Department for
Business, Energy
& Industrial Strategy

Habitats Regulations Assessment for an Application Under the Planning Act 2008

SIZEWELL C NEW NUCLEAR POWER STATION

Regulation 63 of the Conservation of Habitats and Species Regulations 2017, and

Regulation 28 of the Conservation of Offshore Marine Habitats and Species Regulations 2017

July 2022

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Term	Abbreviation
Adverse Effect on Integrity	AEoI
Appropriate Assessment	AA
Beach Landing Facility	BLF
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Combined Drainage Outfall	CDO
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Deed of Obligation	DoO
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Invasive Non-Native Species	INNS
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National Site Network	NSN
National Trust	NT
Nationally Significant Infrastructure Project	NSIP
National Policy Statement	NPS
Natural England	NE
Northumbrian Water Limited	NWL
Office for Nuclear Regulation	ONR
Planning Act 2008	PA 2008

Planning Inspectorate	PINS
Public Rights of Way	PRoW
Report on the Implications for European Sites	RIES
Royal Society for the Protection of Birds	RSPB
Special Area of Conservation	SAC
Site Integrity Plan	SIP
Site of Special Scientific Interest	SSSI
Special Protection Area	SPA
Statement of Common Ground	SoCG
Statutory Nature Conservation Body	SNCB
Suffolk County Council	SCC
Suffolk Wildlife Trust	SWT
Terrestrial Ecology Monitoring and Mitigation Plan	TEMMP
Together Against Sizewell C	TASC
Water Discharge Activity permit	WDA permit
Water Resource Zone	WRZ
Water Industry National Environment Programme	WINEP

1 Introduction

1.1 Background

This is a record of the Habitats Regulations Assessment ("HRA") that the Secretary of State for Business, Energy, and Industrial Strategy ("BEIS") has undertaken under the Conservation of Habitats and Species Regulations 2017 ("the Habitats Regulations") and the Conservation of Offshore Marine Habitats and Species Regulations 2017 ("the Offshore Habitats Regulations") in respect of the Development Consent Order ("DCO") and Deemed Marine Licence ("DML") for The Sizewell C New Nuclear Power Station and its associated infrastructure (the "Project"). The ExA defines this as "Proposed Development". It is defined as "Project" within this HRA for consistency with the terminology of the Habitats Regulations. For the purposes of these regulations the Secretary of State is the competent authority.

The Project will comprise the construction and operation of a new nuclear power station, consisting of two United Kingdom European Pressurised Reactors (UK EPR™) with a combined nominal capacity of 3,340 megawatts ("MW"), along with several offsite associated developments. The power station and onsite developments and marine works would be located at Sizewell in East Suffolk, adjacent to the existing Sizewell B power station and approximately 3km to the northeast of the town of Leiston. The Project application is described in more detail in Section 2.

The Project constitutes a nationally significant infrastructure project ("NSIP") as defined by s. 14(1)(a) of the Planning Act 2008[1] ("PA 2008") as it is for an onshore generating station with a capacity over 50MW.

The Project was accepted by the Planning Inspectorate ("PINS") on 24 June 2020 and a five-member Panel of Inspectors ("the Panel") was appointed as the Examining Authority ("ExA") for the application. The Examination of the Project application began on 14 April 2021 and completed on 14 October 2021. The ExA submitted its report of the Examination, including its recommendation ("the ExA's Report"), to the Secretary of State on 25 February 2022.

Following receipt of the ExA's Report the Secretary of State invited Interested Parties ("IPs") to provide additional updates, information and responses to information regarding certain issues, including those relating to potential impacts on qualifying features of UK National Site Network ("NSN") sites (referred to in this report as "protected sites"). The Secretary of State's consultation letters referred to throughout this report and the specific details are included in Section 1.5

This HRA contains analysis and assessment of the potential effects of the Project upon protected sites in other European Economic Area ("EEA") States ("transboundary sites"), which is included under the transboundary assessment section of the report (Section 6).

[1] http://www.legislation.gov.uk/ukpga/2008/29/contents.

1.2 Habitats Regulations Assessment (HRA)

The Habitats Regulations and the Offshore Habitats Regulations aim to ensure the long-term conservation of certain species and habitats by protecting them from possible adverse effects of plans and projects.

In the UK, the Habitats Regulations apply as far as the 12 nautical miles ("nm") limit of territorial waters. Beyond territorial waters, the Offshore Habitats Regulations serve the same function for the UK's offshore marine area. The Secretary of State notes that the Project has the potential to affect protected sites located within and outside the 12 nm limit. Any reference to "The Habitats Regulations" will include the Offshore Regulations as the context requires.

Following the UK's departure from the European Union ("EU"), The Habitats Regulations were amended by The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 ("the 2019 Regulations"). Reference to the Habitat Regulations in this HRA Report are therefore to the latest amended version at the time of publication, unless otherwise stated.

The Habitats Regulations provide for the designation of sites for the protection of habitats and species of international importance. These sites are called Special Areas of Conservation ("SACs"). They also provide for the classification of sites for the protection of rare and vulnerable birds and for regularly occurring migratory species within the UK and internationally. These sites are called Special Protection Areas ("SPAs"). SACs and SPAs together from part of the UK's NSN.

The Convention on Wetlands of International Importance 1972 ("the Ramsar Convention") provides for the listing of wetlands of international importance. These sites are called Ramsar sites. Government policy is to afford Ramsar sites in the United Kingdom the same protection as sites within the NSN (collectively referred to in this HRA as "protected sites").

Candidate SACs ("cSACs"), SACs and SPAs are afforded protection as protected sites. As a matter of policy[2] the Government affords potential SPAs ("pSPAs") the same level of protection.

Regulation 63 of the Habitats Regulations provides that:

…before deciding to undertake, or give any consent, permission or other authorisation for, a plan or project which (a) is likely to have a significant effect on a European site or a European offshore marine site (either alone or in-combination with other plans or projects), and (b) is not directly connected with or necessary to the management of that site, [the competent authority] must make an appropriate assessment of the implications for that site in view of that site's conservation objectives.

And that:

In the light of the conclusions of the assessment, and subject to regulation 64 [IROPI], the competent authority may agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the European site or the European offshore marine site (as the case may be).

[2] NPS EN-1 para 5.3.9

Regulation 28 of the Conservation of Offshore Marine Habitats and Species Regulations 2017 contains similar provisions:

Before deciding to undertake, or give any consent, permission or other authorisation for, a relevant plan or project, a competent authority must make an appropriate assessment of the implications of the plan or project for the site in view of that site's conservation objectives.

And that:

In the light of the conclusions of the assessment, and subject to regulation 29 [IROPI], the competent authority may agree to the plan or project only if it has ascertained that it will not adversely affect the integrity of the European offshore marine site or European site (as the case may be).

This Project is not directly connected with, or necessary to, the management of a protected site. The Habitats Regulations require that, where the Project is likely to have a likely significant effect ("LSE") on any such site, either alone or in-combination with other plans and projects, an appropriate assessment ("AA") must be carried out to determine whether the Project will have an adverse effect on the integrity ("AEoI") of the site in view of that site's Conservation Objectives. In this document, the following assessments are collectively referred to as the Habitats Regulations Assessment ("HRA"):

- Stage 1: Assessment of LSE;
- Stage 2: AA to determine whether there is an AEoI of a protected site;
- Stage 3: Assessment of alternative solutions;
- Stage 4: Imperative Reasons of Overriding Public Interest ("IROPI"); and
- Stage 5: Proposed compensatory measures.

1.3 Site Conservation Objectives

Where an AA is required in respect of a protected site, regulation 63(1) of the Habitats Regulations (and regulation 28(1) of the Offshore Habitats Regulations) requires that it be an AA of the implications of the plan or project for the site in view of its conservation objectives. Government guidance also recommends that in carrying out the LSE screening, applicants must check if the proposal could have a significant effect on a protected site that could affect its conservation objectives.

Defra Guidance indicates that disturbance to a species or deterioration of a protected site must be considered in relation to the integrity of that site and its conservation objectives[3]. It states that *"the integrity of a site is the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was designated"*.

Conservation objectives have been established by NE. When met, each site will contribute to the overall favourable conservation status of the species or habitat feature across its natural range. Conservation objectives outline the desired state for a protected site, in terms of the interest features for which it has been designated. If these interest features are being managed in a way which maintains their nature conservation value, they are assessed as being in a

[3] https://www.gov.uk/guidance/appropriate-assessment

'favourable condition'. An AEoI is likely to be one which prevents the site from making the same contribution to favourable conservation status for the relevant feature as it did at the time of its designation. There are no set thresholds at which impacts on site integrity are considered adverse. This is a matter for interpretation on a site-by-site basis, depending on the designated feature and nature, scale, and significance of the impact.

NE has issued generic conservation objectives, which should be applied to each interest feature of the site. Supplementary advice for each site underpins these generic objectives to provide site-specific information and give greater clarity to what might constitute an adverse effect on a site interest feature. Supplementary advice on conservation objectives is subject to availability and is currently being updated on a rolling basis.

Where supplementary advice is not yet available for a site, NE advises[4] that HRAs should use the generic objectives and apply them to the site-specific situation. For SPAs, the overarching objective is to avoid the deterioration of the habitats of qualifying features, and the significant disturbance of the qualifying features, ensuring the integrity of the site is maintained and the site makes a full contribution to achieving the aims of the Habitats Regulations. This is achieved by, subject to natural change, maintaining and restoring:

- The extent and distribution of the habitats of the qualifying features;
- The structure and function of the habitats of the qualifying features;
- The supporting processes on which the habitats of the qualifying features rely;
- The populations of the qualifying features; and
- The distribution of the qualifying features within the site.

For SACs, the overarching objective is to avoid the deterioration of the qualifying natural habitats and the habitats of qualifying species, and the significant disturbance of those qualifying species, ensuring the integrity of the site is maintained and the site makes a full contribution to achieving favourable conservation status of each of the qualifying features. This is achieved by, subject to natural change, maintaining and restoring:

- The extent and distribution of the qualifying natural habitats and habitats of qualifying species;
- The structure and function (including typical species) of qualifying natural habitats;
- The structure and function of the habitats of qualifying species;
- The supporting processes on which qualifying natural habitats and habitats of qualifying species rely;
- The populations of qualifying species; and
- The distribution of qualifying species within the site.

The conservation objectives and, where available, supplementary advice on conservation objectives have been used by the Secretary of State to consider whether the Project has the potential to have an AEoI of sites, either alone or in-combination with other plans or projects. The potential for the Project to have an AEoI is considered for each site in turn.

The supplementary conservation objectives relevant to this HRA Report, as published by NE and the Joint Nature Conservation Committee ("JNCC"), are referenced in Section 2, Section 5 and Table 1 of this HRA Report.

[4] https://www.legislation.gov.uk/uksi/2017/1012/regulation/16A

1.4 The Report on the Implications for European Sites (RIES) and Statutory Consultation

Under Regulation 63(3) of the Habitats Regulations and Regulation 28(4) of the Offshore Habitats Regulations the competent authority must, for the purposes of an AA, consult the appropriate Statutory Nature Conservation Body ("SNCB") and have regard to any representation made by that body within such reasonable time as the authority specifies.

Natural England ("NE") is the SNCB for England and for English waters within the 12 nm limit. The JNCC is the SNCB beyond 12 nm, but this duty has been discharged by NE following the 2013 Triennial Review of both organisations[5,6]. However, JNCC retains responsibility as the statutory advisor for protected sites that are located outside the territorial sea and UK internal waters (i.e. more than 12 nautical miles offshore) and as such continues to provide advice to NE on the significance of any potential effects on interest features of such sites.

The ExA, with support from the Inspectorate's Environmental Services Team, produced a Report on the Implications for European Sites[7] (the "RIES"). The purpose of the RIES was to compile, document and signpost information submitted by the Applicant and IPs during the Examination (up until 3 September 2021). It was issued to ensure that IPs, including NE as the appropriate SNCB in respect of the Application for the Project, had been formally consulted on Habitats Regulations matters during the Examination.

The RIES was published on the PINS NSIP web pages and the ExA notified IPs that it had been published. Consultation on the RIES was undertaken between 15 September 2021 and 12 October 2021. The Applicant, NE, the Environment Agency ("EA"), the Royal Society for the Protection of Birds ("RSPB"), Suffolk Wildlife Trust ("SWT"), Together Against Sizewell C ("TASC") and Suffolk Alternative Green Energy ("SAGE") provided comments on the RIES at Deadline 10 (12 October 2021).

The Secretary of State is content to accept the ExA's recommendation that the RIES supports his duty to consult under Regulation 63(3) of the Habitats Regulations and Regulation 28(4) of the Offshore Habitats Regulations.

1.5 Documents Referred to in this HRA Report

This HRA Report has taken account of, and should be read in conjunction with the documents produced as part of the Application and Examination, together with the responses to the Secretary of State's requests for comment and further information which are available on the PINS NSIP project web page[8]. In particular:

- The ExA's Report;
- The RIES;
- The Applicant's Shadow HRA Report, comprising:

[5] https://www.gov.uk/government/publications/triennial-review-of-the-environment-agency-ea-and-natural-england-ne

[6] https://www.gov.uk/government/publications/triennial-review-of-the-joint-nature-conservation-committee-jncc

[7] https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010012/EN010012-007269-RIES_FINAL.pdf

[8] https://infrastructure.planninginspectorate.gov.uk/projects/eastern/the-sizewell-c-project/?ipcsection=docs

  - Volume 1: Screening and Appropriate Assessment [APP-145, APP-146, APP-147, APP-148, APP-149];
  - Volume 2: Assessment of Alternative Solutions [APP-150];
  - Volume 3: Imperative Reasons of Public Interest [APP-151]; and
  - Volume 4: Compensatory Measures [APP-152].
- The Applicant's Shadow HRA Addendum [AS-173];
- The Applicant's Shadow HRA Addendum Appendices 1A-10A [AS-174, AS-175, AS-176, AS-177, AS-178];
- The Applicant's Shadow HRA Second Addendum [REP2-032];
- The Applicant's Shadow HRA Third Addendum [REP7-279];
- The Environmental Statement ("ES") [APP-159] to [APP-582]. Updates to the ES throughout Examination are catalogued within the ES Signposting Document [REP10-172]; and
- The Secretary of States five requests for further information and comments, published on:
  - 18 March 2022[9] ("the Secretary of State's first consultation letter");
  - 31 March 2022[10] ("the Secretary of State's second consultation letter");
  - 25 April 2022[11] ("the Secretary of State's third consultation letter");
  - 16 May 2022[12] ("the Secretary of State's fourth consultation letter"); and
  - 31 May 2022[13] ("the Secretary of State's fifth consultation letter").

Plus, other information submitted during the Examination and during the Secretary of State's consideration of the Application. Key information from these documents is summarised in this HRA.

A Statement of Common Ground ("SoCG") between the Applicant and NE was first submitted with the DCO application and updated at Deadline 2 [REP2-071]. The SoCG was further updated at Deadline 8 [REP8-094], and a final signed version was submitted at Deadline 10 (12 October 2021) [REP10-097]. Subsequent references to the SoCG between the Applicant and NE in this HRA are to the Deadline 10 version, unless otherwise stated. The SoCG confirmed that not all matters relating to HRA were agreed between the two parties, and that there were HRA matters outstanding between them in respect of the Project.

1.6 Structure of this HRA Report

The remainder of this HRA Report is presented as follows:

- Section 2: provides a general description of the Project;
- Section 3: presents an assessment of the extent to which the Project could have a significant effect on protected sites and qualifying features on its own or in-combination with other plans or projects;
- Section 4: provides a description of the AA methodology;

[9] https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010012/EN010012-008877-Sizewell%20C%20-%20Secretary%20of%20State%20Information%20Request.pdf

[10] https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010012/EN010012-010762-Sizewell-C-Information-Request-No.2-31-03-2022.pdf

[11] https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010012/EN010012-010819-BEIS-invitiation-to-IPs-25-04-22.pdf

[12] https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010012/EN010012-010857-Applicant_letter_to_BEIS_sHRA_2nd_Addendum_Attachment%20A.pdf

[13] https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010012/EN010012-010979-Sizewell%20C%20-%20Letter%20to%20Applicant%20and%20ONR.pdf

- Section 5: presents an AA of the effects of the Project on protected sites and qualifying features, on its own and in-combination with other plans or projects;
- Section 6: presents the transboundary assessment of protected sites in other EEA States;
- Section 7: considers the case for derogation under the Habitats Regulations;
- Section 8: considers whether there are feasible alternative solutions that would be less damaging or avoid damage to protected sites;
- Section 9: considers whether the Project needs to be carried out for imperative reasons of overriding public interest;
- Section 10: presents the proposed measures to fully compensate for the negative effects of the Project; and
- Section 11: presents the Secretary of State's conclusions.

2 Project description

The Project comprises the construction and operation of the Sizewell C nuclear power station, to include two UK EPR™ units with an expected net electrical output of approximately 1,670 MW per unit, giving a total capacity of approximately 3,340 MW.

The Project is split into the Main Development Site ("MDS") and offsite "associated developments". The MDS comprises the site of the proposed nuclear power station and construction areas, consisting of:

- The main platform;
- The temporary construction area including an accommodation campus;
- Land east of Eastlands Industrial Estate;
- Offshore works;
- Sizewell B relocated facilities and National grid works;
- The enhancement of sports facilities at Leiston; and
- Fen meadow compensation sites south of Benhall and east of Halesworth and, if required, a Marsh Harrier habitat improvement area in Westleton.

The proposed offsite associated developments consist of:

- Two temporary park and ride sites:
  - The proposed park and ride facility at Darsham. Associated development aiming to alleviate traffic going to and from the MDS by providing car parking for construction works and a bus directly to the MDS (the "Northern Park and Ride");
  - The proposed park and ride facility at Wickham Market. Associated development aiming to alleviate traffic going to and from the MDS by providing car parking for construction workers and a bus directly to the MDS (the "Southern Park and Ride");
- The proposed road which would bypass the A12 through Farnham and Stratford St Andrew (the "Two Village Bypass");
- The proposed road to bypass the B1122 through Middleton Moor and Theberton (the "Sizewell Link Road");
- Permanent highway improvements at the junction of the A12 and B1122 east of Yoxford (the "Yoxford Roundabout") and other road junctions;
- A proposed development along the A14 where HGVs can be held while they wait to enter the Sizewell C MDS, or in the event of an accident on the local road network which prevents access to the MDS (the "Freight Management Facility"); and
- A proposed temporary extension of the railway line of approximately 4.5km from the existing Saxmundham to Leiston branch line to a terminal within the MDS (the "Green Rail Route") and other permanent rail improvements on the Saxmundham to Leiston branch line, to transport freight by rail.

The Planning Statement of the ES [APP-590] (updated with a final version at Deadline 10 [REP10-068]) provides a full description of the Project.

As outlined in Volume 1, Chapter 2 of the ES, the Project design envelope sets out a series of design options for the Project and has a reasoned minimum and maximum extent for a number of key parameters. The final design would lie between the minimum and the maximum extent of the consent sought for all aspects of the Project. The final detailed design of the Project would fall within this 'Rochdale envelope'. In addition, post-consent/pre-construction site investigation

would further inform the detailed design. The Secretary of State's HRA is based upon the maximum extent or worst-case potential impact of the Project for each parameter. Further information on the Rochdale Envelope is available in PINS Advice Note Nine[14].

The DCO, at Schedule 21 includes a DML The licence includes in Part 2 a list of licensed activities (the "licensed activities"), and in part 3 the licence conditions (the "DML conditions"). No licensed activity must commence until a detailed and up-to-date works programme is submitted to and approved in writing by the Marine Management Organisation ("MMO") under DML condition 7(1)(a-c). The works programme must include details of:

- A planned timetable for each licensed activity;
- Timings for mobilisation of construction plant and for delivery of materials by sea;
- A plan for notifying the MMO of the commencement and cessation of activities and phases of activities; and
- A plan for notifying the MMO of changes to the programme.

Under DML condition 8 (1), no licensed activity or phase of activity must be commenced until a detailed method statement (including location of the works) for that activity of phase of works has been submitted to and approved by the MMO in writing.

2.1 Project Location

The power station with other onsite developments and marine works would be located at Sizewell in East Suffolk (Figure 1), adjacent to the existing power station Sizewell B. It would be located almost halfway between Lowestoft and Felixstowe, approximately 3km to the northeast of the town of Leiston. The majority of the onshore element of the MDS is located within the Suffolk Coast and Heaths Area of Outstanding Natural Beauty ("AONB"). The MDS is also located within the Suffolk Coast and Heaths National Character Area and Suffolk Heritage Coast. The MDS covers a total site area of 1011.6 hectares (ha), of which 371.7ha are onshore and the remaining 639.9ha are offshore.

[14] https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/advice-note-nine-rochdale-envelope/

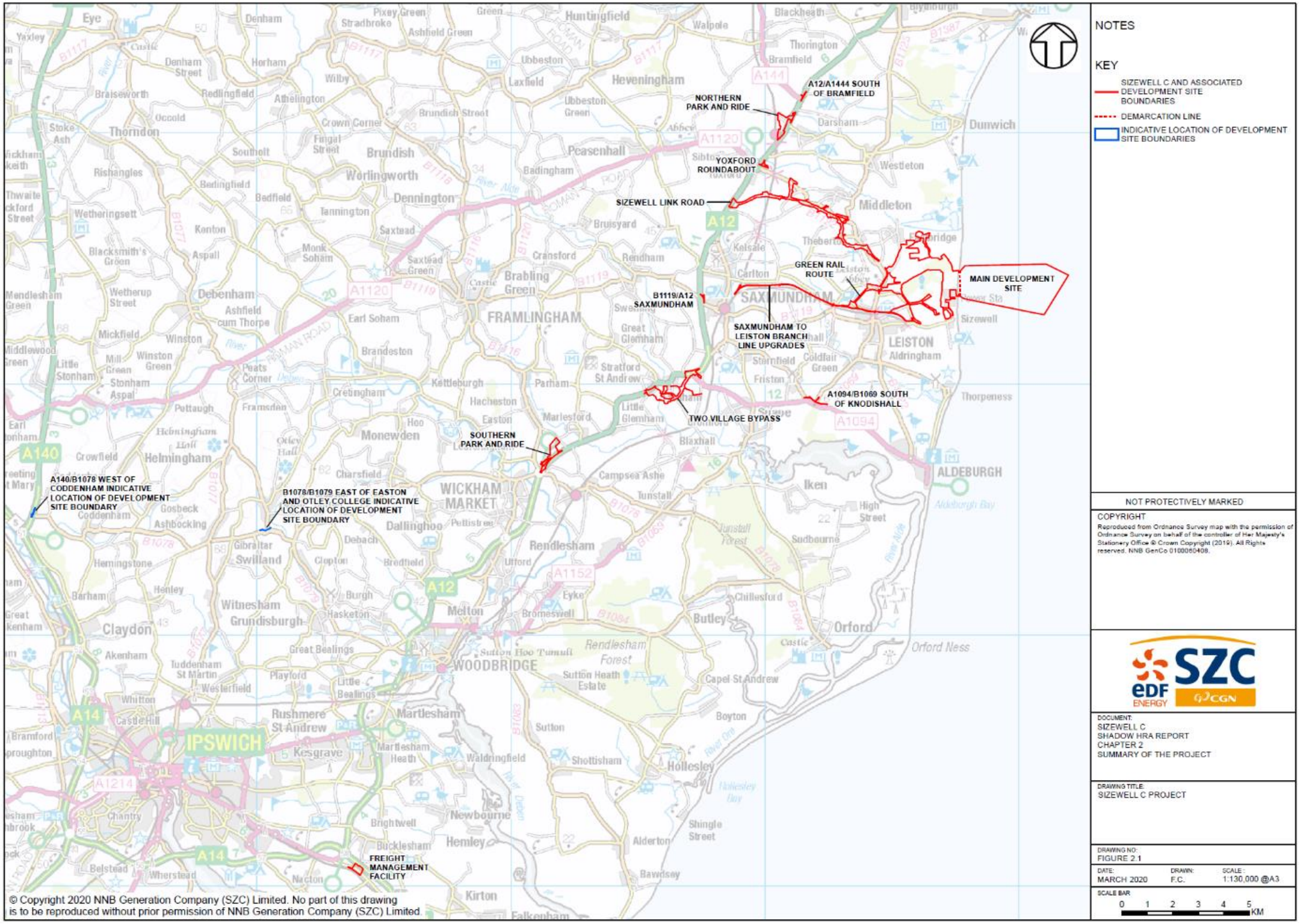

Figure 1: Location of the Project in East Suffolk.

2.2 Protected sites

The Project site is within the zone of influence and within or adjacent to a number of protected sites as illustrated in Figure 2. The approximate distances between the MDS, associated development sites and protected sites are provided in Table 1.

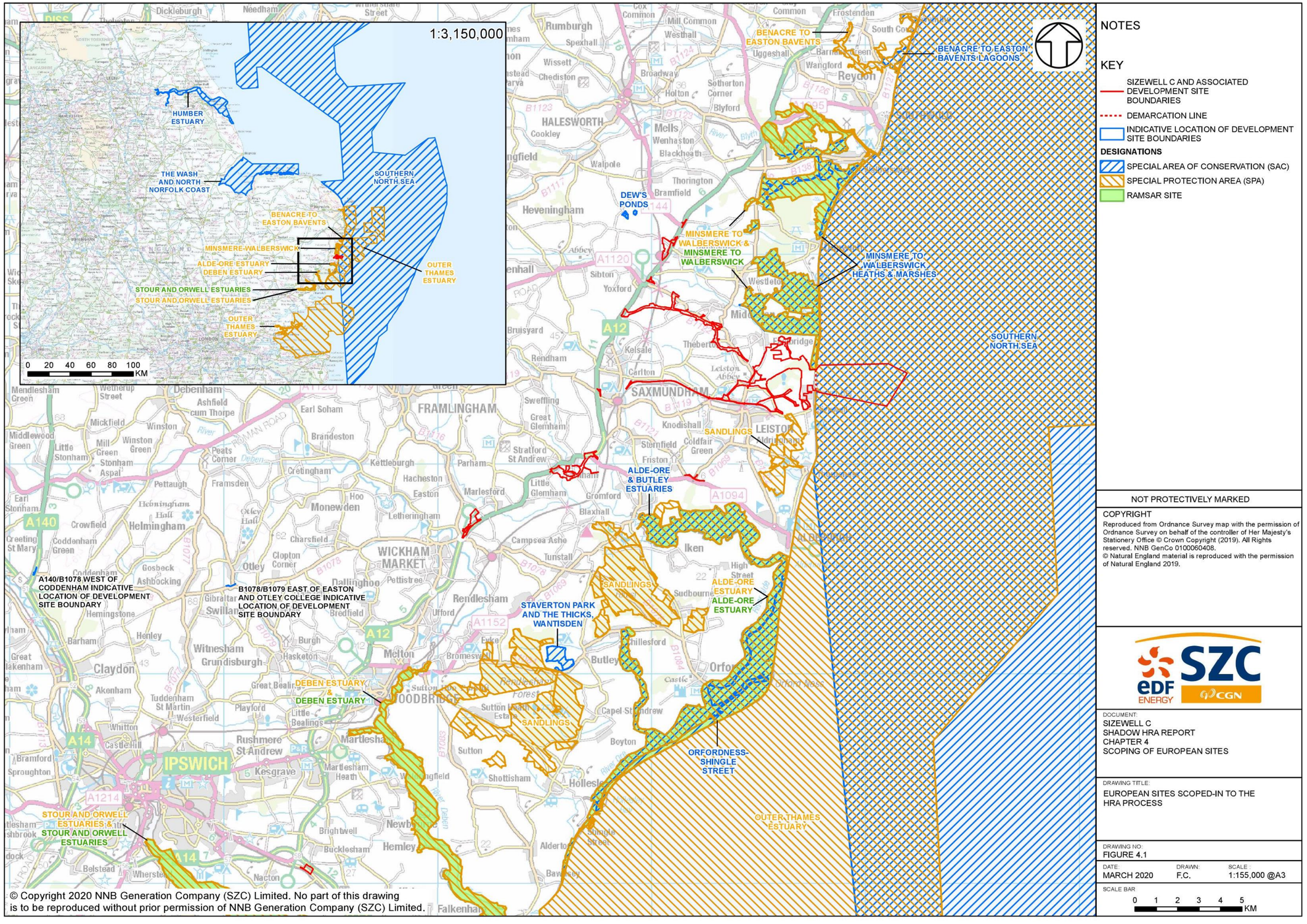

Figure 2: Location of protected sites considered in the HRA.

2.3 Changes to the Application During Examination

During the Pre-examination and Examination stages, 22 formal change requests were submitted by the Applicant. Of these, the Applicant considered following to be relevant to the scope of the Shadow HRA:

- 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 ("BLF"), and construction of a new, temporary BLF;
- Change 5: Change to the location of the water resource storage area and the addition of measures to mitigate flood risk; and
- Change 19: Construction and operation of a temporary desalination plant to provide a potable water supply for the construction of the Project.

The implications of changes 1, 2 and 5 on the conclusions reached in the Applicant's Shadow HRA Report are considered in the Shadow HRA Addendum [AS-173], and in the Shadow HRA Report Third Addendum [REP7-279] for Change 19.

At Deadline 8 the Applicant [REP8-001] formalised reductions to the Order Limits at three fen meadow sites (Pakenham, Halesworth and Benhall), the Sizewell Link Road and the Green Rail Route, and concluded that no amendments were required to its Shadow HRA assessment as a result of these changes.

The RIES did not take into account Change 19 for the temporary desalination plant, as the change request and supporting Shadow HRA Third Addendum were received just prior to issuing of the RIES. Therefore, the implications of Change 19 on matters relevant to the HRA are discussed in the ExA's Report.

2.4 Water Supply

The Applicant's proposal for its principal potable water supply at the time of application was intended to be from mains water, supplied by Essex & Suffolk Water from within the Blyth Water Resource Zone ("Blyth WRZ") [ER 5.11.158]. The Applicant also considered using a combination of water supply options that would ensure security of supply and help to reduce the demand for potable water from the mains supply. The primary components of the sustainable water strategy for the main development site were: mains water provided by Essex & Suffolk Water (the trading name of Northumbrian Water Limited ("NWL")) from within Blyth WRZ; mains provided by Essex & Suffolk Water from within the Northern/Central WRZ via a new pipeline transfer connection to the Blyth WRZ; additional mains water supply enabled by licence trading with local licence holders; storage of non-potable water in the north of the main development site; and water efficiency measures to reduce demand from mains supply. It was acknowledged that there was still ongoing work being undertaken during the Examination [ER 5.11.160], including the key tasks of modelling work by Essex and Suffolk Water and the EA to confirm the volume of potable water that can be supplied from the Blyth WRZ for the Project, continued engagement with Essex and Suffolk Water and the EA regarding the potential to transfer mains water from within the Northern/Central WRZ via a new pipeline transfer connection to the Blyth WRZ and an initial

review of local licences abstractions, to shortlist potential abstractions for trading, and understand available volumes from these licences.

Numerous RR's expressed concern that the Project did not specify how the water demand would be supplied, and also raised concerns about the implications of the additional demand created for local water supplies [ER 5.11.256]. These concerns were shared by East Suffolk Council ("ESC"), Suffolk County Council ("SCC") and the EA, who stated that the water supply options described do not demonstrate that a suitable and ecologically sustainable source of water can be provided [ER 5.11.256].

In response to the ExA's FWQ asking for an update on the water supply strategy, the Applicant indicated that its preferred potable water supply was a new transfer main from NWL's Northern/Central WRZ where water would be supplied from NWL's existing supply headroom in its Northern/Central WRZ and in August 2020 NWL provided a high level outline design and cost estimate for the main based on an assumed demand during construction and operation [ER 5.11.259]. The sustainability of the Northern/Central WRZ abstraction was subject to a Water Industry National Environment Programme ("WINEP") investigation and an interim report by NWL was due in early June 2021 to be followed by a full feasibility study. NWL responded to the FWQ confirming on an indicative basis that it considered it may be possible to deliver the supply transfer main scheme by September 2024 at the earliest and it was preparing a supply profile to confirm what water it may be able to supply between April 2022 and September 2024 [ER 5.11.262]. A number of IPs expressed significant concerns about the progress of the water supply strategy and ensuring that the sustainability of supply did not adversely affect already stressed water resources and NE, supported by RSPB/SWT, raised various concerns and stated that Suffolk Water and the wider East Anglia area is under serious water stress and it asked the Applicant to demonstrate that the level of abstraction required could be sourced sustainably without adverse impacts on European sites [ER 5.11.264-5].

Walker Morris, on behalf of NWL, indicated that the Blyth WRZ does not have 4Ml/day of supply headroom for the Project [ER 5.11.266], and they state that the EA considers NWL abstractions in the Blyth WRZ to be over licenced, with NWL unable to meet additional water demand by abstracting more water and these issues were being addressed by the WINEP process. They went on to say that the water supply for the Project would require a new water main pipeline from another catchment area [ER 5.11.266]. NWL considered the additional infrastructure required would take until September 2026 at the earliest to deliver assuming no delays. They considered this position jeopardised NWL's ability to enter into a Section 55 Agreement[15] (pursuant to the Water Industries Act 1991 ("WIA")) with the Applicant for the supply of non-domestic water. In addition, NWL were aware the Applicant had indicated they were seeking to requisition a water main to serve the accommodation campus as a domestic water supply under s.41 of the WIA and NWL was concerned it may be compelled to supply water creating a critical risk to its existing customers in the absence of additional infrastructure [ER 5.11.267]. On this basis, Walker Morris considered it appropriate at that stage to issue a holding objection to the application pending proposal of a suitable mechanism ensuring that NWL would not be required to provide the relevant water supply until its additional infrastructure was in place [ER 5.11.268]. NWL subsequently provided an update of their position [REP7-147] at which point it was unable to confirm it would be able to supply water or related infrastructure for the Project and set out its

[15] Request for non-domestic supply - Section 55, Water Industry Act 1991: https://www.legislation.gov.uk/ukpga/1991/56/section/55

concerns in relation to being compelled to provide a domestic supply to the accommodation campus and its inability to commit to entering into a s.55 WIA agreement to supply water and infrastructure for non-domestic purposes [ER 5.11.269] and referred to the need for future modelling to assess the precise quantum of sustainable water supply in the Northern/Central WRZ [ER 5.11.270].

At Deadline 7, the Applicant submitted a revised Water Supply Strategy, and separately submitted Change 19. This proposed a temporary desalination plant to supply potable water during the early construction phase until such a time as the NWL supply transfer main could be operational. The revised approach involved the use of water tankers to supply potable water for construction, prior to the desalination plant becoming operational. The desalination plant would operate until the supply transfer main was available late in the construction period [ER 5.11.271]. Row 5.1 in Table 2.1 of the SoCG (submitted in October 2021) [REP10-092] between the Applicant and NWL states that there is agreement between the two parties that for the initial 9-12 months of construction, whilst the temporary desalination plant is being installed, the Project's water supply would be met by water tankers, and that these tankers would need to be filled outside the local Blyth WRZ, where sufficient licensed headroom exists. It further explains that NWL has indicated that the water tankers cannot be filled from its Suffolk network, and that NWL has identified a number of potential options within its Essex Supply Area, subject to further investigation and negotiation with the Applicant.

The ExA clarified [ER 6.2.48] that water abstraction and the transfer main do not form part of the DCO application. The ExA considered the potential environmental impacts of the construction and operation of the desalination plant and the use of water tankers prior to its commissioning. The ExA concluded that there would not be significant adverse effects from emissions to air from the desalination plant [ER 5.3.214]. The ExA was satisfied that there would not be significant changes to air quality from road traffic emissions from vehicles servicing the Project [ER 5.2.216]. Overall, the ExA concluded that there was no evidence of any risk that the UK's ability to comply with air quality legislation [ER 5.3.218], provided that a Requirement is included to notify the EA and ESC so that the time period for operation of the desalination plant can be limited to that presented in the final desalination plant air quality assessment [ER 5.3.219].

Given the significant change to the original Water Supply Strategy, the ExA held an additional ISH 15 on the environmental effects of the desalination plant and discussed the current position on water supply at ISH 11. Numerous IPs expressed concerns about the changes to the strategy, including the lack of clarity on the permanent water supply [ER 5.11.272].

At ISH11 the ExA discussed the sourcing of the short term tankered water supply and the certainty of water supply to the Project [ER 5.11.273-4]. NWL's concern was that that the Northern/Central WRZ's ability to provide the supply for the transfer main relied on extraction from the River Waveney, but recent discussions with EA had led NWL to conclude that it may be required to cut extraction levels from the River by as much as 60% and it stated they would not be able to understand this fully until the modelling had been completed and reviewed by the EA. NWL stated that if abstraction from the River Waveney were to be capped, then it would require significant capital projects such as (for instance) a permanent desalination plant, or sewage effluent reuse plant, to meet anticipated future demand [ER 5.11.274]. The Applicant stated that the temporary desalination plant could be retained through the construction period and it was confident that working with NWL it would be able to resolve the permanent water supply issues for the Project [ER 5.11.275]. NWL explained that its ongoing modelling work to

understand whether there was a sustainable source of water supply in the Northern Central WRZ was due to complete on 30 September 2021 and the EA would then need to review this and it was unlikely to be completed by close of the examination [ER 5.11.277]. At ISH15 the ExA asked about the water supply solution during the reinstatement period for the temporary construction and also onward through the operation of the Project [ER 5.11.278]. The Applicant criticised the alternative put forward by some IPs of putting the project on hold until a water main had been put in place as it considered there was an acceptable way of supplying water in the interim and it was pursuing the most sustainable water supply strategy in the circumstances [ER 5.11.279]. The Applicant also considered there was no justification for extending the examination as suggested by one IP as it considered that even if the modelling process concluded that there was no capacity in the Northern Central WRZ, a requisite supply would be available which would be dealt with under a separate statutory regime which would provide a mechanism for delivery a supply [ER 5.11.280].

The ExA noted that concerns were also raised about the non-potable water supply but that the Applicant responded to these concerns reaffirming its commitments set out in the Water Supply Strategy for supply of non-potable water throughout the construction period [ER 5.11.276].

The ExA noted [ER 5.11.281] that NWL confirmed that the outcome of the WINEP modelling exercise was further delayed and would be unknown at the close of the Examination, but identifies [ER 5.11.282] that the Applicant and NWL are both confident they could work towards a permanent water supply solution, as confirmed in the SoCG [REP10-092]. The ExA notes that they had agreed the necessary protective provisions (part 6 Schedule 19 of the draft Order) under which the Applicant will not request a domestic water supply for accommodation provision unless agreed by ESW and ESW will use its reasonable endeavours to supply potable water to the Project subject to the conditions that ESW can confirm there is sufficient water in the North Central WRZ to meet the demand or new supply schemes have been identified and approved in ESW's Water Resources Management Plan 2024 ("WRMP24"). Additionally, the ExA notes [ER 5.11.283] that NWL has identified that if the WINEP modelling process does not identify enough capacity in the Northern Central WRZ to supply the Project in accordance with the Applicant's preferred water supply solution, then NWL will identify new supply schemes in their WRMP24 which may take longer to deliver. NWL agreed that 2032 has been identified by the Applicant as the backstop date for the long term supply to be fully available. The ExA notes that this date would correspond with the end of the proposed construction period and prior to commencement of the cold function testing of the Project [ER 5.11.283].

NE submitted that the pipeline/mains transfer is a fundamental component of the eventual operation of the Project and considered that the potential impacts of its construction should be clearly assessed in accordance with the NPS and the Secretary of State's Scoping Opinion [ER 5.11.284]. NE consider that without such impact assessments being available, it is unable to advise on whether this key element of the Project may have an impact on designated sites already considered by the Applicant, or others further afield that may be affected by abstraction of this scale and so it is unable to advise whether adverse effects on designated sites from these elements can be ruled out. NE also referenced water supply in its concerns regarding the likelihood of cumulative and in-combination effects being missed or downplayed if HRA conclusions for integral and inextricably linked elements of the project and pushed down the line into other consenting regimes beyond the Order [ER 5.11.284].

The RIES [PD-053] paragraphs 3.2.49 to 3.2.55 and 4.2.94 to 4.2.107, highlighted that NE (NE Issue 3) [RR-0878] and [REP2-153] raised concerns regarding the source of water required for various elements of the Project and the potential for consequent ecological effects on protected sites and their qualifying features. NE stated that Suffolk and the wider East Anglia area is under serious water stress and asked the Applicant to demonstrate that the level of abstraction required can be sourced sustainably, without adverse impacts on protected sites. NE highlighted the potential for water use/ abstraction (and/or associated works, such as any pipelines for the transfer) to damage the notified habitats and bird supporting habitats of the following protected sites:

- Alde-Ore and Butley Estuaries SAC;
- Alde-Ore Estuary SPA;
- Alde-Ore Estuary Ramsar;
- Minsmere-Walberswick Heaths and Marshes SAC;
- Minsmere-Walberswick Ramsar; and
- Potentially a wider suite of protected sites, depending on the chosen source of water supply.

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 qualifying features associated with the current hydrological management in the Minsmere-Walberswick SPA and Ramsar.

The RIES reports the various positions of the Applicant and IPs with regards to water supply and abstraction up to Deadline 7, but did not include reference to Change 19 (the desalination plant), which had been submitted to provide a temporary local solution for water supply during construction. The ExA clarified [ER 6.2.52] that the desalination plant could be in operation until the point just prior to cold functional testing of the nuclear plant, which is the latest date it is anticipated the permanent water supply solution would be in place.

At the end of the Examination, NE [REP8-298i] [REP10-097] continued to express concern regarding the source of abstraction/supply for multiple elements of the water supply strategy, specifically the tankered water supply and the pipeline/transfer main, and the potential effects this may have on protected sites. This matter is stated to be '*disagreed*' in the SoCG [REP10-097] between NE and the Applicant. In the SoCG (Issue 3 and 9) and in its response to the RIES [REP10-199], NE advised that:

"…pushing any Habitats Regulations Assessment (HRA) conclusions for integral and inextricably linked elements of the project down the line into other consenting regimes beyond the Development Consent Order (DCO) raises the likelihood that cumulative and 'in combination' impacts in these regards may get missed/downplayed, and we wish to draw the Examining Authority's attention to this point."

NE stated [REP10-097] that the pipeline/mains transfer is a fundamental component of the eventual operation of the Project; therefore, the potential impacts of its construction should be clearly assessed in accordance with the National Policy Statements ("NPS") and the Secretary of State's Scoping Opinion. NE stated that in the absence of such an assessment, it was unable to advise on whether it may have an impact on protected sites already considered by the Applicant, or others further afield that may be affected by water abstraction at this scale. NE was therefore unable to advise whether adverse effects on protected sites from these elements could be ruled out.

The ExA [ER 6.2.54] noted that NE also referenced the water supply in its concerns regarding cumulative/in-combination effects [REP10-097](Issue 9), stating that:

"*In terms of cumulative and in combination assessment, it is Natural England's advice that this approach* [i.e. integral and inextricably linked elements of the project where impact assessments (and therefore potential mitigation/compensation measures) are proposed to be pushed down the line into other consenting regimes beyond the DCO] *raises the likelihood that impacts in these regards may get missed/downplayed.*"

In specific response to NE's concerns regarding the tankered water supply, the Applicant [REP10-161] stated:

"In respect of the environmental impact of the shorter-term supply, this is a point raised by Natural England in their Deadline 9 representation [REP8-298i] regarding the sources for tankering. There is however no need for EIA or HRA of those sources as part of this process because they are all existing and licensed sources and nothing new is proposed at those sources. Further, even if something new is in due course proposed at those sources, it would be subject to its own assessment."

With regards to the pipeline/transfer main, the Applicant [REP10-161] reiterated that the pipeline in question is not part of the Project applied for in the DCO application. The Applicant stated:

"…in the event that the transfer main was pursued it would be promoted by the water company and would undergo its own planning process, which would include assessment under the Habitats Regulations as necessary."

The Applicant [REP10-161] stated it had provided a cumulative assessment with regards to the preferred pipeline/transfer main in [AS-189]. The high-level cumulative effects assessment [AS-189] (page 50 to 58) of the preferred pipeline/transfer main as a direct link from Barsham to Sizewell (as shown on Plate 1.2 of [AS-202] (page 142)), concluded no new or different significant effects from those in ES Volume 10 Chapter 4 [APP-578]. Chapter 4 of Volume 10 of the ES also concluded no AEoI arising from the Project in-combination. The ExA [6.2.57] notes that this report was produced prior to the further discussions on water supply strategy during the Examination [APP-578].

In its response to the RIES [REP10-186] the EA reiterated that it is the competent authority for several permits and licences sought by the Applicant and that water abstraction and supply is *"partially regulated through an EA licence".*

The RSPB/SWT supported NE's views, stating that although they *"appreciate any new proposals will be assessed – it is the consideration of those potential effects within the HRA and ES for this project"* [REP10-205]. They also referenced NE's views with regards to potential cumulative and in-combination effects of the proposal as it currently stands.

The ExA considers that the information available on the potential cumulative and 'in combination' effects of the pipeline/transfer main or other solution is currently limited as the chosen source and location of the transfer main is not yet known and the findings of the WINEP study are required to determine the preferred, sustainable option for a supply. The ExA states that the latter will be subject to its own assessments, including HRA and the Applicant's cumulative assessment of the preferred pipeline/transfer main was high level and contained no conclusions

specific to matters of HRA and refers to Chapter 6 of its report for more details on the HRA considerations [ER 5.11.285].

The ExA notes that the Applicant had responded to the effect that the Order does not include a request to abstract water and in the event that the transfer main was pursued it would be promoted by the water company and would undergo its own planning process which would include assessment under the Habitats Regulations as necessary and there can be no requirement to assess, at this stage, the development which is not applied for as part of the application for development consent and there was no need for environmental assessment of any such abstraction during the application for development consent process [ER 5.11.286].

The ExA's view is that the Applicant's stance does not address the need to fully consider the cumulative assessment of the environmental effects of the proposed water supply solution that is fundamental to the operation of the Project [ER 5.11.286] and agrees [ER 5.11.287] with NE that it is unable to undertake a meaningful assessment of potential effects arising from the chosen solution for operational supply in combination with the Project from the evidence presented to the Examination, and accordingly considers it has not been provided with sufficient information or certainty on the issue of permanent water supply.

In response to a question from the ExA with respect to the nuclear site licence application and lack of certainty about the permanent water supply [ER 5.11.288] the ONR responded that it '[t]here is no specific Licence Condition covering the requirement for a reliable water supply'. However, having referred to a number of Licence Conditions, the ONR considered that in fulfilment of these licence conditions the ONR 'would expect the licensee to put in place a reliable source of water before nuclear safety related activities take place on the site that are dependent on such a supply. This may be during the later stages of commissioning, but such a supply will certainly be needed before the station begins to raise power from nuclear reactions in the core'.

TASC suggested that any Order granted should be on the basis of a Requirement only allowing commencement if the water company can guarantee water supply throughout operation and decommissioning [ER 5.11.289]. The ExA notes that whilst such a requirement could prevent the power station from operating and hence nullify the benefit of any consent granted, it would not in itself achieve the desired objective of a sustainable water solution. The ExA does not consider that this would provide a satisfactory means of controlling this fundamental aspect of the project [ER 5.11.289].

At the close of the examination the ExA considers that there was still uncertainty as to where the permanent water supply would be sourced and how the necessary water would be transferred to the Project [ER 5.11.290]. The ExA notes that at ISH15 both the Applicant and NWL were confident that a permanent water supply solution would be developed and states that balanced against this are the protective provisions that would allow NWL not to agree to the supply of domestic water and also the necessary long term supply of potable water if the conditions outlined are not met [ER 5.11.291]. The ExA considers that in the circumstances it has to consider the possibility that a sustainable water supply may not be able to be identified and from what the ONR has set out there remains a possibility that the Project may not be able to operate [ER 5.11.292]. The ExA also states that it needs to consider the potential cumulative environmental effects of any potential water supply solution, noting that the Applicant briefly outlined a consideration of a cumulative assessment of the originally proposed transfer main solution from the Northern Central WRZ and the identification of no new or different significant effects from those in ES Volume 10 Chapter, but considers that this was only based on a very

small scale plan showing the potential route of the transfer main and the cumulative assessment of the preferred pipeline/transfer main does not contain any conclusions specific to matters of HRA and, in any event, the lack of certainty of this routeing option being the final water supply solution resulting in it giving this assessment little weight [ER 5.11.293]. The ExA notes that no cumulative effects assessment has been provided in respect of the other potential solutions outlined by the Applicant and NWL, with the Applicant's position being that any water supply would be delivered under a separate statutory regime and as such any environmental assessment required would be undertaken as part of that process, whereas the concerns by NE about the implications for the HRA are discussed in more detail in Chapter 6 of the ExA's Report [ER 5.11.294]. The ExA states that it accepts the position of NE that the water supply strategy is a fundamental component of the operational Project [ER 5.11.294].

The ExA concludes [ER 5.11.295] that it cannot recommend that the Order should be granted without greater clarity about a sustainable water supply solution and any consequential environmental effects. The ExA recommends [ER 5.11.296] that the Secretary of State may wish to consult with the Applicant, NWL, the EA and other IPs to identify whether there has been any progress on the identification and assessment of effects of a sustainable permanent water supply solution for the Project, prior to making a decision on the Application. The ExA considers [ER 7.5.7] that, even if the Project and the water supply are considered to be two separate projects, the cumulative effects associated with it should be assessed at this stage.

On 18 March 2022, the Secretary of State requested further information from the Applicant. The Secretary of State referred to the letter from NWL, dated 23 February 2022, which advised that NWL are unable to meet the Project's long-term demand for water supply from existing water resources, and that a number of demand management and supply side options are being appraised. The Secretary of State asked the Applicant to:

- Provide information setting out progress made in terms of securing a permanent water supply solution;
- Confirm if it would be possible for the proposed temporary desalination plant to permanently meet the full water supply demand for the lifetime of the Project, should no alternative water supply solution be identified;
- To provide any further information to assist the Secretary of State in understanding the water supply strategy for the lifetime of the Project, and to provide information sufficiently detailed to enable the Secretary of State to understand and reach a reasoned conclusion on the cumulative environmental effects, including for Habitats Regulations purposes, of the different permanent water supply solutions.

The Applicant responded to the Secretary of State on 8 April 2022. The Applicant confirmed that it would be possible to extend the lifespan of the temporary desalination plant beyond the end of the construction phase, but that it has not been designed for permanent use and the Applicant would therefore consider alternatives to the current temporary design, including alternative marine outfall infrastructure solutions. The Applicant notes that impacts on the marine and terrestrial environment would require detailed assessment but would be unlikely to generate any materially new or different significant environmental effects (paragraph 2.2.8 of the Applicant's response). The Applicant considers the Secretary of State can be satisfied there is no in principle difficulty regarding a permanent desalination supply and that design options are available to achieve that should it be necessary (paragraph 2.2.11 of the Applicant's response).

The Applicant noted that, as confirmed in NWL's letter, the duties under the WIA mean that NWL will need to identify new water resources to meet the forecast demand, that NWL has included the demand from the Project in its WRMP24 Demand Forecast, and that options being tested include desalination. The Applicant notes that paragraph 9 of NWL's letter reiterates NWL's commitment to provide the Project's long-term water supply (paragraph 2.1.5 of the Applicant's response).

The Applicant advises that work on the draft WRMP24 is well advanced (paragraph 2.1.9 of the Applicant's response), that it is for this process to identify and determine the environmental acceptability of the options for supplementing the region's water supply, and that the Secretary of State may make a decision on the Application confident that the duty will be effectively satisfied (paragraph 2.1.11 of the Applicant's response). The Applicant also notes that NWL is in the early stages of completing an Integrated Environmental Assessment ("IEA") of its draft WRMP24 feasible options, which includes Strategic Environmental Assessment, Carbon Assessment, Habitats Regulation Assessment, Biodiversity Net Gain Assessment, Invasive Non-native Species Assessment, Natural Capital Assessment, and Water Framework Directive Assessment. The Applicant notes that any future supply to the Project will have been subject to these environmental assessments before being supplied (paragraph 2.13 of the Applicant's response).

The Applicant submits that it is because the long-term planning of water supply is subject to separate statutory provisions and processes that the identification of the source of the Project's long-term supply cannot be known at this stage (paragraph 2.1.16 of the Applicant's response). The Applicant highlights that the source may well change during the lifetime of the Project as the undertaker develops and manages its water resources in response to changing demand and other considerations. The Applicant considers that for the same reasons, and because on the evidence the source of the supply is unlikely to be a constraint to the construction and operation of the new power station, the source does not need to be known for the purposes of the Application (paragraph 2.1.16 of the Applicant's response). The Applicant cites NPS EN-1 as being clear that the decision-maker should work on the assumption that other regimes and regulatory processes will be properly applied and enforced so that decisions on DCO applications should complement but not seek to duplicate other processes (paragraph 2.1.17 of the Applicant's response).

The Applicant states there is insufficient detail on the different permanent water supply solutions to enable the undertaking of any meaningful assessment of the various water supply solutions (paragraph 2.3.3 of the Applicant's response). The Applicant references Regulation 14(3)(b) of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017, which states that the environmental statement must 'include the information reasonably required for reaching a reasoned conclusion on the significant effects of the development on the environment, taking into account current knowledge and methods of assessment.' The Applicant considers that the Secretary of State can be satisfied that the potential environmental impacts, including cumulative impacts, will be sufficiently assessed (paragraph 2.3.5 of the Applicant's response).

The Applicant considers that with regard to the HRA and specifically the assessment of in-combination effects, that WRMP24 would fall within the definition of a 'plan or project' in line with the guidance provided at paragraph 4.17 of the Planning Inspectorate's Advice Note 10 (paragraph 2.3.8 of the Applicant's response). The Applicant notes that this Advice Note recognises there may be limited information available on projects identified in development

plans, which is similar to the case for the new supply schemes to be identified in WRMP24. The Applicant states that it is for this reason that any assessment of the options within the WRMP24 is most appropriately carried out through the WINEP process (paragraph 2.3.9 of the Applicant's response).

On 25 April 2022, the Secretary of State invited comments from IPs on the responses to his information requests. A number of responses raised concerns relating to the lack of certainty around the permanent water supply for the site and the possible impacts of the proposed desalination plant. Various responses noted that Suffolk has a limited water supply given that it is one of the driest regions in the country. Responses also highlighted the Applicant's previous decision to discount desalination in favour of alternative options for the permanent water supply. In particular, IPs have highlighted the Applicant's conclusion in January 2021, in Appendix 2.2.D Water Supply Strategy of the ES Addendum Volume 3 Chapter 2, that the installation of a modular desalination plant on the MDS and abstracting seawater for treatment was discounted in favour of alternative options due to concerns with power consumption, sustainability, cost, and wastewater discharge, with the Applicant noting that the desalination process is typically energy intensive and that the discharge of brine water as a result of desalination may not be suitable for discharge through the combined drainage outfall. The Secretary of State notes that in this same document, the Applicant noted that 'Essex and Suffolk Water has identified means to provide a viable supply of potable water to Sizewell C' with this option referred to as 'transfer of surplus potable water via a new pipeline from Barsham', demonstrating the Applicant's focus on the preferred mains transfer option via NWL at that time.

Various IPs raised concerns with the Applicant's response to paragraph 3.3. of the Secretary of State's letter of 18 March 2022 regarding whether the proposed temporary desalination plant could be made permanent. The MMO's response of 20 May 2022 noted no assessment has been undertaken on any proposals or options for a permanent desalination plant, and there is no assessment of any desalination plant operating in combination with the Project.

The MMO concurs with NE's comments provided to the Secretary of State on 7 April 2022 that any advice provided following Change 19 relating to the desalination plant effects were explicitly made on the assumption that the desalination plant would only be temporarily in operation during the construction phase of the project (for a maximum period of three years). The Secretary of State notes the Applicant responded to NE's comments advising that NE had misunderstood the proposed desalination plant and its operation. The Applicant noted the Fourth Environmental Statement Addendum – Volume 1 states at paragraph 3.2.20 that the desalination plant would initially be located in the main platform area, and that once the desalination plant becomes a physical constraint it would be relocated to the temporary construction area. The Applicant notes it was assumed this relocation would occur in approximately Year 4 of construction.

Other IPs also raised concerns regarding the possibility of the temporary desalination plant being made permanent. The joint response from Theberton & Eastbridge Parish Council, Middleton cum Fordley Parish Council, Stop Sizewell C, Minsmere Levels Stakeholders Group and B1122 Action Group states that the suggestion a desalination plant could remain north of the SSSI crossing, close to the proposed temporary desalination plant but placed underground, is unacceptable, and the infrastructure already proposed for this area would result in a permanent 25% loss of biodiversity over the long term. The response states that additional infrastructure, underground or not, immediately adjacent to protected sites, should not be allowed. Responses, including those from TASC, Suffolk Coastal Friends of the Earth, Walberswick Parish Council,

Woodbridge Town Council, and Mr Paul Collins, also took issue with the Applicant's suggested siting options for a permanent desalination plant.

The joint response submitted by the RSPB and SWT raised concerns that the Applicant's proposed approach to the assessment of potential impacts of the extended use of a desalination plant does not comply with the requirements of the EIA or Habitats Regulations assessments. The response states that adequate assessments, especially of possible cumulative impacts for having a desalination plant for longer or the lifetime of the applications, is not provided. RSPB and SWT strongly disagree with the Applicant's view that the Secretary of State can be satisfied that the potential environmental impacts (including cumulative impacts) will be sufficiently assessed due to the WRMP24 process being the appropriate means of undertaking that assessment.

Other IPs, including Woodbridge Town Council, raised concerns regarding the case law referred to by the Applicant.

On 31 May 2022 the Secretary of State asked the Applicant to confirm if any further progress had been made in its discussions with NWL regarding a permanent water supply connection. The Applicant's response of 16 June 2022 confirms that NWL will submit its draft WRMP24 to the Department for Environment, Food and Rural Affairs ("DEFRA") in October 2022, in accordance with the deadline that must be met by all water companies under the prevailing WRMP24 and 2024 Price Review cycle. The Applicant states that NWL has confirmed that its draft WRMP24 will make full provision for the Project's long-term demand, and that subject to necessary approvals from DEFRA and the Water Services Regulation Authority ("Ofwat"), it is likely to be feasible to deliver the required infrastructure to supply the Project. The Applicant's response also notes that it has been agreed that negotiations under Section 55/Section 56 of the WIA will commence in October 2022, following publication of the draft WRMP24, in readiness for them to be signed once NWL's Business Plan has been approved by Ofwat, most likely in early 2024. The Applicant states that there is no reason to suppose that a new water supply scheme for a critical NSIP will not be approved in the 2024 Price Review, and there is every reason to expect that NWL, using reasonable endeavours, will be able to deliver the necessary infrastructure to make the permanent water supply connection before the end of construction of the Project.

The Secretary of State's Consideration of Water Supply

The Secretary of State has considered the supply of water during the construction period. He is satisfied with the Applicant's assurance that potable water will be supplied via a combination of tankers and a temporary desalination plant. The Secretary of State notes that the Applicant reaffirmed its commitments in the Water Supply Strategy for supply of non-potable water throughout the construction period. The Secretary of State is satisfied that there will be an adequate supply of both potable and non-potable water during the construction period and that the impacts of the water supply during the construction period have been properly assessed as part of this application.

The Secretary of State has considered the Applicant's response to his questions on the matter of long-term water supply, as well as the comments submitted by IPs on this matter in light of the ExA's report. The Secretary of State notes that paragraph 8 of the letter from Walker Morris on behalf of NWL, of 23 February 2022, provides that, in addition to demand management options, NWL is also appraising other options that include (but are not limited to): an import from

Anglian Water; nitrate removal at Barsham WTWs; effluent reuse and desalination; and longer term (post-2035) winter storage reservoirs. The Secretary of State considers that these represent potentially viable solutions for the water supply strategy as would the fall back of the Applicant's own permanent desalination plant if those solutions cannot be used. The Secretary of State is therefore content that if consent is granted for the development, there is a reasonable level of certainty that a permanent water supply solution can be found before the first reactor is commissioned.

With regard to the Applicant's case that the permanent water supply to be supplied by Essex & Suffolk Water/NWL will be assessed as part of the separate regulatory processes associated with WRMP24, the Secretary of State has considered the relevant policy. Paragraph 4.10.3 of NPS EN-1 (EN-1), states that the decision-maker '*should work on the assumption that the relevant pollution control regime and other environmental regulatory regimes, including those on land drainage, water abstraction and biodiversity, will be properly applied and enforced by the relevant regulator. It should act to complement but not seek to duplicate them*.' This text is carried forward in paragraph 4.11.5 of the draft revision of EN-1.

Paragraph 5.15.4 of EN-1 states '*The considerations set out in Section 4.10 on the interface between planning and pollution control therefore apply. These considerations will also apply in an analogous way to the abstraction licensing regime regulating activities that take water from the water environment, and to the control regimes relating to works to, and structures in, on, or under a controlled water*.' This text is carried forward to paragraph 5.16.6 of the draft revision of EN-1. Paragraph 5.15.6 states that the decision-maker '*should also consider the interactions of the proposed project with other plans such as Water Resources Management Plans'*. This text is carried forward to paragraph 5.16.9 of the draft revision of EN-1.

The Secretary of State notes the EA's water resources planning guideline, updated on 4 April 2022[16], which states that water companies in England or Wales must prepare and maintain an WRMP that sets out how a water company intends to achieve a secure supply of water for its customers and a protected and enhanced environment. This guideline notes that the duty to prepare and maintain a WRMP is set out in sections 37A to 37D of the WIA and that a water company must prepare a plan at least every 5 years and review it annually. Part 3.1 of this guideline details the legal requirements relevant to the preparation and publication of a WRMP, including the need to take account of relevant legislation including the Conservation of Habitats and Species Regulations 2017. Part 3.3.1 notes that statutory consultees for the WRMP process includes the EA, and also notes that if possible options affect a designated site in England then the water company must contact NE. Part 4.1.1 notes that a water company should carry out a HRA as part of the WRMP process, including an appropriate assessment, as set out in the Conservation of Habitats and Species Regulations 2017 (as amended), if a preferred plan would be likely to have a significant effect on a European site (either alone or in combination with other plans or projects).

The Secretary of State notes the policy in Section 4.2 of EN-1. Paragraph 4.2.7 acknowledges that *'In some instances, it may not be possible at the time of the application for development*

[16] EA, Natural Resources Wales, and Office for Water Services, Water resources planning guideline (updated 4 April 2022), https://www.gov.uk/government/publications/water-resources-planning-guideline/water-resources-planning-guideline

consent for all aspects of the proposal to have been settled in precise detail.' This text has been carried forward to paragraph 4.2.5 of the draft revision of EN-1.

The Secretary of State considers that the Project and the WRMP24 process for the sourcing of water are separate projects. This is evident from their separate ownership and because they are subject to distinct and asynchronous determination processes. The Secretary of State also considers that these projects are stand-alone, given that NWL has a duty to undertake its WRMP24 regardless of whether or not the Project proceeds.

The Secretary of State has considered the ExA's view [ER 7.5.7] that, even if the Project and the water supply are considered to be two separate projects, the cumulative effects associated with it should be assessed at this stage. As set out below, the Secretary of State has considered the cumulative assessment of the proposed pipeline from the North/Central WRZ and agrees with the Applicant's assessment that the pipeline is not likely to give rise to new or significant effects to those already identified in the ES. In addition, the Secretary of State agrees with the Applicant that the detail of the potential environmental impacts (including cumulative impacts) associated with the proposed permanent water supply to be provided by NWL will be sufficiently assessed and that the WRMP24 process is the appropriate means of undertaking that assessment. The Secretary of State agrees that further detailed assessment cannot be undertaken by the Applicant at this stage as the preferred option for long-term supply is not yet known given the current status of the separate WRMP24 process, which falls to be considered as a separate plan or project. The Secretary of State considers that it is because the long-term planning of water supply is subject to separate statutory provisions and processes, including those set out above, that the identification of the source of the Project's long-term water supply cannot be known by the Applicant at this stage.

The Applicant's original and preferred water supply connection was a direct link from Barsham and the Applicant provided information about this, the cumulative effects of its preferred water supply solution of in Table 1.1 of the ES Addendum, Volume 3, Chapter 2, Appendix 2.2.D Water Supply Strategy submitted in January 2021. This refers to potable water transfer options and envisages that a supply of potable water via a direct link from Barsham would be provided by Essex and Suffolk Water. Table 1.1 notes that the provision of this link does not form part of the Application, however it provides a cumulative assessment of the Project with this link at Chapter 10 of the ES Addendum at paragraphs 10.4.229-10.4.250. The cumulative assessment states that "it is proposed that the detailed route alignment of the pipeline will follow existing roads and boundaries where possible" and that "it is anticipated that the earthworks for the cut and fill, and the pipelaying task for the preferred water supply proposal will progress quickly along the route and works would only impact upon a single receptor for a small number of days at most". In relation to Terrestrial ecology and ornithology it finds that "Given the footprint of the works and the proposed locations for working, ecological impacts would be minimal and avoidable or mitigable" and for all the other impacts assessed concludes that "no significant cumulative effects are anticipated in relation to the preferred water supply proposal and there would be no change to the residual cumulative effects as presented in Volume 10, Chapter 4 of the ES".

The Secretary of State has seen no subsequent evidence to suggest that anything has changed in that regard. The Secretary of State is satisfied that, based on current knowledge, there are no additional cumulative impacts if the Barsham pipeline were to be pursued. The Secretary of State has considered the information provided by the Applicant on cumulative effects and does not

agree with the ExA's criticisms and considers there is sufficient information on which he can base his conclusion.

