The Planning Inspectorate
Yr Arolygiaeth Gynllunio

REPORT on the IMPLICATIONS for EUROPEAN SITES

Proposed Sizewell C Project

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

Planning Inspectorate Reference: EN010012

15 September 2021

[This page is intentionally left blank]

TABLE OF CONTENTS

1 INTRODUCTION 2
1.0 BACKGROUND 2
1.1 DOCUMENTS USED TO INFORM THIS RIES 3
1.2 STRUCTURE OF THIS RIES 6

2 OVERVIEW 8
2.1 EUROPEAN SITES CONSIDERED 8
2.2 HRA MATTERS CONSIDERED DURING THE EXAMINATION 10

3 LIKELY SIGNIFICANT EFFECTS 11
3.1 THE APPLICANT'S ASSESSMENT 11
3.2 EXAMINATION 11
3.3 SUMMARY OF HRA SCREENING OUTCOMES DURING THE EXAMINATION 22

4 ADVERSE EFFECTS ON INTEGRITY 26
4.1 INTRODUCTION 26
4.2 THE INTEGRITY TEST - HABITATS 29
4.3 THE INTEGRITY TEST - BIRDS 48
4.4 THE INTEGRITY TEST – MARINE MAMMALS 78
4.5 THE INTEGRITY TEST - FISH 82
4.6 THE INTEGRITY TEST - CONCLUSION 91

5 ALTERNATIVE SOLUTIONS 94
5.0 APPLICANT'S ASSESSMENT IN SHADOW HRA REPORT 94
5.1 SUMMARY 95

6 IMPERATIVE REASONS FOR OVERRIDING PUBLIC INTEREST (IROPI) 96
6.0 APPLICANT'S IROPI CASE IN SHADOW HRA REPORT 96
6.1 SUMMARY 97

7 COMPENSATORY MEASURES 98
7.1 APPLICANT'S PROPOSED COMPENSATORY HABITAT AREA 98
7.2 SUMMARY 111

ANNEX 1: TABLE SUMMARISING THE EUROPEAN SITES AND QUALIFYING FEATURES CONSIDERED BY THE APPLICANT 112

ANNEX 2: TABLE SUMMARISING THE APPLICANT'S CONCLUSIONS ON LSE AND AEOI FOR THOSE EUROPEAN SITES, FEATURES AND EFFECTS DISCUSSED IN THIS RIES AND THE DEGREE OF AGREEMENT WITH THE APPROPRIATE NATURE CONSERVATION BODY, NE…….119

[This page is intentionally left blank]

1 INTRODUCTION

1.0 Background

1.0.1 NNB Generation Company (SZC) Limited (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 Sizewell C Project (the application). 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.

1.0.2 The relevant Secretary of State is the competent authority for the purposes of the Habitats Regulations[1] and/or the Offshore Marine Regulations[2] 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.

1.0.3 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)[3], up to and including Deadline 7 of the Examination (3 September 2021)[4], in relation to potential effects to European sites[5]. 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:

[1] The Conservation of Habitats and Species Regulations 2017 (the Habitats Regulations), as amended by The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. These Regulations came into force on 31 December 2020. Additionally, new guidance on 'HRA: Protecting a European site' has been published jointly by Defra, NE, the Welsh Government and Natural Resources Wales in February 2021. The ExA sought confirmation as to whether and how these changes to legislation and guidance affected the Applicant's Shadow HRA Report. The Applicant [REP2-100] clarified the changes to the legislation in response to question HRA.1.1 with reference to the 'National Site Network'. The Applicant confirmed that the changes to the legislation have no bearing on the assessment and conclusions reached in the Shadow HRA Report. With regards to the new guidance, the Applicant [REP2-100] stated that this guidance represents the re-statement of principles which are already found in relevant case-law and previous guidance and does not necessitate a revision of the Shadow HRA Report. NE [REP2-152] confirmed in response to the ExA's question HRA.1.0 that the new guidance has not altered their advice in regard of the Applicant's Shadow HRA.

[2] The Conservation of Offshore Marine Habitats and Species Regulations 2017 (the Offshore Marine Regulations), as amended by The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019, apply beyond UK territorial waters (12 nautical miles). These regulations are relevant when an application is submitted for an energy project in a renewable energy zone (except any part in relation to which the Scottish Ministers have functions).

[3] The RIES has predominantly focused on the representations of UK Government statutory advisors and does not summarise all representations submitted on matters of HRA.

[4] Due to the timing, this RIES does not consider late submissions to Deadline 7 or any additional submissions received after 3 September 2021, with the exception of Natural England's response to agenda items 5a and 5b of Issue Specific Hearing (ISH) 10 [REP7-287].

[5] The term European Sites in this context includes Sites of Community Importance (SCIs), Special Areas of Conservation (SACs) and candidate SACs, Special Protection Areas (SPAs), possible SACs, potential SPAs, 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 the Planning Inspectorate's Advice Note 10.

https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010012/EN010012-002292-Examination%20Library%20PDF%20Version%20Sizewell%20FINAL.pdf

1.0.4 It is issued to ensure that IPs including the statutory nature conservation bodies: Joint Nature Conservation Committee (JNCC)[6] and Natural England (NE) are consulted formally on Habitats Regulations matters. This process may be relied on by the Secretary of State for the purposes of Regulation 63(3) of the Habitats Regulations and Regulation 28(4) of the Offshore Marine Regulations. Following consultation, the responses will be considered by the ExA in making 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.

1.0.5 The Applicant has also considered likely significant effects on European sites in European Economic Area (EEA) States [APP-145]. Only European sites within the National Site Network[1] are addressed in this report.

1.1 Documents used to inform this RIES

The Applicant's HRA documents

1.1.1 The Applicant provided three volumes of HRA reports with the DCO application, which comprised the following:

- Shadow Habitats Regulations Assessment Volume 1: Screening and Appropriate Assessment Part 1 of 5 [APP-145];
- Shadow Habitats Regulations Assessment Volume 1: Screening and Appropriate Assessment Part 2 of 5 [APP-146];
- Shadow Habitats Regulations Assessment Volume 1: Screening and Appropriate Assessment Part 3 of 5 [APP-147];
- Shadow Habitats Regulations Assessment Volume 1: Screening and Appropriate Assessment Part 4 of 5 [APP-148];
- Shadow Habitats Regulations Assessment Volume 1: Screening and Appropriate Assessment Part 5 of 5 [APP-149];
- Shadow Habitats Regulations Assessment Volume 2: Stage 3 Assessment of Alternative Solutions (AS) [APP-150];
- Shadow Habitats Regulations Assessment Volume 3: Stage 4 Imperative Reasons of Public Interest [APP-151]; and
- Shadow Habitats Regulations Assessment Volume 4: Compensatory Measures (CM) [APP-152].

1.1.2 For ease of reading, the Applicant's Shadow HRA Volume 1 [APP-145 to APP-149] will hereafter be referred to as the 'Shadow HRA Report'. Volume 2 [APP-150] will be referred to as the 'Applicant's Assessment of

[6] JNCC [AS-044] submitted representation to the Examination stating that as the activity associated with the Proposed Development is onshore/inshore, NE should provide a full response on nature conservation matters and confirming that JNCC do not intend to provide further comment on the Proposed Development.

AS'; Volume 3 [APP-151] will be the 'Applicant's IROPI case'; and Volume 4 [APP-151] the 'Applicant's CM report'.

1.1.3 HRA Screening and Integrity matrices were included in the Shadow Habitats Regulations Assessment Volume 1: Screening and Appropriate Assessment Part 4 of 5 [APP-148].

Changes to the Proposed Development during pre-Examination

1.1.4 On 11 January 2021, during the pre-Examination period, the Applicant submitted a formal change request [AS-105] for fifteen proposed changes to the application (Changes 1 to 15). These changes are set out in Table 1 of the Applicant's cover letter of 11 January 2021 [AS-105].

1.1.5 As a result, the Applicant submitted the following HRA addendum documents:

- Shadow Habitats Regulations Assessment Addendum (Revision 1) [AS-173];
- Shadow Habitats Regulations Assessment Addendum Appendices 1A-10A Part 1 of 5 [AS-174];
- Shadow Habitats Regulations Assessment Addendum Appendices 1A-10A Part 2 of 5 [AS-175];
- Shadow Habitats Regulations Assessment Addendum Appendices 1A-10A Part 3 of 5 [AS-176];
- Shadow Habitats Regulations Assessment Addendum Appendices 1A-10A Part 4 of 5 [AS-177]; and
- Shadow Habitats Regulations Assessment Addendum Appendices 1A-10A Part 5 of 5 [AS-178].

1.1.6 Revised HRA screening matrices were included in AS-174; integrity matrices were included in AS-178. Both documents contained revised matrices for SAC sites only. For ease of reading, the Applicant's Shadow HRA Addendum parts 1 to 5 will collectively be referred to as the 'Shadow HRA Addendum'.

1.1.7 The Shadow HRA Addendum confirms that the proposed changes that were considered relevant to the scope of the Applicant's HRA are:

- Change 1: Potential to increase the frequency of freight train movements to facilitate bulk material imports by rail;
- Change 2: An enhancement of the permanent beach landing facility and construction of a new, temporary beach landing facility; and
- Change 5: Change to the location of the water resource storage area and the addition of measures to mitigate flood risk.

1.1.8 The Shadow HRA Addendum included the following updates: baseline surveys undertaken in late 2019-2020 for wintering waterbirds, breeding waterbirds, nightjar, marsh harrier and terns; additional fish assessments, comprising revised predictions of fish entrapment, further

assessment of potential effects on certain fish stocks and European population estimates of twaite shad; additional noise modelling outputs; and further analysis of inter-pathway effects.

1.1.9 The Shadow HRA Addendum was also updated in response to the Environment Agency's (EA) Relevant Representation (RR) [RR-0373]. This resulted in one additional European site (the Plymouth Sound and Estuaries SAC) being scoped into the assessment, as discussed later in this report.

1.1.10 On 21 April 2021, the ExA formally accepted [PD-013] the fifteen changes (Changes 1-15) to the application put forward by the Applicant. The ExA determined that the proposed changes were material changes but could be accepted into the Examination as part of the original application, for the reasons set out in [PD-013].

Changes to the Proposed Development during Examination

1.1.11 At Deadline 2 of the Examination (2 June 2021), the Applicant submitted a Shadow HRA Second Addendum [REP2-032] (hereafter referred to as the 'Shadow HRA Second Addendum'). This was submitted to update the calculations of potential change in recreational use of European sites by displaced visitors and construction workers and to consider the implications of this change on the assessment of recreational displacement in the Shadow HRA Report [APP-145].

1.1.12 At Deadline 4 (1 July 2021), Shadow HRA Addendum Appendices 1A-10A Part 5 of 5 (Version 2) [REP4-004] were submitted. This [REP4-004] superseded the document of the same title [AS-178] and incorporated three missing figures from the original version.

1.1.13 At Deadline 5 (23 July 2021), the Applicant submitted a formal change request [REP5-002] for three additional proposed changes to the application (Changes 16 to 18). These changes are set out in Table 3 of the Applicant's cover letter of 23 July 2021 [REP5-001] and in Table 1: Overview of Proposed Changes of the Applicant's Change Request letter of the same date [REP5-002]. The Applicant stated in [REP5-002] that Changes 16 to 18 did not necessitate any amendments to the Shadow HRA.

1.1.14 On 10 August 2021, the ExA formally accepted [PD-039] Changes 16 to 18 to the application put forward by the Applicant. The ExA did not consider that the proposed changes constituted material changes to the original application.

1.1.15 The Applicant also provided notice at Deadline 5 [REP5-001] of a further proposed change to the application (Change 19). This comprised construction and operation of a temporary desalination plant to provide a potable water supply for the construction of the Proposed Development, as identified in [AS-397].

1.1.16 The Applicant's formal Change Request for a further proposed change to the application (Change 19) was submitted to the Planning Inspectorate by letter dated 3 September 2021 [REP7-286] that was received on 6 September 2021. The proposed change is set out in Table 1 of the

Applicant's Change Request letter dated 3 September 2021 [REP7-286] and in Table 2.1 of Part 1 – Change Report which accompanied the request [REP7-285]. Information including a Shadow HRA Third Addendum [REP7-279] was submitted with the Change Request.

1.1.17 On 10 September 2021, the ExA formally accepted [PD-050] Change 19 to the application put forward by the Applicant. The ExA considered the proposed change to be material but could be accepted into the Examination for the reasons set out in [PD-050].

1.1.18 This RIES acknowledges Change 19 but, due to the timing, has not included reference to information that was submitted with the Change Request (documents coloured green in [REP7-002]), including the Shadow HRA Third Addendum [REP7-279]. As such, references to 'the Proposed Development' within this RIES are to the Proposed Development for which a DCO is being sought, including Changes 1 to 18 (but excluding Change 19).

1.1.19 The Applicant submitted a 'HRA Signposting Document' at Deadline 7 [REP7-079], which summarised all of its documentation and submissions (to date) relevant to the Shadow HRA.

1.2 Structure of this RIES

1.2.1 The remainder of this report is as follows:

- **Section 2** identifies the European sites that were identified within the DCO application. It provides an overview of the issues that have emerged during the examination.
- **Section 3** provides an overview of the Applicant's assessment of likely significant effects (LSE). It provides a summary of where IPs disputed the Applicant's conclusions and identifies additional European sites and qualifying features screened for potential LSEs during the Examination.
- **Section 4** provides an overview of the Applicant's assessment of adverse effects on integrity (AEoI) of European sites. It provides a summary of where IPs have disputed the Applicant's conclusions.
- **Section 5** provides an overview of the consideration given to alternative solutions during the Examination.
- **Section 6** provides an overview of the consideration given to Imperative Reasons for Overriding Public Interest (IROPI) during the Examination.
- **Section 7** provides an overview of the consideration given to compensatory measures during the Examination.
- **Annex 1** contains a table summarising the European sites and qualifying features identified by the Applicant, together with the Applicant's conclusion on LSE.

- **Annex 2** contains a table summarising the Applicant's conclusions on LSE and AEoI for those European sites, features and effects discussed in this RIES and the degree of agreement with the appropriate nature conservation body, NE. Where the conclusions of the Applicant were disputed by NE during the Examination, these are highlighted in red within this table.

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 HRA assessments.

2.1.2 The Applicant's Shadow HRA Report [APP-145 to APP-149] identified a total of 20 European sites within the National Site Network for inclusion within the assessment, which are listed in Table 2.1 below. Annex 1 of this report lists the qualifying features of these sites, together with the Applicant's conclusion on LSE for these sites and features.

Table 2.1: European sites identified in the Applicant's Shadow HRA Report [APP-145 to APP-149]

Name of European site	Distance to Sizewell C Main Development Site (MDS)	Distance to closest Associated Development Site (where less than distance to MDS)
Alde, Ore and Butley Estuaries SAC	6.5km	1.3km (A1094/B1069 south of Knodishall)
Alde-Ore Estuary SPA	6.5km	1.3km (A1094/B1069 south of Knodishall)
Alde-Ore Estuary Ramsar site	6.5km	1.3km (A1094/B1069 south of Knodishall)
Benacre to Easton Bavents SPA	14.2km	10.5km (A12/A144 south of Bramfield)
Benacre to Easton Bavents Lagoons SAC	14.6km	12.1km (A12/A144 south of Bramfield)
Deben Estuary SPA	22.2km	5km (freight management facility)
Deben Estuary Ramsar	22.2km	5km (freight management facility)
Dew's Ponds SAC	11.2km	1.7km (northern park and ride)
Humber Estuary SAC	162.9km	153km (A12/A144 south of Bramfield)
Minsmere to Walberswick Heaths and Marshes SAC	Adjacent	Not applicable (N/A)
Minsmere-Walberswick SPA	Adjacent	N/A

Name of European site	**Distance to Sizewell C Main Development Site (MDS)**	**Distance to closest Associated Development Site (where less than distance to MDS)**
Minsmere to Walberswick Ramsar site	Adjacent	N/A
Orfordness to Shingle Street SAC	8.9km	5.9km (A1094/B1069 south of Knodishall)
Outer Thames Estuary SPA	Within and adjacent	N/A
Sandlings SPA	1.6km	N/A
Southern North Sea (SNS) SAC	Within and adjacent	N/A
Staverton Park and the Thicks, Wantisden SAC	17km	6.5km (southern park and ride)
Stour and Orwell Estuaries SPA	33.7km	1.6km (freight management facility)
Stour and Orwell Estuaries Ramsar site	33.7km	1.6km (freight management facility)
The Wash and North Norfolk Coast SAC	88.2km	79.4km (A12/A144 south of Bramfield)

2.1.3 The locations of these European sites relative to the Proposed Development are illustrated on Figure 4.1 of the Shadow HRA Report [APP-145].

2.1.4 In response to representations made by the EA in respect of migratory fish [RR-0373], the Applicant included one further European site in their Shadow HRA Addendum [AS-173], Plymouth Sound and Estuaries SAC. This site is approximately 615km distant from the Proposed Development and the qualifying features are listed in Annex 1 of this RIES. See paragraph 3.2.20 of this RIES for further details.

2.1.5 NE [REP2-152] confirmed in response to the ExA's First Written Question (ExQ1) HRA1.3 that it is satisfied that the proposals in its current form have scoped in all relevant European sites. The Marine Management Organisation (MMO) [RR-0744] also confirmed in its RR that it agreed with the list of European sites that have been screened in on a conservative basis. The MMO also stated that it broadly agreed with the sites and qualifying features 'screened in' for further assessment in the Shadow HRA Report. However, it considered this was less clear for mobile species and noted that consideration of effects on some primary habitats and supporting habitats was lacking.

2.2 HRA matters considered during the Examination

2.2.1 The Examination has focussed on a number of potential impacts on European sites and their qualifying features, including the following matters:

- Water abstraction and supply;
- Airborne pollution;
- Physical interaction between species and infrastructure (fish entrapment at the cooling water intake and bird interactions with pylons and power lines);
- Impediment to current management practices;
- Disturbance to species due to light, noise and visual impacts from the Main Development Site (MDS);
- Recreational pressure and disturbance;
- Changes to coastal processes and geomorphology arising from MDS;
- Impacts from changes to water quality (thermal plume, chemical plume, chlorination, hydrazine);
- Impacts from combined drainage outfall (CDO);
- Impacts from mud drilling and bentonite;
- Indirect effects on bird and marine mammal from impacts to prey species;
- Cumulative and in combination assessment;
- Mitigation and monitoring plans; and
- Compensatory measures for the marsh harrier qualifying features of the Minsmere-Walberswick SPA and Ramsar site.

2.2.2 These matters are discussed in Sections 3 and 4 of this RIES, as relevant.

2.2.3 The ExA notes that a considerable number of issues discussed in this RIES remain outstanding at the time of publication. During the Examination the Applicant has also requested a number of changes to the Proposed Development, which are supported by the submission of new information. This includes information relevant to the findings in the Applicant's Shadow HRA Report. Accordingly, not all of the issues identified in this information have been addressed previously by IPs in their earlier submissions. The ExA looks forward to submissions of updated SoCGs to provide updated positions from relevant IPs, which are anticipated to be submitted after publication of the RIES.

3 LIKELY SIGNIFICANT EFFECTS

3.1 The Applicant's assessment

3.1.1 The Applicant has described how it has determined what would constitute a 'significant effect' within Section 5 of the Shadow HRA Report [APP-145]. This follows guidance documents on HRA, with reference to relevant case law.

3.1.2 The Applicant's conclusions on LSE from the Proposed Development alone are presented in Section 5.5 of the Shadow HRA Report [APP-145] and in the screening matrices [APP-148, with revised versions for the SACs presented in AS-174]. It concluded that of the 20 European sites considered, LSE can only be excluded for Staverton Park and the Thicks, Wantisden SAC. It concluded that LSE cannot be excluded for all other European sites from the project alone.

3.1.3 A summary table of all European sites and qualifying features considered for LSE is included at Annex 1 to this report. Annex 2 summarises those European sites, qualifying features and the potential effects of the Proposed Development considered by the Applicant that have been discussed during the Examination. It presents the Applicant's conclusion on LSE and AEoI and also identifies any sites, features or effects that were disputed by NE during the Examination, highlighting the current position of NE at the point of issue of the RIES.

In combination assessment

3.1.4 Section 5.6 of the Shadow HRA Report [APP-145] considers LSE in combination with other plans or projects as listed in Table C.1 in Appendix C of the Shadow HRA Report [APP-148]. The conclusions are presented in Table C.1 [APP-148] and in the screening matrices [APP-148, with revised versions for the SACs presented in AS-174]. In combination matters are discussed further at paragraphs 3.2.58 to 3.2.65 below and in Section 4 to this report.

3.1.5 The Shadow HRA Addendum [AS-173] included a supplementary assessment of "inter-pathway effects" (interactions between impacts from the Proposed Development) on European sites at Appendix 1A [AS-174]. Cumulative and inter-pathway effects are discussed further at paragraphs 3.2.56 to 3.2.57 and 4.1.16 to 4.1.20 below.

3.2 Examination

3.2.1 The matters relating to the Applicant's assessment of LSE that have been disputed by NE and other IPs during the Examination are detailed below.

3.2.2 Prior to ISH10 (held on 27 August 2021), the ExA identified several instances where the IPs positions were unclear in relation to screening for a number of European sites, qualifying features and potential impacts. The ExA therefore requested the Applicant and other IPs to complete a table issued during the hearing as an action point to clarify their positions

[EV-188]. The responses to this table from the Applicant [REP7-073] and NE [REP7-287] have been used to inform this section of the RIES.

Alde-Ore and Butley Estuaries SAC – Recreational pressure

3.2.3 The Applicant in the Shadow HRA Report [APP-145 to APP-149] screened out LSE from recreational pressure for the Alde-Ore and Butley Estuaries SAC qualifying features 1140: Mudflats and sandflats not covered by seawater at low tide and 1330: Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*). This was on the basis that it was "*considered that the majority of additional visits undertaken by people displaced from Sizewell, or potentially the RSPB Minsmere Reserve, to Aldeburgh would involve activities on the immediate beach frontage around the town, rather than the estuarine habitats and landscape of the Alde-Ore Estuary.*" The Shadow HRA Report [APP-145] at Table 5.2, items 9d and 9h expand on the Applicant's conclusions of no LSE for this site.

3.2.4 In its RR, NE [RR-0878, Issue 29] disputed the Applicant's conclusion of no LSE on the qualifying features of the Alde-Ore and Butley Estuaries SAC, as it considered that there was potential for damage to notified habitats associated with increased recreational disturbance eg trampling. NE [RR-0878] discussed this matter under Issue 29, grouping this European site with other sites for which LSE from recreational pressure had been identified by the Applicant. At Deadline 7, NE [REP7-287] confirmed this view.

3.2.5 At Deadline 7, the Applicant maintained that there would be no LSE [REP7-073].

Benacre to Easton Bavants SPA – Noise, light and visual disturbance

3.2.6 The Applicant's Shadow HRA Report [APP-145 and APP-148] concluded that there would be no LSE on the qualifying features of Benacre to Easton Bavents SPA as a result of disturbance effects as no discernible impact pathway is evident.

3.2.7 NE's RR [RR-0878, Issue 27] highlighted a number of concerns regarding impacts from noise, light and visual disturbance (discussed further in Section 4.3 of this RIES) and stated that these concerns related to bittern, little tern and marsh harrier of Benacre to Easton Bavents SPA that use the MDS as functionally linked land (FLL). NE considered LSE could not be ruled out for these features[7].

3.2.8 NE [RR-0878] grouped this European site with other sites for which it had the same concern and expanded on this matter (NE Issue 27). At Deadline 7, NE [REP7-287] confirmed its view that there would be a LSE. However, the Applicant maintained that there would be no LSE [REP7-073].

[7] NE [EV-160] confirmed that for all issues identified 'red' and 'amber' in its Written Representation [REP2-153] it was not satisfied that either LSE or AEoI can be ruled out.

Minsmere-Walberswick SPA and Benacre to Easton Bavents SPA – indirect impacts on breeding bittern from entrapment of prey species (eels)

3.2.9 The EA [REP2-135] queried whether indirect effects had been addressed for all appropriate bird species. It specifically noted that eel, which are prey for bitterns are predicted to be entrapped at Sizewell C; it therefore considered that breeding bittern of Minsmere-Walberswick SPA and Benacre to Easton Bavents SPA should be considered in the HRA. The Royal Society for the Protection of Birds (RSPB)/Suffolk Wildlife Trust (SWT)[8] [REP2-506][REP5-164] echoed this concern in relation to the Minsmere-Walberswick SPA.

3.2.10 The Applicant's screening matrices submitted with the application [APP-148] for Minsmere-Walberswick SPA and Benacre to Easton Bavents SPA stated that "*With specific reference to bittern (for which European eel is an important prey item), no negative effect on the numbers of glass eels or elvers migrating through Sizewell Bay is predicted. No discernible impact pathway is apparent.*"

3.2.11 In response to the RSPB/SWT, the Applicant [Appendix P of REP5-120] noted that glass eels are of relevance to bittern, and that only three glass eels have been recorded in the sampling of Sizewell. It confirmed a worst case assessment of entrainment had been presented in [AS-238] and that the effects were predicted to be between 0.007 and 0.024% of the River District Basin biomass.

3.2.12 The RSPB/SWT did not respond to [Appendix P of REP5-120] prior to publication of the RIES. The EA made numerous comments regarding the impingement of eels in relation to the assessment under the Eels (England and Wales) Regulations 2009; however, did not make further comments in relation to the HRA.

Outer Thames Estuary SPA – Recreational disturbance to little terns

3.2.13 The Applicant [APP-145 and APP-148] concluded that there would be no LSE on qualifying features of the Outer Thames Estuary SPA as a result of recreational pressure.

3.2.14 This was disputed by NE [RR-0878, Issue 29] who considered that there was a potential for impacts on the little tern qualifying feature of this SPA (and that it could not agree to no AEoI), including their supporting habitats due to increased recreational pressure from Sizewell C workers and displaced locals during construction. At Deadline 7, NE [REP7-287] confirmed its view that there would be LSE.

3.2.15 At Deadline 7, the Applicant maintained that there would be no LSE [REP7-073].

[8] The RSPB/SWT submitted a number of combined representations to the Examination.

Outer Thames Estuary SPA – Habitat loss and fragmentation

3.2.16 The Applicant [APP-145] concluded that there would be no LSE to the qualifying features of the Outer Thames Estuary SPA as a result of direct habitat loss and fragmentation.

3.2.17 This was disputed by NE [RR-0878, Comment 357] who noted that the Proposed Development has the potential to alter the morphology and ecological function of the nearshore area (which could be used by qualifying species of the SPA). It advised the Applicant to assess potential habitat loss and fragmentation against the Conservation Objectives.

3.2.18 With specific reference to red-throated diver, NE [RR-0878, Comment 357] stated that physical loss by removal or smothering of any of the habitats on which red-throated divers depend may result in the loss of foraging sites and therefore the reduction of the food resource for the overwintering population. Furthermore, during the construction, operation and decommissioning phases the construction of the jetty, dredge areas, thermal and chemical plumes could potentially lead to a loss or fragmentation of feeding habitat for features of interest, therefore leading to a loss of total available habitat within the site. It advised that prey species could be displaced during construction and decommissioning due to works to the project infrastructure and therefore red-throated diver could be displaced.[9]

3.2.19 Nevertheless, at Deadline 7, both NE [REP7-287] and the Applicant [REP7-073] confirmed their views that there would be no LSE to any qualifying features of the Outer Thames Estuary SPA from habitat loss and fragmentation. NE did not confirm the basis upon which its position changed.

Plymouth Sound and Estuaries SAC – Impingement of allis shad

3.2.20 The Shadow HRA Report [APP-145] acknowledged that twaite shad could potentially be impinged by the intake tunnel; however, no specific reference was made to allis shad. Whilst the EA's RR [RR-0373] acknowledged that impingement predictions for allis shad are low[10], it queried the screening out of allis shad within the Applicant's Shadow HRA Report.

3.2.21 As noted in paragraph 2.1.4 of this RIES, the Applicant responded to the EA in the Shadow HRA Addendum [AS-173] and identified Plymouth Sound and Estuaries SAC as having a spawning population of allis shad. However, on the basis of the very low predicted impingement at Sizewell C (three individuals, based on a single individual being recorded in the monitoring data from Sizewell B in 2009), the Applicant excluded LSE because this scale of effect would not make any material difference to the population of any European site, regardless of location. A screening matrix for this site was provided in [AS-174].

[9] The Applicant [APP-145] did not exclude LSE from entrapment and subsequent reduction in the availability of prey for the SPA qualifying features.

[10] The EA concluded this based on SPP103 'Consideration of potential effects on selected features at Sizewell' [AS-238].

3.2.22 The EA [REP2-136] acknowledged that the Applicant has provided additional information but deferred to NE as the appropriate nature conservation body with regards to the conclusions of no LSE on European sites for the DCO application [REP7-131]. The EA also stated that "*some of these matters will be considered as part of the Environmental Permitting process and for this reason we are not commenting at the DCO stage.*"

3.2.23 NE subsequently confirmed it was content that there would be no LSE on allis shad of the Plymouth Sound and Estuaries SAC [REP7-287].

Staverton Park and the Thicks, Wantisden SAC – Airborne pollution

3.2.24 The Applicant concluded that there would be no LSE on the Old acidophilous oak woods with *Quercus robur* on sandy plains qualifying feature of Staverton Park and the Thicks, Wantisden SAC as a result of the Proposed Development, either alone or in combination with other plans or projects.

3.2.25 However, NE [RR-0878, Issue 5][REP2-153] [REP2-071], considered that there is potential for LSE from increased airborne pollution (oxides of nitrogen, NO_x) from all elements of the Proposed Development.

3.2.26 The Applicant explained that LSE on Staverton Park and the Thicks, Wantisden SAC had been screened out due to distance of the habitat qualifying feature from the Proposed Development [REP2-071, row 5]. Table 4.4 of the Shadow HRA Report [APP-145] identified this site as being located 17km from the MDS and 6.5km from the closest associated development site.

3.2.27 At Deadline 3, the Applicant [REP3-042] acknowledged that the Site Improvement Plan for the Staverton Park and the Thicks, Wantisden SAC identified atmospheric nitrogen deposition as a pressure for the qualifying feature of the SAC. However, the Applicant reiterated its view that as the SAC is located 17km from the MDS, it does not have the potential to be affected by emissions from operational combustion (from diesel generators). The Applicant also noted that the screening distance detailed in the EA's risk assessment guidance[11] is 10km for European sites [REP3-042].

3.2.28 In response to ExQ2 [REP7-144, HRA.2.0], NE confirmed it was satisfied that LSE on Staverton Park and the Thicks, Wantisden SAC can be excluded due to distance. However, this was contradicted by its response in REP7-287] which stated that "*LSE had been predicted and brought forward to appropriate assessment where the applicant has provided sufficient evidence that of No Adverse Effect on Integrity.*"

[11] Defra and EA. Guidance: Air emissions risk assessment for your environmental permit, 2016. (Online). Available from: https://www.gov.uk/guidance/air-emissions-risk-assessment-for-your-environmental-permit

Numerous European sites – changes to coastal processes/sediment transport

3.2.29 The Shadow HRA Report [APP-145] considered the potential for LSE due to changes to coastal processes/ sediment transport during construction, operation and decommissioning of Proposed Development components (specifically, the coastal defences, beach landing facility (BLF), cooling water intakes and outfalls, fish recovery and return (FRR) system and CDO) on qualifying features of the following European sites:

- Alde, Ore and Butley Estuaries SAC;
- Alde-Ore Estuary SPA;
- Alde-Ore Estuaries Ramsar;
- Benacre to Easton Bavents Lagoons SAC;
- Benacre to Easton Bavents SPA;
- Minsmere to Walberswick Heaths and Marshes SAC;
- Minsmere-Walberswick SPA;
- Minsmere-Walberswick Ramsar; and
- Orfordness to Shingle Street SAC.

3.2.30 See Annex 1 of this RIES for the sites and qualifying features screened in by the Applicant.

3.2.31 During the Examination, NE raised concerns regarding the potential for AEoI due to changes to coastal processes/ sediment transport on all qualifying features of the Minsmere-Walberswick SPA [RR-0878] [REP2-153] [REP2-071] (see issue 28), including qualifying features not screened by the Applicant in the Shadow HRA Report, which had been excluded on the basis of no impact pathway. These additional qualifying features are identified in red in Annex 2.

3.2.32 Potential effects arising from changes to coastal processes/sediment transport are described in more detail in Section 4 of this RIES.

Numerous European sites - Invasive non-native species (INNS)

3.2.33 The Shadow HRA Report [APP-145] does not explicitly address the spread of INNS as a potential effect pathway. NE considered [RR-0878, Issue 16] [REP2-071] that the proposals present a risk of unintentionally spreading INNS (via marine and terrestrial sources) and could lead to a detrimental effect to all qualifying features of the following sites:

- Alde-Ore and Butley Estuaries SAC;
- Alde-Ore Estuary SPA;
- Alde-Ore Estuary Ramsar site;
- Minsmere to Walberswick Heath and Marshes SAC;
- Minsmere-Walberswick SPA; and

- Minsmere-Walberswick Ramsar site.

3.2.34 NE requested [RR-0878] this pathway to be assessed in detail within the HRA to inform mitigation or compensation measures and required biosecurity control measures during construction and operation across all development sites. NE also advised that a non-native species management plan should be created and submitted to NE for review.

3.2.35 The Applicant [REP2-071] explained that this was not a potential effect pathway identified or agreed at the screening stage. It confirmed that the Code of Construction Practice (CoCP) requires a biosecurity risk assessment to be undertaken to avoid potentially facilitating the spread of INNS during construction, and that given the inclusion of these measures in the CoCP, no further assessment is required. This matter is stated to be agreed between the Applicant and NE in the draft SoCG [REP2-071].

Numerous European sites - Marine water quality

3.2.36 NE [RR-0878 Issues 30-36] highlighted concerns regarding direct exposure of foraging birds to changes in marine water quality (thermal and chemical discharges including total residual oxidant (TRO), bromoform from chlorination[12] and hydrazine[13], as well as discharges from the Combined Drainage Outfall[14] (CDO) and drilling chemical discharges). This was relevant to the following sites and features:

- Alde-Ore Estuary SPA – Sandwich tern, little tern and lesser black-backed gull (breeding);
- Alde-Ore Estuary Ramsar – little tern;
- Humber Estuary SAC – sea lamprey and river lamprey;
- Minsmere–Walberswick SPA – little tern;
- Minsmere–Walberswick Ramsar – little tern; and
- Outer Thames Estuary – little tern, common tern and red-throated diver.

Direct toxicity to seabirds

3.2.37 The Shadow HRA Report did not assess the potential effect of direct toxicity on SPA seabirds. NE [RR-0878] particularly noted that the chemical plume associated with the outfall exceeds Environmental Quality Standards (EQS) or Predicted No Effect on Concentration (PNEC) for bromoform. It sought additional evidence, detailing the direct impacts of any chemical plume on marine foraging bird species, with consideration given to risks from direct or repeated exposure to the chemical plume.

[12] Undertaken to avoid biofouling [APP-145]

[13] Used to inhibit corrosion in steam generation circuits [APP-145].

[14] Used during the construction phase for the dewatering of the site; all brown water/ sewage, any hydrazine testing and all Tunnel Boring muds will be discharged via the CDO.

3.2.38 The RSPB/SWT [REP2-506] made extensive comments about the potential for impacts on birds from changes in marine water quality. It specifically noted the potential for direct toxicity effects on birds from the chemical plume; particularly from bromoform on red-throated diver of the Outer Thames Estuary SPA which loaf and forage on the sea surface, and from hydrazine on waterbirds, waders, terns and gulls on the Minsmere South Levels (ie entering through the Sluice). It also noted [REP7-153] that the Applicant has mentioned that terns have been observed foraging in the Sizewell B plumes and therefore there is a pathway for a potential impact because birds could be in contact with these chemicals.

3.2.39 The Applicant [REP2-071][REP3-042][Appendix P of REP5-120] confirmed that the potential for direct effects of toxicity on SPA seabirds was not identified as a potential effect pathway and noted that this was not raised by NE or the RSPB/SWT in the comments they provided during the pre-application stage. It considered the potential for direct effects from the chemical plume not to be a credible pathway and noted that it is not aware of any evidence of effects from chemical plumes connected with other existing discharges from nuclear power stations.

3.2.40 NE [RR-0878, Issue 36][REP2-153] also noted that there had been a number of recent occurrences of bentonite break outs or frack outs on other horizontal directional drilling (HDD) projects around the coast. It therefore considered the potential for this impact pathway should be considered as a LSE. However, the Applicant maintained [REP7-073] that there would be no LSE from drilling mud and bentonite breakout.

3.2.41 Nevertheless, the matter was shown to be 'amber' in NE's WR [REP-153], and NE confirmed amber matters are those for which it cannot exclude LSE or AEoI [EV-160].

Direct impacts to sea and river lamprey of Humber Estuary SAC

3.2.42 The Applicant's Shadow HRA Report [APP-145 and APP-148] concluded that there would be no LSE on the sea and river lamprey qualifying features of the Humber Estuary SAC as a result of water quality effects in the marine environment, due to a lack of pathway.

3.2.43 This was disputed by NE [RR-0878, Comment 354] who considered that due to the substantial amount of work that had been done on thermal and chemical plume modelling and the potential to disrupt migratory paths, this pressure pathway should be screened in. At Deadline 7, NE [REP7-287] confirmed its view that there would be LSE.

3.2.44 At Deadline 7, the Applicant maintained that there would be no LSE [REP7-059].

Numerous European sites – Physical interaction between birds and project infrastructure (pylons and power lines)

3.2.45 NE raised concerns ([RR-0878, NE Issue 7][REP2-153][REP2-071]) of relevance to the Alde-Ore Estuary SPA, Minsmere-Walberswick SPA, and Outer Thames Estuary SPA, that physical interaction of birds and new pylons and overhead power lines had not been considered as part of the

assessment. It highlighted the potential for impacts through electrocution, displacement and collision and considered LSE could not be ruled out for these European sites. NE expected to see some assessment of this in the HRA and mitigation such as line markers, to be included, if necessary. The RSPB [REP3-074] supported NE's concerns.

3.2.46 The Applicant maintained [REP2-071][REP3-024][REP6-024] that no likely pathway for a material effect has been identified due to physical interaction with pylons. It explained that the development proposals require the repositioning of one existing overhead pylon and four new overhead gantries and considered that this is a minimal change to the existing baseline situation, presenting little potential for any additional effects on SPA bird populations. Furthermore, all new pylon and gantries would be located within the footprint of the main platform in areas that are likely to be avoided by birds because of the absence of suitable habitats in such locations and the presence of anthropogenic activities.

3.2.47 At Deadline 7, NE confirmed that it considered there to be LSE to Alde-Ore Estuary SPA and Minsmere-Walberswick SPA only (NE did not confirm for which qualifying features), and not to the Outer Thames Estuary SPA [REP7-287].

3.2.48 The Applicant maintained that there would be no LSE to all three European sites [REP7-073].

Numerous (and unknown) European sites - Water abstraction and supply

3.2.49 Although the Applicant provided a Water Supply Strategy [APP-601] with the DCO application, it did not specifically address the potential impacts of water use and abstraction within the Shadow HRA Report.

3.2.50 NE [RR-0878, Issue 3][REP2-153] noted that at its peak during construction, it is proposed that Sizewell C would require over 4 megalitres of water per day. It explained that Suffolk, and the wider East Anglia area, is under serious water stress and requested the Applicant to demonstrate that this level of abstraction can be sourced sustainably, and without adverse impacts on designated sites already.

3.2.51 It raised concerns over the potential for water use/ abstraction (and/or associated works eg pipelines) to damage the notified habitats and bird supporting habitats of the following European sites:

- Alde-Ore and Butley Estuaries SAC;
- Alde-Ore Estuary SPA;
- Alde-Ore Estuary Ramsar site;
- Minsmere to Walberswick Heaths and Marshes SAC;
- Minsmere-Walberswick SPA; and
- Minsmere-Walberswick Ramsar site.

3.2.52 NE [RR-0878] therefore advised that impacts of water use should be assessed in detail within the HRA (both from individual project elements,

cumulatively with other project elements, cumulatively with other impact pathways (ground and surface water impacts, foul water impacts, and waterborne pollution impacts) to properly assess such risks and inform any necessary mitigation or compensation measures. NE considered LSE could not be ruled out for these European sites[7]. At Deadline 7, NE [REP7-287] reconfirmed this position.

3.2.53 The EA [RR-0373] also considered that the supply options described by the Applicant do not provide the detail that is necessary to provide assurance that a sustainable source of water can be provided that will not cause ecological harm.

3.2.54 The RSPB/SWT [REP3-074] supported NE's concerns and considered that in the absence of a strategy for water supply there remains a potential threat to the interest features associated with the current hydrological management in the Minsmere to Walberswick SPA and Ramsar site.

3.2.55 At Deadline 7, the Applicant maintained that there would be no LSE [REP7-073]. As noted at paragraph 1.1.18 above, Change 19 included a desalination plant, but discussion of this change is not included in the RIES due to the timing of the change request. Effects of water abstraction and supply are described in further detail in Section 4.

Numerous European sites - Cumulative/inter-project effects

3.2.56 NE [RR-0878][REP2-071] (NE Issue 9) and the RSPB/SWT [RR-1059] raised concerns with the Applicant's assessment of cumulative impacts between different elements of the Proposed Development and the total impacts of the project as whole. NE included a list of European sites for which it considered this applied in its RR, WR and initial SoCG with the Applicant. These are also identified in red in the summary table at Annex 2 to this RIES.

3.2.57 In response to the comments of IPs, the Applicant provided a Shadow HRA Addendum [AS-147], which included additional analysis of the potential for various potential effect pathways on European sites to combine or interact and discussed its conclusion with regards to AEoI. This matter is described in further detail in Section 4.