Section 3.2.3. of the revised Water Supply Strategy submitted at Deadline 7 in September 2021 stated that 'there is some potential spare capacity in the WRZ at NWL's Barsham Water Treatment Works near Beccles which is located in their Northern /Central WRZ, from which water is proposed to be transferred to Sizewell via a 28km pipeline. This transfer will also require other water network enhancements, which NWL are currently investigating. The proposed transfer main would connect into the local Blyth distribution network at Saxmundham Water Tower, and at other locations subject to detailed design. These local connections have the potential to provide significant legacy benefit by increasing capacity and resilience of the distribution network.'

The Statement of Common Ground agreed between NWL and the Applicant records that the proposal to transfer water from Barsham relies on abstraction from the River Waveney and its associated Waveney Augmentation Groundwater Scheme (WAGS) operated by the EA. It further records that on 26 August 2021 the EA informed NWL that a sustainability reduction may be applied to NWL's abstraction licence for the River Waveney and WAGS abstraction licenses which could reduce NWL's allowable annual quantities of abstraction by up to 60% and that further modelling work is being carried out by NWL to investigate this.

The Secretary of State further notes the letter from Walker Morris on behalf of NWL on 23 February 2022 states that NWL will not be able to supply all forecast household and non-household demand, including the Project's long-term demand, from existing water resources, and that NWL will need to identify new water resources to meet the forecast demand. The Secretary of State notes that the letter states that in addition to demand management options, NWL is appraising options including (but not limited to) nitrate removal at Barsham WTWs to reduce raw water quality driven water treatment works outage. While noting that the ultimate source of supply has yet to be identified by NWL, the Secretary of State considers that the information provided demonstrates sufficiently, in principle, the viability of a mains connection pipeline to the Project. If some or all of the supply were able to come from that location.

The Secretary of State is satisfied that if NWL, through the regulatory processes associated with the WRMP24, put forwards a solution to the supply of potable water supply which requires a change to the pipeline connection to the Project (once it has established where it will source the water for the Project from) any such solution will be subject to its own environmental assessments, including those under the HRA. The Secretary of State has not seen any information at this stage to suggest that a different pipeline connection (if it were to be required) would not be viable or its impacts unacceptable. However, this will be for NWL to assess once the source of the permanent water supply is known.

The Secretary of State notes that any such pipeline or connection will be applied for separately to the Project once there is certainty around its route and specification.

The Secretary of State notes that in light of the matters identified above it is not possible for the Applicant to provide more specific details regarding the route or specification of the pipeline, or other connection, that will provide the Project with a connection to the water main or water supply at this stage, and notes that such a pipeline or alternative connection does not form part of the Application. This is due to the fact that the specific details of the route remain unknown until NWL identifies the source of the water that the pipeline will connect the Project to. The Secretary of

State considers that such a pipeline or alternative connection cannot be subject to more detailed assessment as part of this Application given it is subject to the WRMP24. The Secretary of State notes that whilst the Water Supply Strategy submitted in January 2021 identified that the pipeline between Barsham and the Project did not form part of the Application, a cumulative assessment of the Project with that pipeline was undertaken, and that the Application was accepted on that basis. The Secretary of State agrees that in light of the present state of knowledge, it is not possible for the Applicant to conduct any meaningful assessment of any different solution to emerge from the WRMP24 process but that any such different solution will necessarily be subject to its own assessment before it can proceed.

The policy set out in NPS EN-1 is clear that a decision-maker should work on the assumption that relevant environmental regulatory regimes, including the abstraction licencing regime regulating activities that take water from the water environment, will be properly applied, and enforced by the relevant regulator, and that a decision-maker should not seek to duplicate these regimes. The policy is also clear that the decision-maker should have regard to the interaction between the proposed project and other plans, and references Water Resource Management Plans as a specific example of such plans. The Secretary of State notes the acknowledgement in Section 4.2 of EN-1 that it is not always possible for all aspects of a proposal to be settled in precise detail. The fact that there is a lack of detailed information available regarding the source of a permanent water supply via NWL means that it is not possible for the Applicant to have assessed the effect, including the cumulative effects of all of the potential means of conveying water to the Project. The WRMP process is conducted by the water company and is not something that the Applicant can dictate. If (and only if) the WRMP process fails to provide a solution, the Applicant will have to consider its own permanent desalination plant.

The Secretary of State notes the concerns raised by IPs regarding the prospect of a permanent desalination plant. The Secretary of State agrees with the Applicant that further detailed assessment of the impacts associated with a permanent desalination plant would be required if the Applicant were ultimately to pursue this option as part of its water supply strategy which is not the current intention. The Secretary of State has not requested further detailed assessment from the Applicant of this option given that it does not form part of the Project and the Applicant's position is that a bespoke permanent desalination plant for the Project is unlikely to be required. The Secretary of State notes the Applicant's position that a permanent desalination plant is not likely to generate any materially new or materially different significant environmental effects on the marine environment (see paragraph 2.2.8 of the Applicant's response to the Secretary of State's letter of 18 March 2022) and on the terrestrial environment (see paragraph 2.2.10 of the Applicant's response to the Secretary of State's letter of 18 March 2022). The Secretary of State has also considered the concerns raised by IPs regarding the fact that the Applicant had previously discounted desalination from its water supply options. The Secretary of State notes that the revision 1.0 of the Applicant's Water Supply Strategy produced in May 2020 noted that benefits of desalination include potentially short lead times with equipment available for hire, and that it could be useful for temporary top-ups or in times of drought. The limitations of desalination were listed as 'desalinated water being aggressive in pipe network and may require remineralisation'.

The Secretary of State acknowledges (above) that the Applicant's conclusion in January 2021, in Appendix 2.2.D Water Supply Strategy of the ES Addendum Volume 3 Chapter 2, was to discount the installation of a modular desalination plant on the MDS and the abstraction of seawater for treatment and notes that the Applicant also stated in the same document that Essex

and Suffolk Water had 'identified means to provide a viable supply of potable water to Sizewell C' with this option referred to as 'transfer of surplus potable water via a new pipeline from Barsham'. This reflected the Applicant's position that a new mains pipeline is preferable to a permanent desalination plant.

The Secretary of State notes that revision 2.0 of the Water Supply Strategy published in September 2021 sets out the important role that a temporary desalination plant would play in the overall strategy. The Secretary of State acknowledges that the Applicant's position on desalination has therefore changed between January 2021 and September 2021 as a result of new information becoming available to the Applicant regarding the preferred mains connection via NWL. The Secretary of State is content that it is reasonable for the Applicant to rely on revision 2.0 of the Water Supply Strategy submitted during the Planning Inspectorate's examination of the Project in light of the new information that became available via NWL in terms of the important role that a temporary desalination plant would play in the overall strategy. The Secretary of State considers that if, contrary to expectation, the Applicant were to seek to provide water from a permanent desalination plant, that would require its own consent and would be subject to further detailed assessment at that stage before it could proceed. Accordingly, for essentially the same reasons as identified above in respect of the other potential solutions to the supply water strategy, the Secretary of State does not consider it necessary for the effects of any such solution to be assessed in more detail as a permanent desalination plant does not form part of the Project and the Applicant is not relying on it as an integral part of the Project.

The Secretary of State notes and agrees with the position of the ONR that in order to fulfil the Licence Conditions of any nuclear site licence necessary to operate the power station, the Applicant will have to put in place a reliable source of water before any nuclear safety related activities can take place that are dependent on such a supply. Accordingly, the Secretary of State is satisfied that the issue of a sustainable water supply solution will be subject to control through the nuclear site licence application and a reliable source of water will need to be demonstrated before any nuclear safety related activities can take place. The Secretary of State notes that NWL has included the demand from the Project in its WRMP24 Demand Forecast and NWL remains committed to providing the Project with a long term water supply and is therefore satisfied that there is a requisite degree of confidence that a long term solution is deliverable, that any such long term solution will be subject to its own environmental assessment, including any required under the Habitats Regulations, which will consider cumulative and in-combination effects before it can proceed, and that the ability to deliver that solution will need to be demonstrated to fulfil the Licence Conditions of any nuclear site licence to enable the Project to generate power.

The ExA clarified [ER 6.2.60] that its conclusions (at [ER 6.2.61- ER 6.2.65] and repeated below) only relate to matters of HRA. In concluding on matters of HRA, the ExA stated [ER 6.2.61] that at the close of the Examination there was still no certainty as to where the permanent water supply would be sourced from and how the necessary water would be transferred to the Project. The ExA stated [ER 6.2.62] that it had no reason to believe NWL (or other water companies), in providing the tankered water supply would cause LSE/AEoI of protected sites.

Regarding the pipeline/ transfer main, the ExA [ER 6.6.63] considered that the information available on the potential cumulative and in-combination effects was limited, as the chosen source and location of the transfer main are unknown and the findings of the WINEP study are required to determine preferred, sustainable option for supply. The ExA considered that the

Applicant's cumulative assessment of the preferred pipeline/transfer main [AS-189] was high-level and contained no conclusions specific to matters of HRA.

The ExA considered [ER 6.2.64] that it was unable to undertake a meaningful assessment of potential LSE arising from the chosen solution for operational water supply in-combination with the Project from the evidence presented to the Examination, due to the absence of a chosen solution and the lack of clarity regarding the protected sites and qualifying features (if any) that would be affected by such a chosen solution.

The ExA accepted [ER 6.2.65] the position of NE that the water supply strategy is a fundamental component of the operational Project, and that LSE associated with it should be assessed. Given the proximity of protected sites such as Minsmere-Walberswick Heaths and Marshes SAC, Minsmere-Walberswick SPA and Ramsar (and potentially other protected sites), the ExA was of the view that there could be LSE during construction and operation, either alone or in-combination with solutions such as the preferred pipeline/ transfer main.

The ExA concluded [ER 6.2.66] that it has not been provided with sufficient information or certainty and advised that information necessary to inform the HRA is incomplete in this regard. The ExA recommended that the Secretary of State may therefore wish to satisfy themself further in this regard.

The ExA considered the potential for LSE and consideration of AEoI associated with Change 19 for relevant protected sites and qualifying features in its report [ER 6.4]. The ExA also considered the issue of certainty of source in its report [ER 5.11].

In relation to the Habitats Regulations, the Secretary of State does not agree with Natural England that the source of any permanent water supply is, in itself, integral to the application. There will need to be a permanent water supply solution and the Secretary of State is satisfied that such a solution can be found before the first reactor is commissioned. However, the Secretary of State does not consider that the source of that supply is an integral part of this application. There is no current certainty as to the final source of the permanent water supply, which does not need to be in place until the early 2030s. The Applicant has carried out a cumulative assessment of the potential pipeline route from Barsham/the North/Central WRZ which identifies that this will result in no new or different significant cumulative effects. However, it is not currently known whether this or some other means of connecting the development to the water supply network will be required and this is something that will only become known through the WINEP process. The Secretary of State agrees with the position of the Applicant that an assessment of the Habitats Regulations implications of the proposed permanent water supply solution will be undertaken by NWL. The Secretary of State does not agree with NE that any such assessment is likely to miss or underplay any effects of any kind, including any cumulative or in-combination effects.

In the unlikely event that NWL can find no solution, then the Applicant has confirmed that it would seek to take forward its own solution of the construction of a permanent desalination plant. As already noted, this in itself would require a further application, either to amend the DCO or for another form of planning consent and such an application would similarly trigger the requirement for the necessary environmental assessments including any required under the Habitats Regulations. Such assessment would consider the proposed permanent water supply solution in combination with the Project and address any cumulative effects.

The Secretary of State is satisfied that the Applicant has established an acceptable water supply strategy for the construction period. The Secretary of State is also satisfied that a long-term water supply is viable and that any proposed water supply solution to be supplied by NWL will be properly assessed under the WRMP24 process and/or other relevant regulatory regimes and considers that no further information is required regarding the proposed water supply solution for a decision to be taken on the Application.

The Secretary of State therefore disagrees with the ExA's conclusions on this matter and considers that the uncertainty over the permanent water supply strategy is not a barrier to granting consent to the Project.

2.5 Other consents, licenses and permits

The DCO is not the only consent, licence or permit required to construct, operate or maintain the Project. Other consents, licences and permits required are detailed by the Applicant [REP10-023] and include EA Environmental Permits ("EPs"), which are currently under consideration by the EA. These EPs include a new bespoke Water Discharge Activity ("WDA") EP and a Combustion Activity ("CA") EP, for which the EA is the competent authority under the Habitats Regulations.

During consultation regarding the RIES, the EA requested [REP10-186] that no conclusions are reached within the Secretary of State's HRA for aspects that will be more appropriately considered by the EA as the competent authority for EPs. The EA also set out the likely timescales for determining EPs stating that they would not reach a final decision before the Secretary of State reached his final conclusions for the DCO.

The National Policy Statements ("NPSs") advise on how the relationship between permits and DCOs should be addressed. These are set out in the Overarching NPS for Energy ("EN-1"), and the NPS for Nuclear Power Generation ("EN-6").

EN-1 paragraph 4.10.3 states that:

"In considering an application for development consent, the IPC should focus on whether the development itself is an acceptable use of the land, and on the impacts of that use, rather than the control of processes, emissions or discharges themselves. The IPC should work on the assumption that the relevant pollution control regime and other environmental regulatory regimes, including those on land drainage, water abstraction and biodiversity, will be properly applied and enforced by the relevant regulator. It should act to complement but not seek to duplicate them."

EN-1 paragraph 4.10.7 states that:

"…*the IPC should be satisfied, before consenting any potentially polluting developments, that:*

- *the relevant pollution control authority is satisfied that potential releases can be adequately regulated under the pollution control framework;* and
- *the effects of existing sources of pollution in and around the site are not such that the cumulative effects of pollution when the proposed development is added would make that development unacceptable, particularly in relation to statutory environmental quality limits. [paragraph 4.10.7]."*

Finally, paragraph 4.10.8 states that:

"*The IPC should not refuse consent on the basis of pollution impacts unless it has good reason to believe that any relevant necessary operational pollution control permits or licences or other consents will not subsequently be granted*."

Furthermore, EN-6 paragraph 2.7.3 states that:

"*To avoid unnecessary duplication and/ or delay and to ensure that planning and regulatory expertise are focussed on the most appropriate areas, when considering a development consent application the IPC should act on the basis that:*

- *the relevant licensing and permitting regimes will be properly applied and enforced;*
- *it should not duplicate the consideration of matters that are within the remit of the Nuclear Regulators; and*
- *it should not delay a decision as to whether to grant consent until completion of the licensing or permitting process"*

And EN-6 paragraph 2.7.5 states that:

"Consent should not be refused on the grounds of matters within the remit of the regulators unless the IPC has good reason to believe that any necessary licence, permit or authorisation will not subsequently be granted."

The ExA noted the recommendations on the matter of permitting in EN-1 and EN-6. The ExA [ER 6.1.7] also noted that Regulation 67(2) of the Habitats Regulations states that: *"Nothing in regulation 63(1) or 65(2) requires a competent authority to assess any implications of a plan or project which would be more appropriately assessed under that provision by another competent authority"*.

Nevertheless, the ExA's view [ER 6.1.8] was that any assessment which may be carried out by the EA in relation to EPs should not substitute the assessment which must be made by the Secretary of State, in keeping with his statutory duty under the Habitats Regulations. The ExA acknowledged [ER 6.1.8] that a DCO would authorise the operation and use of the authorised development as per Article 7, subject to Article 7(2), which does not relieve the undertaker of any duty to obtain any permit, licence or other obligation under any other legislation that may be required.

During the Post-examination consultation, the EA confirmed that EPs for discharges into the marine environment and emissions to air (from diesel generators) will be required for the desalination plant and that as part of the permit determination an AA may be required to determine any impacts from the Project alone, or in-combination with plans and projects[17].

The Secretary of State does not seek to fetter any later assessment/s made by the EA in relation to EPs, consents or licences that are, or may be required for the Project. This matter is discussed further in the relevant chapters of the AA that relate to changes to marine water quality and changes to air quality.

[17] Environment Agency (14th April 2022): Letter Reference EN010012.

3 Stage 1: Screening for Likely Significant Effects

Under regulation 63 of the Habitats Regulations and regulation 28 of the Offshore Habitats Regulations, the Secretary of State must consider whether a development will have an LSE on a protected site, either alone or in-combination with other plans or projects.

The purpose of this section is to identify any LSEs on protected sites that may result from the Project and to record the Secretary of State's conclusions on the need for an AA.

The Applicant's Shadow HRA Report set out its methodology for determining LSE, including a pre-screening site selection to identify protected sites and qualifying features to take forward to the screening stage. The Applicant described how it determined what would constitute a significant effect within section 5 of the Shadow HRA Report and that it followed guidance documents on HRA, with reference to relevant case law. Additionally, section 2.10 of the Shadow HRA report sets out the project parameters, with reference to the ES, and section 2.11 identified the scenarios assessed in the report. Details on worst-case scenarios are presented in sections 7 to 10.

The impact pathways considered by the Applicant to have the potential to result in LSE were:

- Alteration of coastal processes / sediment transport;
- Alteration of local hydrology and hydrogeology;
- Changes in air quality;
- Direct habitat loss and fragmentation;
- Disturbance due to increased recreational pressure; and
- Disturbance effects on species populations;
- Physical interaction between species and project infrastructure.
- Water quality effects (marine environment);
- Water quality effects (terrestrial environment);

The Applicant identified the potential for LSE as a result of the Project alone on 19 protected sites in the NSN considered in the Shadow HRA Report and addenda. These are:

- Alde-Ore and Butley Estuaries SAC;
- Alde-Ore Estuary SPA;
- Alde-Ore Estuary Ramsar;
- Benacre to Easton Bavents Lagoons SAC;
- Benacre to Easton Bavents SPA;
- Deben Estuary SPA;
- Deben Estuary Ramsar;
- Dew's Pond SAC;
- Humber Estuary SAC;
- Minsmere-Walberswick Heaths and Marshes SAC;
- Minsmere-Walberswick SPA:
- Minsmere-Walberswick Ramsar;
- Orfordness to Shingle Street SAC;
- Outer Thames Estuary SPA;
- Sandlings SPA;
- Southern North Sea SAC;
- Stour and Orwell Estuaries SPA;

- Stour and Orwell Estuaries Ramsar; and
- The Wash and North Norfolk Coast SAC.

No IP, including NE, disputed the Applicant's conclusion of LSE on these sites. The ExA also agreed with the Applicant's conclusion of LSE on these 19 protected sites.

In relation to Change 19 for the temporary desalination plant, the Applicant's Shadow HRA Third Addendum did not identify any new protected sites or features, nor any new pathway of effect resulting from this change, but did conclude that there was the potential for LSE on the following nine protected sites (of the 19 sites already screened in for LSE), which are carried forwards for consideration of AEoI:

- Alde-Ore Estuary SPA;
- Alde-Ore Estuary Ramsar;
- Minsmere-Walberswick SPA;
- Minsmere-Walberswick Heaths and Marshes SAC;
- Minsmere-Walberswick Ramsar;
- Outer Thames Estuary SPA;
- Humber Estuary SAC;
- Southern North Sea SAC; and
- The Wash and North Norfolk Coast SAC.

No IPs raised concerns about the scope of the protected sites considered in the Applicant's Shadow HRA Third Addendum. Following submission of the Shadow HRA Report and Shadow HRA Addendum, NE confirmed [REP2-152] that it was satisfied that the proposals in their current form have scoped in all relevant protected sites. The MMO also confirmed [RR-0744] that it agreed with the list of protected sites that had been screened in on a conservative basis. By the end of Examination, a number of IPs including the EA [REP7-131] [REP10-188], the MMO [REP10-107], SCC and ESC deferred to NE to advise on the conclusions of the Applicants Shadow HRA and potential effects on protected sites.

The Applicant concluded no LSE on a number of protected sites and their qualifying features (see Annex 1 to the RIES). During Examination, as described in the RIES, IPs disputed several of the Applicants conclusions regarding no LSE, and there were instances where potential effects had been raised as a concern by NE that had not been included in the Applicant's Shadow HRA Report. The ExA sought clarity regarding the positions of the Applicant and IPs during Examination. For potential effects, features, and protected sites where the positions of the Applicant and IPs differed, these are discussed below and in footnotes to Table 1.

Of those protected sites considered in the LSE assessment, the ExA concluded that LSEs could not be excluded either alone or in-combination with other plans or projects, for 19 protected sites. However, in view of the uncertainty around the permanent water supply solution, the ExA could not preclude the potential identification of LSE on protected sites and features during construction and operation, either alone (if considering the solution such as the preferred pipeline/ transfer main as part of the project) or in-combination with solutions such as the preferred pipeline/ transfer main. The ExA therefore advised that information necessary to inform this HRA is incomplete in this regard.

For the reasons set out in section 2.4 the Secretary of State considers the provision of a permanent water supply itself should not be considered within this HRA and is satisfied that any

impacts will be considered both alone and in-combination with the effects of the Project at such time that proposals for a permanent water supply are known.

The Secretary of State is satisfied that all LSEs that could result from the Project alone or in-combination with other plans or projects capable of assessment at this time have been identified, and that all the relevant protected sites and relevant qualifying features were identified for consideration. The Secretary of State considers that sufficient information has been provided to inform a robust assessment in line with his duties under the Habitats Regulations.

Table 1 lists the sites for which LSEs could not be excluded, either alone or in-combination, alongside the relevant qualifying features and impact pathways. This list includes effects on protected sites and qualifying features for which the Applicant concluded LSE, together with a number of further effects on additional qualifying features which were disputed by IP's during Examination and screened in by the ExA. The ExA report and the RIES provide further information on sites and features which were considered, but for which LSEs were screened out. The Secretary of State is satisfied to adopt the rationale and conclusions of the ExA for those sites and features screened out of the LSE assessment and has not duplicated that assessment here.

The Secretary of State has considered the potential effects of the Project on all interest features of the protected sites listed in Table 1, taking into account their conservation objectives, to determine whether there will be LSEs in the context of the Habitats Regulations.

With regards to the ruling of the European Court of Justice (ECJ) in People Over Wind, Peter Sweetman v Coillte Teoranta (C-323/17) (the "Sweetman Judgement")[18], NE [REP10-199] agreed with the ExA in that there are several inconsistencies with regards to the Sweetman Judgment where the Applicant has concluded no LSE in its Shadow HRA Report, but proposed mitigation measures. For the avoidance of doubt, in reaching his conclusions regarding LSE the Secretary of State took no account of measures intended to avoid or reduce effects on any protected site.

The Secretary of State recognises that powers are in place for decommissioning effects to be addressed fully by the relevant authorities prior to decommissioning, and in light of more detailed information on decommissioning processes and environmental conditions at that time.

[18] ECJ case reference C-323/17, available: http://curia.europa.eu/juris/document/document.jsf?docid=200970&doclang=EN

Table 1: Protected Sites for which likely significant effects cannot be excluded.

protected site	Supplementary Conservation Advice	Distance from the MDS	Distance from the closest Associated Development Site (where less than to the MDS)	Qualifying features	Impact Pathway (C = construction; O = operations and maintenance; D = decommissioning)	LSE alone[19] (Y/N)
Alde-Ore and Butley Estuaries SAC	See footnote[20]	6.5km	1.3km (A1094/B1069 south of Knodishall)	Estuaries Mudflats and sandflats not covered by seawater at low tide Atlantic salt meadows	Changes to coastal processes / sediment transport (C,O,D) Water quality effects (marine environment) (O) Water quality effects (terrestrial environment) (C) Alteration of local hydrology and hydrogeology (C,O) Changes in air quality (C,O,D) Unintentional introduction or spread of INNS (C,O)[21] Cumulative / Inter-project effects (O)	Y
Alde-Ore Estuary SPA	See footnote[22]	6.5km	1.3km (A1094/B1069 south of Knodishall)	Breeding avocet *Recurvirostra avosetta* Breeding marsh harrier *Circus aeruginosus*	Changes in air quality (C,O,D) Disturbance due to increase in recreational pressure (C,O,D) Physical interaction between species and project infrastructure (C,O)[23] Unintentional introduction or spread of INNS (C,O)[21] Cumulative/ inter-project effects (C,O,D)	Y
				Breeding little tern *Sterna albifrons* Breeding sandwich tern *Thalasseus. sandvicensis* Breeding lesser black-backed gull *Larus fuscus*	Changes to coastal processes/ sediment transport (C,O,D) Water quality effects (marine environment) – including direct toxicity and bentonite break out (C,O)[24] Water quality effects (terrestrial environment) (C) Alteration of local hydrology and hydrogeology (C,O) Changes in air quality (C,O,D) Physical interaction between species and project infrastructure - impacts from entrapment on fish as a prey species (O) Disturbance due to increase in recreational pressure (C,O,D) Unintentional introduction or spread of INNS (C,O)[21] Cumulative/ inter-project effects (C,O,D)	Y
				Over winter avocet *Recurvirostra avosetta* Over winter redshank *Tringa totanus* Over winter ruff *Philomachus pugnax*	Changes to coastal processes/ sediment transport (C,O,D) Water quality effects (terrestrial environment) (C) Alteration of local hydrology and hydrogeology (C,O) Changes in air quality (C,O,D) Disturbance due to increase in recreational pressure (C,O,D)	Y

[19] For all potential effects listed in Table 1, the conclusion of LSE is reached on the basis of the Project alone. Effects in-combination do not therefore require further consideration at the LSE screening stage and are taken forward for assessment alone and in-combination at the AA stage in Section 5.

[20] https://designatedsites.naturalengland.org.uk/Marine/SupAdvice.aspx?SiteCode=UK0030076&SiteName=alde&SiteNameDisplay=Alde%2c+Ore+and+Butley+Estuaries+SAC&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=&NumMarineSeasonality=0

[21] The Applicant contended that biosecurity measures required through the Code of Construction Practice ("CoCP") meant that this pathway could be screened out. This matter was stated to be agreed between the Applicant and NE in the final SoCG. However, the Applicant appears to have relied on measures in the CoCP in reaching this conclusion, which is inconsistent with current best practice with regard to of the ruling of the European Court of Justice (ECJ) in People Over Wind*, Peter Sweetman v Coillte Teoranta* (C-323/17) (the "Sweetman Judgement"). NE agreed, in their comments on the RIES, that there are a number of inconsistencies with regards to the Sweetman judgement. In reaching his conclusions on LSE, the Secretary of State took no account of measures intended to avoid or reduce effects on any Protected site, therefore the spread of INNS is screened in and taken forward to the AA.

[22] https://designatedsites.naturalengland.org.uk/Marine/SupAdvice.aspx?SiteCode=UK9009112&SiteName=alde-ore&SiteNameDisplay=Alde-Ore+Estuary+SPA&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=&NumMarineSeasonality=8

[23] NE raised concerns that physical interaction of birds and new pylons and overhead lines had not been considered in the Applicants shadow HRA Report, highlighting the potential for impacts due to electrocution, displacement and collision. Following the submission by the Applicant of an assessment of the collision risk between birds and powerlines [REP6-024] NE considered that LSE could not be ruled out for the Alde-Ore Estuary SPA and the Minsmere-Walberswick SPA, which are therefore screened in and taken forward to the AA.

[24] NE raised concern regarding direct exposure of foraging birds to changes in water quality, including direct toxicity from thermal and chemical discharges including total residual oxidant ("TRO"), bromoform and hydrazine, as well as discharges from the Combined Drainage Outfall "CDO" and bentonite from Horizontal Directional Drilling ("HDD"). This was for multiple sites and features which were additional to those considered by the Applicant. The ExA considered that there was uncertainty whether LSE on bird qualifying features arising from bentonite breakout could be excluded. This impact pathway is therefore screened in and taken forward to the AA.

protected site	Supplementary Conservation Advice	Distance from the MDS	Distance from the closest Associated Development Site (where less than to the MDS)	Qualifying features	Impact Pathway (C = construction; O = operations and maintenance; D = decommissioning)	LSE alone[19] (Y/N)
					Physical interaction between species and project infrastructure (C,O)[23] Unintentional introduction or spread of INNS (C,O)[21] Cumulative/ inter-project effects(C,O,D)	
Alde-Ore Estuary Ramsar	N/A	6.5km	1.3km (A1094/B1069 south of Knodishall)	Ramsar Criterion 2 Nationally scarce plant species and British Red Data Book invertebrates	Changes to coastal processes/ sediment transport (C,O,D) Water quality effects (marine environment) (O) Water quality effects (terrestrial environment) (C) Alteration of local hydrology and hydrogeology (C,O,D) Changes in air quality (C,O,D) Disturbance due to increase in recreational pressure (C,O,D) Unintentional introduction or spread of INNS (C,O)[21] Cumulative/ inter-project effects (C,O,D)	Y
				Ramsar Criterion 3 The site supports a notable assemblage of breeding and wintering wetland birds Ramsar Criterion 6 Species/ populations occurring at levels of international importance	Changes to coastal processes/ sediment transport (C,O,D) Water quality effects (marine environment) (C,O)– including direct toxicity and bentonite break out (little tern)[24] Water quality effects (terrestrial environment) (C) Alteration of local hydrology and hydrogeology (C,O,D) Changes in air quality (C,O,D) Disturbance due to increase in recreational pressure (C,O,D) Physical interaction between species and project infrastructure including impingement and entrainment of prey (O) Unintentional introduction or spread of INNS (C,O)[21] Cumulative/ inter-project effects (C,O,D)	Y
Benacre to Easton Bavents Lagoons SAC	See footnote[25]	14.6km	12.1km (A12/A144 south of Bramfield)	Coastal lagoons (Priority feature)	Changes to coastal processes/ sediment transport (C,O,D) Water quality effects (marine environment) (O) Cumulative/ inter-project effects (C,O,D)	Y
Benacre to Easton Bavents SPA	See footnote[26]	14.2km	10.5km (A12/A144 south of Bramfield)	Breeding bittern *Botaurus stellaris*	Physical interaction with project infrastructure (entrapment of prey species)[27] Disturbance due to increase in recreational pressure (C,O,D) Cumulative/ inter-project effects (C,O)[28]	Y
				Breeding little tern *Sternula albifrons*	Changes to coastal processes/ sediment transport (C,O,D) Water quality effects (marine environment) (O) Physical interaction with project infrastructure (entrapment of prey species) (O) Disturbance due to increase in recreational pressure (C,O,D) Cumulative/ inter-project effects (C,O,D)	Y
				Breeding marsh harrier *Circus aeruginosus*	Disturbance due to increase in recreational pressure (C,O,D) Cumulative/ inter-project effects (C,O)[28]	Y

[25] https://designatedsites.naturalengland.org.uk/Marine/SupAdvice.aspx?SiteCode=UK0013104&SiteName=benacre&SiteNameDisplay=Benacre+to+Easton+Bavents+Lagoons+SAC&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=&NumMarineSeasonality=0

[26] http://publications.naturalengland.org.uk/file/5503127986110464

[27] The Applicants Shadow HRA Report stated no effect on glass eels or elvers, which are an important prey species of Bittern, and therefore no discernible impact pathway to the Bittern feature. The EA noted that eel are predicted to be entrapped at Sizewell C, and therefore should be considered in the HRA for the Benacre to Easton Bavents SPA. The RSPB/SWT made the same point for the Minsmere-Walberswick SPA. NE stated that it had no concern regarding breeding Bittern at these two sites due to eel impingement but did not explain on what basis it reached this conclusion. The ExA considered that, given the issues raised during examination and lack of explanation by NE, this impact pathway should be screened in on a precautionary basis. The Secretary of State agrees, and this is taken forward to the AA.

[28] NE raised concerns regarding the Applicants assessment of cumulative impacts and listed the Protected sites for which this applied. NE also considered that resolution of their disagreement regarding cumulative/ inter-project effects requires all single site issues to be resolved first. As cumulative/ inter-project effects were not screened in by the Applicant for the Breeding Bittern and Breeding Marsh Harrier features of the Benacre to Bavents SPA, or the Sea Lamprey and River Lamprey features of the Humber Estuary SAC, cumulative/ inter-project effects for these two sites are screened in by the ExA and taken forward to the AA.

protected site	Supplementary Conservation Advice	Distance from the MDS	Distance from the closest Associated Development Site (where less than to the MDS)	Qualifying features	Impact Pathway (C = construction; O = operations and maintenance; D = decommissioning)	LSE alone[19] (Y/N)
Deben Estuary SPA	See footnote[29]	22.2km	5km (freight management facility)	Wintering avocet *Recurvirostra avosetta* Wintering dark-bellied brent goose *Branta bernicla bernicla*	Disturbance effects on species' population (noise, light and visual) (C,O,D) Cumulative/ inter-project effects (C,O,D)	Y
Deben Estuary Ramsar	N/A	22.2km	5km (freight management facility)	Ramsar Criterion 6 species/ populations occurring at levels of international importance: dark-bellied Brent goose	Disturbance effects on species' population (noise, light and visual) (C,O,D) Cumulative/ inter-project effects (C,O,D)	Y
Dew's Pond SAC	See footnote[30]	11.2km	1.7km (northern park and ride)	Great crested newt *Triturus cristatus*	Alteration of local hydrology and hydrogeology (C,O,D)	Y
Humber Estuary SAC	See footnote[31]	162.9km	153km (A12/A144 south of Bramfield)	Sea lamprey *Petromyzon marinus* River lamprey *Lampetra fluviatilis*	Water quality effects (marine environment)[32] Physical interaction between species and project infrastructure (O) Cumulative/ inter-project effects (C,O)[28]	Y
				Grey seal *Halichoerus grypus*	Water quality effects (marine environment) (C,O,D) Disturbance effects on species' population (underwater noise) (C,O,D) Physical interaction between species and project infrastructure - effects on prey species (C,O,D) Physical interaction between species and project infrastructure – collision risk (C,O,D) Cumulative/ inter-project effects (C,O,D)	Y
Minsmere to Walberswick Heaths and Marshes SAC	See footnote[33]	Adjacent (MDS)	N/A	Annual vegetation of drift lines	Changes to coastal processes/sediment transport (C,O,D) Water quality effects (marine environment) (C,O,D) Changes in air quality (C,D) Disturbance due to increase in recreational pressure (C,O,D) Unintentional introduction or spread of INNS (C,O)[21] Cumulative/ inter-project effects (C,O,D)	Y
				Perennial vegetation of stony banks	Changes to coastal processes/sediment transport (C,O,D) Alteration of local hydrology and hydrogeology (C,O,D) Water quality effects (marine environment) (C,O,D) Water quality effects (terrestrial environment) (C,O,D) Changes in air quality (C,O,D) Disturbance due to increase in recreational pressure (C,O,D) Unintentional introduction or spread of INNS (C,O)[21] Cumulative/ inter-project effects (C,O,D)	Y
				European dry heaths	Changes in air quality (C,O,D) Disturbance due to increase in recreational pressure (C,O,D) Unintentional introduction or spread of INNS (C,O)[21]	Y

[29] https://designatedsites.naturalengland.org.uk/Marine/SupAdvice.aspx?SiteCode=UK9009261&SiteName=deben&SiteNameDisplay=Deben+Estuary+SPA&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=&NumMarineSeasonality=2

[30] http://publications.naturalengland.org.uk/file/6663816760786944

[31] https://designatedsites.naturalengland.org.uk/Marine/SupAdvice.aspx?SiteCode=UK0030170&SiteName=humber&SiteNameDisplay=Humber+Estuary+SAC&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=&NumMarineSeasonality=8

[32] For the Humber Estuary SAC, water quality effects, including the impact of thermal and chemical plumes on migratory fish species, were screened out by the Applicant in its Shadow HRA Report due to the distance between the protected site and the Project. NE disputed this, stating that thermal plumes could form a barrier to migration of some fish species, and advised that there could be LSE. This impact pathway is therefore screened in on a precautionary basis and taken forward to the AA.

[33] http://publications.naturalengland.org.uk/file/5537398570352640

protected site	Supplementary Conservation Advice	Distance from the MDS	Distance from the closest Associated Development Site (where less than to the MDS)	Qualifying features	Impact Pathway (C = construction; O = operations and maintenance; D = decommissioning)	LSE alone[19] (Y/N)
					Damage to notified habitats due to impediment to management practices (C,O,D)[34] Cumulative/ inter-project effects (C,O,D)	
Minsmere - Walberswick SPA	See footnote[35]	Adjacent (MDS)	N/A	Breeding avocet *Recurvirostra avosetta* Breeding bittern *Botaurus stellaris*	Water quality effects (terrestrial environment) (C,O,D) Alteration of local hydrology and hydrogeology (C,O,D) Changes in air quality (C,O,D) Disturbance due to increase in recreational pressure (C,O,D) Disturbance effects on species' population (noise, light and visual) (C,O,D) Physical interaction between species and project infrastructure[23] Changes to coastal processes/ sediment transport (O)[36] Unintentional introduction or spread of INNS (C,O)[21] Damage to notified habitats due to impediment to management practices (C,O,D)[34] Cumulative/ inter-project effects (C,O,D)	Y
				Breeding bittern *Botaurus stellaris*	Physical interaction between species and project infrastructure – including indirect impacts from entrapment on fish as a prey species[27]	Y
				Breeding little tern *Sternula albifrons*	Changes to coastal processes/ sediment transport (C,O,D) Water quality effects (marine environment) – including direct toxicity and bentonite break out (C,O)[24] Water quality effects (terrestrial environment) (C,O,D) Alteration of local hydrology and hydrogeology (C,O,D) Changes in air quality (C,O,D) Disturbance due to increase in recreational pressure (C,O,D) Physical interaction between species and project infrastructure – including impacts from entrapment on fish as a prey species (O) Disturbance effects on species' population – indirect impacts on fish as a prey species from noise and vibration (C,O,D) Disturbance effects on species' population (noise, light and visual) (C,O,D) Unintentional introduction or spread of INNS (C,O)[21] Damage to notified habitats due to impediment to management practices (C,O,D)[34] Cumulative/ inter-project effects (C,O,D)	Y
				Breeding marsh harrier *Circus aeruginosus*	Water quality effects (terrestrial environment) (C,O,D) Alteration of local hydrology and hydrogeology (C,O,D) Changes in air quality (C,O,D) Direct habitat loss and fragmentation (C,O,D) Disturbance due to increase in recreational pressure (C,O,D) Disturbance effects on species' population (noise, light and visual) (C,O,D) Physical interaction between species and project infrastructure (C,O)[23]	Y

[34] NE considered that works in and around the MDS, which is directly adjacent to Minsmere, have the potential to impede management practices required for its conservation, and identified this as a concern for these protected sites. The ExA determined that there is a risk of LSE to these sites through an absence of management, and in light of mitigation proposed by the Applicant to not impede the RSPB's existing access route to the southern edge of the Minsmere reserve, that this Impact pathway should be screened in. The Secretary of State agrees, and this impact pathway is taken forward to the AA on a precautionary basis.

[35] https://designatedsites.naturalengland.org.uk/Marine/SupAdvice.aspx?SiteCode=UK9009101&SiteName=minsmere&SiteNameDisplay=Minsmere-Walberswick+SPA&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=&NumMarineSeasonality=12

[36] NE considered that LSE due to changes to coastal process/ sediment transport during the operational phase on all qualifying features of the Minsmere-Walberswick Heath and Marshes SAC, Minsmere-Walberswick SPA and Minsmere-Walberswick Ramsar could not be excluded, including for qualifying features not screened in by the Applicant in the Shadow HRA Report. In its response to the RIES, the Applicant considered that the qualifying features are not dependant on the potentially affected habitats. This impact pathway is screened in on a precautionary basis and taken forward to the AA.

protected site	Supplementary Conservation Advice	Distance from the MDS	Distance from the closest Associated Development Site (where less than to the MDS)	Qualifying features	Impact Pathway (C = construction; O = operations and maintenance; D = decommissioning)	LSE alone[19] (Y/N)
					Changes to coastal processes/ sediment transport (O)[36] Unintentional introduction or spread of INNS (C,O)[21] Damage to notified habitats due to impediment to management practices (C,O,D)[34] Cumulative/ inter-project effects (C,O,D)	
				Breeding nightjar *Caprimulgus europaeus*	Changes in air quality (C,O,D) Direct habitat loss and fragmentation (C,O,D) Disturbance due to increase in recreational pressure (C,O,D) Disturbance effects on species' population (noise, light and visual) (C,O,D) Physical interaction between species and project infrastructure (C,O)[23] Changes to coastal processes/ sediment transport (O)[36] Unintentional introduction or spread of INNS (C,O)[21] Damage to notified habitats due to impediment to management practices (C,O,D)[34] Cumulative/ inter-project effects (C,O,D)	Y
				Breeding shoveler *Anas clypeata* Breeding teal *A.crecca* Breeding gadwall *A.strepera* Wintering gadwall *A.strepera* Wintering hen harrier *Circus cyaneus* Wintering shoveler *A.clypeata* Wintering white-fronted goose *Anser albifrons*	Water quality effects (terrestrial environment) (C,O,D) Alteration of local hydrology and hydrogeology (C,O,D) Changes in air quality (C,O,D) Disturbance due to increase in recreational pressure (C,O,D) Disturbance effects on species' population (noise, light and visual) (C,O,D) Physical interaction between species and project infrastructure (C,O)[23] Changes to coastal processes/ sediment transport (O)[36] Unintentional introduction or spread of INNS (C,O)[21] Damage to notified habitats due to impediment to management practices (C,O,D)[34] Cumulative/ inter-project effects (C,O,D)	Y
				Wintering gadwall *A.strepera* Wintering hen harrier *Circus cyaneus* Wintering shoveler *A.clypeata*	Direct habitat loss and fragmentation (C,O,D)	Y
Minsmere - Walberswick Ramsar	N/A	Adjacent	N/A	Ramsar Criterion 1 Mosaic of marine, freshwater, marshland and associated habitats Ramsar Criterion 2 Supports nine nationally scarce plants and at least 26 red data book invertebrates	Changes to coastal processes/ sediment transport (C,O,D) Water quality effects (marine environment) (C,O,D) Water quality effects (terrestrial environment) (C,O,D) Alteration of local hydrology and hydrogeology (C,O,D) Changes in air quality (C,O,D) Disturbance due to increase in recreational pressure (C,O,D) Unintentional introduction or spread of INNS (C,O)[21] Damage to notified habitats due to impediment to management practices (C,O,D)[34] Cumulative/ inter-project effects (C,O,D)	Y
				Ramsar Criterion 2 An important assemblage of rare breeding birds associated with marshland and reedbeds	Changes to coastal processes/ sediment transport (C,O,D) Disturbance effects on species' population (noise, and visual) (C,O,D) Water quality effects (terrestrial environment) (C,O,D) Alteration of local hydrology and hydrogeology (C,O,D) Changes in air quality (C,O,D) Direct habitat loss and fragmentation (C,O,D) Disturbance due to increase in recreational pressure (C,O,D)	Y

protected site	Supplementary Conservation Advice	Distance from the MDS	Distance from the closest Associated Development Site (where less than to the MDS)	Qualifying features	Impact Pathway (C = construction; O = operations and maintenance; D = decommissioning)	LSE alone[19] (Y/N)
					Physical interaction between species and project infrastructure – including impacts from entrapment on fish as a prey species (little tern) (C,O,D) Water quality effects (marine environment) (C,O,D) – including direct toxicity and bentonite break out (little tern)[24] Unintentional introduction or spread of INNS (C,O)[21] Damage to notified habitats due to impediment to management practices (C,O,D)[34] Cumulative/ inter-project effects (C,O,D)	
Orfordness to Shingle Street SAC	See footnote[37]	8.9km	5.9km (A1094/B1069 south of Knodishall)	Coastal lagoons	Changes to coastal processes/ sediment transport (C,O,D) Water quality effects (marine environment) (C,O,D) Changes in air quality (C,O,D) Cumulative/ inter-project effects (C,O,D)	Y
				Annual vegetation of drift lines	Changes to coastal processes/ sediment transport (C,O,D) Water quality effects (marine environment) (C,O,D) Changes in air quality (C,D) Disturbance due to increase in recreational pressure (C,O,D) Cumulative/ inter-project effects (C,O,D)	Y
				Perennial vegetation of stony banks	Changes to coastal processes/ sediment transport (C,O,D) Water quality effects (marine environment) (C,D) Changes in air quality (C,O,D) Disturbance due to increase in recreational pressure (C,O,D) Cumulative/ inter-project effects (C,O,D)	Y
Outer Thames Estuary SPA	See footnote[38]	Within and adjacent	N/A	Wintering / passage red-throated diver *Gavia stellate*	Disturbance effects on species' population (direct disturbance from vessels) (C,O,D) Disturbance effects on species' population (noise and visual stimuli) (C,O,D) Disturbance effects on species' population – including indirect impacts on fish as a prey species from noise and vibration (C,O,D) Physical interaction between species and project infrastructure –impacts from entrapment on fish as a prey species (O) Water quality effects (marine environment) (C,O,D) – including direct toxicity and bentonite break out[24] Cumulative/ inter-project effects (C,O,D)	Y
				Breeding little tern *Sternula albifrons* Breeding common tern *Sterna hirundo*	Disturbance effects on species' population (direct noise, light and visual stimuli, also indirect impacts on fish as a prey species from noise and vibration) (C,O,D) Water quality effects (marine environment) (C,O,D) – including direct toxicity and bentonite break out[24] Physical interaction between species and project infrastructure – including impacts from entrapment on fish as a prey species (O) Cumulative/ inter-project effects (C,O,D)	Y

[37] https://designatedsites.naturalengland.org.uk/Marine/SupAdvice.aspx?SiteCode=UK0014780&SiteName=orford&SiteNameDisplay=Orfordness+-+Shingle+Street+SAC&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=&NumMarineSeasonality=0

[38] https://designatedsites.naturalengland.org.uk/Marine/SupAdvice.aspx?SiteCode=UK9020309&SiteName=outer%20thames%20estuary&SiteNameDisplay=Outer+Thames+Estuary+SPA&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=&NumMarineSeasonality=3

protected site	Supplementary Conservation Advice	Distance from the MDS	Distance from the closest Associated Development Site (where less than to the MDS)	Qualifying features	Impact Pathway (C = construction; O = operations and maintenance; D = decommissioning)	LSE alone[19] (Y/N)
Sandlings SPA	See footnote[39]	1.6km	N/A	Breeding nightjar *Caprimulgus europaeus* Breeding woodlark *Lullula arborea*	Changes in air quality (C,O,D) Direct habitat loss and fragmentation (C,O,D) Disturbance due to increase in recreational pressure (C,O,D) Disturbance effects on species' population (noise, light and visual) (C,O,D) Cumulative/ inter-project effects (C,O,D)	Y
Southern North Sea SAC	See footnote[40]	Within and adjacent	N/A	Harbour porpoise *Phocoena phocoena*	Water quality effects (marine environment) (C,O,D) Direct habitat loss and direct/ indirect habitat fragmentation (C,O,D) Disturbance effects on species' population (underwater noise) (C,O,D) Physical interaction between species and project infrastructure (C,O,D) Cumulative/ inter-project effects (C,O,D)	Y
Stour and Orwell Estuaries SPA	See footnote[41]	33.7km	1.6km (freight management facility)	Breeding avocet *Recurvirostra avosetta* Pintail (wintering) *Anas acuta* Dark-bellied Brent goose (wintering) *Branta bernicla bernicla* Dunlin (wintering) *Calidris alpina alpine* Knot (wintering) *Calidris alpine* Black-tailed godwit (wintering) *Limosa limosa islandica* Grey plover (wintering) *Pluvialis squatarola* Redshank (wintering) *Tringa totanus* Assemblage qualification: a wetland of international importance Assemblage qualification: waterbird assemblage	Disturbance effects on species' population (noise and visual stimuli) (C,O,D) Alteration of local hydrology and hydrogeology[42]	Y
Stour and Orwell Estuaries Ramsar	N/A	33.7km	1.6km (freight management facility)	Ramsar Criterion 5 assemblages of international importance: waterfowl Ramsar Criterion 6 species/ populations occurring at levels of international importance	Disturbance effects on species' population (noise and visual stimuli) (C,O,D) Alteration of local hydrology and hydrogeology[42]	Y
The Wash and North Norfolk Coast SAC	See footnote[43]	88.2km	79.4km (A12/A144 south of Bramfield)	Harbour seal *Phoca vitulina*	Water quality effects (marine environment) (C,O,D) Disturbance effects on species' population (effects on prey species) (C,O,D) Disturbance effects on species' population (underwater noise) (C,O,D) Physical interaction between species and project infrastructure (C,O,D) Cumulative/ inter-project effects (C,O,D)	Y

[39] http://publications.naturalengland.org.uk/file/5201677619822592
[40] https://data.jncc.gov.uk/data/206f2222-5c2b-4312-99ba-d59dfd1dec1d/SouthernNorthSea-conservation-advice.pdf
[41] https://designatedsites.naturalengland.org.uk/Marine/SupAdvice.aspx?SiteCode=UK9009121&SiteName=stour&SiteNameDisplay=Stour+and+Orwell+Estuaries+SPA&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=&NumMarineSeasonality=8
[42] The Applicant in its Shadow HRA Report did not screen in this impact pathway in relation to the Stour and Orwell Estuaries SPA and Ramsar, stating that no discernible impact pathway is evident. The ExA did screen this impact pathway in, and it is taken forward to the AA upon that basis.
[43] https://designatedsites.naturalengland.org.uk/Marine/SupAdvice.aspx?SiteCode=UK0017075&SiteName=the+wash+and&SiteNameDisplay=The+Wash+and+North+Norfolk+Coast+SAC&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=&NumMarineSeasonality=2

3.1 Likely Significant Effects Alone Assessment

The Secretary of State agrees with the recommendations of the ExA and concludes that LSEs cannot be excluded at the 19 protected sites listed in Table 1, when the Project is considered alone. These are taken forward to the AA to consider whether AEoI at these sites from the effects of the Project alone or in-combination with other plans and projects can be excluded.

3.2 Likely Significant Effects In-combination Assessment

Under the Habitats Regulations the Secretary of State is obliged to consider whether the Project, in-combination with other plans or projects might affect protected sites, if no LSE is concluded for the Project alone.

Section 5.6 of the Applicants Shadow HRA Report sets out the approach taken to the in-combination assessment, including the selection of plans and projects for consideration. The Applicants in-combination screening exercise is provided in Appendix C of the Shadow HRA Report, including a list of plans and projects which were considered. The Applicant's Shadow HRA Addenda also considered potential in-combination effects associated with the change requests they supported, to determine if the changes altered the conclusions of previous assessments.

The RIES notes that concerns were raised during Examination on matters of in-combination effects, and additional projects were highlighted by IPs, including the MMO [RR-0744], NE [RR-0878], and Heavingham Hall Estate [RR-0908] [REP2-287] and these are addressed by the EXA at [ER: 6.2.149 - 6.2.153].

Where potential effects were screened out by the Applicant from the Project alone, the Applicant also considered in-combination effects but in all cases reached a conclusion of no LSE alone or in-combination [APP-145] [APP-148]. The justification for this was either that there was no impact pathway from the Project alone, or that the LSE in-combination screening exercise identified no plan or project that could act in-combination with the Project to potentially result in LSE.

For all potential effects which the Applicant concluded that a LSE could occur, the conclusion was reached based on the Project alone. The ExA therefore considered that effects in-combination do not require further consideration at this screening stage. The Secretary of State agrees with the ExA, and the 19 protected sites listed in Table 1 are taken forward to the AA to consider whether AEoI from the Project alone and in-combination with other plans or projects, can be excluded.

4 Appropriate Assessment Methodology

The requirement to undertake an AA is triggered when a competent authority, in this case the Secretary of State (subject to Regulation 64), determines that a plan or project is likely to have a significant effect on a protected site either alone or in-combination with other plans or projects. Guidance issued by Defra states that the purpose of an AA is to assess the implications of the plan or project in respect of the site's conservation objectives, either individually or in-combination with other plans and projects, and that the conclusions should enable the competent authority to ascertain whether the plan or project will adversely affect the integrity of the site concerned. The focus is therefore specifically on the species and/or habitats for which the protected site is designated[44].

In line with the requirements of Regulation 63 of the Habitats Regulations:

"In considering whether a plan or project will adversely affect the integrity of the site, the competent authority must have regard to the manner in which it is proposed to be carried out or to any conditions or restrictions subject to which it proposes that the consent, permission or other authorisation should be given."

The purpose of this AA is to determine whether AEoI of the features of the 19 sites identified can be ruled out as a result of the Project alone or in-combination with other plans or projects in view of the site's conservation objectives and using the best scientific evidence available.

In accordance with the precautionary principle embedded in the integrity test and established through case law[45], the Secretary of State as the competent authority may agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the protected site, and this must be demonstrated beyond all reasonable scientific doubt. If the Secretary of State cannot exclude AEoI of the affected protected sites, then he can only agree to a plan or project if it complies with the requirements of Regulation 64 of the Habitats Regulations. Regulation 64 provides that the Secretary of State may agree to the plan or project only if satisfied that there are no alternative solutions, and that the plan or project must be carried out for IROPI. In addition, Regulation 68 requires compensatory measures to be secured which maintain the overall coherence of the NSN.

4.1 In-combination Assessment Methodology

The AA presents effects from the Project in-combination with other plans and projects. Due to the range of receptors being assessed, the projects which are relevant to the in-combination assessments will be different for each receptor.

Paragraphs 3.4.11 to 3.4.22 of the Shadow HRA Report [APP-145] provided a high-level summary of the Applicant's approach to in-combination assessment. Section 5.6 [APP-145] sets out the approach taken to the in-combination assessment, including the selection of plans and projects for consideration. The Applicant's in-combination screening exercise, including a list of

[44] https://www.gov.uk/guidance/appropriate-assessment#what-must-an-appropriate-assessment-contain

[45] CJEU Case C-127/02 Waddenzee 7 September 2004, Reference for a preliminary ruling from the Raad van State (Netherlands) in the proceedings: Landelijke Vereniging tot Behoud van de Waddenzee and Nederlandse Vereniging tot Bescherming van Vogels v Staatssecretaris van Landbouw, Natuurbeheer en Visserij.

in-combination plans and projects is provided in Table C.1 of Appendix C to the Shadow HRA Report [APP-148]. The Applicant's conclusions are also presented in Table C.1 [APP-148] and in the screening matrices [APP-148, with revised versions for the SACs presented in AS-174].

Other Plans and projects screened into the assessment by the Applicant listed in [APP-148] are:

- Harwich Haven Approach Channel Deepening;
- Extension of Inner Gabbard East Disposal site;
- SZB Nuclear Power Station Decommissioning;
- East Anglia ONE Offshore Wind Farm ;
- East Anglia ONE Operations and Maintenance Marine Licence applications for Generation and Transmission Assets;
- East Anglia ONE North Offshore Wind Farm;
- East Anglia TWO Offshore Wind Farm;
- East Anglia THREE Offshore Wind Farm;
- Great Yarmouth Third River Crossing;
- Norfolk Vanguard Offshore Wind Farm;
- Norfolk Boreas Offshore Wind Farm;
- Thanet Extension Offshore Wind Farm;
- Lake Lothing Third Crossing;
- A number of applications for multiple dwellings in close proximity to the Project;
- Shingle Recycling from Sudbourne Beach to Slaughden Sea defences; and
- Suffolk Shoreline Management Plan (SMP7).

The Applicant's Shadow HRA Addendum [AS-173] and Shadow HRA Third Addendum [REP7-279] also considered potential in-combination effects associated with the change requests they supported, to determine if the changes altered the conclusions of its previous assessments (as relevant).

The RIES notes that concerns were raised during Examination on matters of in-combination effects, and additional projects were highlighted by IPs, including the MMO [RR-0744], NE [RR-0878], and Heavingham Hall Estate [RR-0908] [REP2-287].

The following additional projects were identified by IPs:

- Galloper wind farm (MMO [RR-0744]);
- Sizewell B relocation Town and Country Planning Act (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]).

The Applicant responded to the points raised in the RIES on in-combination plans and projects at Deadline 10 [REP10-155]. The ExA report sets out how the scope of its in-combination

considerations are updated following identification of these additional sites [ER: 6.2.149-6.2.153] to include Suffolk Coastal Path in respect of effects of recreational pressure and unexploded Ordnances ("UXO") detonation activities related to other projects in respect of underwater noise.

The ExA notes [ER 6.1.154] that more generally, NE welcomed the Applicants continued engagement on issues in its Written Representation [REP2-153], including the 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."

As set out in Section 3.2, where potential LSEs were screened out by the Applicant from the Project alone, the Applicant also considered in-combination effects but in all cases reached a conclusion of no LSE alone or in-combination [APP-145] [APP-148]. For all potential effects that the Applicant concluded that LSE could occur, the conclusion was reached on the basis of the Project alone. The ExA therefore considered that effects in-combination did not require further consideration at the screening stage. The Secretary of State agreed with the ExA in this regard, and the 19 sites listed in Table 1 have been taken forward to consider whether AEoI from the Project alone and in-combination with other plans or projects, can be excluded.

5 Stage 2: Appropriate Assessment

The Secretary of State has undertaken an objective scientific assessment of the implications of the Project on the qualifying features of the protected sites identified in his screening assessment, using best scientific evidence available. The assessment has been made in light of the site's conservation objectives, which are set out in Section 2, Section 5 and Table 1 of this HRA Report.

5.1 Impact pathways

The impacts considered to have the potential to result in LSE are:

- Alteration of local hydrology and hydrogeology;
- Changes in air quality;
- Changes to coastal processes / sediment transport;
- Direct habitat loss and fragmentation;
- Disturbance due to increase in recreational pressure;
- Disturbance effects on species populations (noise, light and visual);
- Impediment to management practices;
- Physical interaction between species and project infrastructure;
- Physical interaction between species and project infrastructure - indirect impacts from entrapment of prey species on bird qualifying features;
- Physical interaction between species and project infrastructure - risk of collision with pylons and power lines;
- Unintentional spread of Invasive Non-Native Species ("INNS");
- Water quality effects (marine environment); and
- Water quality effects (terrestrial environment).

5.2 Alteration of local hydrology and hydrogeology

This pathway includes the potential physical effects on freshwater (including surface and groundwater resources), including effects on flows and water levels, as well as indirect effects on habitats and species.

The Applicant in its Shadow HRA Report [APP-145] identified potential impact pathways from alterations to local hydrology and hydrogeology arising from the construction, operation, and decommissioning of the Project alone on the qualifying features of the following protected sites:

- Alde-Ore and Butley Estuaries SAC;
- Alde-Ore Estuary SPA and Ramsar;
- Dew's Pond SAC;
- Minsmere-Walberswick Ramsar; and
- Minsmere-Walberswick SPA.

The ExA considered that there was also the potential for alterations in local hydrology and hydrogeology to affect the Stour and Orwell Estuaries SPA.

The Applicant proposed a suite of measures to mitigate the impacts from alterations to local hydrology and hydrogeology which would be secured in the DCO, including Requirement 5 which secures project-wide measures for surface and foul water drainage, including the final Drainage Strategy, which will be in accordance with the Drainage Strategy [REP10-030 to REP10-032], the latter being a certified document of the DCO.

Furthermore, the Code of Construction Practice ("CoCP") [REP10-072] includes commitments to develop specific parameters for the realignment of the Sizewell Drain, and documents contributing towards the water management structures (Terrestrial Ecology Monitoring and Mitigation Plan ("TEMMP") [REP10-090]), MDS Water Monitoring and Response Strategy [REP10-048] and Draft Water Monitoring Plan [REP8-107]). The CoCP is a certified document listed in Schedule 23 of the DCO. The TEMMP is secured through Requirement 4 of the DCO, and the water monitoring plans through Requirement 11 of the DCO.

Requirement 13 of the DCO secures for the MDS that: "*Construction works carried out as part of the authorised development must be carried out accordance with the Construction Method Statement (CMS)*". Requirement 21 includes for a CMS in relation to Sizewell Marshes Site of Special Scientific Interest ("SSSI"). The CMS [REP10-025] is a certified document in the DCO.

The Applicant's Shadow HRA Report [APP-145] and Shadow HRA Addendum [AS-173] concluded that alteration of local hydrology and hydrogeology from the Project would have no AEoI of the qualifying features of protected sites. Furthermore, the Applicant screened out an AEoI for protected sites for the Project in-combination with other projects and plans.

The Applicant [APP-145] identified potential impacts from an alteration of local hydrology and hydrogeology arising from the construction, operation and decommissioning of the Northern Park and Ride on the great crested newt qualifying feature of the Dew's Pond SAC. The Applicant concluded that there would no AEoI as the Dew's Pond SAC is in a different hydrological catchment to the Northern and Park Ride and there is no hydrological connectivity between the surface waters. NE [RR-0878] raised no concerns during the Examination regarding the Applicant's conclusion of no AEoI of the Dew's Pond SAC.

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 Project is unlikely to result in hydrological impacts, including waterborne pollution, on the following protected sites:

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

At Deadline 10, NE [REP10-097] confirmed that the mitigation measures in place through the CoCP [REP10-072] were sufficient to ensure no AEoI of all protected sites and no adverse effect to the Minsmere-Walberswick Heaths and Marshes SSSI via groundwater and surface water impacts (which could in turn result in impacts to part of the Minsmere-Walberswick Ramsar).

NE [RR-0878], [REP2-153] and [REP10-097] maintained its general position that for all protected sites it could not agree to a conclusion of no AEoI in respect of cumulative and in-combination effects until all outstanding issues identified by NE had been resolved. However, NE did not raise

a particular concern with regards to in-combination effects relating to alteration of local hydrology and hydrogeology and did not dispute the Applicant's conclusion of no AEoI. Additionally, no IPs identified plans or projects that could act in combination with the Project to affect the protected sites considered for this impact pathway.

The ExA was satisfied that subject to the mitigation and control measures as secured through the dDCO, Drainage Strategy, CoCP and TEMMP, there would be no AEoI of protected sites from the alteration of local hydrology and hydrogeology from the Project, either alone or in-combination.

5.3 Changes in air quality

This pathway includes changes to air quality from emissions to air, and any consequential direct or indirect effects on habitats and species, from all phases of the Project. Potential non-radiological air quality effects have only been considered where the site is within 10 km of the MDS. The zone of influence for particulate (dust) emissions is generally up to 500 m from the source.

The Shadow HRA Report [APP-145] and Shadow HRA Addendum [AS-173 and AS-174] concluded that changes in air quality from the Project would have no AEoI of qualifying features of any protected site, either alone or in combination with other plans or projects.

NE expressed concerns in its RR [RR-0878] and WR [REP2-153] regarding potential damage to the following protected sites from increased airborne pollution (dust and NO_x) during construction and operation:

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

NE subsequently agreed that there would be no AEoI of Staverton Park and the Thicks, Wantisden SAC from changes to air quality because of the distance between the SAC and the Project [REP7-287].

At the end of the Examination, NE agreed that the impacts of dust on protected sites could be adequately mitigated during construction through the implementation of the Outline Dust Management Plan and CoCP [REP2-071] and [REP10-097].

Furthermore, the ExA was content that an AEoI of protected sites from the ammonia emissions from road traffic from the Project could be excluded.

At the end of the Examination the ExA highlighted outstanding issues regarding potential effects on Sandlings SPA, Minsmere to Walberswick Heaths and Marshes SAC, Minsmere-Walberswick SPA and Ramsar. The ExA was unable to conclude no AEoI of these sites from air quality changes during the construction of the Project alone because NE had not commented on the Applicant's revised Desalination Plant Air Quality Impact Assessment.

With regards to in-combination effects, NE (NE Issue 9) [RR-0878], [REP2-153] and [REP10-097] maintained its general position that for all protected sites it could not agree to a conclusion of no adverse effect in respect of cumulative and in-combination effects until all outstanding issues had been resolved.

The ExA considered that local plans were already represented within the air quality assessment and it was not aware of any other relevant plans or projects with regards to potential in-combination effects.

The ExA concluded that an AEoI on the Sandlings SPA, Minsmere to Walberswick Heaths and Marshes SAC and the Minsmere-Walberswick SPA and Ramsar as a result of changes in air quality could not be excluded.

Additional Information

In his first consultation letter, the Secretary of State invited NE to comment on the effects on site integrity from changes to air quality during the construction and operation of the Project, for all features of the Sandlings SPA, Minsmere to Walberswick Heaths and Marshes SAC, Minsmere-Walberswick SPA, and Minsmere-Walberswick Ramsar, both alone and in-combination with other projects.

In their letter[46] dated 7th April 2022, NE stated that with regards to the potential air quality impacts from increased deposition of NO_x and atmospheric nitrogen, NE were satisfied that air quality critical levels were not exceeded to a degree that would constitute an AEoI when various construction and operation works/activities were considered in isolation (including the desalination plant). However, emissions arising from all works/activities within the Project should be assessed together. Specifically, emissions from the diesel generators used during construction and the diesel generators used to power the desalination plant should be assessed together and with other activities including HGV movements and other site works to ensure critical level thresholds are not exceeded to a degree that would constitute an AEoI.

NE state that without these assessments, it is not possible to conclude no AEoI of these sites from air quality impacts arising during the construction and operation of the Project.

Furthermore, in their letter dated 8th April 2022, the EA stated that the desalination plant will require an EP for combustion activities and when an EP application is received, the EA will assess the impacts on air quality and NE will be consulted as part of the determination process.

In April 2022, the Applicant submitted additional air pollution models[47] to address NE's concerns and to inform the EP application. The Applicant also confirmed that any emissions from the diesel generators would be regulated through an EP, and for that to be granted, no significant effects must occur on any sensitive habitat receptors.

The models included combined contributions from diesel generators for the desalination plant; the combined heat and power (CHP) facility; the haul route non-road mobile machinery (NRMM); and other mobile generators, used during the construction phase.

[46] environ (7th April 2022): Letter Ref: Size-SP004 (NE Internal ref: 386508)
[47] EDF (April 2022): The Sizewell C Project: SZC Co.'s Response to the Secretary of State's Request for Further Information dated 18 March 2022: Appendix 7 – Project Air Quality Assessment. Revision 1.0

The models predicted that the combined percentage contribution "PC" (i.e., the contribution to nutrient nitrogen deposition arising from the modelled sources) will exceed 1% of the Critical Load for all habitat classes, except fen, marsh and swamp (swamp and reedbeds).

The Applicant's assessment of the potential for an AEoI of the Minsmere to Walberswick Heaths and Marshes SAC, and Minsmere-Walberswick Ramsar and SPA[48] concluded the following:

- With regard to the Minsmere to Walberswick Heaths and Marshes SAC, the Site Improvement Plan lists nitrogen deposition as a specific threat to the European dry heaths qualifying feature; however, the European dry heaths qualifying feature is not present within the area predicted to experience deposition exceeding 1% of the Critical Load.
- The area of the Ramsar which is predicted to be subject to nitrogen deposition largely coincides with sand dune and sparsely vegetated shingle. The relevant Critical Load habitat class included in the air quality modelling is 'coastal stable dunes', which provides a proxy for sand dunes and coastal vegetated shingle. The lowest part of this range (as applied in the assessment) is highly precautionary because different types of sand dune and vegetated shingle may have sensitivities comparable to other habitats that have higher Critical Loads.
- The Ramsar does not have an explicit 'restore' target for air quality effects. However, if such a target is assumed to apply for the Ramsar, given that the combined process contribution is small, and the highly precautionary nature of using the lower end of the Critical Load range for coastal stable dunes as a reference threshold for the habitats, it can be concluded that the predicted effect would not compromise achievement of a 'restore' objective with respect to nitrogen deposition, and integrity of the Ramsar would not be adversely affected.
- The bird qualifying features of the SPA are not directly affected by air quality but based on the predicted effects on the habitats above, the Applicant concluded that the extent, distribution, structure, and function of the habitats on which the qualifying features rely, and the supporting processes on which the habitats of the qualifying features rely, would be maintained. Furthermore, the achievement of a 'restore' objective would not be compromised. The Applicant concluded that an adverse effect on the bird qualifying features of the SPA could be excluded.

The Applicant stated that the assessment of the combined effect of nutrient nitrogen deposition was highly precautionary because it applied the lower end of the Critical Load range for the various habitat types, and the models assumed that all plant will be operating at the same time.

The Applicant concluded that an AEoI in relation to potential air quality effects could be excluded for the Minsmere protected sites for the combined effects of all source's emissions from the Project alone.

In his fourth consultation letter, the Secretary of State with regards to the Applicant's updated air quality assessment (based on the combined emissions from diesel generators for the temporary desalination plant and other sources of emissions from the Project), requested that NE advise on whether an AEoI of Sandlings SPA, Minsmere-Walberswick SPA and Ramsar, and Minsmere to Walberswick Heaths and Marshes SAC from air quality effects could now be excluded.

On 14th June 2022, NE advised that, based on the information provided, an AEoI of Sandlings SPA and Minsmere-Walberswick SPA could be excluded: however, an AEoI of Minsmere to

[48] EDF (April 2022): The Sizewell C Project: SZC Co.'s Response to the Secretary of State's Request for Further Information dated 18 March 2022. Revision 1.0

Walberswick Heaths and Marshes SAC and Minsmere-Walberswick Ramsar from changes to air quality could not be excluded.

NE raised concerns that the Applicant's updated assessment relied on several assumptions and averages, rather Project and site-specific parameters and that this approach did not allow a robust assessment of the impacts to be made.

NE also highlighted the annual NO_x Critical Level and the nitrogen deposition threshold are predicted to be exceeded for the European dry heath and the annual vegetation of the drift line qualifying features of Minsmere-Walberswick SAC.

NE agreed that the background levels of nitrogen and sulphur already exceeded Critical Levels at Minsmere-Walberswick SAC and Ramsar, but this did not justify allowing further deposition, as this could undermine the conservation objective to restore the site.

NE also raised concerns that it was unclear if the Applicant had included other Project-wide emission sources such as HGVs and increases in traffic within their models. NE also advised that ammonia has direct and indirect effects on sensitive species and ammonia from vehicle emissions was not assessed in the updated air quality report.

NE also stated that an in-combination assessment is required for the AA, and this should include all relevant sources of air pollution (from across all sectors) that were 'live' at the time of the assessment.

Finally, NE confirmed that it had been consulted on the EA's draft HRA which informs the operational CA permit and that a further comprehensive assessment of air quality impacts will be required for the desalination plant generators.

In response to NE's comments on the updated air quality assessment, the Applicant restated that all potential effects associated with air quality were fully addressed in the Shadow HRA Report, which concluded that an AEoI, in relation to air quality, could be excluded for the Minsmere to Walberswick Heaths and Marshes SAC and the Minsmere-Walberswick SPA and Ramsar, for the Project alone and in-combination with other plans and projects. The Applicant also provided the following clarifications[49] to address NE's comments:

- With regards to the assumptions made in the updated cumulative emissions models, the Applicant stated that the assessments used a 'Rochdale envelope' approach representing a worst-case scenario. The modelled scenarios included all plant scheduled to be used at any time within each phase as if they were all operating at the same time, which represented a precautionary approach to the assessment. Furthermore, the application of the lower Critical Load from the range for each habitat is highly precautionary. With respect to control measures, the operation of the diesel generators will be assessed and controlled by the EA through the permitting process, and it is appropriate for the Secretary of State to rely upon the proper and robust operation of that process (in accordance with relevant policy in EN-1 and EN-6).
- With regards to the impacts of emissions on the qualifying features of the SAC and Ramsar, the Applicant stated that it had provided the predicted environmental concentration ("PEC")

[49] Sizewell C (June 2022): The Sizewell C Project: SZC Co.'s Response to the Secretary of State's Letter dated 31 May 2022. Appendix 2: SZC Co.'s Response to the Secretary of State's Letter dated 31 May 2022: Appendix 2-SZC Co.'s response to comments made by Natural England related to the Habitats Regulations Assessment (Air Quality) in their letter to the SoS dated 14 June 2022. Rev 1.0. June 2022.

and the PEC as a percentage of the Critical Level. This information was used to test if the PEC was less than 70% of the Critical Level value. The highest PEC value was 46% of the relevant Critical Level for annual mean NOx, which was below the 70% threshold for further assessment, and the toxicity effects were considered in the Shadow HRA Report. For nitrogen deposition, the Applicant stated that it had assessed the effect where the process contribution ("PC")/ Critical Load exceeded 1%, and highlighted that their response focussed on nitrogen deposition rather than NOx because it understood that nitrogen deposition was NE's only remaining concern at the close of Examination.

- With regards to the nitrogen deposition thresholds being breached for the European dry heath and drift line features of the SAC, the Applicant stated that the Site Improvement Plan only listed nitrogen deposition as specific threat to the European dry heaths and this feature is not present within the area predicted to experience deposition exceeding 1% of the Critical Load. On this basis the Applicant concluded that the conservation objectives would not be undermined and there would not be an AEoI of the SAC due to nitrogen deposition. Furthermore, the Applicant clarified that it did not simply use the fact that background nitrogen levels already exceeded the Critical Load as justification that further deposition was acceptable, rather it argued that any botanical effect would be less than it would be if background nitrogen deposition rates were lower.
- With regards to the inclusion of other Project-wide emission sources and the significance of ammonia as a source of pollution from vehicle emissions, the Applicant stated that the air quality assessment did not include the contribution of transport emissions because the sensitive features were too far from the transport network to be affected and this was evidenced during the Examination. The potential for significant effects from the combined impact from all affected road and rail transport emission sources in Norfolk, Suffolk and Essex upon all relevant receptors including the SAC and Ramsar were quantified through the use of dispersion modelling, using more conservative methods than those outlined in NE's general guidance, and the ES, concluded [Para 12.6.73] that: "Minsmere–Walberswick Heaths and Marshes SAC, SPA, Ramsar and Sizewell Marshes/levels SSSI will experience a maximum contribution of pollutants from Project traffic of less than 1% of Critical Levels". As the likely effects of transport emissions did not change the concentrations, they were not included in the updated air quality.
- With regards to the omission of an assessment of ammonia emissions in the updated air quality assessment, the Applicant stated that the list of emissions from road traffic requiring assessment by the current statutory guidance does not include ammonia. However, the modelling does include the combined NOx contribution of the entire modelled road network (affected road links in Essex, Norfolk and Suffolk), and the contribution from traffic emissions to the predicted annual mean concentrations of NOx is less than 0.1 µg/m3. The Applicant stated that the ammonia contribution from traffic would be considerably lower that the NOx contribution.
- With regards to the requirement for an in-combination assessment, the Applicant stated that at the time the air quality assessment was undertaken, a review of planning applications within 15 km of the receptors was undertaken and no relevant projects or plans were identified. A further review undertaken on 14th June 2022 confirmed that this was still the case.

On 4th July 2022, the EA published a HRA report for its proposed decision on the draft operational Combustion Activity (CA) permit[50]. The EA requested more realistic modelling from the

[50] Environment Agency (July 2022): Habitats Regulations Assessment Report: Environment Agency Permit for Proposed Sizewell C Nuclear Power Station. Version 1.

Applicant, including the use and location of diesel generators during the operation of the Project to inform their Appropriate Assessment (EA Section 2).

The Appropriate Assessment considered the following effects of CA on protected sites where a LSE was identified (EA Section 6.2):

- Toxic contamination;
- Nutrient enrichment; and
- Acidification.

An Appropriate Assessment of the effects of a loss of off-site power (LOOP) scenario was also undertaken for all relevant protected sites within 10 km of the Project.

The results of the modelling indicated that the effects of CA would be low-impact, small, and for the commissioning of the Project CA, too short-lived to undermine the achievement of the conservation objectives of protected sites (EA Section 6.3).

The EA's HRA report concluded that the operational CA permit would have no AEoI of the following sites, either alone or in combination with other plans and projects (EA Section 8):

- Alde-Ore and Butley Estuaries SAC;
- Alde-Ore Estuaries Ramsar;
- Alde-Ore Estuaries SPA;
- Dew's Pond SAC;
- Minsmere-Walberswick Ramsar;
- Minsmere-Walberswick SPA;
- Minsmere to Walberswick Heaths and Marshes SAC;
- Orfordness to Shingle Street SAC;
- Outer Thames Estuary SPA;
- Sandlings SPA; and
- Sizewell Marshes SSSI and Minsmere-Walberswick Heaths and Marshes SSSI functionally linked land

This conclusion was not dependent on any mitigation measures or conditions.

5.4 Changes to coastal processes / sediment transport

The Applicant identified four elements of the Project that could cause potential LSEs to arise from the alteration of coastal processes / sediment transport, including: coastal defences; the BLF; cooling water intakes and outfalls; and the fish recovery and return ("FRR") system and combined drainage outfall ("CDO") [APP-145].

In respect of Change 19, the Applicant [REP7-279] identified that the installation and presence / usage and the removal of intake and outfall heads for the desalination plant in the nearshore zone, were of relevance to the assessment of coastal geomorphology and hydrodynamics. The assessment of these elements considered potential changes to tidal flows, wave propagation, suspended sediment concentrations ("SSC"), sedimentation rate, and sediment bed change [REP7-030].

A potential LSE during construction, operation and decommissioning of the Project was identified for the following sites and qualifying features:

- Alde-Ore and Butley Estuaries SAC:
  - Estuaries;
  - Mudflats and sandflats not covered by sea water at low tides; and
  - Atlantic salt meadows.
- Alde-Ore Estuary SPA:
  - Breeding little tern;
  - Breeding sandwich tern;
  - Breeding lesser black-backed gull;
  - Breeding marsh harrier (in combination only);
  - Wintering avocet;
  - Wintering redshank; and
  - Wintering ruff.
- Alde-Ore Ramsar:
  - Ramsar Criterion 2 – nationally scarce plant species and British Red Data Book invertebrates (alone only);
  - Ramsar Criterion 3 – a notable assemblage of breeding and wintering wetland birds; and
  - Ramsar Criterion 6 – species populations occurring at levels of international importance (alone only).
- Benacre to Easton Bavents Lagoons SAC:
  - Coastal lagoons.
- Benacre to Easton Bavents SPA:
  - Breeding little tern.
- Minsmere to Walberswick Heath and Marshes SAC:
  - Annual vegetation of drift lines; and
  - Perennial vegetation of stony banks.
- Minsmere-Walberswick SPA:
  - Breeding avocet (alone only);
  - Breeding bittern (alone only);
  - Breeding little tern;
  - Breeding marsh harrier (alone only);
  - Breeding nightjar (alone only);
  - Wintering shoveler (alone only); and
  - Wintering white fronted goose (alone only).
- Minsmere-Walberswick Ramsar:
  - Ramsar Criterion 1 – mosaic of marine, freshwater, marshland and associated habitats, complete with transition areas in between; and
  - Ramsar Criterion 2 – supports nine nationally scarce plants and at least 26 British Red Data Book invertebrates; and
  - Ramsar Criterion 2 – an important assemblage of rare breeding birds associated marshland and reedbeds.
- Orfordness and Shingle Street SAC:
  - Coastal lagoons;
  - Annual vegetation of drift lines; and
  - Perennial vegetation of stony banks.

The Shadow HRA [APP-145] concluded that changes to coastal processes / sediment transport as a result of the Project, either alone or in-combination with other plans or projects, would have no AEoI of the sites listed above. The Applicant provided technical reports and representations

relevant to its assessment, and proposed mitigation and monitoring of potential coastal processes effects.

NE [RR-878] [REP10-097] did not dispute the Applicant's conclusion of no AEoI as a result of changes to coastal processes / sediment transport in respect of the following sites:

- Alde-Ore and Butley Estuaries SAC;
- Alde-Ore Estuary SPA;
- Alde-Ore Ramsar site;
- Benacre to Easton Bavents Lagoon SAC;
- Benacre to Easton Bavents SPA; and
- Orfordness to Shingle Street SAC.

NE's outstanding concerns related to uncertainty and risk associated with the modelling and design of the Soft Coastal Defence Feature ("SCDF")[51], including potential for exposure of the Hard Coastal Defence Feature ("HCDF"), quantities and type of sediment used in the recharge, and trigger points required for recharge of the SCDF. NE [REP7-144] stated that additional modelling work, as described in version 2 of TR544 [REP3-032], would be required to address its uncertainty with the SCDF.

NE recommended further assessment in order to come to a view on whether AEoI of the Minsmere to Walberswick Heath and Marshes SAC and Minsmere-Walberswick SPA and Ramsar could be excluded.

The RSPB/SWT [REP10-204] expressed preference for more specific wording in the TR544 (version 3) report [REP7-101] in relation to grain size. This was to avoid the possibility of the current wording being interpreted to justify selection of a coarser grain size and not fully reflecting the range of particle size in existing and adjacent beach frontages. The RSPB/SWT also stated that it was unable to exclude an AEoI of vegetated shingle of the Minsmere to Walberswick Heaths and Marshes SAC and Minsmere-Walberswick Ramsar. This was because it considered that the Applicant had not provided convincing evidence of the feasibility of mitigation works, should impacts arise following monitoring.

Due to the timing of the final Examination deadline the Applicant was unable to respond to NE's or the RSPB/SWT's final representations [REP10-200].

The final position of the MMO [REP10-107] was that all matters relating to coastal processes / sediment transport were agreed and that impacts could be managed through the Coastal Processes Monitoring and Mitigation Plan ("CPMMP").

The EA [REP10-191] noted that in respect of the Coastal Defences Design Report [REP8-096], further modelling outputs were awaited and not expected until after the close of Examination. The EA also believed there were still gaps in the Storm Erosion Modelling [REP9-020].

At the final Examination deadline, the Applicant submitted an updated report TR544 'Preliminary Design and Maintenance Requirements for the Sizewell C Soft Coastal Defence Feature' [REP10-124]. NE and other IPs did not have the opportunity to comment on the Applicant's final submissions on this matter, as they were received at the final deadline.

[51] The SCDF will be located in front of the HCDF.

With regards to Change 19, the desalination plant, NE provided a briefing note [REP8-298i] to the ExA in lieu of attendance to Issue Specific Hearing (ISH) 15 where the matter was discussed. The ExA was of the view that this did not directly respond to the ExA's specific query on coastal geomorphology. It was therefore unclear to the ExA whether NE had any outstanding concerns with regards to the Applicant's assessment of coastal processes / sediment transport associated with Change 19.

ESC [REP10-179] considered that the CPMMP should be amended to require removal of pipelines associated with the desalination plant once they are no longer required.

The CPMMP [REP10-041] includes a commitment that native particle size distribution will be the default position for recharge of the SCDF. The CPMMP is secured pursuant to DML Condition 14 (marine CPMMP) and Requirement 12 of the DCO. DML Condition 14 secures the marine CPMMP to be submitted to and approved by, the MMO in writing and in consultation with the EA.

The ExA was of the view, in line with the conclusions of NE, that there would be no AEoI of the following sites, alone or in combination with other plans or projects:

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

The ExA considered that with the Applicant's proposed adaptive monitoring and management approach to the potential effects of alteration of coastal processes / sediment transport, as secured through the DCO and DML conditions, together with the CPMMP as a certified document, an AEoI of the Minsmere to Walberswick Heaths and Marshes SAC, Minsmere-Walberswick SPA, and Minsmere-Walberswick Ramsar would be unlikely to occur. However, as the Applicant and IPs, including NE, were unable to comment on the final representations and updated reports at the final Examination deadline, the ExA was not able to reach a conclusion.

In his second consultation letter, the Secretary of State invited the Applicant to respond to NE's [REP10-200] and the RSPB/SWT's [REP10-204] Deadline 10 submissions in relation to changes to coastal processes / sediment transfer impacts on the Minsmere to Walberswick Heaths and Marshes SAC, and the Minsmere-Walberswick SPA and Ramsar site. The Secretary of State also invited NE, the MMO, the EA, the RSPB/SWT and ESC to comment on the updated TR544 'Preliminary Design and Maintenance Requirements for the Sizewell C Soft Coastal Defence Feature' [REP10-124] and the CPMMP [REP10-041].

In its response, NE[52] welcomed the Applicant's commitment to using native material. However, it requested its Deadline 10 comments [REP10-200] to be addressed and responded to point-by-point by the Applicant. This included addressing its concerns in relation to further work required on the SCDF design, threshold volumes for recharge, particle size modelling and

[52] Natural England, 2022. *Application by NNB Generation Company (SZC) Limited ("the Applicant") for an Order granting Development Consent for the proposed Sizewell C Nuclear Power Station ("the proposed Development")*. 14th April 2022.

groundwater work, as well as clarification on inconsistencies / errors such as the proposed frequency of beach nourishments.

The MMO[53] deferred provision of advice regarding potential impacts on the Walberswick Heaths and Marshes SAC, and the Minsmere-Walberswick SPA and Ramsar site to NE.

The EA[54] reiterated their position as made in relation to coastal considerations in their letter dated 8th April[55], which was provided in response to the Secretary of State's first consultation letter. Its response stated that the Applicant had prepared an additional report (BEEMS Technical Report TR553 'Modelling of Soft Coastal Defence Feature under Design Basis Conditions' v2), which resolved the EA's remaining concerns.

The RSPB/SWT[56] stated that the approach to particle size for the SCDF did not appear to be confirmed. It reiterated the risk that further modelling could lead to a decision for coarser material required for engineering function. This would not be compatible with the ecological function of the SAC, SPA and Ramsar. It remained concerned over the lack of established mitigation techniques to address adverse impacts on the annual vegetation of drift lines. It also stated there appeared to be no clear commitment to mitigation should monitoring reveal unexpected impacts.

ESC[57] highlighted the importance of the SCDF as a mitigation feature, and that it should be maintained whilst the HCDF exists. The effectiveness of the SCDF is partly linked to the form and position of the HCDF. ESC had concerns with several aspects of the HCDF design. However, these would be resolved with the Applicant under discharge of Requirement 12(1), which requires ESC's approval of the HCDF design. ESC considered the version of the CPMMP submitted at Deadline 10 to not be complete. Requirement 12(1) requires the CPMMP to be complete before construction of the HCDF and the SCDF. ESC's position therefore remained as stated in the SoCG [REP10-102].

In response to the Secretary of State's request the Applicant provided an Appendix[58] to its Main Report[59]. This provided further information in relation to NE's and the RSPB/SWT's final comments on coastal processes / sediment transport.

The Applicant noted NE's request for provision of recharge volume work, particle size modelling and groundwater work and the RSPB/SWT's concerns in relation to grain size selection. The

[53] Marine Management Organisation, 2022. *Application by NNB Generation Company (SZC) Limited ("the Applicant") for an Order granting Development Consent for the proposed Sizewell C Nuclear Power Station ("the proposed Development")*. 12th April 2022.

[54] Environment Agency, 2022. *Application by NNB Generation Company (SZC) Limited for an Order Granting Development Consent for the Sizewell C Project*. 14th April 2022.

[55] Environment Agency, 2022. *Application by NNB Generation Company (SZC) Limited for an Order Granting Development Consent for the Sizewell C Project*. 8th April 2022.

[56] RSPB/SWT, 2022. *Response to Department for Business, Energy and Industrial Strategy Request for Further Information issued on 31 March 2022*. 12th April, 2022.

[57] East Suffolk Council, 2022. *Planning Act 2008 and The Infrastructure Planning (Examination Procedure) Rules 2010 Application by NNB Generation Company (SZC) Limited ("the Applicant") for an Order granting Development Consent for the proposed Sizewell C Nuclear Power Station ("the proposed Development").* 14th April 2022.

[58] NNB Generation Company (SZC) Limited, 2022. *SZC Co.'s Response to the Secretary of State's Request for Further Information dated 31 March 2022: Appendix 8 - Additional technical information to support Question 8.11 in relation to Natural England, RSPB and SWT comments on assessment of coastal processes*. April 2022.

[59] NNB Generation Company (SZC) Limited, 2022. *SZC Co.'s Response to the Secretary of State's Request for Further Information dated 31 March 2022*. April 2022.

Applicant stated that recharge thresholds have yet to be finalised but will be detailed in the CPMMP which requires approval by the ESC and MMO before works can commence. As noted in the TR544 'Preliminary Design and Maintenance Requirements for the Sizewell C Soft Coastal Defence Feature' [REP10-124] the predicted recharge volume is well within the range of other beach recharge activities for which some information is available. Recharges are predicted to be required very infrequently and no works would be required from within the boundary of the SAC. The Applicant highlighted that the report focusses on demonstrating the viability of the proposed preliminary design via modelling of its stability in storm conditions, and estimation of maximum recharge requirements. Therefore, a range of values are presented.

The Applicant committed to use of sediment which matches native grain size as closely as possible (within the constraints of the aggregate supply) as the SCDF's particle size. The use of native particle sizes means that the SCDF and its maintenance would not alter the sediment properties or coastal processes acting on supra-tidal shingle vegetation. This is reflected in TR544 [REP10-124], the Storm Erosion Modelling report [REP9-020], Coastal Defences Design Report [REP8-096], and the CPMMP [REP10-041] which is secured under Requirement 12 and under Condition 14 of the DML. In addition, it considered the XBeach-G modelling to be considered worst-case in terms of erosion and recharge intervals for SCDF viability. Considering the additional studies and securing mechanisms following NE's final comments with respect to grain size and implications on the annual drift line communities, the Applicant considered this addressed NE's and the RSPB/SWT's concerns on this point.

In response to the RSPB/SWT's concerns regarding the Applicant's lack of examples of evidence from around the UK where beach recharge operations have provided beneficial effects for vegetated shingle, the Applicant highlighted its responses to RSPB/SWT at Deadlines 8 [REP8-121] and 10 [REP10-164]. These state that the waves and tides affecting the frontage will be unchanged with or without the SCDF, so the natural levels of disturbance that the drift line vegetation experiences to allow for its maintenance and succession would also not change. TR544 [APP10-124] notes that Hurst Spit (Hampshire, UK) provides an example where shingle recharge has promoted colonisation and recovery of shingle vegetation. Burt et al (2018)[60] suggests that beach management aided towards '*a recovery in vegetated shingle, which is likely to have reached pre-storm extent by the end of 2017'.* The report also further states the potential beneficial impacts of beach management.

The Applicant highlighted the Sizewell C Coastal Defences Design Report [REP8-096] which illustrates the works which will take place near the foreshore. In response to the RSPB/SWT's concerns regarding a reduction in the spatial extent for monitoring the shoreline and longshore bar, the Applicant explained that the proposed coastal processes monitoring extent of 500m either side of the BLF and MBIF is more than double the predicted impact and equates to a total frontage of 1180m.

[60] Burt, L., Eastick, C. & Ferguson, P. (2018) *Assessing the dynamics of vegetated shingle – Hurst Spit case study 2013 – 2017.* New Forest District Council.

In response to the Secretary of State's third consultation letter, the EA[61] had no further comment on the Applicant's representations. The RSPB/SWT[62] stated it had not provided further comment on concerns set out in its final Examination submission due to these concerns not being resolved in light of the Applicant's responses and/or new information. NE did not comment any further on this matter post-Examination.

5.5 Direct habitat loss and fragmentation

The Applicant [APP-145] identified potential impact pathways from direct habitat loss and fragmentation arising from the construction, operation, and decommissioning of the Project alone on the qualifying features of several protected sites:

- Minsmere-Walberswick SPA;
- Minsmere-Walberswick Ramsar;
- Sandlings SPA; and
- Southern North Sea SAC.

For the Minsmere-Walberswick SPA and Ramsar, the Applicant stated that the Sizewell Marshes SSSI provides key foraging areas for breeding marsh harrier and wintering hen harrier populations of the SPA, although to a lesser extent than the Minsmere Levels South which are closer to the nesting area of the SPA. Construction at the MDS would result in the permanent loss of 5.74ha of the SSSI, representing approximately 5.45% of the total coastal grazing marsh and reedbed habitats within the Sizewell Marshes.

The Applicant [APP-145] concluded no AEoI of all protected sites and qualifying features screened into the AA resulting from direct disturbance and habitat fragmentation, in the absence of any mitigation. For marsh harrier, this was because the loss of foraging habitat represents a small proportion of the available wetland foraging habitat in a wider area, that is less heavily used than other wetland habitat e.g. Minsmere South Levels, which are closer to the nesting areas. The Applicant noted that baseline surveys demonstrated relatively little foraging activity of wintering hen harrier within the vicinity of the MDS, and no evidence of breeding nightjar within or close to the MDS. Further, it noted that breeding nightjar are unlikely to rely on habitat near to the MDS for foraging, because their main breeding sites are more than 1km from the MDS; beyond the mean maximum distance of 747m from territory centres recorded during studies of radio-tracked birds in south-east England. The Applicant stated that wintering gadwall and shoveler could be affected by the loss of wetland habitat in Sizewell Marshes, which may be functionally linked to the SPA, however, that baseline surveys demonstrate relatively low numbers of these species on Sizewell Marshes compared to those occurring in other areas of suitable habitat within, and in close proximity to the SPA. The Applicant considered therefore that areas of habitat to be lost are not of disproportionate importance relative to other parts of Sizewell Marshes. Although the Ramsar qualifying features are different to those of the SPA, the

[61] Environment Agency, 2022. *Application by NBB Generation Company (SZC) Limited for an Order Granting Development Consent for the Sizewell C Project*. 23rd May 2022.

[62] RSPB/SWT, 2022. *Response to Department for Business, Energy and Industrial Strategy Information presented in Responses to Secretary of Statement Questions of 18th and 31st March 2022 from the Royal Society for the Protection of Birds and Suffolk Wildlife Trust.* 23rd May 2022.

bird species cited as part of Criterion 2 are also qualifying features of the SPA except for bearded tit, and therefore the conclusions of no AEoI also apply to the Ramsar.

The ExA [ER 6.4.639] was of the view that because the loss of 5.74ha of wetland foraging habitat for marsh harrier and hen harrier within the Sizewell Marshes SSSI is located outwith the SPA and Ramsar and based on survey evidence is less heavily used by marsh harrier and hen harrier than other areas in the vicinity of the SPA and Ramsar (such as Minsmere Levels South), the conservation objectives of the SPA in relation to the marsh harrier and hen harrier qualifying features would not be undermined. The ExA was satisfied that there would be no AEoI of all qualifying features screened in, of the Minsmere-Walberswick SPA and Ramsar from direct habitat loss and fragmentation of functionally linked land ("FLL") during construction, operation and decommissioning of the Project.

NE (in its SoCG) [REP10-097] and RSPB/SWT [REP10-111] had outstanding concerns regarding the survey work undertaken for water birds, and regarding the impact from permanent land take on Sizewell Marshes SSSI. However, neither NE nor RSPB/SWT disputed the Applicant's conclusion of no AEoI of the Minsmere-Walberswick SPA and Ramsar from direct habitat loss and fragmentation at Deadline 10.

For the Sandlings SPA, the Applicant stated that baseline surveys provided no evidence of breeding nightjar and little evidence of regular occurrence of breeding woodlark within or close to the MDS. Noting the apparent absence of the qualifying features from the affected areas, the ExA was satisfied that there would be no AEoI of the Sandlings SPA from direct habitat loss and fragmentation as a result of Project, either alone or in-combination.

For harbour porpoise of the Southern North Sea SAC, the Applicant provided an assessment [APP-145] (updated in respect of Change 19 [REP7-270]) of direct habitat loss and fragmentation as a result of dredging for the BLF during construction and the presence of permanent structures during operation. This assessment concluded that potential effects on habitats resulting from dredging during construction would be short in duration and at individual scales with limited, localised impacts. For operation, the Applicant concluded that the total area of long-term habitat loss and potential changes to the habitat is 0.026km^2 (including the enhanced permanent BLF and temporary BLF) and that the addition of the dredge area for the desalination plant would result in an updated total of 0.0286km^2. This updated total equates to 0.0002% of the winter area of the Southern North Sea SAC and is below the spatial disturbance threshold of 20% and the seasonal average displacement threshold of 10% of the seasonal component. Consequently, the Applicant concluded no AEoI. Having considered the evidence before the Examination, the position of IPs, including the advice of NE as the ANCB, and the implications of the Project on this SAC in light of its conservation objectives, the ExA was of the view that there would be no AEoI of the harbour porpoise due to direct habitat loss and direct/indirect habitat fragmentation.

NE highlighted that supplementary conservation objectives for the Southern North Sea SAC include that: *"The condition of supporting habitats and processes, and the availability of prey is maintained"*, and advised that the long term/ permanent loss of foraging area within the SAC during operation of the Project from impingement of prey species 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. At the close of Examination however, NE [REP8-298h] [REP10-199] [REP10-097] confirmed that it no longer considered that any compensation is required, as the Applicant had demonstrated that any

impacts could be adequately mitigated. The ExA [EV-188] sought clarification from NE regarding its concerns. NE responded [REP8-298h] that, in light of updated assessments of prey species impingements provided by the Applicant, it did not have concerns about loss of foraging area for harbour porpoise of the Southern North Sea SAC and agreed with the Applicants conclusion of no AEoI from this impact pathway for harbour porpoise.

5.6 Disturbance due to increase in recreational pressure

A potential LSE was identified for the effects of disturbance due to increased recreational pressure for multiple protected sites and qualifying features (see Table 1).

The Applicant's Shadow HRA Report acknowledged the potential for an increase in visitor numbers or changes in patterns of use of recreational areas. It confirmed that a Rights of Way Access Strategy[63] would be developed to reduce displacement of people and minimise trampling of vegetation, and that the strategy outlines a monitoring programme for recreational displacement to identify local mitigation measures if necessary. The Applicant concluded no AEoI to these protected sites from this pathway because of the likely duration of effect, the location of access points relative to sensitive habitats, the small potential change in visitor numbers relative to the baseline, the diffuse nature of this pressure and existing management measures in place in certain locations.

The Recreational Disturbance Assessment [APP-149] stated that a number of mixed residential developments have been identified with the potential for in-combination effects with the Project, however, these developments would be covered by the Suffolk Recreational Disturbance Avoidance and Mitigation Strategy or project-specific mitigation. Therefore, it concluded that there is no potential for in-combination effects arising from this impact pathway.

NE [RR-0878] [REP2-152] [REP5-160] considered that the new population of construction workers would likely use designated sites for recreation, and that local people who currently use the MDS and surrounding area could be displaced to nearby designated sites. It highlighted the potential for recreational activities to negatively impact protected site qualifying features through noise, trampling of nests and vegetation, increased fire risk, enrichment of habitats amongst others. NE also had concerns regarding the Applicants assessment methodology and proposed mitigation, and therefore could not exclude AEoI of:

- Alde-Ore Estuary SPA – all qualifying features;
- Alde-Ore Estuary Ramsar – all qualifying features;
- Minsmere-Walberswick SPA – all qualifying features;
- Minsmere-Walberswick Heaths and Marshes SAC – all qualifying features;
- Minsmere-Walberswick Ramsar – all qualifying features;
- Outer Thames Estuary SPA:
  - Little tern.
- Sandlings SPA:
  - Nightjar and woodlark.

[63] Submitted in Appendix I of [APP-270] with a final revision at Deadline 10 (Revision 6 [REP10-037]). The PRoW Strategy was listed as a certified document in Schedule 24 of the dDCO and is to be certified under article 80 [REP10-009] and its implementation secured through Requirement 10.

RSPB/SWT and the National Trust ("NT") shared similar concerns. RSPB/SWT did not agree that an AEoI could be excluded from the project alone or in-combination for:

- Minsmere-Walberswick SPA:
  - Little tern;
  - Nightjar;
  - Hen harrier;
  - Wintering waterbirds (including white-fronted goose); and
  - Breeding waterbirds.
- Sandlings SPA:
  - Nightjar and woodlark.

NT also had concerns regarding recreational disturbance to breeding nightjar of Minsmere-Walberswick SPA, as noted in the RIES, it had commissioned a report on the matter in conjunction with RSPB/SWT [REP2-506].

Assessment methodology

NE [RR-0878] [REP2-152] [REP5-160] acknowledged that the Applicant had collected some evidence and data to inform the recreational disturbance impact assessment, however it considered the evidence base used by the Applicant to underpin its disturbance strategy lacked robustness and relied heavily on extrapolation of data from secondary sources and numerous logically flawed assumptions. It 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. Detailed comments were provided in Appendix C of [REP7-087].

The RSPB/SWT [RR-1059] [REP2-506] [REP10-204] did not agree that AEoI could be excluded for the Minsmere-Walberswick Heaths and Marshes SAC (perennial vegetation of stony banks and European dry heaths features). It had concerns regarding the adequacy of baseline data, did not agree with particular survey methodologies, and considered the estimates of increases in recreational use of designated sites to be low and confusingly presented. These comments were echoed by the NT [RR-0877] [REP2-150] [REP5-155] who were concerned that visitors would be displaced to Dunwich Heath and Beach and that this had not been adequately assessed and were concerned about impacts on vegetated shingle and heathland habitat. The RSPB/SWT and NT jointly commissioned a report [REP2-506] (page 214 onwards) to examine impacts of recreation on protected sites and based their representations on that report.

The Applicant [REP2-108] considered its assessment to be highly precautionary as it assumed that all visitors would be displaced to protected sites. However, it acknowledged some errors in the assessment of potential displaced visitor numbers in the Shadow HRA Report and therefore provided updated estimated figures. The Applicant explained [REP7-087] that it had continued to have discussions with NE, RSPB/SWT and NT regarding figures used in the assessment. It 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 on which figures they agreed or disagreed with.

At Deadline 10, NT [REP10-112] maintained its position, stating that impacts arising from the displacement of visitors had not been adequately assessed in the Shadow HRA. The RSPB/SWT [REP10-111] maintained its position and stated that the design of the baseline surveys could have resulted in an underestimation of visitors likely to be displaced and that they were not in agreement with the updated estimates presented at Deadline 7. NE [REP10-200]

confirmed that, despite some shortfalls in the Applicant's evidence base, it was content that the proposed suite of mitigation measures (including the Informal Recreation Strategy and two Monitoring and Mitigation Plans ("MMPs")) are sufficient to avoid an AEoI of any protected site from increased recreational disturbance associated with the Project, either alone or in-combination. NE highlighted some remaining concerns with the MMPs but confirmed that these do not affect their conclusions.

Mitigation

In addition to concerns about the Applicant's assessment, NE initially considered the Applicant's proposed mitigation and monitoring strategies to be inadequate to address the potential scale of impacts. NE therefore advised the Applicant to undertake a two-pronged approach to mitigation and monitoring 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 protected sites more resilient to increased recreational pressures.

NE [RR-0878] [REP2-152] [REP5-160] [REP7-087] [REP7-144] advised that a SANG could be provided within / in proximity to the MDS to concentrate a proportion of recreation in that area and detailed minimum requirements that it would expect from a SANG. The RSPB/SWT [REP2-506] [REP3-074] [REP3-075] [REP5-164] [REP6-046] [REP7-152] and NT [REP3-070] [REP5-155] [Rep7-137] also advocated a SANG. The RSPB/SWT identified a number of locations where mitigation measures could resolve recreational impacts and advised that a monitoring programme be developed. NE further advised that off-site measures (e.g. visitor engagement and access management) should be provided due to the unique draw of the coastal protected sites. It considered that these measures should be in-line with the approach taken with ESC to develop the Suffolk Coast RAMS. ESC [RR-0342] agreed with this suggestion. The Applicant, although initially considering a RAMS to not be applicable to the Project, subsequently agreed [REP3-042] to contribute to the Suffolk Coast RAMS, which is secured through the Deed of Obligation ("DoO") ([REP10-075] to [REP10-087]).

In response to comments regarding mitigation, the Applicant produced two MMPs during Examination to capture mitigation for recreational impacts (for both habitats and bird qualifying features):

- The MMP for Minsmere-Walberswick protected sites and the Sandlings, entitled "MMP for Minsmere-Walberswick and Sandlings (North)", set out initial mitigation measures to be deployed at commencement of construction, and additional mitigation measures which would be deployed where monitoring shows potential for disturbance to qualifying features. The MMP was revised [REP5-105] to account for feedback from engagement with IPs[64].
- The MMP for Sandlings (central) and Alde-Ore and Butley Estuaries protected sites. The Applicant confirmed that its conclusion of no AEoI for these sites does not rely on 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.

[64] Including comments from NE [REP6-042][REP8-298j], the RSPB/SWT [REP3-074][REP5-164][REP6-046][REP7-154][REP8-170] and the NT [REP3-070].

The mitigation and monitoring requirements of the plans are secured via the DoO [REP10-075] [REP10-087]. The Applicant considered that a Suffolk Coastal RAMS payment and the proposed mitigation package would prevent an AEoI of protected sites and did not consider the provision of a SANG to be an appropriate response to the recreational pressure of construction workers and was not required. Nevertheless, at Deadline 8 the Applicant proposed additional and improved accessible green space and recreational routes within the Sizewell Estate, in the report entitled ("Information Recreation and Green Space Proposals") [REP8-135]. The proposals would provide and enhance a mix of recreational activities across multiple sites. Appendix C of the report also summarised other mitigation measures that the Applicant committed to, including:

- New recreational access provision at Aldhurst Farm;
- Improvements to Kenton Hills car park;
- Improvements in the MDS;
- Improvements to the wider PRoW network;
- Sizewell beach car park subsidies and interpretation signage; and
- Provision of a 3G pitch and multi-use games areas at Leiston Leisure centre.

These proposals are secured through the DoO (including financial contributions to the Public Rights of Way ("PRoW") fund, the European Site Access Contingency Funds and the RAMS contributions), Requirement 2 and Requirement 10 of the DCO [ER 6.4.232].

The Applicants HRA Signposting document [REP7-079] identified the mitigation measures relied upon by the Applicant in its assessment of recreational pressure. As the document was submitted at Deadline 7, and in light of amendments made to the dDCO by close of Examination, the ExA [ER 6.4.233] indicated how these are now secured, along with the latest Examination Library references.

The ExA notes the agreement from NE that the proposed suite of mitigation measures are sufficient to avoid an AEoI of any protected site from increased recreational disturbance associated with the Project, either alone or in-combination. The RSPB/SWT [REP10-204] confirmed that if refinements to the MMPs were made in the Deadline 10 submissions, it would be content with the mitigation proposed. The RSPB/SWT did not have the opportunity to comment on the Deadline 10 MMPs. The refinements the RSPB/SWT refers to in [REP10-204] which are relevant to qualifying features of protected sites relate to little tern. However, the Minsmere MMP (Annex U of [REP10-084]) states there is limited potential for direct disturbance due to the relative inaccessibility of the wetland habitats used by these birds and the predicted minor changes in visitor numbers and existing management practices.

The NT [REP10-197] stated that the proposed visitor and ecological monitoring proposals in the Deadline 8 version of the Minsmere MMP appear to be adequate to identify the likely potential effects of increased recreational pressure on the sites. The NT also made some comments on the content of the monitoring proposal but due to timing was unable to comment on the Deadline 10 MMPs.

The ExA welcomed the provision of the MMPs by the Applicant and that revisions submitted during the Examination took on board comments of IPs. The ExA acknowledged that a number of parties had outstanding comments on the content of the MMPs, e.g. NE [REP10-200], RSPB/SWT [REP10-204], and the NT [REP10-197]. However, the ExA considered these to be minor in nature. In conclusion, the ExA was content that the DoO [REP10-075] to [REP10-087] secures mitigation measures which are considered suitable to manage and reduce the effects

from recreational pressure on qualifying features. The ExA considers that with the proposed mitigation measures in place, the Project would not result in an AEoI of all protected sites identified above, either alone or in-combination with other plans and projects, as a result of increases in recreational pressure/ disturbance.

5.7 Disturbance effects on species populations (noise, light and visual)

A potential likely significant was identified due to disturbance effects on species populations for the following protected sites and qualifying features/Criterion:

- Deben Estuary SPA:
  - Wintering avocet;
  - Wintering dark-bellied Brent goose;
  - Deben Estuary Ramsar: and
  - Criterion 6.
- Minsmere-Walberswick SPA:
  - Breeding avocet;
  - Breeding bittern;
  - Breeding little tern;
  - Breeding marsh harrier;
  - Breeding nightjar;
  - Breeding shoveler;
  - Breeding teal;
  - Breeding gadwall;
  - Wintering gadwall;
  - Wintering hen harrier;
  - Wintering shoveler; and
  - Wintering white fronted goose.
- Minsmere-Walberswick Ramsar:
  - Criterion 2.
- Outer Thames Estuary SPA:
  - Wintering / passage red-throated diver.
- Sandlings SPA:
  - Breeding nightjar; and
  - Breeding woodlark.
- Southern North Sea SAC:
  - Harbour porpoise.
- Stour and Orwell Estuaries SPA:
  - Breeding avocet;
  - Wintering pintail;
  - Wintering dark-bellied Brent goose;
  - Wintering dunlin;
  - Wintering knot;
  - Wintering black-tailed godwit;
  - Wintering grey plover;
  - Wintering redshank;
  - Assemblage qualification: a wetland of international importance; and
  - Assemblage qualification: waterbird assemblage.
- Stour and Orwell Estuaries Ramsar:

- Criterion 5; and
- Criterion 6.

The Applicant [REP5-120] undertook a precautionary assessment of disturbance effects which accounted for overlapping construction phases and modelled the longest construction phases. Acoustic barriers as mitigation was proposed as an early priority during Phase 1 of construction. The final CoCP [REP10-072] states that solid barriers or landscaping, or a combination of the two, would be installed as early as is practicable in the construction process. The location of the barriers is shown on the Construction Parameter Plans [REP7-269], which are secured by DCO Requirement 13.

The Draft MDS Noise Monitoring and Management Plan (Draft NMMP) [RE7-048] outlines that three barriers would be installed as primary mitigation with additional barriers installed if needed following further assessment. The timing of installation, however, was not specified. This would be carried out in accordance with the Noise Mitigation Scheme [REP10-084] and NMMP. The installation of additional barriers as a potential intervention measure, following proposed monitoring of breeding waterbirds, is also included in the TEMMP [REP10-090], as secured by Requirement 4 of the DCO.

The RIES [PD-053] outlined a number of concerns raised by NE and the RSPB/SWT with regards to the Applicant's assessment of disturbance effects on specific bird qualifying features of the Minsmere-Walberswick SPA and Ramsar.

The RSPB/SWT [REP10-204] remained of the view that the initial and additional measures to mitigate disturbance would not be effective, and that evidence had not been provided as to where measures could be deployed and to what extent they would mitigate disturbance. NE [REP5-160] also recommended more robust monitoring and adaptive management in respect of disturbance to gadwall and shoveler than what was proposed in the TEMMP. The ExA considered the timing of the acoustic screening in the Applicants CoCP [REP10-072] lacked certainty.

The Applicant's assessment of noise disturbance was based primarily upon thresholds for impulsive noise and provided information on chronic noise as further context [REP3-042] [REP10-164] [APP-145]. A threshold of 70dBL_{Amax} for impulsive noise effects was applied to wintering waterbirds and a threshold of 65dBL_{Amax} for breeding waterbirds.

The Applicant considered that noise levels during Phase 5 of construction would be broadly similar to Phase 1. The Applicant's model showed [REP5-120] a slight reduction in encroachment of both the 70dB and 65dBL_{Amax} contours on the Minsmere South Levels during Phase 5 compared to Phase 1 [APP-147]. Phase 5 noise contours also show less encroachment on to the Sizewell Marshes SSSI compared to Phase 1. The Applicant stated that was due to the absence of construction works in the MDS area closest to the SSSI.

The RSPB/SWT raised concerns with regards to chronic noise, noise modelling, and the potential for chronic noise to affect densities and distributions of breeding birds. It advised a chronic noise threshold of 45 dBL_{Amax} [REP2-506].

In response, the Applicant [REP3-042] explained that chronic noise had been modelled for Phases 3 and 4, as they would extend over a considerably longer period than the other construction phases. Therefore, the outputs of modelling for Phases 3 and 4 are more representative of typical chronic noise levels during construction. The Applicant [REP10-164]

also contested the RSPB/SWT's advised threshold for chronic noise in determining potential effects on breeding waterbirds This was because many of the studies which provide evidence for the effects associated with particular noise levels are focussed on songbird species which are different in biology and behaviour to waterbirds.

The ExA was of the view that given the lack of available evidence as to what noise levels would affect breeding waterbirds, as well as the Applicant's use of the Waterbird Disturbance Toolkit (TIDE tool) and associated supporting studies, it was content with the lower noise threshold for breeding birds.

Appendix N - Evening noise and bird disturbance [REP5-120] stated that there is no evidence to suggest that birds would be more sensitive to construction noise over the night-time period compared to the daytime period in the key areas used by waterbirds around the MDS. The Applicant [REP10-111] stated that nocturnal flight surveys [REP5-125] indicated limited use of the Minsmere South Levels by roosting white-fronted geese, and the CoCP [REP10-072] includes measures to reduce impacts on ecology. The RSPB/SWT [REP10-111] retained its concerns about potential night-time noise disturbance to white-fronted geese and other waterbirds and that insufficient monitoring and mitigation had been proposed.

The ExA shared the concerns of the RSPB/SWT [REP2-506] [REP5-166] that due to the height of some of the infrastructure the screening would not reduce all potential visual impacts. It is acknowledged in the Shadow HRA Report [APP-145] that high structures such as cranes may be visible on the skyline. The ExA noted the impracticalities associated with screening high structures such as cranes and that a 150m visual buffer has been applied in three main areas.

The Shadow HRA Third Addendum [REP7-279] provided an update to the Applicant's assessment of noise impacts to birds from Change 19, the desalination plant. The RSPB/SWT [REP8-171] argued that the Applicant had not discussed all additional noise sources arising from Change 19. However, the Applicant [REP9-024] confirmed that the additional HGV movements required to bring water to the construction site before the desalination plant is operational would not exceed the cap which had already been assessed. An assessment of potential noise from diesel generators, including combined noise with MDS construction activities had also been included.

The ExA was of the view that Applicant's assessment had considered the potential noise associated with additional HGV numbers and that the diesel generators would not result in a material change to the predicted noise levels assessed.

Further information and the Secretary of State's conclusions are provided in Sections 5.18.1.1, 5.22, 5.24, 5.25, 5.26 and 5.27.

5.8 Impediment to management practices

NE raised concern [RR-0878] during Examination regarding the potential for works in and around the MDS, which is directly adjacent to the Minsmere reserve, to have the potential to impede the management practices required for its conservation, such as access for grazing animals. This was identified as a concern for the following protected sites:

- Minsmere-Walberswick Heaths and Marshes SAC;
- Minsmere-Walberswick SPA; and

- Minsmere-Walberswick Ramsar.

The Applicant provided a plan [REP6-002] showing the access route for the RSPB to access the southern side of the RSPB reserve, which is located outside of the DCO Order limits. The Applicant stated that it would commit in writing 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.

NE confirmed [REP7-287] that the Applicant had provided sufficient information to ensure any impact can be mitigated to avoid an AEoI. The RSPB/SWT confirmed [REP3-074] [REP8-173] that it would welcome an appropriate agreement to ensure no impediment to future management practices arises from the Project and looked forward to receiving the commitment in writing. During the Examination, the Applicant agreed [REP6-002] to not impede the RSPB's existing access route to the southern edge of the Minsmere reserve via Lower Abbey Farm. However, a firm commitment from the Applicant that it would not impede the RSPBs existing access route was not submitted during the Examination.

The ExA stated that the Secretary of State could conclude no AEoI with the mitigation proposed in the form of access to the RSPB for management of the Minsmere reserve, either alone or in-combination with other plans or projects. However, the ExA considered that a firm commitment from the Applicant that it would not impede the RSPB's existing access route to the Minsmere reserve via Lower Abbey Farm was not submitted during the Examination, and recommended that the Secretary of State may wish to satisfy himself in this regard before reaching a conclusion.

No specific plans or projects were identified to consider in-combination.

In his second consultation letter, the Secretary of State asked the Applicant to provide details of how it could provide assurance, within the DCO or otherwise, that there will be no impediment to the RSPB's existing access route to the Minsmere reserve via Lower Abbey Farm. The Applicant responded[83] in April 2022. Consideration of the Applicants response and the Secretary of State's conclusion are presented in paragraph 5.21.6.1.

5.9 Physical interaction between species and project infrastructure

5.9.1 Collision with pylons and power lines

A potential likely significant was identified for the following sites and qualifying features:

- Alde-Ore Estuary SPA and Ramsar (all features); and
- Minsmere-Walberswick SPA (all features).

The Applicant's assessment of collision risk between birds and power lines [REP6-024] supported its position that there was no likely pathway for a material effect and there would be no LSEs. As a precautionary measure, line markers would be installed on the power lines to minimise the risk of bird collision.

The Applicant explained [REP10-155] that following discussions with NE, it proposed that monitoring for line strikes would be carried out in the first instance to determine if further mitigation (such as line markers) would be required. The TEMMP [REP10-090] includes provision for monthly monitoring of carcasses under overhead lines between new pylons,

including proposed methodology. Installation of markers on overhead lines is identified as a potential intervention subject to the findings of the proposed monitoring. No specific trigger point in terms of bird numbers is specified in the TEMMP, however it states that: "*The EWG [Ecology Working Group] will determine, based on review of this data, whether line markers are required and SZC Co. will install the markers if these are judged to be required by the EWG*."

The ExA was of the view that although the TEMMP specifies it is related to "*all bird species" of "the Minsmere Habitat Sites*", the monitoring proposed would equally apply to bird qualifying features of the Alde-Ore Estuary SPA, which include the same species as those of the Minsmere-Walberswick SPA and Ramsar.

National Grid Electricity Transmission ("NGET") stated [REP6-026] that on the basis of the information provided by the Applicant and considering its experience in relation to existing power lines, it considered it unlikely that line markers would be required. It stated that if it was determined to be necessary, the typical arrangement would be installation of orange-coloured space dampers on the main conductor bundles, in addition to either spiral or sphere markers on the earthwire. It concluded that: "*However, NGET's SPOTTED log states there are no reported collisions in the vicinity of Sizewell and therefore, any mitigation measures are currently considered unnecessary in this vicinity*."

NE did not submit comments on the TEMMP updates due to the timing of the submission at the final Examination deadline. The final signed SoCG between the Applicant and NE marked the position on this matter for the Alde-Ore Estuary SPA and the Minsmere-Walberswick SPA and Ramsar as "*agreed in principle but further information required*" [REP10-097].

The ExA considered that the wording in the TEMMP combined with securing of the EWG membership would be sufficient to secure that monitoring and mitigation would be available and could be implemented. The ExA was satisfied that the measures proposed would mitigate for any AEoI of qualifying bird features of the Alde-Ore Estuary SPA and Minsmere-Walberswick SPA, resulting from collision risk between species and project infrastructure, both alone and in combination.

With a view to the fact that NE did not submit comments on the TEMMP updates, in his fourth consultation letter the Secretary of State invited NE to provide advice as to whether an AEoI due to physical interaction between birds and infrastructure (pylons and powerlines) could be excluded for the Alde-Ore Estuary SPA and Minsmere-Walberswick SPA.

In its response, NE[65] stated that it welcomed the Applicant's commitment in its revised TEMMP to undertake monthly carcass surveys under overhead lines and between pylons, the results of which will be submitted to the EWG on a monthly basis and used to determine whether line markers are required. On this basis, NE advised that an AEoI of the Alde-Ore Estuary SPA and Minsmere-Walberswick SPA through this impact pathway could be ruled out.

[65] Natural England, 2022. *Application by NNB Generation Company (SZC) Limited ("the Applicant") for an Order granting Development Consent for the proposed Sizewell C Nuclear Power Station ("the proposed Development").* 30th May 2022.

5.9.2 Indirect Impacts from Entrapment of Prey Species on Bird Qualifying Features

A potential LSE was identified due to indirect impacts on bird qualifying features resulting from entrapment of prey species for the following protected sites and qualifying features/Criterion:

- Alde-Ore Estuary SPA:
  - Little tern;
  - Sandwich tern; and
  - Lesser black-backed gull.
- Alde-Ore Estuary Ramsar:
  - Criterion 3 (breeding and wintering wetland assemblage); and
  - Criterion 6 (species/population occurring at levels of international importance).
- Benacre to Easton Bavents SPA:
  - Little tern.
- Minsmere-Walberswick SPA:
  - Little tern.
- Minsmere to Walberswick Ramsar:
  - Criterion 2 (breeding bird assemblage).
- Outer Thames Estuary SPA:
  - Red-throated diver;
  - Little tern (breeding); and
  - Common tern (breeding).

The Applicant's assessment within the Shadow HRA [APP-145] concluded there would be no AEoI of the sites listed above. This was because it predicted entrapment to have a negligible effect on Spawning Stock Biomass ("SSB") populations of key prey species. It predicted the effects to be so small as to be undetectable in the context of year-to-year variation in populations due to other environmental factors.

The Applicant's Shadow HRA Third Addendum [REP7-279] provided an updated assessment in respect of Change 19 (the desalination plant) for the Alde-Ore Estuary SPA and Ramsar, Minsmere-Walberswick SPA and Ramsar, and the Outer Thames Estuary SPA. The Addendum concluded there would be no AEoI of these sites. NE were unable to comment due to the timing of the submission late into the Examination [REP10-201].

Significance of Effects

NE [RR-0878] [REP5-160] raised concerns regarding indirect impacts on the food web for birds with small foraging ranges, specifically for lesser-black backed gull, little tern, and sandwich tern of the Alde-Ore Estuary SPA and little tern of Minsmere-Walberswick SPA and Ramsar.

The RSPB/SWT [REP2-506] [REP5-164] [REP6-046] were concerned that limited mitigation had been proposed for fish mortality and potential prey depletion for bird species of designated sites. It considered that the Applicant's assessment did not recognise the impacts of prey depletion on foraging efficiency and success rates. The RSPB/SWT [REP2-506] also shared concerns held by the EA [REP2-135] relating to impingement affecting sand gobies and nursery grounds. It raised concerns of increasing climate pressures affecting the mortality of fish eggs and larvae and how this could negatively affect SPA seabirds. Its concerns were in relation to: non-breeding red-throated diver and (during the breeding season) foraging common and little tern of the Outer Thames Estuary SPA; breeding little tern of the Minsmere-Walberswick SPA; and breeding sandwich terns of the Alde-Ore Estuary SPA.

Dr Henderson, on behalf of TASC, raised concerns [REP2-481h] [REP7-247] [REP8-284] that entrainment impacts had been underestimated for numerous species, including sand gobies. TASC considered [REP10-425] that fish such as sand eel had been "*grossly underestimated in the entrainment study*", as small and long-thin fish had not been sampled using the pump sampler.

NE [RR-0878] [REP2-153] [REP5-160], the EA [RR-0373] [REP2-068] [REP2-135] [REP5-150] [REP7-132], and the RSPB/SWT [REP3-074] [REP6-046] [REP7-154] all raised concerns about the use of a percentage of SSB for species as an indicative threshold for significance, stating this could underestimate impacts and would not identify local impacts on SPA birds, particularly during the breeding season.

In response to concerns raised by IPs, the Applicant submitted a localised effects assessment in ES Addendum 2.17A, 'SPP103 – Consideration of potential effects on selected fish stocks at Sizewell' Chapter 3 [AS-238]. Modelling [REP3-042] indicated 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, such as herring, sprat and anchovy as the most important prey groups for marine birds around Sizewell for which modelling indicated that the impacts would be small. It considered the scale of local depletion of prey resources to be well within the bounds of natural variability [REP5-120].

The Applicant submitted an update to the local effects assessment in Revision 5 of SPP103 [REP6-016]. This included a sensitivity analysis addressing uncertainty in the FRR system efficiency and additional data for each species stock area assessments. The analysis concluded no significant reductions in the prey availability of:

- Overwintering red-throated diver – The species has foraging ranges beyond the Greater Sizewell Bay and tidal excursion;
- Sandwich tern and lesser black-backed gull – Both species have wide foraging ranges and the potential to exploit opportunistic foraging opportunities from the FRR; and
- Little tern – The species has the most restricted foraging ranges, foraging close to colonies up to a maximum distance of approximately 2.4km during the breeding season. The Applicant stated that based on expected foraging ranges, it predicted foraging to primarily be affected by the immediate effects of Sizewell B rather than the Project.

The Applicant noted [REP7-060] that mixing and fish behaviour would dampen depletion with distance from the intakes and that tidal replenishment would replace losses, particularly in the case of pelagic shoaling species and juvenile stages. The intakes would be just beyond the likely foraging range for little terns.

The Applicant predicted [REP5-120] [REP6-028] that the combined (Sizewell B and the Project) entrapment loses for sand gobies would be approximately 1.42% of the population estimate. It suggested that due to their short lifespan and early age of maturity, sand gobies have a sustainable harvesting rate far greater than the precautionary 10% of SSB threshold applied. As such, it considered the predicted level of losses to be negligible at the population level. In relation to nursery grounds, the Applicant explained that many species with juvenile life stages observed at Sizewell have spawning and nursery grounds distributed over wide geographic areas. It noted that larval recruitment in the bay will be largely influenced by oceanographic and meteorological processes.

The Applicant stated [REP5-120] 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.

The EA [REP7-133] provided comments on the Applicant's updated assessment. The RSPB/SWT [REP7-154] confirmed, in response to the Applicant's revised assessments, that it considered the predicted depletion levels of prey species to be significant. It did not agree with the Applicant's conclusion of no AEoI.

Discharge of Dead and Moribund Fish

The Applicant explained [AS-238] [REP5-120] [REP6-016] that biomass discharged by the FRR would be retained within the system, resulting in bottom-up effects stimulating secondary production and, in some cases, affording opportunistic feeding opportunities. The majority of FRR discards sink and therefore would not be accessible to surface feeding seabirds. However, floating discards would represent potential foraging opportunities.

The RSPB/SWT [REP2-506] noted that red-throated diver and little tern do not forage on discarded material. NE [REP2-153] also noted that terns will discard any deceased fish captured.

NE [REP2-153] raised concerns regarding the risk of exposure to chemicals from birds ingesting discarded fish or through increasing the time spent within the area of the chemical plume. The RSPB/SWT [REP2-506] considered that dead and moribund biota could contribute to biochemical oxygen demand and increase nitrogen inputs and levels of un-ionised ammonia in the water column. It noted that this could affect prey distribution. TASC [REP2-481h] also expressed concerns about impacts on the local ecology.

The Applicant [REP3-042] [REP5-120] confirmed that impinged biota would not be subjected to chlorine total residual oxidant ("TRO") or hydrazine exposure. This is because the FRR wash water would not be chlorinated, and hydrazine enters the cooling water circuit at the discharge pit before being discharged via the outfall. It stated that dead fish would not bioaccumulate chemicals and would only be exposed to extremely low residual concentrations of TRO, bromoform and hydrazine present in surface plumes. It considered live fish discharged from the FRR or present in the wider environment to not significantly bioaccumulate these substances. The Applicant also stated that it was not aware of any evidence for effects arising in relation to bird species feeding upon moribund fish returning to the surface at other nuclear power stations.

Monitoring

The Applicant submitted a Fish Impingement and Entrainment Monitoring Plan ("FIEMP") [REP10-138]. The plan is listed as a certified document in Schedule 23 of the DCO and certified under Article 80 [REP10-009].

The Applicant stated that the FIEMP is intended to confirm the impingement and entrainment predictions presented in the ES, ES Addendum and Shadow HRA assessments, with real data collected from Project operation compared with data collected from Sizewell B simultaneously, for comparison. The plan also contains potential schemes to offset any potential impact should the ES and ES Addendum have underpredicted impingement or entrainment. Funding for such schemes is secured in the DoO [REP10-075] to [REP10-087] and is to be released for suitable schemes at the discretion of the Marine Technical Forum ("MTF"). The Applicant confirmed that the plans are not relied upon in reaching its conclusion of no AEoI of these sites.

By the close of Examination, the content of the FIEMP was not agreed with NE [REP8-298e] [REP10-204] or the EA [REP10-190]. The RSPB/SWT [REP10-204] also remained concerned that proposed mitigation aimed at fish populations might not directly benefit bird species associated with designated sites, and that the proposed mitigation did not appear to cover all the fish species which are important prey to SPA birds.

5.9.2.1 Conclusions at the End of the Examination

The EA had a number of outstanding concerns related to the FIEMP including its baseline, assessment (including scale and impact) of impingement of fish, mitigation, and residual effects. It confirmed that it deferred to NE to advise on the effects on NSN sites [REP7-131].

NE expressed concern with the Applicant's proposed monitoring duration during operation but did not appear to indicate a risk of AEoI as a result of entrapment of fish in its final SoCG with the Applicant [REP10-097]. NE's final position at the end of Examination, however, remained unclear.

The RSPB/SWT [REP10-204] had outstanding concerns around the effects of the cooling water system on prey distribution for birds of the Minsmere-Walberswick SPA and Ramsar, Outer Thames Estuary SPA and Alde-Ore Estuary SPA, and the lack of an Acoustic Fish Deterrent to mitigate this impact.

TASC's outstanding concerns were in relation to the underestimation of entrainment impacts and impacts on the local ecology from discharge of dead material [REP10-425].

The ExA noted that NE did not provide a substantive response to the Applicant's local scale modelling of fish depletion in the context of effects on SPA and Ramsar features. The ExA highlighted that outstanding concerns in the SoCG between the Applicant and NE relate to the monitoring measures in the FIEMP, which the Applicant stated it does not rely on in its conclusions of no AEoI.

The ExA acknowledged that red-throated diver, sandwich terns and lesser-black backed gulls have an extensive foraging range. Therefore, these species will be resilient to a relatively small-scale change in prey abundance. However, the ExA found the consequential impacts to the little tern population, having regard to their more restricted foraging range, are likely to result in a greater effect that is difficult to refute.

The ExA was unable to disregard the concerns raised by NE and the EA. In the absence of a clear agreement to the Applicant's assessment from NE, together with the outstanding concerns raised by the EA, the ExA considered that the Secretary of State may wish to satisfy themselves on these matters before reaching a conclusion.

5.9.2.2 Additional Information

In his second consultation letter, the Secretary of State invited NE and the EA to provide their views as to whether they were satisfied with the Applicant's Deadline 10 Submission – 9.89/10.7 Draft Fish Impingement and Entrainment Monitoring Plan [REP10-138].

NE[66] acknowledged the additional clarification the Applicant had provided in relation to presentation of data to the MTF, plans for a 24-hour survivability experiment, and commitment to a smelt monitoring and mitigation plan. However, it advised that its comments had largely not been addressed and it was not satisfied with the revision of the monitoring plan.

The concerns reiterated by NE included insufficient monitoring, sampling periods of three years, and disagreement over some of the population comparators used for marine fish in the ES. The Applicant had not addressed NE's comment that all data produced should be made publicly available and secured in the Terms of Reference for the MTF. NE also reiterated that the Terms of Reference for the MTF should be included in the FIEMP, and that many key decisions are still deferred to the MTF, for which there is no clear guidance on the composition or qualifications of the group. In addition, NE noted that there is no commitment to comparing findings against predictive impacts in the ES.

The EA[67] stated that their concerns had not been fully addressed by the Applicant. Its remaining concerns related broadly to:

- Duration of monitoring;
- Proposed methodologies used to consider impacts; and
- Reaching agreement on how further mitigation and / or compensation for impacts to fish might be decided.

In its response, the EA also echoed the concerns of NE and wished for clarity on descriptions of the roles and responsibilities of the MTF whilst reiterating that entrainment monitoring data should be made publicly available. Full details of the EA's concerns in relation to the FIEMP are provided in Appendix A of its response.

In the same letter, the Secretary of State invited NE to provide advice on whether an AEoI due to indirect impacts of entrapment of prey species on the qualifying bird features of the Alde-Ore Estuary SPA and Ramsar, Benacre to Easton Bavents SPA, Minsmere-Walberswick SPA and Ramsar, and the Outer Thames Estuary SPA could be excluded.