In combination assessment (screening stage)

3.2.58 Concerns were raised on matters of in combination effects and additional projects were highlighted by IPs, including the MMO [RR-0744], NE [RR-0878] (NE Issue 9) and Heveningham Hall Estate [RR-0908 and REP2-287] during the Examination. These matters are described below and in Section 4 to this report, where relevant.

3.2.59 The following additional projects were identified by IPs:

- Galloper wind farm (MMO [RR-0744]);
- Sizewell B relocation TCPA application (NE [RR-0878]);
- Other plans or projects that may affect migratory fish at the North Sea Spawning Stock Biomass (SSB) area level (NE [RR-0878]);

- Suffolk Coastal Path in respect of the screening of Minsmere to Walberswick Heaths and Marshes SAC (NE [RR-0878]);
- AONB Management Plan in respect of the screening of Minsmere to Walberswick Heaths and Marshes SAC (NE [RR-0878]);
- Onshore cable routes of the Scottish Power Renewables offshore wind projects (RSPB/SWT [REP5-166]);
- Unexploded Ordnances (UXO) detonation activities related to other projects (NE [RR-0878]); and
- Traffic emissions from projects in relevant local plans (Heveningham Hall Estate [RR-0908 and REP2-287]).

3.2.60 The Applicant [REP2-082] in its initial SoCG with the MMO, responded to the MMO's comments regarding the Galloper wind farm, which stated that the impacts of the wind farm will not be in the baseline and therefore should not be screened out from the in combination assessment. The MMO [RR-0878] stated this was because although the construction phase will not overlap, the wind farm will be in operation during the construction and operation of the Proposed Development. The Applicant [REP2-082] clarified that the project referred to in Appendix C of the Shadow HRA Report by the MMO is the construction of the Galloper Operation and Maintenance (O&M) Base at Harwich, as opposed to the wind farm. The Applicant confirmed that the O&M base has been constructed and is operational. This matter was therefore identified as resolved in the initial SoCG. The Applicant [REP2-066] also clarified that expansion of the Galloper Offshore Wind Farm has been referred to in Appendix C (and in the Shadow HRA Report), although no information was available to inform the in combination assessment.

3.2.61 With regards to the Sizewell B relocation TCPA application highlighted by NE [RR-0878], this application was subsequently permitted in February 2021. Annex B to the Joint Local Impact Report (LIR) of East Suffolk Council (ESC) and Suffolk County Council (SCC) [REP1-047] confirms that the competent authority reached a conclusion of no LSE as result of the Sizewell B relocated facilities. The Annex B document also summarises NE's consultation response to the planning application, stating that NE agree no LSE. No further comments from the Applicant or NE with regards to in combination effects with the Sizewell B relocated facilities have been noted in representations.

3.2.62 NE included in its RR [RR-0878] comment that "as fisheries assessments are being undertaken at the North Sea SSB area level, Natural England question whether other plans or projects that may impact upon fisheries, such as other power stations are also being considered at this Zone of Influence scale?" NE's RR [RR-0878] stated that it would expect the Coast Path and AONB Management Plan to be screened in to the assessment of recreational disturbance on the Minsmere to Walberswick Heaths and Marshes SAC. The RSPB/SWT [REP5-166] also considered that the onshore cable routes of the Scottish Power Renewables offshore wind

projects should be included in respect of recreational pressure in combination effects.

3.2.63 The Applicant did not include a specific response to NE's and the RPSB/SWT's RR in its Relevant Representation Report [REP1-013] on the basis that it would be seeking to agree a SoCG with these bodies. It is unclear whether these above matters have been responded to by the Applicant and they are not specifically referenced in the draft SoCG with NE [REP2-071]. Matters of recreational pressure are discussed further in Section 4 to this RIES.

3.2.64 NE also raised concerns [RR-0878] that UXO detonation activities related to other projects were not included in the Applicant's in combination assessment. NE stated that there is the potential for other projects to undertake UXO activities at the same time as piling operations for the Proposed Development and this should be considered within the HRA. NE's latest view on this matter is included in its response to the ExA's ExQ2 [REP7-144, HRA.2.6] which includes its comments on the Applicant's SNS SIP. NE acknowledges that the requirement for UXO clearance works is not yet confirmed but highlights that other projects in the area of the proposed works have identified and had to clear UXO. NE therefore identifies a realistic chance that this will be the case for piling works at the Proposed Development. NE comments on the SIP [REP7-144] include "…*the detonation of one UXO at Sizewell should be included in the in-combination assessment*". Discussion of UXO and marine mammals is included at paragraph 4.4.5 below.

3.2.65 More generally, NE confirmed in its WR [REP2-153] that it welcomed the Applicant's continued engagement on the issues, including cumulative and in combination assessment, stating that "…*we would require all issues relating to European protected sites be resolved before we can agree to an absence of in-combination effects.*"

3.2.66 The matter of in combination traffic emissions from projects in relevant local plans raised by Heveningham Hall Estate [RR-0908 and REP2-287] is described further in Section 4.

3.3 Summary of HRA screening outcomes during the Examination

3.3.1 Of the 21 European sites and qualifying features considered for screening by the Applicant in the Shadow HRA Report [APP-145 to APP-149] and Shadow HRA Addendum [AS-173], the Applicant concluded that there would be LSE from the project alone on 19 of these European sites (see Annex 1 to this RIES). These sites and features are discussed further in Section 4 of this RIES.

3.3.2 The Applicant's conclusions of no LSE to any of the qualifying features of the following two European sites were disputed during the Examination:

- Staverton Park and the Thicks, Wantisden SAC – airborne pollution to 'Old acidophilous oak woods with *Quercus robur* on sandy plains' qualifying feature. On the basis of NE's comments in [REP7-287],

the ExA has taken a precautionary approach and included this site in the assessment of effects on integrity in Section 4 of this RIES.

- Plymouth Sound and Estuaries SAC - impingement of allis shad. Further to NE's agreement of no LSE, the ExA has not included further discussion on this site in Section 4 of this RIES.

3.3.3 Of the 19 European sites for which the Applicant identified LSE from the project alone, there were discussions during the Examination relating to the identification of LSE for additional impact pathways for European sites and qualifying features, as detailed in Section 3.1 of this RIES and highlighted in red within the summary table at Annex 2. To summarise, these are as follows:

- Alde-Ore and Butley Estuaries SAC:
  - Risk of spreading INNS;
  - Recreational pressure to Mudflats and sandflats not covered by seawater at low tide and Atlantic salt meadows; and
  - Damage from water use/abstraction to all qualifying features.
- Alde-Ore Estuary SPA:
  - Risk of spreading INNS;
  - Water quality impacts to Sandwich tern, little tern and lesser black-backed gull;
  - Damage from water use/abstraction to all qualifying features; and
  - Collision risk (qualifying features not specified).
- Alde-Ore Estuary Ramsar:
  - Risk of spreading INNS;
  - Water quality impacts to little tern; and
  - Damage from water use/abstraction to all qualifying features.
- Benacre to Easton Bavants SPA:
  - Noise, light and visual disturbance to bittern, little tern and marsh harrier;
  - Indirect impacts on breeding bittern from entrapment of prey species (eels).
- Humber Estuary SAC:
  - Water quality impacts to sea and river lamprey.
- Minsmere to Walberswick Heaths and Marshes SAC:
  - Risk of spreading INNS;

  - Damage from water use/abstraction to all qualifying features.
- Minsmere–Walberswick SPA:
  - Risk of spreading INNS;
  - Water quality impacts to little tern;
  - Damage from water use/abstraction to all qualifying features;
  - Indirect impacts on breeding bittern from entrapment of prey species (eels); and
  - Collision risk (qualifying features not specified).
- Minsmere–Walberswick Ramsar:
  - Risk of spreading INNS;
  - Water quality impacts to little tern; and
  - Damage from water use/abstraction to all qualifying features.
- Outer Thames Estuary SPA:
  - Recreational disturbance to little terns;
  - Habitat loss and fragmentation for all qualifying features;
  - Water quality impacts to little tern, common tern and red-throated diver; and
  - Collision risk (qualifying features not specified).

3.3.4 The above effects have been identified by IPs as resulting in LSE from the project alone. The Applicant maintained that there would be no LSE for all of the above impacts, features and European sites, alone or in combination [REP7-073].

3.3.5 The ExA has not progressed the following matters to Section 4 of this RIES because both the Applicant and NE have separately confirmed there would be no LSE from the project alone or in combination with other plans and projects:

- habitat loss and fragmentation to the Outer Thames Estuary SPA qualifying features; and
- collision risk to Outer Thames Estuary SPA qualifying features.

3.3.6 For all other matters detailed above in paragraph 3.3.3 of this RIES, the ExA has taken a precautionary approach where a pathway for effect exists and has included further discussion on the above matters in Section 4 of this RIES. This is on the basis that the Applicant's conclusions of no LSE alone or in combination have been disputed by IPs. The ExA also notes that mitigation measures have been discussed in relation to a

number of the matters detailed above, which is inconsistent with current practice (Sweetman[15]).

[15] The 2018 ruling by the Court of Justice of the European Union (the CJEU) on the interpretation of the Habitats Directive in the case of People Over Wind and Sweetman vs Coillte Teoranta (2018) ('the Sweetman judgement'), confirmed that mitigation should not be taken into account at screening stage.

4 ADVERSE EFFECTS ON INTEGRITY

4.1 Introduction

Conservation Objectives

4.1.1 The Conservation Objectives for the 19 European sites taken forward to appropriate assessment and consideration of AEoI at the point of the DCO application were included in the Applicant's Shadow HRA Report [APP-145][16]. The Conservation Objectives provided by the Applicant were stated to be generic for all the SACs and Ramsar sites assessed for impacts on habitats in Section 7.2 of the Shadow HRA Report, and similarly for the SPAs and Ramsar sites assessed for impacts to birds in Section 8.2.

4.1.2 NE also provided in its RR [RR-0878] hyperlinks to the Conservation Objectives for the 13 European sites they have commented upon (see Section 2.3.4 of the RR).

4.1.3 As Staverton Park and the Thicks, Wantisden SAC was screened out, no Conservation Objectives were provided for the site by the Applicant in its original Shadow HRA Report [APP-145]. However, these were provided by NE in its RR [RR-0878].

Mitigation

4.1.4 The Applicant's Shadow HRA Report [APP-145] relied upon a number of mitigation measures to reach its conclusions. These are summarised in Section 4 of the Applicant's HRA Signposting document [REP7-079]. Where there have been discussions relating to mitigation during the Examination, these are detailed in the relevant sections of the RIES below.

Applicant's conclusion and NE's initial comments

4.1.5 The Applicant considered the potential for AEoI on European sites within Sections 7 to 10 of the Shadow HRA Report [APP-145] and in the integrity matrices [APP-148, as revised in respect of SACs by AS-178].

4.1.6 Those European sites, qualifying features and effects considered for AEoI by the Applicant and discussed during the Examination are listed in the table presented in Annex 2 to this report. The table also identifies any effects on sites and features that have been the subject of dispute between the Applicant and NE during the Examination.

4.1.7 The Applicant concluded that an AEoI (resulting from noise and visual disturbance during construction) could not be excluded for the marsh harrier qualifying feature of the Minsmere-Walberswick SPA and Ramsar site. This site and its marsh harrier qualifying feature were therefore considered in respect of the derogations under the Habitats Regulations. See Sections 5 to 7 of this RIES.

[16] Section 7.2 (coastal, freshwater and terrestrial habitats); Section 8.2 (birds); Tables 9.1 and 9.3 and paragraphs 9.2.9 to 9.2.23 (marine mammals); and Section 9.2 (migratory fish)

4.1.8 The Applicant concluded that the Proposed Development would not adversely affect the integrity of any other European site.

4.1.9 To date in the Examination, NE has not disputed the Applicant's conclusion of no AEoI on the following European sites:

- Deben Estuary SPA;
- Deben Estuary Ramsar site;
- Dew's Ponds SAC; and
- Orfordness to Shingle Street SAC.

4.1.10 As such, these sites have not been considered further in this RIES.

4.1.11 NE [RR-0878] also agreed that *"…subject to the rigorous implementation of the mitigation measures specified within the Drainage Strategy and Code of Construction Practice"* the Proposed Development is unlikely to result in hydrological impacts, including waterborne pollution, on the following European sites (NE Issues 1 and 4):

- Minsmere – Walberswick (SAC, SPA, Ramsar site);
- Alde-Ore and Butley Estuaries (SAC, SPA, Ramsar site); and
- Stour and Orwell Estuaries (SPA, Ramsar site).

4.1.12 NE further agreed that the Proposed Development is unlikely to result in foul water impacts on Minsmere–Walberswick (SAC, SPA, Ramsar site), *"…subject to the rigorous implementation of the mitigation measures" specified within the Drainage Strategy and Code of Construction Practice"* (NE Issue 2) [RR-0878].

4.1.13 During the Examination a number of IPs, including NE, have disputed or raised concerns with the Applicant's assessment and/or conclusions of no AEoI. Section 4 of the RIES has only focussed on matters discussed during the Examination. It highlights where disagreements remain and identifies the sites and features for which the ExA understands there is agreement between the Applicant and IPs on the conclusion of no AEoI. IPs are invited to confirm if the ExA's understanding as reported in this RIES is correct.

In combination effects

4.1.14 The Applicant's approach to in combination effects is described in paragraphs 3.4.11 to 3.4.22 of the Applicant's Shadow HRA Report [APP-145]. Section 5.6 of the Shadow HRA Report describes how the Applicant identified the projects and plans to be considered in the in combination assessment. These are presented in Appendix C [APP-148] to the Shadow HRA Report.

4.1.15 The Applicant's assessment of in combination effects for the sites, qualifying features and effects considered for AEoI are presented in Sections 7 (for coastal, freshwater and terrestrial habitats), Section 8 (for birds), and Section 9 (marine mammals) of the Shadow HRA Report [APP-145] and also in the Applicant's integrity matrices [APP-148]. In combination effects considered at the AEoI stage are discussed as

relevant under the sub-sections below and also summarised at paragraph 4.6.9.

Cumulative/ inter project effects

4.1.16 As noted in Section 3 above, NE [RR-0878][REP2-071][REP2-153] (NE Issue 9) and the RSPB/SWT [RR-1059] raised concerns with the Applicant's assessment of cumulative impacts between different elements of the Proposed Development and the total impacts of the project as whole. NE's representations identified a list of numerous sites to which it considers this concern applies. These are identified in the table at Annex 2 to this RIES.

4.1.17 In response to NE and RSPB/SWT, the Applicant provided a Shadow HRA Addendum [AS-147], which included as Appendix A1 to that report additional analysis of the potential for various potential effect pathways on European sites to combine or interact. The Shadow HRA Addendum concluded that there was only limited interaction such that there was no potential for AEoI. It is noted that the European sites included in Appendix A1 to the Shadow HRA Addendum do not include all sites identified in NE's Issue 9 [RR-0878][REP2-071][REP2-153]. It also included analysis for a number of European sites that were not raised as a concern by NE. All sites discussed by the Applicant and identified by NE and RSPB/SWT are included in the table at Annex 2 to this RIES.

4.1.18 The initial SoCG between the Applicant and NE [REP2-071] submitted at Deadline 2 records this matter as 'discussions ongoing'. This initial SoCG is the latest SoCG between the two parties submitted to the Examination.

4.1.19 The initial SoCG between the Applicant and the RSPB/SWT [REP2-088] records that this matter is 'not agreed' between the two parties. In its initial SoCG with the Applicant it stated that "*We acknowledge that the updated documents do include assessment of project-wide effects but disagree with conclusions relating to e.g. marine ecology (as discussed above) for two reasons: 1. where we disagree with the level of significance attributed to single impacts, this means the impact when combined with others is also under-estimated; and 2. where impacts considered insignificant alone are not considered further this disregards potential for additive and/or synergistic effects.*"

4.1.20 The Applicant [REP2-088] in responding to the RSPB/SWT's comments stated that *"The Shadow HRA Report draws an overall conclusion regarding all pathways/effects on European sites in Section 11 based on an Evidence Plan that was agreed with both parties. SZC Co took a highly precautionary approach to the likely significant effect (LSE) screening stage. Therefore, all relevant pathways that could have any conceivable influence on the qualifying features of European sites were included in the appropriate assessment stage. This approach ensures that no pathways or effects that may be insignificant when considered alone are excluded from the in-combination assessment."*

Positions at time of publications of this RIES

4.1.21 The ExA's understanding of NE's position in relation to the assessment of effects on integrity at the time of publication of this RIES is summarised in Annex 2.

4.1.22 The matters discussed during the Examination are detailed below in the following sections:

- Section 4.2: The Integrity Test – habitats
- Section 4.3: The Integrity Test - birds
- Section 4.4: The Integrity Test – marine mammals
- Section 4.5: The Integrity Test - fish

4.1.23 As noted in Section 2.2 of this RIES, the ExA notes that a large proportion of issues discussed in this RIES remain outstanding at the time of publication of this RIES.

4.2 The Integrity Test - habitats

Changes in air quality

4.2.1 The Shadow HRA Report [APP-145] assessed the potential for changes in air quality during construction, operation and decommissioning of the Proposed Development to result in an AEoI of the habitat qualifying features of the following European sites:

- Alde, Ore and Butley Estuaries SAC;
- Alde-Ore Estuaries Ramsar;
- Minsmere to Walberswick Heaths and Marshes SAC;
- Minsmere-Walberswick Ramsar; and
- Orfordness to Shingle Street SAC.

4.2.2 The Shadow HRA Report [APP-145] also assessed the potential for impacts to supporting habitats arising from changes in air quality to result in an AEoI on the bird qualifying features of the following sites (as well as bird qualifying features of the Ramsar sites listed above):

- Alde-Ore Estuary SPA;
- Minsmere–Walberswick SPA; and
- Sandlings SPA.

4.2.3 See Annex 1 of this RIES for the qualifying features screened in for air quality effects.

4.2.4 The Shadow HRA Report [APP-145] concluded that changes in air quality as a result of the Proposed Development would not have an AEoI on the qualifying features of the above European sites, either alone or in combination with other plans or projects. This conclusion was unchanged by the Shadow HRA Addendum [AS-173], which included at Appendix 1A

[AS-174] a supplementary assessment of inter-pathway effects in relation to changes in air quality on the European sites listed at paragraph 4.2.1 above.

4.2.5 NE's RR [RR-0878, Part II, issue 5] set out its concerns regarding potential damage to the following European sites and qualifying features, resulting from increased airborne pollution (dust and nitrogen oxide (NO_X) (from all elements of the Proposed Development)). NE confirmed it was not yet satisfied that AEoI could be excluded for these sites and features:

- Alde, Ore and Burley Estuaries SAC (all qualifying features);
- Alde-Ore Estuaries Ramsar (all qualifying features);
- Minsmere to Walberswick Heaths and Marshes SAC (European dry heaths qualifying feature);
- Minsmere-Walberswick Ramsar (all qualifying features); and
- Staverton Park and the Thicks, Wantisden SAC (old acidophilous oak woods with *Quercus robur* on sandy plains qualifying feature).

4.2.6 As reported in Section 3 of this RIES, the Applicant's Shadow HRA Report [APP-145] screened out LSE on the old acidophilous oak woods with *Quercus robur* on sandy plains qualifying feature of Staverton Park and the Thicks, Wantisden SAC due to the distances involved and did not consider the potential for AEoI on this site. Further to the comments from NE in [RR-0878 and REP2-153], the potential impacts from changes to air quality have been included in this section of the RIES.

4.2.7 NE subsequently agreed that impacts from dust on European sites can be adequately mitigated through the provisions of the Outline Dust Management Plan and CoCP, provided these are rigorously implemented and maintained [REP2-071].

4.2.8 NE's concerns regarding impacts from NO_x on the European sites listed at paragraph 4.2.5, during construction and operation of the Proposed Development (both alone and in combination), were also reflected in its WR [REP2-153, Part II, issue 5] and in the Deadline 2 SoCG between the Applicant and NE [REP2-071, issue 5]. NE explained that increased NO_X emissions can represent a risk to qualifying features where there is exceedance of critical levels (CLe) for sensitive vegetation.

4.2.9 Regarding NO_x from road traffic, NE acknowledged [REP2-153 and REP2-071] that proposed changes to the transport strategy were likely to contribute positively towards air quality. However, it advised that additional information was required to outline how the Applicant would work to mitigate impacts from the Proposed Development *"…that will add further pressure to already sensitive sites in this regard".*

4.2.10 Regarding combustion emissions from diesel generators during operation (resulting in increased concentrations of NO_x), NE considered [REP2-153 and REP2-071] that whilst it was reasonable for the Applicant to make an argument as to why the daily NO_x exceedance was not of concern in this specific case, this must be underpinned by clear evidence. NE

acknowledged that the Applicant had gone some way toward doing this but considered that it lacked clarity and detail. NE stated that reliance had been placed upon the rate of recovery in the justification; however, no evidence as to the time taken for the specific habitat type to recover (which would vary) had been provided and that the Applicant must provide reassurance this would not cause long term damage to the site.

4.2.11 NE also stated [REP2-153 and REP2-071] that there was a general pattern throughout the Applicant's reports of a reliance upon the justification that a background exceedance of the Critical Load (CLo)/ CLe means that significant changes/noticeable damage as a result of further additions from the process contribution (PC) of the Proposed Development are unlikely. Whilst NE acknowledged that it was not the Applicant's responsibility to reduce concentrations and loadings to below the threshold levels, it must not undermine NE's ability to meet the site Conservation Objectives. NE considered that more evidence was required as to why further contributions from the Proposed Development would not undermine meeting the Conservation Objectives.

4.2.12 The Applicant considered [REP2-071, issue 5] that "*…the current system of nitrogen and acid critical loads assumes decades of continuous exposure…"* and therefore, considered that its focus on and use of air quality modelling based on the "routine operation scenario", rather than the "commissioning scenario", was appropriate. The Applicant considered that in the absence of a continuously elevated supply of nitrogen, levels in the soil would deplete and the vegetation should recover.

4.2.13 As such, the Applicant considered that the routine operation scenario better reflected the long-term effect on vegetation and that this was the most relevant effect when nitrogen and acid deposition are being considered. It explained that for this scenario, the modelling assumed a single diesel generator running continuously throughout the year, indefinitely [REP2-071]. However, the Applicant explained that routine testing is anticipated to be carried out for 60 hours per year for each of the 12 diesel generators, with an aggregated total of 720 operation hours per year. Therefore, the Applicant considered its assessment to be highly precautionary [REP2-071].

4.2.14 At Deadline 3, the Applicant [REP3-042] responded to the points raised in NE's WR [REP2-153] regarding impacts from NO_X. For annual NO_x, the Applicant considered that a conclusion of no AEoI could be drawn for all European sites and qualifying features – *"…because for all receptors either the PC is less than 1% of the Critical Level or the PEC* [predicted environmental concentration] *is less than 100% of the Critical Level…".*

4.2.15 For daily (24-hour) NO_x at the Alde, Ore and Butley Estuaries SAC and Alde-Ore Estuary Ramsar site, the Applicant considered that a conclusion of no AEoI could be drawn for all qualifying features, because for all receptors either the PC is less than 10% of the CLe (the threshold of insignificance) and/or the PEC is below the CLe [REP3-042].

4.2.16 As reported in Section 3 of this RIES, in [REP3-042] the Applicant reiterated its view that as the Staverton Park and the Thicks, Wantisden SAC is located 17km from the MDS, it does not have the potential to be

affected by emissions from operational combustion (from diesel generators). NE subsequently stated in [REP7-287] that *"…the applicant has provided sufficient evidence that of* [sic] *No Adverse Effect on Integrity"* for the old acidophilous oak woods with *Quercus robur* on sandy plains qualifying feature of Staverton Park and the Thicks, Wantisden SAC.

4.2.17 In respect of the Minsmere to Walberswick Heaths and Marshes SAC, the Applicant [REP3-042] reiterated that, as stated in the Shadow HRA Report [APP-145], the European dry heaths qualifying feature was not present within the area of predicted exceedance of the daily CLe at the southern part of the SAC. The Applicant considered that for this reason, together with longer term NO_x concentrations having greater potential to affect vegetation than short-term exceedances, there would be no AEoI of the European dry heaths qualifying feature as a result of daily NO_x exceedance of the CLe.

4.2.18 The Applicant provided further justification to support its conclusion of no AEoI of all qualifying features of Minsmere-Walberswick Ramsar site as a result of impacts from daily NO_X in [REP3-042] (paragraph 11.3.12 onwards). In summary, the Applicant stated that the area of predicted exceedance of daily NO_x CLe is very localised and outwith the area of core importance for the breeding wetland bird species of the Ramsar site. Regarding the habitat qualifying features, the Applicant considered that the short term (24-hour) mean for NO_x is of less importance than the annual mean, as vegetation exposed to levels of NO_x above the CLe will be more likely to recover if the exceedance is for a short duration. The Applicant also noted that calculations presented in the ES [APP-250] indicate the daily mean NO_x CLo would only be exceeded up to 8 times per year based on the worst-case meteorological data [REP3-042]. The Applicant therefore concluded that the vegetation within the area of the predicted exceedance of the daily NO_x CLe would not experience any negative effects as a result of short-term increases in NO_x [REP3-042].

4.2.19 The Applicant [REP3-042] explained that the assessment of depositional impacts takes into account the relevant qualifying features and compares predicted impacts against CLo for the features, which it considered to be a more robust and site-specific assessment than that carried out for CLe – describing the latter as *"a generic standard"*.

4.2.20 For habitats within the Alde, Ore and Butley Estuaries SAC, Alde-Ore Estuary Ramsar site and Minsmere to Walberswick Heaths and Marshes SAC, the Applicant stated [REP3-042] that conclusions of no AEoI from depositional impacts could be reached either because nitrogen and acid deposition is predicted to be less than 1% of the CLo, or because the habitat qualifying features are not present within the area of concern.

4.2.21 In respect of the qualifying features of Minsmere-Walberswick Ramsar site, the Applicant stated [REP3-042] that a conclusion of no AEoI from depositional impacts could be reached because only a small part of the vegetated sand dune habitat qualifying feature (approximately 2ha – described as *"only 5% of the approximately 43ha of vegetated sand dune in the underlying* [Minsmere-Walberswick Heaths and Marshes] *SSSI"*) would experience an increase in nitrogen and acid deposition above 1%

of the lower value of the CLo, together with the precautionary nature of using the lower value of the CLo as an assessment threshold.

4.2.22 At Deadline 5, ESC [REP5-135] confirmed that it supported NE's comments on air quality in relation to potential impacts on designated sites and that discussions on this matter remained ongoing.

4.2.23 NE [REP5-160], also at Deadline 5, advised the ExA that issues 5 and 15 in Part II of its WR [REP2-153] provided comprehensive coverage of its position regarding impacts from airborne pollution on designated sites but provided a summary of that position. NE reiterated its view that it is essential the Applicant can demonstrate airborne pollution will not adversely impact the designated sites (as identified in [REP2-153 and REP2-071]) and their qualifying features.

4.2.24 NE confirmed [REP5-160] that the Applicant had provided a response to its concerns in this regard and confirmed it was in the process of reviewing this with its air quality specialist. In ExQ2 [PD-033, HRA.2.1] the ExA asked NE to provide an update on that position for Deadline 7.

4.2.25 In response to ExQ2 HRA.2.1, NE confirmed at Deadline 7 [REP7-144] that it was still reviewing the Applicant's comments on air quality and would provide an updated position on this matter as soon as it was able to.

4.2.26 Representations on behalf of Heveningham Hall Estate raised concerns regarding the Applicant's assessment of air quality impacts on European sites [RR-0908 and REP2-287]. Heveningham Hall Estate's concerns related to how the modelling locations were identified, a lack of assessment of ammonia deposition, how the geographical extent of impacts from nitrogen and acid deposition had been considered, and a lack of assessment of in combination effects from traffic emissions.

4.2.27 The Applicant responded to most of these concerns in [REP1-013 and REP5-119]. In relation to ammonia, the Applicant cited guidance from Highways England on assessing impacts from road traffic emissions (LA 105)[17], noting that the guidance does not identify ammonia emissions as pollutants requiring assessment [REP5-119]. The Applicant considered that ammonia emissions from road traffic from the Proposed Development are not expected to result in significant contributions at the habitat sites or any other receptor, based on the level of emissions from vehicles and the dispersion of road traffic emissions down to background levels within 200m of the highway [REP5-119].

4.2.28 In terms of in combination effects from traffic emissions, Appendix 1A of the Shadow HRA Addendum [AS-174] provided a supplementary assessment of inter-pathway effects, including reference to road traffic emissions. The ExA has been unable to locate any representations from the Applicant responding to Heveningham Hall's concerns in relation to traffic emissions in combination with other plans or projects.

[17] Highways England (2019) – LA 105 Air Quality

Changes to coastal processes/sediment transport

4.2.29 As described in Section 3 of this RIES, the Shadow HRA Report [APP-145] assessed the potential for changes to coastal processes/ sediment transport during construction, operation and decommissioning of Proposed Development components (specifically, the coastal defences, BLF, cooling water intakes and outfalls, FRR system and CDO) to result in an AEoI of the habitat qualifying features of the following European sites:

- Alde, Ore and Butley Estuaries SAC;
- Alde-Ore Estuaries Ramsar;
- Benacre to Easton Bavents Lagoons SAC;
- Minsmere to Walberswick Heaths and Marshes SAC;
- Minsmere-Walberswick Ramsar; and
- Orfordness to Shingle Street SAC.

4.2.30 The Shadow HRA Report [APP-145] also assessed the potential for impacts to supporting habitats arising from changes in coastal processes/sediment transport to result in an AEoI on some bird qualifying features of the following sites (as well as some bird qualifying features of the Ramsar sites listed above):

- Alde-Ore Estuary SPA;
- Benacre to Easton Bavents SPA; and
- Minsmere-Walberswick SPA.

4.2.31 See Annex 1 and 2 of this RIES for the qualifying features screened in.

4.2.32 The Shadow HRA Report [APP-145] concluded that changes to coastal processes/ sediment transport as a result of the Proposed Development would not have an AEoI on the qualifying features of the above European sites, either alone or in-combination with other plans or projects.

4.2.33 The Shadow HRA Addendum [AS-173] provided an updated assessment to consider the implications of the enhanced permanent BLF and a new, temporary BLF (Change 2) on the conclusions reached in respect of the above European sites. The conclusions of no AEoI remained unchanged.

4.2.34 NE's RR [RR-0878, Part II, issue 28], WR [REP2-153, Part II, issue 28] and Deadline 2 SoCG with the Applicant [REP2-071, issue 28] raised concerns regarding potential damage to/loss of habitats resulting from changes to coastal processes/geomorphology (from the MDS element of the Proposed Development). NE confirmed it was not yet satisfied that AEoI could be excluded for these sites and qualifying features:

- Minsmere to Walberswick Heaths and Marshes SAC (annual vegetation of drift lines and perennial vegetation of stony banks qualifying features);
- Minsmere–Walberswick SPA (all features); and

- Minsmere-Walberswick Ramsar site (all features).

4.2.35 Similar concerns were raised by the RSPB/SWT, including in [REP2-506] [REP3-074] [REP5-163] [REP6-046] and [REP7-154]. At Deadline 7, the RSPB/SWT confirmed it did not agree that AEoI could be excluded for the European sites listed in paragraph 4.2.34 above (amongst other sites) [REP7-152].

4.2.36 The Applicant submitted further documentation including:

- Technical report TR543 *'Modelling of the Temporary and Permanent Beach Landing Facilities at Sizewell C'* [PDB-010] at Procedural Deadline B.
- Technical report TR544 *'Preliminary design and maintenance requirements for the Sizewell C Soft Coastal Defence Feature'* - version 1 [REP2-115]), submitted at Deadline 2. This was superseded by version 2 [REP3-032] at Deadline 3 (updated to take account of outputs from the Storm Erosion Modelling Report [REP3-048]), which was then superseded by version 3 at Deadline 7 [REP7-101].
- TR545 *'Storm Erosion Modelling of the Sizewell C Coastal Defence Feature'* - version 1, submitted at Deadline 3 [REP3-048]. Version 2 was submitted at Deadline 7 [REP7-045], superseding [REP3-048].
- Coastal Processes Monitoring and Mitigation Plan (CPMMP) - Revision 2, submitted at Deadline 5 [REP5-059].

4.2.37 In response to [PDB-010], NE's position at Deadline 3 [REP3-071a] was that it was satisfied that the presence of the BLFs will not cause an AEoI of Minsmere to Walberswick Heath and Marshes SAC, Minsmere-Walberswick SPA or Minsmere–Walberswick Ramsar site. However, this position relates only to the BLFs element of the Proposed Development and does not constitute a conclusion on the project alone (or in combination).

4.2.38 In response to [REP3-032], at Deadline 5 NE [REP5-158] raised concerns about the large quantities of sediment required to recharge the Soft Coastal Defence Feature (SCDF) (which would be located in front of the Hard Coastal Defence Feature (HCDF)) and whether this had been secured. NE also highlighted the need for *"…clear and precautionary triggers for the whole frontage…"* to avoid impacts to Minsmere to the north [REP5-158].

4.2.39 NE stated [REP5-158] that "While monitoring alone is not sufficient mitigation with a HRA, it will inform the frequency and timing of beach recharge. Natural England's confidence in this assessment is underpinned on a clear and well written 'Coastal Processes Monitoring and Mitigation Plan'".

4.2.40 ExQ2 [PD-034, CG.2.6] asked NE whether it had any concerns in relation to the revised CPMMP [REP5-059]. At Deadline 7, NE requested *"…that the ExA defer our input to Part 3 of Examiner's questions, when we will*

aim to provide a response by Deadline 8" [REP7-144]. Question CG.2.6 of ExQ2 [PD-034] was therefore reissued to NE in ExQ3 [PD-045, HRA.3.6].

4.2.41 The RSPB/SWT has expressed concerns that addressing impacts from the approach to the HCDF and SCDF on the habitat qualifying features of Minsmere to Walberswick Heaths and Marshes SAC and Minsmere-Walberswick Ramsar site via the CPMMP is not sufficient, including in [REP7-152] and [REP7-154]. The RSPB/SWT considers that the role of the Terrestrial Ecology Monitoring and Mitigation Plan (TEMMP) needs to be clarified in this regard.

4.2.42 In response to the Applicant's statement in [REP3-032] that HCDF exposure is *"not expected"* as the SCDF would be maintained by the Applicant, NE [REP5-158] advised that this was not sufficiently certain for the purposes of HRA. In response to the Applicant's statement [REP3-032] that triggers in the CPMMP could be adjusted to account for any uncertainties in SCDF response or future pressures *"…as part of a structured Adaptive Environmental Assessment and Management Process",* NE considered [REP5-158] that "...*some of this work investigating triggers to deal with the uncertainty in the Soft Coastal Defence Feature will have to be undertaken up front for the HRA to ascertain no LSE*".

4.2.43 In ExQ2, the ExA asked the Applicant [PD-034, CG.2.9(i)] what level of certainty it could provide that HCDF exposure would not occur - and should the HCDF become exposed, whether any further assessments would be carried out in response to NE's concerns in [REP5-158] and, if so, what the anticipated timetable was for those assessments.

4.2.44 In response, the Applicant stated that the potential for exposure of the HCDF would be mitigated by the presence of the SCDF, which would be "recharged" when required to ensure it is always present [REP7-052]. The Applicant considered that the results of its modelling [REP7-101 and REP7-045] demonstrate the viability of the SCDF and confirmed that recharge trigger levels would be set in the CPMMP, incorporating a large safety buffer. However, the Applicant acknowledged that a *"very small risk would remain that a small part of the HCDF could be temporarily exposed for a short period"* (for example, if an extreme storm or storm sequence occurs in the interval between the trigger being activated and conduction of mitigation being possible). Under that circumstance, the Applicant considered that the structural integrity of the HCDF would be unaffected by a temporary exposure along a short section of its length such as this REP7-052].

4.2.45 In [PD-034, CG.2.9(ii)], the ExA requested that NE clarify the exact nature of the work that it considered needed to be carried out up front to deal with the uncertainty around the SCDF. NE advised [REP7-144, CG.2.9] that the further work required is set out by the Applicant in TR544 *'Preliminary design and maintenance requirements for the Sizewell C Soft Coastal Defence Feature'* [REP3-032, page 45], as follows:

- *"Further work required to refine the SCDF's coastal processes design and finalise the buffer and sacrificial layer volumes includes:*
  - *Setting the Vrecharge (the threshold volume for SCDF recharge) for the CPMMP.*
  - *Extending the modelling period from the end of the operational phase (2099) to the end of decommissioning for SLR cases.*
  - *Modelling a range of particle sizes between 10 and 80 mm to optimise SCDF particle-size selection and SCDF performance.*
  - *Consideration of whether gravel model calibration work should be undertaken to reduce model uncertainty, specifically measurements of the groundwater properties (hydraulic conductivity) for Sizewell's supra-tidal sediments, which are the closest analogy to the SCDF available. Full-scale physical modelling may also be required to finalise the design prior to SCDF construction."*

4.2.46 NE advised that this work needs to be undertaken upfront in order for it to agree with the Applicant's conclusion of no AEoI on the European sites listed in paragraph 4.2.34 above [REP7-144, CG.2.9]. However, the Applicant stated that *"…no further modelling work is planned"* [REP7-052, CG.2.9].

4.2.47 As noted above, at Deadline 5 NE highlighted the need for clear and precautionary triggers for the whole frontage, particularly the area to the north of the site, to avoid impacts to Minsmere [REP5-158]. At Deadline 7, the Applicant confirmed [REP7-052, CG.2.9] that trigger levels were not yet defined in the CPMMP [REP5-059] while discussions with stakeholders were ongoing with the modelling report outputs.

4.2.48 The Applicant submitted version 3 of TR544 'Preliminary design and maintenance requirements for the Sizewell C Soft Coastal Defence Feature' at Deadline 7 [REP7-101], superseding version 2 [REP3-032]. Version 2 of TR545 'Storm Erosion Modelling of the Sizewell C Coastal Defence Feature' was also submitted at Deadline 7 [REP7-045], superseding version 1 [REP3-048].

4.2.49 The Applicant explained that both of these modelling reports had been updated to detail recharge intervals during the decommissioning period. The Applicant confirmed that the CPMMP [REP5-059] would be updated at Deadline 10 to take account of stakeholder comments [REP7-052, CG.2.9].

Invasive non-native species (INNS)

4.2.50 As detailed in Section 3 of this RIES, LSE arising from the potential for unintentionally spreading INNS has been included in Section 4 to this RIES.

4.2.51 The Applicant [REP2-071] confirmed that the CoCP requires a biosecurity risk assessment to be undertaken to avoid potentially facilitating the

spread of INNS during construction, and that given the inclusion of these measures in the CoCP, no further assessment is required.

4.2.52 This matter is stated to be agreed between the Applicant and NE in the draft SoCG [REP2-071].

Recreational pressure

4.2.53 The Shadow HRA Report [APP-145][18] assessed the potential for impacts associated with increased recreational pressure to result in AEoI on the habitat qualifying features of the following European sites:

- Alde-Ore Estuary Ramsar;
- Minsmere to Walberswick Heaths and Marshes SAC;
- Minsmere-Walberswick Ramsar; and
- Orfordness to Shingle Street SAC.

4.2.54 See Annex 1 and 2 of this RIES for the qualifying features screened in.

4.2.55 With regards to the above sites and features, NE [RR-0878] noted that the Applicant's Shadow HRA Report stated "Orfordness is predominantly accessible by National Trust boat or accessible on foot from Aldeburgh along the shingle ridge, which is a considerable distance. On this basis we understand that this site is unlikely to be significantly impacted by recreational disturbance."

4.2.56 However, NE [RR-0878, Issue 29][REP2-153][REP5-160] noted the new population of workers would likely use designated sites for recreation and that local people who currently use the development site and surrounding area could be displaced to nearby designated sites. It highlighted the potential for recreational activities to negatively impact designated site qualifying features (species and habitats) through noise disturbance to species, trampling of nests and vegetation, increased fire risk, enrichment of habitats etc. This section of the RIES discusses recreational impacts to habitats; disturbance to birds is discussed in Section 4.3.

4.2.57 NE could not exclude an AEoI from damage to notified habitats resulting from increased recreational pressure for the following:

- Alde-Ore and Butley Estuaries SAC[19] (Mudflats and sandflats not covered by seawater at low tide and Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*));
- Alde-Ore Estuary Ramsar (all qualifying features);
- Minsmere to Walberswick Heaths and Marshes SAC (all qualifying features); and
- Minsmere-Walberswick Ramsar site (all qualifying features).

[18] Supported by Appendix E; Recreational Disturbance Assessment [APP-148]; this identified the potential effects on bird species and habitats.

[19] As noted in Section 3 of this RIES, due to the disputed conclusions, the ExA has included Alde-Ore and Butley Estuaries SAC in this effects on integrity stage of the RIES.

4.2.58 NE [RR-0878][REP2-153][REP5-160] acknowledged that the Applicant had collected some evidence and data to inform the recreational disturbance impact assessment, but considered there to be significant limitations which leaves many uncertainties with regards to the conclusions.

4.2.59 The RSPB/SWT [RR-1059][REP2-032][REP2-506] also had concerns with the adequacy of baseline data and considered the estimates of potential increases in recreational use of designated sites by both displaced visitors and construction workers to be low and confusingly presented. It considered the impacts on Perennial vegetation of stony banks and European Dry Heaths of Minsmere to Walberswick Heaths & Marshes SAC to have been inadequately assessed. These comments were echoed by the National Trust (NT) [RR-0877][REP2-150][REP5-155], which was concerned that visitors would be displaced to Dunwich Heath and Beach and that this had not been adequately assessed. The NT had specific concerns about impacts on vegetated shingle habitat and heathland habitat. The RSPB/SWT and NT jointly commissioned a report by Footprint Ecology [REP2-506, Appendix 2] to examine impacts of recreation on European sites and based their representations on that report.