In its response, NE[68] stated that the Applicant had addressed its concerns regarding the indirect impact of entrapment of prey species. It advised that in light of the work undertaken to model localised depletion of fish populations, it agreed with the Applicant's conclusion of no AEoI of the bird features of the sites listed above.

5.10 Unintentional spread of Invasive Non-Native Species ("INNS")

The Applicant did not explicitly address the spread of INNS as an impact pathway in its Shadow HRA Report and NE did not consider that this issue was addressed in sufficient detail. At Examination, NE raised concerns [RR-0878, REP2-071] that the proposals presented a risk of

[66] Natural England, 2022. *Application by NNB Generation Company (SZC) Limited ("the Applicant") for an Order granting Development Consent for the proposed Sizewell C Nuclear Power Station ("the proposed Development").* 14th April 2022.

[67] Environment Agency, 2022. *Application by NNB Generation Company (SZC) Limited for an Order Granting Development Consent for the Sizewell C Project.* 14th April 2022.

[68] Natural England, 2022. *Application by NNB Generation Company (SZC) Limited ("the Applicant") for an Order granting Development Consent for the proposed Sizewell C Nuclear Power Station ("the proposed Development").* 14th April 2022.

unintentionally spreading INNS during the construction and operational phases via terrestrial and marine sources, which could have a detrimental effect on protected sites features through, for example, increased competition with habitats and species. NE considered that this could lead to a detrimental effect on qualifying features of the following protected sites:

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

As NE did not reference specific qualifying features, the ExA considered all qualifying features on a precautionary basis, as the risk of spread of INNS has the potential to be a site-wide effect.

The CoCP [REP10-072] requires a biosecurity risk assessment to be undertaken and a management plan to be implemented to avoid potentially facilitating the spread of INNS. Additionally, for the marine environment the CoCP specifies that the potential for INNS to be introduced during ballast water activities must be managed through compliance with measures set out in the International Maritime Organisation Ballast Water Management Convention. In light of these mitigation measures in the CoCP, the Applicant considered that no further assessment is required.

In its SoCG with the Applicant, NE agrees that mitigation measures in the CoCP are sufficient to ensure no AEoI of the above sites. The CoCP is secured through Requirement 2 of Schedule 2 of the DCO. The ExA was satisfied that there would be no AEoI of protected sites from the Project alone or in-combination once the mitigation measures are implemented. No specific plans or projects were identified to consider in-combination.

5.11 Water quality effects (marine environment)

The Applicant's Shadow HRA Report [APP-145] identified the following potential impact pathways for water quality effects on the marine environment:

- Construction and decommissioning:
  - Contamination resulting from installation and removal of marine infrastructure and accidental discharge from vessel traffic;
  - Discharges from the CDO; and
  - Dredging and disposal.
- Operation:
  - Discharge activities from the cooling water system, including thermal and chemical (including hydrazine and chlorination) plume, and moribund biota.

During the Examination the Applicant committed to a suite of measures to mitigate the impacts of the Project on protected sites including:

- A CoCP [REP10-072], which includes a commitment to the use of a bentonite recovery system during drilling. Furthermore, NE will be consulted within 24 hours in the event of a drilling mud breakout, and an Ecological Clerk of Works will oversee the works to ensure

early detection. The CoCP is secured by Requirement 2 of the DCO and is also listed as a certified document in Schedule 23 of the DCO.

- A Mitigation Route Map [REP10-073], which includes commitments to mitigation to minimise impacts on marine ecology receptors from changes in marine water quality, including: location of outfalls; intake and outfall design and position; a Chlorination Strategy for operation which uses seasonal and spot-chlorination of critical plant to minimise total residual oxidants in the cooling water discharge. The Mitigation Route Map identifies that this commitment would be secured through the WDA permit. The scheme design is secured through Article 3 of the DCO.
- The Mitigation Route Map also commits to management and monitoring of discharges from the cooling water outfall, CDO and desalination plant outfall, which would be secured by the WDA permit.
- Controls over chemicals used within the marine environment are included in DML Conditions 15 and 18 (DCO Schedule 21 [REP10-009]).

With regards to the temporary desalination plant (Change 19), the Applicant [REP10-162] set out the following controls to ensure the removal of the plant and associated infrastructure:

- The Construction Method Statement ("CMS") (secured by DCO Requirement 13 [REP10-009]) includes a condition to ensure that Phase 5 cold flush testing commissioning works will not commence until operation of the temporary desalination plant has ceased.
- Requirement 29 of the dDCO [REP10-009] secures that this component must be removed following completion of the construction works.
- Condition 46(e) of the DML requires removal to be completed prior to commencement of hot functional commissioning testing.

The Applicant concluded that effects on marine water quality as a result of the Project would have no AEoI of the qualifying features of any protected sites.

At the end of the Examination NE [REP10-097] maintained concerns around the potential effects of the CDO, thermal and chemical plume (including hydrazine and chlorination), and bentonite break out on the qualifying features of the Alde-Ore Estuary SPA and Ramsar and Minsmere-Walberswick SPA and Ramsar, and confirmed that it could not provide its final advice until the further information on the effects and mitigation to be included with the WDA permit had been received.

At Deadline 10, the RSPB/SWT [REP10-111] remained concerned about potential impacts on terns (and their prey) from thermal and chemical plumes and the combined effects noise, lighting, vibration and sediment plumes from marine construction and dredging during construction. During operation they highlighted combined impacts on prey species from thermal and chemical plumes and fish mortality and water quality effects from the cooling water system.

The final SoCG with the MMO [REP10-107] noted that there was agreement on all marine water quality issues in the ES, referencing that the DML (Schedule 21 of the DCO [REP10-009]) now contained conditions providing control over the use of chemicals, and that discharges into the marine environment would be regulated through a WDA permit.

The EA [REP10-186] stated that impacts from changes to water quality (thermal and chemical plume, chlorination, hydrazine), the CDO, drilling and bentonite impacts would be regulated through a WDA EP: however the WDA EP would not be determined before the Secretary of

State determines the DCO. The EA [REP10-186] requested that no conclusions should be reached within the Secretary of State's HRA on aspects where the EA is the competent authority.

The ExA did not consider that chemicals consumed by SPA bird species would be at a concentration that would affect the populations of the qualifying features, but that further information on controls on marine water quality will be presented with the WDA Permit.

With regards to bentonite break out, the ExA stated that the measures secured through the CoCP [REP10-072], including the commitment to use a bentonite recovery system, could ensure no AEoI of protected sites, alone and in combination: however, due to the timing of the Examination, NE did not have the opportunity to comment on the updated CoCP and therefore, the Secretary of State may wish to satisfy themself in this regard.

Additionally, the ExA suggests that the Secretary of State may wish to satisfy themself that the MMO is content with the conclusions of the updated version of the BEEMS Technical Report TR552 [REP10-052], because at the end of the Examination, the MMO has not had the opportunity to comment on this document.

With regards to operational discharge activities associated with the cooling water system, including the thermal and chemical (including hydrazine and chlorination) plume, and moribund biota, the ExA was of the view that AEoI could be excluded because of the mitigation and monitoring measures secured.

Without prejudice to the subsequent EP process, the ExA concluded that based on the material available at Examination, and with the mitigation measures secured and controlled through the WDA permit, an AEoI of protected sites from the Project alone or in combination with other plans or projects could be excluded. However, the Secretary of State may wish to satisfy himself in this regard.

Additional Information

In his first consultation letter, the Secretary of State invited the EA, the MMO and NE to provide comments on the updated BEEMS Technical Report TR552 for the Sizewell C Desalination Plant Construction Discharge Assessment H1 Type Assessment submitted by the Applicant at Deadline 10 [REP10-052].

On 7th April 2022, in response to the Secretary of State's letter, NE stated that a H1 type assessment is used to specifically support an application for a WDA permit and that it would defer to the EA on this topic until it was consulted on the permits in its role as a statutory consultee.

On 8th April 2022, in response to the Secretary of State's letter, the MMO stated that because the proposed discharge activity falls within the remit of the EA and their relevant environmental permitting regime, it would defer to the EA on this matter.

On 8th April 2022, in response to the Secretary of State's letter, the EA stated that because an H1 assessment is required in support of an associated WDA permit application, it would not comment in advance of the WDA permit application.

In his second consultation letter, the Secretary of State invited NE to comment on the mitigation measures for the impacts of drilling mud and bentonite break out presented in the Applicant's Deadline 10 Submission – 8.11/10.2 Code of Construction Practice [REP10-072].

Furthermore, NE, having now been consulted on the EA's draft HRA for the WDA EP, was invited to provide advice on whether an AEoI due to marine water quality impacts could be excluded for the following sites:

- Alde-Ore Estuary SPA and Ramsar;
- Benacre to Easton Bavents SPA;
- Humber Estuary SAC;
- Minsmere to Walberswick Heaths and Marshes SAC;
- Minsmere-Walberswick SPA and Ramsar; and
- Outer Thames Estuary SPA.

On 14th April 2022, in response the Secretary of State's second consultation letter regarding the impacts from drilling mud and bentonite break outs, as presented in the Applicant's CoCP [REP10-072]. NE advised that until further details were provided by the Applicant, it did not consider that appropriate mitigation measures were in place to exclude impacts from bentonite.

With regards to the draft HRA for the WDA EP, NE advised that it had been consulted by the EA; however, until the HRA was finalised, it was unable to give unqualified advice on the impacts on the integrity of the above sites.

Post-Examination, on 4 July 2022, the EA published a HRA report for its proposed decision on the draft operational WDA permit[50]. The operation of the Project requires an operational WDA permit for two discharges covering the operational water discharge activities from hot functional testing during commissioning, through operation, until decommissioning. The discharge points are the cooling water system discharge, which includes sewage treatment works effluent, and the fish recovery and return system discharge (EA Section 3.1.2). The EA's HRA report considered the effects of the Project alone, including synergistic effects between the chemical and thermal plumes, and the effects of the Project in combination with other plans and projects.

The EA's HRA report stated that there would be no AEoI of any Protected Site (EA Section 7.2):

"We do not believe that, for those European sites requiring Appropriate Assessment, the operational WDA permit will impact upon their ecological structure, function and ecological processes across their whole area.

We were able to reach this conclusion due to the bespoke modelling results confirmed that the effects identified above would be low-impact and too small to undermine the achievement of the conservation objectives or would have no connectivity with the more distant sites. Site integrity cannot be considered to be adversely affected if the findings of an Appropriate Assessment demonstrate that the conservation objectives will not be undermined alone or in combination with other PPP."

The EA's HRA report concluded that the operational WDA permit can be ascertained to have no adverse effect on the integrity of the following sites, either alone or in combination with other plans and projects (EA Section 8):

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

- Orfordness to Shingle Street SAC;
- Outer Thames Estuary SPA;
- Southern North Sea SAC; and
- The Wash and North Norfolk Coast SAC.

This conclusion was not dependent on any mitigation measures or conditions.

5.12 Water quality effects (terrestrial environment)

This pathway includes chemical effects on freshwater (surface and groundwater) during construction and decommissioning, such as changes in suspended sediment, nutrient concentrations, and chemical status, as well as indirect effects on habitats and species. Operational impact pathways include long-term flow changes associated with the cut-off wall and realignment of ditches, and indirect effects on habitats and species. No chemical effects are predicted during operation as all discharge would be via the cooling water system.

The Applicant [APP-145] identified potential impact pathways from changes to water quality arising from the construction, operation, and decommissioning of the Project alone on the qualifying features of the following protected sites:

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

The Applicant proposed a suite of measures to mitigate the impacts from changes to water quality, to be secured through the DCO.

The CoCP includes commitments in respect of the management of surface water run-off. The CoCP states that a construction phase drainage system will be implemented incorporating Sustainable Drainage System (“SuDS”) measures in accordance with the Drainage Strategy [REP10-030] to [REP10-032]. The Drainage Strategy is a certified document listed in Schedule 23 of the DCO. A final iteration of the Drainage Strategy is secured through DCO [REP10-009] Requirements 5 and 23(1). The CoCP also includes a range of measures for the management of excavated material, including stockpile management and ensuring a minimum distance between stockpiles and the nearest watercourse of 10m. The CoCP is a certified document listed in Schedule 23 of the DCO [REP10-009].

Furthermore, the Applicant stated that the principles of the Drainage Strategy would also be applied to the operation phase [APP-297]. The Applicant concluded [APP-145] that there would be no AEoI of any protected site from changes in water quality from the Project alone.

NE [RR-0878], [REP2-153] and [REP10-097] did not dispute the Applicant’s conclusions of no AEoI of protected sites.

The Applicant [APP-145] screened out terrestrial water quality effects from the in-combination assessment, and NE [REP2-153] and [REP10-097] agreed that there would be no AEoI from terrestrial water quality effects if the proposed mitigation measures are implemented.

The ExA was satisfied that there would be no AEoI of protected sites from the Project, alone or in-combination once the mitigation measures are implemented.

5.13 Appropriate Assessment: protected sites for which there is agreement on conclusions of no adverse effects on site integrity

Table 2 presents the Secretary of State's conclusions on protected sites and features for which he considers AEoI could be excluded. The Secretary of State considers that there was clear agreement between the Applicant and SNCB at the close of Examination as to the exclusion of AEoI of these sites and features, and that the ExA was also satisfied that an adverse effect could be excluded. IP representations, SNCB advice and ExA recommendations are referenced and documented in Table 2 where applicable.

Table 2: Secretary of State's conclusions on protected sites for which there is agreement on conclusions of no Adverse Effects on Integrity from the Project either alone or in-combination.

Impact Pathway C = construction; O = operations and maintenance; D = decommissioning	**Protected Site**	**Qualifying Feature**	**Views of Interested Parties**	**Secretary of State conclusions Alone**	**Secretary of State conclusions In-combination**
Unintentional introduction or spread of INNS	Alde-Ore and Butley Estuaries SAC Alde-Ore Estuary SPA Alde-Ore Estuary Ramsar Minsmere to Walberswick Heath and Marshes SAC Minsmere-Walberswick SPA Minsmere-Walberswick Ramsar	All features screened into AA	NE advised [REP10-097] that the mitigation measures proposed by the Applicant in the CoCP [REP10-072] are sufficient to ensure no AEoI. The ExA was satisfied that, subject to implementation of the mitigation measures as secured, there would be no AEoI either alone or in-combination. No specific plans or projects were identified by the ExA to consider in-combination.	The Secretary of State is satisfied that, subject to the implementation of the mitigation measures secured in the CoCP, an AEoI of protected sites resulting from the unintentional spread of INNS from the Project alone can be excluded.	The Secretary of State is satisfied that, subject to the implementation of the mitigation measures secured in the CoCP, an AEoI of protected sites resulting from the unintentional spread of INNS from the Project in-combination with other plans and projects, can be excluded.
Changes to coastal processes / sediment transport	Alde-Ore and Butley Estuaries SAC	Estuaries Mudflats and sandflats not covered by seawater at low tide Atlantic salt meadows	NE [RR-0878] [REP10-097] did not dispute the Applicant's conclusion of no AEoI from changes to coastal processes/sediment transport in respect of the screened in qualifying features of these sites. On the basis of the information before the Examination, the ExA was of the view that there would be no AEoI from alteration of coastal processes/sediment transportation on these protected sites either alone or in combination	The Secretary of State is satisfied that subject to the implementation of the mitigation measures secured under the DML and DCO, an AEoI of protected sites from the Projects alone can be excluded.	The Secretary of State is satisfied that subject to the implementation of the mitigation measures secured under the DML and DCO, an AEoI of protected sites from the Projects in combination can be excluded.
	Alde-Ore Estuary SPA	Breeding little tern Breeding sandwich tern Breeding lesser black-backed gull Over winter avocet Over winter redshank Over winter ruff			
	Alde-Ore Estuaries Ramsar	Ramsar Criterion 2 Nationally scarce plant species and British Red Data Book invertebrates Ramsar Criterion 3 The site supports a notable assemblage of breeding and wintering wetland birds Ramsar Criterion 6 Species/ populations occurring at levels of international importance			
	Benacre to Easton Bavents Lagoons SAC	Coastal lagoons (Priority feature)			
	Benacre to Easton Bavents SPA	Breeding little tern			

Impact Pathway C = construction; O = operations and maintenance; D = decommissioning	**Protected Site**	**Qualifying Feature**	**Views of Interested Parties**	**Secretary of State conclusions Alone**	**Secretary of State conclusions In-combination**
	Orfordness to Shingle Street SAC	Coastal lagoons Annual vegetation of drift lines Perennial vegetation of stony banks			
Water quality effects (marine environment)	Alde-Ore and Butley Estuaries SAC	Estuaries Mudflats and sandflats not covered by seawater at low tide Atlantic salt meadows	The ExA [6.4.133] was of the view that an AEoI from water quality effects could be excluded for a number of sites and qualifying features. [ER 6.4.138] The ExA recognised that further detailed information will be provided for the WDA permit and that this will be subject to a separate HRA.	The Secretary of State is satisfied that subject to the implementation of the mitigation measures and the controls which will be secured through the DCO, DML and EPs (see section 5.11), an AEoI of protected sites from the Projects alone can be excluded.	The Secretary of State is satisfied that subject to the implementation of the mitigation measures and the controls which will be secured through the DCO, DML and EPs (see section 5.11), an AEoI of protected sites from the Projects in combination can be excluded.
	Alde-Ore Estuary Ramsar	Criterion 2 (nationally scarce plant species and British Red Data Book invertebrates)			
	Benacre to Easton Bavents Lagoons SAC	Coastal lagoons			
	Benacre to Easton Bavents SPA	Little tern (breeding)			
	Humber Estuary SAC	Grey seal			
	Minsmere-Walberswick Heaths and Marshes SAC	Annual vegetation of drift lines Perennial vegetation of stony banks			
	Minsmere-Walberswick Ramsar	Criterion 1 (mosaic of marine, freshwater, marshland and associated habitats) Criterion 2 (supports nine nationally scarce plants and at least 26 red data book invertebrates)			
	Orfordness to Shingle Street SAC	Coastal lagoons Annual vegetation of drift lines Perennial vegetation of stony banks			
	Southern North Sea SAC	Harbour porpoise			
	The Wash and North Norfolk Coast SAC	Harbour seal			
Water quality effects (terrestrial environment)	Alde-Ore and Butley Estuaries SAC	Estuaries Mudflats and sandflats not covered by seawater at low tide Atlantic salt meadows	NE [REP2-153] and [REP10-097] confirmed agreement with the Applicant's conclusions of no AEoI in respect of the qualifying features of the Minsmere-Walberswick SPA and Ramsar [ER 6.4.149]. NE [RR-0878], [REP2-153] and [REP10-097] did not dispute the Applicant's conclusions of no AEoI in respect of the other protected sites and qualifying features listed in this table [ER 6.4.150].	The Secretary of State is satisfied that subject to the implementation of the secured mitigation measures (see section 5.12) an AEoI of protected sites from the Projects alone can be excluded.	The Secretary of State is satisfied that subject to the implementation of the secured mitigation measures (see section 5.12) an AEoI of protected sites from the Projects in combination can be excluded.
	Alde-Ore Estuary SPA	Breeding little tern Breeding sandwich tern Breeding lesser back-backed gull Over winter avocet Over winter redshank Over winter ruff			

Impact Pathway C = construction; O = operations and maintenance; D = decommissioning	**Protected Site**	**Qualifying Feature**	**Views of Interested Parties**	**Secretary of State conclusions Alone**	**Secretary of State conclusions In-combination**
	Alde-Ore Estuary Ramsar	Criterion 2 (nationally scarce plant species and British Red Data Book invertebrates) Criterion 3 (the site supports a notable assemblage of breeding and wintering wetland birds) Criterion 6 (species/ populations occurring at levels of international importance)	For in-combination effects, NE agreed that there would be no AEoI from terrestrial water quality effects with rigorous implementation of the proposed mitigation measures [ER 6.4.153]. The ExA [ER 6.4.154] was satisfied that, subject to the implementation of the mitigation measures as secured, there would be no AEoI of protected sites from the terrestrial water quality effects as a result of Project, either alone or in combination.		
	Minsmere-Walberswick SPA	Breeding avocet Breeding bittern Breeding little tern Breeding marsh harrier Breeding shoveler Wintering shoveler Breeding teal Breeding gadwall Wintering gadwall Wintering hen harrier Wintering white fronted goose			
	Minsmere-Walberswick Heaths and Marshes SAC	Perennial vegetation of stony banks			
	Minsmere-Walberswick Ramsar	Criterion 1 (mosaic of marine, freshwater, marshland and associated habitats) Criterion 2 (supports nine nationally scarce plants and at least 26 red data book invertebrates) Criterion 2 (an important assemblage of rare breeding birds associated with marshland and reedbeds)			
Alteration of local hydrology and hydrogeology	Alde-Ore and Butley Estuaries SAC	Estuaries Mudflats and sandflats not covered by seawater at low tide Atlantic salt meadows	NE [RR-0878] raised no concerns during the Examination regarding the Applicant's conclusion of no AEoI of Dew's Pond SAC. NE [RR-0878] agreed that *"…subject to the rigorous implementation of the mitigation measures specified within the Drainage Strategy and Code of Construction Practice"* the Project is unlikely to result in hydrological impacts on the remaining sites. NE did not raise a particular concern with regards to in-combination effects relating to alteration of local hydrology and hydrogeology and did not dispute the	The Secretary of State is satisfied that subject to the implementation of the secured mitigation measures an AEoI of protected sites from the Project alone can be excluded.	The Secretary of State is satisfied that subject to the implementation of the secured mitigation measures an AEoI of protected sites from the Project in combination can be excluded.
	Alde-Ore Estuary SPA	Breeding little tern Breeding sandwich tern Breeding lesser black-backed gull Wintering avocet Wintering redshank Wintering ruff			
	Alde-Ore Estuary Ramsar	Criterion 2 (nationally scarce plant species and British Red Data Book invertebrates)			

Impact Pathway C = construction; O = operations and maintenance; D = decommissioning	**Protected Site**	**Qualifying Feature**	**Views of Interested Parties**	**Secretary of State conclusions Alone**	**Secretary of State conclusions In-combination**
		Criterion 3 (the site supports a notable assemblage of breeding and wintering wetland birds) Criterion 6 (species/ populations occurring at levels of international importance)	Applicant's conclusion of no AEoI. Additionally, no IPs raised plans or projects that could act in combination with the Project to affect the protected sites considered for this potential impact pathway. At Deadline 10, NE [REP10-097] confirmed that the mitigation measures in place through the CoCP [REP10-072] are sufficient to ensure no AEoI of all protected sites and no adverse effect to the Minsmere-Walberswick Heaths and Marshes SSSI via groundwater and surface water impacts (which could in turn result in impacts to part of the Minsmere-Walberswick Ramsar). The ExA was satisfied [ER 6.4.170] that subject to implementation of mitigation measures as secured through the DCO, Drainage Strategy, CoCP and TEMMP, there would be no AEoI of protected sites from the Project, either alone or in combination.		
	Dew's Pond SAC	Great crested newt			
	Minsmere-Walberswick SPA	Breeding avocet Breeding bittern Breeding little tern Breeding marsh harrier Breeding shoveler Wintering shoveler Breeding teal Breeding gadwall Wintering gadwall. Wintering hen harrier Wintering white fronted goose			
	Minsmere-Walberswick Heaths and Marshes SAC	Perennial vegetation of stony banks			
	Minsmere-Walberswick Ramsar	Criterion 1 (mosaic of marine, freshwater, marshland and associated habitats) Criterion 2 (supports nine nationally scarce plants and at least 26 red data book invertebrates) Criterion 2 (an important assemblage of rare breeding birds associated with marshland and reedbeds)			
	Stour and Orwell Estuaries SPA	Breeding avocet Pintail (wintering) Dark-bellied Brent goose (wintering) Dunlin (wintering) Knot (wintering) Black-tailed godwit (wintering) Grey plover (wintering) Redshank (wintering) Assemblage qualification: a wetland of international importance Assemblage qualification: waterbird assemblage			
	Stour and Orwell Estuaries Ramsar	Ramsar Criterion 5 assemblages of international importance: waterfowl			

Impact Pathway C = construction; O = operations and maintenance; D = decommissioning	**Protected Site**	**Qualifying Feature**	**Views of Interested Parties**	**Secretary of State conclusions Alone**	**Secretary of State conclusions In-combination**
		Ramsar Criterion 6 species/ populations occurring at levels of international importance			
Changes in air quality	Alde-Ore and Butley Estuaries SAC	Estuaries Mudflats and sandflats not covered by seawater at low tide Atlantic salt meadows	The ExA [ER 6.4.187] was content that there would be no AEoI of the qualifying features of Alde-Ore and Butley Estuaries SAC, Alde-Ore Estuaries Ramsar and Alde-Ore Estuary SPA as a result of changes in air quality during construction, alone or in combination with other plans or projects. At the close of Examination this conclusion was not disputed by NE. The ExA [ER 6.4.203] considered that local plans are included in the air quality assessment and the ExA is not aware of any other relevant plans or projects that have not been considered in terms of potential in-combination effects. The ExA [ER 6.4.186] considered the distance of the Project from the qualifying features, the extent of the likely impacts, and the proposed dust mitigation measures presented in the Outline Dust Management Plan and CoCP. Based on this information, along with the comments of NE, the ExA considered that the measures would mitigate the effects of construction. Based on this, the ExA [ER 6.4.186] concluded no AEoI during construction, operation and decommissioning for the qualifying features of the Orfordness to Shingle Street SAC, either alone or in combination with other plans or projects. This conclusion was not disputed by NE.	The Secretary of State is satisfied that subject to the implementation of the mitigation measures secured in the CoCP and the DCO an AEoI from the Project alone can be excluded.	The Secretary of State is satisfied that subject to the implementation of the mitigation measures secured in the CoCP and the DCO an AEoI from the Project in-combination can be excluded.
	Alde-Ore Estuary Ramsar	Criterion 2 (nationally scarce plant species and British Red Data Book invertebrates)			
	Orfordness to Shingle Street SAC	Coastal lagoons Annual vegetation of drift lines Perennial vegetation of stony banks			
Disturbance due to increase in recreational pressure	Alde-Ore Estuary SPA	Breeding avocet Breeding marsh harrier Breeding little tern Breeding sandwich tern Breeding lesser black-backed gull Over winter avocet Over winter redshank Over winter ruff	NE confirmed at Deadline 10 [REP10-200] that the proposed suite of mitigation measures (including the Informal Recreation Strategy and the two MMPs) are sufficient to avoid an AEoI of any protected site from increased recreational disturbance associated with the Project, either alone or in-combination with other plans or projects. The RSPB/SWT [REP10-204] confirmed that if refinements were made to the MMPs in relation to little tern in Deadline 10 submissions, it would be content with the mitigation proposed. The RSPB/SWT did not have the opportunity to comment on the Deadline 10	The Secretary of State is satisfied that subject to the implementation of the secured mitigation measures an AEoI from the Project alone can be excluded.	The Secretary of State is satisfied that subject to the implementation of the secured mitigation measures an AEoI from the Project in-combination can be excluded.
	Alde-Ore Estuary Ramsar	Criterion 2 (nationally scare plant species and British Red Data Book invertebrates) Criterion 3 (breeding wintering wetland bird assemblages)			

Impact Pathway C = construction; O = operations and maintenance; D = decommissioning	**Protected Site**	**Qualifying Feature**	**Views of Interested Parties**	**Secretary of State conclusions Alone**	**Secretary of State conclusions In-combination**
		Criterion 6 (species/ populations occurring at levels of international importance)	MMPs. However, the Minsmere MMP states that there is limited potential for direct disturbance due to the relative inaccessibility of the wetland habitats used by these birds and predicted minor changes in visitor numbers and existing management practices. The NT [REP10-197] stated that the proposed visitor and ecological monitoring proposals in the Deadline 8 version of the Minsmere MMP appear to be adequate to identify the likely potential effects of increased recreational pressure on the sites. The NT also made some comments on the content of the monitoring proposals, but due to timing was unable to comment on the Deadline 10 MMPs. The ExA welcomed the provision of the MMPs by the Applicant and that revisions submitted during Examination took on board comments of IPs. The ExA acknowledged that a number of IPs had outstanding comments on the content of the MMPs, however it considers these to be minor in nature. The ExA was content that the DoO secures the following measures which are considered suitable to manage and reduce the effects from recreational pressure on qualifying features: • Monitoring to be carried out in accordance with the MMPs; • Payment of the European Sites Access Contingency Fund to fund the Minsmere and Sandlings (North) Initial Mitigation Measures in accordance with the MMP for Minsmere–Walberswick and Sandlings (North) and any further mitigation measures required in accordance with the MMPs; • Payment of the RAMS Contribution (towards mitigating the In-combination recreational disturbance impacts); and • Provision for applying for any planning permission required to permit the Aldhurst Farm enhancement works, which are located beyond the Order limits. The ExA concluded [ER 6.4.239 et seq.] that, with the proposed mitigation measures in place, the Project would not result in an AEoI of any protected sites		
	Benacre to Easton Bavents SPA	Breeding bittern Breeding tittle tern Breeding marsh harrier			
	Minsmere-Walberswick Heaths and Marshes SAC	Annual vegetation of drift lines European dry heaths Perennial vegetation of stony banks			
	Minsmere-Walberswick SPA	Breeding avocet Breeding bittern Breeding little tern Breeding marsh harrier Breeding nightjar Breeding shoveler Wintering shoveler Breeding teal Breeding gadwall Wintering gadwall Wintering hen harrier Wintering white fronted goose			
	Minsmere-Walberswick Ramsar	Criterion 1 (mosaic of marine, freshwater, marshland and associated habitats) Criterion 2 (supports nine nationally scarce plants and at least 26 red data book invertebrates) Criterion 2 (an important assemblage of rare breeding birds associated with marshland and reedbeds)			
	Orfordness to Shingle Street SAC	Annual vegetation of drift lines Perennial vegetation of stony banks			
	Sandlings SPA	Breeding nightjar Breeding woodlark			

Impact Pathway C = construction; O = operations and maintenance; D = decommissioning	**Protected Site**	**Qualifying Feature**	**Views of Interested Parties**	**Secretary of State conclusions Alone**	**Secretary of State conclusions In-combination**
			screened in, either alone or in-combination with other plans or projects, as a result of recreational pressure/ disturbance.		
Physical interaction between birds and project infrastructure - pylons and power lines	Alde-Ore Estuary SPA	All features screened into AA	The ExA considered [ER 6.4.249] the risk of collision associated with pylons to be low on the basis of the information submitted to the Examination by the Applicant and NGET, with regards to the limited extent and nature of the powerlines, the likely movement of bird species across the Project, and the absence of existing records of bird collisions in the area of the existing power lines and power station at Sizewell. The ExA believed [ER 6.4.250] the wording in the TEMMP with respect to the proposed methodology, combined with the securing of the EWG membership are sufficient to secure that the monitoring and mitigation would be available and can be implemented in the event that effects are identified. The ExA [ER 6.4.251] was satisfied that this would mitigate any AEoI on qualifying bird features of the Alde-Ore Estuary SPA and Minsmere-Walberswick SPA resulting from collision risk between birds and project infrastructure can be excluded, either alone or in combination. In response to the Secretary of State's fourth letter, NE welcomed the Applicant's commitment to monthly carcass surveys under overhead lines between new pylons which will be shared with the EWG, as secured in the TEMMP. On this basis, NE advised that an AEoI of the Minsmere-Walberswick SPA through this impact pathway could be ruled out.	The Secretary of State is satisfied that, subject to the securing of mitigation and monitoring measures in the TEMMP, there will be no AEoI of qualifying features of the Alde-Ore Estuary SPA and Minsmere-Walberswick SPA due to physical interaction between birds and project infrastructure, resulting from the Project alone.	The Secretary of State is satisfied that, subject to the securing of mitigation and monitoring measures in the TEMMP, there will be no AEoI of qualifying features of the Alde-Ore Estuary SPA and Minsmere-Walberswick SPA due to physical interaction between birds and project infrastructure, resulting from the Project in combination with other plans and projects.
	Minsmere-Walberswick SPA	All features screened into AA			
Physical interaction between species and project infrastructure	Humber Estuary SAC	Grey seal	NE [REP7-294] agreed with the Applicant's conclusion of no AEoI of the Humber Estuary SAC due to entrainment of prey species as a result of water abstraction. This was noted by the ExA. NE [RR-0878] initially raised concerns about the potential for some built elements of the Project to present a physical interaction (collision) risk to mobile species. However, NE [REP8-094] confirmed that it had no further concerns about physical interaction between project infrastructure and marine mammals having reviewed the information submitted by the Applicant.	The Secretary of State is satisfied that there will be no AEoI of the grey seal feature of the Humber Estuary SAC due to physical interaction between species and project infrastructure, resulting from the Project alone.	The Secretary of State is satisfied that there will be no AEoI of the grey seal feature of the Humber Estuary SAC due to physical interaction between species and project infrastructure, resulting from the Project in combination with other plans and projects.

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			The ExA was of the view [ER 6.4.397] that the available information was sufficient to demonstrate that there would be no AEoI of the grey seal from the Humber Estuary SAC, as a result of physical interaction between species and project infrastructure.		
	Southern North Sea SAC	Harbour porpoise	NE [REP7-294] advised that intake tunnels would result in long term/permanent loss of foraging area within the Southern North Sea SAC during the operational phase of the Project, resulting in harbour porpoise having to move out of the area to feed. However, NE [REP7-294] later confirmed that its concerns were resolved in light of the updated assessments of prey species impingement and demonstration that any impacts can be adequately mitigated. This was noted by the ExA. NE [RR-0878] initially highlighted the risk of collision for mobile species. However, it subsequently confirmed [REP8-298n] that updates to the MMMP, a more refined idea of construction plans and a meeting with the Applicant resolved its concerns. NE [REP10-097] did not dispute the Applicant's conclusion of no AEoI arising from the physical interaction between harbour porpoise and vessels. The MMO [REP10-195] also did not dispute the Applicant's conclusion. The ExA was of the view [ER 6.4.781] that there would be no AEoI of the harbour porpoise feature of the Southern North Sea SAC, as a result of collision with marine vessels.	The Secretary of State is satisfied that there will be no AEoI of the harbour porpoise feature of the Southern North Sea SAC due to physical interaction between species and project infrastructure, resulting from the Project alone.	The Secretary of State is satisfied that there will be no AEoI of the harbour porpoise feature of the Southern North Sea SAC due to physical interaction between species and project infrastructure, resulting from the Project in combination with other plans and projects.
	The Wash and North Norfolk Coast SAC	Harbour seal	NE [RR-0878] initially raised concerns about the potential for some build elements of the Project to present a physical interaction risk to mobile species. However, NE [REP8-094] confirmed that it had no further concerns about physical interaction between project infrastructure and marine mammals having reviews the information submitted by the Applicant. The MMO [REP10-195] did not dispute the Applicant's conclusion of no AEoI in respect of physical interaction between species and infrastructure. The ExA was of the view [ER 6.4.832] that the available information provided was sufficient to demonstrate that there would be no AEoI for harbour seal of The Wash and North Norfolk Coast SAC.	The Secretary of State is satisfied that there will be no AEoI of the harbour seal feature of The Wash and North Norfolk Coast SAC due to physical interaction between species and project infrastructure, resulting from the Project alone.	The Secretary of State is satisfied that there will be no AEoI of the harbour seal feature of The Wash and North Norfolk Coast SAC due to physical interaction between species and project infrastructure, resulting from the Project in combination with other plans or projects.

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Physical interactions with project infrastructure (entrapment of prey species)	Benacre to Easton Bavents SPA	Bittern	In the draft FIEMP [REP10-138] the Applicant proposed the funding of two eel passes at Snape Maltings and Blythford Bridge. This is to ensure compliance with the Eel Regulations 2009 and the Water Framework Directive. Schedule 11 of the DoO secures the funding of these passes to be constructed by the EA. A Deed of Covenant on this matter was also signed between the Applicant and EA. The EA confirmed [REP10-193] that the completion of these agreements resolved its concerns on these matters. As noted in Section 5.11.2, TASC raised concerns that there had been an underestimation of the number of eel that would be entrained and killed during the operation of the Project [REP2-481h]. TASC also raised concerns that the glass eel sampling was insufficient [REP7-247]. The MMO [REP2-140] supported the Applicant's findings and considered there was a good level of confidence that actual impacts to all fish species (including eels) would not be significant. NE [REP8-298h] confirmed it had no further concern regarding breeding bittern and agreed to a conclusion of no AEoI to the qualifying features at Benacre to Easton Bavents SPA due to eel impingement. The ExA considered [ER 6.4.356] that on the basis of the evidence provided, a likely low number of eels would be entrapped by the Project. The ExA was of the view that this would result in no negative effect on the numbers of glass eels or elvers migrating through the Greater Sizewell Bay such that it would have no discernible adverse effect on the bittern qualifying feature of the SPA.	The Secretary of State is satisfied that, with consideration of the measures secured in the LVSE and FRR, there will be no AEoI of the bittern feature of Benacre and Easton Bavents SPA due to physical interaction with project infrastructure (entrapment of prey species), resulting from the Project alone.	The Secretary of State is satisfied that, with consideration of the measures secured in the LVSE and FRR, there will be no AEoI of the bittern feature of Benacre and Easton Bavents SPA due to physical interaction with project infrastructure (entrapment of prey species), resulting from the Project in combination with other plans or projects.
	Humber Estuary SAC	Grey seal	NE [REP7-294] agreed with the Applicant's conclusion that the impacts of entrapment of prey species would not be of a magnitude that would have an AEoI of grey seal of the Humber Estuary SAC. The ExA was [ER 6.4.415] satisfied that, based on the evidence presented regarding prey depletion and the consequential effect on grey seal of the Humber Estuary SAC, and considering measures secured (in	The Secretary of State is satisfied that, with consideration of the measures secured in the LVSE and FRR, there will be no AEoI of the grey seal feature of Humber Estuary SAC due to physical interaction with project	The Secretary of State is satisfied that, with consideration of the measures secured in the LVSE and FRR, there will be no AEoI of the grey seal feature of Humber Estuary SAC due to physical interaction with

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			the FRR and LVSE), the impacts would not be of a magnitude that would have an AEoI of grey seal of the Humber Estuary SAC.	infrastructure (entrapment of prey species), resulting from the Project alone.	project infrastructure (entrapment of prey species), resulting from the Project in combination with other plans or projects.
	Minsmere-Walberswick SPA and Ramsar	Bittern	NE [REP8-298h] confirmed it had no further concern regarding breeding bittern and agreed to a conclusion of no AEoI to the qualifying features at Minsmere-Walberswick SPA due to eel impingement. The ExA considered [ER 6.4.644] that on the basis of the evidence provided, a likely low number of eels would be entrapped by the Project. The ExA was of the view that this would result in no negative effect on the numbers of glass eels or elvers migrating through the Greater Sizewell Bay such that it would have no discernible adverse effect on the bittern qualifying feature of the SPA.	The Secretary of State is satisfied that, with consideration of the measures secured in the LVSE and FRR, there will be no AEoI of the bittern feature of Minsmere-Walberswick SPA and Ramsar due to physical interaction with project infrastructure (entrapment of prey species), resulting from the Project alone.	The Secretary of State is satisfied that, with consideration of the measures secured in the LVSE and FRR, there will be no AEoI of the bittern feature of Minsmere-Walberswick SPA and Ramsar due to physical interaction with project infrastructure (entrapment of prey species), resulting from the Project in combination with other plans or projects.
Direct habitat loss and fragmentation	Sandlings SPA	Breeding nightjar Breeding woodlark	Noting the apparent absence of the qualifying features from the affected areas, the ExA [ER 6.4.727] was satisfied that there would be no AEoI of the Sandlings SPA from direct habitat loss, either alone or in-combination.	The Secretary of State is satisfied that there will be no AEoI of the Sandlings SPA, Southern North Sea SAC and the Minsmere-Walberswick SPA and Ramsar due to direct habitat loss and fragmentation, resulting from the Project alone.	The Secretary of State is satisfied that there will be no AEoI of the Sandlings SPA, Southern North Sea SAC and the Minsmere-Walberswick SPA and Ramsar due to direct habitat loss and fragmentation, resulting from the Project in combination with other plans or projects.
	Southern North Sea SAC	Harbour porpoise	NE initially advised that long term/ permanent loss of foraging area within the SAC for the operational phase of the Project (from intake tunnels) would result in harbour porpoise having to move out of the area to feed and advised that this would constitute and AEoI and that compensation for this loss of area should be proposed. By close of Examination, NE [REP8-298h] [REP10-199] [REP10-097] confirmed that it no longer considered compensation was required, in light of the updated assessment of prey species impingement provided by the Applicant, and that it agreed with the Applicants conclusion of no AEoI. Having considered the evidence before the Examination, the position of IPs, and the implications of the Project on the SAC in light of its conservation objectives, the ExA [ER 6.4.756] was of the view that there would be no AEoI of the harbour porpoise due to direct habitat loss or fragmentation.		

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	Minsmere-Walberswick SPA	Breeding marsh harrier Breeding nightjar Wintering gadwall Wintering hen harrier Wintering shoveler	NE and the RSPB/SWT had outstanding concerns regarding the survey work undertaken for water birds, and regarding the impact from permanent land take on Sizewell Marshes SSSI. However, at Deadline 10, NE (in its SoCG) and RSPB/SWT [REP10-111] did not dispute the Applicants conclusions of no AEoI for the Minsmere-Walberswick SPA and Ramsar. The ExA was of the view [ER 6.4.640] that the conservation objectives of the SPA in relation to marsh harrier and hen harrier would not be undermined, because the loss of 5.74ha of wetland foraging habitat within the Sizewell Marshes SSSI is outwith the SPA and Ramsar and based on survey evidence is less heavily used by these species than other areas in the vicinity of the SPA and Ramsar (such as the Minsmere Levels South). Baseline surveys demonstrated no evidence of breeding nightjar within or close to the MDS. The ExA [ER 6.4.642 et seq.] was satisfied that there would be no AEoI for all features for the Minsmere-Walberswick SPA and Ramsar from direct habitat loss and fragmentation of functionally linked land ("FLL") for all phases of the Project.		
	Minsmere-Walberswick Ramsar	Ramsar Criterion 2 An important assemblage of rare breeding birds associated with marshland and reedbeds			
Disturbance effects on species populations (noise, light and visual)	Deben Estuary SPA	Wintering avocet Wintering dark-bellied Brent goose	The Applicant considered that the distance of the Project from the Deben Estuary SPA and Ramsar meant disturbance of the qualifying features would be highly unlikely. It also referred to the CoCP which states that site lighting must be installed in accordance with the Light Management Plan [REP10-033]. Both would be certified document under Schedule 23 of the DCO. The Applicant's conclusion of no AEoI was not disputed by IPs, including NE, during Examination. The Applicant's assessment concluded that with the adoption of the proposed mitigation measures relating to lighting, there is no potential for an AEoI of the Deben Estuary SPA and Ramsar in combination with other plans or projects. It also stated that the potential for disturbance from operation and maintenance activities for the East Anglia ONE Offshore Wind Farm "*… will be considerably lower"* than that of the completed construction of the cable route. The Applicant's conclusions were not disputed by NE during the Examination, and the sites were not raised	The Secretary of State is satisfied that, subject to measures secured in the CoCP, there will be no AEoI of the Deben Estuary SPA and Ramsar due to disturbance effects on species populations, resulting from the Project alone.	The Secretary of State is satisfied that, subject to measures secured in the CoCP, there will be no AEoI of the Deben Estuary SPA and Ramsar due to disturbance effects on species populations, resulting from the Project in combination with other plans or projects.
	Deben Estuary Ramsar	Ramsar Criterion 6 species / populations occurring at levels of international importance: dark-bellied Brent goose			

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			by NE as sites of concern in relation to in combination and cumulative effects [RR-0878] [REP10-097].		
	Minsmere-Walberswick SPA and Ramsar	Wintering / non-breeding white-fronted goose	NE [REP8-298l] stated that the acoustic surveys provided by the Applicant confirm that during the survey year in which white-fronted goose numbers nationally were higher than normal, for the majority of nights no geese were detected and there was no regular movement to suggest the presence of a roost. The SoCG between the Applicant and NE [REP10-097] confirmed that there are no matters outstanding in relation to white-fronted goose. The RSPB/SWT confirmed its concerns remained and stated that the Applicant's conclusions are based on one year of data and are not in agreement with their local observations over a period of years. It considered the Applicant's argument that birds using the FLL may be functionally linked to the SPA rather than being from the designated population represents a gap in the assessment. It also highlighted concerns for noise disturbance at night [REP10-111]. The ExA noted the concerns of the RSPB/SWT with regards to movements but was of the view that the evidence provided to the Examination does not support the presence of a regular local roost of white-fronted goose that could be disturbed by the Project. The ExA agreed with the Applicant's conclusion of no AEoI of the white-fronted goose feature of the Minsmere-Walberswick SPA and Ramsar due to disturbance from the Project.	The Secretary of State is satisfied that there will be no AEoI of the wintering / non-breeding white-fronted goose feature of the Minsmere-Walberswick SPA and Ramsar due to disturbance effects on species populations, resulting from the Project alone.	The Secretary of State is satisfied that there will be no AEoI of the wintering / non-breeding white-fronted goose feature of the Minsmere-Walberswick SPA and Ramsar due to disturbance effects on species populations, resulting from the Project in combination with other plans or projects.
		Breeding teal	The RSPB/SWT [REP10-204] stated it could not exclude an AEoI due to the potential of the Project to affect the ability of conservation measures to restore the feature. NE did not raise concerns during Examination with regards to disturbance to breeding teal or an AEoI as a result of impeding the conservation objectives being achieved. The ExA was of the view [ER 6.4.615] that there would be no AEoI and the Project would not prevent the target to restore the population size.	The Secretary of State is satisfied that there will be no AEoI of the breeding teal feature of the Minsmere-Walberswick SPA and Ramsar due to disturbance effects on species populations, resulting from the Project alone.	The Secretary of State is satisfied that there will be no AEoI of the breeding teal feature of the Minsmere-Walberswick SPA and Ramsar due to disturbance effects on species populations, resulting from the Project in combination with other plans or projects.

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		Breeding avocet Breeding little tern Breeding nightjar Wintering hen harrier Ramsar Criterion 2	NE's RR [RR-0878] stated that an AEoI from noise, light and visual disturbance could not be excluded for avocet, little tern, nightjar, hen harrier and Ramsar Criterion 2. However, NE did not expand further on its concerns for these qualifying features in subsequent representations. The ExA considered the evidence provided by the Examination, including information in the Shadow HRA (Sections 8.8 and 8.9), the Shadow HRA Addendum (Sections 8.3, 8.5, 8.7) and the Shadow HRA Third Addendum (Section 8.2), and was of the view that an AEoI could be excluded for avocet, little tern, nightjar, hen harrier and Ramsar Criterion 2 as a result of noise, light and visual disturbance from the Project.	The Secretary of State is satisfied that there will be no AEoI of the avocet, little tern, nightjar, hen harrier and Ramsar Criterion 2 features of the Minsmere-Walberswick SPA and Ramsar due to disturbance effects on species populations, resulting from the Project alone.	The Secretary of State is satisfied that there will be no AEoI of the avocet, little tern, nightjar, hen harrier and Ramsar Criterion 2 features of the Minsmere-Walberswick SPA and Ramsar due to disturbance effects on species populations, resulting from the Project in combination with other plans or projects.
	Outer Thames Estuary SPA	Wintering / passage red-throated diver Breeding little tern Breeding common tern	NE's [ER 6.4.699] comments in relation to disturbance to the Outer Thames Estuary SPA appeared to relate to the noise and disturbance associated with vessel movements, for which it provided agreement with the Applicant's conclusion of no AEoI to the Outer Thames Estuary SPA, subject to the secured measures. The RSPB/SWT [ER 6.4.700] did not provide contrary evidence regarding the sensitivity of red-throated diver, nor any persuasive arguments that a significant proportion of the Outer Thames Estuary population would be disturbed / displaced from light from the BLF. The ExA recommended [ER 6.4.701] that, when taking into account the measures proposed in the Lighting Management Plan, an AEoI could be excluded. With regards to potential in-combination impacts, the Applicant's assessment [APP-145] concluded that none of the identified plans or projects have potential to cause an in-combination AEoI due to disturbance effects to species populations of the Outer Thames Estuary SPA with the Project alone. The Applicant's assessment [APP-145] concluded that none of the identified plans or projects have the potential to cause an in-combination AEoI due to disturbance effects to species populations of the Outer Thames Estuary SPA together with the Project. The ExA noted that NE [RR-0878] [REP10-097] have	The Secretary of State is satisfied that, subject to the measures proposed in the Lighting Management Plan, there will be no AEoI of the wintering red-throated diver feature of the Outer Thames Estuary SPA due to disturbance effects on species populations, resulting from the Project alone.	The Secretary of State is satisfied that, subject to the measures proposed in the Lighting Management Plan, there will be no AEoI of the wintering red-throated diver feature of the Outer Thames Estuary SPA due to disturbance effects on species populations, resulting from the Project in combination with other plans or projects.

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			outstanding concerns with regards to cumulative/in-combination effects for the site. The RSPB/SWT [REP10-111] [REP10-204] also had outstanding concerns with regards to the Applicant's conclusion in relation to direct disturbance from light and cumulative/inter-project effects. The ExA recommended that the Secretary of State satisfy himself on the outstanding matters before a conclusion on in-combination effects is determined.		
	Sandlings SPA	Breeding nightjar Breeding woodlark	NE [RR-0878] included Sandlings SPA in its list of sites of concern with regards to light visual and noise disturbance at the MDS. However, it did not expand on the reasons for its position, nor elaborate on its concerns in subsequent representations. The RSPB/SWT [REP2-506] considered that a lack of justification had been provided by the Applicant to conclude no AEoI. It stated that the assessment failed to consider the potential for combined effects of recreational pressure and visual disturbance during construction in the north-western part of the site. The Applicant [REP3-042] stated that only the most northern block of the site is in close proximity to the MDS, which is estimated to hold 3% and 9% of the SPA breeding nightjar and woodlark populations respectively. It stated that noise levels are predicted to be below threshold levels throughout the entire area of the Sandlings SPA but acknowledged that the visual impact zone encroaches onto a small area in the northwest corner of the northern block of the SPA. It considered there to be little potential for construction related noise and visual disturbance. The RSPB/SWT [REP5-166] requested further detail regarding the numbers of woodlark and nightjar that would be affected. However, their final SoCG with the Applicant [REP10-111] did not address the matter of noise, light and visual disturbance to the SPA. The ExA was content that any disturbance from the Project would not prevent the population and distribution of the qualifying features from being	The Secretary of State is satisfied that there will be no AEoI of the breeding nightjar and woodlark features of the Sandlings SPA due to disturbance effects on species populations, resulting from the Project alone.	The Secretary of State is satisfied that there will be no AEoI of the breeding nightjar and woodlark features of the Sandlings SPA due to disturbance effects on species populations, resulting from the Project in combination with other plans or projects.

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			maintained on the basis of the low levels of noise predicted and small area of potential visual disturbance. This matter was stated as agreed between the Applicant and NE in the SoCG [REP10-097]. The ExA was of the view that there would be no AEoI to the woodlark and nightjar qualifying features of the Sandlings SPA arising from noise, light and visual disturbance from the Project. With regards to potential in combination impacts, the Applicant predicted no potential for an AEoI in combination with other plans or projects. NE [RR-0878] had outstanding concerns with regard to in combination effect, however, the ExA noted that these related to in combination effects with other consents required for the Project and where NE considered there to be outstanding concerns regarding effects from the Project alone. The ExA noted that NE confirmed its agreement with the Applicant's conclusion of no AEoI of the Sandlings SPA as a result of potential effects of disturbance on species populations. The ExA agreed [ER 6.4.738] with the Applicant that there would be no AEoI in combination with the plans and projects identified.		
	Stour and Orwell Estuaries SPA	Breeding avocet Pintail (wintering) Dark-bellied Brent goose (wintering) Dunlin (wintering) Knot (wintering) Black-tailed godwit (wintering) Grey plover (wintering) Redshank (wintering) Assemblage qualification: a wetland of international importance Assemblage qualification: waterbird assemblage	The Applicant concluded no AEoI of all qualifying features of the Stour and Orwell Estuaries SPA and Ramsar arising from disturbance. It considered the distance of the Project from the SPA and Ramsar meant that disturbance of qualifying features would be highly unlikely. It also referred to the CoCP which states that site lighting must be installed in accordance with the Light Management Plan [REP10-033]. Both would be certified document under Schedule 23 of the DCO. The conclusion of no AEoI was not disputed by IPs, including NE, during Examination. The ExA was satisfied [ER 6.4.812] that, subject to the implementation of the mitigation measures as secured, there would be no AEoI of the qualifying features of the Stour and Orwell Estuary SPA and Ramsar from the disturbance of species populations as a result of the Project, either alone or in combination.	The Secretary of State is satisfied that, with consideration of the measures secured in the CoCP, there will be no AEoI of the Stour and Orwell Estuaries SPA and Ramsar due to disturbance effects on species populations, resulting from the Project alone.	The Secretary of State is satisfied that, with consideration of the measures secured in the CoCP, there will be no AEoI of the Stour and Orwell Estuaries SPA and Ramsar due to disturbance effects on species populations, resulting from the Project in combination with other plans or projects.
	Stour and Orwell Estuaries Ramsar	Ramsar Criterion 5 assemblages of international importance: waterfowl Ramsar Criterion 6 species/ populations occurring at levels of international importance			

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	The Wash and North Norfolk Coast SAC	Harbour seal	The Applicant's conclusion of no AEoI relied upon a MMMP to mitigate potential underwater noise impacts. The ExA was satisfied the draft MMMP [REP10-028] and Schedule 20 of the DML, Part 3, Condition 36(3)(b) of the DCO secures measures to mitigate injurious effects from underwater noise during piling operations. It acknowledged that underwater noise from piling would be temporary and intermittent, and that harbour seal numbers in and around the Project are low. Taking into account the proposed mitigation measures secured in the draft MMMP, the ExA was content [ER 6.4.823] that an AEoI can be excluded. With regards to potential in combination impacts, the Applicant concluded there was no potential for an AEoI of harbour seal of The Wash and North Norfolk Coast SAC in combination with other plans or projects. NE [RR-0878] had outstanding concerns with regard to in combination effect, however, the ExA noted that these related to in combination effects with other consents required for the Project and where NE considered there to be outstanding concerns regarding effects from the Project alone. The ExA noted [ER 6.4.837] that NE confirmed its agreement with the Applicant's conclusion of no AEoI to the harbour seal qualifying feature of The Wash and North Norfolk Coast SAC for all potential impact pathways. The ExA concluded [ER 6.4.838] that any cumulative/in-combination effect with subsequent consents would not result in an AEoI to The Wash and North Norfolk Coast SAC.	The Secretary of State is satisfied that, with consideration of measures secured in the DML and DCO, there will be no AEoI of the harbour seal feature of The Wash and North Norfolk Coast SAC due to disturbance effects on species populations, resulting from the Project alone.	The Secretary of State is satisfied that, with consideration of measures secured in the DML and DCO, there will be no AEoI of the harbour seal feature of The Wash and North Norfolk Coast SAC due to disturbance effects on species populations, resulting from the Project in combination with other plans or projects.
Disturbance effects on species populations (indirect impacts on fish as a prey species from noise and vibration)	Outer Thames Estuary SPA	Wintering / passage red-throated diver	The RSPB/SWT [REP2-506] disagreed with the Applicant's conclusion of no AEoI. It disagreed that the affected north-west corner of the SPA is of lower importance and noted that the construction is expected to take place over two winters. The Applicant explained that red-throated diver densities are lower in the north-west block of the Outer Thames Estuary SPA. This was based on data and conclusions from NE commissioned digital aerial surveys. It also stated that the largest areas within which the effects of underwater noise on fish represent a small percentage (<1%) of the total SPA area.	The Secretary of State is satisfied that there will be no AEoI of the red-throated diver feature of the Outer Thames Estuary SPA due to indirect disturbance impacts on fish as a prey species from noise and vibration, resulting from the Project alone.	The Secretary of State is satisfied that there will be no AEoI of the red-throated diver feature of the Outer Thames Estuary SPA due to indirect impacts on fish as a prey species from noise and vibration, resulting from the Project in combination with other plans or projects.

Impact Pathway C = construction; O = operations and maintenance; D = decommissioning	**Protected Site**	**Qualifying Feature**	**Views of Interested Parties**	**Secretary of State conclusions Alone**	**Secretary of State conclusions In-combination**
			The RSPB/SWT provided no further evidence to substantiate its concerns. No concerns were raised by NE on this matter. The ExA recommended [ER 6.4.704] that an AEoI of the red-throated diver feature of the Outer Thames Estuary SPA could be excluded for the Project alone. The Applicant's assessment [APP-145] concluded that none of the identified plans or projects have the potential to cause an in-combination AEoI due to disturbance effects to species populations of the Outer Thames Estuary SPA together with the Project. The ExA noted that NE [RR-0878] [REP10-097] have outstanding concerns with regards to cumulative/in-combination effects for the site. The RSPB/SWT [REP10-111] [REP10-204] also had outstanding concerns with regards to the Applicant's conclusion in relation to indirect disturbance to prey species and cumulative and cumulative/inter-project effects. The ExA recommended that the Secretary of State satisfy himself on the outstanding matters before a conclusion on in-combination effects is determined.		
Disturbance effects on species populations (direct disturbance from vessels)	Outer Thames Estuary SPA	Wintering / passage red-throated diver	Initially NE, the MMO and RSPB/SWT did not support the Applicant's conclusion of no AEoI due to insufficient evidence provided in support of it. The Applicant produced an Outline Vessel Management Plan, which outlined vessel movements and routes and provided the strategy for planning vessel movements, as well as monitoring of red-throated divers. NE [REP10-097] considered that the Applicant had made sufficient alterations to the Outline Vessel Management Plan and agreed there would be no AEoI of over wintering red-throated diver of the Outer Thames Estuary SPA. The SoCG between the Applicant and the RSPB/SWT [REP10-111] confirmed that their concerns had been resolved. The ExA recommended [ER 6.4.694] there would be no AEoI to red-throated diver of the Outer Thames Estuary SPA from vessel disturbance from the Project alone.	The Secretary of State is satisfied that, with consideration of the measures secured in the Outline Vessel Management Plan, there will be no AEoI of the red-throated diver feature of the Outer Thames Estuary SPA due to disturbance effects on species populations, resulting from the Project alone.	The Secretary of State is satisfied that, with consideration of the measures secured in the Outline Vessels Management Plan, there will be no AEoI of the red-throated diver feature of the Outer Thames Estuary SPA due to disturbance effects on species populations, resulting from the Project in combination with other plans or projects.

Impact Pathway C = construction; O = operations and maintenance; D = decommissioning	**Protected Site**	**Qualifying Feature**	**Views of Interested Parties**	**Secretary of State conclusions Alone**	**Secretary of State conclusions In-combination**
			The Applicant's assessment [APP-145] concluded that none of the identified plans or projects had the potential to cause an in-combination AEoI due to disturbance effects to species populations of the Outer Thames Estuary together with the Project. The RSPB/SWT [REP10-111] in its SoCG with the Applicant suggested that the Applicant's in-combination assessment is limited but also acknowledged that the Applicant provided mitigation for potential adverse effects from the Project alone. NE also confirmed its agreement [REP10-198] [REP10-199] [REP10-097] that there would be no AEoI of overwintering red-throated diver of the Outer Thames Estuary with the mitigation measures secured. The ExA was if the view [ER 6.4.694] that with the implementation of the proposed mitigation measures, there would be no AEoI from the Project.		
Disturbance effects on species population (underwater noise)	The Wash and North Norfolk Coast SAC	Harbour seal	The ExA was satisfied the draft MMMP and Schedule 20 (DML), Part 3, Condition 36(3)(b) of the DCO secures measures to mitigate injurious effects from underwater noise during piling operations. The ExA acknowledged [ER 6.4.823] that underwater noise from piling would be temporary and intermittent and that harbour seal numbers in and around the Project are low. The ExA was satisfied that the Applicant has demonstrated that there is unlikely to be any significant disturbance or barrier effects, or temporary auditory injury effects to foraging harbour seal. On this basis and taking into account the proposed mitigation measures secured in the draft MMMP, the ExA was content that an AEoI could be excluded.	The Secretary of State is satisfied that, with consideration of the measures secured in the DML and DCO, there will be no AEoI of the harbour seal feature of The Wash and North Norfolk Coast SAC due to disturbance effects on species' populations from underwater noise, resulting from the Project alone.	The Secretary of State is satisfied that, with consideration of the measures secured in the DML and DCO, there will be no AEoI of the harbour seal feature of The Wash and North Norfolk Coast SAC due to disturbance effects on species' populations from underwater noise, resulting from the Project in combination with other plans or projects.

For the reasons set out in Table 2, the Secretary of State is satisfied that an AEoI, from the effects of the Project alone or in-combination with other plans and projects, can be excluded for the following protected sites and qualifying features for all impact pathways:

- Alde-Ore and Butley Estuaries SAC: All features screened into AA;
- Alde-Ore Estuary Ramsar:
  - Ramsar Criterion 2 Nationally scarce plant species and British Red Data Book invertebrates.
- Benacre to Easton Bavents Lagoons SAC: All features screened into AA;
- Benacre to Easton Bavents SPA:
  - Breeding Bittern; and
  - Breeding Marsh Harrier.
- Deben Estuary SPA: All features screened into AA;
- Deben Estuary Ramsar: All features screened into AA;
- Dew's Pond SAC: All features screened into AA;
- Humber Estuary SAC:
  - Grey seal.
- Orfordness to Shingle Street SAC: All features screened into AA;
- Sandlings SPA: All features screened into AA;
- Stour and Orwell Estuaries SPA: All features screened into AA;
- Stour and Orwell Estuaries Ramsar: All features screened into AA; and
- The Wash and North Norfolk Coast SAC: All features screened into AA.

Additional consideration of protected sites and qualifying features for which there was not clear agreement at the end of Examination is presented in the following site-specific AA sections.

5.14 Appropriate Assessment: Alde-Ore and Butley Estuaries SAC and Ramsar

The Alde-Ore and Butley Estuaries SAC and Ramsar is located 6.5km from the MDS and 1.3km to the closest Associated Development Site (A1094-B1069 South of Knodishall).

The SAC covers an area of 1561.53ha, and is the only bar-built estuary in the UK with a shingle bar. This bar has been extending rapidly along the coast since 1530, pushing the mouth of the estuary progressively south-westwards. There is a range of littoral sediment and rock biotopes (the latter on sea defences) that are of high diversity and species richness for estuaries in eastern England. Water quality is excellent throughout. The area is relatively natural, being largely undeveloped and with very limited industrial activity. The estuary contains large areas of shallow water over subtidal sediments, and extensive mudflats and saltmarshes exposed at low water. Its diverse and species-rich intertidal sand and mudflat biotopes grade naturally along many lengths of the shore into vegetated or dynamic shingle habitat, saltmarsh, grassland and reedbed[69]. The adjacent shingle and lagoon habitats are designated separately as the Orfordness-Shingle Street SAC.

The Secretary of State has considered the potential for the Project to constitute an AEoI for each feature for which a significant effect is likely.

[69] http://publications.naturalengland.org.uk/publication/5301479954972672

The three qualifying features for which the SAC is designated, and which have all been carried forward to consideration of AEoI are:

- Estuaries;
- Mudflats and sandflats not covered by seawater at low tide; and
- Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*).

The Criterion relating to habitats[70] for which the Ramsar is designated, and which have been carried forward to consideration of AEoI is:

- Criterion 2 (the site supports a number of nationally scarce plant species and British Red Data Book invertebrates).

The Shadow HRA Report provided information for an AA for the following potential impact pathways:

- Alteration of coastal processes/sediment transport (construction, operation and decommissioning);
- Changes in water quality (marine environment) (operation);
- Changes in water quality (terrestrial environment) (construction);
- Alteration of hydrology and hydrogeology (construction, operation and decommissioning);
- Changes in air quality (construction, operation and decommissioning); and
- Disturbance effects from increase in recreational pressure (construction, operation and decommissioning).

As mentioned earlier in this HRA (see Table 1), submissions from NE indicated that the following additional impacts should be considered at the AA stage for all qualifying features screened in:

- Unintentional introduction or spread of INNS (construction).

5.14.1 All features: Alone

5.14.1.1 Changes to coastal processes

For the reasons set out in Table 2, in line with the recommendation of the ExA and NE, the Secretary of State is satisfied that, based upon the mitigation measures as secured under the DML and DCO an AEoI of the Alde-Ore and Butley Estuaries SAC and Ramsar from the effects of changes to coastal processes/ sediment transport on estuaries, mudflats and sandflats not covered by sea water at low tides, Atlantic salt meadows and Criterion 2 from the Project alone can be excluded.

5.14.1.2 Changes in water quality (marine environment)

For the reasons set out in Table 2, in line with the recommendations of the ExA, the Secretary of State is satisfied that, subject to the implementation of the mitigation measures as secured, an AEoI of the Alde-Ore and Butley Estuaries SAC and Ramsar from the effects of changes to water quality on estuaries, mudflats and sandflats not covered by sea water at low tides, Atlantic salt meadows and Criterion 2 from the Project alone can be excluded.

[70] Bird related Ramsar Criterion are discussed under the Alde-Ore Estuary SPA and Ramsar, section 5.15.

5.14.1.3 Changes in water quality (terrestrial environment)

For the reasons set out in Table 2, in line with the recommendations of the ExA, the Secretary of State is satisfied that, based upon the mitigation measures secured, an AEoI of the Alde-Ore and Butley Estuaries SAC and Ramsar from the effects of changes to water quality on estuaries, mudflats and sandflats not covered by sea water at low tides, Atlantic salt meadows and Criterion 2 from the Project alone can be excluded.