4.2.60 In response, the Applicant [Appendix 6A of REP2-108] provided updated estimated figures to respond to comments from RSPB/SWT. However, it explained why its assessment should be considered to be highly precautionary. This included the assumption that all visitors would be displaced to European sites. It considered that the number of people that would visit European sites during the construction of the Proposed Development would likely be lower than assessed.

4.2.61 Prior to publication of the RIES, the Applicant submitted a Statement on Recreational Disturbance Numbers [REP7-087]. This set out the higher estimated figures advocated by NE and the RSPB/SWT, and lower estimated figures advocated by the Applicant, alongside statements from each party (and the National Trust) on which figures they agree or disagree with.

4.2.62 Furthermore, the RSPB/SWT [RR-1059][REP2-506] considered impacts to be poorly assessed and mitigation measures to be scant; it identified a number of locations where mitigation measures could resolve recreational impacts and advised that a monitoring programme be developed. It also advised that in combination impacts with the onshore cable routes of the Scottish Power Renewables offshore wind projects needed to be assessed [REP5-166].

4.2.63 In relation to habitats, RSPB/SWT also stated that due to a lack of detail on mitigation and monitoring proposals, it did not agree an AEoI could be excluded from the project alone or in combination with other projects for Minsmere to Walberswick Heaths & Marshes SAC (Perennial vegetation of stony banks and European Dry Heaths).

4.2.64 NE [RR-0878][REP2-153][REP5-160] advised the Applicant to undertake a two-pronged approach to mitigation and monitoring, akin to that which housing developers have undertaken, of:

- provision and promotion of an 'on-site' Suitable Alternative Natural Greenspace (SANG); and
- provision of 'off-site' measures which aim to make the coastal European sites more resilient to increased recreational pressures.

SANG

4.2.65 During the Examination, NE [RR-0878][REP2-153][REP5-160] advised the Applicant to provide a SANG within/in close proximity to the MDS to concentrate a proportion of recreation in that area.

4.2.66 A SANG was also advocated by RSPB/SWT [REP2-506][REP3-074][REP3-075][REP5-164] who considered that the provision of SANG is an important stage of the mitigation hierarchy because it avoids or reduces the impact rather than mitigating it, which is the next stage of the hierarchy. The NT [REP3-070][REP5-155] concurred with these comments. All three parties acknowledged the availability of greenspace at Aldhurst Farm and Kenton Hills, but expressed concern that this was not sufficient in terms of either capacity or adequacy and that there were no monitoring proposals for these sites.

4.2.67 NE [REP2-153] stated that it understood that the Applicant was considering Aldhurst Farm to fulfil the function of a SANG to mitigate predicted impacts from displaced local people. It detailed the minimum requirements that it would expect from a SANG.

4.2.68 NE considered the construction of accommodation for 5,900 new workers to be significant in scale. It noted that the Applicant does not consider recreational impacts for workers to be likely, and as such did not consider Aldhurst Farm to be a SANG for recreational impacts from workers. NE considered that all workers would have recreational needs during weekday evenings and that although the Applicant assumed c.90% of workers would return home to families at weekends, this would still leave c.590 workers requiring open space for recreation. Furthermore, it noted that the Suffolk coast has high amenity value and recreational draw and therefore questioned the Applicant's assumption that workers would use the leisure/sports facilities provided through the Proposed Development. It welcomed the proposal for a bike riding trail through Kenton Hills for the workers to use but advised that this only provides for limited types of recreational use. RSPB [REP5-164] agreed.

4.2.69 Overall, NE considered that 5900 workers new to the area equates to roughly 2500 houses by number of people (based on 2.4. people per house). It confirmed that for a housing development of that scale in a similar location, it would advise that an alternative green space/SANG is required before an adverse effect on integrity from recreational disturbance could be ruled out. It did acknowledge that the impacts from workers at the campus and caravan parks are slightly different to typical housing as they would not be allowed dogs; therefore, it agreed the exact design of the SANG is open for debate.

4.2.70 In response to NE's comments, the Applicant [REP5-112] confirmed that the accommodation proposals are limited to 2,400 campus bed spaces and 600 caravan spaces.

4.2.71 The Applicant [Question AR.1.12 of REP2-100][REP3-042][REP5-112] explained that it did not consider the provision of a SANG to be an appropriate response to the pressure of construction workers, as they would have a different profile to typical residents and would use European sites for recreation substantially less than the general public. It considered that the 'Regional disturbance Avoidance Mitigation Strategy' (RAMS) payment (see below for further details), together with the proposed package of mitigation measures, are an appropriate response and will prevent AEoI of European sites and that a SANG, or further green space provision following the SANG principles, is not required.

4.2.72 It explained that it had not called Aldhurst Farm a SANG because it has not been proposed in the same way (to mitigate purely residential impacts) and because it has a value to a number of communities. Nevertheless, in scale and quality it is equivalent to the resource that a SANG would provide. The Applicant explained it had no other land available or proposed within the DCO for the creation of an additional SANG and a case for compulsory powers to create a SANG on other land could not be supported given the weakness of the requirement.

4.2.73 Nevertheless, it committed to providing further improvements for recreation at Aldhurst Farm in the Aldhurst Farm Technical Note [REP5-126].

4.2.74 At Deadline 6, the RSPB/SWT [REP6-046] accepted that Aldhurst Farm would provide alternative greenspace which will provide a contribution to a reduction of recreational impacts. However, it did not agree that Aldhurst Farm could sufficiently mitigate impacts of both construction workers and displaced existing recreational users. It advised an additional recreational provision be sought for construction workers.

Off-site mitigation measures

4.2.75 NE [RR-0878][REP2-153][REP5-160] advised that off-site measures (eg visitor engagement, education and information, access management) should be provided on the basis that, even if well designed, a SANG would not be used in preference to coastal designated sites by all workers and displaced local walkers due to the latter's unique draw. These residual pressures to the sites therefore require further mitigation. It considered that these measures should be in line with the approach taken with ESC to develop the Suffolk Coast RAMS[20].

4.2.76 The Applicant's Shadow HRA Report [APP-148] stated that the RAMS is not directly applicable to the Sizewell C Project but confirmed that the Applicant was committed to the principles within the strategy within a monitoring and mitigation plan/agreement with relevant organisation/site managers to the European site in question.

[20] A package of strategic mitigation measures aimed at making sensitive designated sites more resilient to recreational pressures arising from new housing development within reach of them.

4.2.77 ESC [RR-0342] disagreed the RAMS was not directly applicable, as workers would act as any other new resident in a residential development, albeit for a fixed number of years. It suggested that a financial contribution to the Suffolk Coast RAMS would help mitigate in combination recreational disturbance impacts that are likely to arise from the accommodation campus.

4.2.78 The Applicant subsequently confirmed [REP3-042] it had agreed with ESC to make a financial contribution to the Suffolk Coast RAMS to mitigate for the recreational disturbance at European sites that could potentially be caused by construction workers residing at the accommodation campus and the Land East of Eastlands Industrial Estate caravan site.

4.2.79 The RAMS contribution was secured through the Deed of Obligation (latest version is that submitted at Deadline 7 [REP7-043]).

Monitoring and Mitigation Plans

4.2.80 During the Examination, the Applicant submitted two separate Monitoring and Mitigation Plans (MMP) (which were relevant to both habitats and bird qualifying features):

- MMP for Minsmere - Walberswick European Sites and Sandlings (North) European Site [REP2-118] (the 'Minsmere Plan'). This addressed the Minsmere-Walberswick European sites[21] and the northern part of the Sandlings SPA at North Warren and Aldringham Walks (collectively referred to as "Sandlings (North) European site"). It set out how the mitigation measures deployed at the commencement of construction (the "Initial Mitigation Measures") and any mitigation measures found necessary where monitoring shows potential for disturbance to qualifying habitats and/or species (the "Additional Mitigation Measures") would be secured and delivered[22]. This was subsequently revised at Deadline 5 [REP5-105] to take into account feedback from engagement with stakeholders[23] and entitled 'MMP for Minsmere – Walberswick and Sandlings (North)' (hereafter referred to in this RIES as the 'Minsmere MMP'); and
- MMP for Sandlings (Central) and Alde, Ore and Butley Estuaries [REP5-122]. This explained that the conclusion of no AEoI for these sites does not rely on the implementation of site-specific mitigation; however, a precautionary approach has been adopted to establish a monitoring regime to determine whether mitigation measures may be necessary.

[21] Minsmere to Walberswick Heaths and Marshes SAC, Minsmere–Walberswick SPA and Minsmere–Walberswick Ramsar site.
[22] The RSPB/SWT [REP3-074][REP5-164] welcomed that the Applicant had incorporated its mitigation suggestions.
[23] Including extensive comments from the RSPB/SWT in [REP3-074][REP5-164] and the National Trust in [REP3-070].

4.2.81 The mitigation and monitoring requirements of the plans would be secured via the draft Deed of Obligation (latest version is that submitted at Deadline 7 [REP7-044]).

4.2.82 At Deadline 6, NE [REP6-042] stated that it would provide more detailed comments on recreational disturbance at a later deadline but considered that the Minsmere MMP and associated recreational disturbance mitigation strategies did not provide the confidence to exclude AEoI beyond reasonable scientific doubt. NE identified a number of points for further consideration, including:

- the inclusion of verbal briefings to workers;
- clarification as to whether the creation and maintenance of firebreaks proposed as a contingency measure at Westleton Heath are additional to existing firebreaks; and
- the provision of additional wardening resource for monitoring measures.

4.2.83 The Applicant [REP7-059] confirmed at Deadline 7 that in principle these measures are acceptable and can be reflected in future revisions of the MMP. Question HRA.3.4 of ExQ3 [PD-045] asked the Applicant to update the MMP accordingly, with responses due at Deadline 8 (24 September 2021).

4.2.84 NE [REP7-144] confirmed it would comment on the MMP for Sandlings (Central) and Alde, Ore and Butley Estuaries at Deadline 8 (after publication of this RIES).

4.2.85 The RSPB/SWT [REP6-046][REP7-154] agreed that the MMPs provide a good basis for mitigation of impacts, but provided detailed comments about what refinements were required, including to determine the level of initial wardening resource provided and to address the speed of implementation of additional mitigation measures. It also queried the omission of monitoring at Orfordness to Shingle Street SAC from the MMP for the Sandlings (Central) and Alde-Ore Estuary SAC.

4.2.86 In response, the Applicant [REP7-059] confirmed it would discuss updates to the Minsmere MMP with RSPB/SWT. With regards to Orfordness to Shingle Street SAC, the Applicant explained that the main access point is by boat or a long walk (distance not specified); therefore, it was concluded there would be no AEoI of the SAC.

Additional mitigation

4.2.87 In addition to the MMPs, the Applicant highlighted the mitigation it had already committed to within the application documents eg [REP2-118][REP3-042]. These were:

- keeping the coast path open at all times except if unsafe to do so;
- a new informal car park accessed off the B1122;
- a surfaced footpath (new designated Public Right of Way (PRoW));

- approximately 27 hectares of new open access land where dogs will be allowed to be exercised off-lead at Aldhurst Farm;
- improvements to Kenton Hills car park including additional spaces; and
- management of vegetation and signage.

4.2.88 The Shadow HRA Report [APP-148] also referred to the preparation of a Rights of Way and Access Strategy[24] to minimise the displacement of people away from the Sizewell C area and to nearby European sites to minimise trampling of vegetation. The PRoW Strategy is a certified document in the draft DCO (dDCO) and Requirement 6A secures that 'Public rights of way implementation plans' must be submitted and approved by SCC before development of any new or diverted PRoW listed in Schedule 11 of the dDCO can be carried out. These plans must be in must be in general accordance with the PRoW Strategy.

4.2.89 The Applicant also confirmed [REP3-042] that it would provide a suite of enhancements to rights of way and access outside the MDS being agreed with SCC, which will be funded through the PRoW Fund, as well as to European Sites Access Contingency Fund. Both of these would be secured through the draft Deed of Obligation (latest version Deadline 7 [REP7-044]).

4.2.90 The Applicant summarised the proposed recreational mitigation measures in Table 4.1 of the HRA Signposting Document submitted at Deadline 7 [REP7-079].

4.2.91 Furthermore, the Applicant [REP7-059] explained that it had identified further improvements in the local area that could be delivered including further footpaths and off-road cycle routes, and improvements to facilities such as signage, gates and paths to make the area even more welcoming and accessible, and proposals to actively promote this recreational area to construction workers. It stated that proposals will be discussed with consultees, and submitted to the Examination at a future deadline. Question HRA.3.5 of ExQ3 [PD-045] asked the Applicant to provide an update with regards to discussions on these matters, with responses due at Deadline 8 (24 September 2021).

Positions at time of publication of the RIES

4.2.92 NE [REP7-144][REP7-087] considered the Applicant's predicted use of nature conservation sites by construction workers to be potentially vastly underestimated and informed by limited and unreliable evidence. It therefore considered the proposed mitigation and monitoring strategies (in the absence of provision of a SANG) to be inadequate to address the potential scale of impacts, and advised that an AEoI on the nearby designated sites[25] cannot be ruled out; therefore, it reiterated its request

[24] Submitted in Appendix I of [APP-270] which stated that "*This strategy is expected to inform the relevant Footpath Implementation Plan which will be prepared by SZC Co. and submitted to the highway authority for agreement pursuant to the Draft DCO*". It was revised at Deadline 2 [REP2-035], Deadline 3[REP3-013] and Deadline 7 [REP7-024].

[25] European sites not explicitly stated in NE's response, although stated to be 'as agreed within scope'

for a SANG specifically to address impacts from workers within close proximity to the worker's accommodation. This was echoed by the RSPB/SWT [REP6-046][REP7-152] who did not consider Aldhurst Farm could sufficiently mitigate impacts of both construction workers and displaced existing recreational users; it advised an additional recreational provision be sought for construction workers.

4.2.93 The Applicant [REP7-059] continued to assert that the Minsmere MMP, combined with other mitigation proposals will exclude AEoI of European sites beyond reasonable scientific doubt. It considered that a proper understanding the likely recreational characteristics of construction workers would enable a conclusion of no AEoI of designated sites to be reached. It further explained that Aldhurst Farm was designed to, as far as possible, respond to NE's SANG guidelines for the Thames Basins Heaths, but was unclear whether the proposals for Aldhurst Farm would be sufficient, in NE's view, to fulfil the SANG requirement.

Water abstraction and supply

4.2.94 As noted in Section 3 of this RIES, water abstraction and supply were not assessed by the Applicant in its Shadow HRA Report. NE [RR-0878 Issue 3] considered there could be a potential LSE on the notified habitats and bird supporting habitats of the following European sites arising from water abstraction and supply for the Proposed Development:

- Alde-Ore and Butley Estuaries SAC;
- Alde-Ore Estuary SPA;
- Alde-Ore Estuary Ramsar site;
- Minsmere-Walberswick SPA; and
- Minsmere-Walberswick Ramsar site.

4.2.95 NE [RR-0878] requested that the Applicant provide an abstraction/water use strategy, covering both the MDS and associated development sites, which incorporates any mitigation measures that may be required. NE stated that "*the local Crag groundwater body is already at 'Poor Quantitative Status' i.e. is already overabstracted. It is likely this is already having an impact e.g. on the discharge of groundwater from the Crag to headwater streams in the west of Sizewell Marshes SSSI.*" The Proposed Development lies within the Blythe Water Resource Zone (WRZ).

4.2.96 During the pre-examination stage, the Applicant provided additional information on the Water Supply Strategy (Appendix 2.2D of the ES Addendum) [AS-202] in January 2021. This confirmed that as detailed in the original Site Water Supply Strategy [APP-601], the principal water supply would come from mains water provided by Northumbria Water Ltd (NWL) (trading locally as Essex and Suffolk Water (ESW)). It provided an overview of water supply options that could provide security of supply.

4.2.97 The Applicant later explained [REP2-071] that a preferred scheme had been identified by NWL to supply potable water from Barsham Water Treatment Works near Beccles, from within the Northern/Central WRZ.

This would meet the Proposed Development's full peak demand of potable water during construction, as well as its smaller operational demand over the lifetime of the power station. It would involve an upgrade of one works and c.30km of replacement or new mains between Shadingfield and Sizewell. It stated that the Proposed Development would use existing headroom within river abstraction.

4.2.98 At Deadline 3 and in response to NE's WR, the Applicant [REP3-042] stated that an updated Water Supply Strategy would be provided that would also take account of technical studies being carried out by NWL to confirm the availability of a sustainable potable water supply from their Northern/Central WRZ, and the means of transfer and delivery of this supply to the Sizewell C Project (the proposed Sizewell Transfer Main). The Applicant confirmed that there would be no abstraction from the local Blythe WRZ.

4.2.99 At Deadline 5 the Applicant subsequently explained [REP5-001] that the new transfer main would not be available until December 2024 at the earliest, approximately two years after the assumed start of construction of Sizewell C. It therefore proposed a temporary desalination plant to meet the Proposed Development's potable water needs for part of the construction period before the transfer main is available[26]. The proposed temporary desalination plant would comprise an intake pipe with screen, an outfall pipe with diffuser, and associated onshore pumping station and plant.

4.2.100 At Deadline 7 a further Water Supply Strategy was submitted by the Applicant [REP7-036]. As previously, the strategy confirmed that the local water resource zone (Blythe WRZ) is not able to supply the Proposed Development with the outlined potable water demands and that discussions with NWL have identified the opportunity to provide a connection from a separate water resource zone (Northern/Central WRZ), which may contain spare capacity to supply the peak demand of 4,000m3/day to SZC subject to completion of NWL's part of the EA-led Water Industry National Environment Programme (WINEP) study.

4.2.101 The strategy confirmed that to allow the transfer of this potential spare capacity, a new potable water transfer main would be required from Barsham to Sizewell C, as well as some network upgrades, and that NWL had identified June 2028 as the latest credible date that the transfer main would be fully available. The strategy therefore allowed for installation and retention of a temporary desalination plant (Change 19) until this date, or later if required, to mitigate the programme risk around delivery of the transfer main by December 2026. The Applicant stated that temporary desalination would be decommissioned before commencement of the operation of Proposed Development.

4.2.102 Therefore, the Applicant [REP7-036] states it is proposing the provision of water across three separate phases:

[26] The Applicant stated that once the transfer main has been constructed, the temporary desalination plant would be removed.

- Phase 1: October 2022 to January 2024 – Water provided through trucks;
- Phase 2: October 2023 to December 2026 – Water provided through local temporary desalination plant on site[27]; and
- Phase 3: December 2026 onwards – NWL transfer main.

4.2.103 The Applicant also included a note to the Applicant's Water Supply Strategy submitted at Deadline 7 [REP7-036] stating that it is aware of NWL's most recent letter to the ExA dated 24 August [REP7-257], which suggests that NWL may have difficulty supplying water to the Proposed Development, even in the longer term, based on its current capital investment programme. This matter, including the WINEP remains under discussion. The Applicant states that its Water Supply Strategy "*preempts any risk for the duration of the construction period, allowing considerable time for longer term outcomes to be examined by all stakeholders.*"

4.2.104 NWL submitted representations at Deadline 5 [REP5-257] and Deadline 7 [REP7-257][REP7-147] detailing water supply difficulties. Discussions on this matter are ongoing.

4.2.105 As noted in paragraph 1.1.16 above, the Applicant provided a Shadow HRA Third addendum [REP7-279] to support its request for Change 19, which assesses the temporary desalination plant, identified as Phase 2 above. The RIES has not considered the Shadow HRA Third Addendum. The transfer main (identified as Phase 3) would be provided by NWL and does not form part of the DCO application [REP7-285].

4.2.106 NE's cover letter for its Deadline 7 submissions [REP7-139] stated that its representations to date *"…do not include consideration of LSE for a potentially wider suite of European sites which may now also be in scope of the HRA in terms of the latest water supply strategy which has been proposed by the Applicant. This presents the potential for LSE to additional European sites within the Northern/ Central Water Resource Zone (WRZ) via the Sizewell transfer main from abstraction, pipeline works, and other associated infrastructure required to get the water to the proposal site. Should the latest interim water supply strategy as proposed through the Applicant's forthcoming change proposal be accepted by the ExA, this also applies to the tankered water supply where the source is currently unknown. The desalination plant will also need to be considered in terms of additional impacts to European sites already screened into the sHRA."*

4.2.107 At Deadline 7 NE [REP7-287] also reiterated its view that there would be LSE from damage to notified habitats arising from water use/abstraction (and/or associated works eg pipelines) during the construction/operation of the Proposed Development for those sites and qualifying features listed at paragraph 3.2.51 above (NE Issue 3).

[27] The Applicant [REP7-036 – Water Supply Strategy] states that the "*end date aligns with the proposed availability of NWL's transfer main, however this phase can be extended as required until such time the NWL transfer main is fully available*"

4.3 The Integrity Test - birds

Changes in air quality

4.3.1 The Shadow HRA Report [APP-145] assessed the potential for impacts to supporting habitats arising from changes in air quality to result in an AEoI on the avian qualifying features of the following sites:

- Minsmere–Walberswick SPA;
- Minsmere-Walberswick Ramsar site;
- Sandlings SPA; and
- Alde-Ore Estuary SPA; and
- Alde-Ore Estuaries Ramsar site.

4.3.2 See Annex 1 and 2 of this RIES for the qualifying features screened in. Discussions regarding this impact pathway are reported from paragraph 4.2.1 of this RIES onwards and not repeated here.

Changes to coastal processes/ sediment transport

4.3.3 The Shadow HRA Report [APP-145] assessed the potential for impacts to supporting habitats arising from changes in coastal processes/sediment transport to result in an AEoI on the bird qualifying features of the following sites:

- Alde-Ore Estuary SPA;
- Alde-Ore Estuaries Ramsar;
- Benacre to Easton Bavents SPA;
- Minsmere-Walberswick SPA; and
- Minsmere-Walberswick Ramsar.

4.3.4 See Annex 1 of this RIES for the qualifying features screened in by the Applicant. Discussions regarding this impact pathway are reported from paragraph 4.2.29 of this RIES onwards and not repeated here.

Disturbance due to noise, light and visual

4.3.5 The Applicant's Shadow HRA Report [APP-145] screened in the potential for disturbance effects associated with noise, light and visual impacts during construction for the following European sites and qualifying features:

- Deben Estuary SPA;
- Deben Estuary Ramsar site;
- Minsmere-Walberswick SPA;
- Minsmere-Walberswick Ramsar;
- Outer Thames Estuary SPA;

- Sandlings SPA;
- Stour and Orwell Estuaries SPA; and
- Stour and Orwell Estuaries Ramsar.

4.3.6 See Annex 1 and 2 of this RIES for the qualifying features screened in.

4.3.7 The Applicant concluded that an AEoI due to disturbance (noise, light and visual) could be excluded for all European sites, both alone and in combination with other plans and projects, except the marsh harrier qualifying feature of the Minsmere-Walberswick SPA and Ramsar.

4.3.8 NE [RR-0878, Issue 27] stated that it did not agree an AEoI from impacts from noise, light and visual disturbance could be excluded for the following:

- Alde-Ore Estuary SPA – all features;
- Alde-Ore Estuary Ramsar site – avocet, lesser black-backed gull, redshank, waterbird assemblage, wetland bird assemblage and invertebrate assemblage;
- Benacre to Easton Bavents SPA - little tern, bittern and marsh harrier[28];
- Minsmere-Walberswick SPA – all features;
- Minsmere- Walberswick Ramsar site – wetland bird assemblage (breeding) and wetland invertebrate assemblage; and
- Outer Thames Estuary SPA – all features; and
- Sandlings SPA – European nightjar and woodlark.

4.3.9 The RSPB/SWT [REP2-506] stated that it could not exclude an AEoI from impacts from noise, light and visual disturbance for the following European sites:

- Minsmere-Walberswick SPA – gadwall and shoveler, teal, bittern and marsh harrier;
- Minsmere-Walberswick Ramsar site; and
- Sandlings SPA – woodlark and nightjar.

4.3.10 Specific concerns are detailed under the relevant headings below.

Alde-Ore Estuary SPA and Ramsar

4.3.11 NE [RR-0878] stated that it could not rule out AEoI from noise, light and visual disturbance to all features of the Alde-Ore Estuary SPA and the avocet, lesser black-backed gull, redshank, waterbird assemblage, wetland bird assemblage and invertebrate assemblage of the Alde-Ore Estuary Ramsar. However, the ExA has been unable to locate any

[28] As noted in Section 3 of this RIES, NE considered this potential impact pathway to also apply to little tern, bittern and marsh harrier of Benacre to Easton Bevants SPA.

information relating to the specific concerns for these features in NE's subsequent representations.

Benacre to Easton Bavents SPA - Marsh harrier, little tern and bittern

4.3.12 NE [RR-0878] [REP2-153] stated that it could not exclude an AEoI from impacts from noise, light and visual disturbance for the marsh harrier, little tern and bittern qualifying features of the Benacre to Easton Bavents SPA. However, the ExA has been unable to locate any information relating to the specific concerns for these features in NE's subsequent representations.

Minsmere-Walberswick SPA and Ramsar site – Generic concerns

Baseline data

4.3.13 NE [RR-0878 Issue 27][REP2-071][REP2-153] stated that it expected a minimum of two complete winter's survey effort to be undertaken. However, it noted that the Applicant had concluded no AEoI in the absence of any project-specific breeding bird survey and without a single complete winter's project-specific bird survey. The RSPB/SWT [REP2-506][REP5-164] were similarly concerned that only one year of distributional data had been provided, meaning that birds breeding in ditches and longer vegetation away from the main pools might not have been represented in the data. It also considered the approaches used by the 2020 project-specific breeding wader and waterbird surveys in the Minsmere South Levels depart from standard methodologies and may have underestimated breeding activity.

4.3.14 The Shadow HRA Addendum [AS-173] provided data from the Applicant's first project-specific breeding waterbird survey conducted in 2020 and the first complete up-to-date project-specific non-breeding waterbird survey conducted in winter 2019-20. It stated that the analyses of the new data did not alter the conclusions reached in the Shadow HRA Report.

4.3.15 The Applicant [REP3-042] considered its methodologies to be similar to that used by RSPB and stated that it had supplemented its data with RSPB data for Spring 2021. In addition to previous years data from RSPB, the Applicant considered it had a good data set and confirmed that its conclusions did not depend on distributional information.

4.3.16 The RSPB/SWT [REP5-116] responded that the RSPB's survey transect route includes greater coverage of the ditches where breeding waterfowl might be expected to be found. It disagreed that one year of distributional data is sufficient or that distributional information does not affect the conclusions; it considered that an assumption of an even distribution is a reasonable approach and not, as the Applicant had stated, an overestimation.

Assessment methodology

4.3.17 The RSPB/SWT [REP2-506] raised concerns regarding:

- whether the acoustic data collected at Minsmere was representative of the wider area and appropriate for assessing noise levels likely to be experienced by most breeding birds;
- whether the defined daytime noise disturbance thresholds are appropriate given the Applicants definitions of daytime is 0700-2300 hours;
- whether the noise modelling accounts for overlapping construction phases;
- the assertion that most noisy activities would not occur at the same time, given that final construction timelines would only be confirmed once contractors are appointed;
- the assumption that a 5m high acoustic fence would be in place during Phase 1 of the construction period;
- noise modelling limitations where insufficient details are available for several activities eg early morning unloading of HGVs, night-time dewatering activities and marine unloading;
- noise impacts during construction Phase 5 given the uncertainty over the duration and activities during this phase; and
- the rationale for modelling chronic noise for construction Phases 3 and 4 only which have the lowest levels of peak noise.

4.3.18 The Applicant responded to these points in [REP3-042] and [REP5-120]. It considered it had acknowledged any limitations and undertaken a precautionary assessment that accounts for overlapping construction phases and models the longest construction phases. It considered it would be unreasonable to suggest the worst-case scenario would apply for the lifetime of the works and that the noise modelling is a reasonable representation of the likely noise levels. It confirmed the acoustic barriers would be an early priority during Phase 1 of construction as stated in Section 3.3a in Part B of the CoCP [REP2-056].

4.3.19 The RSPB/SWT [REP5-166] considered that a commitment to commence the construction of these barriers at the beginning of construction Phase 1 (and before other significantly noisy activity occurs) should be secured. It welcomed the Applicant's response but continued to have concerns regarding noise levels during construction Phase 5 and remained of the view that chronic noise during construction Phases 1, 2 and 5 should be modelled and assessed.

4.3.20 The Applicant responded to the concerns related to the definition of daytime and night time periods in Appendix N Evening noise and bird disturbance of [REP5-120]. This concluded that there is no material difference between daytime and night time noise levels; therefore, the change in noise levels which would be experienced by birds would be the same whether these are prior to and after dusk. It stated that there is no evidence to suggest that birds would be more sensitive to construction

noise over the night time period compared with the daytime period and there is no reason to suggest that a different disturbance threshold should be applied after dusk (ie evening or night time), regardless of the timing of that period throughout the year.

4.3.21 The RSPB/SWT [REP6-046] responded that the Applicant has not considered the potential for different bird behaviour and changes in distribution when it is dark. It had particular concerns about birds roosting on the Minsmere South Levels and whose flights between daytime and roosting locations would take them close to or over the construction site, and those birds which may feed in different locations at night. The RSPB/SWT considered that impacts on wintering waterbirds of Minsmere-Walberswick SPA and Ramsar site could have been significantly underestimated (due to the significant overlap of the daytime 70dB peak noise contour with the eastern area of Sizewell Marshes during construction Phases 1 and 2 in particular; the limited understanding of bird movements around these areas; or their usage during dark hours).

Evidence base

4.3.22 The RSPB/SWT [REP2-506] highlighted concerns relating to the noise and visual disturbance evidence base, specifically:

- that limited evidence exists regarding impacts from impulsive noise disturbance threshold;
- that there is a wide variety of responses exhibited by birds to temporary effects of noise disturbance and that generalisations regarding impacts of noise should not be made;
- the lack of a sensitivity threshold for chronic noise; and
- the visual disturbance evidence base relates to impacts on intertidal estuarine habitats which may not be directly comparable, therefore the visual disturbance buffer of 150m was insufficient.

4.3.23 The Applicant [REP3-042] stated it had used the Waterbird Disturbance Toolkit (TIDE tool[29]) and associated supporting studies to evidence impacts relating to construction noise. It considered it had set appropriate thresholds for chronic noise and that a large amount of evidence it relied upon derived from studies undertaken on a wide range of other habitats.

4.3.24 However, the RSPB/SWT [REP5-166] remained of the view that predicted noise levels should be assessed in relation to available evidence and that the Applicant's visual disturbance buffer of 150m has not been adequately justified.

Extent of impacts

[29] N. Cutts, K. Hemingway and J. Spencer. Waterbird disturbance mitigation toolkit. Informing estuarine planning and construction projects. Institute of Estuarine and Coastal Studies for TIDE. 2013.

4.3.25 The RSPB/SWT [REP2-506] made a number of comments relating to the applicant's conclusions, including:

- whether the daytime impulsive noise levels presented in the Shadow HRA Addendum are significant;
- that daytime chronic noise during Phases 3 and 4 of construction would impact on breeding birds;
- that some ecologically important areas would experience night-time chronic and impulsive noise levels above the set thresholds; and
- that during Phase 1 of construction a large part of visual disturbance buffer lies within the area encompassed by the threshold noise contour for breeding waterbirds.

4.3.26 The Applicant [REP3-042] responded to each point individually but in summary reiterated that none of the points raised affected the overall conclusions presented in the Shadow HRA of no AEoI on the SPA breeding waterbird populations.

4.3.27 The RSPB/SWT [REP5-166] remained concerned that noise impacts on breeding birds of the Minsmere South Levels and Sizewell Marshes in construction Phases 1 to 4 would be potentially significant, and that these areas are functionally linked to Minsmere-Walberswick SPA. Furthermore, it remained concerned the effects on breeding birds could arise from chronic noise levels and that chronic noise modelling for Phases 1, 2 and 5 had not been provided.

Minsmere-Walberswick SPA and Ramsar – Breeding bittern, gadwall and shoveler (impacts from flood compensation works)

4.3.28 The RSPB/SWT [REP2-506] noted that construction of the flood compensation area and wetland habitat would occur in the first winter of Phase 1 of the construction period. It was concerned that should works stretch into breeding season, impacts on breeding bittern, gadwall and shoveler, could be more significant than predicted. It specifically noted that breeding bittern start booming in February.

4.3.29 The Applicant subsequently confirmed [REP3-042] that works on the flood compensation area would only be carried out in winter and that in the event that works are not completed in the first winter (October to February, inclusive), that they would be continued in the second winter. The RSPB/SWT welcomed this commitment, and requested it be adequately secured [REP2-506]. The RSPB/SWT confirmed that securing this commitment would resolve its concerns on this issue [REP5-166]. Question HRA.3.1 of ExQ3 [PD-045] asked the Applicant to update the CoCP or explain how this commitment is secured, with responses due at Deadline 8 (24 September 2021).

Minsmere-Walberswick SPA and Ramsar site – Gadwall and shoveler

4.3.30 The Applicant's Shadow HRA Report [APP-145] ruled out an AEoI for gadwall and shoveler of the Minsmere-Walberswick SPA and Ramsar from

disturbance effects. This was on the basis that the potential visual impact zone does not extend onto the SPA (other than in the south-eastern extremity, which does not include suitable habitat), whilst the peak noise levels within the SPA (again excepting the south-eastern extremity) during construction of the MDS are predicted to remain below the 64dB LA_{max} threshold.

4.3.31 However, it acknowledged that gadwall and shoveler may breed and forage in FLL at the Minsmere South Levels and Sizewell Marshes (outside of the European site) and stated that up to 11% of the breeding gadwall and 7% of the breeding shoveler could be displaced from the FLL. The Applicant concluded that there would be no AEoI as the assessment was based on a worst case during Phase 1 of the construction period and therefore it considered it unlikely that the potential for displacement of breeding shoveler from the Minsmere South Levels would be as high as is estimated, nor would it be predicted to extend over the full duration of the construction period. It also stated that the displaced birds may be functionally linked to the SPA rather than being from the designated population.

4.3.32 NE [REP2-071][REP2-153] advised that the Applicant's conclusions for these species is lacking precaution on the basis of (i) limited data (ii) uncertainties about behavioural responses of breeding birds to visual and acoustic disturbance; iii) the compounding effects of recreational pressure; iv) the significant % of predicted breeding bird displacement (where new data show breeding numbers remain consistent), and; v) the significant increase in non-breeding birds. It concluded that for a development of this scale, the information is deemed to be insufficient to exclude an AEoI for breeding and non-breeding gadwall and shoveler.

4.3.33 The RSPB/SWT [REP2-506][REP3-074][REP6-046] supported NE's comments and expressed concerns regarding the limited survey data and the significant night-time noise and chronic daytime noise during the construction period.

Breeding gadwall and shoveler

4.3.34 In respect of breeding gadwall and shoveler, the Applicant [REP3-042] explained that in the absence of distribution data, the conclusion in the Shadow HRA Report had assumed a uniform distribution of birds on the Minsmere South Levels and that all gadwall and shoveler on the Sizewell Marshes would be displaced. It confirmed that the surveys detailed in the Shadow HRA Addendum [AS-173] demonstrated that the gadwall and shoveler breeding on the Minsmere South Levels are concentrated in the northeast of the area, outside those areas where displacement due to noise and visual disturbance from construction activities is predicted to occur.

4.3.35 The Applicant confirmed that all of the birds predicted to be displaced occur on the FLL (at the Minsmere South Levels) as opposed to those within the boundaries of the designated site itself, and not on the SPA (Ramsar site) itself and considered that NE's position fails to recognise this fact.

4.3.36 The RSPB/SWT [REP2-506][REP5-164][REP6-046] did not agree that a distinction can be drawn between designated and functionally linked populations for the purposes of HRA as the linked areas are equally important to these species. It highlighted movement of breeding and wintering gadwall and shoveler within the Minsmere-Walberswick SPA and nearby sites such as the Minsmere South Levels and Sizewell Marshes, and explained that the Supplementary Advice on the Conservation Objectives refers to management of the South Levels. Although it acknowledged that birds on the Minsmere South Levels and Sizewell Marshes are "*additional breeding birds on these nearby habitats outside the designated site*", it did not consider it possible to affect such significant proportions of the populations associated with the SPA and on the FLL without the potential for adverse effects on the integrity of the Minsmere-Walberswick SPA. It considered the Applicant's position for gadwall and shoveler to be inconsistent with the approach it took for marsh harrier.

4.3.37 Both the Applicant [REP3-042][REP7-051] and the RSPB/SWT [REP2-506] cited guidance regarding functionally linked populations published by NE (Chapman and Tyldesley, 2016). The RSPB/SWT noted the guidance states that "*if effects on functionally linked land or sea are likely to have a significant effect on the population of species for which a European site was designated or classified, those effects must be considered fully in a Habitats Regulations Assessment*." However, the Applicant explained that the guidance also states that such assessments have to determine how critical the area of FLL is to the designated population and whether it is necessary to maintain or restore favourable conservation status of the qualifying feature. The Applicant considered that the birds which breed within the designated site are not dependent on the functionally linked habitats on the Minsmere South Levels and Sizewell Marshes for the provision of resources which cannot be obtained from the within the designated site itself; rather the functional linkage is concerned with the occurrence of additional breeding birds on nearby habitats outside of the designated site [REP5-112]. It explained that the functional linkage is fundamentally different to that for the marsh harrier population, for which the functionally linked habitats provide a foraging resource to the birds which breed within the designated site.

4.3.38 The Applicant [REP7-051] also noted that NE and RSPB/SWT were concerned that between-year movements of breeding birds between the SPA and the FLL might affect the conclusions of the assessment (because the FLL may be more important in some years than others). It explained that the assessment relies on seven years of abundance data and that it would be unreasonable to suggest this is not sufficient to adequately capture the potential for between year movements and enable the issue to be accounted for within the assessment.

4.3.39 Furthermore, the Applicant [REP3-042] noted that the current breeding gadwall and breeding shoveler Minsmere-Walberswick SPA (and Ramsar site) populations are currently considerably above the citation levels (by approximately three-fold in both cases). It considered that it is highly

unlikely that the FLL on the Minsmere South Levels and Sizewell Marshes is necessary to achieving the conservation objectives for these features.

4.3.40 However, the RSPB/SWT [REP2-506] explained that the Supplementary Advice on Conservation Objectives for breeding gadwall sets a target to *"Maintain the size of the breeding population at a level which is above 24 pairs, whilst avoiding deterioration from its current level as indicated by the latest mean peak count or equivalent".*

4.3.41 The Applicant [REP3-042] concluded that the predicted displacement of a relatively small number of breeding pairs from FLL outside the designated site would not prevent achievement of the supplementary advice on the generic conservation objectives to maintain the SPA population size at above the citation level, whilst avoiding deterioration from its current level.

4.3.42 NE [REP2-153] also expressed concerns over the application of a 70dB LA_{max} threshold for the purposes of determining potential effects on breeding gadwall and breeding shoveler, stating that this threshold was derived for non-breeding waterbirds. The Applicant [REP3-042] explained that this issue had been recognised and, as a consequence, a lower threshold of 65dB LA_{max} was applied in the assessment in relation to breeding waterbirds [APP-145]. It also stated that the further noise modelling presented in the Shadow HRA Addendum [AS-173], demonstrated relatively low levels of chronic noise which would occur over the Minsmere South Levels during phases 3 and 4 of the construction period.

4.3.43 The RSPB/SWT [REP2-506] queried the extent to which noise and visual disturbance would be lower during other phases of the construction programme; the Applicant [REP3-042] explained that the highly precautionary assessment was based on a worst case scenario of Phase 1 of the construction programme, assuming a uniform distribution across the Minsmere South Levels. However, the RSPB/SWT [REP5-166] considered the assessment to be reasonable, not highly precautionary (as discussed in paragraph 4.3.16 in this RIES).

Non-breeding gadwall and shoveler

4.3.44 In respect of non-breeding gadwall and shoveler, NE [REP2-071] raised a number of matters, namely that the higher numbers of gadwall and shoveler recorded on the Minsmere South Levels during the 2019 – 2020 surveys compared to those recorded during the previous project specific non-breeding water bird surveys, represent a 'significant increase'. The Applicant [REP3-042] responded that marked annual fluctuations in wintering waterbird numbers at individual sites are a frequent occurrence, as demonstrated by the Wetland Bird Survey (WeBS) data.

4.3.45 NE [REP2-071] also considered the mapping of winter survey records to be inadequate because the peak counts are represented by a single point location for gadwall and three point locations for shoveler. The Applicant [REP3-042] responded that these species often occur in large, concentrated aggregations during the non-breeding season, so distribution can be sufficiently well indicated by the mapped point locations. Furthermore, it noted that the distribution of both nonbreeding

gadwall and non-breeding shoveler on the Minsmere South Levels is shown to be consistently centred around the main pool systems on the Minsmere South Levels, and beyond the areas within which effects of noise and visual disturbance are predicted to occur.

4.3.46 The Applicant [REP3-042] disputed NE's view that the "effect of increased recreational pressure, which is likely to occur along the north of Minsmere South Levels, has not been highlighted when considering the overlap between birds and potential disturbance". The Applicant confirmed this was considered in Sections 8.8 k) v. and 8.8 l) v. of the Shadow HRA Report [APP-145] and Table 3.3. and Section 3.5 b) ii. of Appendix 1A of the Shadow HRA Addendum [AS-174].

4.3.47 The RSPB/SWT [REP2-506] noted that no estimates of the numbers of birds or proportion of the SPA population likely to be displaced had been presented by the Applicant. It considered that with the levels of displacement predicted, an AEoI could not be excluded for non-breeding gadwall and shoveler populations of the Minsmere-Walberswick SPA. As with the breeding gadwall and shoveler, the RSPB/SWT [REP2-506] noted that although the current population level may be above that at the time of designation, any deterioration from current population levels would compromise the site's ability to meet the requirement to "avoid deterioration from its current level" set in the Supplementary Advice on Conservation Objectives.

4.3.48 The Applicant [REP3-042] responded that the Shadow HRA Report estimated the number of birds recorded on the Sizewell Marshes represents 4-18% and 4-10% of peak winter counts for gadwall and shoveler, respectively. It confirmed [REP5-112] that the effects of disturbance and displacement are only relevant to the FLL at Sizewell Marshes. It explained that there are several other sites in the wider area which are used by the SPA birds during the winter period, and it is highly likely that there is interchange of birds between these sites and the Sizewell Marshes; therefore, it is not possible to provide an estimate of the SPA population that would be affected by displacement from the Sizewell Marshes. The Applicant considered that the relatively small proportion of the SPA population of non-breeding gadwall and shoveler which is likely to depend upon the Sizewell Marshes, combined with the fact that other sites outside the SPA have the potential to provide more extensive areas of supporting habitat, means that the predicted displacement of birds from substantial parts of the Sizewell Marshes will not prevent the SPA from continuing to support the existing populations.

Overall positions

4.3.49 Following the Applicant's response at Deadline 3, NE [REP5-160] reiterated its previous position that in the context of the precautionary principle, the Applicant has not been able to exclude AEoI beyond reasonable scientific doubt (for breeding or non-breeding gadwall and shoveler). It requested more robust data on the distribution of these species to inform its conclusions, or the provision of mitigation/compensation in the event that a significant amount of gadwall and/or shoveler are displaced by the development. It advised that the inclusion of a wetland element of habitat creation, to be delivered

as part of the marsh harrier compensation, might also be considered in relation to its potential to support displaced SPA waterbirds. Additionally, NE recommended that monitoring and adaptive management should be more robust than that currently proposed within the TEMMP.

4.3.50 The RSPB/SWT [REP5-164] agreed that there is a need for a robust monitoring and mitigation plan.

4.3.51 In response to NE and the RSPB/SWT concerns regarding the predicted levels of displacement, the Applicant [REP7-051] reiterated its conclusion that the predicted levels of displacement on FLL would not prevent the maintenance of the favourable conservation status of gadwall and shoveler.

Minsmere-Walberswick SPA and Ramsar - Marsh harrier

4.3.52 Noise and visual disturbance during construction of the Proposed Development at the MDS would potentially result in the displacement of breeding marsh harrier (a qualifying feature of the Minsmere-Walberswick SPA and a component species of the breeding bird assemblage qualifying feature of the Ramsar site) from wetland and arable habitats they would have otherwise used for foraging. These habitats are therefore functionally linked to the Minsmere-Walberswick SPA and Ramsar.

4.3.53 The Applicant's assessment of potential AEoI on marsh harrier of the Minsmere-Walberswick SPA and Ramsar site as a result of disturbance during construction, operation and decommissioning of the Proposed Development is set out in Sections 8.8. and 8.9 of [APP-145]. Evidence cited by the Applicant to support its assessment approach included a study by Madders and Whitfield (2006)[30], which provided a review of the displacement effects of wind farms on foraging raptors. The Applicant explained that there are no available studies that provide specific information on the behavioural responses of marsh harrier to anthropogenic noise [APP-145]. Observations of marsh harrier flight activity at Trimley Marshes (in relation to noise generation from the Port of Felixstowe) were used to inform the assessment in [APP-145], in addition to evidence from studies on other bird species.

4.3.54 NE's RR [RR-0878, Part II, issue 27], WR [REP2-153, Part II, issue 27] and initial SoCG with the Applicant [REP2-071, issue 27] set out its concerns regarding noise, light and visual disturbance (from the MDS element of the Proposed Development) to marsh harrier using FLL. NE also expressed concerns about the barrier effect of the construction phase preventing marsh harrier from accessing foraging habitats at Sizewell Marshes.

4.3.55 The RSPB/SWT's WR [REP2-506] set out concerns regarding the Applicant's evidence base for the assessment of sensitivity of marsh harriers to noise and visual disturbance, querying the relevance of the

[30] M. Madders and D. P. Whitfield. Upland raptors and the assessment of wind farm impacts. Ibis, 2006, 148, p. 43-56.

Madders and Whitfield study to construction of the Proposed Development.

4.3.56 The Shadow HRA Report explains that the main marsh harrier nesting area is within the SPA and Ramsar site at Minsmere, over 1km away from the closest part of the MDS [APP-145]. However, NE has advised that marsh harriers have large foraging ranges and that this issue affects foraging undertaken beyond the boundary of the SPA/Ramsar rather than disturbance at nesting locations [RR-0878, REP2-153 and REP2-071].

Applicant's calculations

4.3.57 The Applicant presented calculations of estimated habitat loss to foraging marsh harrier during construction in Table 8.12 of the Shadow HRA Report [APP-145] (habitat 'loss' in the sense that disturbance may exclude marsh harriers from using it for foraging, rather than direct habitat loss). It was estimated that:

- **103.6ha** (20.9%) of the total wetland habitats within 0-4km of the Minsmere marsh harrier breeding site would be lost as a result of disturbance effects during in Phase 1 of construction (98.7ha (19.9%) in Phase 2).
- **261.0ha** (24%) of the arable habitat within 0-4km of the Minsmere marsh harrier breeding site would be lost as a result of disturbance effects during in Phase 1 of construction (263.3ha (24.2%) in Phase 2).
- The aggregated figure for wetland habitat loss plus arable habitat loss was **364.6ha** (23%) in Phase 1 of construction and 362ha (22.8%) in Phase 2.

4.3.58 In response to question Bio.2.16 of ExQ2 [PD-033], the Applicant confirmed [REP7-051] the total areas of habitat loss to foraging marsh harrier are as set out in bold in paragraph 4.3.57 above.

4.3.59 The Applicant considered that the overall potential 'loss' of foraging resource amongst wetland habitats, would be less than the calculated extent of habitat area (20.9%), due largely to the effect of distance from the breeding area on levels of flight activity [APP-145]. The Applicant [APP-145] considered that usage by foraging marsh harriers of the areas that are predicted to be potentially 'lost' is estimated to be relatively low, based on flight activity data (collected from 2014 to 2016[31]) which estimated the use of Sizewell Marshes to be approximately 60% of that for the Minsmere South Levels on average (see Table 6.7 [APP-145] and Figures 6.3 to Figure 6.5 in [APP-146]). To take account of this difference in usage with distance from the nesting area, the Applicant presented calculations for the potential 'loss' of Sizewell Marshes with regard to the available foraging wetland resource (Table 8.13 [APP-145]).

4.3.60 The Applicant considered it likely that the marsh harriers would modify their existing behaviour to use alternative areas of existing agricultural

[31] Further surveys were undertaken in 2020, as reported later in this section of the RIES

land, noting that there are extensive areas of land in arable production in proximity to the Minsmere marsh harrier breeding site [APP-145].

4.3.61 Therefore, explaining that wetland is the key foraging habitat for marsh harrier of the Minsmere-Walberswick SPA and Ramsar site, the Applicant considered only the potential 'loss' of the foraging resource from the wetland habitats in assessing potential impacts to breeding marsh harriers [APP-145]. The RSPB/SWT has disputed this approach [REP2-506][REP2-088, NV1]. The Applicant provided further justification to support this approach in [REP2-088, NV1] in response to concerns from the RSPB/SWT, in Appendix M of [REP5-120] and in its response to question Bio.2.16 of ExQ2 [REP7-051].

Applicant's conclusions regarding AEoI

4.3.62 The overall conclusion as presented in the Applicant's HRA Report [APP-145] was that an AEoI (resulting from noise and visual disturbance during construction) from the project alone could not be excluded for the breeding marsh harrier qualifying features of the Minsmere-Walberswick SPA and Ramsar site. The Applicant therefore provided a case for Alternative Solutions, IROPI and Compensatory Measures, as described in Sections 5 to 7 of this RIES.

4.3.63 An AEoI for marsh harrier of the Minsmere-Walberswick SPA and Ramsar is not predicted to arise during operation. Similarly, an AEoI is not predicted to arise during decommissioning, given that the identified effect would be compensated for in the construction phase (as discussed in Section 7 of this RIES) and this alternative habitat in the north-eastern part of the EDF Energy Estate would be available and used by foraging marsh harrier during decommissioning [APP-145].

4.3.64 The Shadow HRA Addendum [AS-173] considered the implications of Change 5 (change to the location of the water resource storage area and the addition of flood mitigation measures to lower flood risk) on the conclusions reached in respect of disturbance to marsh harrier of the Minsmere-Walberswick SPA and Ramsar. The Applicant provided further baseline surveys, undertaken in the 2020 breeding season, of marsh harrier flight activity [AS-036]. The Shadow HRA Addendum [AS-173] confirmed that the data from the 2020 surveys closely corresponded with that presented in the Shadow HRA Report and did not alter the conclusions presented in the Shadow HRA Report [APP-145] in respect of an AEoI of breeding marsh harrier of the Minsmere-Walberswick SPA and Ramsar.

4.3.65 The Shadow HRA Addendum [AS-173] also considered the implications of additional noise modelling outputs for the construction works at the MDS on breeding marsh harrier populations – concluding that these did not alter the conclusions presented in the Shadow HRA Report [APP-145].

4.3.66 Appendix 1A to the Shadow HRA Addendum [AS-174] provided further consideration of inter-pathway effects during construction on breeding marsh harrier of the Minsmere-Walberswick SPA and Ramsar – concluding it was "highly unlikely" that increased recreational disturbance would add to the effects of noise and visual disturbance. The Applicant

therefore considered there would be no change to the conclusions of the Shadow HRA Report [APP-145] in this regard.

4.3.67 Of the other changes proposed which were considered by the Applicant to be of relevance to the HRA (Changes 1 and 2), the Shadow HRA Addendum [AS-173] concluded that these changes would not alter the conclusions presented in the Shadow HRA Report [APP-145] for the qualifying features of the Minsmere-Walberswick SPA and Ramsar.

4.3.68 The Applicant's conclusion that an AEoI of the marsh harrier qualifying features of the Minsmere-Walberswick SPA and Ramsar (resulting from noise and visual disturbance during construction) could not be excluded has not been disputed by NE or other IPs. In its RR, NE [RR-0878] confirmed it was satisfied that the criteria for derogating from the Habitats Regulations were fulfilled with respect to marsh harrier of the Minsmere-Walberswick SPA and Ramsar site.

4.3.69 The discussions and representations made by the Applicant and IPs during the Examination in respect of marsh harrier of the Minsmere-Walberswick SPA and Ramsar were largely around the compensatory measures proposed by the Applicant. These matters are considered separately in Section 7 of this RIES.

Minsmere-Walberswick SPA and Ramsar site – Teal

4.3.70 The Applicant excluded an AEoI to breeding teal on the basis of sporadic recent breeding on the Minsmere South Levels and Sizewell Marshes and because noise impacts are not expected on the main areas of habitat suitable for breeding teal.

4.3.71 The RSPB/SWT [REP2-506] considered that much of the South Levels would provide suitable habitat. It noted that the population has declined dramatically to a five year mean peak count (2011/12 - 2015/16) of one pair and the conservation objectives for the site therefore require the feature to be restored. It considered that the potential for the proposed development to affect the ability of conservation measures to restore this feature (if causes are understood and suitable solutions can be proposed) should be considered.

4.3.72 The Applicant [REP3-042] responded that during annual surveys from 2010 to 2017, no breeding pairs were recorded on the Minsmere South Levels, whilst the one pair recorded on the Minsmere South Levels during the 2020 surveys was outside the area within which potential effects of noise and visual disturbance are predicted to occur. It stated that as noted by RSPB/SWT, this record from 2020 can only be regarded as 'potential breeding', because of the difficulty of confirming actual breeding unless young are observed. The Applicant therefore queried how the Proposed Development could have the potential to affect the ability of conservation measures to restore the Minsmere-Walberswick SPA (and Ramsar) breeding teal population. It stated that this is particularly the case given the extensive areas of potentially suitable habitat which occur throughout much of the SPA (and Ramsar).

4.3.73 NE did not raise any concerns about impacts on teal.

Minsmere-Walberswick SPA and Ramsar site - White-fronted goose

4.3.74 The Applicant's Shadow HRA Report [APP-145] ruled out an AEoI to white-fronted geese of the Minsmere-Walberswick SPA and Ramsar site from disturbance effects. This was on the basis that the potential visual impact zone does not extend onto the SPA (other than in the south-eastern extremity, which does not include suitable white-fronted goose habitat), whilst the peak noise levels within the SPA (again excepting the south-eastern extremity) during construction of the MDS are predicted to remain below the 70dB LA_{max} threshold.

4.3.75 NE [RR-0878] highlighted that the construction site would be active 24 hours a day and therefore nocturnal surveys for white-fronted geese should be undertaken as they are most active outside daylight hours and daytime surveys only may therefore overlook potential impacts. The RSPB/SWT [REP2-506] also stated that the surveys were not presented in a way that it was possible to attach any confidence to conclusions regarding the likely noise levels experienced by roosting geese.

4.3.76 The Applicant undertook further white-fronted geese surveys in winter 2020/2021 and submitted the white-fronted goose survey report to the Examination at Deadline 5 [REP5-125]. However, the RSPB/SWT [REP6-046] raised some concerns about limitations of the survey schedule and considered that the Applicant had a limited understanding of bird movements and therefore had potentially underestimated impacts. It noted that the construction site lies on the flight line of White fronted goose and stated that the report provides further evidence that adverse effects on the integrity of the Minsmere-Walberswick SPA cannot be ruled out.

4.3.77 At Deadline 7, NE [REP7-144] confirmed in response to EXQ2 HRA.2.4 [PD-033] that it is currently reviewing the white-fronted goose survey report.

Minsmere-Walberswick SPA and Ramsar site - Other features

4.3.78 NE's RR [RR-0878] stated that an AEoI from noise, light and visual disturbance could not be excluded for all features of the Minsmere-Walberswick SPA and Ramsar. However, the ExA has been unable to locate any detailed information relating to specific concerns for the following features in NE's subsequent representations:

- Minsmere-Walberswick SPA – avocet, little tern, nightjar and wintering hen harrier; and
- Minsmere-Walberswick Ramsar site – wetland invertebrate assemblage.

Outer Thames Estuary SPA – Red-throated diver

Direct disturbance from vessels

4.3.79 The Applicant's Shadow HRA Report [APP-145] excluded an AEoI from disturbance to red-throated diver of the Outer Thames Estuary SPA during construction, operation and decommissioning from the project

alone or in combination with other plans or projects. The Shadow HRA Addendum [AS-173] concluded that the small increase in vessel deliveries to the BLFs would not alter the conclusions of the Shadow HRA Report.

4.3.80 NE [REP2-153][REP5-159][REP5-160] noted that red-throated divers are a species that are highly sensitive to disturbance and that insufficient evidence had been presented to draw a conclusion of no AEoI due to disturbance and displacement by vessel traffic for non-breeding red-throated diver. NE stated that:

- The assumptions made about the vessel transit corridor through the SPA are insufficient. NE requested a full vessel management plan, detailing appropriate mitigation to reduce red-throated diver disturbance and displacement, be secured within the DCO.
- The Applicant described the increased vessel activity as small compared to the existing, but the proposed vessel activity is not considered against clearly defined baselines over appropriate timescales.
- Red-throated divers typically show strong disturbance responses to vessels from distances up to 5km, leading to long resettlement times (3-7 hours). Red-throated divers are considered to have significant stress responses to disturbance events.
- The Outer Thames Estuary SPA already has issues with traffic from the offshore wind industry displacing red-throated diver; any additional plans/projects should assess disturbance in addition to that already caused by vessel traffic associated with the offshore wind industry.

4.3.81 The MMO [REP3-070][REP6-039] supported NE's comments. It advised that a best practice protocol should be produced detailing mitigation to reduce the disturbance and displacement to red-throated divers from vessels during construction and operation. Furthermore, the DML should be amended to require the submission of the protocol to the MMO for approval prior to works commencing.

4.3.82 The RSPB/SWT [REP2-506][REP3-074][REP5-165][REP5-164] also supported NE's position and made extensive comments about impacts to red-throated divers of the Outer Thames Estuary SPA. It considered that vessel disturbance impacts could compromise the SPA objective to maintain the distribution of the qualifying features within the site and therefore did not support the conclusion of no AEoI from the project alone or in combination with other plans or projects. It recommended that a detailed displacement assessment should be carried out following the standard methodologies used for offshore windfarm and cable route assessments; this should include an in combination assessment of effects with relevant windfarms.

4.3.83 The RSPB highlighted red-throated diver's high sensitivity to disturbances and drew attention to the Supplementary Advice on Conservation

Objectives for this site, which note the vulnerability of red-throated diver to disturbance by boats and the strong stress response exhibited by birds in response to such disturbance by marine activity and construction.

4.3.84 The Applicant [REP3-042][Appendix P of REP5-120] responded that an offshore windfarm assessment approach is inappropriate because there is no comparability with the nature of the Sizewell C project. It explained that the indicative vessel corridor assumed in its assessment represented a worst-case scenario assuming maximum transit through the Outer Thames Estuary SPA. It confirmed that there would be c.0.1 hours of vessel activity per km^2 per month compared to existing levels within the SPA which are frequently at values of at least 1.5hours per km^2 per month and can be above 5 – 10 hours per km^2 per month in shipping lanes and in proximity to wind farms. The Applicant considered that the scale and extent of displacement of the SPA red-throated divers which is expected to occur as a result of the operation of the BLFs and the associated vessel movements is highly unlikely to lead to any discernible increase in mortality amongst the SPA population.

4.3.85 The Applicant disputed NE's assertion that red-throated diver may show disturbance responses to vessels of up to 5km with long resettlement times of 3-7 hours. It noted that displacement does not mean that all birds are excluded from the affected area but rather it is the case that densities would be reduced (temporarily) within the vicinity of the transiting vessels. Nevertheless, it committed to working with NE to produce a vessel management plan.

4.3.86 The RSPB [REP5-164][REP6-046] also noted that boat-based monitoring proposed in the TEMMP[32] is unlikely to be effective as red-throated divers are flushed by boats at too great a distance to be observed. It also queried the potential limitations of drone surveys, such as the distance they can fly from the operator and the weather conditions under which they can operate and whether suitably robust coverage can be achieved. Furthermore, the RSPB/SWT raised concerns regarding the effectiveness of the measures proposed to avoid disturbance and displacement as there were no proposals to address effects shown through monitoring to be greater than predicted.

4.3.87 At Deadline 6, the Applicant submitted an Outline Vessel Management Plan (OVMP) [REP6-027] outlining the vessel movements and routes and providing the strategy for planning the vessel movements to protect the Outer Thames Estuary SPA. The OVMP also summarised the approach to monitoring of red-throated divers, the governance around this monitoring, the setting of disturbance thresholds and approach which would be taken in relation to directing vessels to use alternative routes. The OVMP would be supplemented during the detailed planning and construction stages by specific Vessel Management Plans prepared by the contractors to accord with the principles in this OVMP. The Applicant considered that the OVMP provides reassurance that an AEoI for red-throated diver can be avoided [REP6-025].

[32] [REP1-016] Monitoring proposed to *"Determine the extent of any vessel based disturbance to wintering red-throated divers in the SPA during the early phases of the construction period*".

4.3.88 In response, NE [REP7-141] made a number of comments, specifically noting that the plan did not attempt to avoid the SPA or plan vessel routes to reduce time spent within the SPA for the primary routes proposed. It advised existing shipping lanes to be utilised wherever possible; that vessel movements should preferably be avoided within the SPA; and that the proposed monitoring is unlikely to be successful. It also considered that the increase in vessel movements had been underestimated.

4.3.89 The RSPB/SWT [REP7-152][REP7-153][REP7-154] considered there to be an error in the calculation of the uplift in vessel activity for the proposed route options in the OVMP and stated it therefore had concerns with the routes the Applicant had proposed. It advised that the commitments to use identified routes unless safety reasons required otherwise and to avoid impacts on re-throated divers could be clearer. Furthermore, it noted additional measures that could be added.

4.3.90 The MMO [REP7-136] deferred to NE on the appropriate mitigation to be contained within the plan but explained that it could not support the conclusion of no adverse effects on red-throated diver until the OVMP is agreed. It also stated that the OVMP should be a certified document and that a new condition should be added to the DML.

4.3.91 At the same deadline as the comments from NE, RSPB/SWT and the MMO were received, the Applicant submitted a revised version on the OVMP [REP7-046] to include better defined delivery routes, delivery numbers and mitigation measures. IPs were unable to comment on the revised OVMP before the publication of this RIES.

4.3.92 The Applicant also incorporated a new DML condition to require the undertaker to manage vessels in accordance with the OVMP unless otherwise approved by the MMO (DCO Version 8, Part, Paragraph 31a). The OVMP was also listed as a certified document in Schedule 22 of the dDCO [REP7-006].

In combination effects

4.3.93 Despite NE and RSPB/SWT's comments relating to the need to assess in combination effects with other plans or projects, the Applicant [REP5-112] was confident that these had been properly assessed. It concluded [Appendix P of REP5-120] that due to the very small change in vessel numbers due to the Sizewell C Project compared with baseline levels and the lower densities of red-throated diver in the north-western section than in the larger southern section of the Outer Thames Estuary SPA, combined with localised nature of construction noise effects, there is no realistic potential for a material effect on the red-throated diver population of the SPA.

Outer Thames Estuary SPA – other features

4.3.94 NE [RR-0878] stated that it could not rule out AEoI from noise, light and visual disturbance to all features of the Alde-Ore Estuary SPA. However, the ExA has been unable to locate any information relating to the specific concerns for litter tern and common tern features in NE's subsequent representations.

Sandlings SPA - Breeding nightjar and woodlark

4.3.95 The Shadow HRA Report [APP-145] excluded an AEoI for breeding nightjar and woodlark on that basis that the bulk of the Sandlings SPA (and hence of the breeding nightjar and woodlark habitat within the SPA) is over 9km from the MDS, and well beyond the distance at which effects of noise and visual disturbance associated with the construction of the MDS could occur.

4.3.96 NE [RR-0878, Issue 27] did not agree an AEoI from impacts from noise, light and visual disturbance could be excluded for breeding nightjar and woodlark. It did not submit any further specific concerns for these species in its subsequent submissions.

4.3.97 The RSPB/SWT [REP2-506] considered that a lack of justification had been provided by the Applicant to conclude no AEoI. It considered a significant percentage of the SPA population would be affected. Furthermore, it stated that the assessment fails to consider the potential for combined effects of recreational pressure and visual disturbance during construction on nightjar and woodlark in the north-western part of the Sandlings SPA.

4.3.98 The Applicant [REP3-042] considered that the RSPB/SWT had misunderstood the assessment presented in the Shadow HRA Report [APP-145]. It explained that the Sandlings SPA comprises several discrete blocks of habitat and that only the most northern block is in close proximity of the MDS. The northern block in its entirety is estimated to hold 3% and 9% of the SPA breeding nightjar and woodlark populations, respectively.

4.3.99 The Applicant stated that noise levels are predicted to be below the threshold levels (ie 65dB LA_{max} for breeding birds) throughout the entire area of the Sandlings SPA but the visual impact zone (or visual buffer) encroaches onto a small area in the northwest corner of the discrete northern block of the SPA. Consequently, it considered that there is little potential for construction-related noise and visual disturbance to affect any breeding woodlark or nightjar associated with the Sandlings SPA, and the possibility that there could be effects on a significant percentage of either of these SPA populations can be rejected. The Applicant furthermore considered that there is no potential for the effects of noise and visual disturbance to contribute in any substantive way to inter-pathway effects on the Sandlings SPA populations of breeding woodlark and nightjar.

4.3.100 The RSPB/SWT [REP5-166] acknowledged that only part of the northern block of the Sandlings SPA would be affected by the visual disturbance buffer but requested further detail regarding the numbers of woodlark and nightjar that would be affected. It stated [REP7-152] that in the absence of alternative greenspace for construction workers, it did not agree that an AEoI on the Sandlings SPA can be excluded.

Impediment to management practices

4.3.101 NE raised concern in its RR [RR-0878, Issue 8] regarding the potential for works in and around the MDS, which is directly adjacent to Minsmere,

to have the potential to impede the management practices required for its conservation (eg access for grazing animals). NE identified this as a concern for the Minsmere-Walberswick SPA and Ramsar and Minsmere to Walberswick Heaths and Marshes SAC. At Deadline 3, RSPB/SWT [REP3-074] confirmed that it would welcome an appropriate agreement to ensure no impediment to future management practices arises from the Proposed Development.

4.3.102 This matter was queried by the ExA during the Examination [PD-018, HRA.1.5][PD-033, HRA.2.2]. At Deadline 6 the Applicant [REP6-002] provided a plan showing the access route for the RSPB to access the southern side of the RSPB reserve, which is located entirely outside of the DCO boundary. The Applicant stated it will commit in writing, initially via the SoCG and then by an exchange of letters, to not carrying out works which impede the RSPB's existing access route to the southern edge of the Minsmere reserve via Lower Abbey Farm.

4.3.103 NE confirmed in its late response to Deadline 7 [REP7-287] that "The applicant has now provided sufficient evidence to ensure any impact can be adequately mitigated to avoid an AEoI."

Indirect impacts on birds from entrapment of prey species

4.3.104 The Applicant screened in the potential for effects on SPA birds due to entrapment of prey species for the following European sites:

- Alde-Ore Estuary SPA;
- Benacre to Easton Bavents SPA;
- Deben Estuary SPA;
- Minsmere-Walberswick SPA;
- Outer Thames Estuary SPA; and
- Sandlings SPA.

Entrapment calculations

4.3.105 NE [RR-0878 Issues 7 and 30] [REP5-160] raised concerns regarding indirect impacts on the food web as a result of entrapment losses, particularly for bird species with small foraging ranges. It specifically highlighted concerns relating to fish as prey species for lesser black-back gull, little tern and sandwich tern of Alde-Ore Estuary SPA birds and little tern of Minsmere-Walberswick SPA and Ramsar site.

4.3.106 The RSPB/SWT [REP2-506][REP5-164][REP6-046] were also concerned that limited mitigation was proposed for fish mortality and the potential prey depletion for bird species of designated sites. It confirmed [REP7-152] this issue related to:

- non-breeding red-throated diver and (during the breeding season) foraging common and little terns of the Outer Thames Estuary SPA;
- breeding little terns of the Minsmere-Walberswick SPA; and
- breeding Sandwich terns of the Alde-Ore Estuary SPA

4.3.107 NE, the EA and the RSPB/SWT raised concerns about the use of a percentage of the Spawning Stock Biomass (SSB) of each fish species as an indicative threshold for significance; stating that this could underestimate impacts and would not identify local impacts on SPA birds, particularly during the breeding season when birds forage within a certain radius of their nest site. See Section 4.5 of this RIES for further details regarding SSB and the scale of assessment.

4.3.108 The RSPB/SWT [REP2-506][REP3-074][REP6-046] also had concerns around the use of Equivalent Adult Values (EAVs) in the assessment of impacts on predatory birds; stating that it is likely juveniles of some species are taken by predatory birds, therefore EAVs could underestimate ecological impacts. See Section 4.5 of this RIES for further details about EAVs.

4.3.109 In response to concerns about local effects, the Applicant submitted a localised effects assessment in SPP103 Chapter 3 [AS-238] which considered changes in prey availability at the scale of the Greater Sizewell Bay (GSB) and the tidal excursion. The Applicant confirmed [Appendix P of REP5-120] that the assessment considered reductions in numbers without an EAV step and used unadjusted numbers when considering impacts on predatory birds that prey on juvenile life-history stages. The assessment concluded that "*the scale of local depletion of prey resources is well within the bounds of natural variability, which predator/prey relationships are adapted to… As such, no significant reduction in the prey availability of designated HRA species is anticipated*".

4.3.110 However, NE [REP2-153] considered the depletion of prey to be more akin to the impact of a continuous and unrestricted commercial fishery, which could lead to poor breeding success or over winter survival of seabirds in some years. The Eastern Inshore Fisheries and Conservation Authority (EIFCA)[33] [REP5-147] did not specifically respond in relation to HRA matters, however the representation did not consider that the impacts of the power station on fish stocks could be compared to those from commercial fishing activity, as there are management measures available for commercial fishing which can be applied in a reactive manner, whereas a nuclear power station, would continuously operate in the same place in the same manner for many decades.

4.3.111 The RSPB/SWT [REP2-506] also disagreed with the Applicant, stating that low levels of fish availability (even within the bounds of natural variability) are known to affect the breeding success of tern populations. It considered the Applicant's assessment to be inadequate as it did not recognise the impacts of prey depletion on foraging efficiency and success rates. Furthermore, the RSPB/SWT requested an assessment of how local scale depletions would affect fish populations over the timescale of the operation of the power plant.

4.3.112 The Applicant [REP2-071][Appendix P of REP5-120] considered it had undertaken a full assessment of the potential effects of impingement and

[33] Note that EIFCA deferred to NE "for specific consideration of the aspects of impacts on fish biology and populations connected with the management of Marine Protected Areas" [REP5-147].

entrainment on SPA features. It stated [REP3-042] that modelling indicates that depletion levels asymptote after a period of approximately 50 days and are therefore not comparable to an unrestricted fishery causing constant depletion of prey. The Applicant identified pelagic fish as the most important prey groups for terns within the waters around Sizewell, for which the modelling (which relates to combined effects of Sizewell B and C) indicates that effects are small. It considered that the scale of between year variability in fish abundance is orders of magnitude greater than the level of depletion predicted to occur within the GSB and tidal excursion as a result of impingement.

4.3.113 With specific reference to sprat and herring, the Applicant confirmed that unmitigated losses represent 0.03% and 0.01% of the SSB, respectively (Table 2 of Appendix 7L [REP2-110]) and that there is no indication the station would cause losses at a level that could affect population sustainability.

4.3.114 The Applicant submitted an update to the local effects assessment in Revision 5 of SPP103 at Deadline 6 [Appendix F of REP6-016] to address stakeholder comments (including a sensitivity analysis addressing uncertainty in the Fish Recovery and Return (FRR) system[34] efficiency) and additional data for each of the species stock area assessments. This concluded that no significant reductions in the prey availability of designated HRA species are anticipated on the basis that:

- Overwintering red-throated diver have foraging ranges beyond the GSB and tidal excursion, without the restriction of having to return to local breeding colonies near Sizewell.
- Wide foraging ranges coupled with the low levels of depletion relative to natural variability and the potential to exploit opportunistic foraging opportunities from the FRR suggests no significant adverse food-web effects due to fish impingement for:
  - common terns;
  - sandwich terns;
  - lesser black-backed gulls;
  - greater black backed gulls;
  - herring gull;
  - black-headed gull; and
  - common gull.

[34] Table 22.26 of ES Volume 2 Chapter 22 Marine Ecology and Fisheries [APP-317] explains that *"Water, and associated biota, abstracted at the intake heads would transit towards the forebays. Biota too small to be impinged on the drum screens would be entrained through the power station condensers. …Abstracted planktonic organisms that are larger than the drum screen mesh size would be impinged and returned to the receiving waters via the FRR system."*

- Based upon the expected breeding season foraging ranges of little tern, foraging would primarily be within the Sizewell-Dunwich Bank and therefore more likely be subject to the immediate effects of Sizewell B than Sizewell C as the intakes are located 3km offshore. The scale of local depletion of prey resources is therefore well within the bounds of natural variability to which predator-prey relationships are adapted.

4.3.115 The Applicant further noted at Deadline 7 [REP7-059] that mixing and fish behaviour would dampen the depletion with distance from the intakes and, in the case of pelagic shoaling species and particularly juvenile stages (which are of importance in the diet of little tern), tidal replenishment would replace losses. It also noted that the intakes would be just beyond the likely foraging range of little terns.

4.3.116 The Applicant [REP7-059] reiterated its conclusion that impingement from Sizewell B and Sizewell C together would not have any adverse food-web effects on designated feature of HRA sites.

4.3.117 The MMO [REP7-136] confirmed it would comment on the Applicant's Report [REP6-016] at Deadline 8 (after publication of this RIES).

4.3.118 At Deadline 7, the RSPB/SWT [REP7-153][REP7-154] remained concerned about the effects on fish populations as prey for species of designated sites. It considered the predicted depletion levels of species of importance to birds of designated sites (specifically cod, whiting, dab and juvenile fish) to be significant. It was concerned about the effects of additional depletion where the local fish resources are at the lower end of the range of interannual variability for key species.

Discharge of dead and moribund fish

4.3.119 The Applicant [SPP103, Chapter 3 of AS-238][Appendix P of REP5-120] explained that biomass that is discharged by the FRR is retained within the system resulting in bottom-up effects stimulating secondary production and, in some cases, affording opportunistic feeding opportunities for seabirds (notably gulls). Whilst the majority of FRR discards sink and would therefore not be accessible to surface feeding seabirds, floating discards would represent a potential foraging opportunity to scavenging seabirds.

4.3.120 However, the RSPB/SWT [REP2-506] noted that that red-throated diver (Outer Thames Estuary SPA) and little tern (Outer Thames Estuary SPA and Minsmere-Walberswick SPA) do not forage on discards and would therefore not benefit from any discharged material. NE [REP2-153] also noted that terns will discard any deceased fish captured, so this recourse would not be available to those species.

4.3.121 The RSPB/SWT also raised concerns that the discharge of dead and moribund biota from the FRR system would contribute to biochemical oxygen demand and increase nutrient inputs and levels of un-ionised ammonia in the water column. This, combined with other operational impacts could affect the prey distribution for SPA bird populations.

4.3.122 The Applicant [REP3-042][Appendix P of REP5-120] confirmed the FRR wash water would not be chlorinated, therefore impinged biota would not bioaccumulate chemicals and would only be in contact with the extremely low residual concentrations of TRO, bromoform and hydrazine present in surface plumes. The Applicant stated that it is not aware of evidence for any such effects arising in relation to gulls (or other bird species) feeding upon moribund fish returned to the surface at other nuclear power stations.

Eels

4.3.123 As noted in Section 3 of this RIES, concerns regarding indirect impacts on breeding bittern from entrapment of eels were raised by the EA and RSPB.

4.3.124 The RSPB/SWT did not respond to the Applicant's [Appendix P of REP5-120] worst case assessment of entrapment in relation to indirect impacts on breeding bittern prior to publication of this RIES.

Sand gobies

4.3.125 The EA [REP2-135] also noted that marine invertebrates and gobies which are prey species for non-seabird species, for example breeding and non-breeding avocet (Alde-Ore Estuary SPA) are vulnerable to entrapment. Similar concerns were raised by RSPB/SWT [REP2-506] who noted that sand goby are prey species to red-throated diver, little tern and common tern of the Outer Thames Estuary SPA, little tern of the Minsmere-Walberswick SPA and Sandwich terns of the Alde-Ore Estuary SPA. It considered that impacts to these species could be potentially significant and raised concerns that the total prey availability losses or local effects within GSB had not been considered together and along with the potential cumulative effects of losses year on year.

4.3.126 The Applicant [Appendix P of REP5-120][REP6-028] considered that sand gobies are resilient to the degree of depletion predicted by entrapment and that the combined (Sizewell B and C) entrapment losses for sand gobies are predicted to be approximately 1.42% of the population estimate. The Applicant suggested that due to their short lifespan and early age of maturity, sand gobies have a sustainable harvesting rate of far greater than the precautionary 10% of SSB threshold applied. The Applicant considered its assessment to be precautionary as the small impingement fraction is assigned an EAV of 1 and total mortality is assumed for the entrainment fraction; therefore, the predicted level of losses are regarded as negligible at the population level.

Nursery grounds

4.3.127 The RSPB/SWT [REP2-506] raised concerns that impingement affecting nursery grounds could affect local prey availability, particularly for little tern. In response, the Applicant [Appendix P of REP5-120] explained that many of the species with juvenile life stages observed at Sizewell have spawning and nursery grounds distributed over wide geographic areas and that larval recruitment of fish into and out of the bay will be largely influenced by oceanographic and meteorological processes.

4.3.128 It also explained breeding little tern from colonies at Minsmere, Dingle Marshes (both within the Minsmere-Walberswick SPA) and Slaughden (within the Alde-Ore Estuary SPA) would forage to a large extent within the GSB and tidal extent. However, based upon the expected breeding season foraging ranges of the birds from these colonies, foraging would primarily be within the Sizewell-Dunwich Bank and therefore more likely be subject to the immediate effects of Sizewell B.

Climate change

4.3.129 The RSPB/SWT [REP2-506] outlined concerns that climate change will result in more days per year in which entrainment temperatures are above 30°C, temperatures at which fish egg and larval stage mortality increases rapidly. It was concerned that this could potentially combine with other climate pressures to negatively affect SPA seabirds.

4.3.130 The Applicant [Appendix P of REP5-120] considered that whilst higher entrainment mortality rates may be observed under future climate change, its starting point for fish entrainment assessments is precautionary. Furthermore, it stated that thermal lethality is highly species specific and adaptation to future climate conditions and/or potential species distribution shifts may influence the ability to tolerate thermal stress.

Indirect impacts on birds from disturbance of prey species by underwater noise and vibration

4.3.131 The Shadow HRA Report [APP-145] acknowledged the potential for noise and vibration from impact piling during the construction of the BLFs, and dredging and drilling for construction of cooling water intakes and outfalls.

Little tern

4.3.132 In relation to little tern, the RSPB/SWT [REP2-506] noted that a significant area of the foraging range of little terns from the Minsmere-Walberswick and Outer Thames Estuary SPAs (Minsmere colony) is expected to coincide with the area over which a fish 'behavioural response' (including displacement) is predicted. It acknowledged that the Shadow HRA Addendum made a commitment to avoid piling (and other BLF construction) activity during the bird breeding season (May to August) which would resolve concerns about noise disturbance from piling affecting foraging terns from the Minsmere-Walberswick and Outer Thames Estuary SPAs. RSPB/SWT requested that all relevant details be secured.

4.3.133 The Applicant did not respond to this matter in its response to RSPB/SWT [REP5-120].

Red-throated diver

4.3.134 The Shadow HRA Addendum [AS-173] concluded that no AEoI would arise from indirect effects on the prey of red-throated diver due to the relatively short duration of the works, and because the area affected is limited to the north-west corner of the SPA where red-throated diver concentrations are lower than the southern part of the SPA. The

RSPB/SWT [REP2-506] disagreed that this part of the SPA is of lower importance and noted that the construction is expected to take place over two winters.

4.3.135 The Applicant explained [Appendix P of REP5-120] that its assertion that red-throated diver densities are lower in the north-west block of the Outer Thames Estuary SPA than in the larger southern block are based on data and conclusions derived from two separate programmes of NE commissioned digital aerial surveys for the entire SPA area; therefore, it queried why RSPB/SWT did not accept the findings of these surveys. Furthermore, it stated that the largest areas within which effects on fish from underwater noise are predicted to occur represent a small percentage of the total SPA area (considerably less than 1%); those effects which extend out to this (largest) area are limited to behavioural effects, which will be temporary and (likely) short-term. As such, there is no basis for considering potential effects on the red-throated diver population from effects of underwater noise on their fish prey.

Marine water quality

4.3.136 Discussions relating to impacts from changes to marine water quality are discussed below. Note that NE [RR-0878, Issues 30-36] explained that discharges (and hence the thermal and chemical plumes, including hydrazine discharges) and the use of seasonal chlorination would be managed as part of the Water Discharge Activity (WDA) operational permit, as issued by the EA. NE explained it has yet to be consulted on the permit and associated HRA and would need to see further details of the proposed and final permit application before it can provide robust advice on potential impacts to designated sites and species.

Direct toxicity to seabirds

4.3.137 The Applicant [REP5-120] emphasised that the chemical plumes have very small overlaps with the predicted foraging ranges of the various SPA seabird populations of relevance (less than a fraction of 1% in most cases).

4.3.138 Furthermore, it explained [REP7-073] that the concentrations of both bromoform and hydrazine are low and of a level which is considered unlikely to result in direct toxicity. It noted that bromoform rapidly degrades in the marine environment and that the likelihood of birds being exposed to the chemicals at concentrations above their PNEC for any prolonged period would be small. It also confirmed that bromoform and hydrazine have low bioconcentration factors so there is a low likelihood that these chemicals would accumulate through the food chain.

4.3.139 In response to RSPB/SWT's concerns regarding hydrazine entering the Minsmere South Levels via the sluice [REP2-506], the Applicant [REP5-120] acknowledged the potential for this to occur. It stated that the best approach to achieve the required discharge level during commissioning is currently under investigation. This discharge would be regulated via the WDA permit.

Indirect impacts on birds from impacts on prey species

4.3.140 In addition to the potential for direct effects on seabirds, NE [RR-0878 Issues 30-36] highlighted concerns regarding the potential impacts from changes in marine water quality (thermal, chemical and sediment plumes) on their prey species. This was relevant to the following sites and features:

- Alde-Ore Estuary SPA – Sandwich tern, little tern and lesser black-backed gull (breeding);
- Alde-Ore Estuary Ramsar – little tern;
- Minsmere–Walberswick SPA – little tern;
- Minsmere–Walberswick Ramsar – little tern; and
- Outer Thames Estuary – little tern, common tern and red-throated diver.

4.3.141 NE [RR-0878][REP2-071 confirmed that the impacts from the intake and outfalls would be assessed as part of a WDA operational permit, as issued by the EA, but NE had yet to be consulted on the permit and associated HRA at the time of writing. It stated that it would need to see further details of the proposed and final permit application before it could provide robust advice on potential impacts on designated sites and species.