5.14.1.4 Alteration of local hydrology and hydrogeology

For the reasons set out in Table 2, in line with the recommendations of NE and the ExA, the Secretary of State is satisfied that, based upon the mitigation measures secured in the DCO, Drainage Strategy, CoCP and TEMMP, an AEoI of the qualifying features of the Alde-Ore Estuary SAC and Ramsar from the effects of alterations of local hydrology and hydrogeology from the Project alone can be excluded.

5.14.1.5 Changes in air quality

For the reasons set out in Table 2, in line with the recommendation of the ExA, the Secretary of State is satisfied that, subject to the implementation of the mitigation measures as secured, an AEoI of the Alde-Ore and Butley Estuaries SAC and Ramsar from the effects of changes to air quality on estuaries, mudflats and sandflats not covered by sea water at low tides, Atlantic salt meadows and Criterion 2 from the Project alone can be excluded.

5.14.1.6 Unintentional spread of INNS

For the reasons set out in Table 2, in line with the recommendations of the ExA, the Secretary of State is satisfied that, based upon the mitigation measures secured in the CoCP, an AEoI of the Alde-Ore and Butley Estuaries SAC and Ramsar from the effects of unintentional spread of INNS on all features from the Project alone can be excluded.

5.14.2 All features: In-combination

5.14.2.1 Changes to coastal processes / sediment transport

For the reasons set out in Table 2, in line with the recommendation of the ExA and NE, the Secretary of State is satisfied that, based upon the mitigation measures as secured under the DML and DCO an AEoI of the Alde-Ore and Butley Estuaries SAC and Ramsar from the effects of changes to coastal processes / sediment transport on estuaries, mudflats and sandflats not covered by sea water at low tides, Atlantic salt meadows and Criterion 2 from the Project in combination with other plans or projects can be excluded.

5.14.2.2 Changes in water quality (marine environment)

For the reasons set out in Table 2, in line with the recommendations of the ExA, the Secretary of State is satisfied that, subject to the implementation of the mitigation measures secured, an AEoI of the Alde-Ore and Butley Estuaries SAC and Ramsar from the effects of changes to water quality on estuaries, mudflats and sandflats not covered by sea water at low tides, Atlantic salt meadows and Ramsar Criterion 2 from the Project in-combination with other plans and projects can be excluded.

5.14.2.3 Changes in water quality (terrestrial environment)

For the reasons set out in Table 2, in line with the recommendations of the ExA, the Secretary of State is satisfied that, subject to the implementation of the mitigation measures as secured, an AEoI of the Alde-Ore and Butley Estuaries SAC and Ramsar from the effects of changes to water quality on estuaries on mudflats and sandflats not covered by sea water at low tides, Atlantic salt meadows and Criterion 2 from the Project in combination with other plans and projects can be excluded.

5.14.2.4 Alteration of local hydrology and hydrogeology

For the reasons set out in Table 2, in line with the recommendations of NE and the ExA, the Secretary of State is satisfied that, based upon the mitigation measures secured in the DCO, Drainage Strategy, CoCP and TEMMP, an AEoI of the qualifying features of the Alde-Ore and Butley Estuaries SAC and Ramsar from the effects of alterations of local hydrology and hydrogeology from the Project in-combination with other plans and projects can be excluded.

5.14.2.5 Changes in air quality

For the reasons set out in Table 2, in line with the recommendations of the ExA, the Secretary of State is satisfied that, subject to the implementation of the mitigation measures as secured, an AEoI of the Alde-Ore and Butley Estuaries SAC and Ramsar from the effects of changes to air quality on estuaries on mudflats and sandflats not covered by sea water at low tides, Atlantic salt meadows and Criterion 2 from the Project in combination with other plans and projects can be excluded.

5.14.2.6 Unintentional spread of INNS

For the reasons set out in Table 2, in line with the recommendation of the ExA, the Secretary of State is satisfied that, based upon the mitigation measures secured in the CoCP, an AEoI of the Alde-Ore and Butley Estuaries SAC and Ramsar from the effects of unintentional spread of INNS on all features from the Project in-combination with other plans and projects can be excluded.

5.14.3 Ramsar Criterion 2 (the site supports a number of nationally scarce plant species and British Red Data Book invertebrates): Alone and In-combination

5.14.3.1 Disturbance due to increase in recreational pressure

For the reasons set out in Table 2, in line with the recommendation of NE and the ExA, the Secretary of State is satisfied that, based upon the mitigation measures secured in the DCO, an AEoI of the Alde-Ore Estuary Ramsar from the effects of increases in recreational pressure on all features from the Project alone and in-combination can be excluded.

5.15 Appropriate Assessment: Alde-Ore Estuary SPA and Ramsar

The Alde-Ore Estuary SPA and Ramsar is located 6.5 km from the MDS and 1.3 km to the closest associated development site (the A1094-B1069 south of Knodishall).

The SPA and Ramsar cover an area of 5,547ha, and consist of an estuary complex of three rivers comprising various habitats including intertidal mudflats, saltmarsh, a vegetated shingle spit, saline lagoons, and semi-intensified grazing marsh. The site supports nationally scarce plants and invertebrates and notable assemblages of breeding and wintering wetland birds[71,72].

The Secretary of State has considered the potential for the Project to constitute an AEoI for each feature for which a significant effect is likely.

The bird qualifying features for which the SPA is designated, and which have been carried forward to consideration of are:

- Avocet (breeding and wintering);
- Marsh harrier (breeding);
- Little tern (breeding);
- Sandwich tern (breeding);
- Lesser black-backed gull (breeding);
- Redshank (wintering); and
- Ruff (wintering).

The Criterion relating to bird features for which the Ramsar is designated, and which have been carried forward to the AA are:

- Criterion 3 (assemblage of breeding and wintering wetland birds); and
- Criterion 6 (species/populations occurring at levels of international importance).

The Shadow HRA Report provided information for an AA for the following potential impact pathways:

- Changes to coastal processes/sediment transport (construction, operation and decommissioning);
- Changes in water quality (marine environment) (operation);
- Changes in water quality (terrestrial environment) (construction);
- Alteration of hydrology and hydrogeology (construction, operation and decommissioning);
- Changes in air quality (construction, operation and decommissioning); and
- Disturbance effects from increase in recreational pressure (construction, operation and decommissioning).

The Applicant concluded no AEoI for all qualifying features of the Alde-Ore Estuary SPA and Ramsar. As noted in Table 1 of the HRA, submissions from NE indicated that the following additional impacts should be considered at the AA stage:

- Unintentional introduction or spread of INNS; and
- Physical interaction between birds and project infrastructure (pylons and power lines).

[71] https://rsis.ramsar.org/ris/862
[72] http://publications.naturalengland.org.uk/publication/5170168510545920

5.15.1 All features: Alone

5.15.1.1 Changes in air quality

For the reasons set out in Table 2, in line with the recommendation of the ExA, the Secretary of State is satisfied that an AEoI of the Alde-Ore Estuary SPA and Ramsar from the effects of changes to air quality on the qualifying bird features from the Project alone can be excluded.

5.15.1.2 Changes to coastal processes / sediment transport

For the reasons set out in Table 2, in line with the recommendation of the ExA and NE, the Secretary of State is satisfied that, based upon the mitigation measures as secured under the DML and DCO an AEoI of the Alde-Ore Estuary SPA and Ramsar from the effects of changes to coastal processes / sediment transport on qualifying features from the Project alone can be excluded.

5.15.1.3 Physical interaction between species and project infrastructure

The ExA considered that the measures proposed within the TEMMP would mitigate for any AEoI of the qualifying features of the Alde-Ore Estuary SPA and Ramsar, resulting from collision risk between species and project infrastructure, from the Project alone.

In response to the Secretary of State's fourth letter, NE welcomed the Applicant's commitment to monthly carcass surveys under overhead lines between new pylons which will be shared with the EWG, as secured in the TEMMP. On this basis, NE advised that an AEoI of the Alde-Ore Estuary SPA through this impact pathway could be ruled out.

The Secretary of State is satisfied that, subject to the securing of mitigation and monitoring measures in the TEMMP, an AEoI of the Alde-Ore Estuary SPA and Ramsar from collision risk between species and Project infrastructure on qualifying features from the Project alone can be excluded.

5.15.1.4 Unintentional spread of INNS

For the reasons set out in Table 2, in line with the recommendation of the ExA, the Secretary of State is satisfied that, based upon the mitigation measures secured in the CoCP, an AEoI of the Alde-Ore Estuary SPA and Ramsar from the effects of the unintentional spread of INNS on all features from the Project alone can be excluded.

5.15.1.5 Disturbance due to increase in recreational pressure

For the reasons set out in Table 2, in line with the recommendation of NE and the ExA, the Secretary of State is satisfied that, based upon the mitigation measures secured in the DCO, an AEoI of the Alde-Ore Estuary SPA and Ramsar from the effects of increases in recreational pressure on all features from the Project alone can be excluded.

5.15.2 All Features: In-combination

5.15.2.1 Changes in air quality

For the reasons set out in Table 2, in line with the recommendation of the ExA, the Secretary of State is satisfied that an AEoI of the Alde-Ore Estuary SPA and Ramsar from the effects of changes to air quality on the qualifying bird features from the Project in-combination with other plans and projects can be excluded.

5.15.2.2 Changes to coastal processes / sediment transport

For the reasons set out in Table 2, in line with the recommendation of the ExA and NE, the Secretary of State is satisfied that, based upon the mitigation measures as secured under the DML and DCO an AEoI of the Alde-Ore Estuary SPA and Ramsar from the effects of changes to coastal processes / sediment transport on qualifying features from the Project in-combination with other plans or projects can be excluded.

5.15.2.3 Physical interaction between species and project infrastructure

The ExA considered that the measures proposed within the TEMMP would mitigate for any AEoI of qualifying features of the Alde-Ore Estuary SPA and Ramsar, resulting from collision risk between species and project infrastructure, from the Project in-combination with other plans or projects.

In response to the Secretary of State's fourth letter, NE welcomed the Applicant's commitment to monthly carcass surveys under overhead lines between new pylons which will be shared with the EWG, as secured in the TEMMP. On this basis, NE advised that an AEoI of the Alde-Ore Estuary SPA through this impact pathway could be ruled out.

The Secretary of State is satisfied that, subject to the securing of mitigation and monitoring measures in the TEMMP, an AEoI of the Alde-Ore Estuary SPA and Ramsar from collision risk between species and project infrastructure on qualifying features from the Project in-combination with other plans or projects can be excluded.

5.15.2.4 Unintentional spread of INNS

For the reasons set out in Table 2, in line with the recommendation of the ExA, the Secretary of State is satisfied that, based upon the mitigation measures secured in the CoCP, an AEoI of the Alde-Ore Estuary SPA and Ramsar from the effects of unintentional spread of INNS on all features from the Project in-combination can be excluded.

5.15.2.5 Disturbance due to increase in recreational pressure

For the reasons set out in Table 2, in line with the recommendation of NE and the ExA, the Secretary of State is satisfied that, based upon the mitigation measures secured in the DCO, an AEoI of the Alde-Ore Estuary SPA and Ramsar from the effects of increases in recreational pressure on all features from the Project in-combination can be excluded.

5.15.3 Breeding little tern; breeding sandwich tern; breeding lesser Black-backed gull; wintering avocet; wintering redshank; wintering ruff; Ramsar Criterion 2, 3 and 6: Alone

5.15.3.1 Water quality effects (terrestrial environment)

For the reasons set out in Table 2, in line with the recommendation of the ExA, the Secretary of State is satisfied that, subject to the implementation of the mitigation measures as secured, an AEoI of the qualifying features of the Alde-Ore and Butley Estuaries SPA and Ramsar from the effects of changes to water quality on from the Project alone can be excluded.

5.15.3.2 Alteration of local hydrology and hydrogeology

For the reasons set out in Table 2, in line with the recommendation of NE and the ExA, the Secretary of State is satisfied that, based upon the mitigation measures secured in the DCO, Drainage Strategy, CoCP and TEMMP, an AEoI of qualifying features of the Alde-Ore Estuary SPA and Ramsar from the effects of alterations of local hydrology and hydrogeology from the Project alone can be excluded.

5.15.4 Breeding little tern; breeding sandwich tern; breeding lesser Black-backed gull; breeding marsh harrier; wintering avocet; wintering redshank; wintering ruff; Ramsar Criterion 2, 3 and 6: In-combination

5.15.4.1 Water quality effects (terrestrial environment)

For the reasons set out in Table 2, in line with the recommendation of the ExA, the Secretary of State is satisfied that, based upon the mitigation measures secured, an AEoI of the qualifying features of the Alde-Ore and Butley Estuaries SPA and Ramsar from the effects of changes to water quality on from the Project in combination with other plans or projects can be excluded.

5.15.4.2 Alteration of local hydrology and hydrogeology

For the reasons set out in Table 2, in line with the recommendation of NE and the ExA, the Secretary of State is satisfied that, based upon the mitigation measures secured in the DCO, Drainage Strategy, CoCP and TEMMP, an AEoI of the qualifying features of the Alde-Ore Estuary SPA and Ramsar from the effects of alterations of local hydrology and hydrogeology from the Project in-combination with other plans and projects can be excluded.

5.15.5 Breeding little tern; breeding sandwich tern; breeding lesser Black-backed gull; Ramsar Criterion 3 and 6: Alone

5.15.5.1 Physical interaction with project infrastructure (entrapment of prey species)

For the reasons set out in Section 5.9, in line with the advice from NE, the Secretary of State is satisfied that, based upon the proposed monitoring in the draft FIEMP and mitigation measures secured, an AEoI of the Alde-Ore Estuary SPA and Ramsar SPA from the effects of physical interaction with project infrastructure (entrapment of prey species) on breeding little tern, breeding sandwich tern, breeding lesser black-backed gull, and Ramsar Criterion 3 and 6 from the Project in combination alone can be excluded.

5.15.5.2 Water Quality effects (marine environment)

The Secretary of State is confident that the impacts of changes to water quality will be assessed as part of the permitting process and that pollution mitigation and control measures will be secured through this process to prevent an AEoI of the protected site. In accordance with the policies set out in EN-1 and EN-6, the Secretary of State has no reason to believe that an EP will not be granted and has taken account of the conclusions of the EA's proposed decision on the draft operational WDA permit which states that an AEoI of the breeding little tern, breeding sandwich tern, breeding lesser black-backed gull and Ramsar Criterion 3 and 6 features of the Alde-Ore Estuary SPA and Ramsar have been excluded. The Secretary of State has assessed the material presented during the Examination including representations made by IPs, the recommendation of the ExA, and all relevant post-Examination representations and information received. Regarding the effects from changes to water quality, and without prejudice to the EP process, the Secretary of State concludes that an AEoI of the breeding little tern, breeding sandwich tern, breeding lesser black-backed gull and Ramsar Criterion 3 and 6 features of the Alde-Ore Estuary SPA and Ramsar can be excluded for the Project alone.

5.15.6 Breeding little tern; breeding sandwich tern; breeding lesser Black-backed gull; Ramsar Criterion 3 and 6: In-combination

5.15.6.1 Physical interaction with project infrastructure (entrapment of prey species)

For the reasons set out in Section 5.9, in line with the advice from NE, the Secretary of State is satisfied that, based upon the proposed monitoring in the draft FIEMP and mitigation measures secured, an AEoI of the Alde-Ore Estuary SPA and Ramsar SPA from the effects of physical interaction with project infrastructure (entrapment of prey species) on breeding little tern, breeding sandwich tern, breeding lesser black-backed gull, and Ramsar Criterion 3 and 6 from the Project in combination alone can be excluded.

5.15.6.2 Water Quality effects (marine environment)

The ExA considered that the Suffolk SMP and the cable route for East Anglia ONE were plans or projects that could act in combination with the Project. Having considered the information available the ExA concluded that there would be no AEoI of the sites in combination with these plans and projects.

The ExA was aware that NE had outstanding concerns with regards to marine water quality effects for Alde-Ore Estuary SPA and Ramsar, including matters to be addressed through the WDA EP (NE Issue 9 and 30 to 36) [RR-0878] and [REP10-097].

The Secretary of State is confident that the impacts of changes to water quality will be assessed as part of the permitting process and that pollution mitigation and control measures will be secured through this process to prevent an AEoI of the protected site. In accordance with the policies set out in EN-1 and EN-6, the Secretary of State has no reason to believe that an EP will not be granted and has taken account of the conclusions of the EA's proposed decision on the draft operational WDA permit which states that an AEoI of the breeding little tern, breeding sandwich tern, breeding lesser black-backed gull and Ramsar Criterion 3 and 6 features of the Alde-Ore Estuary SPA and Ramsar have been excluded. The Secretary of State has assessed the material presented during the Examination including representations made by IPs, the

recommendation of the ExA, and all relevant post-Examination representations and information received. Regarding the effects from changes to water quality, and without prejudice to the EP process, the Secretary of State concludes that an AEoI of the breeding little tern, breeding sandwich tern, breeding lesser black-backed gull and Ramsar Criterion 3 and 6 features of the Alde-Ore Estuary SPA and Ramsar can be excluded for the Project in-combination with other plans and projects.

5.16 Appropriate Assessment: Benacre to Easton Bavents Lagoons SAC

The Benacre to Easton Bavents Lagoons SAC is located 14.6km from the MDS and 12.1km to the closest Associated Development Site (A12/A144 South of Bramfield).

The SAC covers an area of 366.93ha and is designated solely for it hosting the Annex 1 habitat, coastal lagoons. The lagoons (the Denes, Benacre Broad, Covehithe Broad and Easton Broad) have formed behind shingle barriers and are a feature of a geomorphologically dynamic system. Sea water enters the lagoons by percolation through the barriers, or by overtopping them during storms and high spring tides. The lagoons show a wide range of salinities, from nearly fully saline in South Pool, the Denes, to extremely low salinity at Easton Broad. This range of salinity has resulted in a series of lagoonal vegetation types, including beds of narrow-leaved eelgrass *Zostera angustifolia* in fully saline or hypersaline conditions, beds of spiral tasselweed *Ruppia cirrhosa* in brackish water, and dense beds of common reed *Phragmites australis* in freshwater. The site also supports several specialist lagoonal species[73]

The Secretary of State has considered the potential for the Project to constitute an AEoI for each feature for which a significant effect is likely.

The sole qualifying feature for which the site is designated, and which has been carried forward to consideration of AEoI is:

- Coastal lagoons (priority feature).

The Applicants Shadow HRA provided information for an AA for the following potential impact pathways:

- Changes to coastal processes / sediment transport; and
- Changes in water quality (marine environment).

5.16.1 Coastal lagoons: Alone

5.16.1.1 Changes to coastal processes / sediment transport

For the reasons set out in Table 2, in line with the recommendation of NE and the ExA, the Secretary of State is satisfied that, based upon the mitigation measures as secured under the DML and DCO an AEoI of the Benacre to Easton Bavents Lagoons SAC from the effects of changes to coastal processes / sediment transport on coastal lagoons from the Project alone can be excluded.

[73] http://publications.naturalengland.org.uk/publication/6349053717643264

5.16.1.2 Changes in water quality (marine environment)

For the reasons set out in Table 2, in line with the recommendation of the ExA, the Secretary of State is satisfied that, subject to the implementation of the mitigation measures secured, an AEoI of the Benacre to Easton Bavents Lagoons SAC from the effects of changes to water quality on coastal lagoons from the Project alone can be excluded.

5.16.2 Coastal Lagoons: In-combination

5.16.2.1 Changes to coastal processes / sediment transport

For the reasons set out in Table 2, in line with the recommendation of NE and the ExA, the Secretary of State is satisfied that, based upon the mitigation measures as secured under the DML and DCO an AEoI of the Benacre to Easton Bavents Lagoons SAC from the effects of changes to coastal processes / sediment transport on coastal lagoons from the Project in combination with other plans or projects can be excluded.

5.16.2.2 Changes in water quality (marine environment)

For the reasons set out in Table 2, in line with the recommendation of the ExA, the Secretary of State is satisfied that, subject to the implementation of the mitigation measures secured, an AEoI of the Benacre to Easton Bavents Lagoons SAC from the effects of changes to water quality on coastal lagoons from the Project in-combination with other plans and projects can be excluded.

5.17 Appropriate Assessment: Benacre to Easton Bavents SPA

The Benacre to Easton Bavents SPA is located approximately 14.2km from the MDS, and 10.5km to the closest associated development site (A12/A144 south of Knodishall).

The SPA covers an area of 470.6ha. The site supports an important assemblage of breeding birds. The area lies within one of the driest parts in the country, with the annual total rainfall being typically two thirds of the national average. This, along with the free-draining sandy and gravelly soils, mean that much of the semi-natural habitat consists of open heathlands and acid grassland. However, there are also broadleaved woodland and softwood plantations, and tall fen vegetation in the river valleys and marshes nearer the coast.

The area has internationally important stretches of shingle, dunes, saltmarsh and coastal lagoons which are very important for breeding, wintering and passage birds. In addition to the three species for which this site is classified as a SPA, these include little grebe *Tachybaptus ruficollis* (also winter), shelduck *Tadorna tadorna* (also winter), wigeon *Anas penelope* (also winter), gadwall *Anas strepera*, pochard *Aythya ferina* (also winter), tufted duck *A. fuligula* (also winter), hobby *Falco subbuteo*, water rail *Rallus aquaticus* (also winter), ringed plover *Charadrius hiaticula*, turtle dove *Streptopelia turtur*, barn owl *Tyto alba* (also winter), little owl *Athene noctua*, kingfisher *Alcedo atthis*, lesser spotted woodpecker *Dendrocopos minor*, nightingale *Luscinia megarhynchos*, wheatear *Oenanthe oenanthe*, grasshopper warbler *Locustella naevia*, bearded tit *Panurus biarmicus* and tree sparrow *Passer montanus*. The site also supports a notable assemblage of other wintering birds, in addition to those mentioned above[26].

The Secretary of State has considered the potential for the Project to constitute an AEoI for each feature for which a significant effect is likely.

The three qualifying features for which the site is designated, and which have all been carried forward to the AA are:

- Bittern (breeding);
- Little tern (breeding); and
- Marsh harrier (breeding).

The Applicants Shadow HRA Report provided information for an AA for the following potential impact pathways:

- All three qualifying features - disturbance due to increase in recreational pressure (construction, operation and decommissioning); and
- Little tern only:
  - Alteration of coastal processes/sediment transport (construction, operation and decommissioning);
  - Water quality effects (marine environment) (operation); and
  - Physical interaction with project infrastructure (entrapment of prey species during operation).

As mentioned earlier in this HRA (see Table 1), additionally physical interaction with project infrastructure (entrapment of prey species during operation) for the breeding bittern feature is carried forward to the AA, due to concerns raised by the EA and RSPB/SWT during Examination.

5.17.1 Breeding little tern: Alone

5.17.1.1 Changes to coastal processes / sediment transport

For the reasons set out in Table 2, in line with the recommendation of the ExA and NE, the Secretary of State is satisfied that, based upon the mitigation measures as secured under the DML and DCO an AEoI of the Benacre to Easton Bavents SPA from the effects of changes to coastal processes / sediment transport on little tern from the Project alone can be excluded.

5.17.1.2 Water quality effects (marine environment)

For the reasons set out in Table 2, in line with the recommendation of the ExA, the Secretary of State is satisfied that, subject to the implementation of the mitigation measures secured, an AEoI of the Benacre to Easton Bavents SPA from the effects of changes to water quality on little tern from the Project alone can be excluded.

5.17.1.3 Physical interaction with project infrastructure (entrapment of prey species)

For the reasons set out in Section 5.9, in line with the advice from NE, the Secretary of State is satisfied that, based upon the proposed monitoring in the draft FIEMP and mitigation measures secured, an AEoI of the Benacre to Easton Bavents SPA from the effects of physical interaction with project infrastructure (entrapment of prey species) on little tern from the Project alone can be excluded.

5.17.2 Breeding little tern: In-combination

5.17.2.1 Changes to coastal processes / sediment transport

For the reasons set out in Table 2, in line with the recommendation of the ExA and NE, the Secretary of State is satisfied that, based upon the mitigation measures as secured under the DML and DCO an AEoI of the Benacre to Easton Bavents SPA from the effects of changes to coastal processes / sediment transport on little tern from the Project in combination with other plans or projects can be excluded.

5.17.2.2 Water quality effects (marine environment)

For the reasons set out in Table 2, in line with the recommendation of the ExA, the Secretary of State is satisfied that, subject to the implementation of the mitigation measures secured, an AEoI of little tern from the Project in-combination with other plans and projects can be excluded.

5.17.2.3 Physical interaction with project infrastructure (entrapment of prey species)

For the reasons set out in Section 5.9, in line with the advice from NE, the Secretary of State is satisfied that, based upon the proposed monitoring in the draft FIEMP and mitigation measures secured, an AEoI of the Benacre to Easton Bavents SPA from the effects of physical interaction with project infrastructure (entrapment of prey species) on little tern from the Project in combination with other plans or projects can be excluded.

5.17.3 Breeding Bittern: Alone and In-combination

5.17.3.1 Physical interaction with project infrastructure (entrapment of prey species)

For the reasons set out in Table 2, in line with the recommendation of NE and the ExA, the Secretary of State is satisfied that, based upon the mitigation measures secured, an AEoI of the Benacre to Easton Bavents SPA from the effects of disturbance due to physical interaction with project infrastructure from the Project alone and in-combination can be excluded.

5.17.4 All features: Alone and In-combination

5.17.4.1 Disturbance due to increase in recreational pressure

For the reasons set out in Table 2, in line with the recommendation of NE and the ExA, the Secretary of State is satisfied that, based upon the mitigation measures secured, an AEoI of the Benacre to Easton Bavents SPA from the effects of disturbance due to increase in recreational pressure from the Project alone and in-combination can be excluded.

5.18 Appropriate Assessment: Deben Estuary SPA and Ramsar

The Deben Estuary SPA and Ramsar is located 22.2km from the MDS and 5km from the closest Associated Development Site (freight management facility).

The SPA and Ramsar covers an area of 978.93ha. The estuary is relatively sheltered and narrow, particularly at the mouth which is protected by shifting sand and gravel banks. Much of

the intertidal area consists of mudflats with more sandy deposits occurring where exposed red crag erodes from cliffs. The mudflats support populations of invertebrate species such as *Hydrobia* spp. and *Corophium* spp. which are an important food source for wintering avocets.

The Deben Estuary supports a complex mosaic of saltmarsh communities which form an important habitat for roosting avocets. They vary in species composition depending on substrate type, frequency of tidal inundation, exposure, position within the estuary and past management practices. The Deben Estuary is also of importance for regularly supporting, in winter, internationally significant numbers of dark-bellied Brent geese[74].

The Secretary of State has considered the potential for the Project to constitute an AEoI for each feature for which a significant effect is likely.

The qualifying features for which the site is designated, and which have been carried forward to the AA are:

- Avocet (wintering);
- Dark-bellied Brent goose (wintering); and
- Ramsar Criterion 6 - species/ populations occurring at levels of international importance: dark-bellied Brent goose (wintering).

The Applicants Shadow HRA Report provided information for an AA for the following potential impact pathways:

- Disturbance effects on species populations (noise, light and visual).

5.18.1 All features: Alone and In-combination

5.18.1.1 Disturbance effects on species' population (noise, light and visual)

For the reasons set out in Table 2, in line with the recommendation of the ExA and NE, the Secretary of State is satisfied that, based upon the mitigation measures as secured in the DCO, an AEoI of the Deben Estuary SPA and Ramsar from the effects of displacement (noise, light and visual) on wintering avocet, wintering dark-bellied Brent goose and Ramsar Criterion 6, from the Project alone and in-combination with other plans or projects can be excluded.

5.19 Appropriate Assessment: Dew's Ponds SAC

Dew's Pond SAC is located 11.2km from the MDS and 1.7km from the closest Associated Development Site (Northern Park and Ride).

The SAC covers an area of 6.74ha and supports one of the largest known breeding populations of great crested newt in the UK. The site lies in north-east Suffolk in the parish of Bramfield within the South Norfolk and High Suffolk Claylands National Character Area. This part of Suffolk has a high density of farm ponds supporting a widespread distribution of great crested newt. There are 12 ponds within the site, ranging from long established farm ponds to more recently dug ones. Rough, semi-improved grassland surrounds the ponds with some scrub and hedgerow

[74] http://publications.naturalengland.org.uk/publication/2993195

habitat. The terrestrial habitats are important to newts for feeding, shelter and hibernation during the non-breeding season[75].

The Secretary of State has considered the potential for the Project to constitute an AEoI for each feature for which a significant effect is likely.

The sole qualifying feature for which the SAC is designated, and which has been carried forward to consideration of AEoI is:

- Great crested newt.

The Shadow HRA Report provided information for an AA for the following potential impact pathway:

- Alteration of local hydrology and hydrogeology.

5.19.1 Great crested newt: Alone and In-combination

5.19.1.1 Alteration of local hydrology and hydrogeology

For the reasons set out in Table 2, in line with the recommendation of NE and the ExA, the Secretary of State is satisfied that, based upon the mitigation measures secured in the DCO, Drainage Strategy, CoCP and TEMMP, an AEoI of the great crested newt feature of Dew's Ponds SAC from the effects of alterations of local hydrology and hydrogeology from the Project alone and in-combination with other plans and projects can be excluded.

5.20 Appropriate Assessment: Humber Estuary SAC

The Humber Estuary SAC is located approximately 162.9km from the Project.

The SAC covers an area of 36,657.15ha and is the second largest coastal plain Estuary in the UK. The estuary supports a full range of saline conditions from the open coast to the limit of saline intrusion on the tidal rivers of the Ouse and Trent. The range of salinity, substrate and exposure to wave action influences the estuarine habitats and the range of species that utilise them; these include a breeding bird assemblage, winter and passage waterfowl, vascular plants and invertebrates. Significant fish species include river lamprey and sea lamprey which breed in the River Derwent, a tributary of the River Ouse. Grey seals come ashore in autumn to form breeding colonies on the sandy shores of the south bank at Donna Nook[76].

The Secretary of State has considered the potential for the Project to constitute an AEoI for each feature for which a significant effect is likely.

The only qualifying feature carried forward by the Applicant to the AA were grey seal. As noted in Table 1 of the HRA, submissions from NE indicated that the following additional features should be considered at the AA stage:

- Water quality effects (marine environment) – river lamprey and sea lamprey qualifying features

[75] http://publications.naturalengland.org.uk/publication/6294869702082560
[76] http://publications.naturalengland.org.uk/publication/5009545743040512

The qualifying features for which the SAC is designated, and which have been carried forward to consideration of AEoI are:

- Grey seal;
- River lamprey; and
- Sea lamprey.

The Shadow HRA Report provided information for an AA for the following potential impact pathways:

- Water quality effects (marine environment);
- Disturbance effects on species' population (underwater noise);
- Physical interaction between species and project infrastructure (effects on prey species); and
- Physical interaction between species and project infrastructure (collision risk with vessels.

5.20.1 Sea lamprey; river lamprey: Alone

5.20.1.1 Water quality effects (marine environment)

NE [REP10-097] (epage 52-59) at Deadline 10 raised concerns around the potential effects of the CDO, thermal and chemical plume (including hydrazine and chlorination), and bentonite break outs on the Humber Estuary SAC. It was the ExA's understanding that this related to the river and sea lamprey qualifying features of the SAC.

In most of these cases, NE [REP10-097] had stated it expected further information on the effects and mitigation to be provided with the WDA permit, but it had not been consulted on the permit and therefore it could not provide its final advice.

Without prejudice to the subsequent EP process, the ExA considered that on the basis of the material currently available, and with the mitigation measures secured through the WDA permit, it was possible to conclude no AEoI from the Project alone.

The Secretary of State is confident that the impacts of changes to water quality will be assessed as part of the permitting process and that pollution mitigation and control measures will be secured through this process to prevent an AEoI of the protected site. In accordance with the policies set out in EN-1 and EN-6, the Secretary of State has no reason to believe that an environmental permit will not be granted and has taken account of the conclusions of the EA's proposed decision on the draft operational WDA permit which states that an AEoI of the sea lamprey and river lamprey features of the Humber Estuary SAC have been excluded. The Secretary of State has assessed the material presented during the Examination including representations made by IPs, the recommendation of the ExA, and all relevant post-Examination representations and information received. Regarding the effects from changes to water quality, and without prejudice to the EP process, the Secretary of State concludes that an AEoI of the sea lamprey and river lamprey features of the Humber Estuary SAC can be excluded for the Project alone.

5.20.1.2 Physical interaction between species and project infrastructure

The Shadow HRA assessed the potential impacts of entrapment of sea lamprey and river lamprey of the Humber Estuary SAC. The assessment concluded there would be no AEoI of the

Humber Estuary SAC due to entrainment of river and sea lamprey during the operation of the Project.

The Applicant [REP10-168] considered fish entrapment from the seawater intake for the proposed desalination plant and concluded that with the mesh screen, there would be no adverse effect on the Humber Estuary SAC. The Applicant confirmed there was no potential for combined entrapment effects from the desalination plant and operational cooling water system, as the desalination plant would only operate during the construction phase.

The Shadow HRA reported that neither sea nor river lamprey were detected in the entrainment sampling and, therefore, the assessment determined that their respective populations are not considered to be at to be at risk from entrainment.

The Shadow HRA Addendum [AS-173] contained revised predictions of fish entrapment and consideration of potential effects on selected fish stocks at the Project. This was supported by supplementary information on fish assessment [AS-173]. The Shadow HRA Addendum and Shadow HRA Third Addendum [REP7-279] concluded the revised predictions of fish impingement and Changes 2 and 19 would not alter the conclusions of the Shadow HRA.

Dr Henderson on behalf of TASC disputed the Applicant's conclusions and considered that the impacts of entrainment of fish species had been underestimated, and that lamprey could not support additional mortality without impacts to their populations [REP8-284] [REP10-425].

Both the EA [REP7-131] and the MMO [REP2-082] deferred to NE regarding the overall conclusions of the HRA [REP2-082].

Equivalent Adult Values (EAVs)

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 [REP6-024].

Lamprey are a semelparous species that spawn once then die and therefore an EAV of 1 was applied which assumes that every fish entrapped would normally survive to maturity and join the spawning stock. EAV of 1 is the theoretical maximum.

The EA's concerns regarding the Applicant's EAV method [RR-0373] [REP2-135] [REP7-132] were related to repeat spawners only.

The ExA was content that the EAV method applied by the Applicant for the assessment of impacts on river lamprey and sea lamprey is precautionary and assesses a theoretical maximum.

Scale of assessment

With regards to the scale of assessment for the HRA, the Applicant explained that:

- For river lamprey, predicted impingement losses were compared against a spawning run size estimate for the Humber catchment made in 2018 by the Humber International Fisheries Institute.
- For sea lamprey, there is no stock assessment available – the impingement assessment was based on the impingement data collected for Sizewell B where a single sea lamprey was to be impinged in 2015.

The EA [REP2-135] confirmed it agreed with the stock comparator used for the assessment of effects of river lamprey. However, it did not refer to sea lamprey.

The ExA notes the Applicant's explanation [REP6-016] that SACs designated for sea lamprey are found all along the European coast and that, geographically, those on the Dutch coast are nearer to the Project than the Humber Estuary SAC. Furthermore, sea lamprey do not home to natal rivers; therefore, mortality could not be attributed to any specific site of origin.

The ExA was content with the scale of assessment undertaken for sea and river lamprey of the Humber Estuary SAC.

Impingement calculations

The Shadow HRA explained that if the predicted impingement of a particular species is greater than 1% of the Spawning Stock Biomass (SSB) or – if SSB has not been established for a particular species – fisheries landings, further investigation is warranted to determine whether the effect could be significant at a population level.

For river lamprey, the Applicant [AS-173] calculated expected annual impingement losses (with the proposed LVSE intake head design and FRR mitigation) of 215 individuals, equating to 0.03% of the estimated lamprey population in the Humber catchment. It considered this to be negligible.

For sea lamprey, the Applicant [AS-173] [AS-238] [REP6-016] estimates unmitigated impingement losses to be five fish per annum, dropping to two fish with the proposed LVSE intake head design, and dropping to less than 0.13 fish per annum when considering survival through the fitted FRR. The Applicant considered this to be negligible for a stock which is widespread throughout the North Sea.

A number of concerns were raised during Examination regarding the effectiveness of the LVSE design and the FRR system. The Applicant's report entitled 'Quantifying uncertainty in entrapment predictions for Sizewell C' [REP6-028] assumed no benefit from the LVSE heads and concluded that for all species, effects are below the threshold that would trigger further investigation for potential population level effects. The MMO [REP8-164] agreed that the conclusions of the report were appropriate, and the Applicant's analysis confirms that the local impact from fish entrapment is not significant.

The Applicant stated [REP7-279] [REP10-168] that because the mesh for the desalination plant abstraction is at the headworks, biota which are not entrained are not drawn into the system at all, and this does not, therefore, require assessment in the HRA.

Monitoring

The Applicant submitted a draft FIEMP which was listed as a certified document in Schedule 25 of the DCO and is to be certified under Article 82 and Condition 44 of the DML. By the close of the Examination the content of the draft FIEMP was not agreed with NE [REP8-298e] [REP10-097] or the EA [REP10-190].

NE stated that there was not enough detail regarding future monitoring at the Project over its proposed operational lifetime as monitoring appeared to only be proposed for 3 years. It also considered there to be a lack of detail regarding a contingency plan if there proved to be a significant difference between predicted and actual fish mortality. NE also sought that all data

produced by the Fish Monitoring Plan should be made publicly available and secured in the terms of reference for the Marine Technical Forum.

The Applicant stated that NE do not allege that there is risk of an AEoI but were concerned that impacts should be adequately monitored. It considered that the reference made by NE to monitoring over the lifetime of the Project to be neither proportionate nor beneficial in confirming whether the predicted impacts are correct.

The Applicant [REP10-097] confirmed that the FIEMP provides initially for a programme of simultaneous monitoring at Sizewell B and Sizewell C, with at least 28 randomised visits per year. It also allows for the possibility of longer term, less frequent or targeted monitoring at Sizewell C should it be deemed beneficial and appropriate. The draft FIEMP provides for potential schemes to offset any potential impacts should the ES have under-predicted the levels of entrapment; however, the Applicant also confirms that these are not necessary and not relied upon in reaching its conclusion of no AEoI.

In his second consultation letter, the Secretary of State invited NE and the EA to provide their views as to whether they were satisfied with the Applicant's draft FIEMP [REP10-138].

In its response, the EA stated that it provided detailed comments at Deadlines 8 and 19 [REP8-160] [REP10-190] which highlighted concerns with the draft FIEMP as proposed. It stated that these concerns were not fully addressed in the Applicant's updated FIEMP provided at Deadline 10. The EA confirmed its remaining concerns relate to duration of monitoring, proposed methodologies used to consider impacts, and reaching agreement on how further mitigation and/or compensation for impacts to fish, might be decided.

NE also provided comments on the draft FIEMP in its response. It advised that its comments had largely not been addressed and it was therefore unsatisfied with the revision of the plan.

In the same letter, the Secretary of State also invited NE to provide advice on whether an AEoI due to physical interaction between species and project infrastructure on the sea lamprey and river lamprey qualifying features of the Humber Estuary SAC could be excluded.

For sea lamprey, NE agreed with the Applicant's conclusion of no AEoI based on low impingement/interaction observed at Sizewell B and predicted for Sizewell C.

For river lamprey, NE agreed with the Applicant's conclusion of no AEoI. This was due to the low impingement rates predicted and the Project's distance from the Humber Estuary SAC. It did, however, note that it disagreed with some of the information presented in the Shadow HRA, including the population estimate which had been presented and the statement that '*Southern North Sea population of river lamprey are probably one stock'*.

The Secretary of State has noted the Applicant, EA, and NE's responses and considers that although the draft FIEMP does not incorporate some of the points sought by the EA and NE in their submissions, there is opportunity for both parties to put their points again to the MMO to whom the final plan will be submitted for approval. The draft Order has also been amended to add NE as a named consultee as recommended by the ExA.

The Secretary of State is satisfied that, based upon the mitigation measures secured, an AEoI of the sea lamprey and river lamprey qualifying features of the Humber Estuary SAC from physical interaction between species and project infrastructure from the Project alone can be excluded.

5.20.2 Sea lamprey; river lamprey: In-combination

5.20.2.1 Water quality effects (marine environment).

The ExA was not aware of any further plans or projects that could act in combination with the Project and considered, on the basis of the information provided to the Examination, that it could be possible to conclude no AEoI in-combination.

The Secretary of State is confident that the impacts of changes to water quality will be assessed as part of the permitting process and that pollution mitigation and control measures will be secured through this process to prevent an AEoI of the protected site. In accordance with the policies set out in EN-1 and EN-6, the Secretary of State has no reason to believe that an EP will not be granted and has taken account of the conclusions of the EA's proposed decision on the draft operational WDA permit which states that an AEoI of the sea lamprey and river lamprey features of the Humber Estuary SAC have been excluded. The Secretary of State has assessed the material presented during the Examination including representations made by IPs, the recommendation of the ExA, and all relevant post-Examination representations and information received. Regarding the effects from changes to water quality, and without prejudice to the EP process, the Secretary of State concludes that an AEoI of the sea lamprey and river lamprey features of the Humber Estuary SAC can be excluded for the Project in-combination with other plans and projects.

5.20.2.2 Physical interaction between species and project infrastructure

The Shadow HRA identified no other plans or projects which have the potential to cause the impingement or entrapment of lampreys of the Humber Estuary SAC, and therefore, considered there to be no potential for an in-combination AEoI. The Applicant also considered cumulative/inter-project effects between different elements of the Project [AS-174]. The Applicant stated [REP10-168] that Change 19 did not alter the conclusion of the Shadow HRA.

The ExA was not aware of any further in-combination plans or projects that could act in combination with the Project and considered, on the basis of the information provided to the Examination, that it could be possible to conclude no AEoI in-combination.

The Secretary of State is satisfied that, based upon the mitigation measures secured, an AEoI of the sea lamprey and river lamprey qualifying features of the Humber Estuary SAC from physical interaction between species and project infrastructure from the Project in combination with other plans or projects can be excluded.

5.20.3 Grey seal: Alone

5.20.3.1 Water quality effects (marine environment)

For the reasons set out in Table 2, in line with the recommendation of the ExA, the Secretary of State is satisfied that subject to the implementation of the mitigation measures secured, an AEoI of the grey seal feature of the Humber Estuary SAC from the effects of changes to water quality on grey seal from the Project alone can be excluded.

5.20.3.2 Disturbance effects on species populations (underwater noise)

For the reasons set out in Table 2, in line with the recommendation of the ExA, the Secretary of State is satisfied that with the mitigation measures secured through the DCO and DML, an AEoI of the grey seal feature of the Humber Estuary SAC from the effects of disturbance effects on species populations (underwater noise) on grey seal of the Project alone can be excluded.

5.20.3.3 Physical interaction between species and project infrastructure (entrapment of prey species)

For the reasons set out in Table 2, in line with the recommendation of the ExA, the Secretary of State is satisfied that with the mitigation measures secured, including the FRR and LVSE, an AEoI of the grey seal feature of the Humber Estuary SAC from physical interaction between species and project infrastructure (entrapment of prey species) on grey seal of the Project alone.

5.20.3.4 Physical interaction between species and project infrastructure – collision risk

For the reasons set out in Table 2, in line with the recommendation of the ExA, the Secretary of State is satisfied that with the mitigation measures secured through the DCO, an AEoI of the grey seal feature of the Humber Estuary SAC from the physical interaction between species and project infrastructure due to collision risk with vessels on grey seal of the Project alone can be excluded.

5.20.4 Grey seal: In-combination

5.20.4.1 Water quality effects (marine environment)

For the reasons set out in Table 2, in line with the recommendation of the ExA, the Secretary of State is satisfied that subject to the implementation of the mitigation measures secured, an AEoI of the grey seal feature of the Humber Estuary SAC from the effects of changes to water quality on from the Project in combination with other plans or projects can be excluded.

5.20.4.2 Disturbance effects on species populations (underwater noise)

For the reasons set out in Table 2, in line with the recommendation of the ExA, the Secretary of State is satisfied that with the mitigation measures secured through the DCO and DML, an AEoI of the grey seal feature of the Humber Estuary SAC from the disturbance effects on species populations (underwater noise) on grey seal of the Project in combination with other plans or projects can be excluded.

5.20.4.3 Physical interaction between species and project infrastructure (entrapment of prey species)

For the reasons set out in Table 2, in line with the recommendation of the ExA, the Secretary of State is satisfied that with the mitigation measures secured, including the FRR and LVSE, an AEoI of the grey seal feature of the Humber Estuary SAC from physical interaction between species and project infrastructure (entrapment of prey species) on grey seal of the Project in combination with other plans or projects can be excluded.

5.20.4.4 Physical interaction between species and project infrastructure – collision risk

For the reasons set out in Table 2, in line with the recommendation of the ExA, the Secretary of State is satisfied that with the mitigation measures secured through the DCO, an AEoI of the grey seal feature of the Humber Estuary SAC from the physical interaction between species and project infrastructure due to collision risk with vessels on grey seal of the Project in combination with other plans or projects can be excluded.

5.21 Appropriate Assessment: Minsmere to Walberswick Heaths and Marshes SAC, and Minsmere-Walberswick Ramsar

The Minsmere to Walberswick Heaths and Marshes SAC is adjacent to the MDS and covers 1,256.57 ha of terrestrial habitats on the coast of Suffolk between Southwold and Sizewell.

The SAC contains a complex of habitats, notably mudflat, shingle beach, reedbed, heathland and grazing marsh. The Minsmere-Walberswick Heaths and Marshes SSSI is coincident with the SAC on heathland and shingle habitat, and extends beyond the SAC at multiple points.

Shingle beach forms the coastline at Walberswick and Minsmere. This is subject to sea erosion and human disturbance but supports a variety of scarce shingle plants including sea pea *Lathyrus japonicus*, sea campion *Silene maritima* and small populations of sea kale *Crambe maritima*, grey hairgrass *Corynephorus canescens* and yellow horned-poppy *Glaucium flavum*.

High land at Minsmere, Westleton and Walberswick forms part of the East Suffolk Sandlings and is composed of infertile sands and gravels. This supports large areas of lowland heath, bracken, dry acidic grassland, woods and scrub. Lowland heath, dominated by heather *Calluna vulgaris* but also containing bell heather *Erica cinerea* and cross-leaved heath *E. tetralix*, occupies a large continuous tract of about 400ha at Minsmere, Dunwich and Westleton Heath with smaller areas at Walberswick. This heathland provides a valuable habitat for two nationally decreasing birds, nightjar and woodlark. Patches of unimproved acid grassland in which red fescue *Festuca rubra* and common bent *Agrostis capillaris* predominate through the site, but areas dominated by wavy hairgrass *Deschampsia flexuosa*, purple moor-grass *Molinia caerulea* and sand sedge *Carex arenaria* also occur.

A variety of other acid grassland plants are also present, of which heath bedstraw *Galium saxatile* and sheep's sorrel *Rumex acetosella* are common. Scarce species include bird's-foot clover *Trifolium ornithopodioides* and mossy stonecrop *Crassula tillaea* together with a small colony of red-tipped cudweed *Filago lutescens*. There are also substantial areas dominated by bracken *Pteridium aquilinum* or gorse *Ulex europaeus* and western gorse *U. gallii*[77].

The Secretary of State has considered the potential for the Project to constitute an AEoI for each feature for which a significant effect is likely.

The SAC qualifying features, and non-bird Ramsar Criterion[78] for which the site is designated, and which have been carried forward to consideration of AEoI are:

- Annual vegetation of drift lines;

[77] http://publications.naturalengland.org.uk/file/5537398570352640
[78] Bird related Ramsar Criterion are discussed under the Minsmere-Walberswick SPA and Ramsar, section 5.22.

- European dry heaths;
- Perennial vegetation of stony banks;
- Ramsar Criterion 1 - mosaic of marine, freshwater, marshland and associated habitats[79]; and
- Ramsar Criterion 2 - the site supports a number of nationally-scarce plant species and British Red Data Book invertebrates.

The Applicants Shadow HRA Report provided information for an AA for the following potential impact pathways:

- Alteration of coastal processes/sediment transportation:
    - Annual vegetation of drift lines (C, O, D);
    - Perennial vegetation of stony banks (C, O, D);
    - Ramsar Criterion 1 - mosaic of marine, freshwater, marshland and associated habitats;
    - Ramsar Criterion 2 - nationally-scarce plant species and British Red Data Book invertebrates (C, O, D).
- Changes in water quality (marine environment):
    - Annual vegetation of drift lines (C, O, D);
    - Perennial vegetation of stony banks (C, O, D);
    - Ramsar Criterion 1 – mosaic of marine, freshwater, marshland and associated habitats;
    - Ramsar Criterion 2 - nationally-scarce plant species and British Red Data Book invertebrates (C, D).
- Changes in water quality (terrestrial environment):
    - Perennial vegetation of stony banks (C, O, D);
    - Ramsar Criterion 1 - mosaic of marine, freshwater, marshland and associated habitats;
    - Ramsar Criterion 2 - nationally-scarce plant species and British Red Data Book invertebrates (C, O, D).
- Alteration of coastal local hydrology and hydrogeology:
    - Perennial vegetation of stony banks (C, O, D);
    - Ramsar Criterion 1 - mosaic of marine, freshwater, marshland and associated habitats;
    - Ramsar Criterion 2 - nationally-scarce plant species and British Red Data Book invertebrates (C, O, D).
- Changes in air quality:
    - Annual vegetation of drift lines (C, D);
    - European dry heaths (C, O, D);
    - Perennial vegetation of stony banks (C, O, D);
    - Ramsar Criterion 1 - mosaic of marine, freshwater, marshland and associated habitats;
    - Ramsar Criterion 2 - nationally-scarce plant species and British Red Data Book invertebrates (C, O, D).

[79] Whilst the ExA screened in Ramsar Criterion 1 for the same impact pathways as Criterion 2 for the Minsmere-Walberswick Heaths and Marshes SAC and Ramsar site, it did not explicitly address Criterion 1 its findings in relation to AEoI section of the ExA's Report. The Applicant assessed Ramsar Criterion 1 and 2 concurrently at the AA stage in its Shadow HRA Report and reached the same conclusions for both. Additionally, the interest features of Ramsar Criterion 1 overlap with the qualifying features of the SAC. The Secretary of State therefore is satisfied that Ramsar Criterion 1 has been adequately assessed, and that the conclusions reached by the ExA for Criterion 2 equally apply to Criterion 1.

- Disturbance due to increase in recreational pressure:
  - Annual vegetation of drift lines (C, O, D);
  - European dry heaths (C, O, D);
  - Perennial vegetation of stony banks (C, O, D);
  - Ramsar Criterion 1 - mosaic of marine, freshwater, marshland and associated habitats;
  - Ramsar Criterion 2 - nationally-scarce plant species and British Red Data Book invertebrates (C, O, D).

As mentioned earlier in this HRA (see Table 1), submissions from NE indicated that the following additional impacts should be considered at the AA stage for all qualifying features screened in:

- Unintentional introduction or spread of INNS (C).

The conservation objectives for the SAC are to ensure that the integrity of the site is maintained or restored as appropriate, and to ensure that the site contributes to achieving the favourable conservation status of its qualifying features, by maintaining or restoring;

- The extent and distribution of qualifying natural habitats;
- The structure and function (including typical species) of qualifying natural habitats; and
- The supporting processes on which qualifying natural habitats rely.

The supplementary advice[77] for annual vegetation of drift lines includes the following targets:

- Restore the total extent of the annual and perennial vegetated shingle features to 59 ha. Note that annual vegetation is a linear feature along the strandline and has the potential to extend to approximately 8,800 m in length.
- Restore the ability of this habitat to re-establish itself in response to coastal processes and re-colonise after natural events.
- Restore the distribution and continuity of suitable beach conditions such that this habitat has the greatest opportunity to colonise annually.
- Maintain the abundance of the species listed to enable each of them to be a viable component of the Annex I habitat feature; *Honckenya peploides*, *Cakile maritima*, *Atriplex prostrata*, *A. glabriuscula, A.laciniata.*
- Restore the availability of niches which provide the potential for seedling establishment.
- Maintain the input of nutrients from tidally-derived organic matter and ensure these are able to break down in situ.
- Maintain the availability and size range of those sediments typical of the feature at the site.
- Restore the component vegetation communities of the feature to the following characteristic National Vegetation Classification type; SD2 - *Honkenya peploides - Cakile maritima* strandline community. Note that vegetated shingle communities do not always fit well with the NVC.
- Restore the natural patterns of zonation across the drift line and between this and vegetation of more stable shingle landward that reflect the coastal processes and substrate type typical of the site.
- Maintain the frequency/cover of the following undesirable species to within acceptable levels and prevent changes in surface condition, soils, nutrient levels or hydrology which may encourage their spread; *Centranthus ruber, Cirsium vulgare, Lupinus arboreus, Senecio jacobaea and Tamarix gallica.*
- Maintain the operation of natural sedimentary processes within the site.
- Maintain a natural profile, elevation and slope of the beach and foreshore within the site.

- Restore the recreational access management measures (either within and/or outside the site boundary as appropriate) which are necessary to maintain the structure, functions and supporting processes associated with the feature.
- Maintain adequate sediment supplies to and across the site from source (the beach, offshore deposits, eroding cliffs etc.).
- Where the feature is dependent on surface water and/or groundwater, maintain water quality and quantity to a standard which provides the necessary conditions to support the feature.

The supplementary advice for perennial vegetation of stony banks; coastal shingle vegetation outside the reach of waves includes the following targets:

- Restore the total extent of the perennial vegetation of stony banks; coastal shingle vegetation habitats.
- Restore the distribution and continuity of the habitat and its natural transitions within the site that enable the full succession from older to younger ridges to be represented.
- Restore the ability to respond to natural seasonal or longer-term changes in extent of habitat.
- Restore the range of vegetation communities and transitions characteristic of this feature with other habitats present on the site (such as saltmarsh, wetland, lagoons).
- Restore temporal and spatial zonation of vegetation that reflects pattern of beach ridges across the site, from the active beach ridge, to recently accreted ridges and through to the different-aged more stable ridges and the ongoing natural succession of these communities over time.
- Ensure the component vegetation communities of the feature are referable to and characterised by the following National Vegetation Classification type; SD1 - *Rumex crispus - Glaucium flavum* shingle community. Note that vegetated shingle communities do not always fit well with the NVC.
- Maintain the frequency/cover of the following undesirable species to within acceptable levels and prevent changes in surface condition, soils, nutrient levels or hydrology which may encourage their spread; *Centranthus ruber, Cirsium vulgare, Lupinus arboreus, Senecio jacobaea* and *Tamarix gallica*.
- Restore the abundance of the species listed to enable each of them to be a viable component of the Annex I habitat feature: *Beta vulgaris ssp. maritima, Crambe maritima, Glaucium flavum, Helminthotheca echioides, Lathyrus japonicus,* and *Silene uniflora.*
- Maintain the low nutrient status of the sediment and soils that support the specialised vegetation communities.
- Maintain the availability and size range of those sediments typical of the feature at the site.
- Maintain adequate sediment supplies to and across the site from source (the beach, offshore deposits, eroding cliffs etc).
- Maintain the natural surface morphology and elevation of the shingle structure.
- Maintain the natural sedimentary processes that sustain the form of the shingle structure, including the natural supply of sediment from outside the site.
- Restore the concentrations and deposition of air pollutants to at or below the site-relevant Critical Load or Level values given for this feature of the site on the Air Pollution Information System.
- Restore the management measures (either within and/or outside the site boundary as appropriate) which are necessary to Restore the structure, functions and supporting processes associated with the feature.

The supplementary advice for European dry heaths includes the following targets:

- Maintain the total extent of the feature at 306 hectares.
- Maintain the distribution and configuration of the feature, including where applicable its component vegetation types, across the site.
- Maintain the feature's ability, and that of its supporting processes, to adapt or evolve to wider environmental change, either within or external to the site.
- Maintain the cover of bare ground within the feature to within 1-10%.
- Maintain the overall extent, quality and function of any supporting features within the local landscape which provide a critical functional connection with the site.
- Maintain the abundance of the species listed to enable each of them to be a viable component of the Annex I habitat feature: silver-studded blue *Plebeius argus, a*ntlion *Euroleon nostras,* and Dartford warbler *Sylvia undata.*
- Maintain the properties of the underlying soil types, including structure, bulk density, total carbon, pH, soil nutrient status and fungal: bacterial ratio, to within typical values for the habitat.
- Ensure the component vegetation communities of the feature are referable to and characterised by the following National Vegetation Classification type; H1 - *Calluna vulgaris - Festuca ovina* heath.
- Maintain any areas of transition between this and communities which form other heathland-associated habitats, such as dry and humid heaths, mires, acid grasslands, scrub and woodland.
- Restore a cover of dense bracken to a low level typically of less than <10%.
- Maintain an overall cover of dwarf shrub species which is typically between 25-90%.
- Restore cover of common gorse *Ulex europaeus* at <25% and the combined cover of *U. europaeus* and *U. gallii* at <50%.
- Maintain a diverse age structure amongst the ericaceous shrubs typically found on the site.
- Restore the open character of the feature, with a typically scattered and low cover of trees and scrub (<15% cover).
- Restore the frequency / cover of the following undesirable species to within acceptable levels and prevent changes in surface condition, soils, nutrient levels or hydrology which may encourage their spread.
- There should be <1% of the following species: *Chamerion angustifolium, Cirsium arvense,* 'coarse grasses', *Digitalis purpurea, Epilobium* spp*. (*excluding *E. palustre)*, *Fallopia japonica, Gaultheria shallon*, *Juncus effusus, J. squarrosus, Ranunculus* spp*., Rhododendron ponticum*, *Rumex obtusifolius, Senecio* spp*.,* and *Urtica dioica.*
- Restore the concentrations and deposition of air pollutants to at or below the site-relevant Critical Load or Level values given for this feature of the site on the Air Pollution Information System.
- Maintain the management measures (either within and/or outside the site boundary as appropriate) which are necessary to maintain the structure, functions and supporting processes associated with the feature
- At a site, unit and/or catchment level as necessary, maintain natural hydrological processes to provide the conditions necessary to sustain the feature within the site.
- Where the feature is dependent on surface water and/or groundwater, maintain water quality and quantity to a standard which provides the necessary conditions to support the feature.

Minsmere-Walberswick Heaths Ramsar covers 2,004 ha of coastal habitats situated 20 km south of the town of Lowestoft, in the county of Suffolk[80]. The Minsmere-Walberswick Heaths Ramsar is adjacent to the MDS.

5.21.1 All Features: Alone

5.21.1.1 Changes in air quality

Potential effects were identified from the direct and indirect impacts on the Minsmere to Walberswick Heaths and Marshes SAC, and the Minsmere-Walberswick Ramsar from increased deposition of NO_x from diesel generators. An additional assessment of diesel generator impacts during construction was submitted by the Applicant at Deadline 10 to resolve these concerns [REP10-153] but due to the timing, NE were unable to comment on this information.

The ExA noted that the percentage contributions ("PC") from combined construction works are small, but that the current exposures at the relevant qualifying habitat receptors are already above the Critical Load for several pollutants.

The European dry heath feature of the Minsmere to Walberswick Heaths and Marshes SAC is not present within the 0.1 kg N/ha/yr (1% of the Critical Load) contour line for nitrogen deposition where the Critical Load would be exceeded. Furthermore, concentrations of NO_x are well below the Critical Levels. For the perennial vegetation of the stony banks qualifying feature of the Minsmere to Walberswick Heaths and Marshes SAC (modelled as coastal dunes), the overall construction phase assessment concluded that the PC is 1.1% of the Critical Load, and the predicted environmental concentration ("PEC") remains within the Critical Load range.

The Applicant confirmed that the area where the overall construction phase impacts are greater than 1% of the Critical Load of 10kg N/ha/yr represents 0.2% of the total area of the Minsmere-Walberswick Ramsar [REP10-153], and while no calculation for the area of the SAC is provided, the ExA notes it would be in the same order of magnitude as for the Ramsar given the relative size of the SAC.

The PEC remains below the upper end of the Critical Load range for nutrient nitrogen deposition for all qualifying features of the Minsmere to Walberswick Heaths and Marshes SAC and Minsmere-Walberswick Ramsar. The ExA noted that most of the impacts were attributable to the temporary and short-term impact of diesel generators to power the desalination plant. The area of the Minsmere-Walberswick Heaths and Marshes SSSI underlying the Minsmere-Walberswick Ramsar receptor which would be subject to the exceedance lies within SSSI unit 112 [REP10-153] which is in favourable condition.

The ExA was unable to conclude that there would be no AEoI of the Minsmere to Walberswick Heaths and Marshes SAC and Minsmere-Walberswick Ramsar [REP10-153]. This conclusion was influenced by the absence of comment from NE regarding the impacts attributable to the temporary desalination plant generators which would be in situ for two years.

For acid deposition (from NO_2, NH_3, and SO_2), the ExA noted that there is no European dry heath in the affected area. For the coastal stable dunes and European dry heath features, the PEC remains below 100% of the Critical Load. The ExA agreed that an AEoI could be excluded.

[80] https://rsis.ramsar.org/ris/75

The worst-case impact on the fen marsh and swamp qualifying feature is a PC increase of 1.8% where the background is already 194% of the Critical Load) [REP10-153]. Therefore, the PEC is 195%. The ExA notes that the Critical Load is exceeded, and the PC and increase to the PEC is over the threshold of imperceptibility. On this basis, and in the absence of advice from NE, the ExA was unable to conclude that an AEoI could be excluded.

The ExA was unable to conclude no AEoI of the Minsmere to Walberswick Heaths and Marshes SAC and Minsmere-Walberswick Ramsar from air quality changes during construction from the Project alone, because a final view from NE on the Applicant's revised Desalination Plant Air Quality Impact Assessment was unavailable.

Increases in acid deposition will result from generator use during the operation and commissioning scenarios. During commissioning the acid deposition at receptor E2d (the worst-case modelled receptor point for the Minsmere protected sites) would experience an increase of 21% of the Critical Load (Table 5-16 of [APP-214]). During the routine operation scenario, the PC at the same receptor is 7% of the Critical Load. In both instances, the background concentration as a percentage of the Critical Load is 193.7%. As set out above, the frequency of the commissioning scenario is extremely low and therefore that modelled increase is expected to be a very rare occurrence. In terms of the routine operating scenario, and the 7% increase at receptor E2d (grazing marsh), this is already subject to background acid deposition above the upper Critical Load values but is stated by the Applicant as not considered to be a particularly sensitive habitat to acid deposition, as the soils are likely to be well buffered.

NE stated that the Applicant had not provided enough justification as to why increased NO_x deposition over several years in proximity to a site that already faces pressure from NO_x would not interfere with its conservation objectives [REP10-199].

The ExA noted the Applicant's broad position that prevailing conditions including the current abundance and composition of relevant features suggested that the habitats had enough resilience to allow pollutant deposition to increase above the standard Critical Load value, but this position was unquantified and lacked any evidence or support from NE. The ExA recommended that NE's comments on this position may be sought.

Additional Information

In his fourth consultation letter, the Secretary of State requested that NE advise on whether AEoI of Minsmere-Walberswick Ramsar, and Minsmere to Walberswick Heaths and Marshes SAC from air quality could be excluded.

On 14th June 2022, NE advised that, based on the information provided in the Applicant's updated air quality assessment (based on the combined emissions from diesel generators for the temporary desalination plant and other sources of emissions from the Project), an AEoI of Minsmere to Walberswick Heaths and Marshes SAC and Minsmere-Walberswick Ramsar from changes to air quality could not be excluded.

NE raised concerns that Applicant's updated assessment relied on several assumptions and averages, rather than realistic Project and site-specific parameters, and this approach did not allow a robust impact assessment to be made.

NE also highlighted that the annual NO_x Critical Level threshold and the nitrogen deposition threshold are predicted to be exceeded for the European dry heath and the annual vegetation of the drift line qualifying features of Minsmere-Walberswick SAC.

NE agreed that the background levels of nitrogen and sulphur already exceeded Critical Levels at Minsmere-Walberswick SAC and Ramsar, but this did not justify allowing further deposition, as this could undermine the conservation objective to restore the site.

NE also raised concerns that it was unclear if the Applicant had included other Project-wide emission sources such as HGVs and increases in traffic within their models. NE also advised that ammonia had direct and indirect effects on sensitive species and ammonia from vehicle emissions was not assessed in the updated air quality report.

NE also stated that an in-combination assessment is required for the AA, and this should include all relevant sources of air pollution (from across all sectors) that were 'live' at the time of the assessment.

NE confirmed that it had been consulted on the EA's draft HRA which informs the operational CA permit and that a further comprehensive assessment of air quality impacts will be required for the desalination plant generators.

In response to NE's comments on the updated air quality assessment, the Applicant restated that that all potential effects associated with air quality were fully addressed in the Shadow HRA Report, which concluded that AEoI, in relation to air quality, could be excluded for the Minsmere to Walberswick Heaths and Marshes SAC and the Minsmere-Walberswick Ramsar, for the Project alone and in-combination with other plans and projects. The Applicant provided the following information[81] to address NE's concerns:

- With regards to the assumptions made in the updated cumulative emissions models, the Applicant stated that the assessments used a 'Rochdale envelope' approach representing a worst-case scenario. The modelled scenarios included all plant scheduled to be used at any time within each phase as if they were all operating at the same time, which represented a precautionary approach to the assessment. Furthermore, the application of the lower Critical Load from the range for each habitat is highly precautionary. Furthermore, with respect to control measures, the operation of the diesel generators will be assessed and controlled by the EA through the permitting process, and it is appropriate for the Secretary of State to rely upon the proper and robust operation of that process (in accordance with relevant policy in EN-1 and EN-6).
- With regards to the impacts of emissions on the qualifying features of the SAC and Ramsar, the Applicant stated that it had provided the PEC and the PEC as a percentage of the Critical Level. This information was used to test if the PEC was less than 70% of the Critical Level value. The highest PE value was 46% of the relevant Critical Level for annual mean NOx, which was below the 70% threshold for further assessment, and the toxicity effects were considered in the Shadow HRA. For nitrogen deposition, the Applicant stated that it had assessed the effect where the PC/ Critical Load exceeded 1% and highlighted that their

[81] Sizewell C (June 2022): The Sizewell C Project: SZC Co.'s Response to the Secretary of State's Letter dated 31 May 2022. Appendix 2: SZC Co.'s Response to the Secretary of State's Letter dated 31 May 2022: Appendix 2-SZC Co.'s response to comments made by Natural England related to the Habitats Regulations Assessment (Air Quality) in their letter to the SoS dated 14 June 2022. Rev 1.0. June 2022.

response focussed on nitrogen deposition rather than NOx because it understood that nitrogen deposition was NE's only remaining concern at the close of Examination.

- With regards to the nitrogen deposition thresholds being breached for the European dry heath and drift line features of the SAC, the Applicant stated that the Site Improvement Plan only listed nitrogen deposition as specific threat to the European dry heaths and this feature is not present within the area predicted to experience deposition exceeding 1% of the Critical Load. On this basis the Applicant concluded that the conservation objectives would not be undermined and there would not be an AEoI of the SAC due to nitrogen deposition. Furthermore, the Applicant clarified that it did not simply use the fact that background nitrogen levels already exceeded the Critical Load as justification that further deposition is acceptable, but any botanical effect would be less than it would be if background nitrogen deposition rates were lower.
- With regards to the inclusion of other Project-wide emission sources and the significance of ammonia as a source of pollution from vehicle emissions, the Applicant stated that the air quality assessment did not include the contribution of transport emissions because the sensitive features were too far from the transport network to be affected and this was evidenced during the Examination. The potential for significant effects from the combined impact from all affected road and rail transport emission sources in Norfolk, Suffolk and Essex upon all relevant receptors including the SAC and Ramsar were quantified through the use of dispersion modelling, using more conservative methods than those outlined in NE's general guidance, and the ES, concluded [Para 12.6.73] that: "Minsmere–Walberswick Heaths and Marshes SAC, SPA, Ramsar and Sizewell Marshes/levels SSSI will experience a maximum contribution of pollutants from proposed development traffic of less than 1% of critical levels". As the likely effects of transport emissions did not change the concentrations, they were not included in the updated air quality assessment in-combination effects.
- With regards to the omission of an assessment of ammonia emissions in the updated air quality assessment, the Applicant stated that the list of emissions from road traffic requiring assessment by the current statutory guidance does not include ammonia. However, the modelling does include the combined NOx contribution of the entire modelled road network (affected road links in Essex, Norfolk and Suffolk), and the contribution from traffic emissions to the predicted annual mean concentrations of NOx is less than 0.1 µg/m3. The Applicant stated that the ammonia contribution from traffic would be considerably lower that the NOx contribution.
- With regards to the requirement for an in-combination assessment, the Applicant stated that at the time the air quality assessment was undertaken, a review of planning applications within 15 km of the receptors was undertaken and no relevant projects or plans were identified. A further review undertaken on 14th June 2022 confirmed that this was still the case.

The Secretary of State is confident that the impacts of changes to air quality will be assessed as part of the permitting process and that pollution mitigation and control measures will be secured through this process to prevent an AEoI of the protected sites. In accordance with the policies set out in EN-1 and EN-6, the Secretary of State has no reason to believe that an EP will not be granted and has taken account of the conclusions of the EA's proposed decision on the draft operational CA permit which states that an AEoI of the qualifying features of the Minsmere to Walberswick Heaths and Marshes SAC and the non-bird features of the Minsmere-Walberswick Ramsar have been excluded. The Secretary of State has assessed the material presented during the Examination including representations made by IPs, the recommendation of the ExA, and all relevant post-Examination representations and information received. Regarding the effects from changes to air quality, and without prejudice to the EP process, the Secretary of

State concludes that an AEoI of qualifying features of Minsmere to Walberswick Heaths and Marshes SAC and the non-bird features of the Minsmere-Walberswick Ramsar can be excluded for the Project alone.

5.21.2 All Features: In-combination

5.21.2.1 Changes in air quality

The ExA is not aware of any plans or projects that could act in combination with the Project and considers, on the basis of the information provided to the Examination, that it could be possible to conclude no AEoI in combination. However, the ExA recommended that the Secretary of State satisfy themself before a conclusion on in-combination effects is determined.

The Secretary of State is confident that the impacts of changes to air quality will be assessed as part of the permitting process and that pollution mitigation and control measures will be secured through this process to prevent an AEoI of the protected sites. In accordance with the policies set out in EN-1 and EN-6, the Secretary of State has no reason to believe that an EP will not be granted and has taken account of the conclusions of the EA's proposed decision on the draft operational CA permit which states that an AEoI of the qualifying features of the Minsmere to Walberswick Heaths and Marshes SAC and the non-bird features of the Minsmere-Walberswick Ramsar have been excluded. The Secretary of State has assessed the material presented during the Examination including representations made by IPs, the recommendation of the ExA, and all relevant post-Examination representations and information received. Regarding the effects from changes to air quality, and without prejudice to the EP process, the Secretary of State concludes that an AEoI of qualifying features of Minsmere to Walberswick Heaths and Marshes SAC and the non-bird features of the Minsmere-Walberswick Ramsar can be excluded for the Project in-combination with other plans and projects.

5.21.3 All features: Alone and In-combination

5.21.3.1 Disturbance due to increase in recreational pressure

For the reasons set out in Table 2, in line with the recommendation of NE and the ExA, the Secretary of State is satisfied that, based upon the mitigation measures secured in the DCO, an AEoI of the Minsmere-Walberswick SAC and Ramsar from the effects of increases in recreational pressure on all features from the Project alone and in-combination with other plans or projects can be excluded.

5.21.3.2 Unintentional spread of INNS

For the reasons set out in Table 2, in line with the recommendation of the ExA and NE, the Secretary of State is satisfied that, based upon the mitigation measures as secured in the CoCP an AEoI of the Minsmere-Walberswick Heaths and Marshes SAC and Ramsar from the effects of unintentional spread of INNS on all features resulting from the Project alone and in-combination can be excluded.

5.21.4 Perennial vegetation of stony banks; Ramsar Criterion 1, 2: Alone and In-combination

5.21.4.1 Water quality effects (terrestrial environment)

For the reasons set out in Table 2, in line with the recommendation of the ExA and NE, the Secretary of State is satisfied that, based upon the mitigation measures as secured an AEoI of the Minsmere-Walberswick Heaths and Marshes SAC and Ramsar from the effects of changes in water quality on all features resulting from the Project alone and in-combination can be excluded

5.21.4.2 Alteration of local hydrology and hydrogeology

For the reasons set out in Table 2, in line with the recommendation of NE and the ExA, the Secretary of State is satisfied that, based upon the mitigation measures secured in the DCO, Drainage Strategy, CoCP and TEMMP, an AEoI of the Minsmere-Walberswick Heaths and Marshes SAC and Ramsar from the effects of alterations of local hydrology and hydrogeology from the Project alone and in-combination with other plans or projects can be excluded.

5.21.5 Annual vegetation of drift lines; perennial vegetation of stony banks; Ramsar Criterion 1, 2: Alone and In-combination

5.21.5.1 Changes to coastal processes/ sediment transport

The Shadow HRA [APP-145] identified four elements of the Project that could cause potential LSE to arise, including:

- Coastal defences;
- BLF;
- Cooling water intakes and outfalls; and
- FRR system and CDO.

In respect of Change 19, the Shadow HRA Third Addendum [REP7-279] stated that effects arising from changes to coastal processes and sediment transport would extend over small areas and would be highly localised around activities associated with Change 19.

During the Pre-examination and Examination periods, the Applicant provided technical reports and representations relevant to the assessment, and proposed mitigation and monitoring of potential coastal process effects. These include:

- Technical report TR543 ‘Modelling of the Temporary and Permanent Beach Landing Facilities at Sizewell C’ [PDB-010];
- TR544 Preliminary design and maintenance requirements for the Sizewell C Soft Coastal Defence Feature [REP10-124];
- TR545 Storm Erosion Modelling of the Sizewell C Coastal Defence Feature [REP9-020]; and
- Coastal Processes Monitoring and Mitigation Plan (CPMMP) [REP10-041].

During Examination, NE and the RSPB/SWT confirmed that they were not yet satisfied that an AEoI could be excluded for the Minsmere to Walberswick Marshes SAC for annual vegetation

of drift lines and perennial vegetation of stony banks. The EA considered there to be gaps in the Applicant's Storm Erosion Modelling.

Due to the timing of the final Examination deadline the Applicant was unable to respond to NE's or the RSPB/SWT's final representations [REP10-200].

NE and other IPs did not have the opportunity to comment on the Applicant's final submissions on this matter, as they were received at the final deadline.

Full details of the Applicant's and IPs responses during Examination are provided in Section 5.4

As the Applicant and IPs, including NE, were unable to comment on the final representations and updated reports at the final Examination deadline, the ExA was not able to reach a conclusion.

In his second consultation letter, the Secretary of State invited the Applicant to respond to NE's [REP10-200] and the RSPB/SWT's [REP10-204] Deadline 10 submissions in relation to changes to coastal processes / sediment transfer impacts on the Minsmere to Walberswick Heaths and Marshes SAC, and the Minsmere-Walberswick SPA and Ramsar site. The Secretary of State also invited NE, the MMO, the EA, the RSPB/SWT and ESC to comment on the updated TR544 'Preliminary Design and Maintenance Requirements for the Sizewell C Soft Coastal Defence Feature' [REP10-124] and the CPMMP [REP10-041].

The Applicant provided an Appendix[82] to its Main Report[83] in response to the Secretary of State's letter. This provided further information in relation to NE's and the RSPB/SWT's final comments on coastal processes / sediment transport.

Full details of the responses of the Applicant and all IPs are provided in Section 5.4.

In response to the Secretary of State's third consultation letter, the EA[84] and NE provided no further comment on this matter. The RSPB/SWT[85] stated it had not provided further comment on concerns set out in its final Examination submission due to these concerns not being resolved in light of the Applicant's responses and/or new information.

The Secretary of State has given consideration to the submissions provided by the Applicant and IPs, both during and post-Examination, as well as the recommendation of the ExA, and considers he has sufficient information to reach a conclusion. The Secretary of State is satisfied that, subject to the implementation of the mitigation measures secured in the CPMMP, an AEoI of the Minsmere to Walberswick Marshes SAC and Minsmere-Walberswick Ramsar from the effects of changes to coastal processes / sediment transport on annual vegetation of drift lines

[82] NNB Generation Company (SZC) Limited, 2022. *SZC Co.'s Response to the Secretary of State's Request for Further Information dated 31 March 2022: Appendix 8 - Additional technical information to support Question 8.11 in relation to Natural England, RSPB and SWT comments on assessment of coastal processes*. April 2022.

[83] NNB Generation Company (SZC) Limited, 2022. *SZC Co.'s Response to the Secretary of State's Request for Further Information dated 31 March 2022*. April 2022.

[84] Environment Agency, 2022. *Application by NBB Generation Company (SZC) Limited for an Order Granting Development Consent for the Sizewell C Project*. 23rd May 2022.

[85] RSPB/SWT, 2022. *Response to Department for Business, Energy and Industrial Strategy Information presented in Responses to Secretary of Statement Questions of 18th and 31st March 2022 from the Royal Society for the Protection of Birds and Suffolk Wildlife Trust.* 23rd May 2022.

and perennial vegetation of stony banks resulting from the Project, alone and in-combination with other plans and projects, can be excluded.

5.21.5.2 Water quality effects (marine environment)

For the reasons set out in Table 2, in line with the recommendation of the ExA, the Secretary of State is satisfied that subject to the implementation of the mitigation measures secured, an AEoI of the annual vegetation of drift lines and perennial vegetation of stony banks feature of the Minsmere to Walberswick Marshes SAC and Minsmere-Walberswick Ramsar from the effects of changes to water quality on from the Project alone and in combination with other plans or projects can be excluded.

5.21.6 European dry heaths; Ramsar Criterion 1, 2: Alone and In-combination

5.21.6.1 Impediment to management practices

The ExA stated that the Secretary of State could conclude no AEoI given the mitigation proposed, either alone or in-combination with other plans or projects, but that he may wish to satisfy himself with regard to the lack of a firm commitment from the Applicant that it would not impede the RSPB's access route to the Minsmere reserve via Lower Abbey Farm before reaching a conclusion. The ExA was not aware of any plans or projects that could act in-combination with this impact pathway.

In his second consultation letter, the Secretary of State asked the Applicant to provide details of how it can provide assurance, within the DCO or otherwise, that there will be no impediment to the RSPB's existing access route to the Minsmere reserve via Lower Abbey Farm.

The Applicant responded[83] that at Deadline 8, it submitted a plan showing the retained access to the Minsmere reserve and Sizewell Marshes SSSI as Appendix J [REP8-119] of its Comments on Earlier Deadlines and Subsequent Written Submissions to CAH1 and ISH8-ISH10 [REP8-120]. However, the Applicant stated that it had *'inadvertently omitted'* the amendments to the final Deadline 10 version of the CoCP to include Appendix J [REP10-072].

As part of the documents submitted to the Secretary of State in response to his second consultation letter, the Applicant included Appendix J as a new figure (Figure 1) of an updated CoCP. For clarity, the Applicant included additional wording in section 1.2, paragraph 1.2.1, stating:

"Existing and proposed temporary access routes to the Minsmere to Walberswick Heaths and Marshes SSSI and Sizewell Marshes SSSI must be managed in accordance with Figure 1. Where any of the specified local temporary diversions are required to maintain access to these SSSIs for conservation management purposes during the construction phase, as shown on Figure 1, these diversions must be established prior to the existing routes being rendered unavailable".

The CoCP is a certified document and is secured by Requirement 2 of Schedule 2 of the DCO. Therefore, the Secretary of State is satisfied that sufficient assurances have been committed to, including through provisions of the DCO, that there will be continued and unhindered access to the Minsmere reserve as required to sustain management practices. The Secretary of State is satisfied that, based upon the updated CoCP, an AEoI of the Minsmere-Walberswick Heaths

and Marshes SAC and Ramsar from the effects of impediments to management practices on the European dry heaths qualifying feature and Criterion 1 and 2 from the Project alone and in-combination with other plans and projects can be excluded.

5.22 Appropriate Assessment: Minsmere-Walberswick SPA and Ramsar

The Minsmere to Walberswick SPA and Ramsar are located adjacent to the MDS. The Minsmere -Walberswick SPA covers 2,018.92ha of habitats situated on the coast of Suffolk between Southwold and Sizewell. The SPA is either fully or partially coincident with the Minsmere-Walberswick Heaths and Marshes SAC, Minsmere-Walberswick Ramsar, Outer Thames Estuary SPA and Southern North Sea SAC.

The Minsmere-Walberswick SPA includes both marine areas (i.e. land covered continuously or intermittently by tidal waters) and land which is not subject to tidal influence and contains a mosaic of habitat that supports the 12 designated bird species of this site. There are extensive areas of freshwater and coastal grazing marsh, coastal reedbeds, saltmarsh, lowland heathland, woodland, intertidal mud and mixed sediment. During severe winter weather Minsmere-Walberswick SPA can assume even greater national and international importance as wildfowl and waders from many other areas arrive, attracted by relatively mild climate, compared with continental areas, and the abundant food resources available[86].

The Secretary of State has considered the potential for the Project to constitute an AEoI for each feature for which a significant effect is likely.

The 13 qualifying features of the SPA and bird Ramsar Criterion for which the site is designated, and which have all been carried forward to consideration of AEoI are:

- Avocet (breeding);
- Bittern (breeding);
- Gadwall (breeding);
- Shoveler (breeding);
- Little tern (breeding);
- Marsh harrier (breeding);
- Nightjar (breeding);
- Teal (breeding);
- Gadwall (wintering);
- Hen harrier (wintering);
- Shoveler (wintering);
- White-fronted goose (wintering); and
- Ramsar Criterion 2: An important assemblage of rare breeding birds associated with marshland and reedbeds.

The Applicants Shadow HRA Report provided information for an AA for multiple potential impact pathways (see Table 1).

[86] https://designatedsites.naturalengland.org.uk/Marine/MarineSiteDetail.aspx?SiteCode=UK9009101&SiteName=minsmere&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=&HasCA=1&NumMarineSeasonality=12&SiteNameDisplay=Minsmere-Walberswick%20SPA#backgroundinfo

As mentioned earlier in this HRA (see Table 1), submissions from NE indicated that the following additional impacts should be considered at the AA stage:

- Unintentional spread of INNS (C) - all qualifying features/Criterion;
- Physical interaction between species and project infrastructure (O) - all qualifying features/Criterion;
- Changes to coastal processes/sediment transport (C, O, D) - for additional features that the Applicant had screened out; and
- Damage to notified habitats due to impediment to management practices (C, O, D) - all qualifying features.

The Applicant concluded no AEoI for all qualifying features of the Minsmere-Walberswick SPA and Minsmere to Walberswick Ramsar from all potential impact pathways screened in, except for noise and visual disturbance effects to the marsh harrier qualifying feature of the SPA and Ramsar during construction.

The Supplementary advice for marsh harrier includes the following targets[87]:

- Maintain the size of the breeding population at a level which is above 15 breeding females, whilst avoiding deterioration from its current level as indicated by the latest mean peak count or equivalent.
- Restrict the frequency, duration and/or intensity of disturbance affecting roosting, foraging, feeding, moulting and/or loafing birds so that they are not significantly disturbed.
- Restrict predation and disturbance caused by native and non-native predators.
- Maintain the structure, function and supporting processes associated with the feature and its supporting habitat through management or other measures (whether within and/or outside the site boundary as appropriate) and ensure these measures are not being undermined or compromised.
- Maintain the extent, distribution and availability of suitable habitat (either within or outside the site boundary) which supports the feature for all necessary stages of its breeding cycle (courtship, nesting, feeding). There are no quantified baseline figures for extent and distribution of supporting habitat at Minsmere-Walberswick SPA.
- Maintain the distribution, abundance and availability of key food and prey items (e.g. mammals, birds) at preferred sizes (e.g. voles, mice, rabbit; birds of pipit to duck size).
- Maintain continuous reed cover over large areas avoiding fragmentation of extensive reedbeds.
- Maintain a management regime that ensures the constant availability of areas of dense reed stands as nesting cover.
- Maintain the availability of water over the entire reedbed area, with a high proportion of the area with a water depth of 0.1 m to 0.3 m.
- Maintain the dissolved oxygen concentration at levels equating to high ecological status (specifically ≥ 5.7 mg L-1 (at 35 salinity) for 95 % of year) avoiding deterioration from existing levels.
- Maintain water quality at mean winter dissolved inorganic nitrogen levels where biological indicators of eutrophication (opportunistic macroalgal and phytoplankton blooms) do not affect the integrity of the site and features, avoiding deterioration from existing levels.

[87] Natural England (2019): European Site Conservation Objectives for Minsmere–Walberswick Special Protection Area Site Code: UK9009101

- Maintain natural levels of turbidity (e.g. concentrations of suspended sediment, plankton and other material) across the habitat.

The supplementary advice for gadwall includes the following targets:

- 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.
- Restrict the frequency, duration and/or intensity of disturbance affecting roosting, foraging, feeding, moulting and/or loafing birds so that they are not significantly disturbed (breeding and non-breeding).
- Maintain the size of the non-breeding population at a level which is above 90 individuals, whilst avoiding deterioration from its current level as indicated by the latest mean peak count or equivalent.
- Restrict predation and disturbance caused by native and non-native predators.
- Maintain concentrations and deposition of air pollutants to at or below the site-relevant Critical Load or Level values given for the feature' supporting habitat on the Air Pollution Information System (breeding and non-breeding).
- Maintain the structure, function and supporting processes associated with the feature and its supporting habitat through management or other measures (whether within and/or outside the site boundary as appropriate) and ensure these measures are not being undermined or compromised (breeding and non-breeding).
- Maintain the extent, distribution and availability of suitable habitat (either within or outside the site boundary) which supports the feature for all necessary stages of its breeding cycle (courtship, nesting, feeding). There are no quantified baseline figures for extent and distribution of supporting habitat at Minsmere-Walberswick SPA (breeding and non-breeding).
- Maintain the distribution, abundance and availability of key food and prey items (e.g. hatching midges, *Glyceria fluitans, Agrostis stolonifera, Chara, Potomageton, Ceratophyllum spp., Ruppia*) at preferred sizes (breeding and non-breeding).
- Maintain the hydrology of a waterbody used as a feeding site such that water levels reduce (or are reduced) by 5-15% each month from the time of mean hatch date to the end of the breeding season (breeding and non-breeding).
- Maintain the overall heights of vegetation patches (20-60 cm) within nesting areas that are typically<50 m from the water's edge.
- Maintain the number of waterbodies of optimal size (breeding and non-breeding).
- Maintain the availability of standing water of optimal depth, typically <0.1 m deep, over at least 22 hectares (breeding and non-breeding).
- Restrict aqueous contaminants to levels equating to High Status according to Annex VIII and Good Status according to Annex X of the Water Framework Directive, avoiding deterioration from existing levels (breeding and non-breeding).
- Maintain the dissolved oxygen concentration at levels equating to high ecological status (specifically ≥ 5.7 mg L-1 (at 35 salinity) for 95% of year) avoiding deterioration from existing levels (breeding and non-breeding)
- Maintain water quality at mean winter dissolved inorganic nitrogen levels where biological indicators of eutrophication (opportunistic macroalgal and phytoplankton blooms) do not affect the integrity of the site and features, avoiding deterioration from existing levels (breeding and non-breeding).
- Maintain natural levels of turbidity (e.g. concentrations of suspended sediment, plankton and other material) across the habitat (breeding and non-breeding).

The supplementary advice for shoveler includes the following targets:

- Maintain the size of the breeding population to a level which is above 23 pairs, whilst avoiding deterioration from its current level as indicated by the latest mean peak count or equivalent.
- Restrict the frequency, duration and/or intensity of disturbance affecting roosting, foraging, feeding, moulting and/or loafing birds so that they are not significantly disturbed (breeding and non-breeding).
- Restrict predation and disturbance caused by native and non-native predators.
- Maintain concentrations and deposition of air pollutants to at or below the site-relevant Critical Load or Level values given for the feature' supporting habitat on the Air Pollution Information System (breeding and non-breeding).
- Maintain the structure, function and supporting processes associated with the feature and its supporting habitat through management or other measures (whether within and/or outside the site boundary as appropriate) and ensure these measures are not being undermined or compromised (breeding and non-breeding).
- Maintain the extent, distribution and availability of suitable habitat (either within or outside the site boundary) which supports the feature for all necessary stages of its breeding cycle (courtship, nesting, feeding). There are no quantified baseline figures for extent and distribution of supporting habitat at Minsmere-Walberswick SPA (breeding and non-breeding).
- Maintain the number of waterbodies of optimal size (breeding and non-breeding).
- Restrict aqueous contaminants to levels equating to High Status according to Annex VIII and Good Status according to Annex X of the Water Framework Directive, avoiding deterioration from existing levels (breeding and non-breeding).
- Maintain the dissolved oxygen concentration at levels equating to high ecological status (specifically ≥ 5.7 mg L-1 (at 35 salinity) for 95% of year) avoiding deterioration from existing levels (breeding and non-breeding)
- Maintain water quality at mean winter dissolved inorganic nitrogen levels where biological indicators of eutrophication (opportunistic macroalgal and phytoplankton blooms) do not affect the integrity of the site and features, avoiding deterioration from existing levels (breeding and non-breeding).
- Maintain safe passage of birds moving between nesting and feeding areas.
- Maintain the distribution, abundance and availability of key food and prey items (e.g. *Scirpus, Eleocharis, Carex, Potamogeton, Glyceria*, surface plankton, hatching midges, *Hydrobia*, crustaceans, caddisflies, diptera, beetles) at preferred sizes (breeding and non-breeding).
- Maintain water availability in feeding sites to provide shallow surface water and damp field condition (breeding and non-breeding).
- Maintain the overall heights of vegetation patches (20-60 cm) within nesting areas.
- Maintain the availability of standing water at optimal depth, typically <0.3 m deep (breeding and non-breeding).
- Maintain natural levels of turbidity (e.g. concentrations of suspended sediment, plankton and other material) across the habitat (breeding and non-breeding).

5.22.1 Gadwall; shoveler: Alone

5.22.1.1 Disturbance (noise light and visual)

The Applicant concluded [APP-145] no AEoI of the breeding and non-breeding gadwall and shoveler qualifying features of the Minsmere-Walberswick SPA and Ramsar from disturbance

effects. This was evidenced by the potential visual impact zone not extending onto the SPA, other than in the south-eastern extremity which does not include suitable habitat for these species. The peak noise levels within the SPA, which would occur during construction of the MDS, are predicted to remain below the 64dBL_{Amax} threshold. Supplementary Advice on the generic conservation objectives for both species is to maintain the non-breeding populations whilst avoiding deterioration from their current levels.

The assessment acknowledged that gadwall and shoveler may breed and forage in FLL at the Minsmere South Levels and Sizewell Marshes, and that up to 11% of breeding gadwall and 7% of the breeding shoveler could be displaced from these areas. Between 4-18% and 4-10% of peak winter counts for non-breeding gadwall and shoveler respectively have been recorded on the Sizewell Marshes. The Applicant noted that the populations of gadwall and shoveler are currently more than three times the size and almost double the size of the population at the time of citation, respectively. It stated that the potential for displacement of breeding shoveler from the Minsmere South Levels would not be as high as predicted and displaced birds may be functionally linked to the SPA rather than being from the designated population.

NE [REP2-071] [REP2-153] [REP5-160] concluded that the Applicant had been unable to exclude an AEoI beyond reasonable scientific doubt, as its conclusions lacked precaution on the basis of:

- Limited data;
- Uncertainties about behavioural responses of breeding birds to visual and acoustic disturbance;
- The compounding effects of recreational pressure;
- The significant percentage of predicted breeding bird displacement (where new data show breeding numbers remain consistent); and
- The significant increase in non-breeding birds.

Breeding gadwall and shoveler

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

The Applicant's 2020 surveys provided distributional data on breeding gadwall and shoveler on the Minsmere South Levels and Sizewell Marshes [AS-173] [AS-021] [AS-208]. It considered that the surveys demonstrated birds breeding on the Minsmere South Levels are concentrated in the northeast of the area, outside of where disturbance effects are predicted to occur. Although information on distribution only relates to one year of survey data, it considered the data to be broadly coincident with that of the main pool systems within the Minsmere South Levels. The Applicant confirmed that all of the birds predicted to be displaced occur on the FLL rather than within the boundaries of the SPA and considered that NE's position failed to recognise this.

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. It did not consider it possible to affect such significant proportions of the populations associated with the SPA and FLL without the potential for AEoI of the Minsmere-Walberswick SPA and Ramsar.

The RSPB/SWT cited guidance regarding functionally linked populations published by NE (Chapman and Tyldesley, 2016), noting 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". The Applicant [REP5-112] 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 the functional linkage to be concerned with the occurrence of additional breeding birds and that breeding birds within the designated site are not dependent on the functionally linked habitat for provision of resources.

In response to concerns raised by NE and the RSPB/SWT regarding between year movements of breeding birds between the SPA and FLL, the Applicant [REP7-051] explained that as the assessment relies on seven years of abundance data it would be unreasonable to suggest this is not sufficient to adequately capture the potential for between year movements.

Furthermore, the Applicant [REP3-042] noted that the breeding gadwall and breeding shoveler Minsmere-Walberswick SPA and Ramsar populations are more than three times and almost double the size of the population at the time of citation. It considered it highly unlikely that the FLL is necessary in achieving the conservation objectives for these sites. It therefore concluded that the predicted displacement of a relatively small number of breeding pairs from FLL would not prevent achievement of the Supplementary Advice on the generic conservation objectives, which is to maintain the SPA population size above the citation level.

Non-breeding Gadwall and Shoveler

NE raised a number of matters [REP2-071] including 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 waterbird surveys represents a significant increase. NE also considered the mapping of winter survey records to be inadequate, because the peak counts were represented by a single point location for gadwall and three-point locations for shoveler.

The RSPB/SWT [REP2-506] concluded that with the levels of displacement predicted, an AEoI could not be excluded. It considered that as with breeding gadwall and shoveler, any deterioration from current population levels would comprise the site's ability to meet the Supplementary Advice on Conservation Objectives.

The Applicant stated [REP4-042] that the marked annual fluctuations in wintering waterbird numbers at individual sites are a frequent occurrence, as demonstrated by the Wetland Bird Survey (WeBS) data. The Applicant also noted that both species often occur in large, concentrated aggregations during the non-breeding season, so distribution can be sufficiently well indicated by the mapped point locations. Further, it noted that the distribution of both non-breeding gadwall and shoveler on the Minsmere South Levels is shown to be consistently centred around the main pool systems, and beyond the areas within which disturbance effects are predicted to occur.

The Applicant concluded that the relatively small proportion of the SPA population of non-breeding gadwall and shoveler likely to depend upon the Sizewell Marshes, combined with the other sites outside the SPA which have the potential to provide extensive areas of supporting

habitat, means that displacement of birds from parts of the Sizewell Marshes will not prevent the SPA from continuing to support the existing populations.

Positions at the End of Examination

At the end of Examination, NE [REP5-160] [REP10-199] remained of the view that the information provided in the HRA was insufficient to exclude an AEoI for breeding and non-breeding gadwall and shoveler in the absence of any compensation. 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 Project. NE also recommended that monitoring and adaptive management should be more robust than currently proposed in the TEMMP.

In addition, NE [REP5-160] 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.

The RSPB/SWT [REP5-164] [REP8-173] supported NE's comments and expressed concerns regarding limited survey data. It did not consider that the mitigation in the TEMMP was sufficient and considered that no evidence had been provided as to where mitigation could be deployed, or to what extent this would reduce noise and visual disturbance.

The ExA noted that amendments were made to the TEMMP at the final Examination deadline, however, it was not known whether these amendments would remove the concerns of NE and the RSPB/SWT. The ExA considered that the proposed intervention, should monitoring prove it to be necessary, lack specificity in terms of the likely screening or evidence that it is implementable during the construction period. The limited distributional data and uncertainties with regards to behavioural response and noise thresholds, as well as uncertainties with regards to intervention measures, resulted in the ExA concluding that insufficient evidence had been provided to recommend that an AEoI could be excluded for the breeding and non-breeding gadwall and shoveler features of the Minsmere-Walberswick SPA and Ramsar beyond reasonable scientific doubt.

Additional Information

In his first consultation letter, the Secretary of State requested the Applicant to provide additional information to demonstrate exclusion of AEoI alone and in-combination or alternative measures to avoid, mitigate, or compensate for any adverse effects identified.

The Applicant[88] reiterated that it considered its baseline data to be substantive as the assessments for breeding gadwall and shoveler rely on seven years of survey data and are augmented by further surveys in 2020 which provide distributional as well as abundance data. The Applicant also highlighted that the assessments for non-breeding gadwall and shoveler rely on two full and one partial winter seasons of project-specific survey data, as well as over five winter seasons of WeBS count data.

NE indicated that a full winter season survey programme should comprise twice monthly surveys from October to February inclusive. However, the Applicant's surveys were monthly and extended over the period November to March (inclusive) for the two full winter seasons, with

[88] NNB Generation Company (SZC) Limited, 2022. *The Sizewell C Project – SCZ's Response to the Secretary of State's Request for Further Information dated 18 March 2022.* April 2022.

partial coverage over a season encompassing December to February. The Applicant stated that WeBS demonstrates that counts of gadwall and shoveler are on average less than 25% of the average for the months in which peak counts occur on Sizewell Marshes and Minsmere South Levels. Therefore, the inclusion of October surveys would not have changed the conclusion of no AEoI. The Applicant understood that this was agreed with NE.

To supplement the wintering waterbird surveys, the Applicant carried out an additional season on the Minsmere South Levels and Sizewell Marshes, comprising monthly surveys between November 2021 and March 2022 inclusive. The survey report was being drafted at the time of the Applicant's response to the Secretary of State, however, the Applicant provided numbers of wintering gadwall and shoveler recorded. Preliminary results had also been shared with NE.

With respect to the Minsmere South Levels, recorded peak numbers of gadwall and shoveler were lower during the 2021 – 2022 surveys than peak counts during 2014 – 2015 and 2019 – 2020 surveys. However, numbers were higher than those obtained during the partial survey programme in 2019 – 2020.

Peak counts for gadwall on Sizewell Marshes during the 2021 – 2022 surveys were within the range of those obtained during earlier surveys but were higher for shoveler than in previous years. However, the WeBS counts recorded higher numbers of shoveler in the Sizewell Marshes.

In relation to the distribution of gadwall and shoveler, the findings from the 2021 – 2022 surveys are consistent with the earlier project-specific wintering bird surveys. This showed that the gadwall and shoveler recorded on the Minsmere South Levels are beyond the areas predicted to be affected by potential construction-related disturbance.

The Applicant concluded that the findings from the additional surveys do not alter the conclusions of no AEoI alone or in combination with other plans or projects, as determined by the Shadow HRA and Shadow HRA Addendum.

The Applicant stated that the preliminary results had been shared with NE, and it understood from subsequent discussions that it is now a matter of common ground with NE that the updated baseline survey information is adequate.

In response to the Secretary of State's third consultation letter which asked all IPs to comment on the responses to his first two letters, the RSPB/SWT[89] stated it remained of the view that an AEoI of the Minsmere-Walberswick SPA and Ramsar could not be ruled out. It did not acknowledge the Applicant's additional winter survey data and stated that the initial and additional measures proposed would not mitigate potential effects. It considered that no evidence had been provided as to where the measures could be deployed or to what extent they would reduce noise and visual disturbance, and recommended that further mitigation should be proposed.

NE did not comment further on this matter in its subsequent representations to the Secretary of State.

The Secretary of State notes that changes were made to the TEMMP at Deadline 10. This included changes to the timing and frequency of surveys, with monthly surveys for breeding

[89] RSPB/SWT, 2022. *Response to Department for Business, Energy and Industrial Strategy Information presented in Responses to Secretary of Statement Questions of 18th and 31st March 2022 from the Royal Society for the Protection of Birds and Suffolk Wildlife Trust.* 23rd May 2022.

waterbirds, and twice monthly surveys for non-breeding waterbirds. Monitoring at Sizewell Marshes SSSI was also included, with survey results to be assessed against / compared with findings of RSPB survey results for breeding waterbirds.

The Secretary of State also notes that, in response to the Secretary of State's first letter, the Applicant has provided the results of an additional season of wintering waterbird surveys, of which it has shared with NE.

Following the Applicant's response to the Secretary of State's first letter inviting the Applicant to provide further information to demonstrate exclusion of adverse effects on gadwall and shoveler, the Secretary of State invited comment from the Applicant and IPs in four further letters on specific topics, including, in his letter of 25th April 2022, inviting all IPs for comment on the responses to his first two letters. The Secretary of State notes that NE did not provide a submission in response to this letter, nor comment further on the adequacy or otherwise of the updated TEMMP or publicly comment on the updated baseline data. The Secretary of State considers that the baseline survey data which is supplemented by over five winter seasons of WeBS count data for the SPA and FLL is robust.

The Secretary of State notes that potential displacement effects on gadwall and shoveler are only predicted to occur on FLL, and survey data shows that the distribution of gadwall and shoveler on the Minsmere South Levels was found to be beyond the areas which the effects of noise and visual disturbance are predicted to occur. He has given consideration to Chapman and Tyldesley (2016)[90] which, in respect to how FLL should be taken into account within an HRA, states *"… that assessment will need to determine how critical the area may be to the population of the qualifying species and whether the area is necessary to maintain or restore the favourable conservation status of the species*."

The Secretary of State concludes that, noting the spatial distribution of breeding and non-breeding gadwall and shoveler on FLL, he does not consider the SPA population to be dependent on the FLL for nesting or foraging. He considers the functional linkage to be concerned with the occurrence of birds on habitats outside of the SPA and that other areas of supporting habitat outside the SPA are available should birds be displaced. The Secretary of State also concludes that the baseline survey data is sufficient. This appears to be a matter of common ground between the Applicant and NE, based on the Applicant's statement in response to the Secretary of State's first letter and NE's lack of objection to this statement in subsequent rounds of consultation.

The Supplementary Advice on Conservation Objectives for breeding and non-breeding gadwall and shoveler is to maintain populations and avoid deterioration from their current levels as indicated by the latest mean peak count or equivalent. According to the Shadow HRA assessment, numbers of breeding and non-breeding gadwall are over three-fold more than the citation population size. Breeding shoveler is almost three-fold more than the citation population size and almost double the size for non-breeding shoveler. The Secretary of State does not believe that the levels of predicted disturbance would prevent achievement of the Supplementary Advice on Conservation Objectives for these features of the SPA.

[90] http://publications.naturalengland.org.uk/publication/6087702630891520

The Secretary of State is satisfied that an AEoI of the Minsmere-Walberswick SPA and Ramsar from the effects of disturbance on gadwall and shoveler from the Project alone can be excluded.

5.22.2 Gadwall; shoveler: In-Combination

5.22.2.1 Disturbance (noise, light and visual)

The Shadow HRA provides an in-combination assessment of the potential for AEoI of the qualifying features of the Minsmere-Walberswick SPA from the Project together with the plans and projects identified.

With consideration of the proposed mitigation measures, the Applicant concluded that there was no potential for an AEoI of the Minsmere-Walberswick SPA in combination with other plans or projects. The Applicant considers this conclusion also applies to Minsmere-Walberswick Ramsar site [APP-145].

The Applicant's assessment of cumulative/inter-project effects [AS-174] [REP7-279] concluded that an AEoI would not occur when the respective effects are considered together.

The ExA recommended that the Secretary of State satisfy himself on the outstanding matters before a conclusion on in-combination effects is determined.

As specified in Section 5.22.1.1, the Secretary of State wrote to the Applicant to provide additional information to demonstrate exclusion of AEoI alone and in-combination or alternative measures to avoid, mitigate, or compensate for any adverse effects identified. The Secretary of State considers that the outstanding matters in relation to the impact pathway alone have been resolved.

In light of this, the Secretary of State is satisfied that, based upon the mitigation measures an AEoI of the Minsmere-Walberswick SPA and Ramsar from the effects of disturbance on gadwall and shoveler from the Project in combination with other plans or projects can be excluded.

5.22.3 Breeding bittern; gadwall; shoveler: Alone and In-combination

5.22.3.1 Disturbance associated with the creation of compensatory measures wetland habitat and flood compensation area

The RSPB/SWT [REP2-506] noted that the works to create the wetland habitat element of the marsh harrier compensatory habitat would occur in the first winter of Phase 1 of the construction period. It expressed concern that should works stretch into the breeding season, impacts on breeding bittern, gadwall and shoveler, could be more significant than predicted. It noted that breeding bittern start booming in February.

The Applicant confirmed [REP3-042] that works on the flood compensation area and wetland habitat would only be carried out in the first winter and in the event they are not completed by the first winter, they would be continued in the second winter. The RSPB/SWT confirmed that securing this commitment would resolve its concerns on this issue [REP5-166].

The Applicant incorporated this commitment into the CoCP [REP10-072]. The CoCP is a certified document in Schedule 23 of the DCO and is to be certified under Article 82. Its implementation is secured through Requirement 2 of the DCO.

The ExA was content that the commitment to undertake works for the compensatory habitat during the winter months would mitigate potential disturbance impacts from these works on breeding bittern, gadwall and shoveler, and that this commitment is adequately secured. However, the ExA notes a discrepancy between the need to avoid works in February when bitterns start booming and the statement in the CoCP that excavation work must be undertaken between October and February. This wording does not specifically exclude February.

The ExA therefore recommended that the Secretary of State may wish to consult with the Applicant with regards to an amendment to the period of excavation works for the marsh harrier compensatory habitat area to specifically exclude February.

In his letter of 31st March 2022, the Secretary of State invited the Applicant to submit an updated CoCP which includes an amendment to the excavation period to specifically exclude the month of February.

In response to the Secretary of State's letter, the Applicant had provided an updated CoCP which detailed its amended timeline for the creation of the wetland habitat element of the proposed marsh harrier compensatory habitat, to mid-August to February. It stated that it had consulted further with NE and the RSPB and both parties confirmed that placing a constraint on excavation works to be undertaken between mid-August and February would not disturb breeding bittern, marsh harrier or any other breeding bird feature of the Minsmere-Walberswick SPA and Ramsar.

The Applicant also assured the Secretary of State that the ES and Shadow HRA assumes the inclusion of February and there is no disagreement with other stakeholders on this matter. The updated CoCP therefore did not exclude the month of February as the Applicant did not believe it necessary to do so.

The Secretary of State is satisfied that, based upon the measures as secured in the CoCP an AEoI of the Minsmere-Walberswick SPA and Ramsar from the effects of disturbance on breeding bittern, gadwall and shoveler from the Project alone and in combination with other plans or projects can be excluded.

5.22.4 Little tern: Alone

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

The Shadow HRA [APP-145] acknowledged the potential for noise and vibration from impact piling during the construction of the BLF and dredging, and drilling for construction of cooling water intakes and outfalls. It concluded no AEoI for all qualifying features of all protected sites due to the short term, temporary nature of underwater noise.

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 SPA and Outer Thames Estuary SPA (Minsmere colony) is expected to coincide with the area over which a fish 'behavioural response' (including displacement) is predicted. It stated that a piling restriction would resolve concerns about noise disturbance from piling affecting foraging terns from sites.

The ExA noted the Applicant's proposal in the Shadow HRA Addendum [AS-173] which states that "*All construction works for both the enhanced permanent BLF and temporary BLF would occur outside the little tern breeding season, which is assumed to be May to August, inclusive*"

and also "*To mitigate the potential for impacts on breeding birds, no piling would occur in May to August inclusive.*" This commitment is also included in the draft MMMP [REP10-028], which states "*No piling will occur in the months of May to August inclusive to minimise the potential for effects on designated breeding birds.*"

The dDCO [REP10-009] includes a commitment in the DML (Schedule 20, Part 3) as Condition 36, which places obligations on the Applicant not to commence any impact piling (if required) of Work no. 1A(I) (permanent beach landing facility) and 1a(aa) (temporary marine bulk import facility) between May and July of any year and must not commence until a MMMP in general accordance with the draft MMMP has been submitted and approved by the MMO in writing.

The ExA noted that this restriction in the DML did not restrict 'all construction works'. The Condition does not exclude the commencement of impact piling for the BLF in the month of August, which is stated in the Shadow HRA [AS-174] and draft MMMP [REP10-028].

This matter is not further referred to in representations made by the RSPB/SWT, nor is it mentioned in the final SoCG between the Applicant and RSPB/SWT [REP10-111]. It was not a matter raised by NE during Examination. NE concur with the Applicant's conclusion of no AEoI to the little tern and common tern qualifying feature of the Outer Thames Estuary SPA due to potential disturbance effects [REP10-097].

The ExA was of the view that the Shadow HRA Addendum conclusion of no AEoI is based upon a restriction for 'all construction works' for the BLF to not be undertaken between the months of May to August (inclusive). This was not secured through the DML [REP10-009] or draft MMMP [REP10-028].

The ExA recommended that the Secretary of State may wish to consult with the Applicant on this matter to ensure that the DML condition be amended to account for all construction works and a restriction of works between May and August.

In his second consultation letter, the Secretary of State invited the Applicant to provide suggested amendments to DML Condition 36 (3) which restricts all construction works for the BLF and Temporary Marine Bulk Import Facility (MBIF) between the 1st May to 31st August inclusive.

In its response, the Applicant provided an updated dDCO with an amendment to DML Condition 36 (3) which restricts impact piling between May and August. The Applicant[91] considered it unnecessary to restrict all construction activities for the BLF and Temporary MBIF as there is no pathway for disturbance to fish from airborne noise.

The Applicant acknowledged inconsistent text in the Shadow HRA Addendum which may have led to confusion. The Applicant highlighted that the Shadow HRA Addendum does not explicitly state that only impact piling is considered the source of significant underwater noise nor that potentially significant underwater noise impacts would only arise from impact piling. It states that statements made at Section 8.7.1 and Section 8.8.5 in the Shadow HRA Addendum should not have referred to "*All construction works"* and "*these works*" but should have specifically referred to impact piling only as impact piling is the only source of underwater noise which has the potential to affect fish prey items for terns.

[91] NNB Generation Company (SZC) Limited, 2022. *SZC Co.'s Response to the Secretary of State's Request for Further Information dated 31 March 2022*. April, 2022.

The Applicant notes that a restriction on all construction works on the BLF and MBIF during May – August inclusive would delay the completion of the MBIF construction and have a knock-on effect on the programme for importing backfill. This could consequently mean either a delay to the overall construction period or risk offsetting the delay by transporting backfill by road and rail, therefore increasing HGV numbers beyond those committed to in the DCO. It considered a restriction which referred to a timing restriction on impact piling only as sufficient.

In its response to the Secretary of State's third consultation letter, the RSPB/SWT[92] requested clarity regarding dredging activities in relation to the construction of the BLF and MBIF which have the potential to create underwater noise. It did not consider it clear whether dredging (which may be associated with piling) is also restricted during those months. It requested that all underwater construction activity is restricted from May to August inclusive.

The Secretary of State has given consideration to the responses of the Applicant and RSPB/SWT. The Secretary of State considers that the Applicant's explanation as to why a seasonal restriction should not apply to all construction works on the BLF and MBIF is justified. He agrees that a seasonal restriction on impact piling in relation to these elements of the Project is sufficient. In reaching this conclusion the Secretary of State notes that this was not a matter which was raised during Examination by NE, who agree with the Applicant's conclusion of no AEoI.

The Secretary of State is satisfied that, based upon the mitigation measures as secured under the DML and DCO an AEoI of the Minsmere-Walberswick SPA and Ramsar from the indirect impacts of disturbance of prey species by underwater noise and vibration on little tern from the Project alone can be excluded.

5.22.5 Little tern: In-combination

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

The Shadow HRA provides an in-combination assessment of the potential for AEoI of the little tern feature of the Minsmere-Walberswick SPA arising from disturbance from the Project.

Taking into account the proposed mitigation measures, the Applicant concluded there was no potential for an adverse effect on the Minsmere-Walberswick SPA in combination with other plans or projects. The Applicant considered that the assessment and its conclusion also apply to the Minsmere-Walberswick Ramsar.

The Applicant also considered cumulative/inter-project effects between different elements of the Project [AS-174] [REP7-279]. The assessment concluded that an AEoI of the site would not occur when the respective effects are considered together.

The Secretary of State is satisfied that, based upon the mitigation measures as secured under the DML and DCO an AEoI of the Minsmere-Walberswick SPA and Ramsar from the indirect

[92] The Royal Society for the Protection of Birds and Suffolk Wildlife Trust, 2022. *Response to Department for Business, Energy and Industrial Strategy Information presented in Responses to Secretary of Statement Questions of 18th and 31st Marsh 2022 from the Royal Society for the Protection of Birds and Suffolk Wildlife Trust.* 23rd May 2022.

impacts of disturbance of prey species by underwater noise and vibration on little tern from the Project in combination with other plans or projects can be excluded.

5.22.6 Breeding marsh harrier: Alone

5.22.6.1 Disturbance (noise, light and visual)

Noise and visual disturbance during construction of the Project at the MDS could potentially result in the displacement of breeding marsh harrier from wetland and arable foraging habitats located on land which is functionally linked to the Minsmere-Walberswick SPA and Ramsar.

The Applicant cited evidence to support its assessment approach and explained [APP-145] that there are no available studies which provide specific information on the behavioural responses of marsh harrier to anthropogenic noise. As such, 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 addition to evidence from studies on other bird species.

The Shadow HRA explains that the main marsh harrier nesting area is within the SPA and Ramsar and over 1km away from the MDS. The assessment presented the amount of habitat loss from disturbance to forging marsh harrier during construction:

- 103.6ha (20.9%) of the total wetland habitats within 0-4km of the Minsmere marsh harrier breeding site during 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 263.3ha (24.2%) in Phase 2); and
- 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.

The Applicant [APP-145] considered that the overall potential loss of foraging resource amongst wetland habitat areas would be less than the calculated 20.9%, due largely to the effect of distance from the breeding area on levels of flight activity. It also considered that usage by foraging marsh harriers of the areas predicted to be lost is estimated to be relatively low based on flight activity data, which estimated the use of Sizewell Marshes to be approximately 60% of that for the Minsmere South Levels on average. The Applicant considered it likely that marsh harrier would modify their behaviour to use alternative areas of existing agricultural land, which are available in proximity to the Minsmere marsh harrier breeding site.

As wetland is the key foraging habitat for marsh harrier, the Applicant only considered the potential loss of the foraging resource from the wetland habitats in assessing potential impacts to breeding marsh harrier [REP2-088] [REP5-120] [REP7-051]. This approach was disputed by the RSPB/SWT [REP2-506] [REP2-088].

NE raised concerns [RR-0878] [REP2-153] [REP2-071] regarding noise, light and visual disturbance from the MDS element of the Project 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. The RSPB/SWT [REP2-506] set out its concerns regarding the Applicant's evidence base.

The Applicant's overall conclusion [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 feature of the Minsmere-Walberswick SPA and Ramsar.

The Applicant stated that an AEoI is not predicted to arise during decommissioning as the impact during construction will be compensated for, and alternative compensatory habitat will therefore be available during decommissioning. The Applicant also considered that noise and visual disturbance during operation is unlikely to differ substantially from the existing baseline situation, except in relation to artificial lighting. Light spillage from the Project is not predicted to affect marsh harrier nesting areas and the species does not hunt at night. The Applicant therefore concluded that an AEoI of the Minsmere-Walberswick SPA and Ramsar is not predicted to arise from noise and visual disturbance during operation.

The Applicant provided addendums to the Shadow HRA [AS-173] [REP7-279] to consider 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) and Change 19 (the desalination plant) on the conclusions reached in respect of disturbance to marsh harrier of the Minsmere-Walberswick SPA and Ramsar. The Applicant considered that there would be no change to the conclusions of the Shadow HRA with regards to both Change 5 and Change 19.

Neither NE nor other IPs disputed the Applicant's conclusion that an AEoI of the marsh harrier feature of the Minsmere-Walberswick SPA and Ramsar due to noise and visual disturbance during construction could not be excluded. NE [RR-0878] confirmed it was satisfied that the criteria for derogating from the Habitats Regulations were fulfilled in this regard.

The ExA was of the view that an AEoI of the marsh harrier qualifying feature of the Minsmere-Walberswick SPA and Ramsar resulting from noise and visual disturbance during construction could not be excluded. The ExA also concluded that, with consideration of the characteristics of operational development and the extent of likely impacts compared to the existing baseline situation, there would be no AEoI of the marsh harrier qualifying feature of the Minsmere-Walberswick SPA and Ramsar resulting from noise and visual disturbance (including lighting) during operation and decommissioning.

Additional Information

On the 5th May 2022, the Applicant wrote[93] to the Secretary of State to advise that a pair of marsh harrier were recorded in the 2022 breeding season, nesting in an area of Sizewell Marshes SSSI that would be permanently lost to construction of the Project. Since annual surveys began of the site 25 years ago, this is the first time breeding marsh harriers have been recorded in Sizewell Marshes SSSI. Breeding marsh harriers were also recorded within replacement reedbed habitat created in 2015/16 by the Applicant at Aldhurst Farm, as they have done over the past few years (2019 – 2022).

The Applicant provided a further Shadow HRA Addendum to assess potential direct impacts on marsh harriers nesting outside of the SPA and Ramsar, at the Sizewell Marshes SSSI and Aldehurst Farm.

The nesting areas are approximately 3.5km (at Aldehurst Farm) and 2.5km (at Sizewell Marshes SSSI) from the marsh harrier nesting area within the SPA. Therefore, the nesting birds have potential to be functionally linked with the SPA population. The Applicant considered the potential

[93] NNB Generation Company (SZC), 2022. *Application EN010012 for The Sizewell C Project by NNB Generation Company (SZC) Limited (SZC Co.) – Supplementary information in relation to breeding marsh harriers within the EDF Sizewell Estate.* 5th May 2022.

effects from Project activities on the nesting birds, such as causing nesting attempts to fail, temporarily displacing pairs from the sites, or cause permanent loss of the nesting habitat.

The Applicant concluded there was no potential for adverse effects to occur on the SPA due to the recent nesting activity. It stated that the potential for direct effects on nesting birds is limited to those using sites on FLL and would not affect the population nesting within the designated land. It stated this contrasts with birds which nest in the SPA potentially being displaced from foraging habitat on FLL.

The Applicant highlighted that the SPA population is regarded as being in favourable conservation condition. Further, the extent of reedbed nesting habitat within the SPA has not declined over the years, but the size SPA population of marsh harrier has fluctuated over the same period. The Applicant stated that this, coupled with the nesting activity at both Sizewell Marshes SSSI and Aldehurst Farm being recent developments, demonstrates that the SPA provides sufficient nesting habitat to maintain the population at or above the citation level and the SPA population is not dependent on FLL for nesting.

In its response of 14th June 2022, NE[94] stated that it agreed with the conclusions of the Shadow HRA Addendum in relation to the pair of breeding marsh harrier recently located within the Sizewell Marshes SSSI.

The RSPB/SWT[95] agreed with the Applicant's conclusion that the nests are likely to be functionally linked to the Minsmere-Walberswick SPA given their proximity to the main nesting area, and that the sites could be subject to direct habitat loss, visual and noise disturbance, and recreational disturbance as a result of Sizewell C. However, it was concerned that the impacts had not been properly assessed and contested that the nests constitute a significant proportion of the population.

The RSPB/SWT considered that the Applicant should properly assess the direct loss of nesting habitat affecting birds within Sizewell Marshes SSSI, barrier effects on birds nesting at Aldhurst Farm, noise disturbance on nests at Aldhurst Farm and the effects of recreational disturbance. As such, the RSPB/SWT did not consider it possible to rule out an AEoI of the Minsmere-Walberswick SPA.

The Secretary of State concludes that the effects of disturbance from noise, light and visual sources could undermine the conservation objectives for breeding marsh harrier. The Secretary of State therefore concludes that an AEoI of the Minsmere-Walberswick SPA and Ramsar from the effects of disturbance on breeding marsh harrier from the Project alone cannot be excluded. The impacts on the non-bird features of Minsmere-Walberswick Ramsar are assessed in Section 5.21 above.

[94] Natural England, 2022. *Application by NNB Generation Company (SZC) Limited ("the Applicant") for an Order granting Development Consent for the proposed Sizewell C Nuclear Power Station ("the proposed Development").* 14th June 2022.

[95] RSPB/SWT, 2022. *Response to Secretary of State's Question of 16 May 2022 from the Royal Society for the Protection of Birds and Suffolk Wildlife Trust.* 14th June 2022.

5.22.7 Breeding marsh harrier: In-combination

5.22.7.1 Disturbance (noise, light and visual)

The Shadow HRA provides an in-combination assessment of the potential for AEoI of the qualifying features of the Minsmere-Walberswick SPA from the Project together with the plans and projects identified.

With consideration of the proposed mitigation measures, the Applicant concluded that there was no potential for an AEoI of the Minsmere-Walberswick SPA in combination with other plans or projects. The Applicant considers this conclusion also applies to Minsmere-Walberswick Ramsar site [APP-145].

The Applicant's assessment of cumulative/inter-project effects [AS-174] [REP7-279] concluded that an AEoI would not occur when the respective effects are considered together.

The ExA recommended that the Secretary of State satisfy himself on the outstanding matters before a conclusion on in-combination effects is determined.

As specified in Section 5.22.1.1, the Secretary of State wrote to the Applicant to provide additional information to demonstrate exclusion of AEoI alone and in-combination or alternative measures to avoid, mitigate, or compensate for any adverse effects identified.

The Secretary of State is satisfied that, based upon the mitigation measures an AEoI of the Minsmere-Walberswick SPA and Ramsar from the effects of disturbance on breeding marsh harrier from the Project in combination with other plans or projects can be excluded.

5.22.8 Wintering / non-breeding white-fronted goose: Alone and In-combination

5.22.8.1 Disturbance (noise, light and visual)

For the reasons set out in Table 2, in line with the recommendation of NE and the ExA, the Secretary of State is satisfied that an AEoI of the Minsmere-Walberswick SPA and Ramsar from the effects of disturbance on white-fronted goose in from the Project alone and in-combination with other plans or projects can be excluded.

5.22.9 Breeding teal: Alone and In-combination

5.22.9.1 Disturbance (noise, light and visual)

For the reasons set out in Table 2, in line with the recommendation of NE and the ExA, the Secretary of State is satisfied that an AEoI of the Minsmere-Walberswick SPA and Ramsar from the effects of disturbance on breeding teal in from the Project alone and in-combination with other plans or projects can be excluded.

5.22.10 Breeding avocet; breeding little tern; breeding nightjar; breeding hen harrier; Ramsar Criterion 2: Alone and In-combination

5.22.10.1 Disturbance (noise, light and visual)

For the reasons set out in Table 2, in line with the recommendation of the ExA, the Secretary of State is satisfied that an AEoI of the Minsmere-Walberswick SPA and Ramsar from the effects

of disturbance on breeding avocet, breeding little tern, breeding nightjar, breeding hen harrier and Ramsar Criterion 2 in from the Project alone and in-combination with other plans or projects can be excluded.

5.22.11 All Features: Alone and In Combination

5.22.11.1 Changes in air quality

Potential effects were identified from the direct and indirect impacts of increased deposition of NO_x arising from diesel generators on the Minsmere-Walberswick SPA and Ramsar. An additional assessment of diesel generator impacts during construction was submitted by the Applicant at Deadline 10 to resolve these concerns [REP10-153] but due to the timing, NE were unable to comment on this information.

The ExA noted that the PCs from combined construction works are small, but that the current exposures (PEC) at the relevant qualifying habitat receptors are already above the Critical Load for a number of pollutants.

For nitrogen deposition, the European dry heaths is not present within the 0.1 kg N/ha/yr (1% of the Critical Load) contour line where the Critical Load would be exceeded. Concentrations of NOx are well below the Critical Loads. For the perennial vegetation of stony banks qualifying feature of the Minsmere to Walberswick Heaths and Marshes SAC (modelled as coastal dunes), the overall construction phase assessment concludes that the PC is 1.1% of the Critical Load, and the PEC remains within the Critical Load range.

The Applicant has confirmed that the area where the overall construction phase impacts are greater than 1% of the Critical Load of 10kg N/ha/yr represents 0.2% of the total area of the Minsmere-Walberswick SPA and Ramsar [REP10-153]. The ExA accepted that this increase affects a sufficiently small area in the context of the total site area and that the conservation objectives of the SPA would not be undermined and an AEoI of the sites can be excluded.

The PEC remained below the upper end of the Critical Load range for nutrient nitrogen deposition for all qualifying features of the Minsmere-Walberswick SPA and Ramsar. The ExA noted that most of the impacts were attributable to the temporary and short-term impact of diesel generators to power the desalination plant. The area of the Minsmere-Walberswick Heaths and Marshes SSSI underlying the Minsmere-Walberswick Ramsar receptor which would be subject to the exceedance lies within SSSI unit 112 [REP10-153], which is in favourable condition.

The ExA was unable to conclude that there would be no AEoI of the Minsmere-Walberswick SPA and Ramsar [REP10-153]. This conclusion was influenced by the absence of comment from NE regarding the impacts attributable to the temporary desalination plant generators which would be in situ for only two years.

For acid deposition (from NO_2, NH_3 and SO_2), the ExA noted that only a small area would be affected and there is no European dry heath in the affected area. For the coastal stable dunes and European dry heath features, the PEC remains below 100% of the Critical Load. The ExA agreed that an AEoI could be excluded.

The worst-case impact on the fen marsh and swamp qualifying feature is a PC increase of 1.8%, where the background is already 194% of the Critical Load [REP10-153]. Therefore, the PEC is

195%. The ExA noted that the Critical Load is exceeded, and the PC and increase to the PEC is over the threshold of imperceptibility.

The ExA was unable to conclude no AEoI of the Minsmere-Walberswick SPA and Ramsar from air quality changes during construction from the Project alone, because a final view from NE on the Applicant's revised Desalination Plant Air Quality Impact Assessment was unavailable.

Acid deposition during operation results from generator use. During commissioning the acid deposition at receptor E2d (the worst-case modelled receptor point for the Minsmere protected sites) would experience an increase of 21% of the Critical Load (Table 5-16 of [APP-214]). During the routine operation scenario, the PC at the same receptor is 7% of the Critical Load. In both instances, the background concentration as a percentage of the Critical Load is 193.7%. As set out above, the frequency of the commissioning scenario is extremely low and therefore that modelled increase is expected to be a very rare occurrence. In terms of the routine operating scenario, and the 7% increase at receptor E2d (grazing marsh), this is already subject to background acid deposition above the upper Critical Load values: however, the Applicant stated that this habitat was not particularly sensitive to acid deposition, as the soils are likely to be well buffered.

NE stated that the Applicant had not provided enough justification as to why increased NOx deposition over several years in proximity to a site that already faces pressure from NO_x would not interfere with its conservation objectives [REP10-199].

The ExA concluded that an AEoI of the Minsmere-Walberswick SPA and Ramsar as a result of changes in air quality could not be excluded.

The ExA considered that local plans were already represented within the air quality assessment and the ExA was not aware of any other relevant plans or projects that had not been considered by the Applicant in terms of potential in-combination effects. The ExA recommended that the Secretary of State also satisfies himself with regards to in-combination air quality effects.

Additional Information

In his fourth consultation letter, the Secretary of State, with regards to the Applicant's updated air quality assessment (based on the combined emissions from diesel generators for the temporary desalination plant and other sources of emissions from the Project), requested that NE advise on whether an AEoI of Minsmere-Walberswick SPA and Ramsar from air quality could be excluded (see Sections 5.3 and 5.21.1.2 for full details of post-examination representations).

On 14th June 2022, NE confirmed that AEoI of Minsmere-Walberswick SPA from changes to air quality could be excluded. However, NE advised that, based on the information provided, an AEoI on Minsmere-Walberswick Ramsar from changes to air quality could not be excluded because of airborne pollutants, and nitrogen and acid deposition on the qualifying habitats. However, NE did not comment on whether an AEoI could be excluded for the qualifying bird features which are specifically being assessed in this section of the report.

On 14th June 2022, the EA confirmed that an EP for emissions from any diesel generators for the proposed desalination plant will be required, and a full and thorough assessment of all impacts, which may include an AA, will take place as part of the determination process.

The Secretary of State is confident that the impacts of changes to air quality will be assessed as part of the permitting process and that pollution mitigation and control measures will be secured

through this process to prevent an AEoI of the protected sites. In accordance with the policies set out in EN-1 and EN-6, the Secretary of State has no reason to believe that an EP will not be granted and has taken account of the conclusions of the EA's proposed decision on the draft operational CA permit which states that an AEoI of the qualifying features of the Minsmere-Walberswick SPA and Ramsar have been excluded. The Secretary of State has assessed the material presented during the Examination including representations made by IPs, the recommendation of the ExA, and all relevant post-Examination representations and information received. Regarding the effects from changes to air quality, and without prejudice to the EP process, the Secretary of State concludes that an AEoI of qualifying features of Minsmere-Walberswick SPA and Ramsar can be excluded for the Project alone and in-combination with other plans and projects.

5.22.12 Breeding little tern; Ramsar Criterion 2: Alone and In-combination

5.22.12.1 Water quality effects (marine environment)

At the end of the Examination NE remained concerned about the potential effects of changes to water quality on the breeding little tern and common tern qualifying feature of the SPA and Ramsar [REP10-097] and [REP10-199], and RSPB/SWT [REP10-111] had concerns about the potential impacts of thermal and chemical plumes and the combined effects of the Project on the marine water environment.

NE [REP10-097] stated that direct risks to little terns from the chemical discharges had not been considered. However, the Applicant [REP10-155] argued that this information was presented in [REP3-042], [REP5-120] and [REP7-073]. The ExA was content that the Applicant had addressed this issue.

The ExA noted the concerns raised about the increased risk to chemical exposure for predatory seabirds: however, it was not persuaded that chemicals consumed would be at concentrations that would affect their populations. The ExA also noted that further detailed information will be provided to inform the WDA permit, and this would be subject to a separate HRA.

With regards to bentonite from potential frack-out events, the ExA took the view that the measures secured through the CoCP [REP10-072], including the commitment to use a bentonite recovery system, could ensure no AEoI of the Minsmere-Walberswick SPA and Ramsar, alone: however, due to the timing of the Examination, NE did not have the opportunity to comment on the updated CoCP.

Additionally, with regards to the updated BEEMS Technical Report TR552 [REP10-052], the ExA could see no reason not to agree with the findings, but suggested that the Secretary of State may wish to satisfy himself that the MMO is content with the conclusions, because at the end of the Examination the MMO had not had the opportunity to review this document.

With regards to operational discharge activities associated with the cooling water system, including thermal and chemical (including hydrazine and chlorination) plume, and moribund biota, the ExA was of the view that AEoI could be excluded on the basis of the mitigation and monitoring measures secured. These include measures in the scheme design (such as location of outfalls, and intake and outfall design and position) (secured through DCO), the Chlorination Strategy (secured through WDA), controls over chemicals used within the marine environment (secured through the DML), measures in the CoCP in relation to bentonite (secured through

DCO), and commitments to management and monitoring of discharges from the cooling water outfall, CDO and desalination plant outfall (secured through WDA).