4.3.142 The RSPB/SWT [REP2-506] also highlighted particular concerns regarding impacts on fish as prey for bird species of the Outer Thames Estuary SPA, Minsmere-Walberswick SPA and Alde-Ore Estuary SPA. In particular, the RSPB/SWT noted concerns regarding:

- the potential for the thermal plume to alter communities and displace certain prey species leading to reduced prey availability and distribution (notably little tern associated with the Minsmere-Walberswick SPA and Ramsar site);
- direct and indirect impacts from the sediment plumes; and
- the potential for synergistic effects of the thermal and chemical plumes.

4.3.143 The Applicant [REP2-071][REP3-042][Appendix P of REP5-120] considered that the potential for indirect effects on foraging seabirds from the thermal and chemical plumes had been assessed in the Shadow HRA, which assumed that foraging birds will show strong avoidance of, or be displaced from, the areas encompassed by the different plumes.

4.3.144 In relation to chemical plumes, it stated that chlorination by-products are rapidly degraded in the marine environment; the low bioconcentration factor of bromoform indicates that indirect effects due to bioaccumulation in the food web is limited; and the rapid degradation rates and low bioconcentration factor of hydrazine indicates that the bioaccumulation potential is low. Furthermore, the Applicant [REP7-073] explained that the concentrations of both bromoform and hydrazine are below levels

which are documented to result in lethal or chronic sub-lethal effects to fish species.

4.3.145 In relation to the thermal plume, the Applicant provided a detailed response in [REP5-120], stating that there is little evidence to indicated that a 2°C or 3°C increase above ambient would cause avoidance by fish. It considered its assessment to be highly precautionary by assuming foraging opportunities are substantially reduced within the areas encompassed by the plumes. Furthermore, it considered that thermal plume areas at temperatures likely to have foraging consequences on designated seabirds and marine mammals are small relative to the foraging range.

4.3.146 The Applicant explained that sediment plumes from dredging activities during construction are predicted to extended over relatively small areas only and be of a few days' duration. It considered that any losses of egg/larvae mortality of pelagic fish species would be minimal compared to natural mortality and that adult pelagic fish have low sensitivity to increases in suspended sediment. It stated that fish within the Greater Sizewell Bay would be acclimated to a highly variable natural background and given the limited magnitude and transient nature of the plume, the scope for fish to be displaced entirely from the plume area and not return is very limited. Therefore, no significant changes in the availability of fish as prey items for designated features and as fisheries resources are predicted.

4.3.147 The Applicant [REP5-120] acknowledged that synergistic effects are feasible over limited spatial areas. However, it considered it unlikely that the inter-relationship between thermal and chlorinated or hydrazine discharges would increase the significance of the effects of localised displacement, beyond the effects predicted for the pressures individually.

4.3.148 NE did not provide an update of its views on this matter prior to publication of the RIES.

Water quality impacts from drilling mud and bentonite breakout

4.3.149 In relation to potential impacts from drilling mud and bentonite, which has been included in the effects on integrity section of this RIES due to disputed conclusions (see Section 3.2, above), the Applicant agreed [REP3-042] that the CoCP is the appropriate mechanism for provision of the further information requested and committed to providing the requested information at an appropriate deadline. The most recent version of the CoCP was submitted at Deadline 7 [Revision 5, REP7-038] and did not refer to drilling mud or bentonite breakout. Question HRA.3.0 of ExQ3 [PD-045] asked the Applicant to update the CoCP accordingly, with responses due at Deadline 8 (24 September 2021).

Physical interaction between birds and project infrastructure (pylons and power lines)

4.3.150 As detailed in section 3 of this RIES, the potential for physical interaction between birds and project infrastructure has been progressed to the

assessment of effects on integrity in this RIES due to disputes raised in the Examination.

4.3.151 The Applicant maintained [REP2-071][REP3-024][REP6-024] that no likely pathway for a material effect has been identified due to physical interaction with pylons. It explained that the development proposals require the repositioning of one existing overhead pylon and four new overhead gantries and considered that this is a minimal change to the existing baseline situation which represents little potential for any additional effects on SPA bird populations. Furthermore, all new pylon and gantries would be located within the footprint of the main platform in areas that are likely to be avoided by birds because of the absence of suitable habitats in such locations and the presence of anthropogenic activities.

4.3.152 However, it submitted an assessment at Deadline 6 submission Appendix D: Collision Risk Between Birds and Power Lines [REP6-024] to support this position. This provided further evidence regarding the routing and height of powerlines and the arrangement of pylons and power lines relative to the proposed buildings and structures. Notwithstanding the conclusion of no LSE, the Applicant proposes as a precautionary measure that line markers are installed to minimise collision risk with power lines: "*SZC Co. will update the design principles to include reference to the proposed line markers, subject to operational and technical requirements and consideration of the views of key stakeholders, including National Grid*" [REP6-024].

4.3.153 NE did not submit any comments on the Applicant's report prior to publication of this RIES.

Recreational disturbance

4.3.154 The Shadow HRA Report [APP-145][35] assessed the potential for impacts associated with increased recreational pressure to result in an AEoI of the bird qualifying features of the following European sites:

- Alde-Ore Estuary SPA;
- Alde-Ore Estuary Ramsar;
- Benacre to Easton Bavents SPA;
- Minsmere–Walberswick SPA;
- Minsmere–Walberswick Ramsar; and
- Sandlings SPA.

4.3.155 See Annex 1 and 2 of this RIES for the qualifying features screened in. As noted in Section 3 above, the Outer Thames Estuary SPA has been included in the consideration of effects on integrity stage of this RIES due to IPs having disputed the Applicant's conclusions for this site.

[35] Supported by Appendix E; Recreational Disturbance Assessment [APP-148]; this included a review of available scientific evidence about the effects of anthropogenic disturbance on birds and habitats.

4.3.156 NE [RR-0878, Issue 29][REP2-153] stated that it could not exclude an AEoI from recreational disturbance for the following European sites:

- Alde-Ore Estuary SPA – all features;
- Alde-Ore Estuary Ramsar site – all features;
- Minsmere-Walberswick SPA – all features;
- Minsmere- Walberswick Ramsar – all features;
- Outer Thames Estuary SPA – little tern; and
- Sandlings SPA – European nightjar and woodlark.

4.3.157 The RSPB/SWT [RR-1059][REP2-506] stated it did not agree an AEoI could be excluded from the project alone or in combination with other projects for:

- Minsmere-Walberswick SPA – (little tern, nightjar, hen harrier, wintering waterbirds (including white-fronted goose), breeding waterbirds) due to the potential increase in use of the path from Eel's foot public house to Minsmere sluice; and
- Sandlings SPA (woodlark and nightjar).

4.3.158 The National Trust also had concerns over recreational disturbance to breeding nightjar of Minsmere to Walberswick SPA [REP2-150]. As noted previously in this RIES, it commissioned a report on recreational disturbance in conjunction with RSPB/SWT; therefore, it shared the same concerns.

4.3.159 Section 4.2 of this RIES provides an overview of discussions related to recreational pressure on habitats of European sites; these matters are equally applicable to the potential for recreational disturbance to bird features of European sites and are therefore not repeated here.

Combined marine impacts

4.3.160 In respect of red-throated divers of the Outer Thames Estuary SPA and terns of Minsmere-Walberswick SPA and Alde-Ore Estuary SPA, the RSPB/SWT [REP2-506][REP3-074][REP5-165][REP5-164] raised concerns about the potential for combined marine impacts. Specifically, direct disturbance from noise, lighting of the BLFs and visual disturbance from both the BLFs, as well as combined impacts on birds and their prey (from dredging; piling and vessel movements; impingement and entrainment of fish; the thermal bromoform and hydrazine plumes; increased organic matter from the discharge of dead and dying fish; increased suspended sediment concentrations); and the resulting total displacement of marine birds. It queried whether these impacts could be adequately mitigated.

4.3.161 In response, the Applicant [Appendix P of REP5-120] explained that this had been addressed in Appendix 1 of the Shadow HRA Addendum [AS-174] and disagreed that individual effects had been underestimated or that there is insufficient detail known regarding synergistic issues.

4.3.162 The RSPB/SWT [REP6-046] welcomed the Applicant's response and confirmed it would update its position on all aspects of marine ornithology in its next SoCG; this is anticipated to be submitted at Deadline 8 (after publication of the RIES).

4.4 The Integrity Test – marine mammals

Introduction

Relevant European sites

4.4.1 European sites with marine mammal qualifying features that are relevant to the Proposed Development are:

- Humber Estuary SAC;
- SNS SAC; and
- The Wash and North Norfolk Coast SAC.

4.4.2 The qualifying features screened into the assessment of effects on integrity are identified in Annex 1 and 2 of this RIES.

Underwater noise and the Marine Mammal Mitigation Protocol

4.4.3 The potential impacts of underwater noise to marine mammal qualifying features of the above SACs were assessed in the Shadow HRA Report [APP-145] and supported by an Underwater Noise Effects Assessment for Sizewell C: Edition 2 [APP-329].

4.4.4 Further to Change 2 to enhance the permanent BLF and to construct a new temporary BLF, the Shadow HRA Addendum [AS-173] was revised to reflect new piling requirements and updates to JNCC guidance on assessing the impacts of underwater noise. In reaching the conclusion of no AEoI for marine mammal qualifying features of European sites, the Shadow HRA Addendum [AS-173] introduced mitigation in the form of a hydrohammer (which has two hydraulic plungers filled with water designed to dampen impact and reduce the source noise of impact piling).

4.4.5 The Applicant incorporated the use of a hydrohammer into an updated draft Marine Mammal Monitoring Plan (MMMP) (Revision 2) [REP3-019][36]. This also referred to the latest guidelines on the abatement of underwater

[36] Although a draft MMMP for piling works was submitted with the application [APP-331], the application version of the DCO [APP-059] only contained a condition requiring the submission and approval of a MMMP for UXO clearance. The application dDCO allowed for clearance activities including potential UXO detonations. However, the MMO [RR-0743] did not consider that any UXO campaign should be authorised through conditions on the DML as they are high risk activities which require detailed, complex impact assessments, conditions and enforcement. It also noted that only a hypothetical UXO clearance situation had been considered by the Applicant and that the maximum parameters of UXO detonation activities should be clearly defined in the DCO/DML. NE [RR-0878] similarly advised that the UXO assessment should represent the worst case scenario in terms of potential impacts and that UXO detonations should be included in the in combination assessment. In response, the Applicant removed UXO clearance activities from the authorised development in Revision 3 of the dDCO [AS-144]; such that any clearance activities would be consented via a separate Marine Licence should they be required.

noise pollution from pile-driving (Merchant and Robinson, 2020), as suggested by the MMO [RR-0744].

4.4.6 NE [REP2-153] welcomed the use of a hydrohammer and was satisfied that noise increases could be successfully mitigated by the 500m mitigation zone outlined in the MMMP.

4.4.7 The MMO [REP2-082] noted the absence of a condition requiring a MMMP to be submitted to and approved by the MMO in respect of impact piling. A condition was subsequently incorporated into dDCO Revision 4 (Schedule 20 (DML), Part 3, Paragraph 40) [REP2-013] by the Applicant. However, MMO [REP3-070a][EV-161][REP7-136] continued to express concerns that the condition does not state that the plan "*will follow current best practice as advised by the relevant statutory nature conservation bodies*" nor that the final MMMP must be in line with the draft MMMP (which should be a certified document). It also considered that the draft MMMP should be agreed in examination with the relevant statutory nature conservation bodies. The MMO deferred to NE's view on whether the content of the draft MMMP includes sufficient mitigation.

4.4.8 The MMO [REP2-140][REP6-039] also sought clarification over the underwater noise model and input parameters and noted that potential underwater noise effects of any mechanical cutting that might be required during decommissioning of the temporary BLF have not been assessed. Furthermore, it considered that the cumulative effects assessment relating to the combined piling scenario is not clear and that evidence to support the statement that the combined effects are less than the worst-case scenarios for individual piling should be provided.

4.4.9 At Deadline 5, the Applicant submitted a report entitled 'Underwater noise effect assessment for the Sizewell C revised marine freight options' (Revision 1) [REP5-124] to provide an evidence base for the Shadow HRA Addendum and to respond to the MMO's comments in [REP2-140]. This included model results for the decommissioning option of removing piles from the temporary BLF with mechanical cutting methods and an explanation of why the cumulative effects assessment captures the worst-case combined piling scenario.

4.4.10 The MMO [REP7-136] confirmed it would comment on the Applicant's Report [REP5-124] at Deadline 8 (after publication of this RIES).

4.4.11 At Deadline 7, the Applicant updated the DCO [REP7-006] to require the MMMP to be submitted to and approved by the MMO to be in general accordance with the draft (DCO Version 8, Part, Paragraph 40(2)(b)). The MMMP was also listed as a certified document in Schedule 22 of the dDCO [REP7-006].

Humber Estuary SAC and The Wash and North Norfolk Coast SAC (Marine mammals)

Effects on prey species

4.4.12 The Applicant's consideration of effects on prey species was informed by the assessment of entrapment of fish. As noted above, there were extensive discussions relating to the assessment of entrapment of fish

which were relevant to fish as a prey species for both birds and marine mammals.

4.4.13 The Applicant's Shadow HRA Addendum [AS-173] concluded that "local depletion due to impingement is orders of magnitude below natural variability in abundance to which predator-prey relationships are adapted to. Therefore, impingement from Sizewell B and Sizewell C would not have any adverse food-web effects on qualifying interest features of European sites". This position was reiterated by the Applicant in REP6-016] and [REP7-073].

4.4.14 No specific concerns have been raised regarding the effects on prey species of grey seal of the Humber Estuary SAC or harbour seal of The Wash and North Norfolk Coast SAC.

Underwater noise

4.4.15 See the Marine Mammals Introduction section of this RIES for details of discussions relating to the Applicant's underwater noise assessment and the MMMP.

4.4.16 The MMO [REP7-136] confirmed that it considered the assessment for seals to be appropriate and that there would be no AEoI for the Humber Estuary SAC and The Wash and North Norfolk Coast SAC, however it deferred to NE for further comments. NE [EV-160] confirmed that it agreed with the Applicant's assessment of no AEoI of the Humber Estuary SAC and The Wash and North Norfolk Coast SAC due to noise, light and visual disturbance.

Southern North Sea (SNS) SAC (Marine mammals)

Loss of foraging habitat

4.4.17 NE [RR-0878, Issue 7] highlighted that conservation objectives for the SNS SAC include that "*3. The condition of supporting habitats and processes, and the availability of prey is maintained*". It advised that the long term/permanent loss of foraging area within the SAC for the operational phase of the development (from intake tunnels) would result in harbour porpoise having to move out of the area to feed. NE advised that this would constitute an AEoI and that compensation for this loss of area should be proposed.

4.4.18 The ExA sought an update from NE on this matter in [EV-188]; no response had been received prior to publication of the RIES.

Physical interaction with project infrastructure – collision

4.4.19 NE's RR [RR-0878, Issue 7] highlighted the risk of collision for mobile species including from marine vessel activity, capital dredging, piling and drilling works. NE advised such risks should be assessed to inform any necessary mitigation measures and that collision avoidance measures during construction and operation may be required.

4.4.20 The MMO [REP3-070a] supported NE's initial concerns and stated that it would liaise with the Applicant and NE to secure any appropriate mitigation measures.

4.4.21 The Applicant [REP2-071] confirmed that this matter was assessed in the Shadow HRA Report and the Shadow HRA Addendum [AS-173] which provided further details on increased vessel collision risk resulting from the BLF change request. NE [REP2-153] subsequently confirmed it had no further concerns regarding physical interaction between project infrastructure and marine mammals. Question HRA.3.7 of ExQ3 [PD-045] asked NE to confirm what information resolved their concerns, with responses due at Deadline 8 (24 September 2021).

Underwater noise

4.4.22 See the Marine Mammals Introduction section of this RIES for details of discussions relating to the Applicant's underwater noise assessment and the MMMP.

4.4.23 With specific reference to the SNS SAC, NE [RR-0878] considered there to be flaws in the assessment of impacts from underwater noise. It advised the pin pile effective deterrent radius (EDR) of 15km to be more appropriate than the 26km used in the assessment.

4.4.24 NE [RR-0878] further noted that the spatial extent of the winter portion of the SNS SAC that could be impacted by underwater noise in combination exceeds the maximum threshold of exclusion of harbour porpoise from 20% of the relevant area in any given day (32.8%, reducing to 22.2% when taking the average overlap into account). NE therefore did not agree with the conclusion of no AEoI and advocated the use of a cofferdam during pile installation to eliminate underwater piling noise.

4.4.25 The Shadow HRA Addendum [AS-173][37] updated the assessment to reflect the 15km EDR, changes to JNCC guidance for assessing noise disturbance and the changes in piling requirements from the beach landing facilities enhancement. NE [REP2-153] confirmed that it was satisfied with the results of the noise modelling undertaken and that impacts are either within previously assessed ranges or are only slight and can be mitigated by the 500m mitigation zone outlined in the MMMP.

4.4.26 Nevertheless, NE [RR-0878] and the MMO [RR-0744][REP1-025] advised that a SNS SIP demonstrating no impact to the SNS SAC would need to be submitted to, and approved by, the MMO before the commencement of any construction activities that could affect the integrity of the SNS SAC. The SIP must demonstrate that the project either alone or in combination with other plans or projects, will not exceed the noise thresholds assessed within the SAC Review of Consents HRA undertaken by the Secretary of State for the Department for Business Energy and Industrial Strategy (BEIS) alongside the MMO. The MMO [EV-161] advised the SIP should be a certified document.

4.4.27 In response, the Applicant submitted a draft SIP (Appendix 9A of [AS-178], subsequently revised in Appendix 9A of [REP4-004]) with an overall objective to reduce the risk of any significant disturbance to harbour porpoise in the SNS SAC winter area as a result of underwater noise in

[37] Supported by the Applicant's report entitled 'Underwater noise effect assessment for the Sizewell C revised marine freight options' (Revision 1) submitted at Deadline 5 [REP5-124]

combination with other plans and projects.[38] At Deadline 2, the Applicant updated dDCO Schedule 20 (DML), Part 3, Paragraph 40(2)(c) [REP2-013] to require submission to and approval of the SIP by the MMO should impact piling be required.

4.4.28 The MMO [REP3-070a][REP6-040][REP7-136] welcomed the revision to Paragraph 40(2)(c) but highlighted that there is insufficient detail regarding the purpose of the SIP or what designated site the plan relates to. At Deadline 7, the MMO [REP7-136] confirmed it was still reviewing the draft SIP and that it could not support the conclusion of no adverse effects on harbour porpoise until the SIP has been agreed.

4.4.29 NE [REP7-142] confirmed that it would consider the SIP to be a draft that would be revisited and finalised prior to construction activities commencing. It provided a number of comments on the detail of the SIP, including that a worst case scenario should be addressed. It stated that it could not agree to no AEoI on the SNS SAC until its comments were addressed.

4.4.30 At Deadline 7, the Applicant updated the DCO [REP7-006] to require the SIP to be submitted to and approved by the MMO to be in general accordance with the draft SIP (DCO Version 8, Part, Paragraph 40(2)(c)). The draft SIP was also listed as a certified document in Schedule 22 of the dDCO [REP7-006].

In-combination effects

4.4.31 As noted above, NE and the MMO requested that a SIP should be produced and secured. However, NE advised [RR-0878][REP2-153] that until the mechanism by which the SIPs will be managed, monitored and reviewed is developed, it is unable to advise that this approach is sufficient to address the in combination impacts and therefore the risk of AEoI of the SNS SAC cannot be fully ruled out.

4.5 The Integrity Test - fish

Humber Estuary SAC (Migratory fish)

Applicant's assessment of entrapment

4.5.1 The potential impacts of entrapment[39] of fish qualifying features (sea lamprey and river lamprey) of the Humber Estuary SAC were assessed by the Applicant in the Shadow HRA Report [APP-145] (supported by Report TR406 'Sizewell C Impingement Predictions Based Upon Specific Cooling Water System Design [APP-326]).

[38] The Applicant's report entitled 'Underwater noise effect assessment for the Sizewell C revised marine freight options' (Revision 1) [REP5-124] to provide an evidence base for the SNS SIP.

[39] Combined impingement and entrainment. Defined in [REP5-112] as: "*Entrainment is the process by which organisms that are small enough to pass through the filtration screens transit the entire cooling water system, through the condensers and are discharged in the main cooling water discharge at the outfall 3km offshore. In contrast, impingement is the process by which organisms that are too large to pass through the filtration screens are removed from the cooling water flow and, instead, transit through the Fish Recovery and Return (FRR) system before being returned to sea via the FRR outfall (some 400 m from shore).*"

4.5.2 The Applicant's Shadow HRA Addendum [AS-173] contained revised predictions of fish entrapment and consideration of potential effects on selected fish stocks at Sizewell. This was supported by supplementary information on fish assessments [AS-238][40]. The Shadow HRA Addendum concluded that the revised predictions of fish impingement would not alter the conclusions of the Shadow HRA Report [APP-145] (ie no AEoI).

4.5.3 The main issues raised in relation to the assessment of entrapment are detailed below. It should be noted that whilst the EA expressed concerns over fish entrapment calculations, it deferred to NE's opinion with regards to impacts on European sites [REP7-131]; nevertheless, the EA's comments on assessment methodologies have been included in this RIES below.

Equivalent Adult Values (EAVs)

4.5.4 The majority of fish entrapped are expected to be juvenile stages. EAVs are used to convert an annual rate of loss of predominantly juvenile fish due to entrapment into an annual rate of loss of fish that would naturally survive to maturity and join the spawning population. [Appendix F of [REP6-024].

4.5.5 The EA [RR-0373][REP2-135][REP7-132] raised significant concerns with the Applicant's EAV method, stating that it would likely underestimate the impact on some fish species. The EA submitted a summary of the principal difference in position between the Applicant and the EA in Appendix C of [REP5-150]. This explains that the disagreements centre on whether to account for the effect of repeat spawning within the population (which the Applicant has not taken into account) as well as concerns with biological parameters such as mortality rates and the effects of fishing mortality. The EA considered that the Applicant's (Cefas) method systematically underestimated the impact of impingement on the population and the EA therefore developed an extension to the Cefas method to account for repeat spawning (the Spawning Production Foregone (SPF) method). These concerns were shared by NE [RR-0878, Issue 30][REP5-160][41] and the RSPB/SWT [REP2-506][REP3-074][REP6-046].

4.5.6 The EA explained that's its concerns relate to repeat spawners and confirmed that river lamprey and European eel[42] are not repeat spawners [REP2-135][REP5-150][REP7-131].

[40] [AS-238] comprised a number of reports, including of particular relevance to entrapment:

- Revision 7 of TR406 - Impingement predictions based upon specific cooling water system design, which was revised in response to Relevant Representations; and
- Revision 4 of TR SPP099 – Predicted performance of the SZC low velocity side entry intake heads compared with the Sizewell B intakes.

[41] Note that the viewpoints of the EA, NE, MMO and the Applicant in relation to EAVs and the scale of assessment are analogous to matter discussed in the Hinkley Point C WDA Appeal Inquiry. The evidence was examined and cross-examined in detail during the course of a 9 day inquiry hearing from 8 - 24 June 2021. All parties referred to this inquiry in their representations.

[42] As noted in Section 3.1 of this RIES, eel are prey species of breeding bittern of Minsmere-Walberswick SPA and Benacre to Easton Bavents SPA.

4.5.7 However, the MMO confirmed that it was content with the Applicant's approach to EAVs [RR-0744] [REP6-039]; stating that the extended SPF method does not take account of fishing mortality and makes additional assumptions which may introduce further unquantified uncertainties in the assessment. It considered the core Cefas method end-point age to be more reflective of reality in the context of fished seas. The MMO stated that it did not see any justification for application of the extended SPF method, as the predicted impacts to fish are all small and generally less than 0.1% spawning stock biomass. It considered that on its own, uncertainty regarding the 'best' EAV method would not be a reason for requiring additional effort to be expended on the extended model.

4.5.8 The Applicant [Appendix P of REP5-120] explained that the EA's SPF approach "necessarily estimates a multiannual rate of impingement losses (repeat spawning) and not an annual one. Such an approach gives an inflated estimate of annual loss and annual loss as a percentage of spawning population size because it would involve projecting and summing the future numbers of mature fish over several years (a multi-annual rate of loss) rather than estimating it for a single year."

4.5.9 It subsequently submitted a Technical Note on EAV and stock size [Appendix F of REP6-024]. This explains that there is inbuilt precaution into the EAV factors as follows:

- The EAV assumes no fishing mortality before maturity (thus overestimating the chance of survival to maturity).
- EAV biomass is calculated by multiplying EAV by the mean adult fish weight from the spawning population, however the weight at the age of first maturity will be lower than the individual weight of older and more fecund fish in the spawning population. Therefore, the EAV biomass upweights apparent losses of spawner biomass due to entrapment and their potential contribution to the spawning population biomass; which derives a precautionary higher rate of annual EAV biomass loss as a percentage of spawning population biomass for repeat spawning species.
- For species where there are very low numbers recorded in impingement samples or where there are insufficient biological data to determine an EAV, an EAV of 1 has been applied – this is the maximum value possible and assumes every fish entrapped would normally survive to maturity and join the spawning stock (and is therefore precautionary). Notably, this assumption was made for river lamprey and European eel[43]. River lamprey and European eel are semelparous, meaning they only spawn once before dying, therefore an EAV of 1 is the maximum theoretical number.

[43] As noted in Section 4.3 of this RIES, eel are prey species of breeding bittern of Minsmere-Walberswick SPA and Benacre to Easton Bavents SPA. [REP6-024] notes that no adult fish (silver eels) have been recorded from impingement sampling at Sizewell B during eight years of sampling in the period 2009-2017.

4.5.10 The Applicant noted the EA's suggested SPF extension is not an annual rate, so cannot be compared against an annual spawning population. It also stated that extending the assumption of no fishing mortality to adult stages introduces over-precaution, as acknowledged by the MMO in [RR-0744].

4.5.11 The EA responded to the Applicant's note in [REP7-128] explaining that:

- fishing mortality is of less concern for species which are not targeted commercially;
- upweighting is not going to be equivalent to calculating the number of repeat spawners;
- the SPF model does return annual rates; and
- fishing mortality can be included into the SPF method.

4.5.12 Although the EA had referenced the Hinkley Point C inquiry earlier in the Examination, the EA [REP7-131] explained that it did not consider the permit appeal at Hinkley Point C would set a precedent as to what is the most appropriate EAV method in all circumstances; as the underlying parameters are specific to individual power stations.

4.5.13 NE [REP7-143] explained it preferred the SPF method because it reflects the losses from all year classes in a given year, not just the first-time spawners, which gives a more realistic picture of, and estimated value to, the lost adult spawning potential from a given year. It explained that fish tend to become more fecund as they age.

4.5.14 The Applicant [REP7-073] confirmed that it would consider updating the impingement assessment using the SPF model approach and will provide a response at Deadline 8.

Scale of assessment

4.5.15 EAV losses, expressed as an annual rate, are compared to the relevant SSB or population ([REP6-028] and Appendix F of [REP6-024]).

4.5.16 NE [RR-0878][REP2-153][REP5-160] highlighted concerns with the scale of the assessment used by the Applicant (ie the North Sea SSB or ICES management unit). It considered that this approach does not consider local fish stocks and populations and therefore underestimates fish entrapment impact.

4.5.17 These concerns were shared by the EA [RR-0373][REP2-068][REP2-135][REP5-150][REP7-132] who considered the Applicants approach could not offer a meaningful ecological assessment of the losses to fish populations within the waters around SZC and noted that smaller sub-populations of some species are known to exist. The EA stated that whilst it had received further updated reports from the Applicant, it could not agree with estimated numbers of fish impingement or the degree of mitigation proposed (see 'Low velocity side-entry (LVSE)' section of this RIES below). Furthermore, it highlighted that the estimated numbers of fish impinged at Sizewell B has been used to inform impingement calculations at Sizewell C; but that true impingement rates at Sizewell B

are uncertain due to sampling issues[44], leading to potential underestimations of impact. The EA advised that the calculations should be revised using a precautionary correction factor to allow for this uncertainty.

4.5.18 The RSPB/SWT [REP3-074][REP6-046][REP7-154] supported NE and the EA's points around the scale of assessment and the potential for under-estimation of fish impingement. It was concerned that potentially high catches overnight may not have been fully represented in the impingement predictions. At Deadline 7, it noted that a correction factor had still not been applied by the Applicant in any of its submitted documents, which results in uncertainty around the reliability of the impingement (and subsequently, total entrapment) predictions.

4.5.19 The EIFCA [RR-0348] also advised that local effects need to be considered (although did not specifically make reference to HRA in its representation).

4.5.20 However, the MMO [RR-0744][REP2-140][REP6-040] concluded that the use of ICES stock areas for commercial fish species represents the current best scientific evidence available and that there is currently no robust information that would support use of more local stock areas in the assessment.

4.5.21 The Applicant responded in Report TR406 (informed by SPP103 Chapter 3) [AS-238], stating that: "…Given the negligible predicted SZC impacts compared to those of fishing, *and the precautionary nature of ICES' estimates of SSBs, no justification is found not to use the ICES' stock definitions to assess SZC effects on fish… There are no isolated fish populations at Sizewell, fish live and move in an unconstrained coastal environment with most species undertaking wide spatial migrations throughout the year. As such, ICES stock units represent the best available evidence for assessing the impacts of the proposed development in relation to stock sustainability. However, it is recognised that assessments of effects on fish must consider aspects beyond stock sustainability and further information on the potential for localised effects of the station is provided in Section 8.*"

4.5.22 NE [REP2-153] considered that the Applicant's Report TR406 had oversimplified and omitted the possibility of using all existing evidence to determine the scale of assessment. It advised that the best available evidence summarising this ongoing scientific debate regarding appropriate scales of assessment for cooling water intake impacts on fishes is found within the ongoing public enquiry in the Hinkley Point C project. It advised that further consideration should be given to

[44] The predictions for entrapment at Sizewell C are based on the Comprehensive Impingement Monitoring Programme (CIMP) data from Sizewell B. The EA explained "*The CIMP undertaken at SZB had frequent overflowing of the bulk overnight sample. On these occasions an incomplete bulk sample was collected, providing a 'greater than' result, or the bulk sample was abandoned and no result obtained. This means that more fish may have been collected than recorded in the sampling. Results from overflowing bulk samples have been excluded from the data set, and impingement for surveys affected extrapolated from day-time hourly samples"*.

mitigation opportunities to further reduce fish mortality rates [REP2-153][REP5-160].

4.5.23 The EA [REP2-135] noted that the model in the Applicant's local assessment incorporates a number of assumptions creating inherent uncertainty in the outputs, but it is helpful as a broad relative indication of local impacts to use alongside other evidence.

4.5.24 The Applicant continued to iterate through the examination that it considered the SSB to be the most appropriate means of determining impacts on fish populations relative to the relevant scale of the population as it accounts for the full life-history of the species in questions [Appendix P of REP5-120]. The Applicant's Deadline 6 Technical Note on EAV and stock size (Appendix F of [REP6-024]) explained that the ICES approach is a multistage international process with internal and external peer review which takes into account new evidence on the species ecology and distribution at 'Benchmark' meetings ever 3-5 years. The ICES Benchmark process is in addition to annual assessments and evaluates current assessments and data methodologies and proposes improvements.

4.5.25 Nevertheless, the Applicant submitted an update to the local effects assessment in Revision 5 of SPP103 at Deadline 6 [REP6-016] to address stakeholder comments and re-run the assessment with more detail added to each of the species stock area assessments.

4.5.26 However, the EA [REP7-132][REP7-133] stated that it did not agree with the stock comparators being used, the appropriateness of the exchange rates applied in the local effects model, or that it offered a precautionary assessment of the potential local depletion of fish populations. Although the EA had referenced the Hinkley Point C inquiry earlier in the Examination, it further explained [REP7-131] that it did not consider the permit appeal at Hinkley Point C would set a precedent as to what is the most appropriate stock size for species at Sizewell C, as it is different site with a different fish assemblage.

4.5.27 The ExA notes, that the EA has confirmed it agrees with the stock comparator used for the assessment of effects on river lamprey and European eel[45] [REP2-135][REP5-150][REP7-131].

Low velocity side-entry (LVSE)

4.5.28 The Applicant's assessment of effects was based upon fitting LVSE to the cooling water intake heads and a FRR system. The MMO [RR-0744][REP2-140][REP2-082][REP3-070a], EA [RR-0373][REP2-135][REP5-150], NE [RR-0878][REP2-153][REP5-160] and RSPB/SWT [REP2-506][REP3-074][REP5-164][REP6-046] noted that LVSE is novel

[45] As noted in Section 3.1 of this RIES, eel are prey species of breeding bittern of Minsmere-Walberswick SPA and Benacre to Easton Bavents SPA.

technology. They considered that more evidence should be provided to justify the assumptions of the beneficial effect of the LVSE design[46].

4.5.29 In particular, the EA [REP2-135] expressed doubt regarding the LVSE reduction factor (the degree of mitigation offered by the LVSE applied in the assessment) and therefore considered the predicted impingement may have been underestimated. It noted [REP5-150] that no evidence has been provided that low velocities would reduce fish impingement in poor visibility conditions at the intake head and therefore advised the Applicant to remove this reduction calculation from the impingement figures.

4.5.30 In response, the Applicant submitted a report entitled 'Quantifying uncertainty in entrapment predictions for Sizewell C' [REP6-028]. This acknowledged that the effectiveness of the LVSE intake heads is not certain, and therefore assumed no benefit from the LVSE heads. It concluded that for all species, effects are below the thresholds that would trigger further investigation for potential population level effects.

4.5.31 The EA [REP7-133] welcomed that no effect of the LVSE had been assumed and noted that this led to increased impacts for seabass, cod, whiting and epi-benthic species, and additional pressures on juvenile pelagic species. It cautioned that the LVSE intake heads could have the potential to act as an artificial reef and an attractant to fish. It noted [REP7-131] that the size of the structure at SZC is much larger than the smaller simple capped intake structure at Sizewell B; therefore, the assumption that the LVSE will have the same impact as SZC intake structure is not sound. It further noted that there is a lack of knowledge as to how a large complex LVSE structure may behave in comparison to the Sizewell B design.

4.5.32 The MMO [REP7-136] confirmed it would comment on the Applicant's report [REP6-028] at Deadline 8 (after publication of this RIES).

4.5.33 The Applicant [REP7-073] rebutted the suggestions that the intake heads could act as artificial reefs. It confirmed that the low velocity element refers only to the water drawn into the intake heads; the LVSE head does not affect tidal current velocities and does not have the potential to create conditions conducive to reef building and dwelling organisms.

Acoustic Fish Deterrent (AFD) system

4.5.34 Given the concerns relating to LVSE and uncertainties in the impingement predictions, the MMO, EA, NE, and RSPB/SWT[47] sought justification for the lack of an acoustic fish deterrent (AFD) system (which they consider to be best practice and which would mitigate impacts to fish themselves and their predators).

4.5.35 Fish Guidance Systems Ltd [RR-0390][PDB-061][REP2-274][REP5-200][REP6-059] explained that an AFD system is an integral part of the

[46] Although note that in response to Report TR406 [AS-238], the MMO [REP2-140] noted that "*The assessment makes assumptions about the effectiveness of the LVSE system and FRR system. There is a lack of good evidence to support these assumptions and thus the scale of benefit is uncertain, however, the MMO understands that there isn't any further work that can sensibly be done to reduce this uncertainty*."

[47] In the same representations as detailed above regarding LVSE.

EA best practice guide[48] for the screening of coastal intakes. It considered that an AFD system meeting the requirements set by EDF/NNB for the Hinkley Point C AFD would be available, and that remotely operated vehicles (ROVs) could be developed to undertake maintenance to avoid using divers (which has safety implications).

4.5.36 The EIFCA [REP5-147] considered that the use of AFDs should be considered as mitigation. It noted "that an expert in AFDs said during ISH7 Part 2 that service intervals for AFDs are now longer than those on which the [Hinkley Point] assessment were made, and that there are options for servicing AFDs by means of remotely operated vehicles (ROVs)…The Applicant stated that the same considerations in connection with diver safety as assessed for [Hinkley Point] would apply at Sizewell, due to the environment being the same." However, EIFCA queried this assumption, noting that water currents and underwater visibility – can be very different at the locations of the two power stations.

4.5.37 At Deadline 5, the Applicant [REP5-123] provided an overview of the proposed fish protection measures and explained that an AFD has not been proposed as the cooling intake would be located more than 3km offshore and that safe installation was not feasible due to high turbidity and velocities.

4.5.38 The MMO [REP6-039] explained that an effective AFD might further reduce impingement for some species, however the absence of an AFD system should not be an impediment to consenting the project as the impacts on fish without an AFD are not significant[49]. It advised that a further sensitivity analysis is undertaken to examine the effectiveness of the LVSE and the Fish Recovery and Return system.

4.5.39 Fish Guidance Systems Ltd used evidence from an ROV manufacturer to argue that maintenance activities could be undertaken by using similar ROVs to those currently deployed in the North Sea for work in the Oil and Gas industry in very similar conditions to those at Sizewell C [REP6-059].

4.5.40 The EA [REP7-127] noted that the Applicant's AFD Report [REP5-123] highlighted that high turbidity levels to be a restriction to safe underwater operation and maintenance of the AFD. However, the EA considered the Applicant's data used to reinforce turbidity issue was biased towards sampling at period of expected highest turbidity; it had no evidence that the high turbidity persists throughout the year. It advised that evaluation of practicalities (including safety) of maintenance operations at other times of the year should be undertaken.

4.5.41 The MMO [REP7-136] confirmed it would comment on the Applicant's AFD Report at Deadline 8 (after publication of this RIES).

[48] Environment Agency (2010). Cooling water options for the new generation of nuclear power stations in the UK. Science Report SC070015/SR3 for the Environment Agency, Bristol, UK. [Authors: Turnpenny, A.W.H., Coughlan, J., Ng, B., Crews, P., Bamber, R.N., Rowles, P.]

[49] The ExA understands that this comment was made with regards to EIA matters. The MMO deferred to NE regarding the overall conclusions of the HRA [REP2-082].

Monitoring

4.5.42 Schedule 20 (DML), Part 3, Paragraph 50 provided for a monitoring plan to assess the efficacy of the intake head and the fish recovery and return system and for any necessary adaptive measures. However, the EA [REP2-135][REP2-068][REP3-067][REP6-035][REP7-126] queried what monitoring and adaptive measures could be undertaken and what would be done if the monitoring did show adverse effects. The MMO [REP2-140][REP3-070a] also advised that further discussions were required to ensure that this condition contains appropriate detail.

4.5.43 EIFCA [REP5-147] supported the need for ongoing monitoring of fish impingement and entrainment, along with provision for future compensatory measures should monitoring indicate that actual impacts exceed the predicted impacts.

4.5.44 NE [REP5-159] advised that the monitoring should verify entrapment estimates and levels of predicted impact; and quantify the performance of fish mitigation measures, specifically in respect of fish as prey species. It considered that key monitoring principles, commitment to collaborative design of the monitoring programme with key fish expert agencies and specific targets should be secured.

4.5.45 The wording of the condition was revised in DCO Revisions 3 [AS-144], 4 [REP2-013] and 5 [REP5-030]. Nevertheless, the MMO [REP7-136] advised that further changes to the wording were required to secure appropriate fish monitoring and mitigation.

4.5.46 The Applicant submitted a draft Fish Impingement and Entrainment Monitoring Plan at Deadline 7 [REP7-077]. This plan was listed as a certified document in Schedule 22 of Version 8 of the DCO [REP7-006] and the condition revised to confirm that monitoring must be in general accordance with the draft plan. IPs were unable to comment on the plan before the publication of this RIES.

Water quality impacts

4.5.47 As noted in Section 3 of this RIES, the ExA has screened in LSE to sea and river lamprey from water quality impacts.

4.5.48 NE [RR-0878][REP2-071] highlighted that the thermal plume could form a barrier to migration of some fish species, stating that the plume may be above the 2/3°C threshold uplift criteria for SACs (NE Issue 31). It also identified the potential for impacts from chemical discharges. As noted in paragraph 4.3.136, NE confirmed that the impacts from the intake and outfalls would be assessed as part of the WDA operational permit, as issued by the EA, but NE had yet to be consulted on the permit and associated HRA at the time of writing.

4.5.49 The Applicant [REP2-071] explained that the extent of the Sizewell C thermal plume alone does not intersect with the SAC and is located over 12 km to the north of the SAC. The thermal plume is only predicted to intersect the mouth of the Alde-Ore Estuary SAC and only at increased temperatures in the 0°C to 1°C range as 98th percentiles (Sizewell B and Sizewell C combined).

4.5.50 The Applicant did not comment on the potential impacts of the chemical plume on the sea and river lamprey features of the Humber Estuary SAC.

4.6 The Integrity Test - conclusion

Introduction

4.6.1 The Applicant concluded that an AEoI (resulting from noise and visual disturbance during construction) from the project alone could not be excluded for the breeding marsh harrier qualifying features of the Minsmere-Walberswick SPA and Ramsar site. The Applicant has concluded no AEoI either alone or in combination with other plans and projects for all other sites and qualifying features.

4.6.2 Although the EA and MMO have submitted numerous representations in relation to the matters detailed in Section 4 of this RIES, both parties confirmed at Deadline 7 that they defer to NE to advise on the conclusions of AEoI (EA [REP7-131] and MMO [REP7-136]).

Sites for which it is agreed an AEoI <u>cannot</u> be excluded

4.6.3 The Applicant's conclusion of AEoI for the breeding marsh harrier qualifying features of the Minsmere-Walberswick SPA and Ramsar site was not disputed by any IPs during the course of the Examination. NE confirmed in its RR [RR-0878] that "*The criteria for derogating from the Habitats Regulations are fulfilled with respect to marsh harrier, with regards to Minsmere-Walberswick SPA and Ramsar site*".