Without prejudice to the subsequent EP process, the ExA considered that on the basis of the material available and with the mitigation measures secured and controlled through the WDA permit, it is possible to conclude no AEoI from the Project alone or in combination with other plans or projects. The ExA recommended that the Secretary of State may wish to satisfy themself in this regard, both from the Project alone and in combination.

Additional Information

In his first and second consultation letters, the Secretary of State invited the EA, MMO and NE to comment on the updated BEEMS Technical Report TR552 for the Desalination Plant Construction Discharge Assessment H1 Type Assessment.

In their letter dated 7th April 2022, NE stated that a H1 type assessment is used to specifically support an application for a WDA permit and that it would defer to the EA on this topic until being consulted on the permits in their role as a statutory consultee. In their letter dated 8th April 2022, the MMO stated that it would defer to the EA on this matter. The EA (8th April 2022) stated that because an H1 assessment is required in support of an associated WDA permit application, it would not comment on it before the WDA permit application.

The Secretary of State also invited NE to comment on the measures to mitigate the impacts from drilling mud and bentonite break out in the Applicant's CoCP [REP10-072] (see Section 5.11 for full details of consultation). NE advised that until further details were provided by the Applicant, it did not consider that appropriate mitigation measures were in place exclude impacts from bentonite.

Furthermore, NE, having now been consulted on the EA's draft HRA for the WDA EP, was invited to confirm whether an AEoI due to marine water quality impacts could be excluded for Minsmere-Walberswick SPA and Ramsar. NE advised that it had been consulted by the EA; however, until the HRA was finalised, it was unable to give unqualified advice on the impacts on the integrity of the above sites.

The Secretary of State is confident that the impacts of changes to water quality will be assessed as part of the permitting process and that pollution mitigation and control measures will be secured through this process to prevent an AEoI of the protected site. In accordance with the policies set out in EN-1 and EN-6, the Secretary of State has no reason to believe that an EP will not be granted and has taken account of the conclusions of the EA's proposed decision on the draft operational WDA permit which states that an AEoI of the little tern and Ramsar Criteria 2 features of the Minsmere-Walberswick SPA and Ramsar have been excluded. The Secretary of State has assessed the material presented during the Examination including representations made by IPs, the recommendation of the ExA, and all relevant post-Examination representations and information received. Regarding the effects from changes to water quality, and without prejudice to the EP process, the Secretary of State concludes that an AEoI of the breeding little tern and Ramsar Criteria 2 features of the Minsmere-Walberswick SPA and Ramsar can be excluded for the Project alone and in-combination with other plans and projects.

5.22.12.2 Physical interaction with project infrastructure (entrapment of prey species)

For the reasons set out in Section 5.9, the Secretary of State is satisfied that, based upon the proposed monitoring in the draft FIEMP and mitigation measures secured, an AEoI of the Minsmere-Walberswick SPA and Ramsar from the effects of physical interaction with project infrastructure (entrapment of prey species) on breeding little tern and Ramsar Criterion 2 from the Project alone and in combination with other plans or projects can be excluded.

5.22.13 All features: Alone and In-combination

5.22.13.1 Changes to coastal processes / sediment transport

The Shadow HRA [APP-145] identified four elements of the Project that could cause potential LSE to arise, including:

- Coastal defences;
- BLF;
- Cooling water intakes and outfalls; and
- FRR system and CDO.

In respect of Change 19, the Shadow HRA Third Addendum [REP7-279] stated that effects arising from changes to coastal processes and sediment transport would extend over small areas and would be highly localised around activities associated with Change 19.

During the Pre-examination and Examination periods, the Applicant provided technical reports and representations relevant to the assessment, and proposed mitigation and monitoring of potential coastal process effects. These include:

- Technical report TR543 ‘Modelling of the Temporary and Permanent Beach Landing Facilities at Sizewell C’ [PDB-010];
- TR544 Preliminary design and maintenance requirements for the Sizewell C Soft Coastal Defence Feature [REP10-124];
- TR545 Storm Erosion Modelling of the Sizewell C Coastal Defence Feature [REP9-020]; and
- Coastal Processes Monitoring and Mitigation Plan (CPMMP) [REP10-041].

During Examination, NE and the RSPB/SWT confirmed that they were not yet satisfied that an AEoI could be excluded for all features of the Minsmere-Walberswick SPA and Ramsar. The EA considered there to be gaps in the Applicant's Storm Erosion Modelling.

Due to the timing of the final Examination deadline the Applicant was unable to respond to NE’s or the RSPB/SWT’s final representations [REP10-200].

NE and other IPs did not have the opportunity to comment on the Applicant’s final submissions on this matter, as they were received at the final deadline.

Full details of the Applicant's and IPs’ responses during Examination are provided in Section 5.4.

As the Applicant and IPs, including NE, were unable to comment on the final representations and updated reports at the final Examination deadline, the ExA was not able to reach a conclusion.

In his second consultation letter, the Secretary of State invited the Applicant to respond to NE's [REP10-200] and the RSPB/SWT's [REP10-204] Deadline 10 submissions in relation to changes to coastal processes / sediment transfer impacts on the Minsmere to Walberswick Heaths and Marshes SAC, and the Minsmere-Walberswick SPA and Ramsar site. The Secretary of State also invited NE, the MMO, the EA, the RSPB/SWT and ESC to comment on the updated TR544 'Preliminary Design and Maintenance Requirements for the Sizewell C Soft Coastal Defence Feature' [REP10-124] and the CPMMP [REP10-041].

The Applicant provided an Appendix[96] to its Main Report[97] in response to the Secretary of State's letter. This provided further information in relation to NE's and the RSPB/SWT's final comments on coastal processes / sediment transport.

Full details of the responses of the Applicant and all IPs are provided in Section 5.4.

In response to the Secretary of State's third consultation letter, the EA[98] had no further comment on the Applicant's representations. The RSPB/SWT[99] stated it had not provided further comment on concerns set out in its final Examination submission due to these concerns not being resolved in light of the Applicant's responses and/or new information. NE did not provide a response to the consultation.

The Secretary of State has considered the submissions provided by the Applicant and IPs, both during and Post-examination, as well as the recommendation of the ExA, and considers he has sufficient information to reach a conclusion. The Secretary of State is satisfied that, subject to the implementation of the mitigation measures secured, an AEoI of the Minsmere-Walberswick SPA and Ramsar from the effects of changes to coastal processes / sediment transport on all qualifying features resulting from the Project, alone and in-combination with other plans and projects, can be excluded.

5.22.13.2 Water quality effects (terrestrial environment)

For the reasons set out in Table 2, in line with the recommendation of the ExA, the Secretary of State is satisfied that with the mitigation measures secured, an AEoI of the bird features of the Minsmere-Walberswick SPA and Ramsar from the effects of changes to water quality on the terrestrial environment from the Project alone and in-combination with other plans or projects can be excluded.

5.22.13.3 Alteration of local hydrology and hydrogeology

For the reasons set out in Table 2, in line with the recommendation of NE and the ExA, the Secretary of State is satisfied that, based upon the mitigation measures secured in the DCO,

[96] NNB Generation Company (SZC) Limited, 2022. *SZC Co.'s Response to the Secretary of State's Request for Further Information dated 31 March 2022: Appendix 8 - Additional technical information to support Question 8.11 in relation to Natural England, RSPB and SWT comments on assessment of coastal processes*. April 2022.

[97] NNB Generation Company (SZC) Limited, 2022. *SZC Co.'s Response to the Secretary of State's Request for Further Information dated 31 March 2022*. April 2022.

[98] Environment Agency, 2022. *Application by NBB Generation Company (SZC) Limited for an Order Granting Development Consent for the Sizewell C Project*. 23rd May 2022.

[99] RSPB/SWT, 2022. *Response to Department for Business, Energy and Industrial Strategy Information presented in Responses to Secretary of Statement Questions of 18th and 31st March 2022 from the Royal Society for the Protection of Birds and Suffolk Wildlife Trust.* 23rd May 2022.

Drainage Strategy, CoCP and TEMMP, an AEoI of the Minsmere-Walberswick SPA and Ramsar from the effects of alterations of local hydrology and hydrogeology from the Project alone and in-combination with other plans or projects can be excluded.

5.22.13.4 Disturbance due to increase in recreational pressure

For the reasons set out in Table 2, in line with the recommendation of NE and the ExA, the Secretary of State is satisfied that, based upon the mitigation measures secured in the DCO, an AEoI of the Minsmere-Walberswick SPA and Ramsar from the effects of increases in recreational pressure on all features from the Project alone and in-combination with other plans or projects can be excluded.

5.22.13.5 Direct habitat loss and fragmentation

For the reasons set out in Table 2, in line with the recommendation of NE, the RSPB/SWT and the ExA, the Secretary of State is satisfied that an AEoI of the Minsmere-Walberswick SPA and Ramsar from the effects of direct habitat loss and fragmentation from the Project alone and in-combination can be excluded.

5.22.13.6 Impediment to management practices

The Secretary of State is satisfied that, based upon the updated CoCP, an AEoI of the Minsmere-Walberswick SPA and Ramsar from the effects of impediments to management practices on the avocet, bittern, little tern, marsh harrier, nightjar, shoveler (wintering and breeding), teal, gadwall (wintering and breeding), hen harrier and white-fronted goose features from the Project alone and in-combination with other plans and projects can be excluded (see Paragraph 5.21.6.1).

5.22.13.7 Physical interaction between species and project infrastructure

The ExA considered that the measures proposed within the TEMMP would mitigate for any AEoI of qualifying features of the Alde-Ore Estuary SPA and Ramsar, resulting from collision risk between species and project infrastructure, from the Project alone and in combination with other plans or projects.

In response to the Secretary of State's fourth letter, NE welcomed the Applicant's commitment to monthly carcass surveys under overhead lines between new pylons which will be shared with the EWG, as secured in the TEMMP. On this basis, NE advised that an AEoI of the Minsmere-Walberswick SPA through this impact pathway could be ruled out.

The Secretary of State is satisfied that, subject to the securing of mitigation and monitoring measures in the TEMMP, an AEoI of the Alde-Ore Estuary SPA and Ramsar from collision risk between species and project infrastructure on qualifying features from the Project alone and in-combination with other plans or projects can be excluded.

5.23 Appropriate Assessment: Orfordness to Shingle Street SAC

The Orfordness to Shingle Street SAC is located 8.9km from the NDS and 5.9km to the closest Associated Development Site (the A1094/B1069 South of Knodishall).

Orfordness is an extensive shingle structure consisting of a foreland, a 15 km-long spit and a series of recurves running from north to south. It supports some of the largest and most natural sequences of shingle vegetation affected by salt spray in the UK. Drift-line vegetation occurs on the sheltered western side of the spit, at the transition from shingle to saltmarsh, as well as on the exposed eastern coast. The site also includes a series of percolation lagoons that have developed in the shingle bank adjacent to the shore at the mouth of the Ore estuary[100]. The adjacent estuarine and intertidal habitats are designated separately as the Alde-Ore and Butley Estuaries SAC.

The Secretary of State has considered the potential for the Project to constitute an AEoI for each feature for which a significant effect is likely.

The qualifying features for which the site is designated, and which have been carried forward to the AA are:

- Coastal lagoons;
- Annual vegetation of drift lines; and
- Perennial vegetation of stony banks.

The Applicants Shadow HRA Report provided information for an AA for the following potential impact pathways:

- Alteration of coastal processes/sediment transport (construction, operation and decommissioning);
- Changes in water quality (marine environment) (construction, operation and decommissioning) (except perennial vegetation of stony banks during operation);
- Changes in air quality (construction, operation and decommissioning); and
- Disturbance due to increase in recreational pressure (construction, operation and decommissioning) (except coastal lagoons).

5.23.1 Coastal lagoons; annual vegetation of drift lines; perennial vegetation of stony banks: Alone

5.23.1.1 Changes to coastal processes / sediment transport

For the reasons set out in Table 2, in line with the recommendation of the ExA and NE, the Secretary of State is satisfied that, based upon the mitigation measures as secured under the DML and DCO an AEoI of the Orfordness and Shingle Street SAC from the effects of changes to coastal processes / sediment transport on coastal lagoons, annual vegetation of drift lines, and perennial vegetation of stony banks the Project alone can be excluded.

5.23.1.2 Water quality effects (marine environment)

For the reasons set out in Table 2, in line with the recommendation of the ExA, the Secretary of State is satisfied that, subject to the implementation of the mitigation measures secured, an AEoI of the Orfordness and Shingle Street SAC from the effects of changes to water quality on annual vegetation of drift lines, and perennial vegetation of stony banks from the Project in-combination with other plans and projects can be excluded.

[100] http://publications.naturalengland.org.uk/file/5071689641623552

5.23.1.3 Changes in air quality

For the reasons set out in Table 2, in line with the recommendation of the ExA, the Secretary of State is satisfied that an AEoI of the Orfordness and Shingle Street SAC from the effects of changes to air quality on coastal lagoons, annual vegetation of drift lines, and perennial vegetation of stony banks features from the Project alone can be excluded.

5.23.2 Coastal lagoons; annual vegetation of drift lines; perennial vegetation of stony banks: In-combination

5.23.2.1 Changes to coastal processes / sediment transport

For the reasons set out in Table 2, in line with the recommendation of the ExA and NE, the Secretary of State is satisfied that, based upon the mitigation measures as secured under the DML and DCO an AEoI of the Orfordness and Shingle Street SAC from the effects of changes to coastal processes / sediment transport on coastal lagoons, annual vegetation of drift lines, and perennial vegetation of stony banks from the Project in combination with other plans or projects can be excluded.

5.23.2.2 Water quality effects (marine environment)

For the reasons set out in Table 2, in line with the recommendation of the ExA, the Secretary of State is satisfied that, subject to the implementation of the mitigation measures secured, an AEoI of the Orfordness and Shingle Street SAC from the effects of changes to water quality on annual vegetation of drift lines, and perennial vegetation of stony banks from the Project in-combination with other plans and projects can be excluded.

5.23.2.3 Changes in air quality

For the reasons set out in Table 2, in line with the recommendation of the ExA, the Secretary of State is satisfied that an AEoI of the Orfordness and Shingle Street SAC from the effects of changes to air quality on coastal lagoons, annual vegetation of drift lines, and perennial vegetation of stony banks features from the Project in-combination with other plans and projects can be excluded.

5.23.3 Annual vegetation of drift lines; perennial vegetation of stony banks: Alone and In-combination

5.23.3.1 Disturbance due to increase in recreational pressure

For the reasons set out in Table 2, in line with the recommendation of the ExA and NE, the Secretary of State is satisfied that, based upon the mitigation measures as secured under the DCO an AEoI of the Orfordness and Shingle Street SAC from the effects of disturbance due to increase in recreational pressure on annual vegetation of drift lines and perennial vegetation of stony banks from the Project alone and in-combination with other plans and projects can be excluded.

5.24 Appropriate Assessment: Outer Thames Estuary SPA

The Outer Thames Estuary SPA overlaps the DCO Order limits.

The SPA covers an area of approximately 392,451.66ha and is classified for the protection of wintering red-throated diver, breeding little tern and breeding common tern. The SPA supports the largest aggregations of wintering red-throated diver in the UK; approximately 38% of the UK population. The site comprises areas of shallow and deeper water, high tidal current streams and a range of mobile mud, sand, silt and gravely sediments extending into the marine environment, incorporating areas of sand banks often exposed at low tide. Intertidal mud and sand flats are found further towards the coast and within creeks and inlets inland down the Blyth estuary and the Crouch and Roach estuaries[101]

The Secretary of State has considered the potential for the Project to constitute an AEoI for each feature for which a significant effect is likely.

The qualifying features for which the site is designated, and which have been carried forward to the AA are:

- Wintering red-throated diver;
- Breeding little tern; and
- Breeding common tern.

The Applicants Shadow HRA Report provided information for an AA for the following potential impact pathways:

- Disturbance effects (construction, operation and decommissioning);
- Changes in water quality (marine environment) (construction, operation and decommissioning); and
- Physical interaction with project infrastructure (increased collision risk with construction and decommissioning vessels/activities and entrapment of prey species during operation).

The Applicant concluded no AEoI for all qualifying features of the Outer Thames Estuary SPA from all LSEs screened in.

5.24.1 All features: Alone and In-combination

5.24.1.1 Disturbance effects on species' population (noise and visual stimuli)

For the reasons set out in Table 2, in line with the recommendation of the ExA, the Secretary of State is satisfied that, based upon the mitigation measures as secured under the DML and DCO an AEoI of the Outer Thames Estuary SPA from the effects of disturbance on species' population (noise and visual stimuli) from the Project In-combination with other plans and projects can be excluded.

[101] http://publications.naturalengland.org.uk/file/5459831745413120

5.24.1.2 Physical interaction between species and project infrastructure (entrapment of prey species)

For the reasons set out in Section 5.9, in line with the advice from NE, the Secretary of State is satisfied that, based upon the proposed monitoring in the draft FIEMP and mitigation measures secured, an AEoI of the Outer Thames Estuary SPA from the effects of physical interaction with project infrastructure (entrapment of prey species) on all qualifying features from the Project alone and in combination with other plans or projects can be excluded.

5.24.2 Little tern; common tern: Alone

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

The Shadow HRA [APP-145] acknowledged the potential for noise and vibration from impact piling during the construction of the BLF and dredging, and drilling for construction of cooling water intakes and outfalls. It concluded no AEoI for all qualifying features of all protected sites due to the short term, temporary nature of underwater noise.

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 SPA and Outer Thames Estuary SPA (Minsmere colony) is expected to coincide with the area over which a fish 'behavioural response' (including displacement) is predicted. It stated that a piling restriction would resolve concerns about noise disturbance from piling affecting foraging terns from sites.

The ExA noted the Applicant's proposal in the Shadow HRA Addendum [AS-173] which states that "*All construction works for both the enhanced permanent BLF and temporary BLF would occur outside the little tern breeding season, which is assumed to be May to August, inclusive*" and also "*To mitigate the potential for impacts on breeding birds, no piling would occur in May to August inclusive.*" This commitment is also included in the draft MMMP [REP10-028], which states "*No piling will occur in the months of May to August inclusive to minimise the potential for effects on designated breeding birds.*"

The dDCO [REP10-009] includes a commitment in the DML (Schedule 20, Part 3) as Condition 36, which places obligations on the Applicant not to commence any impact piling (if required) of Work no. 1A(I) (permanent beach landing facility) and 1a(aa) (temporary marine bulk import facility) between May and July of any year and must not commence until a MMMP in general accordance with the draft MMMP has been submitted and approved by the MMO in writing.

The ExA noted that this restriction in the DML did not restrict 'all construction works'. The Condition does not exclude the commencement of impact piling for the BLF in the month of August, which is stated in the Shadow HRA [AS-174] and draft MMMP [REP10-028].

This matter is not further referred to in representations made by the RSPB/SWT, nor is it mentioned in the final SoCG between the Applicant and RSPB/SWT [REP10-111]. It was not a matter raised by NE during Examination. NE concur with the Applicant's conclusion of no AEoI to the little tern and common tern qualifying feature of the Outer Thames Estuary SPA due to potential disturbance effects [REP10-097].

The ExA was of the view that the Shadow HRA Addendum conclusion of no AEoI is based upon a restriction for 'all construction works' for the BLF to not be undertaken between the months of

May to August (inclusive). This was not secured through the DML [REP10-009] or draft MMMP [REP10-028].

The ExA recommended that the Secretary of State may wish to consult with the Applicant on this matter to ensure that the DML condition be amended to account all construction works and a restriction of works between May and August.

In his second consultation letter, the Secretary of State invited the Applicant to provide suggested amendments to DML Condition 36 (3) which restricts all construction works for the BLF and Temporary Marine Bulk Import Facility (MBIF) between the 1st May to 31st August inclusive.

In its response, the Applicant provided an updated dDCO with an amendment to DML Condition 36 (3) which restricts impact piling between May and August. The Applicant[102] considered it unnecessary to restrict all construction activities for the BLF and Temporary MBIF as there is no pathway for disturbance to fish from airborne noise.

The Applicant acknowledged inconsistent text in the Shadow HRA Addendum which may have led to confusion. The Applicant highlighted that the Shadow HRA Addendum does not explicitly state that only impact piling is considered the source of significant underwater noise nor that potentially significant underwater noise impacts would only arise from impact piling. It states that statements made at Section 8.7.1 and Section 8.8.5 in the Shadow HRA Addendum should not have referred to "*All construction works"* and "*these works*", but should have specifically referred to impact piling only as impact piling is the only source of underwater noise which has the potential to affect fish prey items for terns.

The Applicant notes that a restriction on all construction works on the BLF and MBIF during May – August inclusive would delay the completion of the MBIF construction and have a knock-on effect on the programme for importing backfill. This could consequently mean either a delay to the overall construction period or risk offsetting the delay by transporting backfill by road and rail, therefore increasing HGV numbers beyond those committed to in the DCO. It considered a restriction which referred to a timing restriction on impact piling only as sufficient.

In its response to the Secretary of State's third consultation letter, the RSPB/SWT[103] requested clarity regarding dredging activities in relation to the construction of the BLF and MBIF which have the potential to create underwater noise. It did not consider it clear whether dredging (which may be associated with piling) is also restricted during those months. It requested that all underwater construction activity is restricted from May to August inclusive.

The Secretary of State has considered the responses of the Applicant and RSPB/SWT. The Secretary of State considers that the Applicant's explanation as to why a seasonal restriction should not apply to all construction works on the BLF and MBIF is justified. He agrees that a seasonal restriction on impact piling in relation to these elements of the Project is sufficient. In

[102] NNB Generation Company (SZC) Limited, 2022. *SZC Co.'s Response to the Secretary of State's Request for Further Information dated 31 March 2022*. April, 2022.

[103] The Royal Society for the Protection of Birds and Suffolk Wildlife Trust, 2022. *Response to Department for Business, Energy and Industrial Strategy Information presented in Responses to Secretary of Statement Questions of 18th and 31st Marsh 2022 from the Royal Society for the Protection of Birds and Suffolk Wildlife Trust.* 23rd May 2022.

reaching this conclusion the Secretary of State notes that this was not a matter which was raised during Examination by NE, who agree with the Applicant's conclusion of no AEoI.

The Secretary of State is satisfied that, based upon the mitigation measures as secured under the DML and DCO an AEoI of the Outer Thames Estuary SPA from the indirect impacts of disturbance of prey species by underwater noise and vibration on little tern and common tern from the Project alone can be excluded.

5.24.2.2 Water quality effects (marine environment)

At the end of the Examination NE remained concerned about the potential effects of changes to water quality on the breeding little tern and common tern qualifying features of the SPA [REP10-097] and [REP10-199], and RSPB/SWT [REP10-111] had concerns about the potential impacts of thermal and chemical plumes and the combined effects of the Project on the marine water environment.

NE [REP10-097] stated that direct risks to little terns from the chemical discharges had not been considered. However, the Applicant [REP10-155] argued that this information was presented in [REP3-042], [REP5-120] and [REP7-073]. The ExA was content that the Applicant had addressed this issue.

The ExA noted the concerns raised about the increased risk to chemical exposure for predatory seabirds: however, it was not persuaded that chemicals consumed would be at concentrations that would affect their populations. The ExA also noted that further detailed information will be provided to inform the WDA permit and this would be subject to a separate HRA.

With regards to bentonite from potential frack-out events, the ExA took the view that the measures secured through the CoCP [REP10-072], including the commitment to use a bentonite recovery system, could ensure no AEoI of the Outer Thames Estuary SPA, alone: however, due to the timing of the Examination, NE did not have the opportunity to comment on the updated CoCP.

Additionally, with regards to the updated BEEMS Technical Report TR552 [REP10-052], the ExA could see no reason not to agree with the findings, but suggested that the Secretary of State may wish to satisfy himself that the MMO is content with the conclusions, because at the end of the Examination the MMO had not had the opportunity to review this document.

With regards to operational discharge activities associated with the cooling water system, including thermal and chemical (including hydrazine and chlorination) plume, and moribund biota, the ExA was of the view that an AEoI could be excluded on the basis of the mitigation and monitoring measures secured. These included measures in the scheme design (such as location of outfalls, and intake and outfall design and position) (secured through DCO), the Chlorination Strategy (secured through the WDA permit), controls over chemicals used within the marine environment (secured through the DML), measures in the CoCP in relation to bentonite (secured through DCO), and commitments to management and monitoring of discharges from the cooling water outfall, CDO and desalination plant outfall (secured through the WDA permit).

Without prejudice to the subsequent EP process, the ExA considered that on the basis of the material currently available to the ExA and with the mitigation measures secured and controls through the WDA permit, it was possible to conclude no AEoI from the Project alone. However, the ExA recommended that the Secretary of State may wish to satisfy themself in this regard.

Additional Information

In his first and second consultation letters, the Secretary of State invited the EA, MMO and NE to comment on the updated BEEMS Technical Report TR552 for the Desalination Plant Construction Discharge Assessment H1 Type Assessment.

NE stated that a H1 type assessment is used to specifically support an application for a WDA permit and that it would defer to the EA on this topic until being consulted on the permits in their role as a statutory consultee. The MMO stated that it would defer to the EA on this matter. The EA stated that because an H1 assessment is required in support of an associated WDA permit application, it would not comment on it before the WDA permit application.

The Secretary of State also invited NE to comment on the measures to mitigate the impacts from drilling mud and bentonite break out in the Applicant's CoCP [REP10-072] (see Section 5.11 for full details of consultation). NE advised that until further details were provided by the Applicant, it did not consider that appropriate mitigation measures were in place exclude impacts from bentonite.

Furthermore, NE, having now been consulted on the EA's draft HRA for the WDA EP, was invited to confirm whether an AEoI due to marine water quality impacts could be excluded for the Outer Thames Estuary SPA. NE advised that it had been consulted by the EA; however, until the HRA was finalised, it was unable to give unqualified advice on the impacts on the integrity of the above sites.

The Secretary of State is confident that the impacts of changes to water quality will be assessed as part of the permitting process and that pollution mitigation and control measures will be secured through this process to prevent an AEoI of the protected site. In accordance with the policies set out in EN-1 and EN-6, the Secretary of State has no reason to believe that an EP will not be granted and has taken account of the conclusions of the EA's proposed decision on the draft operational WDA permit which states that an AEoI of the common tern and little tern features of the Outer Thames Estuary SPA have been excluded. The Secretary of State has assessed the material presented during the Examination including representations made by IPs, the recommendation of the ExA, and all relevant post-Examination representations and information received. Regarding the effects from changes to water quality, and without prejudice to the EP process, the Secretary of State concludes that an AEoI of the common tern and little tern features of the Outer Thames Estuary SPA can be excluded for the Project alone.

5.24.3 Little tern; common tern: In-combination

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

The Shadow HRA provides an in-combination assessment of the potential for AEoI of the bird qualifying features of the Outer Thames Estuary SPA arising from disturbance effects, from the Project in combination with other plans or projects [APP-145].

The Applicant concluded that none of the identified plans or projects have the potential to cause an AEoI due to disturbance effects to species populations of the SPA in combination with the Project.

The Applicant also considered cumulative/inter-project effects between different elements of the Project [AS-174]. The 'Supplementary Assessment of Inter-Pathway Effects' considered that inter-pathway effects could not occur via disturbance effects.

The RSPB/SWT [REP10-204] acknowledged the Applicant's cumulative/inter-project effects assessment, however, it considered that this did not advance understanding beyond the assessment of individual impacts.

The ExA noted the RSPB/SWT's outstanding concerns with regards to the Applicant's conclusion of no AEoI in relation to cumulative/inter-project effects. The ExA was of the view that it could be possible to conclude no AEoI in combination, however it recommended that the Secretary of State may wish to satisfy himself on the outstanding matters in relation to this impact pathway.

Additional Information

In his second letter, the Secretary of State invited the Applicant to provide suggested amendments to DML Condition 36 (3) which restricts all construction works for the BLF and Temporary Marine Bulk Import Facility (MBIF) between the 1st May to 31st August inclusive, to address outstanding concerns of the RSPB/SWT in relation to impacts from indirect disturbance on little tern and common tern from the Project alone.

In its response, the Applicant provided an updated dDCO with an amendment to DML Condition 36 (3) which restricts impact piling between May and August. The Applicant[104] considered it unnecessary to restrict all construction activities for the BLF and Temporary MBIF as there is no pathway for disturbance to fish from airborne noise.

The Applicant acknowledged inconsistent text in the Shadow HRA Addendum which may have led to confusion. The Applicant highlighted that the Shadow HRA Addendum does not explicitly state that only impact piling is considered the source of significant underwater noise nor that potentially significant underwater noise impacts would only arise from impact piling. It states that statements made at Section 8.7.1 and Section 8.8.5 in the Shadow HRA Addendum should not have referred to "*All construction works"* and "*these works*" but should have specifically referred to impact piling only as impact piling is the only source of underwater noise which has the potential to affect fish prey items for terns.

The Applicant notes that a restriction on all construction works on the BLF and MBIF during May – August inclusive would delay the completion of the MBIF construction and have a knock-on effect on the programme for importing backfill. This could consequently mean either a delay to the overall construction period or risk offsetting the delay by transporting backfill by road and rail, therefore increasing HGV numbers beyond those committed to in the DCO. It considered a restriction which referred to a timing restriction on impact piling only as sufficient.

In its response to the Secretary of State's third consultation letter, the RSPB/SWT[105] requested clarity regarding dredging activities in relation to the construction of the BLF and MBIF which

[104] NNB Generation Company (SZC) Limited, 2022. *SZC Co.'s Response to the Secretary of State's Request for Further Information dated 31 March 2022*. April, 2022.

[105] The Royal Society for the Protection of Birds and Suffolk Wildlife Trust, 2022. *Response to Department for Business, Energy and Industrial Strategy Information presented in Responses to Secretary of Statement Questions of 18th and 31st Marsh 2022 from the Royal Society for the Protection of Birds and Suffolk Wildlife Trust.* 23rd May 2022.

have the potential to create underwater noise. It did not consider it clear whether dredging (which may be associated with piling) is also restricted during those months. It requested that all underwater construction activity is restricted from May to August inclusive.

The Secretary of State has given consideration to the responses of the Applicant and RSPB/SWT. The Secretary of State considers that the Applicant's explanation as to why a seasonal restriction should not apply to all construction works on the BLF and MBIF is justified. He agrees that a seasonal restriction on impact piling in relation to these elements of the Project is sufficient. In reaching this conclusion the Secretary of State notes that this was not a matter which was raised during Examination by NE, who agree with the Applicant's conclusion of no AEoI. As such, he is satisfied that outstanding concerns with regards to this impact pathway have been resolved.

The Secretary of State is satisfied that, based upon the mitigation measures as secured under the DML and DCO an AEoI of the Outer Thames Estuary SPA from the indirect impacts of disturbance of prey species by underwater noise and vibration on little tern and common tern from the Project in combination with other plans or projects can be excluded.

5.24.3.2 Water quality effects (marine environment)

The Applicant's Shadow HRA Report provided an in-combination assessment of the potential for AEoI of the bird qualifying features of the Outer Thames Estuary SPA arising from changes to water quality from the Project together with other plans and projects. It concluded [APP-145] that none of the identified plans or projects had the potential to cause an in-combination effect with the Project.

The Applicant also considered cumulative/inter-project effects between different elements of the Project [AS-174] and [REP7-279]. The assessment concluded that inter-pathway effects could occur between the pathways for the marine water quality effects and interaction with project infrastructure during the operational phase because both pathways could affect the foraging conditions and/or food availability of the birds. However, the effects from both pathways on the qualifying features were predicted to be too small to result in an AEoI of the features when considered together [AS-174].

The ExA was not aware of any further in-combination plans or projects that could act in combination with the Project and considered, on the basis of the information provided to the Examination, that it could be possible to conclude no AEoI in combination. However, the ExA recommended that the Secretary of State satisfy himself on the outstanding matters before a conclusion on in-combination effects is reached.

Additional Information

In his first and second consultation letters, the Secretary of State invited the EA, MMO and NE to comment on the updated BEEMS Technical Report TR552 for the Desalination Plant Construction Discharge Assessment H1 Type Assessment.

NE stated that a H1 type assessment is used to specifically support an application for a WDA permit and that it would defer to the EA on this topic until being consulted on the permits in their role as a statutory consultee. The MMO stated that it would defer to the EA on this matter. The EA stated that because an H1 assessment is required in support of an associated WDA permit application, it would not comment on it before the WDA permit application.

The Secretary of State also invited NE to comment on the measures to mitigate the impacts from drilling mud and bentonite break out in the Applicant's CoCP [REP10-072] (see Section 5.11 for full details of consultation). NE advised that until further details were provided by the Applicant, it did not consider that appropriate mitigation measures were in place exclude impacts from bentonite.

Furthermore, NE, having now been consulted on the EA's draft HRA for the WDA EP, was invited to confirm whether an AEoI due to marine water quality impacts could be excluded for the Outer Thames Estuary SPA. NE advised that it had been consulted by the EA; however, until the HRA was finalised, it was unable to give unqualified advice on the impacts on the integrity of the above sites.

The Secretary of State is confident that the impacts of changes to water quality will be assessed as part of the permitting process and that pollution mitigation and control measures will be secured through this process to prevent an AEoI of the protected site. In accordance with the policies set out in EN-1 and EN-6, the Secretary of State has no reason to believe that an EP will not be granted and has taken account of the conclusions of the EA's proposed decision on the draft operational WDA permit which states that an AEoI of the common tern and little tern features of the Outer Thames Estuary SPA have been excluded. The Secretary of State has assessed the material presented during the Examination including representations made by IPs, the recommendation of the ExA, and all relevant post-Examination representations and information received. Regarding the effects from changes to water quality, and without prejudice to the EP process, the Secretary of State concludes that an AEoI of the common tern and little tern features of the Outer Thames Estuary SPA can be excluded for the Project in-combination with other plans and projects.

5.24.4 Wintering / passage red-throated diver: Alone

5.24.4.1 Disturbance effects on species' population (direct disturbance from vessels; noise and visual stimuli; and indirect impacts on fish as a prey species from noise and vibration)

For the reasons set out in Table 2, in line with the recommendation of the ExA and NE, the Secretary of State is satisfied that, based upon the mitigation measures as secured under the DML and DCO an AEoI of the Outer Thames Estuary SPA from the effects of from the Project alone can be excluded.

5.24.4.2 Water quality effects (marine environment)

At the end of the Examination NE could not provide its final advice on the potential effects of changes to water quality on wintering red-throated diver because information on the effects and mitigation to be included with the WDA permit was unavailable [REP10-097] and [REP10-199].

The ExA acknowledged that further information would be provided for the WDA permit, and that this would be subject to a separate and detailed HRA.

The ExA noted the concerns raised about the increased risk of chemical exposure for predatory seabirds. However, it was not persuaded that chemicals consumed by SPA species would be at concentrations that would affect their populations. The ExA does however note that controls on marine water quality will be addressed by the WDA Permit and the Secretary of State may therefore wish to satisfy themself further in this regard.

With regards to bentonite from potential frack-out events, the ExA was of the view that the measures secured through the CoCP [REP10-072], including the commitment to use of a bentonite recovery system, could ensure no AEoI to Outer Thames Estuary SPA, alone or in combination. However, due to the timing of the Examination, NE did not have the opportunity to comment on the updated CoCP and therefore, the Secretary of State may wish to satisfy themself in this regard. Furthermore, the ExA suggested that the Secretary of State may wish to satisfy themself that the MMO is content with the conclusions of the updated version of the BEEMS Technical Report TR552 [REP10-052].

With regards to operational discharge activities associated with the cooling water system, including thermal and chemical (including hydrazine and chlorination) plume, and moribund biota, the ExA was of the view that an AEoI could be excluded based on the mitigation and monitoring measures secured through the DCO, WDA, DML and the CoCP.

Based on the information available, the ExA without prejudice to the subsequent EP process, considered that with the mitigation measures secured and controls through the WDA permit, it was possible to conclude no AEoI from the Project alone. However, the Secretary of State may wish to satisfy themself in this regard.

Additional Information

In his first and second consultation letters, the Secretary of State invited the EA, MMO and NE to comment on the updated BEEMS Technical Report TR552 for the Desalination Plant Construction Discharge Assessment H1 Type Assessment.

NE stated that a H1 type assessment is used to specifically support an application for a WDA permit and that it would defer to the EA on this topic until being consulted on the permits in its role as a statutory consultee. The MMO stated that it would defer to the EA on this matter. The EA stated that because an H1 assessment is required in support of an associated WDA permit application, it would not comment on it before the WDA permit application.

The Secretary of State also invited NE to comment on the measures to mitigate the impacts from drilling mud and bentonite break out in the Applicant's CoCP [REP10-072] (see Section 5.11 for full details of consultation). NE advised that until further details were provided by the Applicant, it did not consider that appropriate mitigation measures were in place exclude impacts from bentonite.

Furthermore, NE, having now been consulted on the EA’s draft HRA for the WDA EP, was invited to confirm whether an AEoI due to marine water quality impacts could be excluded for the Outer Thames Estuary SPA. NE advised that it had been consulted by the EA; however, until the HRA was finalised, it is unable to give unqualified advice on the impacts on the integrity of the above sites.

The Secretary of State is confident that the impacts of changes to water quality will be assessed as part of the permitting process and that pollution mitigation and control measures will be secured through this process to prevent an AEoI of the protected site. In accordance with the policies set out in EN-1 and EN-6, the Secretary of State has no reason to believe that an EP will not be granted and has taken account of the conclusions of the EA’s proposed decision on the draft operational WDA permit which states that an AEoI of the red-throated diver feature of the Outer Thames Estuary SPA has been excluded. The Secretary of State has assessed the material presented during the Examination including representations made by IPs, the

recommendation of the ExA, and all relevant post-Examination representations and information received. Regarding the effects from changes to water quality, and without prejudice to the EP process, the Secretary of State concludes that an AEoI of the red-throated diver feature of the Outer Thames Estuary SPA can be excluded for the Project alone.

5.24.5 Wintering / passage Red-throated diver: In-combination

5.24.5.1 Disturbance effects on species' population (direct disturbance from vessels; noise and visual stimuli; and indirect impacts on fish as a prey species from noise and vibration)

For the reasons set out in Table 2, the Secretary of State is satisfied that, based upon the mitigation measures as secured under the DML and DCO an AEoI of the Outer Thames Estuary SPA from the effects of disturbance on species' population (direct disturbance from vessels; noise and visual stimuli; and indirect impacts on fish as a prey species from noise and vibration) from the Project In-combination with other plans and projects can be excluded.

5.24.5.2 Water quality effects (marine environment)

The Shadow HRA report presented an in-combination assessment of the potential for AEoI of the bird qualifying features of the Outer Thames Estuary SPA from changes to water quality from the Project together with the plans and projects presented in Tables 8.29 and 8.30 of [APP-145].

The Applicant also considered the cumulative/ inter-project effects between different elements of the Project in [AS-174] and [REP7-279] and stated that inter-pathway effects could only occur via the pathways for the marine water quality effects and interaction with project infrastructure during the operational phase which both have the potential to affect the foraging conditions and/ or food availability for the qualifying features of the Outer Thames SPA. It concluded that because the effects from both pathways are predicted to be small, no AEoI is predicted when the respective effects are considered together [AS-174].

The Applicant's assessment [APP-145] concluded that none of the identified plans or projects had the potential to cause an AEoI due to changes in water quality in combination with the Project.

The ExA was aware that NE had outstanding concerns with regards to marine water quality effects and cumulative/in-combination effects for the Outer Thames Estuary SPA, which included matters to be addressed through the WDA EP (NE Issue 9 and 30 to 36)[RR-0878] and [REP10-097]; and the RSPB/SWT [REP10-111] and [REP10-204] also had outstanding concerns with regards to the Applicant's assessment of cumulative/inter-project effects.

The ExA was not aware of any further plans or projects that could act in combination with the Project and considered. On the basis of the information provided to the Examination, the ExA concluded that it could be possible to conclude no AEoI in combination. However, the ExA recommended that the Secretary of State satisfy themself on the outstanding matters before a conclusion on in-combination effects is determined.

Additional Information

In his first and second consultation letters, the Secretary of State invited the EA, MMO and NE to comment on the updated BEEMS Technical Report TR552 for the Desalination Plant Construction Discharge Assessment H1 Type Assessment.

NE stated that a H1 type assessment is used to specifically support an application for a WDA permit and that it would defer to the EA on this topic until being consulted on the permits in its role as a statutory consultee. The MMO stated that it would defer to the EA on this matter. The EA stated that because an H1 assessment is required in support of an associated WDA permit application, it would not comment on it before the WDA permit application.

The Secretary of State also invited NE to comment on the measures to mitigate the impacts from drilling mud and bentonite break out in the Applicant's CoCP [REP10-072] (see Section 5.11 for full details of consultation). NE advised that until further details were provided by the Applicant, it did not consider that appropriate mitigation measures were in place exclude impacts from bentonite.

Furthermore, NE, having now been consulted on the EA's draft HRA for the WDA EP, was invited to confirm whether an AEoI due to marine water quality impacts could be excluded for the Outer Thames Estuary SPA. NE advised that it had been consulted by the EA; however, until the HRA was finalised, it is unable to give unqualified advice on the impacts on the integrity of the above sites.

The Secretary of State is confident that the impacts of changes to water quality will be assessed as part of the permitting process and that pollution mitigation and control measures will be secured through this process to prevent an AEoI of the protected site. In accordance with the policies set out in EN-1 and EN-6, the Secretary of State has no reason to believe that an EP will not be granted and has taken account of the conclusions of the EA's proposed decision on the draft operational WDA permit which states that an AEoI of the red-throated diver feature of the Outer Thames Estuary SPA has been excluded. The Secretary of State has assessed the material presented during the Examination including representations made by IPs, the recommendation of the ExA, and all relevant post-Examination representations and information received. Regarding the effects from changes to water quality, and without prejudice to the EP process, the Secretary of State concludes that an AEoI of the red-throated diver feature of the Outer Thames Estuary SPA can be excluded for the Project in-combination with other plans and projects.

5.25 Appropriate Assessment: Sandlings SPA

The Sandlings SPA is located 1.6km from the MDS at the closest point.

The Sandlings SPA covers 3,400ha of habitats near the Suffolk coast, between the Deben Estuary and Leiston. It regularly supports 3.2% of the Great Britain breeding population of nightjar (count as at 1992) and 10.3% of the Great Britain breeding population of woodlark (count as at 1997)[106]. The SPA is coincident with all or parts of Blaxhall Heath SSSI, Leiston-Aldeburgh SSSI, Sandlings Forest SSSI, Snape Warren SSSI, Sutton and Hollesley Heaths SSSI, and Tunstall Common SSSI. Woodlark and nightjar use the open grassland, heaths and rotational conifer plantation habitats for breeding. These two species also use grasslands, arable land and other habitats for feeding[107].

[106] Natura 2000 Standard Data Form. Site UK9020286 Sandlings. 08 2001, updated 12 2015.

The Secretary of State has considered the potential for the Project to constitute AEoI for each feature for which a significant effect is likely.

The qualifying features for which the site is designated, and which have been carried forward to the AA are:

- Breeding nightjar; and
- Breeding woodlark.

The Applicants Shadow HRA Report provided information for an AA for the following potential impact pathways:

- Changes in air quality (construction, operation and decommissioning);
- Direct habitat loss and fragmentation (construction, operation and decommissioning);
- Disturbance effects on species populations (noise, light and visual) (construction, operation and decommissioning); and
- Disturbance due to increase in recreational pressure.

Supplementary advice[107] for nightjar includes the following targets:

- Restore the size of the breeding nightjar population to a level which is consistently above 109 males, whilst avoiding deterioration from its current level as indicated by the latest mean peak count or equivalent.
- Reduce the frequency, duration and/or intensity of disturbance affecting nesting, roosting, foraging or feeding nightjars so that the population is not significantly disturbed.
- Restore the extent, distribution and availability of suitable breeding habitat which supports nightjar for all the necessary stages of its breeding cycle (courtship, nesting, feeding)
- Restore the safe passage of nightjars moving between nesting and feeding areas.
- Restore management or other measures (whether within and/or outside the site boundary as appropriate) necessary to restore the structure, function and/or the supporting processes associated with breeding nightjar and its supporting habitats.
- Maintain or restore the distribution, abundance and availability of key prey items (e.g. moths, beetles) at prey sizes preferred by nightjars.
- Restore the amount of open and unobstructed patches within nesting and foraging areas, including areas of clear-fell, windfall, wide tracks, open forest and heath.
- Restore as necessary the concentrations and deposition of air pollutants to below the site-relevant Critical Load or Level values given for this feature of the site on the Air Pollution Information System.
- Reduce the predation and disturbance of breeding nightjar caused by native and non-native predators.
- Restore the mix of vegetation (optimal conditions normally with vegetation mostly of 20-60 cm with frequent bare patches of >2 m2, 10-20% bare ground and <50% tree/scrub cover overall; trees <2 m in height) throughout the nesting area.
- Maintain the ability of the feature's supporting habitats to adapt or evolve to wider environmental change, either within or external to the site.

Supplementary advice[107] for woodlark includes the following targets:

[107] Natural England (March 2019): European Site Conservation Objectives: Supplementary advice on conserving and restoring site features Sandlings Special Protection Area (SPA) Site code: UK9020286

- Restore the size of the breeding woodlark population to a level which is consistently above 154 breeding pairs, whilst avoiding deterioration from its current level as indicated by the latest mean peak count or equivalent.
- Reduce the frequency, duration and/or intensity of disturbance affecting nesting, roosting, foraging or feeding birds so that the breeding woodlark population is not significantly disturbed.
- Restore the extent, distribution and availability of suitable breeding habitat which supports the feature for all necessary stages of its breeding cycle (courtship, nesting, feeding).
- Restore as necessary the concentrations and deposition of air pollutants to below the site-relevant Critical Load or Level values given for this feature of the site on the Air Pollution Information System.
- Restore management or other measures (whether within and/or outside the site boundary as appropriate) necessary to restore the structure, function and/or the supporting processes associated with breeding woodlark and its supporting habitats.
- Maintain or restore the distribution, abundance and availability of key prey items (e.g. spiders, weevils, caterpillars) at preferred prey sizes preferred by breeding woodlark.
- Restore open and unobstructed terrain, typically within at least 0.2 km of nesting areas, with no increase in tall (>0.2 m) vegetation cover >50% of the site overall.
- Reduce or restrict the predation and disturbance of breeding woodlark caused by native and non-native predators.
- Restore the mix of trees, ground vegetation and bare ground (including frequency of bare patches of <0.5 ha within mosaic of short (<5 cm) to medium (10-20 cm) ground vegetation, and small clumps of shrubs or trees scattered throughout nesting and feeding areas.
- Maintain the ability of the feature's supporting habitats to adapt or evolve to wider environmental change, either within or external to the site.

The Applicant concluded no AEoI to the breeding nightjar and woodlark of the Sandlings SPA from all potential effects, for the project alone or in-combination

5.25.1 Breeding nightjar; breeding woodlark: Alone

5.25.1.1 Changes in air quality

The Applicant's Shadow HRA Report [APP-145] scoped out impacts from dust on Sandlings SPA based on the IAQM 2016 guidance that significant dust impacts are typically limited to areas within 500m of large construction sites.

The ExA noted that changes in air quality at Sandlings SPA during construction, operation and decommissioning of the Project would not result in direct impacts to the qualifying features of the Sandlings SPA either alone or in combination.

The ExA also questioned whether indirect impacts would result in a significant change to relevant species abundance and composition sufficient to noticeably damage supporting habitats and therefore undermine conservation objectives of the SPA.

In the Shadow HRA Report the Applicant stated that background levels of nutrient and acid deposition at the Sandlings SPA already exceed the Critical Load: however, given the background rates of high chronic deposition, the PCs are unlikely to result in significant changes in species composition or habitat condition. The Applicant concluded that it was very unlikely that the Project would lead to significant changes to species composition or noticeable damage to the constituent plants, including lichens and bryophytes.

The ExA noted that while the majority of the underlying Leiston-Aldeburgh SSSI units are currently in favourable condition, which may provide some resilience to change, due to the inherent uncertainty in the ability of the site to tolerate further acid deposition and the lack of comment from NE, it was unable to exclude an AEoI of Sandlings SPA from changes to air quality.

Additional Information

Additional environmental information was issued post-examination in response to requests from the Secretary of State (refer to section 5.3 for full details of submissions). On 14th June 2022, NE, having reviewed the Applicant's updated air quality assessment report, confirmed that AEoI of Sandlings SPA from changes to air quality could be excluded.

Based on this additional information and the advice provided by NE, the Secretary of State concludes that an AEoI of Sandlings SPA from changes in air quality from the Project alone can be excluded.

5.25.1.2 Direct habitat loss and fragmentation

For the reasons set out in Table 2, in line with the recommendation of the ExA, the Secretary of State is satisfied that, noting the apparent absence of the qualifying features from the affected areas, an AEoI integrity of the Sandlings SPA from the effects of direct habitat loss and fragmentation on breeding nightjar and breeding woodlark from the Project alone can be excluded.

5.25.1.3 Disturbance due to increase in recreational pressure

For the reasons set out in Table 2, in line with the recommendation of the ExA and NE, the Secretary of State is satisfied that, based upon the mitigation measures as secured under the DCO an AEoI integrity of the Sandlings SPA from the effects of disturbance due to increase in recreational pressure on breeding nightjar and breeding woodlark from the Project alone can be excluded.

5.25.1.4 Disturbance effects on species populations (noise, light and visual)

For the reasons set out in Table 2, in line with the recommendation of the ExA and NE, the Secretary of State is satisfied that, based upon the mitigation measures as secured under the DCO an AEoI of the Sandlings SPA from the effects of disturbance due to noise, light and visual impacts on breeding nightjar and breeding woodlark from the Project alone can be excluded.

5.25.2 Breeding nightjar; breeding woodlark: In-combination

5.25.2.1 Changes in air quality

At the end of the Examination the ExA concluded that an AEoI of the Sandlings SPA as a result of changes in air quality could not be excluded.

Additional Information

Additional environmental information was issued post-examination in response to requests from the Secretary of State (refer to section 5.3 for full details of submissions). On 14th June 2022,

NE, having reviewed the Applicant's updated air quality assessment report, confirmed that AEoI of Sandlings SPA from changes to air quality could be excluded.

Based on this additional information and the advice provided by NE, the Secretary of State concludes that an AEoI of Sandlings SPA from changes in air quality from the Project in-combination with other plans and projects can be excluded.

5.25.2.2 Direct habitat loss and fragmentation

For the reasons set out in Table 2, in line with the recommendation of the ExA, the Secretary of State is satisfied that, noting the apparent absence of the qualifying features from the affected areas, an AEoI of the Sandlings SPA from the effects of direct habitat loss and fragmentation on breeding nightjar and breeding woodlark from the Project in-combination with other plans or projects can be excluded.

5.25.2.3 Disturbance due to increase in recreational pressure

For the reasons set out in Table 2, in line with the recommendation of the ExA and NE, the Secretary of State is satisfied that, based upon the mitigation measures as secured under the DCO an AEoI of the Sandlings SPA from the effects of disturbance due to increase in recreational pressure on breeding nightjar and breeding woodlark from the Project In-combination with other plans or projects can be excluded.

5.25.2.4 Disturbance effects on species populations (noise, light and visual)

For the reasons set out in Table 2, in line with the recommendation of the ExA and NE, the Secretary of State is satisfied that, based upon the mitigation measures as secured under the DCO an AEoI of the Sandlings SPA from the effects of disturbance due to noise, light and visual impacts on breeding nightjar and breeding woodlark from the Project in-combination with other plans or projects can be excluded.

5.26 Appropriate Assessment: Southern North Sea SAC

The Southern North Sea SAC is adjacent to the Project area.

The SAC covers an area of 3,695,054 of marine seas, and is designated solely for Harbour porpoise, supporting persistently high densities of Harbour porpoise of the UK North Sea Management Unit population. The main area included within the site covers important winter and summer habitat, which emerged as part of the top 10% persistent high-density areas for these seasons within the UK for Harbour porpoise. Approximately two thirds of the site, the northern part, is recognised as important for porpoises during the summer season, whilst the southern part is more important during the winter[108].

The Secretary of State has considered the potential for the Project to constitute AEoI for each feature for which a significant effect is likely.

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The sole qualifying feature for which the site is designated, and which has been carried forward to the AA is:

- Harbour porpoise.

The Applicants Shadow HRA Report provided information for an AA for the following potential impact pathways:

- Water quality effects (marine environment);
- Direct habitat loss and direct/indirect habitat fragmentation;
- Disturbance effects on species' population (underwater noise); and
- Physical interaction between species and project infrastructure (collision risk with vessels and effects on prey species).

The Applicant concluded no AEoI to the harbour porpoise of the Southern North Sea SAC from all potential effects, for the project alone or in-combination

5.26.1 Harbour porpoise: Alone

5.26.1.1 Water quality effects (marine environment)

For the reasons set out in Table 2, in line with the recommendation of the ExA, the Secretary of State is satisfied that subject to the implementation of the mitigation measures secured, an AEoI of the harbour seal feature of The Southern North Sea SAC from the effects of changes to water quality on from the Project alone can be excluded.

5.26.1.2 Direct habitat loss and fragmentation

For the reasons set out in Table 2, in line with the recommendation of NE and the ExA, the Secretary of State is satisfied that an AEoI of the Southern North Sea SAC from the effects of direct habitat loss and fragmentation on harbour porpoise from the Project alone can be excluded.

5.26.1.3 Disturbance effects on species population (underwater noise)

The Shadow HRA [APP-145] assessed the potential for physiological and behavioural effects on marine mammals and their prey species during construction and decommissioning. When assessing the impacts on harbour porpoise of the Southern North Sea SAC, the Applicant applied thresholds as set out in the conservation objectives of the site:

"*Noise disturbance within an SAC from a plan/project individually or in combination is significant if it excludes harbour porpoise from more than:*

1. *20% of the seasonal component of the Southern North Sea SAC in any given day, and*
2. *An average of 10% of the relevant area of the site over a season".*

The Applicant's assessment concluded that for permanent threshold shift effects to occur, harbour porpoise would need to be in very close proximity of drilling (~50m) for over 24 hours, and for dredging within 1.66km of the activity for a period of 24 hours. With this considered, as well as the low number of individuals that may be at risk (i.e. 3.8 individuals) and the small percentage of the North Sea Management Unit reference population that would be affected (i.e.

0.001%), the Applicant concluded that the risk of permanent auditory injury is considered to be unlikely.

In terms of temporary threshold shift and fleeing response, the Applicant considered that taking into account the temporary disturbance and intermittent duration of underwater noise from dredging and drilling activities, there is unlikely to be any significant disturbance or barrier effects for harbour porpoise. The Applicant's predicted maximum area of effect from temporary threshold shift equated to 1.1% of the winter area of the Southern North Sea SAC (12, 697km^2); therefore, below the spatial disturbance thresholds as set out in the conservation objectives of the protected site.

The Shadow HRA concluded there would be no AEoI of the harbour porpoise feature of the Southern North Sea SAC from underwater noise disturbance resulting from the Project alone. The Shadow HRA Addendum [AS-173] and Shadow HRA Third Addendum [REP7-279] concluded that there is no change to the underwater noise assessment in the Shadow HRA as a result of Changes 2 and 19.

The Applicant's conclusion of no AEoI relied upon a MMMP to mitigate potential underwater noise impacts.

NE [RR-0878] considered there to be flaws in the assessment of disturbance effects from underwater noise in terms of the pin pile effective deterrent radius applied and the worst-case scenario applied in terms of UXO detonations.

NE later confirmed that it was satisfied with the mitigation measures which have been proposed with regards to the effects of piling from the construction of both BLFs, and believe that if they are implemented it is unlikely there will be a resulting AEoI of the Southern North Sea SAC.

The MMO deferred to NE on the appropriateness of the Applicant's assessment [REP10-195]. It confirmed the Applicant's report entitled 'Underwater noise effect assessment for the Sizewell C revised marine freight options' (Revision 1) [REP5-124] had addressed its concerns regarding potential underwater noise effects of any mechanical cutting which may be required during decommissioning of the temporary BLF.

The ExA was satisfied the draft MMMP [REP10-028] and Schedule 20 (DML), Part 3, Condition 36(3)(b) of the dDCO secures the deliverable measures to mitigate injurious effects from underwater noise during piling. The ExA therefore recommended there would be no AEoI of the harbour porpoise feature of the Southern North Sea SAC as a result of underwater noise from the Project alone.

The Secretary of State is satisfied that, based upon the mitigation measures as secured under the DML and DCO, an AEoI of the Southern North Sea SAC from the effects of disturbance effects from underwater noise on harbour porpoise from the Project alone can be excluded.

5.26.1.4 Physical interaction between species and project infrastructure

For the reasons set out in Table 2, in line with the recommendation of NE and the ExA, the Secretary of State is satisfied that an AEoI of the Southern North Sea SAC from the effects of physical interaction between species and project infrastructure on harbour porpoise from the Project alone can be excluded.

5.26.2 Harbour porpoise: In-combination

5.26.2.1 Water quality effects (marine environment)

For the reasons set out in Table 2, in line with the recommendation of the ExA, the Secretary of State is satisfied that subject to the implementation of the mitigation measures secured, an AEoI of the harbour seal feature of the Southern North Sea SAC from the effects of changes to water quality on from the Project in-combination with other plans or projects can be excluded.

5.26.2.2 Direct habitat loss and fragmentation

For the reasons set out in Table 2, in line with the recommendation of NE and the ExA, the Secretary of State is satisfied that an AEoI of the Southern North Sea SAC from the effects of direct habitat loss and fragmentation on harbour porpoise from the Project In-combination with other plans or projects can be excluded.

5.26.2.3 Disturbance effects on species population (underwater noise)

The Shadow HRA provided an in-combination description of the potential for AEoI of the harbour porpoise qualifying feature of the Southern North Sea SAC arising from underwater noise disturbance.

Taking into account the commitments in the draft MMMP and the short duration of piling for the Project, the Applicant concluded there was no potential for an AEoI of the Southern North Sea SAC in combination with other plans or projects.

The Applicant considered cumulative/inter-project effects between different elements of the Project [AS-174] [REP7-279]. The Applicant stated that the updated marine mammal reference populations and counts provided, as well as the impacts resulting from Change 19, did not alter the conclusions of no AEoI of the Southern North Sea SAC.

NE noted that the winter portion of the Southern North Sea 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 average overlap into account). On this basis, NE did not agree with the Applicant's conclusion of no AEoI.

Both NE [RR-0878] and the MMO [RR-0744] [REP1-025] advised that a Southern North Sea SAC Site Integrity Plan ("SIP") would need to be submitted to, and approved by, the MMO to ensure no AEoI of the SAC before the commencement of any construction activities. The MMO confirmed that it defers to NE regarding the appropriateness of the Southern North Sea SAC SIP [REP10-107].

The Applicant submitted a draft SIP [AS-178] which was revised three times during Examination in response to IP comments [REP4-004] [REP8-047] [REP10-022].

The SIP was listed as a certified document in Schedule 24 of the dDCO and is to be certified under article 82 [REP10-009].

NE did not have the opportunity to comment on the Applicant's final version of the SIP. However, it highlighted areas of confusion in version 3 of the SIP, particularly around terminology and language used. It considered that calculations provided were not accurate and requested clarity

on the potential piling scenarios being addressed. NE advised that these issues would need to be addressed before it was able to rule out no AEoI of the Southern North Sea SAC.

NE [RR-0878] [REP2-153] [REP10-199] also raised that a mechanism developed by regulators is required for managing, monitoring and reviewing multiple SIPs from multiple plans or projects alongside one another. Until this occurs, NE is unable to advise that the current approach is sufficient to address the in-combination impacts and therefore the risk of AEoI of the Southern North Sea SAC could not be fully ruled out.

The ExA noted NE's concerns regarding the need for a regulatory mechanism to manage, monitor and review SIPs and that this is a strategic matter out of the Applicant's control. The Secretary of State agrees with this conclusion.

The ExA stated that it is not possible to undertake an accurate assessment of likely in combination effects associated with Project construction until the details of construction, particularly the timing of piling, are confirmed. Therefore, it is not possible to determine exactly which mitigation measures would be required at this time.

The ExA was content that the SIP would provide a mechanism to ensure no AEoI of the Southern North Sea SAC in combination with other plans or projects.

The ExA did not consider there to be substantial differences between version 3 of the SIP, which NE reviewed, and the Applicant's final version of the SIP. Therefore, the ExA considered that the Secretary of State may wish to consult with the Applicant, NE and the MMO to resolve the outstanding issues.

In his second consultation letter, the Secretary of State invited the Applicant, in consultation with NE, to provide an updated SIP subsequent to the version submitted by the Applicant at Deadline 10 [REP10-022] to address NE's outstanding concerns in its SoCG [REP10-097].

The Applicant provided an updated version of the Southern North Sea SIP in its response to the Secretary of State's letter, which it stated addressed NE's outstanding comments.

NE stated in its response of 14th April 2022 that the Applicant had provided it with an updated version of the Southern North Sea SIP on 13th April 2022. However, it did not have time to review the updated SIP for the deadline set by the Secretary of State. It stated it would provide an updated position on its adequacy at a subsequent deadline if requested.

The Secretary of State notes that NE was unable to review the content of the updated SIP in time for the 14th April 2022 deadline as set in his letter. However, subsequent to this the Secretary of State invited comment from the Applicant and IPs in three further letters on specific topics, including in his letter of 25th April 2022, inviting all IPs to comment on the responses to his first two letters. The Secretary of State notes that NE did not provide a submission in response to this letter, nor comment further on the adequacy or otherwise of the updated Southern North Sea SAC SIP. The Secretary of State considers that there has been sufficient opportunity for IPs, including NE, to provide comment on the updated SIP.

The Secretary of State considers that the updated SIP provides sufficient confidence that the Project, in-combination with other plans or projects, will not exceed the noise thresholds assessed within the SAC Review of Consents HRA. As an additional point of control, impact piling licensed under the DML cannot not begin until the MMO has provided written approval for the SIP.

The Secretary of State is satisfied that, based upon the mitigation measures as secured under the DML and DCO an AEoI of the Southern North Sea SAC from the effects of disturbance effects from underwater noise on harbour porpoise from the Project in-combination with other plans or projects can be excluded.

5.26.2.4 Physical interaction between species and project infrastructure

For the reasons set out in Table 2, in line with the recommendation of NE and the ExA, the Secretary of State is satisfied that an AEoI of the Southern North Sea SAC from the effects of physical interaction between species and project infrastructure on harbour porpoise from the Project in-combination with other plans or projects can be excluded.

5.27 Appropriate Assessment: Stour and Orwell Estuaries SPA and Ramsar

The Stour and Orwell Estuaries SPA and Ramsar are located 33.7km from the MDS and 1.6km from the closest Associated Development Site (the freight management facility).

The SPA covers an area of 3,676.92ha, and includes extensive mudflats, low cliffs, saltmarsh and small areas of vegetated shingle on the lower reaches. In summer the site supports important numbers of birds, such as 3.6% of the UK population of breeding avocet, while in winter it holds major concentrations of waterbirds, especially geese, ducks and waders[109].

The Secretary of State has considered the potential for the Project to constitute an AEoI for each feature for which a significant effect is likely.

The qualifying features for which the SPA and Ramsar are designated, and which have been carried forward to consideration of AEoI are:

- Avocet (breeding);
- Pintail (wintering);
- Dark-bellied Brent goose (wintering);
- Dunlin (wintering);
- Knot (wintering);
- Black-tailed godwit (wintering);
- Grey plover (wintering);
- Redshank (wintering);
- Assemblage qualification: wetland of international importance; and
- Assemblage qualification: waterbird assemblage.
- Criterion 5 (assemblages of international importance: waterfowl); and
- Criterion 6 (species/ populations occurring at levels of international importance).

The Applicant's Shadow HRA Report provided information for an AA for the following potential impact pathway:

- Disturbance effects on species' population (noise and visual stimuli) (construction, operation and decommissioning).

[109] http://publications.naturalengland.org.uk/file/4754887854260224

As mentioned earlier in this HRA (see Table 1), submissions from IPs indicated that the following additional impacts should be considered at the AA stage:

- Alteration of local hydrology and hydrogeology.

5.27.1 All features: Alone

5.27.1.1 Disturbance effects on species population (noise and visual stimuli)

For the reasons set out in Table 2, in line with the recommendation of the ExA, and noting the lack of disagreement by any IP including NE, the Secretary of State is satisfied that, based upon the mitigation measures secured in the DCO, an AEoI of the Stour and Orwell Estuaries SPA and Ramsar from disturbance effects on species populations (noise and visual stimuli) from the Project alone can be excluded.

5.27.1.2 Alteration of local hydrology and hydrogeology

For the reasons set out in Table 2, in line with the recommendation of NE and the ExA, the Secretary of State is satisfied that, based upon the mitigation measures secured in the DCO, Drainage Strategy, CoCP and TEMMP, an AEoI of the Stour and Orwell Estuaries SPA and Ramsar from the effects of alterations of local hydrology and hydrogeology from the Project alone can be excluded.

5.27.2 All features: In-combination

5.27.2.1 Disturbance effects on species population (noise and visual stimuli)

For the reasons set out in Table 2, in line with the recommendation of the ExA, and noting the lack of disagreement by any IP including NE, the Secretary of State is satisfied that, based upon the mitigation measures secured in the DCO, an AEoI of the Stour and Orwell Estuaries SPA and Ramsar from disturbance effects on species populations (noise and visual stimuli) from the Project in-combination with other plans or projects can be excluded.