4.6.4 The Applicant provided a case for Alternative Solutions, IROPI and Compensatory Measures, as described in Sections 5 to 7 of this RIES.

Sites for which it is agreed an AEoI <u>can</u> be excluded

4.6.5 The ExA understands that of the matters discussed in Section 4 of this RIES, NE agrees that an AEoI can be excluded for:

- Orfordness to Shingle Street SAC, Alde-Ore Estuary SPA, Minsmere-Walberswick SPA and Sandlings SPA – changes in air quality;
- Alde, Ore and Butley Estuaries SAC, Alde-Ore Estuary SPA, Alde-Ore Estuaries Ramsar, Benacre to Easton Bavents Lagoons SAC, Benacre to Easton Bavents SPA and Orfordness to Shingle Street SAC - changes to coastal processes/sediment transport;
- Alde, Ore and Butley Estuaries SAC, Alde-Ore Estuary SPA, Alde-Ore Estuaries Ramsar, Minsmere to Walberswick Heaths and Marshes SAC, Minsmere-Walberswick SPA, Minsmere-Walberswick Ramsar, Stour and Orwell Estuaries SPA, Stour and Orwell Estuaries Ramsar - changes to water quality (terrestrial);
- Alde, Ore and Butley Estuaries SAC, Alde-Ore Estuary SPA, Alde-Ore Estuaries Ramsar, Dew's Pond SAC, Minsmere to Walberswick Heaths and Marshes SAC, Minsmere-Walberswick SPA, Minsmere-Walberswick Ramsar, Stour and Orwell Estuaries SPA, Stour and

Orwell Estuaries Ramsar - changes to local hydrology and hydrogeology;

- All European sites – risk of spreading INNS;
- Humber Estuary SAC and The Wash and North Norfolk Coast SAC – noise, light and visual disturbance; and
- Minsmere-Walberswick SPA and Ramsar and Minsmere to Walberswick Heaths and Marshes SAC – impediment to management practices.

4.6.6 The RSPB/SWT has not explicitly confirmed that it agrees an AEoI can be excluded for any sites and qualifying features.

Sites which remain in dispute

4.6.7 NE was unable to provide a response to the ExA's Action Point 5b from ISH10 [EV-188], which requested a list of sites and features for which it still could not conclude no AEoI prior to the issue of this RIES. However, it is understood that the conclusion of no AEoI remains in dispute for the following sites (see Annex 2 for qualifying features and potential effects that are understood to remain in dispute):

- Alde-Ore and Butley Estuaries SAC;
- Alde-Ore Estuary Ramsar;
- Alde-Ore Estuary SPA;
- Benacre to Easton Bavents Lagoons SAC;
- Benacre to Easton Bavents SPA;
- Humber Estuary SAC;
- Minsmere to Walberswick Heaths and Marshes SAC;
- Minsmere-Walberswick Ramsar;
- Minsmere-Walberswick SPA;
- Outer Thames Estuary SPA;
- Sandlings SPA;
- Southern North Sea SAC;
- Staverton Park and the Thicks, Wantisden SAC; and,
- The Wash and North Norfolk Coast SAC.

4.6.8 The RSPB/SWT has confirmed at Deadline 7 [REP7-152] that it does not agree that potential AEoI can be excluded for the following sites and species from the Proposed Development alone:

- Breeding gadwall, shoveler, teal, marsh harrier, nightjar, avocet, bittern and little tern and non-breeding white-fronted goose, gadwall and shoveler of the Minsmere-Walberswick SPA;

- Non-breeding red-throated divers and breeding common and little terns of the Outer Thames Estuary SPA;
- Breeding Sandwich terns of the Alde-Ore Estuary SPA;
- Breeding woodlark and nightjar of the Sandlings SPA;
- Perennial vegetation of stony banks, Annual vegetation of drift lines and European dry heaths of the Minsmere-Walberswick Heaths & Marshes SAC; and
- The Minsmere-Walberswick Ramsar site - specifically criterion 1 - mosaic of marine, freshwater, marshland and associated habitats, complete with transition areas in between, criterion 2 nine nationally scarce plants and at least 26 red data book invertebrates, and the important assemblage of rare breeding birds associated with marshland and reedbeds.

4.6.9 For the sites and features that remain disputed, the Applicant has concluded no AEoI either alone or in combination with other plans or projects. The disputed conclusions of no AEoI appear to relate to the project alone. NE stated in their WR [REP2-153] that "*We welcome the Applicant's continued engagement on the issue*[NE Issue 9: in combination and cumulative effects]*. However, we would require all issues relating to European protected sites be resolved before we can agree to an absence of in-combination effects.*" It is unclear whether dispute remains with regards to the potential for AEoI arising from the Proposed Development in combination with other plans or projects.

5 ALTERNATIVE SOLUTIONS

5.0 Applicant's assessment in Shadow HRA Report

5.0.1 The Applicant's assessment of alternative solutions to deliver the objectives of the Proposed Development is set out in Volume 2 of the Shadow HRA Report [APP-150] ('the Applicant's Assessment of AS').

5.0.2 The need case for the Proposed Development is set out in Section 3 of [APP-150] and in [APP-151]. This focuses on the continuing growth in electricity demand for the UK, which the Applicant explains that together with the retirement of existing electricity capacity by 2035, will lead to a generation shortfall of 95GW by 2035. The Applicant states in [APP-150] and [APP-151] that the urgent need for new nuclear power stations in the energy mix is firmly established in the National Policy Statements (NPS) EN-1 and EN-6[50].

5.0.3 The Applicant identified a long list of potential alternative solutions in Section 5 of [APP-150]. This was reduced to a short list of potential alternative solutions, which are assessed in Section 6 of [APP-150] in terms of feasibility. The Applicant considered a 'do nothing' scenario (where the power station is not constructed) as part of the long list but discounted this option on the basis that it would be contrary to national policy and would not meet the Sizewell C Project need or objectives.

5.0.4 The short list included:

- Alternative Phase 1 activities: site establishment and preparation for earthworks (Years 1-2);
- Alternative Phase 2 activities: MDS earthworks and completion of temporary infrastructure (Years 1–4); and
- Alternative Phase 3 activities: main civils (Years 3-9); and
- Alternative Phase 4 activities: mechanical and electrical installation (Years 4-11).

5.0.5 No feasible alternative solutions were identified by the Applicant for Phase 5.

5.0.6 Paragraph 8.1.2 of [APP-150] concludes the Applicant's position that none of the feasible alternative solutions would result in a lesser effect on the Minsmere-Walberswick SPA and Ramsar site to that predicted to occur as a result of the Proposed Development.

[50] In ExQ3 [PD-044, G3.0], the ExA noted that the draft Overarching National Policy Statement for Energy (EN-1) was published on 6 September 2021. In addition, the associated 'Planning for New Energy Infrastructure Draft National Policy Statements for energy infrastructure' consultation document was published which includes comments in relation to EN-6. The ExA asked the Applicant to provide an update in the light of these recent publications setting out any perceived implications for the application of policy to the Sizewell C Project and the need for new electricity generating infrastructure of the type of proposed.

5.0.7 Although alternatives to the Proposed Development have been discussed in a wider sense during the Examination by some IPs, no representations have been made by NE querying or disputing the Applicant's consideration of alternative solutions in the HRA Report or its conclusions in that regard.

5.0.8 The discussions and representations made during the Examination in respect of marsh harrier of the Minsmere-Walberswick SPA and Ramsar site were largely around the adequacy, delivery and efficacy of compensatory measures and these points are considered in Section 7 of this RIES.

5.1 Summary

5.1.1 The Applicant concluded that an AEoI (resulting from noise and visual disturbance during construction) from the project alone could not be excluded for the breeding marsh harrier qualifying features of the Minsmere-Walberswick SPA and Ramsar site [APP-145]. The Applicant therefore provided a case for Alternative Solutions in respect of the marsh harrier qualifying features of the Minsmere-Walberswick SPA and Ramsar site [APP-150], as reported in this Section of the RIES.

5.1.2 At the time of writing this RIES, the Applicant's conclusion of no AEoI for a number of other sites, qualifying features and effects remains disputed by NE (as set out in Section 4 and Annex 2 of this RIES). If agreement is not reached that AEoI for other European sites, qualifying features and effects can be excluded, the Applicant may wish to update its assessment of alternative solutions before the close of Examination.

6 IMPERATIVE REASONS FOR OVERRIDING PUBLIC INTEREST (IROPI)

6.0 Applicant's IROPI case in Shadow HRA Report

6.0.1 The Applicant sets out information to support (if required) the SoS making a case for IROPI in Volume 3 of the Shadow HRA Report [APP-151] ('the Applicant's IROPI case').

6.0.2 The Applicant states that its assessment of IROPI has been undertaken in accordance with the guidance set out in Section 4.2 of [APP-151]. During the pre-Examination period, in February 2021, Defra published new guidance on Habitats Regulation Assessment and protecting European sites, derogation notices and the duty to protect, conserve and restore European sites[1].

6.0.3 The Applicant's IROPI case [APP-151] draws from and relies upon the assessment undertaken by the Government to demonstrate the IROPI for the designation of the nuclear NPS (EN-6)[50], including identification of Sizewell C as a potentially suitable site for new nuclear generation. The Applicant's IROPI case [APP-151] focuses on the following points, with reference to supporting evidence:

- **Imperative -** the importance and urgency of the need for new nuclear power generation, including:
  - the continuing growth in electricity demand for the UK, the retirement of existing electricity capacity and a generation shortfall of 95GW by 2035;
  - the required scale of nuclear new build;
  - the UK's commitments to reducing greenhouse gas emissions to net zero by 2050;
  - the continuity and reliability of supply delivered by nuclear energy as part of a diverse energy mix;
  - the urgent need for new nuclear power stations in the energy mix having been firmly established in NPS EN-1 and EN-6 and committed to by the Government, who are proposing to carry forward the sites listed in EN-6 (that are not yet developed) into the new NPS;
  - the urgent need for new nuclear power in the UK, including at Sizewell; and
  - the national importance of these matters.

- **Overriding** - that the national, regional and local interests served by the Proposed Development outweigh the harm (or risk of harm) to the integrity of the Minsmere-Walberswick SPA and Ramsar site identified in the Shadow HRA Report [APP-145].

6.0.4 The Applicant concludes at paragraph 9.1.5 [APP-151] that there are IROPI in favour of allowing the Proposed Development to proceed, "*…despite the precautionary assessment of potential harm to the Minsmere - Walberswick SPA and Ramsar site*".

6.0.5 NE stated in its RR [RR-0878] that it agrees "The criteria for derogating from the Habitats Regulations are fulfilled with respect to marsh harrier, with regards to Minsmere-Walberswick SPA and Ramsar site". Otherwise, NE has not made representations or raised concerns directly around the IROPI case made by the Applicant in the Shadow HRA Report.

6.1 Summary

6.1.1 The Applicant concluded that an AEoI (resulting from noise and visual disturbance during construction) from the project alone could not be excluded for the breeding marsh harrier qualifying features of the Minsmere-Walberswick SPA and Ramsar site [APP-145]. The Applicant therefore provided a case for IROPI in respect of the marsh harrier qualifying features of the Minsmere-Walberswick SPA and Ramsar site [APP-151], as reported in this Section of the RIES.

6.1.2 At the time of writing this RIES, the Applicant's conclusion of no AEoI for a number of other sites, qualifying features and effects remains disputed by NE and other IPs (as set out in Section 4 and Annex 2 of this RIES). If agreement is not reached that AEoI for other European sites, qualifying features and effects can be excluded, the Applicant may wish to update its IROPI case before the close of Examination.

7 COMPENSATORY MEASURES

7.0.1 As detailed in Section 4 of this RIES, the Applicant's HRA Report [APP-145] concluded that an AEoI (resulting from noise and visual disturbance during construction) from the project alone could not be excluded for the breeding marsh harrier qualifying features of the Minsmere-Walberswick SPA and Ramsar site.

7.0.2 Volume 4 of the Shadow HRA Report [APP-152] ('the Applicant's CM report') presented an overview of the compensation package proposed by the Applicant to offset the potential adverse effect on the integrity of the breeding marsh harrier population of the Minsmere-Walberswick SPA and Ramsar site, as a result of noise and visual disturbance from construction activities. This new area of habitat would be created to offset marsh harrier displacement, rather than direct habitat loss.

7.0.3 The details of the compensation package have been discussed and developed during the Examination, as summarised below.

7.1 Applicant's proposed compensatory habitat area

Proposed marsh harrier compensatory habitat area as described in Shadow HRA Report [APP-152]

7.1.1 The Applicant's CM report [APP-152] describes a proposed permanent marsh harrier compensatory habitat area (hereafter 'the MHCHA'), 48.7ha in size, on land located immediately adjacent to the northern part of the Minsmere South Levels. This is illustrated on Appendix A of [APP-152] and Figure 8.10 of [APP-148]. The Applicant states in [APP-152] that this area is located entirely within the EDF Energy estate *"…and is, therefore, already legally secured by EDF Energy"*.

7.1.2 The proposed MHCHA is aimed specifically at increasing the foraging resource available to marsh harrier during construction, via habitat management of the arable land, to increase both the abundance and availability of a range of potential prey species (birds and small mammals). The Applicant's documentation cites evidence from studies which found that birds and small mammals make up the majority of marsh harrier prey items [APP-259].

7.1.3 The Applicant's CM report [APP-152] explains that the design of the MHCHA was informed by a feasibility and design report (provided within Volume 2, Appendix 14C5 of the ES [APP-259] ('the Wood Report')). The Wood Report identified Option 2 (and two sub-options, 2a and 2b) as the preferred option. It includes the following habitat components:

- Tussocky grassland to be managed to provide a mosaic of tall and short vegetation;
- Existing and reinforced hedges;
- Hedge/ scrub belts;

- Earth banks provided alongside scrub belts, sown with tussocky grass mix; and
- Scrub foci (small patches of gorse/ broom around wood/ brash piles).

7.1.4 The habitat components of the Applicant's preferred option(s) for the MHCHA, based on the Wood Report [APP-259] are set out in Table 1.1 of [APP-152].

7.1.5 Subsequent to the Wood Report [APP-259], the Applicant developed the proposals to include a temporary water storage area in the north-eastern part of the MHCHA. This would incorporate wetland habitat margins and wetland habitats extending to the south, along the edge of The Grove (comprising 0.7ha of wet woodland and 1.2ha of reedbed habitat). Tree/hedgerow planting would also be undertaken around the perimeter of the field.

7.1.6 In Section 3 of [APP-152], the Applicant describes its assessment of the suitability of the proposed MHCHA and explains how its extent has been calculated and its location has been established. The Applicant explains the reasoning behind its predictions that the MHCHA would increase the abundance and availability of potential prey species for foraging marsh harrier, with reference to the Wood Report [APP-259]. The Wood Report [APP-259] cites research from Schlaich *et al* (2015)[51], explaining that Schlaich designed and used a similar approach for increasing prey abundance and availability for Montagu's Harriers.

7.1.7 The MHCHA would require ongoing management to maximise its potential as a foraging area for marsh harrier. The Applicant would implement a programme of monitoring to assess the effectiveness of the compensation measures (prey abundance and use of the area by foraging marsh harrier) prior to the start of construction. In terms of funding and implementation, habitat management and monitoring would be the responsibility of the Applicant [APP-152].

7.1.8 The Applicant concluded in [APP-152] that the proposed compensatory measures as set out in that document (the MHCHA) would meet the requirements of NPS EN-6[52] (Table 1.3 of [APP-152] refers).

Shadow HRA Addendum [AS-173]

7.1.9 Change No.5 to the application involved relocating the proposed water storage area from the north-eastern part of the MDS (within the compensatory habitat area) to a location adjacent to a proposed attenuation pond (see Figure 2.2.13 in [AS-190]). The original proposed location for the water storage area would be utilised for fluvial flood mitigation and to create new wetland habitats. These wetland habitats would link up with the proposed permanent wetland habitat corridor

[51] Schlaich, A.E., Klaassen, R.H.G., Bouten, W., Both, C. and Koks, B.J. (2015). Testing a novel agri-environment scheme based on the ecology of the target species, Montagu's Harrier Circus pygargus. IBIS, 157 (4): 713-721.
[52] Department of Energy and Climate Change (2011) NPS EN-6, Volume II of II - Annexes

immediately to the south to create a single integrated wetland feature, as illustrated on Figure 2.2.14 of [AS-190].

7.1.10 The Shadow HRA Addendum [AS-173] included consideration of whether Change No.5 would have any implications for the assessment of disturbance effects on species of the Minsmere-Walberswick SPA and Ramsar site (including marsh harrier). The Shadow HRA Addendum [AS-173] concludes that the change in the location of the water storage area and its replacement with new wetland habitats and flood mitigation land would not affect the conclusions of the Shadow HRA Report in relation to the Minsmere-Walberswick SPA and Ramsar site.

Examination of proposed compensatory habitat area

7.1.11 In its RR, NE stated [RR-0878, issue 27] that additional information was required regarding the detailed design of the marsh harrier compensation area. This position was reiterated in NE's WR [REP2-153, issue 27] and the Deadline 2 SoCG with the Applicant [REP2-071, issue 27]. NE confirmed that the optimal habitat for foraging marsh harrier is wetland.

7.1.12 The RSPB/SWT [REP2-506] provided detailed comments on the proposed compensatory habitat area for marsh harrier, outlining what they considered to be constraints on the functionality of the compensation area. The RSPB/SWT did not agree that the Applicant's proposed compensation package was acceptable, or that it met the requirements of NPS EN-6[52] and the additional criteria contained in the EC's 2018 Managing Natura 2000 guidance[53].

7.1.13 The Deadline 2 SoCG between the Applicant and the RSPB/SWT [REP2-088] set out the position of the parties on this matter at ref. NV1, marking this matter as 'Not Agreed'. It recorded that the RSBP & SWT *"…remain concerned that areas of foraging provided will be inadequate to compensate for the overall loss. We believe the extent of dry habitat provided will not adequately compensate for the significantly larger loss of valuable wetland"* [REP2-088]. The Applicant's position was that there was a high level of confidence that the habitat improvement measures proposed would be sufficient to compensate for the predicted potential 'loss' of the marsh harrier foraging resource due to disturbance, as set out in [REP2-088, NV1].

7.1.14 The SoCG also recorded the RSPB/SWT's concerns regarding the calculations of compensatory habitat required (including how this had been calculated in the Wood Report) and the location of the compensatory habitat area adjacent to the main construction area [REP2-088, NV1]. The RSPB/SWT also considered that the uplift in prey provisioning from the compensatory habitat area compared to the baseline had been overestimated. The Applicant [REP2-088, NV1] wished to understand the RSPB/SWT's concerns in this regard in more detail before commenting further.

[53] European Commission (2018) Commission notice "Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC". Available from: https://ec.europa.eu/environment/nature/natura2000/management/docs/art6/Provisions_Art_6_nov_2018_en.pdf

7.1.15 The RSPB/SWT noted [REP2-088, NV1] that a forthcoming update to the Wood Report would incorporate the new wetland habitats proposed (Change No.5) and that it would update its position following this. However, the RSPB/SWT was concerned that these wetland habitats would *"…not be established before construction commences and hence could represent a loss to the compensation area".*

7.1.16 The Applicant confirmed that the new wetland habitats proposed as part of the compensation area would be created in the first winter of the construction phase to avoid disturbance to breeding marsh harriers and would subsequently be combined with the rest of the area under conservation management [REP2-088, NV1]. This position is discussed further below.

7.1.17 The Applicant provided a Wet Woodland Strategy - revision 1 [REP1-020], which included (amongst other wet woodland areas) delivery of 0.7ha of wet woodland in the new wetland corridor within the MHCHA. Requirement 14B of the dDCO [REP7-006] secures the development and implementation of a Wet Woodland Plan in general accordance with the Wet Woodland Strategy. The Wet Woodland Strategy is a certified document in Schedule 22 of the dDCO [REP7-006]. The Applicant has stated [REP7-051, Bio.2.17] that it will submit a draft Wet Woodland Plan at Deadline 8.

7.1.18 The Applicant also confirmed [REP2-088, NV1] that it would issue an update to the Wood Report [APP-259]. At Deadline 2, the Applicant submitted a Marsh Harrier Habitat Report (Marsh Harrier Compensation Area Design Update to Include Wetland) - revision 1 [REP2-119]. This provided an updated design report for the MHCHA, to take account of Change No. 5 (with Table 3.2 updating the habitat components of Options 2a and 2b set out in the Wood Report [APP-259] to include the new wetland habitats) and other design amendments.

7.1.19 In ExQ1 [PD-018], the ExA posed a number of questions of relevance to the proposed MHCHA. The Applicant's responses to ExQ1 are provided in [REP2-100] with reference to accompanying figures and appendices [REP2-101 to REP2-114]. The Applicant provided a detailed response to Bio.1.48 in Appendix 7F of its responses to ExQ1 [REP2-110]. This included confirmation from the Applicant that the marsh harrier population of Minsmere-Walberswick SPA was in favourable condition and held 17 breeding pairs in 2018. The Applicant also explained why in its view, the Shadow HRA Report was *"highly precautionary"* in assessing the extent of the marsh harrier foraging resource that could be lost during construction [Appendix 7F, REP2-110].

7.1.20 The Applicant has confirmed that the permanent foraging habitat within the proposed MHCHA was taken out of agricultural production approximately 4 years ago and some habitat management – for the purposes of creating compensatory foraging habitats for marsh harriers – has been implemented in the intervening period and is ongoing. Further habitat enhancement, including scrub and hedgerow planting was undertaken in early 2020, and further enhancement and management is proposed [REP2-100 and Appendix 7F, REP2-110]. The Applicant lists the measures undertaken in the MHCHA to date in its response to HRA.1.7

[REP2-100], confirming that it considered a DCO would need to be in place before establishment of the proposed wetland habitats (open water, wet woodland, reedbed and open water channel) could commence.

7.1.21 [REP2-119] states that the habitat management measures in the MHCHA would be required for a limited duration (10-12 years) to cover the construction period and do not need to be permanent. Notwithstanding this, the Applicant has confirmed that following construction, the habitats within the MHCHA will be retained and managed for wildlife as part of the estate-wide habitat proposals set out in the 'Estate Wide Management Plan' and will form a wider area of habitat of value to foraging marsh harriers in the operational phase of the development [REP7-051, Bio.2.16]. An Estate Wide Management Plan for the EDF Energy Estate was submitted at Deadline 7 [REP7-076] and is secured under dDCO Requirement 5C [REP7-006])

7.1.22 The Applicant stated [Appendix 7F, REP2-110] that the new wetland habitat creation (Change No.5) would augment the previously proposed management that was focussed solely on enhancing prey abundance and availability on 'dry' habitats – noting that the high suitability of wetland habitats for foraging marsh harriers was a point recognised throughout the discussions on the design of the MHCHA and was acknowledged by NE in its RR. The Applicant confirmed that the new wetland habitat creation would mean 10% of the 48.7ha MHCHA would be wetland habitat [REP2-100].

7.1.23 As set out in [REP2-119], the wetland component of the MHCHA would comprise:

- wet woodland (0.7ha);
- wet reedbed (2.85ha); and
- open water (0.75ha).

7.1.24 NE [REP2-152, Bio.1.49] reiterated the comments from its RR [RR-0878, issue 27] - that additional information was required regarding the detailed design of the marsh harrier compensation area for NE to review, in order to progress this issue. This position was supported by the RSPB/SWT [REP3-074].

7.1.25 In response to Bio.1.108 of ExQ1, the Applicant confirmed it considered that the proposed 48.7ha area of permanent foraging habitat within the EDF Energy estate (the MHCHA) was sufficient to compensate for the potential loss of foraging resource to marsh harrier of the Minsmere-Walberswick SPA and Ramsar site.

7.1.26 The Applicant stated [REP2-100, Bio.1.108] that additional marsh harrier foraging habitat on land at Westleton (as referenced in Chapter 14 of the ES [AS-033]) *"… would only form part of the habitat compensation proposals and only in the shadow HRA context, if the Secretary of State determines that additional habitat is required to compensate for the potential habitat loss".* If the SoS agrees with the Applicant that the permanent marsh harrier foraging habitat within the EDF Energy estate

(the MHCHA) is sufficient compensation, the Applicant would expect the SoS to omit Work No. 8 (Marsh Harrier Habitat, Westleton) from the DCO and not to include powers for the compulsory acquisition of that land.

7.1.27 The Applicant's position regarding land at Westleton (as set out above and in [REP2-100, Bio.1.108]) was also set out in Appendix 7F of [REP2-100].

7.1.28 NE stated [REP2-152, Bio.1.108]: "As we understand it the habitat at Westleton has been secured as a contingency should the proposed habitat compensation area adjacent to the MDS be deemed insufficient. As we are yet to see detailed plans for either of these areas, we are unable to comment further at this time".

7.1.29 In response to Bio.1.110 of ExQ1, the Applicant [REP2-100] noted that the MHCHA would be further enhanced by the inclusion of the new wetland habitat, as described further in the Applicant's response to Bio 1.107 of ExQ1 and in Appendix 7F of [REP2-100]. NE [REP2-152, Bio.1.110] reiterated that it had yet to see detailed plans for the revised marsh harrier compensation area (to include the wetland component).

7.1.30 At Deadline 3, the RSPB/SWT [REP3-074] acknowledged that, in the longer term, the wetland habitats proposed as part of the MHCHA are likely to be beneficial to marsh harriers and wider biodiversity. However, due to the timing constraints around establishment of these habitats, the RSPB/SWT considered *"…that the compensation proposed may not be adequate, particularly during the early stages of construction"* [REP3-074]. The timing of the wetland habitat creation is discussed further from paragraph 7.1.43 of this RIES onwards.

7.1.31 The RSPB/SWT stated [REP3-074]: "We agree [with NE] that further information is required regarding the design of the marsh harrier compensation area, particularly regarding the management of the site to achieve sufficient levels of prey availability. We have additional concerns about the adequacy of this area which are set out in full in our Written Representations submitted at Deadline 2".

7.1.32 The Deadline 3 position of RSPB/SWT [REP3-074 and REP3-075] remained that wetland habitat would represent the most beneficial habitat for foraging marsh harriers with a greater certainty of success as compensation, but based on current timelines, the replacement of any of the currently proposed dry habitat compensation with wet habitats would not be desirable unless it can be made functional by the time construction commences.

7.1.33 Given that the Applicant does not consider the additional marsh harrier foraging habitat on land at Westleton would be required, it had not originally prepared a detailed habitat proposal plan for this area. However, to assist the ExA the Applicant prepared a habitat plan for this location (entitled "Marsh Harrier Compensatory Habitat Report") and submitted this at Deadline 3 [REP3-053]. It detailed the proposed approach to marsh harrier habitat provision on this additional land, described as approximately 54ha in extent, should the SoS consider that additional compensatory habitat is required. This would focus on habitats which would establish quickly and support high numbers of small

mammals and birds. The location of the marsh harrier compensatory habitat at Westleton is shown on Figure 1.1 of [REP3-053].

7.1.34 In [REP3-042], the Applicant responded to comments in the WRs of NE [REP2-153] and the RSPB/SWT [REP2-506] regarding the proposed compensatory measures for marsh harrier. The Applicant referred to the Marsh Harrier Habitat Report provided at Deadline 2 [REP2-119] for details of the MHCHA including the new wetland habitats. The Applicant has also emphasised (with reference to supporting evidence in Figures 6.3 to 6.5, Plate 8.11 and Table 8.12 of [APP-145]) the proximity of the MHCHA to the Minsmere nesting area and to the north-central parts of the Minsmere South Levels, as a key factor which in its view, would increase the likely usage by foraging marsh harriers [REP7-051, Bio.2.16].

7.1.35 Details of the proposed marsh harrier compensation were discussed at ISH7 [EV-129 to EV-132; EV-137 to EV-138a]. This included comments raised by the Heveningham Hall Estate [REP2-287] and [REP5-279], who considered that the Applicant had not yet provided sufficient information to evidence that the proposed compensatory measures for marsh harriers would work. The Applicant subsequently provided a response to these comments in Appendix B of [REP6-002], as discussed later in this section of the RIES.

7.1.36 In its written summary of oral representations made at ISH7, NE confirmed [REP5-160] that it had recently received detailed plans for both the marsh harrier compensation area at Abbey Farm (ie the MHCHA) including the wetland habitat component and for Westleton, and that these plans were in the process of being reviewed by its specialists.

7.1.37 NE stated [REP5-160] that it would like reassurance from the Applicant that the wetland creation element of the compensation area is feasible, given the Applicant's previous justification for not including it in its initial proposals (unsuitable ground levels, geology and ground and surface water regimes). NE advised that the wetland element of the habitat creation should be in place prior to construction (should consent be granted).

7.1.38 NE stated [REP5-160 and REP6-042] that "The offer of additional compensatory habitat at Westleton will minimise residual concerns that the displacement of marsh harriers could result in an impact. If Natural England can be provided with further information on the above two points [summarised in paragraph 7.1.37 above] and if, after review by our specialists, detailed plans are deemed satisfactory then we advise that risks through this impact pathway can be adequately compensated for, provided plans and monitoring are robustly implemented." This matter was pursued by the ExA in question HRA.2.8 of ExQ2 [PD-033], which asked the Applicant to respond to NE's points regarding the feasibility and timings of the wetland habitat areas within the MHCHA.

7.1.39 At Deadline 6, NE confirmed [REP6-042] that it had reviewed the updated MHCHA proposals including wetland habitats (as set out in the Marsh Harrier Habitat Report [REP2-119]) and the Marsh Harrier Compensatory Habitat Report for the land at Westleton [REP3-053]. NE considered

"…that the design is sufficient to compensate for habitat losses within the MDS which will be impacted by noise and visual disturbance during construction" [REP6-042].

7.1.40 NE [REP6-042] reiterated its earlier advice [REP5-160] that the wetland element of habitat creation should be in place prior to construction, noting that this would be in line with sections 24 of the Habitats Directive: guidance on the application of article 6 (4), Alternative solutions, imperative reasons of overriding public interest (IROPI) and compensatory measures (DEFRA, 2012) which states *"Compensation must be secured before damage occurs. This includes ensuring all legal, technical and financial arrangements are in place. Compensation measures should normally be delivered before the adverse effect on the European site occurs, as this reduces the chance of harming the network of sites and also ensures there is no loss during the period before the compensatory measures are implemented."*

7.1.41 In response to question HRA.2.8 of ExQ2 [PD-033], the Applicant explained [REP7-051] that it had previously considered that creation of new wetlands in the north of the EDF Energy estate was unlikely to be possible due to the topography of this area. However, this was considered further in light of discussions with NE and the Applicant concluded that by excavating material to intercept near surface groundwater levels, it would be possible to provide flood compensation and a wetland in this area. The Applicant also explained these points at ISH10 [REP7-069].

7.1.42 The Applicant further explained [REP7-073] that the creation of a larger area of optimal wetland habitat in the MHCHA on the EDF Energy Estate is not considered feasible, with the remaining land (an elevated 'sandy ridge') being unsuitable for this purpose.

Timing

7.1.43 In its written summary of oral representations made at ISH7, the RSPB/SWT [REP5-164] stated that although it welcomed the principle of the provision of wetland habitats (open water and reedbed) within the compensatory habitats at Lower Abbey Farm (ie the MHCHA), it was concerned about the timing of their creation. The RSPB/SWT recommended that construction of the wetland habitats should be brought forward so that these habitats are functional by the time construction starts. The RSPB/SWT reiterated these points at Deadline 7 [REP7-154] as well as at ISH10, stating that it did not think the newly constructed wetland habitats would support sufficient prey to provide any function for the first year or two [REP7-153]. NE has also advised [REP5-160 and REP6-042] that the wetland element of the habitat creation should be in place prior to construction, as reported in paragraphs 7.1.37 and 7.1.40 above.

7.1.44 The Applicant provided a response to these points at Deadline 6 in [REP6-002], acknowledging that whilst the proposed reedbeds would not be fully established in the first summer of construction, the wetland is expected to be a shallow open water body at this stage, with some limited marginal vegetation and *"…would provide valuable marsh harrier foraging habitat during this period".* The Applicant expects that by the second summer,

the reedbeds would be well established and noted that with the exception of the wetland, the compensation habitat will have been developing for approximately seven years by the time construction starts [REP6-002].

7.1.45 The Applicant [REP7-051, HRA.2.8] reiterated its earlier position [REP2-088, NV1] [REP6-002] that the new wetland habitats proposed as part of the MHCHA would be created in the first winter of the construction phase following the grant of any DCO (currently estimated to be winter 2022-2023). The Applicant has confirmed this is an "*absolute commitment*" [REP7-073]. Question HRA.3.2 of ExQ3 [PD-045] asked the Applicant to confirm how this specific commitment is secured in the dDCO (or other legal mechanism), with responses due at Deadline 8 (24 September 2021).

7.1.46 The Applicant has confirmed [REP7-051, HRA.2.8] that the works would not be undertaken in February-October to avoid impacts on breeding birds (including marsh harriers) and that this would be secured in a future update to the CoCP. As such, the Applicant stated that there would be no point during the important summer period during which the MCHMA would be unavailable to marsh harriers, as no construction of the wetlands will be undertaken in this period.

7.1.47 The Applicant's commitment that the works would not be undertaken in February-October was not included in revision 5 of the CoCP submitted at Deadline 7 [REP7-038]. Question HRA.3.1 of ExQ3 [PD-045] asked the Applicant to update the CoCP to address this matter, or otherwise explain how this commitment is secured in the dDCO, with responses due at Deadline 8 (24 September 2021).

7.1.48 The Applicant [REP7-051, HRA.2.8] confirmed that in the first summer of construction (assumed to be summer 2023), the MHCHA will comprise the dry habitat components, with a shallow open water body. The Applicant expects it is likely to take until the second summer following construction of the wetland for the reedbeds to become fully established and reach optimal condition, but again emphasised [as per REP6-002] that the open water habitats and their margins would provide valuable habitats for foraging marsh harrier.

7.1.49 At ISH7, the Applicant provided a summary of the MHCHA on the EDF Energy estate (including the new wetland habitats) and of the *"contingency site"* at Westleton, reiterating that the additional compensatory habitat at Westleton can be provided if the SoS considers it necessary [REP5-112]. The Applicant highlighted the adaptable nature of foraging marsh harrier, confirmed it was confident that marsh harriers will use the MHCHA and that given their extent and proximity to the Minsmere reedbeds, that the on-site habitats are sufficient [REP5-112].

7.1.50 The Applicant confirmed at ISH7 [REP5-112] that it would provide a response to the written representation of the RSPB/SWT [REP2-506] which would deal with issues such as the levels of precaution in its assessment, the metric used in the calculation of the area and other matters (subsequently provided in Appendix M of [REP5-120]).

7.1.51 At Deadline 5, the RSPB/SWT [REP5-165] expressed concerns about the likely effectiveness of dry habitats on the land at Westleton as foraging

habitat for marsh harrier, given that the proposals were *"more limited in scope"* than those at the MHCHA at Lower Abbey Farm (the MHCHA). Whilst the RSPB/SWT was still of the view that additional compensation for foraging marsh harriers is required due to the concerns about the extent and effectiveness of the habitats at Lower Abbey Farm, it recommended that further consideration should be given to any opportunities to create optimal wetland habitat. The RSPB reiterated these points at ISH10 [REP7-153] and at Deadline 7 [REP7-154]. The Applicant confirmed at ISH10 that Westleton could not be used to create wetland habitats as it is a high sandy ridge [REP7-073].

7.1.52 The Applicant provided further commentary at Deadline 5 [REP5-128, re Bio.1.48] on how it considered the dry and wet habitats in the MHCHA would maximise prey abundance, noting that a further submission would be made at Deadline 6 in relation to the habitats being created in the MHCHA and the contingency location at Westleton, particularly in relation to prey availability. The Applicant considers that its approach to maximising prey populations relies on established methods of habitat management which are known to increase the abundance of bird and mammal prey items for marsh harrier [REP7-073].

7.1.53 At Deadline 6, the Applicant submitted a paper relating to the sufficiency of compensatory measures for marsh harrier [REP6-002, Appendix B] in response to matters raised at ISH7. This included additional information on:

- The sufficiency of the compensatory habitat, comprising comments on:
  - Range of habitat types;
  - Predicted use of compensatory habitat by marsh harrier and the importance of proximity;
  - Prey resource for marsh harrier; and
  - Timing of compensatory habitat provision.
- Monitoring proposals
- Land at Westleton, comprising:
  - Role of the land at Westleton; and
  - Selection of the land at Westleton.
- How the compensatory habitat provision meets the tests of the Habitats Regulations.

7.1.54 The Applicant submitted a 'Note on Marsh Harrier Habitat' following Deadline 6 [AS-408]. This sets out why the Applicant considered that the condition in section 122(2) of the Planning Act 2008 (required for the granting powers of compulsory acquisition of land) had been met. Additional detail on this matter is provided in Appendix 7F of [REP2-110].

7.1.55 An alternative to the Westleton land in the vicinity of Middleton (the Theberton alternative) was suggested during the Examination by the

future landowner of the Westleton land, pending completion. The Applicant stated in [AS-408] that the suitability of this land as an alternative was being investigated but noted that the land is under an Environmental Stewardship scheme which lasts until late 2023 and had previously been screened out when identifying appropriate land parcels. This alternative was discussed further at ISH10 and Compulsory Acquisition Hearing 1; the Applicant noted that this alternative had only been put forward very recently and stated in [REP7-069] that *"…at this late stage it does not see how a switch to this alternative site could be achieved without delay".*

7.1.56 The Applicant provided additional information on the selection of the Westleton site, including the alternative sites which were considered, in [REP6-002].

7.1.57 [AS-408] sets out the matters that the Applicant considers the SoS should have regard to in deciding whether habitat within the EDF Energy Estate constitutes sufficient compensation without the need for additional land at Westleton.

7.1.58 At Deadline 7, the Applicant submitted an analysis of the compensation habitat on the EDF Energy estate (the MHCHA) and at Westleton, concluding that these satisfied the requirements of NPS EN-6 and the new DEFRA guidance[1] [Appendix C of REP7-073]. This was disputed by the RSPB/SWT in its Deadline 7 submission [REP7-154].

7.1.59 The Applicant submitted a 'HRA Signposting Document' at Deadline 7 [REP7-079] which summarised its submissions (to date) relevant to the Shadow HRA Report, including those relating to compensatory habitat for marsh harrier.

Securing delivery of measures

7.1.60 The Applicant's position is that the 48.7ha of permanent foraging habitat within the EDF Energy estate (the MHCHA) constitutes sufficient and appropriate compensatory measures for marsh harrier. On that basis, the Applicant considers that the additional land at Westleton would not be required [Appendix 7F, REP2-110] and [AS-408]. It would appear that the Applicant takes the view that although the works required for the delivery of the MHCHA are not specifically itemised under Work No.1A, they would fall within the definition of 'other associated development' in connection with Work No.1 of the dDCO (Schedule 1 Part 2) [REP7-006].

7.1.61 If the SoS agrees with the Applicant that the permanent marsh harrier foraging habitat within the EDF Energy estate (the MHCHA) is sufficient compensation, the Applicant expects that the SoS would omit Work No.8 (Marsh Harrier Habitat, Westleton) from the DCO and not include powers for the compulsory acquisition of that land [AS-408].

7.1.62 However, should the SoS agree with NE, the RSPB/SWT and other IPs that the 48.7ha of permanent foraging habitat within the EDF Energy estate does not constitute sufficient and appropriate compensatory measures for marsh harrier, the Applicant considers that the inclusion of the additional land at Westleton would ensure adequate compensatory habitat provision [AS-408].

7.1.63 The Applicant states in [AS-408] that provisions are included in the draft Deed of Obligation [REP7-041] to secure the delivery of the additional compensatory habitat at Westleton, should the SoS conclude this is required. In [REP7-079] and in the Deed of Obligation [REP7-041], the Applicant states, with reference to Schedule 11 (provision 12.1) of the Deed of Obligation, that *"a bond will be put in place to provide for the cost of the completion of the marsh harrier habitat improvement works if SZC Co fails to complete the Habitats Works by reason of a Default Event".*

7.1.64 Question HRA.3.3(b) of ExQ3 [PD-045] asked the Applicant to explain whether the Local Authority is bound to the delivery of the Marsh Harrier Compensatory Habitat Report in line with Requirement 14C of the dDCO in the situation of a "*Default Event*". Responses to ExQ3 are due at Deadline 8 (24 September 2021).

7.1.65 The Marsh Harrier Compensatory Habitat Report for the Westleton land [REP3-053] and the Marsh Harrier Habitat Report [REP2-119] are both certified documents in Schedule 22 of the dDCO [REP7-006].

7.1.66 In terms of the Marsh Harrier Implementation Plan, the Applicant confirmed at ISH7 [REP5-122] that this is a post-consent requirement which had been secured by a new Requirement 14C in revision 7 of the dDCO [REP6-007].

7.1.67 At Deadline 6, the RSPB [REP6-046] commented that there are currently several reports with similar titles – the Marsh Harrier Mitigation Area Feasibility Report [APP-259] (the Wood Report), which is updated by the Marsh Harrier Habitat Report [REP2-119] and also the separate Marsh Harrier Compensatory Habitat Report for the land at Westleton [REP3-053].

7.1.68 The RSPB/SWT noted [REP6-046] that the Marsh Harrier Compensatory Habitat Report [REP3-053], which is currently the only one named in Requirement 14C of the dDCO, only refers to the Westleton potential habitat creation, not the main compensation area at Lower Abbey Farm (the MHCHA). Therefore, the RSPB/SWT considered that as currently drafted, dDCO Requirement 14C [REP6-007] was incomplete.

7.1.69 The ExA raised this matter at ISH10 [EV-188] and the Applicant was asked to confirm how the compensatory measures for marsh harrier are secured through the dDCO with reference to the various marsh harrier mitigation/habitat reports. The Applicant subsequently set out in Section 5 of its 'HRA Signposting Document' at Deadline 7 [REP7-079] where it considers the proposed compensatory measures for marsh harrier are secured.

7.1.70 The Applicant stated at ISH10 that it would amend the wording of dDCO Requirement 14C [REP7-069]. At Deadline 7, the Applicant updated Requirement 14C of the dDCO [revision 8, REP7-006] to secure submission of a marsh harrier implementation plan *"…in general accordance with* [both] *the Marsh Harrier Compensatory Habitat Report and the Marsh Harrier Habitat Report…"* to ESC for approval, in consultation with NE.

7.1.71 The RSPB/SWT stated at ISH10 that there are not any detailed habitat establishment and management plans available for either the wet or dry habitats at Lower Abbey Farm (the MHCHA) [REP7-153]. The RSPB/SWT noted that there are some details in other documents, but in terms of how the reed would be established, and how the habitats would be managed in an ongoing way, considered that there is not yet a sufficient level of detail. Without this level of detail, the RSPB/SWT stated it was not yet confident that the necessary vegetation structure would be achieved [REP7-154].

7.1.72 The Applicant has confirmed [REP7-069] that detailed management measures for the wetlands would be included in the approved plans, "*notably the LEMP*". High level management specifications for the wetland habitats are set out in the outline LEMP (oLEMP) [REP1-010]. The oLEMP is a certified document under Schedule 22 of the dDCO [REP7-006] and preparation of a LEMP in general accordance with the measures set out in the oLEMP is secured under Requirement 14 of the dDCO.

Monitoring

7.1.73 The TEMMP (revision 2 [REP5-089]) sets out the Applicant's proposed monitoring measures relevant to the MHCHA. The Applicant has confirmed [REP6-002] that the monitoring measures of relevance to marsh harrier are set out in Table 1.2[54] and Table 3.3 of the TEMMP [REP5-089]. Three strands of monitoring are proposed in the TEMMP, as summarised by the Applicant in [REP5-112 and REP6-002]:

- Survey to determine the success of establishment of foraging habitats for marsh harriers, to include vegetation establishment and botanical monitoring;
- Survey to determine the success of establishment of prey species (small mammals and birds) for marsh harriers; and
- Surveys of foraging activity levels of marsh harrier on both the existing wetland foraging habitats (Minsmere South Levels and Sizewell Marshes) and the permanent foraging area within the EDF Energy estate (the MHCHA).

7.1.74 The Applicant has explained [REP6-002] that "*further interventions*" are proposed in the TEMMP [REP5-089] that could be deployed in response to the findings of the monitoring if necessary.

7.1.75 NE has confirmed [REP6-042] that it is content with the proposed monitoring in the TEMMP [REP5-089] in relation to marsh harrier and the Marsh Harrier Compensation area.

7.1.76 Requirement 4 of the dDCO [REP7-006] states that the construction, operation and removal and reinstatement of authorised development must be carried out in accordance with the TEMMP, which is a certified document in Schedule 22 of the dDCO.

[54] The ExA assumes this was a typo in [REP6-002] and should instead refer to Table 2.1 of the TEMMP

7.1.77 The Applicant does not appear to have proposed specific monitoring measures relevant to marsh harrier on the land at Westleton, although the Marsh Harrier Compensatory Habitat Report for the Westleton land [REP3-053] confirms that *"…the status of the habitats will be monitored by the SZC Co. land management team seasonally to ensure appropriate management is undertaken".* Question HRA.3.3 of ExQ3 [PD-045] asked the Applicant to confirm whether it intends to undertake monitoring on the land at Westleton and if so, provide any further details and confirm how this is secured. Responses to ExQ3 are due at Deadline 8 (24 September 2021).

7.2 Summary

7.2.1 The Applicant concluded that an AEoI (resulting from noise and visual disturbance during construction) from the project alone could not be excluded for the breeding marsh harrier qualifying features of the Minsmere-Walberswick SPA and Ramsar site [APP-145]. The Applicant therefore proposed compensatory measures in respect of the marsh harrier qualifying features of the Minsmere-Walberswick SPA and Ramsar site [APP-152], as reported in this Section of the RIES.

7.2.2 The Applicant's position is that the proposed 48.7ha of permanent foraging habitat within the EDF Energy estate, located immediately adjacent to the northern part of the Minsmere South Levels, constitutes sufficient and appropriate compensatory measures for marsh harrier. On that basis, the Applicant considers that additional land at Westleton would not be required [Appendix 7F, REP2-110] and [AS-408].

7.2.3 However, should the SoS agree with NE, the RSPB/SWT and other IPs that the 48.7ha of permanent foraging habitat within the EDF Energy estate does not constitute sufficient and appropriate compensatory measures for marsh harrier, the Applicant considers that the inclusion of the additional land at Westleton would ensure adequate compensatory habitat provision [AS-408].

7.2.4 NE [REP5-160] has stated that the Westleton site, in addition to the 48.7ha habitat area on the EDF Energy Estate, would minimise residual concerns regarding impacts to marsh harrier.

7.2.5 The Applicant states [AS-408][REP7-079] that provisions are included in the draft Deed of Obligation [REP7-041] to secure the delivery of the additional compensatory habitat at Westleton, should the SoS conclude this is required.

7.2.6 At this time of writing this RIES, the Applicant's conclusion of no AEoI for a number of other sites, qualifying features and effects remains disputed by NE and other IPs (as set out in Section 4 and Annex 2 of this RIES). If agreement is not reached that AEoI for other European sites, qualifying features and effects can be excluded, the Applicant may wish to update its compensation package before the close of Examination.

ANNEX 1: TABLE SUMMARISING THE EUROPEAN SITES AND QUALIFYING FEATURES CONSIDERED BY THE APPLICANT

European sites and qualifying features	**Applicant conclusion on LSE**
UK0030076 Alde-Ore and Butley Estuaries SAC	
1130 Estuaries	LSE
1140 Mudflats and sandflats not covered by seawater at low tide	LSE
1330 Atlantic salt meadows (*Glauco Puccinellietalia maritimae*)	LSE
UK0013104 Benacre to Easton Bavents Lagoons SAC	
1150 Coastal lagoons (Priority feature)	LSE
UK0030133 Dew's Pond SAC	
1166 Great crested newt *Triturus cristatus*	LSE
UK0030170 Humber Estuary SAC	
1130 Estuaries	No LSE
1140 Mudflats and sandflats not covered by seawater at low tide	No LSE
1110 Sandbanks which are slightly covered by sea water all the time	No LSE
1150 Coastal lagoons (Priority feature)	No LSE
1310 Salicornia and other annuals colonizing mud and sand	No LSE
1330 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)	No LSE
2110 Embryonic shifting dunes	No LSE

European sites and qualifying features	**Applicant conclusion on LSE**
2120 Shifting dunes along the shoreline with *Ammophila arenaria* ("white dunes")	No LSE
2130 Fixed coastal dunes with herbaceous vegetation ("grey dunes")* Priority feature	No LSE
2160 Dunes with *Hippopha rhamnoides*	No LSE
1095 Sea lamprey *Petromyzon marinus*	LSE
1099 River lamprey *Lampetra fluviatilis*	LSE
1364 Grey seal *Halichoerus grypus*	LSE
UK0012809 Minsmere to Walberswick Heaths and Marshes SAC	
1210 Annual vegetation of drift lines	LSE
4030 European dry heaths	LSE
1220 Perennial vegetation of stony banks	LSE
UK0014780 Orfordness to Shingle Street SAC	
1150 Coastal lagoons (Priority feature)	LSE
1210 Annual vegetation of drift lines	LSE
1220 Perennial vegetation of stony banks	LSE
UK0012741 Staverton Park and the Thicks, Wantisden SAC	
9190 Old acidophilous oak woods with *Quercus robur* on sandy plains	No LSE
UK0030395 Southern North Sea SAC	
1351 Harbour porpoise *Phocoena phocoena*	LSE

European sites and qualifying features	**Applicant conclusion on LSE**
UK0017075 The Wash and North Norfolk Coast SAC	
1110 Sandbanks which are slightly covered by sea water all the time	No LSE
1140 Mudflats and sandflats not covered by seawater at low tide	No LSE
1160 Large shallow inlets	No LSE
1170 Reefs	No LSE
1310 Salicornia and other annuals colonizing mud and sand	No LSE
1330 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)	No LSE
1420 Mediterranean and thermo Atlantic halophilous scrubs (*Sarcocornetea fruticosi*)	No LSE
1150 Coastal lagoons * (Priority feature)	No LSE
1365 Harbour seal *Phoca vitulina*	LSE
1355 Otter *Lutra lutra*	No LSE
UK0013111 Plymouth Sound and Estuaries SAC	
1110 Sandbanks which are slightly covered by sea water all the time	No LSE
1130 Estuaries	No LSE
1140 Mudflats and sandflats not covered by seawater at low tide	No LSE
1160 Large shallow inlets and bays	No LSE
1170 Reefs	No LSE
13 10 Salicornia and other annuals colonizing mud and sand	No LSE
1320 Spartina swards (*Spartinion maritimae*)	No LSE

European sites and qualifying features	**Applicant conclusion on LSE**
1330 Atlantic salt meadows (*Glauco - Puccinellietalia maritimae*)	No LSE
1102 Allis shad *Alosa alosa*	No LSE
1103 Twaite shad *Alosa fallax*	No LSE
109 9 River lamprey *Lampetra fluviatilis*	No LSE
1095 Great sea lamprey *Petromyzon marinus*	No LSE
1441 Shore dock *Rumex rupestris*	No LSE
1364 Grey seal *Halichoerus grypus*	No LSE
1355 Eurasian otter *Lutra lutra*	No LSE
1351 Common porpoise *Phocoena phocoena*	No LSE
1349 Bottle nosed dolphin *Tursiops truncatus*	No LSE
UK9009112 Alde-Ore Estuary SPA	
Breeding Avocet *Recurvirostra avosetta*	LSE
Breeding Marsh Harrier *Circus aeruginosus*	LSE
Breeding Little Tern *Sterna albifrons*	LSE
Breeding Sandwich Tern *Sterna sandvicensis*	LSE
Breeding Lesser black-backed gull *Larus fuscus*	LSE
Over winter Avocet	LSE
Over winter Redshank *Tringa totanus*	LSE
Over winter Ruff *Philomachus pugnax*	LSE

European sites and qualifying features	**Applicant conclusion on LSE**
UK9009291 Benacre to Easton Bavents SPA	
Breeding Bittern *Botaurus stellaris*	LSE
Breeding Little Tern *Sterna albifrons*	LSE
Breeding Marsh Harrier *Circus aeruginosus*	LSE
UK9009261 Deben Estuary SPA	
Wintering Avocet *Recurvirostra avosetta*	LSE
Wintering Dark-bellied Brent goose Branta *bernicla bernicla*	LSE
UK9009101 Minsmere-Walberswick SPA	
Breeding Avocet *Recurvirostra avosetta*	LSE
Breeding Bittern *Botaurus stellaris*	LSE
Breeding Little Tern *Sterna albifrons*	LSE
Breeding Marsh Harrier *Circus aeruginosus*	LSE
Breeding Nightjar *Caprimulgus europaeus*	LSE
Breeding Shoveler *Anas clypeata*	LSE
Breeding Teal *Anas crecca*	LSE
Breeding Gadwall *Anas strepera*	LSE
Wintering Gadwall *Anas strepera*	LSE
Wintering Hen Harrier *Circus cyaneus*	LSE
Wintering Shoveler *Anas Clypeata*	LSE
Wintering White Fronted Goose *Anser albifrons albifrons*	LSE

European sites and qualifying features	**Applicant conclusion on LSE**
UK9020309 Outer Thames Estuary SPA	
Wintering / passage Red-throated diver *Gavia stellata*	LSE
Breeding Little Tern *Sterna albifrons*	LSE
Breeding Common Tern *Sterna hirundo*	LSE
UK9020286 Sandlings SPA	
Breeding Nightjar *Caprimulgus europaeus*	LSE
Breeding Woodlark *Lullula arborea*	LSE
UK9009121 Stour and Orwell Estuaries SPA	
Breeding Avocet *Recurvirostra avosetta*	LSE
Winter Pintail *Anas acuta*	LSE
Winter Dark-bellied Brent goose *Branta bernicla*	LSE
Winter Dunlin *Calidris alpina alpina*	LSE
Winter Knot *Calidris canutus*	LSE
Winter Black-tailed Godwit *Limosa limosa islandica*	LSE
Winter Grey Plover *Pluvialis squatarola*	LSE
Winter Redshank *Tringa totanus*	LSE
Assemblage qualification: A wetland of international importance	LSE
Assemblage qualification: Waterbird assemblage	LSE
UK11002 Alde-Ore Estuary Ramsar site	
Ramsar criterion 2 Nationally scarce plant species and British Red Data Book invertebrates	LSE

European sites and qualifying features	**Applicant conclusion on LSE**
Ramsar criterion 3 The site supports a notable assemblage of breeding and wintering wetland birds	LSE
Ramsar criterion 6 Species/ populations occurring at levels of international importance	LSE
UK11017 Deben Estuary Ramsar site	
Ramsar criterion 2 Supports a population of the mollusc *Vertigo angustior*	No LSE
Ramsar criterion 6 Species/ populations occurring at levels of international importance: Dark-bellied brent goose *Branta bernicla bernicla*	LSE
UK11044 Minsmere-Walberswick Ramsar site	
Ramsar criterion 1 Mosaic of marine, freshwater, marshland and associated habitats	LSE
Ramsar criterion 2 Supports nine nationally scarce plants and at least 26 red data book invertebrates	LSE
Ramsar criterion 2 An important assemblage of rare breeding birds associated with marshland and reedbeds	LSE
UK11067 Stour and Orwell Estuaries Ramsar site	
Ramsar Criterion 2 Supports seven nationally scarce plants and five red data book invertebrates	No LSE
Ramsar Criterion 5 Assemblages of international importance: waterfowl	LSE
Ramsar Criterion 6 Species/ populations occurring at levels of international importance	LSE

ANNEX 2: TABLE SUMMARISING THE APPLICANT'S CONCLUSIONS ON LSE AND AEOI FOR THOSE EUROPEAN SITES, FEATURES AND EFFECTS DISCUSSED IN THIS RIES AND THE DEGREE OF AGREEMENT WITH THE APPROPRIATE NATURE CONSERVATION BODY, NE

The table also identifies European sites, qualifying features and/or effects for which NE disputed that LSE could be ruled out; these are highlighted in red.

***'N' has been used to denote where there is either clear disagreement, or where the ExA is unclear whether dispute remains**

European sites and Qualifying Features	**Effect and where described in RIES**	**Applicant's conclusion**		**Do NE agree with no AEoI? (Y/N*)**
		LSE? (Y/N)	**AEoI? (Y/N)**	
UK0030076 Alde-Ore and Butley Estuaries SAC				
1130 Estuaries	Changes to coastal processes/ sediment transport – paragraphs 4.2.29 to 4.2.49.	Y	N	Y
	Disturbance due to increase in recreational pressure – paragraphs 3.2.3 to 3.2.5 and paragraphs 4.2.53 to 4.2.93.	N	N/A	**N**
	Water quality effects (terrestrial environment) – paragraph 4.1.11 to 4.1.12.	Y	N	Y

European sites and Qualifying Features	**Effect and where described in RIES**	**Applicant's conclusion**		**Do NE agree with no AEoI? (Y/N*)**
		LSE? (Y/N)	**AEoI? (Y/N)**	
	Alteration of local hydrology and hydrogeology – paragraph 4.1.11 to 4.1.12.	Y	N	Y
	Changes in air quality – paragraphs 4.2.1 to 4.2.28, paragraphs 4.3.1 to 4.3.2.	Y	N	**N**
	In-combination effects – paragraphs 3.2.56 to 3.2.66.	Y	N	**N**
	Unintentional introduction or spread of invasive non-native species – paragraphs 3.2.33 to 3.2.35, paragraphs 4.2.50 to 4.2.52.	N	N/A	Y
	Water abstraction and supply – paragraphs 3.2.49 to 3.2.55, paragraphs 4.2.94 to 4.2.107.	N/A	N/A	**N**
	Cumulative/ inter-project effects – paragraphs 3.2.56 to 3.2.57 and 4.1.16 to 4.1.20.	Y	N	**N**
1140 Mudflats and sandflats not covered by seawater at low tide	Changes to coastal processes/ sediment transport – paragraphs 4.2.29 to 4.2.49.	Y	N	Y
	Water quality effects (terrestrial environment) – paragraphs 4.1.11 to 4.1.12.	Y	N	Y
	Alteration of local hydrology and hydrogeology – paragraphs 4.1.11 to 4.1.12.	Y	N	Y
	Changes in air quality – paragraphs 4.2.1 to 4.2.28, paragraphs 4.3.1 to 4.3.2.	Y	N	N

European sites and Qualifying Features	**Effect and where described in RIES**	**Applicant's conclusion**		**Do NE agree with no AEoI? (Y/N*)**
		LSE? (Y/N)	**AEoI? (Y/N)**	
	Disturbance due to increase in recreational pressure – paragraphs 3.2.3 to 3.2.5 and paragraphs 4.2.53 to 4.2.93.	N	N/A	N
	In-combination effects – paragraphs 3.2.56 to 3.2.66.	Y	N	**N**
	Unintentional introduction or spread of invasive non-native species – paragraphs 3.2.33 to 3.2.35, paragraphs 4.2.50 to 4.2.52.	N	N/A	Y
	Water abstraction and supply – paragraphs 3.2.49 to 3.2.55, paragraphs 4.2.94 to 4.2.107.	N/A	N/A	N
	Cumulative/ inter-project effects – paragraphs 3.2.56 to 3.2.57 and 4.1.16 to 4.1.20.	Y	N	**N**
1330 Atlantic salt meadows (*Glauco Puccinellietalia maritimae*)	Changes to coastal processes/ sediment transport – paragraphs 4.2.29 to 4.2.49.	Y	N	Y
	Water quality effects (terrestrial environment) – paragraphs 4.1.11 to 4.1.12.	Y	N	Y
	Alteration of local hydrology and hydrogeology – paragraphs 4.1.11 to 4.1.12.	Y	N	Y
	Changes in air quality – paragraphs 4.2.1 to 4.2.28, paragraphs 4.3.1 to 4.3.2.	Y	N	**N**

European sites and Qualifying Features	Effect and where described in RIES	Applicant's conclusion		Do NE agree with no AEoI? (Y/N*)
		LSE? (Y/N)	AEoI? (Y/N)	
	Disturbance due to increase in recreational pressure – paragraphs 3.2.3 to 3.2.5 and paragraphs 4.2.53 to 4.2.93.	N	N/A	**N**
	In-combination effects – paragraphs 3.2.56 to 3.2.66.	Y	N	**N**
	Unintentional introduction or spread of invasive non-native species – paragraphs 3.2.33 to 3.2.35, paragraphs 4.2.50 to 4.2.52.	N	N/A	Y
	Water abstraction and supply – paragraphs 3.2.49 to 3.2.55, paragraphs 4.2.94 to 4.2.107.	N/A	N/A	N
	Cumulative/ inter-project effects – paragraphs 3.2.56 to 3.2.57 and 4.1.16 to 4.1.20.	Y	N	**N**
UK9009112 Alde-Ore Estuary SPA				
Breeding Avocet *Recurvirostra avosetta*	Changes in air quality – paragraphs 4.2.1 to 4.2.28, paragraphs 4.3.1 to 4.3.2.	Y	N	Y
	Disturbance due to increase in recreational pressure – paragraphs 4.2.53 to 4.2.93 and paragraphs 4.3.155 to 4.3.160.	Y	N	**N**
	Physical interaction between species and project infrastructure – paragraph 3.2.45 to 3.2.48 and paragraphs 4.3.151 to 4.3.154.	N	N/A	**N**

European sites and Qualifying Features	**Effect and where described in RIES**	**Applicant's conclusion**		**Do NE agree with no AEoI? (Y/N*)**
		LSE? (Y/N)	**AEoI? (Y/N)**	
	In-combination effects – paragraphs 3.2.56 to 3.2.66 and 4.6.9.	Y	N	**N**
	Unintentional introduction or spread of invasive non-native species – paragraphs 3.2.33 to 3.2.35, paragraphs 4.2.50 to 4.2.52.	N	N/A	Y
	Water abstraction and supply – paragraphs 3.2.49 to 3.2.55, paragraphs 4.2.94 to 4.2.107.	N/A	N/A	**N**
	Cumulative/ inter-project effects – paragraphs 3.2.56 to 3.2.57 and 4.1.16 to 4.1.20.	Y	N	**N**
Breeding Marsh Harrier *Circus aeruginosus*	Changes in air quality – paragraphs 4.2.1 to 4.2.28, paragraphs 4.3.1 to 4.3.2.	Y	N	Y
	Disturbance due to increase in recreational pressure – paragraphs 4.2.53 to 4.2.93 and paragraphs 4.3.155 to 4.3.160.	Y	N	**N**
	Physical interaction between species and project infrastructure – paragraph 3.2.45 to 3.2.48 and paragraphs 4.3.151 to 4.3.154.	N	N/A	**N**
	In-combination effects – paragraphs 3.2.56 to 3.2.66 and 4.6.9.	Y	N	**N**
	Unintentional introduction or spread of invasive non-native species – paragraphs 3.2.33 to 3.2.35, paragraphs 4.2.50 to 4.2.52.	N	N/A	Y

European sites and Qualifying Features	**Effect and where described in RIES**	**Applicant's conclusion**		**Do NE agree with no AEoI? (Y/N*)**
		LSE? (Y/N)	**AEoI? (Y/N)**	
	Water abstraction and supply – paragraphs 3.2.49 to 3.2.55, paragraphs 4.2.94 to 4.2.107.	N/A	N/A	**N**
	Cumulative/ inter-project effects – paragraphs 3.2.56 to 3.2.57 and 4.1.16 to 4.1.20.	Y	N	**N**
Breeding Little Tern *Sterna albifrons*	Changes to coastal processes/ sediment transport – paragraphs 4.2.29 to 4.2.49.	Y	N	Y
	Water quality effects (marine environment) (direct toxicity) - paragraph 3.2.36 to 3.2.44, paragraphs 4.3.136 to 4.3.150	N	N/A	**N**
	Water quality effects (terrestrial environment) – paragraphs 4.1.11 to 4.1.12.	Y	N	Y
	Alteration of local hydrology and hydrogeology – paragraphs 4.1.11 to 4.1.12.	Y	N	Y
	Changes in air quality – paragraphs 4.2.1 to 4.2.28, paragraphs 4.3.1 to 4.3.2.	Y	N	Y
	Impacts from entrapment on fish as a prey species – paragraphs 4.3.104 to 4.3.130	Y	N	**N**
	Disturbance due to increase in recreational pressure – paragraphs 4.2.53 to 4.2.93 and paragraphs 4.3.155 to 4.3.160.	Y	N	**N**

European sites and Qualifying Features	**Effect and where described in RIES**	**Applicant's conclusion**		**Do NE agree with no AEoI? (Y/N*)**
		LSE? (Y/N)	**AEoI? (Y/N)**	
	Physical interaction between species and project infrastructure – paragraphs 3.2.45 to 3.2.48 and paragraphs 4.3.151 to 4.3.154.	N	N/A	**N**
	In-combination effects – paragraphs 3.2.56 to 3.2.66 and paragraph 4.6.9.	Y	N	**N**
	Unintentional introduction or spread of invasive non-native species – paragraphs 3.2.33 to 3.2.35, paragraphs 4.2.50 to 4.2.52.	N	N/A	Y
	Water abstraction and supply – paragraphs 3.2.49 to 3.2.55, paragraphs 4.2.94 to 4.2.107.	N/A	N/A	**N**
	Cumulative/ inter-project effects – paragraphs 3.2.56 to 3.2.57 and 4.1.16 to 4.1.20.	Y	N	**N**
Breeding Sandwich Tern *Sterna sandvicensis*	Changes to coastal processes/ sediment transport – paragraphs 4.2.29 to 4.2.49.	Y	N	Y
	Water quality effects (marine environment) (direct toxicity)- paragraph 3.2.36 to 3.2.44, paragraphs 4.3.136 to 4.3.150.	N	N/A	**N**
	Water quality effects (terrestrial environment) – paragraphs 4.1.11 to 4.1.12.	Y	N	Y
	Alteration of local hydrology and hydrogeology – paragraphs 4.1.11 to 4.1.12.	Y	N	Y

European sites and Qualifying Features	**Effect and where described in RIES**	**Applicant's conclusion**		**Do NE agree with no AEoI? (Y/N*)**
		LSE? (Y/N)	**AEoI? (Y/N)**	
	Changes in air quality – paragraphs 4.2.1 to 4.2.28, paragraphs 4.3.1 to 4.3.2.	Y	N	Y
	Impacts from entrapment on fish as a prey species – paragraphs 4.3.104 to 4.3.130	Y	N	**N**
	Disturbance due to increase in recreational pressure – paragraphs 4.2.53 to 4.2.93 and paragraphs 4.3.155 to 4.3.160.	Y	N	**N**
	Physical interaction between species and project infrastructure – paragraphs 3.2.45 to 3.2.48 and paragraphs 4.3.151 to 4.3.154.	N	N/A	**N**
	In-combination effects – paragraphs 3.2.56 to 3.2.66 and paragraph 4.6.9.	Y	N	**N**
	Unintentional introduction or spread of invasive non-native species – paragraphs 3.2.33 to 3.2.35, paragraphs 4.2.50 to 4.2.52.	N	N/A	Y
	Water abstraction and supply – paragraphs 3.2.49 to 3.2.55, paragraphs 4.2.94 to 4.2.107.	N/A	N/A	**N**
	Cumulative/ inter-project effects – paragraphs 3.2.56 to 3.2.57 and 4.1.16 to 4.1.20.	Y	N	**N**
	Changes to coastal processes/ sediment transport – paragraphs 4.2.29 to 4.2.49.	Y	N	Y

European sites and Qualifying Features	**Effect and where described in RIES**	**Applicant's conclusion**		**Do NE agree with no AEoI? (Y/N*)**
		LSE? (Y/N)	**AEoI? (Y/N)**	
Breeding Lesser black-backed gull *Larus fuscus*	Impacts from entrapment on fish as a prey species – paragraphs 4.3.104 to 4.3.130	Y	N	**N**
	Water quality effects (marine environment) (direct toxicity)- paragraph 3.2.36 to 3.2.44, paragraphs 4.3.136 to 4.3.150.	N	N/A	**N**
	Water quality effects (terrestrial environment) – paragraphs 4.1.11 to 4.1.12.	Y	N	Y
	Alteration of local hydrology and hydrogeology – paragraphs 4.1.11 to 4.1.12.	Y	N	Y
	Changes in air quality – paragraphs 4.2.1 to 4.2.28, paragraphs 4.3.1 to 4.3.2.	Y	N	Y
	Disturbance due to increase in recreational pressure – paragraphs 4.2.53 to 4.2.93 and paragraphs 4.3.155 to 4.3.160.	Y	N	**N**
	Physical interaction between species and project infrastructure – paragraphs 3.2.45 to 3.2.48 and paragraphs 4.3.151 to 4.3.154.	N	N/A	**N**
	In-combination effects – paragraphs 3.2.56 to 3.2.66 and paragraph 4.6.9.	Y	N	**N**
	Unintentional introduction or spread of invasive non-native species – paragraphs 3.2.33 to 3.2.35, paragraphs 4.2.50 to 4.2.52.	N	N/A	Y

European sites and Qualifying Features	Effect and where described in RIES	Applicant's conclusion		Do NE agree with no AEoI? (Y/N*)
		LSE? (Y/N)	AEoI? (Y/N)	
	Water abstraction and supply – paragraphs 3.2.49 to 3.2.55, paragraphs 4.2.94 to 4.2.107.	N/A	N/A	**N**
	Cumulative/ inter-project effects – paragraphs 3.2.56 to 3.2.57 and 4.1.16 to 4.1.20.	Y	N	**N**
Over winter Avocet	Changes to coastal processes/ sediment transport – paragraphs 4.2.29 to 4.2.49.	Y	N	Y
	Water quality effects (terrestrial environment) – paragraphs 4.1.11 to 4.1.12.	Y	N	Y
	Alteration of local hydrology and hydrogeology – paragraphs 4.1.11 to 4.1.12.	Y	N	Y
	Changes in air quality – paragraphs 4.2.1 to 4.2.28, paragraphs 4.3.1 to 4.3.2.	Y	N	Y
	Disturbance due to increase in recreational pressure – paragraphs 4.2.53 to 4.2.93 and paragraphs 4.3.155 to 4.3.160.	Y	N	**N**
	Physical interaction between species and project infrastructure – paragraph 3.2.45 to 3.2.48 and paragraphs 4.3.151 to 4.3.154.	N	N/A	**N**
	In-combination effects – paragraphs 3.2.56 to 3.2.66 and paragraph 4.6.9.	Y	N	**N**

European sites and Qualifying Features	**Effect and where described in RIES**	**Applicant's conclusion**		**Do NE agree with no AEoI? (Y/N*)**
		LSE? (Y/N)	**AEoI? (Y/N)**	
	Unintentional introduction or spread of invasive non-native species – paragraphs 3.2.33 to 3.2.35, paragraphs 4.2.50 to 4.2.52.	N	N/A	Y
	Water abstraction and supply – paragraphs 3.2.49 to 3.2.55, paragraphs 4.2.94 to 4.2.107.	N/A	N/A	**N**
	Cumulative/ inter-project effects – paragraphs 3.2.56 to 3.2.57 and 4.1.16 to 4.1.20.	Y	N	**N**
Over winter Redshank *Tringa totanus*	Changes to coastal processes/ sediment transport – paragraphs 4.2.29 to 4.2.49.	Y	N	Y
	Water quality effects (terrestrial environment) – paragraphs 4.1.11 to 4.1.12.	Y	N	Y
	Alteration of local hydrology and hydrogeology – paragraphs 4.1.11 to 4.1.12.	Y	N	Y
	Changes in air quality – paragraphs 4.2.1 to 4.2.28, paragraphs 4.3.1 to 4.3.2.	Y	N	Y
	Disturbance due to increase in recreational pressure – paragraphs 4.2.53 to 4.2.93 and paragraphs 4.3.155 to 4.3.160.	Y	N	**N**
	Physical interaction between species and project infrastructure – paragraph 3.2.45 to 3.2.48 and paragraphs 4.3.151 to 4.3.154.	N	N/A	**N**

European sites and Qualifying Features	**Effect and where described in RIES**	**Applicant's conclusion**		**Do NE agree with no AEoI? (Y/N*)**
		LSE? (Y/N)	**AEoI? (Y/N)**	
	In-combination effects – paragraphs 3.2.56 to 3.2.66 and paragraph 4.6.9.	Y	N	**N**
	Unintentional introduction or spread of invasive non-native species – paragraphs 3.2.33 to 3.2.35, paragraphs 4.2.50 to 4.2.52.	N	N/A	Y
	Water abstraction and supply – paragraphs 3.2.49 to 3.2.55, paragraphs 4.2.94 to 4.2.107.	N/A	N/A	**N**
	Cumulative/ inter-project effects – paragraphs 3.2.56 to 3.2.57 and 4.1.16 to 4.1.20.	Y	N	**N**
Over winter Ruff *Philomachus pugnax*	Changes to coastal processes/ sediment transport – paragraphs 4.2.29 to 4.2.49.	Y	N	Y
	Water quality effects (terrestrial environment) – paragraphs 4.1.11 to 4.1.12.	Y	N	Y
	Alteration of local hydrology and hydrogeology – paragraphs 4.1.11 to 4.1.12.	Y	N	Y
	Changes in air quality – paragraphs 4.2.1 to 4.2.28, paragraphs 4.3.1 to 4.3.2.	Y	N	Y
	Disturbance due to increase in recreational pressure – paragraphs 4.2.53 to 4.2.93 and paragraphs 4.3.155 to 4.3.160.	Y	N	**N**

European sites and Qualifying Features	Effect and where described in RIES	Applicant's conclusion		Do NE agree with no AEoI? (Y/N*)
		LSE? (Y/N)	AEoI? (Y/N)	
	Physical interaction between species and project infrastructure – paragraph 3.2.45 to 3.2.48 and paragraphs 4.3.151 to 4.3.154.	N	N/A	**N**
	In-combination effects – paragraphs 3.2.56 to 3.2.66 and paragraph 4.6.9.	Y	N	**N**
	Unintentional introduction or spread of invasive non-native species – paragraphs 3.2.33 to 3.2.35, paragraphs 4.2.50 to 4.2.52.	N	N/A	Y
	Water abstraction and supply – paragraphs 3.2.49 to 3.2.55, paragraphs 4.2.94 to 4.2.107.	N/A	N/A	**N**
	Cumulative/ inter-project effects – paragraphs 3.2.56 to 3.2.57 and 4.1.16 to 4.1.20.	Y	N	**N**
UK11002 Alde-Ore Estuary Ramsar				
Ramsar criterion 2 Nationally scarce plant species and British Red Data Book invertebrates	Changes to coastal processes/ sediment transport – paragraphs 4.2.29 to 4.2.49.	Y	N	Y
	Water quality effects (terrestrial environment) – paragraph 4.1.11 to 4.1.12.	Y	N	Y
	Alteration of local hydrology and hydrogeology – paragraph 4.1.11 to 4.1.12.	Y	N	Y
	Changes in air quality – paragraphs 4.2.1 to 4.2.28, paragraphs 4.3.1 to 4.3.2.	Y	N	**N**

European sites and Qualifying Features	**Effect and where described in RIES**	**Applicant's conclusion**		**Do NE agree with no AEoI? (Y/N*)**
		LSE? (Y/N)	**AEoI? (Y/N)**	
	Disturbance due to increase in recreational pressure – paragraphs 4.2.53 to 4.2.93	Y	N	Y
	In-combination effects – paragraphs 3.2.56 to 3.2.66 and 4.6.9.	Y	N	**N**
	Unintentional introduction or spread of invasive non-native species – paragraphs 3.2.33 to 3.2.35, paragraphs 4.2.50 to 4.2.52.	N	N/A	Y
	Water abstraction and supply – paragraphs 3.2.49 to 3.2.55, paragraphs 4.2.94 to 4.2.107.	N/A	N/A	**N**
	Cumulative/ inter-project effects – paragraphs 3.2.56 to 3.2.57 and 4.1.16 to 4.1.20.	Y	N	**N**
Ramsar criterion 3 The site supports a notable assemblage of breeding and wintering wetland birds	Changes to coastal processes/ sediment transport – paragraphs 4.2.29 to 4.2.49.	Y	N	Y
	Water quality effects (marine environment) (direct toxicity)- paragraph 3.2.36 to 3.2.44, paragraphs 4.3.136 to 4.3.150.	N	N/A	**N**
	Water quality effects (terrestrial environment) – paragraph 4.1.11 to 4.1.12.	Y	N	Y
	Alteration of local hydrology and hydrogeology – paragraph 4.1.11 to 4.1.12.	Y	N	Y
	Changes in air quality – paragraphs 4.2.1 to 4.2.28, paragraphs 4.3.1 to 4.3.2.	Y	N	**N**

European sites and Qualifying Features	**Effect and where described in RIES**	**Applicant's conclusion**		**Do NE agree with no AEoI? (Y/N*)**
		LSE? (Y/N)	**AEoI? (Y/N)**	
	Disturbance due to increase in recreational pressure – paragraphs 4.3.155 to 4.3.160.	Y	N	**N**
	In-combination effects – paragraphs 3.2.56 to 3.2.66 and 4.6.9.	Y	N	**N**
	Unintentional introduction or spread of invasive non-native species – paragraphs 3.2.33 to 3.2.35, paragraphs 4.2.50 to 4.2.52.	N	N/A	Y
	Water abstraction and supply – paragraphs 3.2.49 to 3.2.55, paragraphs 4.2.94 to 4.2.107.	N/A	N/A	**N**
	Cumulative/ inter-project effects – paragraphs 3.2.56 to 3.2.57 and 4.1.16 to 4.1.20.	Y	N	**N**
Ramsar criterion 6 Species/ populations occurring at levels of international importance	Changes to coastal processes/ sediment transport – paragraphs 4.2.29 to 4.2.49.	Y	N	Y
	Water quality effects (marine environment) (direct toxicity)- paragraph 3.2.36 to 3.2.44, paragraphs 4.3.136 to 4.3.150.	N	N/A	N
	Water quality effects (terrestrial environment) – paragraph 4.1.11 to 4.1.12.	Y	N	Y
	Alteration of local hydrology and hydrogeology – paragraph 4.1.11 to 4.1.12.	Y	N	Y
	Changes in air quality – paragraphs 4.2.1 to 4.2.28, paragraphs 4.3.1 to 4.3.2.	Y	N	**N**

European sites and Qualifying Features	Effect and where described in RIES	Applicant's conclusion		Do NE agree with no AEoI? (Y/N*)
		LSE? (Y/N)	AEoI? (Y/N)	
	Disturbance due to increase in recreational pressure – paragraphs 4.3.155 to 4.3.160.	Y	N	**N**
	In-combination effects – paragraphs 3.2.56 to 3.2.66 and 4.6.9.	Y	N	**N**
	Unintentional introduction or spread of invasive non-native species – paragraphs 3.2.33 to 3.2.35, paragraphs 4.2.50 to 4.2.52.	N	N/A	Y
	Water abstraction and supply – paragraphs 3.2.49 to 3.2.55, paragraphs 4.2.94 to 4.2.107.	N/A	N/A	**N**
	Cumulative/ inter-project effects – paragraphs 3.2.56 to 3.2.57 and 4.1.16 to 4.1.20.	Y	N	**N**
UK0013104 Benacre to Easton Bavents Lagoons SAC				
1150 Coastal lagoons (Priority feature)	Changes to coastal processes/ sediment transport – paragraphs 4.2.29 to 4.2.49.	Y	N	Y
	In-combination effects – paragraphs 3.2.56 to 3.2.66.	Y	N	**N**
	Cumulative/ inter-project effects – paragraphs 3.2.56 to 3.2.57 and 4.1.16 to 4.1.20.	Y	N	Not raised as an effect of concern for this site by NE
UK9009291A Benacre to Easton Bavents SPA				

European sites and Qualifying Features	**Effect and where described in RIES**	**Applicant's conclusion**		**Do NE agree with no AEoI? (Y/N*)**
		LSE? (Y/N)	**AEoI? (Y/N)**	
Breeding Bittern *Botaurus stellaris*	Disturbance effects on species' population (noise, light and visual) – paragraphs 3.2.6 to 3.2.8, paragraphs 4.3.5 to 4.3.10 and paragraph 4.3.12.	N	N/A	N
	Disturbance due to increase in recreational pressure – paragraphs 4.2.53 to 4.2.93 and paragraphs 4.3.155 to 4.3.160.	Y	N	
	In-combination effects – paragraphs 3.2.56 to 3.2.66.	Y	N	**N**
	Cumulative/ inter-project effects – paragraphs 3.2.56 to 3.2.57 and 4.1.16 to 4.1.20.	Y	N	**N**
	Impacts from entrapment on fish as a prey species – paragraphs 3.2.9 to 3.2.12 and 4.3.104 to 4.3.130	N	N/A	NE view unknown, matter raised by RSPB/SWT
Breeding Little Tern *Sterna albifrons*	Changes to coastal processes/ sediment transport – paragraphs 4.2.29 to 4.2.49.	Y	N	Y
	Water quality effects (marine environment) (direct toxicity) – paragraph 3.2.36 to 3.2.44, paragraphs 4.3.136 to 4.3.150.	N	N/A	N
	Disturbance effects on species' population (noise, light and visual) – paragraphs 3.2.6 to 3.2.8, paragraphs 4.3.5 to 4.3.10 and paragraph 4.3.12.	N	N/A	N

European sites and Qualifying Features	**Effect and where described in RIES**	**Applicant's conclusion**		**Do NE agree with no AEoI? (Y/N*)**
		LSE? (Y/N)	**AEoI? (Y/N)**	
	Disturbance due to increase in recreational pressure – paragraphs 4.2.53 to 4.2.93 and paragraphs 4.3.155 to 4.3.160.	Y	N	N
	Physical interaction between species and project infrastructure – paragraphs 4.3.151 to 4.3.154.	N	N/A	**N**
	In-combination effects – paragraphs 3.2.56 to 3.2.66 and 4.6.9.	Y	N	**N**
	Cumulative/ inter-project effects – paragraphs 3.2.56 to 3.2.57 and 4.1.16 to 4.1.20.	Y	N	**N**
Breeding Marsh Harrier *Circus aeruginosus*	Disturbance effects on species' population (noise, light and visual) – paragraphs 3.2.6 to 3.2.8, paragraphs 4.3.5 to 4.3.10 and paragraph 4.3.12.	N	N/A	**N**
	Disturbance due to increase in recreational pressure – paragraphs 4.2.53 to 4.2.93 and paragraphs 4.3.155 to 4.3.160.	Y	N	**N**
	In-combination effects – paragraphs 3.2.56 to 3.2.66 and 4.6.9.	Y	N	**N**
	Cumulative/ inter-project effects – paragraphs 3.2.56 to 3.2.57 and 4.1.16 to 4.1.20.	Y	N	**N**
UK0030170 Humber Estuary SAC				
1095 Sea lamprey *Petromyzon marinus*	Water quality effects (marine environment) – paragraph 3.2.36 to 3.2.44, paragraphs 4.5.47 to 4.5.50.	N	N	**N**