5.27.2.2 Alteration of local hydrology and hydrogeology

For the reasons set out in Table 2, in line with the recommendation of NE and the ExA, the Secretary of State is satisfied that, based upon the mitigation measures secured in the DCO, Drainage Strategy, CoCP and TEMMP, an AEoI of the Stour and Orwell Estuaries SPA and Ramsar from the effects of alterations of local hydrology and hydrogeology from the Project in-combination with other plans or projects can be excluded.

5.28 Appropriate Assessment: The Wash and North Norfolk Coast SAC

The Wash and North Norfolk Coast SAC is located 88.2km from the Project.

This SAC covers an area of 10771ha. The Wash and North Norfolk Coast SAC is the largest embayment in the UK. It is connected via sediment transfer systems to the north Norfolk coast. Together, the Wash and North Norfolk Coast form one of the most important marine areas in the UK and European North Sea coast, and includes extensive areas of varying, but predominantly sandy sediments subject to a range of conditions. Extensive intertidal flats provide ideal

conditions for Harbour seal breeding and hauling-out, hosting the largest colony of Harbour seal in the UK, with 7% of the total UK population[110]

The Secretary of State has considered the potential for the Project to constitute an AEoI for each feature for which a significant effect is likely.

The sole qualifying feature for which the site is designated, and which has been carried forward to the AA is:

- Harbour seal.

The Applicant's Shadow HRA Report provided information for an AA for the following potential impact pathways:

- Water quality effects (marine environment);
- Disturbance effects on species' population (underwater noise); and
- Physical interaction between species and project infrastructure.

5.28.1 Harbour seal: Alone

5.28.1.1 Water quality effects (marine environment)

For the reasons set out in Table 2, in line with the recommendation of the ExA, the Secretary of State is satisfied that subject to the implementation of the mitigation measures secured, an AEoI of the harbour seal feature of The Wash and North Norfolk Coast SAC from the effects of changes to water quality on from the Project alone can be excluded.

5.28.1.2 Disturbance effects on species population (underwater noise)

For the reasons set out in Table 2, in line with the recommendation of the ExA, the Secretary of State is satisfied that with the mitigation measures secured through the MMMP, an AEoI of the harbour seal feature of The Wash and North Norfolk Coast SAC from the disturbance effects on species populations from underwater noise on harbour seal from the Project alone can be excluded.

5.28.1.3 Physical interaction between species and project infrastructure

For the reasons set out in Table 2, in line with the recommendation of NE and the ExA, the Secretary of State is satisfied that an AEoI of the harbour seal feature of The Wash and North Norfolk Coast SAC from the disturbance effects on species populations from underwater noise on harbour seal from the Project alone can be excluded.

5.28.2 Harbour seal: In-combination

5.28.2.1 Water quality effects (marine environment)

For the reasons set out in Table 2, in line with the recommendation of the ExA, the Secretary of State is satisfied subject to the implementation of the mitigation measures secured, an AEoI of

[110] https://sac.jncc.gov.uk/site/UK0017075

the harbour seal feature of The Wash and North Norfolk Coast SAC from the effects of changes to water quality on from the Project in combination with other plans or projects can be excluded.

5.28.2.2 Disturbance effects on species population (underwater noise)

For the reasons set out in Table 2, in line with the recommendation of the ExA, the Secretary of State is satisfied that with the mitigation measures secured through the MMMP, an AEoI of the harbour seal feature of The Wash and North Norfolk Coast SAC from the disturbance effects on species populations from underwater noise on harbour seal from the Project in combination with other plans and projects can be excluded.

5.28.2.3 Physical interaction between species and project infrastructure

For the reasons set out in Table 2, in line with the recommendation of NE and the ExA, the Secretary of State is satisfied that with the mitigation measures an AEoI of the harbour seal feature of The Wash and North Norfolk Coast SAC from the disturbance effects on species populations from underwater noise on harbour seal from the Project alone can be excluded.

5.29 Appropriate Assessment Conclusions

As the competent authority for energy NSIPs as defined under the PA 2008, the Secretary of State has undertaken an AA under Regulation 63 of the Habitats Regulations. The Secretary of State has undertaken an AA in respect of the conservation objectives of 19 protected sites to determine whether the Project, either alone or in-combination with other plans or projects, will result in an AEoI.

The Secretary of State has considered all of the information available to him, including the advice from the SNCBs, the recommendations of the ExA and the views of all IPs, including the Applicant.

The Secretary of State is satisfied that, given the relative scale and magnitude of the identified effects on the qualifying features of the protected sites and, where relevant, the measures in place to avoid or reduce potential adverse effects secured in the DCO and DML, there would not be any implications for the achievement of site conservation objectives and therefore AEoI can be excluded for:

- Alde-Ore and Butley Estuaries SAC;
- Alde-Ore Estuary SPA;
- Alde-Ore Estuary Ramsar;
- Benacre to Easton Bavents Lagoons SAC;
- Benacre to Easton Bavents SPA;
- Deben Estuary SPA;
- Deben Estuary Ramsar;
- Dew's Pond SAC;
- Humber Estuary SAC;
- Minsmere-Walberswick Heaths and Marshes SAC;
- Orfordness to Shingle Street SAC;
- Outer Thames Estuary SPA;
- Sandlings SPA;
- Southern North Sea SAC;

- Stour and Orwell Estuaries SPA;
- Stour and Orwell Estuaries Ramsar; and
- The Wash and North Norfolk Coast SAC.

However, the Secretary of State concurs with the Applicant, NE and the ExA and cannot rule out an AEoI beyond reasonable scientific doubt in relation to:

- Alone effects on the marsh harrier qualifying feature of the Minsmere-Walberswick SPA and Ramsar, from noise and visual disturbance during construction.

The Secretary of State has not identified any further mitigation measures that could reasonably be imposed which would avoid or mitigate the potential AEoI identified and has therefore proceeded to consider the derogation provisions of the Habitats Regulations, as presented in Sections 7 to 10 below.

The Secretary of State concludes that he can be assured that any potential effects associated with changes to marine water quality and changes to air quality will be assessed (including a Habitats Regulations Assessment as necessary) and controlled by the EA's EPs as the activities leading to these pathways are dependent on EPs being approved for activities to commence. Regarding protected sites and qualifying features for which the ExA recommended that a conclusion of no AEoI could be reached but recommended that the Secretary of State may wish to satisfy himself, the Secretary of State is content, having considered all responses to his consultation letters, that he can conclude no AEoI of the protected sites and qualifying features for which the ExA's recommendation related to.

The Secretary of State concludes that the Project meets the integrity test and that the further tests set out in the Habitats Regulations must be applied. These include Stage Three (an assessment of alternative solutions), Stage Four (test for IROPI), and Stage Five (a consideration of environmental compensation).

The Secretary of State's consideration of information provided to inform these further tests are presented in Sections 7 to 11 alongside his conclusions.

6 Transboundary Assessment

Given the potential for this Project to affect mobile features across a wide geographical area, the Secretary of State believes it important to consider the potential impacts on protected sites in other EEA states, known as transboundary sites, in further detail. The ExA considered the implications for these sites in the context of looking at the wider EIA considerations, and with regards to the Habitats Regulations. The results of the ExA's considerations and the Secretary of State's own views on this matter are presented below.

Under Regulation 32 of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017, and in accordance with the Convention on Environmental Impact Assessment in a Transboundary Context ("Espoo Convention") the ExA, on behalf of the Secretary of State undertook three transboundary screenings [OD-007].

The first screening was undertaken on 31 October 2019 following the Applicant's request for a scoping opinion. It was concluded that significant effects on the environment of transboundary sites were likely. A notice was placed in The London Gazette on 5 November 2019 and the State of The Netherlands was notified. The second screening was undertaken on 29 June 2020 following the submission of the Application for a DCO, and the third screening undertaken on 13 October 2021 in light of changes to the original application, accompanied by additional information. No further EEA states were identified for notification. The Secretary of State is content that the special arrangement for nuclear NSIPs as described in the PINS Advice Note 12[111] has been followed, and all relevant states party to the Espoo and Aarhus conventions have been informed of the Project.

Transboundary consultation responses were received from:

- Austria [AS-298];
- Denmark[112];
- Estonia [AS-299];
- Germany [AS-300];
- Ireland [AS-301];
- Norway [AS-302];
- Poland[113];
- Sweden [AS-303]; and
- The Netherlands[114].

Potential transboundary impacts were considered in the Applicant's ES (Volume 10, Chapter 5 [APP-580]) with relevant matters carried forward to the individual topic chapters of the ES.

[111] https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/advice-note-twelve-transboundary-impacts-and-process/#6

[112] https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010012/EN010012-002722-EN010012%20Regulation%2032%20-%20Consultation%20response%20from%20Denmark.pdf

[113] https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010012/EN010012-002816-EN010012%20Regulation%2032%20-%20Consultation%20response%20from%20Poland.pdf

[114] https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010012/EN010012-002728-EN010012%20Regulation%2032%20-%20Consultation%20response%20from%20the%20Netherlands.pdf

The Secretary of State notes that the Applicant considered impacts on transboundary sites in its Shadow HRA Report. At the point of the DCO application, the Applicant identified LSE on the twaite shad qualifying feature for 10 protected sites in EEA states as a result of physical interaction with the project during operation (i.e. impingement and entrainment of fish in the cooling water system). In response to representations made by the EA [RR-0373] on matters of fish entrapment, the Applicant provided further information for protected sites and features in its Shadow HRA Addendum [AS-173]. This additionally concluded LSE for:

- 2 SACs in EEA states for their twaite shad qualifying feature; and
- 17 SACs/SCIs in EEA states for their river lamprey qualifying feature.

Although the Applicant scoped in and considered 7 further transboundary sites for their allis shad qualifying feature, it concluded no LSE during operation on the basis of very low predicted impingement (a single individual being recorded in the monitoring data from Sizewell B in 2009) [AS-174, AS-178]. The ExA agreed with the Applicants screening conclusions.

At the very end of Examination and in response to ExA questioning and with reference to the Sweetman judgement, the Applicant provided an assessment of LSE in relation to physical interaction between species and project infrastructure during operation of the desalination plant in the construction phase (Appendix A of [REP10-168]). The Applicant concluded that LSE on all protected sites and their migratory fish qualifying features (twaite shad, allis shad and river lamprey) considered in the Shadow HRA Report [APP-145) and Shadow HRA addendum [AS-173] could not be excluded either alone or in-combination with other plans or projects. This was based on the "*highly precautionary"* basis that there would be an absence of a mesh screen, which the Applicant asserted forms an integral part of the design and is not an additional mitigation measure intended to avoid or reduce the projects harmful effects at the site. The ExA agreed [ER 6.2.168 et seq] with the Applicant's position and was of the view that there was no realistic prospect that the desalination plant intake would be built without the mesh screen and is therefore not considered a mitigation measure. The ExA was satisfied that LSE could be excluded during construction based on the separation distances between the Project and the protected sites in EEA states (the closest of which is located approximately 200km from the Project), the temporary duration of the Desalination Plant, and abstraction rates during construction being 0.0009% of those during the operation of the Project.

The ExA [ER 6.2.163] did not note any objections by IPs or EEA states to the Applicant's screening conclusions on protected sites in EEA states. The ExA agreed [ER 6.2.164] with the Applicant's conclusion that LSE could not be excluded for the twaite shad qualifying feature of 12 transboundary sites and the river lamprey qualifying feature of 17 transboundary sites during the operational phase, as outlined in Table 3.

Table 3: Protected sites in European Economic Area states for which likely significant effects cannot be excluded.

Protected site	Qualifying features	Impact pathway C = construction; O = operations and maintenance; D = decommissioning
Schele- en Durmeëstuarium van de Nederlandse grens tot Gent SCI Unterweser SCI Weser bei Bremerhaven SCI Nebenarme der Weser mit Strohauser Plate und Juliusplate SCI Schleswig-Holsteinisches Elbästuar und angrenzende Flächen SCI Unterelbe SCI Mühlenberger Loch/Neßsand SCI Rapfenschutzgebiet Hamburger Stromelbe SCI Hamburger Unterelbe SCI Elbe zwischen Geesthacht und Hamburg SCI Marais du Cotentin et du Bessin - Baie des Veys SAC Tregor Goëlo SAC	Twaite shad	Physical interaction with the Project during operation (O)
Schelde- en Durmeëstuarium van de Nederlandse grens tot Gent SCI Unterweser SCI Nebenarme der Weser mit Strohauser Plate und Juliusplate SCI Weser bei Bremerhaven SCI Schleswig-Holsteinisches Elbästuar und angrenzende Flächen SCI Unterelbe SCI Mühlenberger Loch/Neßsand SCI Rapfenschutzgebiet Hamburger Stromelbe SCI Havre de Saint-Germain-sur-Ay et Landes de Lessay SAC Marais Vernier, Risle Maritime SAC Treene Winderatter See bis Friedrichstadt und Bollingstedter Au SAC Untereider SAC Lesum SAC Bremische Ochtum SAC Weser zwischen Ochtummündung und Rekum SAC Unterems und Außenems SCI Ems SCI	River lamprey	Physical interaction with the Project during operation (O)

The Applicant in its Shadow HRA Report [APP-145] and Addenda [AS-174, REP7-279] excluded AEoI due to physical interaction with the Project during construction and operation on the twaite shad and river lamprey qualifying features of all transboundary sites for which LSE was identified.

The Applicant's assessment of entrainment impacts was disputed by Dr Henderson on behalf of TASC, who considered that the impact on twaite shad, river lamprey and allis shad (amongst other species) had been underestimated [REP2-481H]. The ExA considered that these concerns were not raised specifically in relation to individual species populations of transboundary sites, and the ExA was satisfied that there would be no AEoI resulting from impacts to these species on the basis of the available evidence, primarily:

- The predicted levels of entrapment of these qualifying features compared to the reference populations, as set out in section 3 of [REP10-135];
- The mitigation and monitoring measures proposed (particularly in the draft FIEMP [REP10-138]; and
- The separation distances of the protected sites outside the UK from the Project, relative to the UK sites with the aforementioned migratory fish qualifying features for which the ExA is satisfied there would be no AEoI.

The ExA stated [ER 6.4.845] that no IPs or EEA states provided representations to the Examination or Secretary of States transboundary screening consultations that directly disputed the Applicant's conclusions of no AEoI of migratory fish features of specific transboundary sites.

The Secretary of State notes that the State of Austria's response[115] to the transboundary screening consultation on 17 September 2020 sought consultations under Article 5 of the Espoo Convention[116] and raised questions which, amongst others, related to transboundary impacts. The State of Austria submitted an expert statement which concluded that significant transboundary effects due to a severe accident at Sizewell C cannot be excluded. The State of Austria stated:

"The information the EIA procedure provided so far does not allow a meaningful assessment of the effects that conceivable accidents at Sizewell C could have on Austrian territory. The analysis of a severe accident scenario would close this gap and allow for a discussion of the possible impacts on Austria. This should be taken into consideration before granting further permissions."

and recommended:

"Because the source term used in the accident analysis of the Environmental Statement does not reflect a severe accident, it is recommended to calculate the consequences of a severe accident with a large release since the effects of severe accidents can be wide-spread and long-lasting and even countries in Central Europe, such as Austria, can be affected."

In his first consultation letter, the Secretary of State requested that the Applicant and the Office for Nuclear Regulation ("ONR") provided a full response to the questions set out within chapter 8 of Austria's transboundary screening response. The Applicant responded[117] that a transboundary dose assessment from unplanned / accidental releases was included in Chapter 6 of the Sizewell C Article 37 Submission, which included a severe accident scenario. The ONR did not make any specific comment on matters of transboundary effects. The State of Austria was provided with the responses as an appendix to the Secretary of State's third consultation

[115] https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010012/EN010012-003106-EN010012%20Regulation%2032%20-%20Consultation%20response%20from%20Austria.pdf.
[116] https://unece.org/environment-policyenvironmental-assessment/text-convention#article5
[117] https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010012/EN010012-010782-SZC%20-%20Main%20Report.pdf

letter. The State of Austria responded[118] on 23 May 2022. In its response to the answers provided by the Applicant and the ONR to its initial questions, The State of Austria provided a Final Expert Statement ("FES") which, amongst others, stated:

"…the information provided in the EIA documents is not sufficient to assess the significant trans-boundary effects. For an assessment of transboundary impacts, detailed information on severe accident risks is necessary, however, the EIA documents do not contain severe accident calculations."

and restated its initial recommendation. The Applicant and the ONR's responses were also published on the Planning Inspectorate's website on 25 April 2022. Some IPs, including TASC and J Chanay, criticised the responses provided by the Applicant and the ONR. The Secretary of State subsequently invited the Applicant and the ONR to provide any final comments on the FES in his fifth consultation letter; they responded on 16 June 2022[119].

Whilst the Secretary of State acknowledges The State of Austria's questions and responses, he considers that these are outside of the scope of this HRA and do not affect the conclusions on transboundary impacts reached by the Applicant and the ExA in relation to migratory fish features of transboundary sites considered for Habitats Regulations purposes. Further consideration of The State of Austria's comments is presented in the Secretary of State's Decision Letter (Chapter 4).

The Secretary of State has not been presented with any substantive evidence to demonstrate that transboundary impacts would result in an AEoI of transboundary sites, in accordance with the ExA's views on the matter. As such the Secretary of State is satisfied that the Project, either alone or in-combination with other plans or projects would not have an AEoI of any transboundary protected sites.

[118] https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010012/EN010012-010976-Espoo_Convention_NPP_Sizewell_.pdf

[119] The responses provided in relation to the Government of Austria's FES: https://infrastructure.planninginspectorate.gov.uk/projects/eastern/the-sizewell-c-project/?ipcsection=docs&stage=6&filter1=Secretary+of+State+Consultation&filter2=Response+to+SoS+request+for+information+31+May+2022

7 Consideration of Case for Derogation

Based on the AA the Secretary of State cannot conclude, beyond reasonable scientific doubt, the absence of an adverse effect from the Project Alone on the integrity of the marsh harrier feature of the Minsmere-Walberswick SPA and Ramsar.

The Secretary of State has therefore reviewed the Project in the context of Regulations 64 of the Habitats Regulations to determine whether the Project can be consented.

Regulation 64 allows for the consenting of a project that is required for IROPI even though it would cause a negative AEoI of a protected site.

Consent may only be given under Regulation 64 where no alternative solutions to the project are available which are less damaging to the affected protected site and where Regulation 68 is satisfied.

Regulation 68 requires the appropriate authority to secure any necessary compensatory measures to ensure that the overall coherence of the UK's NSN is protected.

This part of the Project review has followed a sequential process whereby:

1. Alternative solutions to the Project have been considered;
2. Consideration has been given to whether there are IROPI for the Project to proceed; and
3. Compensation measures proposed by the Applicant for ensuring that the overall coherence of the UK's NSN is protected have been assessed.

The Secretary of State has had regard to guidance on the application of HRA published by the PINS (2017) (Advice Note 10)[120], guidance produced by the European Commission (2018)[121], together with recently published joint guidance by Defra, NE, the Welsh Government and Natural Resources Wales (2021) on 'Habitats Regulations Assessment: protecting a European site' (the "2021 joint guidance")[122].

[120] The Planning Inspectorate (2017): *Advice Note Ten: Habitats Regulations Assessment Relevant to Nationally Significant Infrastructure Projects.*

[121] European Commission (2018) Managing Natura 2000 sites: The provisions of Article 6 of the Habitats Directive 92/43/EEC

[122] Defra, NE, the Welsh Government and Natural Resources Wales (2021) 'Habitats Regulations Assessment: protecting a European site' https://www.gov.uk/guidance/habitats-regulations-assessments-protecting-a-european-site

8 Stage 3: Assessment of Alternative Solutions

The Secretary of State has given regard to the objectives of the Project as described by the Applicant and has considered how these objectives could be met by alternative means.

8.1 Project Objectives

The Applicant identified the need case for the Project in [APP-150] and in [APP-151]. It focussed on the continuing growth in electricity demand for the UK, which it explained, together with the retirement of existing electricity capacity by 2035, will lead to a generation shortfall of 95GW by 2035. The Applicant stated that the urgent need for new nuclear power stations in the energy mix is firmly established in the Overarching NPS for Energy (EN-1)[123] and NPS for Nuclear Power Generation (EN-6)[124,125].

The Applicant's objectives for the Project are set out in [APP-150 Table 3.1], alongside detail on how the Applicant considers that each of the objectives reflect – and are supported by – national and local planning policies. Once constructed, the Project would have a total capacity of 3,340 MW and would make a significant contribution to the achievement of both national energy targets and to the UK's contribution to global efforts to reduce the effects of climate change.

The conclusion reached by the ExA is that there is an urgent need for new nuclear energy generating infrastructure of the type comprised by the Project. The ExA concluded that the Project responds directly to that urgent need, and to national policy commitment to deliver a large scale new nuclear power station to meet that requirement [ER 6.6.4]. The ExA considered the objectives and was satisfied that they are consistent with relevant policy [ER 6.6.5].

A Ministerial Statement on Energy Infrastructure was published on 7 December 2017[126] which states that *"for projects yet to apply for development consent and due to deploy beyond 2025, Government continues to give its strong in principle support to proposals at those sites currently listed in EN-6"*.

On 7 April 2022, the British Energy Security Strategy was published. It presents Government's ambition for deployment of civil nuclear of up to 24GW by 2050 – three times more than now and representing up to 25% of Britain's projected electricity demand. A key measure is up to 8 reactors progressed across the next series of projects.

Having regard to the suite of objectives identified by the Applicant in the context of EN-1, and EN-6, alongside the ambitions of the BESS and in-principle support given by the 2017 Ministerial Statement, the Secretary of State agrees with the recommendation of the ExA that there is an

[123] Department of Energy and Climate Change. Overarching National Policy Statement for Energy (EN-1). 2011.
[124] Department of Energy and Climate Change. National Policy Statement for Nuclear Power Generation (EN-6). 2011
[125] 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. The Applicant's response is set out in [REP8-116].
[126] https://questions-statements.parliament.uk/written-statements/detail/2017-12-07/HLWS316

urgent need for new nuclear energy generating infrastructure, that this Project responds directly to that urgent need, and that the objectives are consistent with relevant policy.

8.2 Identification of Alternatives

The ExA concluded that alternative energy generating technologies do not need to be considered again, as these were considered by the Government in developing national policy and discounted [ER 5.4.106-5.4.108]. The SoS agrees with the ExA's conclusion. In accordance with guidance published by Defra (2021), the Secretary of State does not consider that alternative forms of energy generation meet the objectives for the Project.

An assessment of alternatives was undertaken as part of the selection of the eight sites identified for new nuclear power stations in NPS EN-6.

The Applicant's assessment of alternative solutions to deliver the objectives of the Project, is presented in in Volume 2 of the Shadow HRA Report [APP-150]. The Applicant identified the following list of potential alternative solutions, looking at:

1. Do nothing scenario;
2. Alternative locations,
3. Alternative scales;
4. Seasonal restrictions;
5. Phasing the construction works differently; and
6. Alternative construction methods/ locations for construction activities.

8.3 Consideration of Alternatives

8.3.1 Do Nothing

The Applicant considered [APP- 150: Table 5.2] that the 'do nothing' option would be contrary to national policy as the need for new nuclear power stations is set out in NPS EN-1, with the need for a new power station at Sizewell C covered in NPS EN-6. The Applicant stated that the Government continues to give its strong in principle support to project proposals at the sites listed in NPS EN-6, including at Sizewell C and that not progressing with a power station at Sizewell would, therefore, not meet the Project need or objectives.

Not proceeding with the Project would remove the risk of direct impacts to breeding marsh harrier but would not meet the Project's objectives and would hinder the wider need to deploy low carbon energy to help the UK to meet its commitments under the Climate Change Act 2008 ("CCA 2008") (as amended) to mitigate the effects of climate change.

8.3.2 Alternative locations

The Applicant considered [APP- 150: Table 5.2] that the 'alternative locations' option would be contrary to national policy as NPS EN-6 explains that all eight sites that made it through the NPS site selection appraisal are required.

NPS EN-6 states [EN-6 Volume II, A.4.6] that in relation to the designation of the NPS, the eight sites are not alternatives to each other.

The Applicant considered that although it is no longer possible for deployment of Sizewell C to take place by the end of 2025, the Ministerial Statement on Energy Infrastructure published on 7 December 2017[127] states that *'for projects yet to apply for development consent and due to deploy beyond 2025, Government continues to give its strong in principle support to proposals at those sites currently listed in EN-6'.* Constructing the power station at a different site would therefore not meet the Project need.

The Applicant stated [APP-150: Table 5.2] that the location of the Project site boundary is heavily constrained by Sizewell B to the south, the Sizewell Marshes SSSI to the west, the North Sea to the east and the Minsmere-Walberswick SPA and Ramsar site to the north and that there is therefore very limited potential to vary the location of the boundary of the MDS within the local area. By constructing a power station elsewhere in the UK, the Project objective to develop a nuclear power station at Sizewell C would not be met.

8.3.3 Alternative scales

The Applicant considered [APP-150: Table 5.2] the 'alternative scales' option of constructing one EPR unit rather than the proposed two. The Applicant considered that by constructing a power station with only one EPR unit, the Project objectives of developing a power station that would make a major contribution to the nation's low carbon energy needs would not be met. In addition, the Applicant stated that the highest standards of nuclear safety would be obtained by directly replicating the design from Hinkley Point C, which is a design for two units.

8.3.4 Seasonal restrictions

Marsh harrier egg laying typically takes place from mid-April to early-May each year. Laying takes place every two to three days. Incubation is undertaken primarily by the female, and this lasts 31-38 days. Fledging occurs after a period of 35-45 days and young are dependent on the adults for a further 15-25 days.

The Applicant stated [APP-150: Table 5.2] that the construction disturbance effects do not extend to the marsh harrier nesting area and would only act to (potentially) limit access to areas of foraging habitat. Demands for foraging resources are likely to be greatest during chick-rearing and possibly into the post-fledging phase, so that constraints in terms of the availability of foraging habitat would be greatest at those times.

The Applicant stated [APP-150: Table 5.2] that the alternative solution of 'seasonal restrictions' would require construction works to cease every year of the proposed construction phase during June and July (taken to be the most sensitive foraging times) and that such a restriction would result in a significant delay to the overall construction programme and significant technical and commercial challenges would arise. Although ultimately the power station would be constructed, the extended construction schedule caused by the seasonal restrictions would delay the provision of low carbon electricity by between 18 months and two years and the Project need of contributing to addressing the UK's predicted shortfall in energy generation capacity of 95GW by 2035 would not be met. Extending the construction programme would also subject the local community and ecological receptors to construction related disturbance for a greater period of time.

[127] https://questions-statements.parliament.uk/written-statements/detail/2017-12-07/HLWS316

8.3.5 Phasing the construction works differently

The Applicant considered [APP-150: Table 5.2] the alternative of 'phasing the construction works by undertaking each phase in series. The Applicant considered that undertaking each construction phase in series would result in an extension to the overall construction programme of greater than 12 months and, therefore, the Project need of contributing to addressing the UK's predicted shortfall in energy generation capacity of 95GW by 2035 would not be met. Extending the construction programme would also subject the local community and ecological receptors to construction related disturbance for a greater period of time.

8.3.6 Alternative construction methods/ locations for construction activities

The Applicant [APP- 150] identified feasible alternative solutions to the Project in the context of construction phase noise and visual disturbance arising from the MDS. The Applicant therefore considered whether such alternative solutions determined to be feasible would have a lesser effect on the integrity of any protected site. The Applicant concluded that as the activities would still be located within the Order Limits, and would still contribute to the overall level of construction phase noise and visual disturbance to the marsh harrier population, when all feasible alternative activities identified for that could be relocated are considered collectively, while the distribution of noise and visual disturbance effect may change, the net effect on potential for harm to the Minsmere-Walberswick SPA and Ramsar site is highly likely to be similar to the effect of the proposed approach to construction as assessed in the predictive noise modelling. In particular, the assumed barrier effect created due to construction noise, and which is – on a conservative basis – predicted to cause marsh harrier from the Minsmere nesting area becoming displaced from parts of its foraging range at Sizewell Marshes, is not possible to avoid, regardless of layout of the construction site. The Applicant, therefore, concluded that there is no alternative solution that would result in a lesser effect on the Minsmere-Walberswick SPA and Ramsar site to that predicted to occur as a result of the Project.

8.4 Conclusion on Alternatives

The Applicant [APP-150] discounted potential alternative solutions 1 - 5 on the basis that these would not meet/deliver the need or objectives of the Project. Regarding alternative solution 6, the Applicant assessed the feasibility of alternative construction methods/ locations for construction activities. The Applicant concluded [APP-150: Paragraph 8.1.2] that there are no feasible alternative solutions which would result in a lesser effect on the marsh harrier feature of the Minsmere-Walberswick SPA and Ramsar to that predicted to occur as a result of the Project.

The ExA reported that alternatives to the Project (although different to the "alternative solutions" test in the Habitats Regulations) were discussed in the wider sense during the Examination. The conclusion reached by the ExA is that the Applicant has met the requirements of relevant policy and legislation in respect of the consideration of alternatives, and that there are no policy or legal requirements that would lead it to recommend development consent be refused for the Project in favour of another alternative [ER 6.6.3].

The ExA confirmed that [ER 6.6.9] no representations have been made by NE querying or disputing the Applicant's consideration of alternative solutions in the Shadow HRA Report or its conclusions in that regard but highlights some concerns about the Applicant's consideration of alternative solutions that were raised by IPs during the Examination [ER: 6.6.10].

The ExA concluded [ER 6.6.12] that, having considered the policy tests regarding the IPC's (now Secretary of State's) assessment of alternative solutions in NPS EN-6, the Applicant's Assessment of Alternative Solutions in [APP-150] and the views of IPs, the ExA is satisfied that there are no alternative solutions which would deliver appreciable benefits in terms of adverse effects on marsh harrier of the Minsmere-Walberswick SPA and Ramsar from noise and visual disturbance during construction and still meet the objectives of the Project. The ExA further considers [ER 6.6.13] that sufficient information has been provided by the Applicant to allow the Secretary of State as the competent authority to consider alternative solutions to the Project in accordance with the requirements of the Habitats Regulations.

Following a review of the information submitted by the Applicant and comments provided by IPs, as well as the recommendation of the ExA, and having identified the objectives of the Project and considered all alternative means of fulfilling these objectives, the Secretary of State is satisfied that no alternative solutions are available that would meet the Project's objectives and which would result in a lesser effect on the Minsmere-Walberswick SPA and Ramsar to that predicted to occur as a result of the Project, and that IROPI must be considered.

9 Stage 4: Imperative Reasons of Overriding Public Interest ("IROPI")

The HRA Derogation Provisions provide that a project having an AEoI of a protected site may proceed (subject to a positive conclusion on alternatives and provision of any necessary compensation) if there are IROPI.

This section of the HRA determines whether there are IROPI for the Project to proceed subject to adequate compensatory measures being implemented.

The HRA Derogation Provisions identify certain in-principle grounds of IROPI that may be advanced in favour of such a project. Where the site concerned hosts a priority natural habitat or a priority species, grounds for IROPI should include human health, public safety or beneficial consequences of primary importance to the environment but otherwise may be of a social or economic nature.

The parameters of IROPI are explored in guidance provided by Defra[128] and the European Commission[129], which identify the following principles:

- Imperative – Urgency and importance: There would usually be urgency to the objective(s), and it must be considered "indispensable" or "essential" (i.e., imperative). In practical terms, this can be evidenced where the objective falls within a framework for one or more of the following;
  i. actions or policies aiming to protect fundamental values for citizens' life (health, safety, environment);
  ii. fundamental policies for the State and the Society; or
  iii. activities of an economic or social nature, fulfilling specific obligations of public service.
- Public interest: The interest must be a public rather than a solely private interest (although a private interest can coincide with delivery of a public objective).
- Long-term: The interest would generally be long-term; short-term interests are unlikely to be regarded as overriding because the conservation objectives of protected sites are long term interests.
- Overriding: The public interest of development must be greater than the public interest of conservation of the relevant protected site(s).

The Applicant provided a case for IROPI at Volume 3 of the Shadow HRA Report [APP-151]. The ExA has also described their findings in respect of IROPI at Section 6.7 of the Recommendation Report. The Secretary of State has reviewed this supporting information and taken full regard to relevant guidance.

The Applicant stated that its assessment of IROPI had 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: protecting a European site[130], which discusses derogation notices and the duty to protect, conserve and

[128]https://consult.defra.gov.uk/marine-planning-licensing-team/mpa-compensation-guidance-consultation/supporting _documents/mpacompensatorymeasuresbestpracticeguidance.pdf
[129] https://ec.europa.eu/environment/nature/natura2000/management/docs/art6/EN_art_6_guide_jun_2019.pdf
[130] DEFRA, NE, the Welsh Government and Natural Resources Wales (2021) Habitats Regulations assessments: protecting a European site

restore protected sites. The Applicant [REP2-100] stated that this new guidance represents the re-statement of principles which are already found in relevant case law and previous guidance and did not necessitate a revision of the Shadow HRA Report. NE [REP2-152] confirmed in response to the ExA's question HRA.1.0 [PD-018] that the new guidance has not altered their advice in regard of the Applicant's Shadow HRA.

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 EN-6, including identification of Sizewell C as a potentially suitable site for new nuclear generation. The Applicant's IROPI case for breeding marsh harrier of the Minsmere-Walberswick SPA and Ramsar does not relate to any priority habitats or species (as identified in Annex 1 and 2 of the Habitats Directive) [APP-151]. Therefore, the IROPI is not restricted to reasons of human health, public safety, or beneficial consequences of primary importance to the environment.

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 Project outweigh the harm (or risk of harm) to the integrity of the Minsmere-Walberswick SPA and Ramsar identified in the Shadow HRA Report [APP-145].

The Applicant concluded at paragraph 9.1.5 [APP-151] that there are IROPI in favour of allowing the Project to proceed, *'…despite the precautionary assessment of potential harm to the Minsmere - Walberswick SPA and Ramsar'*.

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'. The ExA confirmed that otherwise, NE has not made representations or raised concerns directly around the IROPI case made by the Applicant in the Shadow HRA Report [ER 6.7.7].

Concerns about the Applicant's IROPI case were raised by IPs during the Examination. The ExA states [ER 6.7.8] that, for example, TASC considered that there was no IROPI justification for the Project [REP2-481c]. S.A.G.E Community Group considered that the Applicant *'…regards IROPI as an opportunity to reinforce its NPS case for the project, and not, as we understand it, more correctly, to be a special, last resort provision for protecting nature assets through the full*

and proper application of HRA processes as from time to time revised by policy (currently under way) and, over many years, by court authorities' [REP10-361].

The conclusion reached by the ExA is that there is an urgent need for new nuclear energy generating infrastructure of the type comprised by the Project. The ExA concluded that the Project responds directly to that urgent need, and to national policy commitment to deliver a large scale new nuclear power station to meet that requirement [ER 6.7.6].

The ExA concluded [ER 6.7.9] that the Project would respond to the urgent need for nuclear generating infrastructure of this type, in accordance with NPSs EN-1 and EN-6, which in the ExA's view are important and relevant considerations to which the Secretary of State should have regard in reaching his decision. Taking into account the policy context of the Project under NPSs EN-1 and EN-6, the information surrounding the need case for the Project together with the benefits of the Project put forward by the Applicant as summarised in [APP-590][REP2-043][REP10-068], the ExA is of the opinion that IROPI for the Project could be established subject to satisfying themself of the outstanding matters raised in relation to the assessment of AEoI.

The Secretary of State has satisfied himself of the outstanding matters raised in relation to AEoI and is satisfied that there are IROPI for the Project to proceed subject to adequate compensatory measures being implemented. In arriving at his decision, the Secretary of State has reviewed how the Project provides a public benefit which is essential and urgent despite the harm from the Project alone to the integrity of the breeding marsh harrier feature of the Minsmere-Walberswick SPA and Ramsar.

The Secretary of State's decision is predicated by the principal and essential benefit of the Project as a significant contribution to limiting the extent of climate change in accordance with the objectives of the Paris Agreement. The consequences of not achieving those objectives would be severely detrimental to societies across the globe, including the UK, to human health, to social and economic interests and to the environment.

The need to address climate change is the principal tenet behind the CCA 2008, and subsequently published NPSs for energy provide a framework for delivering the UK's international commitments on climate change.

Measures set out in the NPSs have been given further impetus to reflect evolving understanding of the urgency of actions to combat climate change, including a commitment to reduce greenhouse gas emissions to net zero by 2050, which is now reflected in domestic law through amendments to the 2008 Act.

The Government's strategy for decarbonisation to achieve this commitment relies on contributions from all sectors delivered through multiple individual projects implemented by the private sector.

The Government anticipates that decarbonisation will lead to a substantially increased demand for electricity as other power sources are at least partially phased out or transformed and other sectors, such as heat and transport, electrify. Government has committed to no longer use coal to generate electricity from 1 October 2024[131].

[131] www.gov.uk/government/news/end-to-coal-power-brought-forward-to-october-2024

The UK has also committed to decarbonise the electricity system by 2035, subject to security of supply, focusing on 'home-grown technologies'[132]. This will require the establishment of a reliable and secure mix of low-carbon electricity sources, including nuclear power generation.

The British Energy Security Strategy, published in 2022[133], presents Government's ambition for deployment of civil nuclear of up to 24GW by 2050 – three times more than now and representing up to 25% of projected electricity demand.

These considerations are expanded on in the following section.

9.1 The National Policy Statements

9.1.1 Establishing the Basis Provided by the 2011 NPSs

The NPSs were established against obligations made as part of the CCA 2008. The overarching NPS for Energy (NPS EN-1) sets out national policy for energy infrastructure in Great Britain (GB). It has effect, in-combination with the relevant technology-specific NPS, on recommendations made by the PINS to the Secretary of State for BEIS on applications for energy developments that fall within the scope of the NPSs[134].

The NPSs set out a case for the need and urgency for new energy infrastructure to be consented and built with the objective of supporting the Government's policies on sustainable development, in particular by:

- Mitigating and adapting to climate change; and
- Contributing to a secure, diverse and affordable energy supply[135].

EN-6 states [EN-6, Volume II, A.6.1] that because of the urgent need to reduce carbon dioxide emissions in order to avoid significant, long-term adverse environmental, social and economic consequences, whilst maintaining security of energy supply and preserving public safety and public health, the Government believes that nuclear generation needs to be part of the future low carbon electricity generation mix.

The Energy White Paper, Powering Our Net Zero Future, was published on 14 December 2020. It announced a review of the suite of energy NPSs but confirmed that the current NPSs were not being suspended in the meantime. The 2011 energy NPSs therefore remain relevant to the application for the Project.

The arguments which support a national need for low-carbon infrastructure made today are consistent with those arguments contained in the NPSs, and indeed the Secretary of State is of the view that the NPSs clearly set out the specific planning policies which the Government believes both respect the principles of sustainable development and are capable of facilitating the consenting of energy infrastructure on the scale and of the kinds necessary to help us maintain, safe, secure, affordable and increasingly low carbon supplies of energy.

[132] https://www.gov.uk/government/news/plans-unveiled-to-decarbonise-uk-power-system-by-2035
[133] https://www.gov.uk/government/publications/british-energy-security-strategy/british-energy-security-strategy
[134] NPS EN-1 Para 1.1.1
[135] NPS EN-3 Para 1.3.1

The NPSs set out the national case and establish the need for certain types of infrastructure, as well as identifying potential key issues that should be considered by the decision maker. Under section 105 of the PA 2008 an NPS will be an important and relevant consideration relating to the development type applied for, the Secretary of State must have regard to it. The NPSs provide specific policy in relation to the development nuclear power generation development, and the policies set out in NPS EN-1 and EN-6 are therefore relevant.

This national need relates both to the decarbonisation of the electricity supply within the required timeframe and to the risk the decarbonisation programme could pose to the security of electricity supply as more traditional generating stations are decommissioned.

With regard to the latter, the Secretary of State notes the ruling in case C-411/17 by the European Court of Justice[136] that the objective of ensuring the security of the electricity supply constitutes an IROPI.

9.1.2 A Synthesis of the 2011 National Policy Statements

At the time the NPSs were published, scientific opinion was that, to avoid the most dangerous impacts of climate change, the increase in average global temperatures must be kept to no more than 2°C. Global emissions must therefore start falling as a matter of urgency[137].

The energy NPSs were intended to speed up the transition to a low carbon economy and help the UK to realise its climate change commitments sooner than would a continuation under the current planning system[138]. They recognise that moving to a secure, low carbon energy system to enable the UK to meet its legally binding target to cut greenhouse gas emissions by at least 80% by 2050, compared to 1990 levels, is challenging, but achievable. This would require major investment in new technologies to electrify heating, industry and transport, and cleaner power generation[139]. Under some 2050 pathways, electricity generation would need to be virtually emission-free, because emissions from other sectors were expected still to persist[140]. Consequentially, the need to electrify large parts of the industrial and domestic heat and transport sectors could double electricity demand by 2050[141].

The NPSs conclude that the UK needs sufficient electricity capacity from a diverse mix of technologies and fuels[142], and therefore the UK also needs all the types of energy infrastructure covered by the NPSs to achieve energy security at the same time as dramatically reducing greenhouse gas emissions[143].

9.2 The United Kingdom has a Legal Commitment to Decarbonise

This section sets out the obligations of the CCA 2008, against which the NPSs (2011) were established. It then outlines the UK's 2019 legally binding commitment to achieving 'Net-Zero'

[136] Judgement of 29. 7. 2019 – *Case C-411/17 Inter-Environnement Wallonie and Bond Beter Leefmilieu Vlaanderen.* ECLI:EU:2019;622.
[137] NPS EN-1 Para 2.2.8
[138] NPS EN-1 Para 11.7.2
[139] NPS EN-1 Para 2.2.1
[140] NPS EN-1 Para 2.2.6
[141] NPS EN-1 Para 2.2.22
[142] NPS EN-1 Para 2.2.20
[143] PS EN-1 Para 3.1.1

carbon emissions by 2050, against which the need for future electricity generation developments should be assessed, as well as updated nuclear generation ambitions in the 2022 BEIS Energy Security Strategy.

9.2.1 Climate Change Act 2008

The Government, through the CCA 2008, set legally binding carbon targets for the UK[144], aiming to cut emissions (versus 1990 baselines) by 34% by 2020 and at least 80% by 2050, 'through investment in energy efficiency and clean energy technologies such as renewables, nuclear and carbon capture and storage'[145].

The 2008 Act is underpinned by further legislation and policy measures. Many of these have been consolidated in the UK Low Carbon Transition Plan ("LCTP")[145], and UK Clean Growth Strategy[146]. A statutory body, the Committee on Climate Change ("CCC"), was also created by the 2008 Act, to advise the UK and devolved Governments and Parliaments on tackling and preparing for climate change, and to advise on setting carbon budgets. The CCC report regularly to the Parliaments and Assemblies on the progress made in reducing greenhouse gas emissions. The UK government has set five-yearly carbon budgets which currently run until 2032.

9.2.2 Enhancements of Existing UK Government Policy on Climate Change: Net-Zero

The UK context for the need for greater capacities of low-carbon UK generation to come forward with pace, has continued to develop. In October 2018, following the adoption by the UN Framework Convention on Climate Change of the Paris Agreement, the Intergovernmental Panel on Climate Change ("IPCC") published a 'Special Report on the impacts of global warming of 1.5°C above pre-industrial levels. This report concludes that human-induced warming had already reached approximately 1ºC above preindustrial levels, and that without a significant and rapid decline in emissions across all sectors, global warming would not be likely to be contained, and therefore more urgent international action is required.

In response, in May 2019, the CCC published their report called: 'Net-Zero: The UK's contribution to stopping global warming.' This report recommended that government extend the ambition of the 2008 Act past the delivery of net UK greenhouse gas savings of 80% from 1990 levels, by 2050. The CCC recommend that 'The UK should set and vigorously pursue an ambitious target to reduce greenhouse gas emissions (GHGs) to 'Net-Zero' by 2050, ending the UK's contribution to global warming within 30 years.' The CCC believe that this recommendation is 'necessary [against the context of international scientific studies], feasible [in that the technology to deliver the recommendation already exists] and cost-effective', reporting that 'falling costs for key technologies mean that . . . renewable power (e.g., solar, wind) is now as cheap as or cheaper than fossil fuels.' Importantly, the CCC recommendation identifies a need for low-carbon

[144] The commitment to decarbonise extends across the United Kingdom of Great Britain and Northern Ireland. Northern Ireland is interconnected with the mainland power system through interconnectors but is operated under a different electricity market framework. Therefore, hereinafter we refer to Great Britain ('GB') in relation to electricity generation and transmission, and the UK, to refer to the nation which has legally committed itself to Net-Zero carbon emissions by 2050

[145] HM Government. *The UK Low Carbon Transition Plan*. HMSO, 2009. Five Point Plan.

[146] BEIS. *The Clean Growth Strategy*. HMG, 2017 (Corrected 2018).

infrastructure development which is consistent with the need case set out in NPS EN-1, but points to an increased urgency for action.

Since the implementation of the CCA 2008, government has set five-yearly carbon budgets. The latest of which is the sixth carbon budget (CB6) which was laid in legislation in April 2021 and commits to cutting greenhouse gas emissions by 78% by 2035, compared to 1990 level, in line with the CCC recommendation. The sixth carbon budget spans from 2033-2037.

In October 2021, government published The Net Zero Strategy: Build back Greener. It is a cross-economy strategy which sets out the measures to keep us on our path to net zero, including the action we will take to keep us on track for meeting carbon budgets and our 2030 Nationally Determined Contribution. The Net Zero Strategy states that to meet the level of decarbonisation that CB6 requires and simultaneously cater to a 40-60% increase in electricity demand. This presents a substantial challenge and could require having to build out all currently known low carbon technologies in the power sector at or close to their maximum technical limits by 2035.

In June 2019 the Government amended the 2008 Act to implement the CCC's recommendation. This made the UK the first major economy to pass laws requiring it to end its contribution to global warming by 2050.

The British Energy Security Strategy presents Government’s ambition for deployment of civil nuclear of up to 24GW by 2050 – three times more than now and representing up to 25% of Britain’s projected electricity demand. A key measure is ‘up to 8 reactors progressed across the next series of projects.

9.3 Conclusion

In conclusion, nuclear power is recognised as being an important technology for low-carbon generation and the urgent need for large capacities of low-carbon generation is clear to avoid compromising security of electricity supply. Specifically, the Project will be a necessary part of the future generation mix, and as such will make a valuable contribution to meeting the UK Government’s achievement of decarbonisation commitments as part of the legally binding target for Net Zero by 2050.

The Secretary of State agrees with the conclusions of the ExA [ER: 6.7] and is satisfied that there are IROPI for the Project to proceed.

In line with relevant Defra IROPI Guidance (2021) and the conclusions of EN-6 [EN-6, Volume II, A.1.4], the Secretary of State considers that there are IROPI in allowing for the provision of new generation capacity because security of electricity supply is essential for the maintenance of human health and public safety and because combating climate change (which is one of the factors creating the demand for new generating capacity) will have beneficial consequences of primary importance for the environment. The Secretary of State considers the grounds for IROPI to be:

- The protection of human health;
- Public safety; and
- Overriding beneficial consequences of primary importance for the environment.

In arriving at this decision, the Secretary of State has reviewed how the Project provides an essential public benefit that is imperative, despite AEoI of the breeding marsh harrier feature of the Minsmere-Walberswick SPA and Ramsar.

10 Stage 5: Proposed Compensatory Measures

The Secretary of State, having in accordance with Regulation 64 determined that there are no alternative solutions and that the Project must be carried out for IROPI, has considered below the requirements of Regulation 68, which are to provide that any necessary compensatory measures are secured to ensure that the overall coherence of the NSN is protected.

Volume 4 of the Shadow HRA Report [APP-152] presented an overview of the compensation package for breeding marsh harrier of the Minsmere-Walberswick SPA and Ramsar, proposed by the Applicant, to offset the potential AEoI of the sites as a result of noise and visual disturbance from construction of the Project.

10.1 Minsmere-Walberswick SPA and Ramsar

The Applicant's Compensation Measures report [APP-152] describes a proposed marsh harrier compensatory habitat area (the "MHCHA") of 48.7ha in size, on land at Abbey Farm located immediately adjacent to the northern part of the Minsmere South Levels [APP-148]. This area is located entirely within the EDF Energy estate.

The proposed MHCHA is aimed at specifically increasing the foraging habitat resource available to breeding marsh harrier during construction, via habitat management of arable land, to increase both the abundance and availability of a range of potential prey species. The Applicant explained that the design of the MHCHA was informed by a feasibility and design report [APP-259].

The habitat components of the Applicant's option(s) for the MHCHA are set out in Table 1.1 of [APP-152] and include:

- 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).

The Applicant proposed 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. Change No. 5 involved relocating the proposed water storage area to a location adjacent to a proposed attenuation pond. The original location for the temporary water storage area would be utilised for fluvial flood mitigation and to create new wetland habitats. These habitats would link up with the proposed permanent wetland habitat corridor to the south, creating a single wetland feature [AS-190].

The Shadow HRA Addendum and appendices [AS-173] [AS-174] [REP7-279] considered the implications of changes made to the Application during Examination which were considered to be of relevance to the HRA (Changes 1, 2, 5 and 19). The Applicant concluded that these changes would not affect the conclusions of the Shadow HRA Report in relation to noise and visual disturbance effects on qualifying features of the Minsmere-Walberswick SPA and Ramsar.

A programme of monitoring would be implemented by the Applicant prior to the start of construction to assess the effectiveness of the compensation measures. The funding, implementation, habitat management, and monitoring would be the responsibility of the Applicant.

10.1.1 Examination

NE initially requested additional information regarding the detailed design of the marsh harrier compensation area. It confirmed that the optimal habitat for foraging marsh harrier is wetland [RR-0878] [REP2-153] [REP2-071]. The RSPB/SWT did not agree that the proposed compensation package met the requirements of NPS EN-6 and the additional criteria contained in the European Commission's 2018 Managing Natura 2000 guidance[147].

The Applicant confirmed that permanent foraging habitat within the proposed MHCHA was taken out of agricultural production approximately 4 years ago and some ongoing habitat management has been implemented in the intervening period, with further enhancement and management proposed. The Applicant confirmed that the new proposed wetland habitats would be created in the first winter of the construction phase [REP2-088]. It considered that a DCO would need to be in place before establishment of the proposed wetland habitats could commence.

The On-Site Marsh Harrier Compensatory Habitat Strategy [REP10-128] 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 habitats within the MHCHA will be retained and managed for wildlife as part of the estate-wide management habitat proposals set out in the 'Estate Wide Management Plan', as secured under DCO Requirement 8 [REP7-051].

The Applicant confirmed that 10% of the 48.7ha MHCHA would be wetland habitat. As set out in [REP2-100], the wetland component of the MHCHA would comprise:

- Wet woodland (0.7ha);
- Wet reedbed (2.85ha); and
- Open water (0.75ha).

The Applicant also provided a draft Wet Woodland Plan and Wet Woodland Strategy which are certified documents in Schedule 24 (now Schedule 23) of the DCO [REP10-150].

The Applicant [REP7-069] confirmed that detailed management measures for the wetlands would be included in the approved plans. High level management proposals for the wetland habitats are described in the outline LEMP ("oLEMP") [REP10-061], preparation of which is secured under Requirement 24 of the DCO. The oLEMP is a certified document under Schedule 23.

The Applicant submitted further iterations of the On-Site Marsh Harrier Compensatory Habitat Strategy. NE confirmed [REP6-042] that it was satisfied that the design "*… is sufficient to compensate for habitat losses within the Main Development Site which will be impacted by noise and visual disturbance during construction*".

[147] European Commission (2018) Commission notice "Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC".

The Applicant provided the details of additional marsh harrier foraging habitat on land at Westleton (Work No. 8, Marsh Harrier Habitat Westleton), and a habitat plan for this location entitled 'Westleton Marsh Harrier Compensatory Habitat Strategy' [REP10-129]. The additional land is approximately 54ha in extent and would be acquired through compulsory acquisition, should the Secretary of State consider that additional compensatory habitat is required. NE stated, in its final SoCG with the Applicant [REP10-097], that the compensatory habitat at the MHCHA is of sufficient extent to ensure the integrity of the NSN, without making the case that the land at Westleton is essential for this purpose.

10.1.1.1 Timing

Throughout the Examination, NE and the RSPB/SWT expressed concerns about the timing of the wetland habitat element of the MHCHA. They both maintained that the wetland habitat should be in place and made functional by the time construction commences [REP5-160] [REP3-074] [REP3-075].

NE advised [REP6-042] [REP5-160] that, if the habitat was not functional before construction commenced, this would not be in line with section 24 of the Habitats Directive, 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*."

The RSPB/SWT recommended that construction of the wetland habitats should be brought forward so that they are functional by the time construction starts [REP5-164] [REP7-154]. It did not think that the newly constructed wetland habitats would support sufficient prey to provide any function for the first year or two [REP7-153].

The Applicant acknowledged [REP6-002] that the proposed reedbeds would not be fully established in the first summer of construction, but noted the wetland is expected to be a shallow water body with some limited marsh vegetation. The Applicant expects that by the second summer the reedbeds would be fully established. The Applicant's position [REP10-155] was that the excavation works required to create the wetland habitats are reliant upon powers in the Order. It maintained its position that the wetland habitat element of the MHCHA would be created in the first winter of the construction phase following the grant of any DCO.

The Applicant stated [REP7-051] [REP10-155] that the works would not be undertaken during February – October to avoid impacts on breeding birds. This is described in the CoCP which is secured by Requirement 2 of the DCO and is a certified document under Schedule 23.

NE had outstanding concerns on the timing of compensatory habitat delivery, in terms of it being in place and functioning, at the end of Examination. It reiterated that wetland habitat must be established before the onset of disturbing construction activity, or this represents a loss in the extent of the habitat provided [REP10-097]. The RSPB/SWT [REP10-204] also shared these concerns at the end of Examination and considered that if the compensatory habitat was not established in advance of the impact, then it does not meet legal / policy requirements. It considered the reedbed would not provide marsh harrier hunting opportunities for the first 1 – 2 years while the habitat is establishing.

10.1.1.2 Efficacy

The Applicant stated it 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]. The Applicant submitted a 'Note on Marsh Harrier Habitat' [AS-408], as well as additional detail on this matter [REP2-110], setting out why it considered that the condition in section 122(2) of the PA 2008 had been met. It submitted a paper relating to the sufficiency of compensatory measures for marsh harrier [REP6-002], which included additional information on:

- The sufficiency of the compensatory habitat;
- Monitoring proposals;
- Land at Westleton; and
- How the compensatory habitat provision meets the tests of the Habitats Regulations.

The Applicant submitted an analysis of the MHCHA and land at Westleton, concluding that these satisfied the requirements of NPS EN-6 and the new DEFRA guidance[148] . This was disputed by the RSPB/SWT [REP7-154] for a number of reasons, including a lack of confidence that dry habitats could sustain the necessary level of prey provision for marsh harrier activity, and the timing of the functionality of the wetland habitat element of the MHCHA prior to construction commencing.

10.1.1.3 Monitoring

The TEMMP [REP10-089] proposes three strands of monitoring:

- Surveys of foraging activity levels of marsh harrier on the existing wetland foraging habitats (Minsmere South Levels and Sizewell Marshes), the MHCHA, and the land at Westleton;
- Surveys to determine the success of establishment of foraging habitats for marsh harrier to include vegetation establishment and botanical monitoring; and
- Survey to determine the success of establishment of prey species for marsh harrier.

Requirement 4 of the DCO states that the construction and operation of the authorised development must be carried out in accordance with the TEMMP, which is a certified document in Schedule 23 of the DCO.

NE confirmed [REP6-042] that it is content with the proposed monitoring in the TEMMP in relation to marsh harrier and the MHCHA. This confirmation was made in relation to an earlier iteration of the TEMMP but the Secretary of State has no reason to believe that the subsequent updates to the TEMMP would change NE's view in this regard.

The RSPB/SWT had outstanding concerns at the close of Examination about the monitoring measures for marsh harrier as set out in the TEMMP [REP10-204]. This included concerns about the adequacy of targets, and the effectiveness measures and potential interventions.

[148] DEFRA, 2021. *Habitats regulations assessments: protecting a European site*. https://www.gov.uk/guidance/habitats-regulations-assessments-protecting-a-european-site

10.1.1.4 Securing Delivery of Measures

The works required to create the MHCHA were the subject of Work No. 1A(dd) ("flood mitigation area and associated habitat") in Schedule 1 of the dDCO. This then became Work No.1 A(cc) in the final DCO.

The Applicant expected that should the Secretary of State agree that the MHCHA is sufficient compensation, he would omit Work No. 8 for the compulsory acquisition of the land at Westleton [AS-408].

The delivery of key mitigation, including the marsh harrier habitat improvement works (if required), is secured by Schedule 9 (Implementation Plan) in the DoO [REP10-074] - [REP10-084]. Schedule 11 of the DoO states that a Habitats Bond shall be put in place to provide for the cost of the completion of the Habitats Works (which includes the marsh harrier habitat improvement works (if required)), if the Applicant should fail to complete the Habitats Works by reason of a 'Default Event'.

Implementation of a Marsh Harrier Implementation Plan, which must be in general accordance with the Westleton Marsh Harrier Compensatory Habitat Strategy (if required) and the On-site Marsh Harrier Compensatory Habitat Strategy, is secured by Requirement 27 of the DCO. The Marsh Harrier Implementation Plan is to be submitted to the ESC for approval, following consultation with NE.

10.1.1.5 Examination Conclusions

The ExA considered that the advice from NE and the RSPB/SWT, regarding the timing of the wetland element of habitat creation in relation to its functionality, is in line with established practice and guidance for compensatory measures, including that from DEFRA. The ExA therefore considered it necessary for the wetland element of habitat creation to be in place and functional prior to the onset of disturbance to marsh harrier from construction activities.

The ExA agreed that the MHCHA at Abbey Farm is of sufficient extent to ensure the integrity of the NSN is maintained for marsh harrier of the Minsmere-Walberswick SPA and Ramsar. This conclusion was made on the basis that the timing of the wetland habitat creation is brought forward to ensure it is in place and functional prior to construction. The ExA was of the view that the compensatory measures at the MHCHA are adequate in extent, feasible and appropriate, and that the measures are adequately secured.

The ExA considered that there is no evidence to demonstrate that at this stage, the land at Westleton to provide additional dry habitat for foraging marsh harrier is absolutely necessary to ensure the NSN is maintained for the species. The ExA's final position was, therefore, since it is not necessary to acquire this land to facilitate the Project, a case for the compulsory acquisition of this land cannot be made under the PA 2008. As such, the ExA recommended the Secretary of State removes the relevant provisions relating to Work No. 8 from any Order made.

10.1.2 Additional Information

In his first consultation letter, the Secretary of State requested the Applicant to provide information to demonstrate how the wetland habitat element of the proposed marsh harrier

compensatory habitat area could be in place and functioning prior to the onset of disturbance from construction activities.

In response to the Secretary of State's request, the Applicant proposed[149] a revision of the excavation period in the CoCP[150] from October – February over up to two consecutive winters, to mid-August – February (inclusive) over a single winter. The Shadow HRA states that the onset of disturbance will be the start of Phase 1 works within the MDS. The Applicant considered this to be highly precautionary. It explained that the barrier effect caused by noise and visual disturbance during construction will not occur until after the start of bulk earthworks, and subsequent construction activities, which are not programmed to commence until mid-August 2023. It stated this revised timeline takes account of RSPB advice in relation to bittern breeding season, in that male bitterns can start booming in February, but breeding does not start until early March.

Excavation works associated with wetland creation will be restricted to mid-August 2022 – February 2023 and details relating to the wetland habitat creation works will be submitted immediately after the DCO is granted. Reed planting will take place sequentially once earthworks on each section of the wetland habitat is complete, during autumn 2022 and spring 2023. Details of the reed planting are set out in the On-site Marsh Harrier Compensatory Habitat Strategy [REP10-127].

The Applicant concluded that any potential barrier effect as a result of disturbance to marsh harrier would therefore not occur until the start of the 2024 breeding season. The new wetlands will have been in place for approximately one year or more by March 2024. The Applicant highlighted that it considered existing terrestrial habitat to be sufficient and that this will be functional before the onset of any potential disturbance in the 2023 marsh harrier breeding season, with the additional wetland habitat supplementing this in March 2024 at the earliest.

In response to the Secretary of State's third consultation letter, the RSPB/SWT[151] stated that the Applicant's response addressed a key outstanding concern with regards to the delivery of the marsh harrier compensation habitats and it was supportive of the proposed timings.

In its response of 14th June 2022, NE[152] welcomed the earlier commitment from the Applicant to wetland habitat creation as part of the compensatory measures for breeding marsh harrier of the Minsmere-Walberswick SPA. It advised that the timeline proposed by the Applicant for wetland habitat creation would give the best possible chance of the habitat being in place and functioning as far as possible as part of the wider compensatory terrestrial dry habitats, prior to the onset of significant disturbance to marsh harrier from construction activities.

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[149] NNB Generation Company (SZC) Limited, 2022. *The Sizewell C Project – SCZ's Response to the Secretary of State's Request for Further Information dated 18 March 2022.* April 2022.

[150] NBB Generation Company (SZC) Limited, 2022. *SCZ Co.'s Response to the Secretary of State's Request for Further Information dated 31 March 2022: Appendix 3 – Code of Construction Practice (tracked change version), submitted in response to Question 8.16 and in response to our submission dated 8 April 2022*. April 2022.

[151] RSPB/SWT, 2022. *Response to Department for Business, Energy and Industrial Strategy Information presented in Responses to Secretary of Statement Questions of 18th and 31st March 2022 from the Royal Society for the Protection of Birds and Suffolk Wildlife Trust.* 23rd May 2022.

[152] Natural England, 2022. *Application by NNB Generation Company (SZC) Limited ("the Applicant") for an Order granting Development Consent for the proposed Sizewell C Nuclear Power Station ("the proposed Development")*. 14th June 2022.

NE considered that there will likely be a pulse of invertebrates that will quickly attract other bird species which marsh harrier can prey upon during early establishment of the wetland habitat. It also stated that the wetland habitat would be unlikely to be functioning to its full extent for foraging marsh harrier after one year.

The Secretary of State has considered the updated timeline for creation of the wetland habitat as proposed by the Applicant, as well as the responses of NE and the RSPB/SWT. He notes that although NE states the wetland habitat will not be fully functional within a year, it will quickly attract the prey species of marsh harrier before the onset of disturbing impacts from the construction of the Project. He also notes that the RSPB/SWT have stated that the Applicant's proposed amendment to the timeline for wetland habitat construction has addressed their outstanding concerns in relation to its delivery.

Works required to create the MHCHA are subject to Work No.1A(cc) (flood mitigation area and associated habitat) in Schedule 1 of the DCO.

The Secretary of State considers that there is sufficient detail in the evidence presented to provide confidence that a package of measures will be delivered which will protect the coherence of the NSN as required by Regulations 64 and 68 of the Habitats Regulations. In reaching this conclusion he has considered the currently established and functioning marsh harrier compensatory habitat area within the EDF Energy estate, comprised of dry habitat. He considers that this, coupled with the wetland habitat which will be completed by February 2023 before the onset of disturbance from construction, will provide sufficient foraging habitat for breeding marsh harrier to compensate for the full potential adverse effects of the Project on the Minsmere-Walberswick SPA and Ramsar.

The Secretary of State notes that on 6 June 2022, a separate planning application was submitted to ESC seeking permission for the creation of a 4.52ha wetland habitat on land in the vicinity of Lower Abbey Farm. The Secretary of State notes that the area of land covered by this planning application to ESC is in the same location as the wetland habitat applied for as part of this Application as a compensatory measure. The RSPB and SWT wrote to the Secretary of State on 6 July 2022 raising their concerns with the designs included in the application to ESC. The Secretary of State notes these concerns but is satisfied that the design of the wetland compensation area submitted as part of this Application for development consent is adequately secured through Requirement 27 of the Order.

11 Conclusions

The Secretary of State has carefully considered all the information presented within the application, during the Examination and the representations made by all IPs, along with the ExA's Recommendation Report and the responses to the Secretary of State's further consultations.

The Secretary of State concludes that LSEs cannot be excluded at 19 sites, when the Project is considered alone or in-combination with other plans and projects. These sites were taken forward to an AA to consider whether the Project would result in any AEoI of these sites.

Having given due consideration to the information and analysis presented to him and having made a full assessment of the potential for AEoI at each of the protected sites for which the potential for LSE was identified, the Secretary of State concludes that an AEoI of the Minsmere-Walberswick SPA and Ramsar on the breeding marsh harrier feature from the Project alone cannot be excluded.

The Secretary of State is satisfied that there are no alternatives to fulfilling the objectives of the Project and that the Project provides a benefit that is imperative to the public interest. The Secretary of State is also satisfied that the essential public benefits of the Project would outweigh the impacts to the protected sites.

The Secretary of State is also satisfied that necessary compensatory measures to ensure that the overall coherence of the NSN can be secured. The final specifications of these compensatory measures are set out in chapter 10 and will be secured and delivered through the CoCP, which is a certified document in Schedule 23 of the DCO, and in general accordance with the On-site Marsh Harrier Compensatory Habitat Strategy. Implementation of the CoCP is secured through Requirement 2 and provision of a marsh harrier implementation plan in general accordance with the On-site Marsh Harrier Compensatory Habitat Strategy is secured through Requirement 27.

Energy Infrastructure Planning Team
Department for Business Energy and Industrial Strategy

July 2022