European sites and Qualifying Features	Effect and where described in RIES	Applicant's conclusion		Do NE agree with no AEoI? (Y/N*)
		LSE? (Y/N)	AEoI? (Y/N)	
	Physical interaction between species and project infrastructure – paragraphs 4.5.1 to 4.5.50.	Y	N	**N**
	Cumulative/ inter-project effects – paragraphs 3.2.56 to 3.2.57 and 4.1.16 to 4.1.20.	N/A	N/A	**N**
1099 River lamprey *Lampetra fluviatilis*	Water quality effects (marine environment) – paragraph 3.2.36 to 3.2.44, paragraphs 4.5.47 to 4.5.50.	N	N	**N**
	Physical interaction between species and project infrastructure – paragraphs 4.5.1 to 4.5.50.	Y	N	**N**
	Cumulative/ inter-project effects – paragraphs 3.2.56 to 3.2.57 and 4.1.16 to 4.1.20.	N/A	N/A	**N**
1364 Grey seal *Halichoerus grypus*	Disturbance effects on species' population (underwater noise) – paragraphs 4.4.3 to 4.4.11 and paragraphs 4.4.15 to 4.4.16.	Y	N	Y
	Effects on prey species – paragraphs 4.4.12 to 4.4.14.	Y	N	Y
	In-combination effects – paragraph 4.4.31 and 4.6.9	Y	N	**N**
	Cumulative/ inter-project effects – paragraphs 3.2.56 to 3.2.57 and 4.1.16 to 4.1.20.	N/A	N/A	**N**
UK0012809 Minsmere to Walberswick Heaths and Marshes SAC				
	Changes to coastal processes/ sediment transport – paragraphs 4.2.29 to 4.2.49.	Y	N	**N**

European sites and Qualifying Features	**Effect and where described in RIES**	**Applicant's conclusion**		**Do NE agree with no AEoI? (Y/N*)**
		LSE? (Y/N)	**AEoI? (Y/N)**	
1210 Annual vegetation of drift lines	Changes in air quality – paragraphs 4.2.1 to 4.2.28, paragraphs 4.3.1 to 4.3.2.	Y	N	Y
	Disturbance due to increase in recreational pressure – paragraphs 3.2.3 to 3.2.5 and paragraphs 4.2.53 to 4.2.93.	Y	N	**N**
	In-combination effects – paragraphs 3.2.56 to 3.2.66.	Y	N	**N**
	Unintentional introduction or spread of invasive non-native species – paragraphs 3.2.33 to 3.2.35, paragraphs 4.2.50 to 4.2.52.	N	N/A	Y
	Water abstraction and supply – paragraphs 3.2.49 to 3.2.55, paragraphs 4.2.94 to 4.2.107.	N/A	N/A	**N**
	Cumulative/ inter-project effects – paragraphs 3.2.56 to 3.2.57 and 4.1.16 to 4.1.20.	Y	N	**N**
4030 European dry heaths	Changes in air quality – paragraphs 4.2.1 to 4.2.28, paragraphs 4.3.1 to 4.3.2.	Y	N	**N**
	Disturbance due to increase in recreational pressure – paragraphs 3.2.3 to 3.2.5 and paragraphs 4.2.53 to 4.2.93.	Y	N	**N**
	In-combination effects – paragraphs 3.2.56 to 3.2.66.	Y	N	**N**

European sites and Qualifying Features	Effect and where described in RIES	Applicant's conclusion		Do NE agree with no AEoI? (Y/N*)
		LSE? (Y/N)	AEoI? (Y/N)	
	Unintentional introduction or spread of invasive non-native species – paragraphs 3.2.33 to 3.2.35, paragraphs 4.2.50 to 4.2.52.	N	N/A	Y
	Water abstraction and supply – paragraphs 3.2.49 to 3.2.55, paragraphs 4.2.94 to 4.2.107.	N/A	N/A	**N**
	Cumulative/ inter-project effects – paragraphs 3.2.56 to 3.2.57 and 4.1.16 to 4.1.20.	Y	N	**N**
1220 Perennial vegetation of stony banks	Changes to coastal processes/ sediment transport – paragraphs 4.2.29 to 4.2.49.	Y	N	**N**
	Changes in air quality – paragraphs 4.2.1 to 4.2.28, paragraphs 4.3.1 to 4.3.2.	Y	N	Y
	Disturbance due to increase in recreational pressure – paragraphs 3.2.3 to 3.2.5 and paragraphs 4.2.53 to 4.2.93.	Y	N	**N**
	In-combination effects – paragraphs 3.2.56 to 3.2.66.	Y	N	**N**
	Unintentional introduction or spread of invasive non-native species – paragraphs 3.2.33 to 3.2.35, paragraphs 4.2.50 to 4.2.52.	N	N/A	Y
	Water abstraction and supply – paragraphs 3.2.49 to 3.2.55, paragraphs 4.2.94 to 4.2.107.	N/A	N/A	**N**

European sites and Qualifying Features	Effect and where described in RIES	Applicant's conclusion		Do NE agree with no AEoI? (Y/N*)
		LSE? (Y/N)	AEoI? (Y/N)	
	Cumulative/ inter-project effects – paragraphs 3.2.56 to 3.2.57 and 4.1.16 to 4.1.20.	Y	N	**N**
UK9009101 Minsmere-Walberswick SPA				
Breeding Avocet *Recurvirostra avosetta*	Water quality effects (terrestrial environment) – paragraphs 4.1.11 to 4.1.12.	Y	N	Y
	Alteration of local hydrology and hydrogeology – paragraphs 4.1.11 to 4.1.12.	Y	N	Y
	Changes in air quality – paragraphs 4.2.1 to 4.2.28, paragraphs 4.3.1 to 4.3.2.	Y	N	Y
	Disturbance effects on species' population (noise, light and visual) – paragraphs 4.3.5 to 4.3.10 and paragraph 4.3.78.	Y	N	**N**
	Disturbance due to increase in recreational pressure – paragraphs 4.3.155 to 4.3.160	Y	N	**N**
	Physical interaction between species and project infrastructure – paragraph 3.2.48 and paragraphs 4.3.151 to 4.3.154.	N	N/A	**N**
	In-combination effects – paragraphs 3.2.56 to 3.2.66 and 4.6.9.	Y	N	**N**
	Unintentional introduction or spread of invasive non-native species – paragraphs 3.2.33 to 3.2.35, paragraphs 4.2.50 to 4.2.52.	N	N/A	Y

European sites and Qualifying Features	**Effect and where described in RIES**	**Applicant's conclusion**		**Do NE agree with no AEoI? (Y/N*)**
		LSE? (Y/N)	**AEoI? (Y/N)**	
	Water abstraction and supply – paragraphs 3.2.49 to 3.2.55, paragraphs 4.2.94 to 4.2.107.	N/A	N/A	**N**
	Changes to coastal processes/ sediment transport – paragraphs 3.2.29 to 3.2.32 and 4.2.29 to 4.2.49	N/A	N/A	**N**
	Cumulative/ inter-project effects – paragraphs 3.2.56 to 3.2.57 and 4.1.16 to 4.1.20.	Y	N	**N**
Breeding Bittern *Botaurus stellaris*	Water quality effects (terrestrial environment) – paragraph 4.1.11 to 4.1.12.	Y	N	Y
	Alteration of local hydrology and hydrogeology – paragraph 4.1.11 to 4.1.12.	Y	N	Y
	Changes in air quality – paragraphs 4.2.1 to 4.2.28, paragraphs 4.3.1 to 4.3.2.	Y	N	Y
	Disturbance effects on species' population (noise, light and visual) – paragraphs 4.3.5 to 4.3.10 and paragraphs 4.3.28 to 4.3.29.	Y	N	**N**
	Disturbance due to increase in recreational pressure – paragraphs 4.2.53 to 4.2.93 and paragraphs 4.3.155 to 4.3.160.	Y	N	**N**
	Physical interaction between species and project infrastructure – paragraph 3.2.48 and paragraphs 4.3.151 to 4.3.154.	N	N/A	**N**

European sites and Qualifying Features	**Effect and where described in RIES**	**Applicant's conclusion**		**Do NE agree with no AEoI? (Y/N*)**
		LSE? (Y/N)	**AEoI? (Y/N)**	
	In-combination effects – paragraphs 3.2.56 to 3.2.66 and 4.6.9.	Y	N	**N**
	Unintentional introduction or spread of invasive non-native species – paragraphs 3.2.33 to 3.2.35, paragraphs 4.2.50 to 4.2.52.	N	N/A	Y
	Water abstraction and supply – paragraphs 3.2.49 to 3.2.55, paragraphs 4.2.94 to 4.2.107.	N/A	N/A	**N**
	Changes to coastal processes/ sediment transport – paragraphs 3.2.29 to 3.2.32 and 4.2.29 to 4.2.49	N/A	N/A	**N**
	Impacts from entrapment on fish as a prey species – paragraphs 3.2.9 to 3.2.12 and 4.3.104 to 4.3.130	N	N/A	NE view unknown, matter raised by RSPB/SWT
	Cumulative/ inter-project effects – paragraphs 3.2.56 to 3.2.57 and 4.1.16 to 4.1.20.	Y	N	**N**
Breeding Little Tern *Sterna albifrons*	Changes to coastal processes/ sediment transport – paragraphs 4.2.29 to 4.2.49.	Y	N	N
	Water quality effects (marine environment) - paragraph 3.2.36 to 3.2.44 and paragraphs 4.3.136 to 4.3.150.	N	N/A	**N**
	Water quality effects (terrestrial environment) – paragraphs 4.1.11 to 4.1.12.	Y	N	Y

European sites and Qualifying Features	Effect and where described in RIES	Applicant's conclusion		Do NE agree with no AEoI? (Y/N*)
		LSE? (Y/N)	AEoI? (Y/N)	
	Alteration of local hydrology and hydrogeology – paragraphs 4.1.11 to 4.1.12.	Y	N	Y
	Changes in air quality – paragraphs 4.2.1 to 4.2.28, paragraphs 4.3.1 to 4.3.2.	Y	N	Y
	Impacts from entrapment on fish as a prey species – paragraphs 4.3.104 to 4.3.130	Y	N	**N**
	Impacts on fish as a prey species from noise and vibration – paragraphs 4.3.132 to 4.3.133	Y	N	NE view unknown, matter raised by RSPB/SWT
	Disturbance effects on species' population (noise, light and visual) – paragraphs 4.3.5 to 4.3.10 and paragraph 4.3.78.	Y	N	**N**
	Disturbance due to increase in recreational pressure – paragraphs 4.2.53 to 4.2.93 and paragraphs 4.3.155 to 4.3.160.	Y	N	**N**
	Physical interaction between species and project infrastructure – paragraphs 3.2.45 to 3.2.48 and paragraphs 4.3.151 to 4.3.154.	N	N/A	**N**
	In-combination effects – paragraphs 3.2.56 to 3.2.66 and 4.6.9.	Y	N	**N**

European sites and Qualifying Features	Effect and where described in RIES	Applicant's conclusion		Do NE agree with no AEoI? (Y/N*)
		LSE? (Y/N)	AEoI? (Y/N)	
	Unintentional introduction or spread of invasive non-native species – paragraphs 3.2.33 to 3.2.35, paragraphs 4.2.50 to 4.2.52.	N	N/A	Y
	Water abstraction and supply – paragraphs 3.2.49 to 3.2.55, paragraphs 4.2.94 to 4.2.107.	N/A	N/A	**N**
	Cumulative/ inter-project effects – paragraphs 3.2.56 to 3.2.57 and 4.1.16 to 4.1.20.	Y	N	**N**
Breeding Marsh Harrier *Circus aeruginosus*	Water quality effects (terrestrial environment) – paragraph 4.1.11 to 4.1.12.	Y	N	Y
	Alteration of local hydrology and hydrogeology – paragraph 4.1.11 to 4.1.12.	Y	N	Y
	Changes in air quality – paragraphs 4.2.1 to 4.2.28, paragraphs 4.3.1 to 4.3.2.	Y	N	Y
	Disturbance due to increase in recreational pressure – paragraphs 4.2.53 to 4.2.93 and paragraphs 4.3.155 to 4.3.160.	Y	N	**N**
	Physical interaction between species and project infrastructure – paragraph 3.2.48 and paragraphs 4.3.151 to 4.3.154.	N	N/A	**N**
	Changes to coastal processes/ sediment transport – paragraphs 3.2.29 to 3.2.32 and 4.2.29 to 4.2.49	N/A	N/A	**N**

European sites and Qualifying Features	**Effect and where described in RIES**	**Applicant's conclusion**		**Do NE agree with no AEoI? (Y/N*)**
		LSE? (Y/N)	**AEoI? (Y/N)**	
	In-combination effects – paragraphs 3.2.56 to 3.2.66 and 4.6.9.	Y	N	**N**
	Unintentional introduction or spread of invasive non-native species – paragraphs 3.2.33 to 3.2.35, paragraphs 4.2.50 to 4.2.52.	N	N/A	Y
	Water abstraction and supply – paragraphs 3.2.49 to 3.2.55, paragraphs 4.2.94 to 4.2.107.	N/A	N/A	**N**
	Cumulative/ inter-project effects – paragraphs 3.2.56 to 3.2.57 and 4.1.16 to 4.1.20.	Y	N	**N**
	Disturbance effects on species' population (noise, light and visual) – paragraphs 4.3.5 to 4.3.10 and paragraphs 4.3.52 to 4.3.69.	Y	**Y**	**NE agree with Applicant's conclusion of AEoI**
Breeding Nightjar *Caprimulgus europaeus*	Changes in air quality – paragraphs 4.2.1 to 4.2.28, paragraphs 4.3.1 to 4.3.2.	Y	N	Y
	Disturbance effects on species' population (noise, light and visual) – paragraphs 4.3.5 to 4.3.10 and paragraph 4.3.78.	Y	N	**N**
	Disturbance due to increase in recreational pressure – paragraphs 4.2.53 to 4.2.93 and paragraphs 4.3.155 to 4.3.160.	Y	N	**N**

European sites and Qualifying Features	**Effect and where described in RIES**	**Applicant's conclusion**		**Do NE agree with no AEoI? (Y/N*)**
		LSE? (Y/N)	**AEoI? (Y/N)**	
	Physical interaction between species and project infrastructure – paragraph 3.2.48 and paragraphs 4.3.151 to 4.3.154.	N	N/A	**N**
	Changes to coastal processes/ sediment transport – paragraphs 3.2.29 to 3.2.32 and 4.2.29 to 4.2.49	N/A	N/A	**N**
	In-combination effects – paragraphs 3.2.56 to 3.2.66 and 4.6.9.	Y	N	**N**
	Unintentional introduction or spread of invasive non-native species – paragraphs 3.2.33 to 3.2.35, paragraphs 4.2.50 to 4.2.52.	N	N/A	Y
	Water abstraction and supply – paragraphs 3.2.49 to 3.2.55, paragraphs 4.2.94 to 4.2.107.	N/A	N/A	**N**
	Cumulative/ inter-project effects – paragraphs 3.2.56 to 3.2.57 and 4.1.16 to 4.1.20.	Y	N	**N**
Breeding Shoveler *Anas clypeata*	Water quality effects (terrestrial environment) – paragraph 4.1.11 to 4.1.12.	Y	N	Y
	Alteration of local hydrology and hydrogeology – paragraph 4.1.11 to 4.1.12.	Y	N	Y
	Changes in air quality – paragraphs 4.2.1 to 4.2.28, paragraphs 4.3.1 to 4.3.2.	Y	N	Y

European sites and Qualifying Features	Effect and where described in RIES	Applicant's conclusion		Do NE agree with no AEoI? (Y/N*)
		LSE? (Y/N)	AEoI? (Y/N)	
	Disturbance effects on species' population (noise, light and visual) – paragraphs 4.3.5 to 4.3.10 and paragraphs 4.3.28 to 4.3.51.	Y	N	**N**
	Disturbance due to increase in recreational pressure – paragraphs 4.2.53 to 4.2.93 and paragraphs 4.3.155 to 4.3.160.	Y	N	**N**
	Physical interaction between species and project infrastructure – paragraph 3.2.48 and paragraphs 4.3.151 to 4.3.154.	N	N/A	**N**
	Changes to coastal processes/ sediment transport – paragraphs 3.2.29 to 3.2.32 and 4.2.29 to 4.2.49	N/A	N/A	**N**
	In-combination effects – paragraphs 3.2.56 to 3.2.66 and 4.6.9.	Y	N	**N**
	Unintentional introduction or spread of invasive non-native species – paragraphs 3.2.33 to 3.2.35, paragraphs 4.2.50 to 4.2.52.	N	N/A	Y
	Water abstraction and supply – paragraphs 3.2.49 to 3.2.55, paragraphs 4.2.94 to 4.2.107.	N/A	N/A	**N**
	Cumulative/ inter-project effects – paragraphs 3.2.56 to 3.2.57 and 4.1.16 to 4.1.20.	Y	N	**N**
Breeding Teal *Anas crecca*	Water quality effects (terrestrial environment) – paragraph 4.1.11 to 4.1.12.	Y	N	Y

European sites and Qualifying Features	Effect and where described in RIES	Applicant's conclusion		Do NE agree with no AEoI? (Y/N*)
		LSE? (Y/N)	AEoI? (Y/N)	
	Alteration of local hydrology and hydrogeology – paragraph 4.1.11 to 4.1.12.	Y	N	Y
	Changes in air quality – paragraphs 4.2.1 to 4.2.28, paragraphs 4.3.1 to 4.3.2.	Y	N	Y
	Disturbance effects on species' population (noise, light and visual) – paragraphs 4.3.5 to 4.3.10 and paragraphs 4.3.70 to 4.3.73.	Y	N	**N**
	Disturbance due to increase in recreational pressure – paragraphs 4.2.53 to 4.2.93 and paragraphs 4.3.155 to 4.3.160.	Y	N	**N**
	Physical interaction between species and project infrastructure – paragraph 3.2.48 and paragraphs 4.3.151 to 4.3.154.	N	N/A	**N**
	Changes to coastal processes/ sediment transport – paragraphs 3.2.29 to 3.2.32 and 4.2.29 to 4.2.49	N/A	N/A	**N**
	In-combination effects – paragraphs 3.2.56 to 3.2.66 and 4.6.9.	Y	N	**N**
	Unintentional introduction or spread of invasive non-native species – paragraphs 3.2.33 to 3.2.35, paragraphs 4.2.50 to 4.2.52.	N	N/A	Y
	Water abstraction and supply – paragraphs 3.2.49 to 3.2.55, paragraphs 4.2.94 to 4.2.107.	N/A	N/A	**N**

European sites and Qualifying Features	**Effect and where described in RIES**	**Applicant's conclusion**		**Do NE agree with no AEoI? (Y/N*)**
		LSE? (Y/N)	**AEoI? (Y/N)**	
	Cumulative/ inter-project effects – paragraphs 3.2.56 to 3.2.57 and 4.1.16 to 4.1.20.	Y	N	**N**
Breeding Gadwall *Anas strepera*	Water quality effects (terrestrial environment) – paragraph 4.1.11 to 4.1.12.	Y	N	Y
	Alteration of local hydrology and hydrogeology – paragraph 4.1.11 to 4.1.12.	Y	N	Y
	Changes in air quality – paragraphs 4.2.1 to 4.2.28, paragraphs 4.3.1 to 4.3.2.	Y	N	Y
	Disturbance effects on species' population (noise, light and visual) – paragraphs 4.3.5 to 4.3.10 and paragraphs 4.3.28 to 4.3.51.	Y	N	**N**
	Disturbance due to increase in recreational pressure – paragraphs 4.2.53 to 4.2.93 and paragraphs 4.3.155 to 4.3.160.	Y	N	**N**
	Physical interaction between species and project infrastructure – paragraph 3.2.48 and paragraphs 4.3.151 to 4.3.154.	N	N/A	**N**
	Changes to coastal processes/ sediment transport – paragraphs 3.2.29 to 3.2.32 and 4.2.29 to 4.2.49	N/A	N/A	**N**
	In-combination effects – paragraphs 3.2.56 to 3.2.66 and 4.6.9.	Y	N	**N**

European sites and Qualifying Features	Effect and where described in RIES	Applicant's conclusion		Do NE agree with no AEoI? (Y/N*)
		LSE? (Y/N)	AEoI? (Y/N)	
	Unintentional introduction or spread of invasive non-native species – paragraphs 3.2.33 to 3.2.35, paragraphs 4.2.50 to 4.2.52.	N	N/A	Y
	Water abstraction and supply – paragraphs 3.2.49 to 3.2.55, paragraphs 4.2.94 to 4.2.107.	N/A	N/A	**N**
	Cumulative/ inter-project effects – paragraphs 3.2.56 to 3.2.57 and 4.1.16 to 4.1.20.	Y	N	**N**
Wintering Gadwall *Anas strepera*	Water quality effects (terrestrial environment) – paragraph 4.1.11 to 4.1.12.	Y	N	Y
	Alteration of local hydrology and hydrogeology – paragraph 4.1.11 to 4.1.12.	Y	N	Y
	Changes in air quality – paragraphs 4.2.1 to 4.2.28, paragraphs 4.3.1 to 4.3.2.	Y	N	Y
	Disturbance effects on species' population (noise, light and visual) – paragraphs 4.3.5 to 4.3.10 and paragraphs 4.3.28 to 4.3.51.	Y	N	**N**
	Disturbance due to increase in recreational pressure – paragraphs 4.2.53 to 4.2.93 and paragraphs 4.3.155 to 4.3.160.	Y	N	**N**
	Physical interaction between species and project infrastructure – paragraph 3.2.48 and paragraphs 4.3.151 to 4.3.154.	N	N/A	**N**

European sites and Qualifying Features	**Effect and where described in RIES**	**Applicant's conclusion**		**Do NE agree with no AEoI? (Y/N*)**
		LSE? (Y/N)	**AEoI? (Y/N)**	
	Changes to coastal processes/ sediment transport – paragraphs 3.2.29 to 3.2.32 and 4.2.29 to 4.2.49	N/A	N/A	**N**
	In-combination effects – paragraphs 3.2.56 to 3.2.66 and 4.6.9.	Y	N	**N**
	Unintentional introduction or spread of invasive non-native species – paragraphs 3.2.33 to 3.2.35, paragraphs 4.2.50 to 4.2.52.	N	N/A	Y
	Water abstraction and supply – paragraphs 3.2.49 to 3.2.55, paragraphs 4.2.94 to 4.2.107.	N/A	N/A	**N**
	Cumulative/ inter-project effects – paragraphs 3.2.56 to 3.2.57 and 4.1.16 to 4.1.20.	Y	N	**N**
Wintering Hen Harrier *Circus cyaneus*	Water quality effects (terrestrial environment) – paragraph 4.1.11 to 4.1.12.	Y	N	Y
	Alteration of local hydrology and hydrogeology – paragraph 4.1.11 to 4.1.12.	Y	N	Y
	Changes in air quality – paragraphs 4.2.1 to 4.2.28, paragraphs 4.3.1 to 4.3.2.	Y	N	Y
	Disturbance effects on species' population (noise, light and visual) – paragraphs 4.3.5 to 4.3.10 and paragraph 4.3.78.	Y	N	**N**

European sites and Qualifying Features	**Effect and where described in RIES**	**Applicant's conclusion**		**Do NE agree with no AEoI? (Y/N*)**
		LSE? (Y/N)	**AEoI? (Y/N)**	
	Disturbance due to increase in recreational pressure – paragraphs 4.2.53 to 4.2.93 and paragraphs 4.3.155 to 4.3.160.	Y	N	**N**
	Physical interaction between species and project infrastructure – paragraph 3.2.48 and paragraphs 4.3.151 to 4.3.154.	N	N/A	**N**
	Changes to coastal processes/ sediment transport – paragraphs 3.2.29 to 3.2.32 and 4.2.29 to 4.2.49	N/A	N/A	**N**
	In-combination effects – paragraphs 3.2.56 to 3.2.66 and 4.6.9.	Y	N	**N**
	Unintentional introduction or spread of invasive non-native species – paragraphs 3.2.33 to 3.2.35, paragraphs 4.2.50 to 4.2.52.	N	N/A	Y
	Water abstraction and supply – paragraphs 3.2.49 to 3.2.55, paragraphs 4.2.94 to 4.2.107.	N/A	N/A	**N**
	Cumulative/ inter-project effects – paragraphs 3.2.56 to 3.2.57 and 4.1.16 to 4.1.20.	Y	N	**N**
Wintering Shoveler *Anas Clypeata*	Water quality effects (terrestrial environment) – paragraph 4.1.11 to 4.1.12.	Y	N	Y
	Alteration of local hydrology and hydrogeology – paragraph 4.1.11 to 4.1.12.	Y	N	Y

European sites and Qualifying Features	Effect and where described in RIES	Applicant's conclusion		Do NE agree with no AEoI? (Y/N*)
		LSE? (Y/N)	AEoI? (Y/N)	
	Changes in air quality – paragraphs 4.2.1 to 4.2.28, paragraphs 4.3.1 to 4.3.2.	Y	N	Y
	Disturbance effects on species' population (noise, light and visual) – paragraphs 4.3.5 to 4.3.10 and paragraphs 4.3.28 to 4.3.51.	Y	N	**N**
	Disturbance due to increase in recreational pressure – paragraphs 4.2.53 to 4.2.93 and paragraphs 4.3.155 to 4.3.160.	Y	N	**N**
	Physical interaction between species and project infrastructure – paragraph 3.2.48 and paragraphs 4.3.151 to 4.3.154.	N	N/A	**N**
	Changes to coastal processes/ sediment transport – paragraphs 3.2.29 to 3.2.32 and 4.2.29 to 4.2.49	N/A	N/A	**N**
	In-combination effects – paragraphs 3.2.56 to 3.2.66 and 4.6.9.	Y	N	**N**
	Unintentional introduction or spread of invasive non-native species – paragraphs 3.2.33 to 3.2.35, paragraphs 4.2.50 to 4.2.52.	N	N/A	Y
	Water abstraction and supply – paragraphs 3.2.49 to 3.2.55, paragraphs 4.2.94 to 4.2.107.	N/A	N/A	**N**
	Cumulative/ inter-project effects – paragraphs 3.2.56 to 3.2.57 and 4.1.16 to 4.1.20.	Y	N	**N**

European sites and Qualifying Features	**Effect and where described in RIES**	**Applicant's conclusion**		**Do NE agree with no AEoI? (Y/N*)**
		LSE? (Y/N)	**AEoI? (Y/N)**	
Wintering White Fronted Goose *Anser albifrons albifrons*	Water quality effects (terrestrial environment) – paragraph 4.1.11 to 4.1.12.	Y	N	Y
	Alteration of local hydrology and hydrogeology – paragraph 4.1.11 to 4.1.12.	Y	N	Y
	Changes in air quality – paragraphs 4.2.1 to 4.2.28, paragraphs 4.3.1 to 4.3.2.	Y	N	Y
	Disturbance effects on species' population (noise, light and visual) – paragraphs 4.3.5 to 4.3.10 and paragraphs 4.3.74 to 4.3.77.	Y	N	**N**
	Disturbance due to increase in recreational pressure – paragraphs 4.2.53 to 4.2.93 and paragraphs 4.3.155 to 4.3.160.	Y	N	**N**
	Physical interaction between species and project infrastructure – paragraph 3.2.48 and paragraphs 4.3.151 to 4.3.154.	N	N/A	**N**
	Changes to coastal processes/ sediment transport – paragraphs 3.2.29 to 3.2.32 and 4.2.29 to 4.2.49	N/A	N/A	**N**
	In-combination effects – paragraphs 3.2.56 to 3.2.66 and 4.6.9.	Y	N	**N**
	Unintentional introduction or spread of invasive non-native species – paragraphs 3.2.33 to 3.2.35, paragraphs 4.2.50 to 4.2.52.	N	N/A	Y

European sites and Qualifying Features	Effect and where described in RIES	Applicant's conclusion		Do NE agree with no AEoI? (Y/N*)
		LSE? (Y/N)	AEoI? (Y/N)	
	Water abstraction and supply – paragraphs 3.2.49 to 3.2.55, paragraphs 4.2.94 to 4.2.107.	N/A	N/A	**N**
	Cumulative/ inter-project effects – paragraphs 3.2.56 to 3.2.57 and 4.1.16 to 4.1.20.	Y	N	**N**
UK11044 Minsmere-Walberswick Ramsar				
Ramsar criterion 1 Mosaic of marine, freshwater, marshland and associated habitats	Changes to coastal processes/ sediment transport – paragraphs 4.2.29 to 4.2.49.	Y	N	**N**
	Water quality effects (terrestrial environment) – paragraph 4.1.11 to 4.1.12.	Y	N	Y
	Alteration of local hydrology and hydrogeology – paragraph 4.1.11.	Y	N	Y
	Changes in air quality – paragraphs 4.2.1 to 4.2.28, paragraphs 4.3.1 to 4.3.2.	Y	N	**N**
	Disturbance due to increase in recreational pressure – paragraphs 4.2.53 to 4.2.93.	Y	N	**N**
	In-combination effects – paragraphs 3.2.56 to 3.2.66 and 4.6.9.	Y	N	**N**
	Unintentional introduction or spread of invasive non-native species – paragraphs 3.2.33 to 3.2.35, paragraphs 4.2.50 to 4.2.52.	N	N/A	Y

European sites and Qualifying Features	**Effect and where described in RIES**	**Applicant's conclusion**		**Do NE agree with no AEoI? (Y/N*)**
		LSE? (Y/N)	**AEoI? (Y/N)**	
	Water abstraction and supply – paragraphs 3.2.49 to 3.2.55, paragraphs 4.2.94 to 4.2.107.	N/A	N/A	**N**
	Cumulative/ inter-project effects – paragraphs 3.2.56 to 3.2.57 and 4.1.16 to 4.1.20.	Y	N	**N**
Ramsar criterion 2 Supports nine nationally scarce plants and at least 26 red data book invertebrates	Changes to coastal processes/ sediment transport – paragraphs 4.2.29 to 4.2.49.	Y	N	**N**
	Water quality effects (terrestrial environment) – paragraph 4.1.11 to 4.1.12.	Y	N	Y
	Alteration of local hydrology and hydrogeology – paragraph 4.1.11 to 4.1.12.	Y	N	Y
	Changes in air quality – paragraphs 4.2.1 to 4.2.28, paragraphs 4.3.1 to 4.3.2.	Y	N	**N**
	Disturbance due to increase in recreational pressure – paragraphs 4.2.53 to 4.2.93.	Y	N	**N**
	In-combination effects – paragraphs 3.2.56 to 3.2.66 and 4.6.9.	Y	N	**N**
	Unintentional introduction or spread of invasive non-native species – paragraphs 3.2.33 to 3.2.35, paragraphs 4.2.50 to 4.2.52.	N	N/A	Y
	Water abstraction and supply – paragraphs 3.2.49 to 3.2.55, paragraphs 4.2.94 to 4.2.107.	N/A	N/A	**N**

European sites and Qualifying Features	**Effect and where described in RIES**	**Applicant's conclusion**		**Do NE agree with no AEoI? (Y/N*)**
		LSE? (Y/N)	**AEoI? (Y/N)**	
	Cumulative/ inter-project effects – paragraphs 3.2.56 to 3.2.57 and 4.1.16 to 4.1.20.	Y	N	**N**
Ramsar criterion 2 An important assemblage of rare breeding birds associated with marshland and reedbeds	Disturbance effects on species' population (noise, and visual) (Marsh harrier) – paragraphs 4.3.5 to 4.3.10 and paragraphs 4.3.52 to 4.3.69	Y	**Y**	**NE agree with Applicant's conclusion of AEoI**
	Changes to coastal processes/ sediment transport – paragraphs 4.2.29 to 4.2.49.	Y	N	**N**
	Water quality effects (marine environment) (direct toxicity)- paragraph 3.2.36 to 3.2.44, paragraphs 4.3.136 to 4.3.150.	N	N/A	**N**
	Water quality effects (terrestrial environment) – paragraph 4.1.11 to 4.1.12.	Y	N	Y
	Alteration of local hydrology and hydrogeology – paragraph 4.1.11 to 4.1.12.	Y	N	Y
	Changes in air quality – paragraphs 4.2.1 to 4.2.28, paragraphs 4.3.1 to 4.3.2.	Y	N	**N**
	Impacts from entrapment on fish as a prey species (little tern) – paragraphs 4.3.104 to 4.3.130	Y	N	**N**
	Disturbance effects on species' population (noise, light and visual) (excluding marsh harrier component	Y	N	**N**

European sites and Qualifying Features	Effect and where described in RIES	Applicant's conclusion		Do NE agree with no AEoI? (Y/N*)
		LSE? (Y/N)	AEoI? (Y/N)	
	species) – paragraphs 4.3.5 to 4.3.10 and paragraphs 4.3.13 to 4.3.51 and paragraphs 4.3.70 to 4.3.78			
	Disturbance due to increase in recreational pressure – paragraphs 4.3.155 to 4.3.160.	Y	N	**N**
	In-combination effects – paragraphs 3.2.56 to 3.2.66 and 4.6.9.	Y	N	**N**
	Unintentional introduction or spread of invasive non-native species – paragraphs 3.2.33 to 3.2.35, paragraphs 4.2.50 to 4.2.52.	N	N	Y
	Water abstraction and supply – paragraphs 3.2.49 to 3.2.55, paragraphs 4.2.94 to 4.2.107.	N/A	N/A	**N**
	Cumulative/ inter-project effects – paragraphs 3.2.56 to 3.2.57 and 4.1.16 to 4.1.20.	Y	N	**N**
UK9020309 Outer Thames Estuary SPA				
Wintering / passage Red-throated diver *Gavia stellata*	Water quality effects (marine environment) (direct toxicity)- paragraph 3.2.36 to 3.2.44, paragraphs 4.3.136 to 4.3.150.	N	N/A	**N**
	Direct habitat loss and direct/ indirect habitat fragmentation – paragraphs 3.2.16 to 3.2.19.	N	N/A	Y
	Disturbance effects on species' population (direct disturbance from vessels) – paragraphs 4.3.79 to 4.3.93	Y	N	**N**

European sites and Qualifying Features	**Effect and where described in RIES**	**Applicant's conclusion**		**Do NE agree with no AEoI? (Y/N*)**
		LSE? (Y/N)	**AEoI? (Y/N)**	
	Disturbance effects on species' population (noise disturbance on prey species) – paragraphs 4.3.5 to 4.3.10 and 4.3.79 to 4.3.93	Y	N	**N**
	Impacts on fish as a prey species from noise and vibration – paragraphs 4.3.134 to 4.3.135	Y	N	NE view unknown, matter raised by RSPB/SWT
	Impacts from entrapment on fish as a prey species – paragraphs 4.3.104 to 4.3.130	Y	N	NE view unknown, matter raised by RSPB/SWT
	Physical interaction between species and project infrastructure – paragraphs 3.2.45 to 3.2.48.	N	N/A	Y
	In-combination effects – paragraphs 3.2.56 to 3.2.66 and 4.6.9 and 4.3.93.	Y	N	**N**
	Cumulative/ inter-project effects – paragraphs 3.2.56 to 3.2.57 and 4.1.16 to 4.1.20.	Y	N	**N**
Breeding Little Tern *Sterna albifrons*	Water quality effects (marine environment) (direct toxicity)- paragraph 3.2.36 to 3.2.44, paragraphs 4.3.136 to 4.3.150.	N	N/A	**N**
	Direct habitat loss and direct/ indirect habitat fragmentation – paragraphs 3.2.16 to 3.2.19.	N	N/A	Y

European sites and Qualifying Features	**Effect and where described in RIES**	**Applicant's conclusion**		**Do NE agree with no AEoI? (Y/N*)**
		LSE? (Y/N)	**AEoI? (Y/N)**	
	Disturbance effects on species' population (noise disturbance on prey species) – paragraphs 4.3.5 to 4.3.10 and 4.3.94	Y	N	**N**
	Impacts on fish as a prey species from noise and vibration – paragraphs 4.3.132 to 4.3.133	Y	N	NE view unknown, matter raised by RSPB/SWT
	Disturbance due to increase in recreational pressure – paragraphs 3.2.13 to 3.2.15, and paragraphs 4.3.155 to 4.3.160.	N	N/A	**N**
	Physical interaction between species and project infrastructure – paragraphs 3.2.45 to 3.2.48.	N	N/A	Y
	In-combination effects – paragraphs 3.2.56 to 3.2.66 and 4.6.9.	Y	N	**N**
	Impacts from entrapment on fish as a prey species – paragraphs 4.3.104 to 4.3.130	Y	N	NE view unknown, matter raised by RSPB/SWT
	Cumulative/ inter-project effects – paragraphs 3.2.56 to 3.2.57 and 4.1.16 to 4.1.20.	Y	N	**N**
Breeding Common Tern *Sterna hirundo*	Water quality effects (marine environment) (direct toxicity)- paragraph 3.2.36 to 3.2.44, paragraphs 4.3.136 to 4.3.150.	N	N/A	**N**

European sites and Qualifying Features	Effect and where described in RIES	Applicant's conclusion		Do NE agree with no AEoI? (Y/N*)
		LSE? (Y/N)	AEoI? (Y/N)	
	Direct habitat loss and direct/ indirect habitat fragmentation – paragraphs 3.2.16 to 3.2.19.	N	N/A	Y
	Disturbance effects on species' population (noise disturbance on prey species) – paragraphs 4.3.5 to 4.3.10 and 4.3.94	Y	N	**N**
	Disturbance effects on species' population (noise, light and visual) – paragraphs 4.3.5 to 4.3.10.	Y	N	**N**
	Physical interaction between species and project infrastructure – paragraphs 3.2.45 to 3.2.48.	N	N/A	Y
	In-combination effects – paragraphs 3.2.56 to 3.2.66 and 4.6.9.	Y	N	**N**
	Impacts from entrapment on fish as a prey species – paragraphs 4.3.104 to 4.3.130	Y	N	NE view unknown, matter raised by RSPB/SWT
	Cumulative/ inter-project effects – paragraphs 3.2.56 to 3.2.57 and 4.1.16 to 4.1.20.	Y	N	**N**
UK0013111 Plymouth Sound and Estuaries SAC				
1102 Allis shad *Alosa alosa*	Physical interaction between species and project infrastructure – paragraphs 3.2.20 to 3.2.23	N	N/A	Y
UK9020286 Sandlings SPA				

European sites and Qualifying Features	**Effect and where described in RIES**	**Applicant's conclusion**		**Do NE agree with no AEoI? (Y/N*)**
		LSE? (Y/N)	**AEoI? (Y/N)**	
Breeding nightjar *Caprimulgus europaeus*	Changes in air quality – paragraphs 4.2.1 to 4.2.28, paragraphs 4.3.1 to 4.3.2.	Y	N	Y
	Disturbance effects on species' population (noise, light and visual) – paragraphs 4.3.5 to 4.3.10 and paragraphs 4.3.95 to 4.3.100.	Y	N	**N**
	Disturbance due to increase in recreational pressure – paragraphs 4.3.155 to 4.3.160,	Y	N	**N**
	In-combination effects – paragraphs 3.2.56 to 3.2.66 and 4.6.9.	Y	N	**N**
	Cumulative/ inter-project effects – paragraphs 3.2.56 to 3.2.57 and 4.1.16 to 4.1.20.	Y	N	**N**
Breeding Woodlark *Lullula arborea*	Changes in air quality – paragraphs 4.2.1 to 4.2.28, paragraphs 4.3.1 to 4.3.2.	Y	N	Y
	Disturbance effects on species' population (noise, light and visual) – paragraphs 4.3.5 to 4.3.10 and paragraphs 4.3.95 to 4.3.100.	Y	N	**N**
	Disturbance due to increase in recreational pressure – paragraphs 4.3.155 to 4.3.160.	Y	N	**N**
	In-combination effects – paragraphs 3.2.56 to 3.2.66 and 4.6.9.	Y	N	**N**

European sites and Qualifying Features	**Effect and where described in RIES**	**Applicant's conclusion**		**Do NE agree with no AEoI? (Y/N*)**
		LSE? (Y/N)	**AEoI? (Y/N)**	
	Cumulative/ inter-project effects – paragraphs 3.2.56 to 3.2.57 and 4.1.16 to 4.1.20.	Y	N	**N**
UK0030395 Southern North Sea SAC				
1351 Harbour porpoise *Phocoena phocoena*	Direct habitat loss and direct/ indirect habitat fragmentation – paragraphs 4.4.17 to 4.4.18.	Y	N	**N**
	Disturbance effects on species' population (underwater noise) – paragraphs 4.4.3 to 4.4.11 and paragraphs 4.4.22 to 4.4.30.	Y	N	**N**
	Physical interaction between species and project infrastructure – paragraphs 4.4.19 to 4.4.21.	Y	N	Y
	In-combination effects – paragraph 4.4.31 and 4.6.9.	Y	N	**N**
	Cumulative/ inter-project effects – paragraphs 3.2.56 to 3.2.57 and 4.1.16 to 4.1.20.	N/A	N/A	**N**
UK0012741 Staverton Park and the Thicks, Wantisden SAC				
9190 Old acidophilous oak woods with *Quercus robur* on sandy plains	Changes in air quality – paragraphs 3.2.24 to 3.2.28, paragraphs 4.2.1 to 4.2.28, paragraphs 4.3.1 to 4.3.2.	N	N/A	Y
	Cumulative/ inter-project effects – paragraphs 3.2.56 to 3.2.57 and 4.1.16 to 4.1.20.	N/A	N/A	**N**
UK0017075 The Wash and North Norfolk Coast SAC				
	Effects on prey species – paragraphs 4.4.12 to 4.4.14.	Y	N	Y

European sites and Qualifying Features	**Effect and where described in RIES**	**Applicant's conclusion**		**Do NE agree with no AEoI? (Y/N*)**
		LSE? (Y/N)	**AEoI? (Y/N)**	
1365 Harbour seal *Phoca vitulina*	Disturbance effects on species' population (underwater noise) – paragraphs 4.4.3 to 4.4.11 and paragraphs 4.4.15 to 4.4.16.	Y	N	Y
	In-combination effects – paragraph 4.4.31 and 4.6.9.	Y	N	**N**
	Cumulative/ inter-project effects – paragraphs 3.2.56 to 3.2.57 and 4.1.16 to 4.1.20.	N/A	N/A	**N**