

Vattenfall Wind Power Ltd

Thanet Extension Offshore Wind Farm

Appendix 21 to Deadline 2 Submission: Report to
Inform Appropriate Assessment - Part 1 of 2

Relevant Examination Deadline: 2

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Revision B

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Vattenfall Wind Power Ltd
Thanet Extension Offshore Wind Farm

Report to Inform Appropriate Assessment

February 2019, Revision B

Document Reference: 5.2

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Vattenfall Wind Power Ltd
Thanet Extension Offshore Wind Farm
Report to Inform the Appropriate Assessment
February 2019

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1 Introduction

1.1 Revised document introduction

1.1.1 The following document is submitted in replacement of the equivalent document submitted as the formal application (PINS Ref APP-031/ Application Ref 5.1). The document has been revised following certain design changes, receipt of relevant representations, and recent case law on the application of the Habitats Regulations Assessments, as identified by the Examining Authority. Further detail regarding the rationale for resubmission is presented in Section 1.3 of this report.

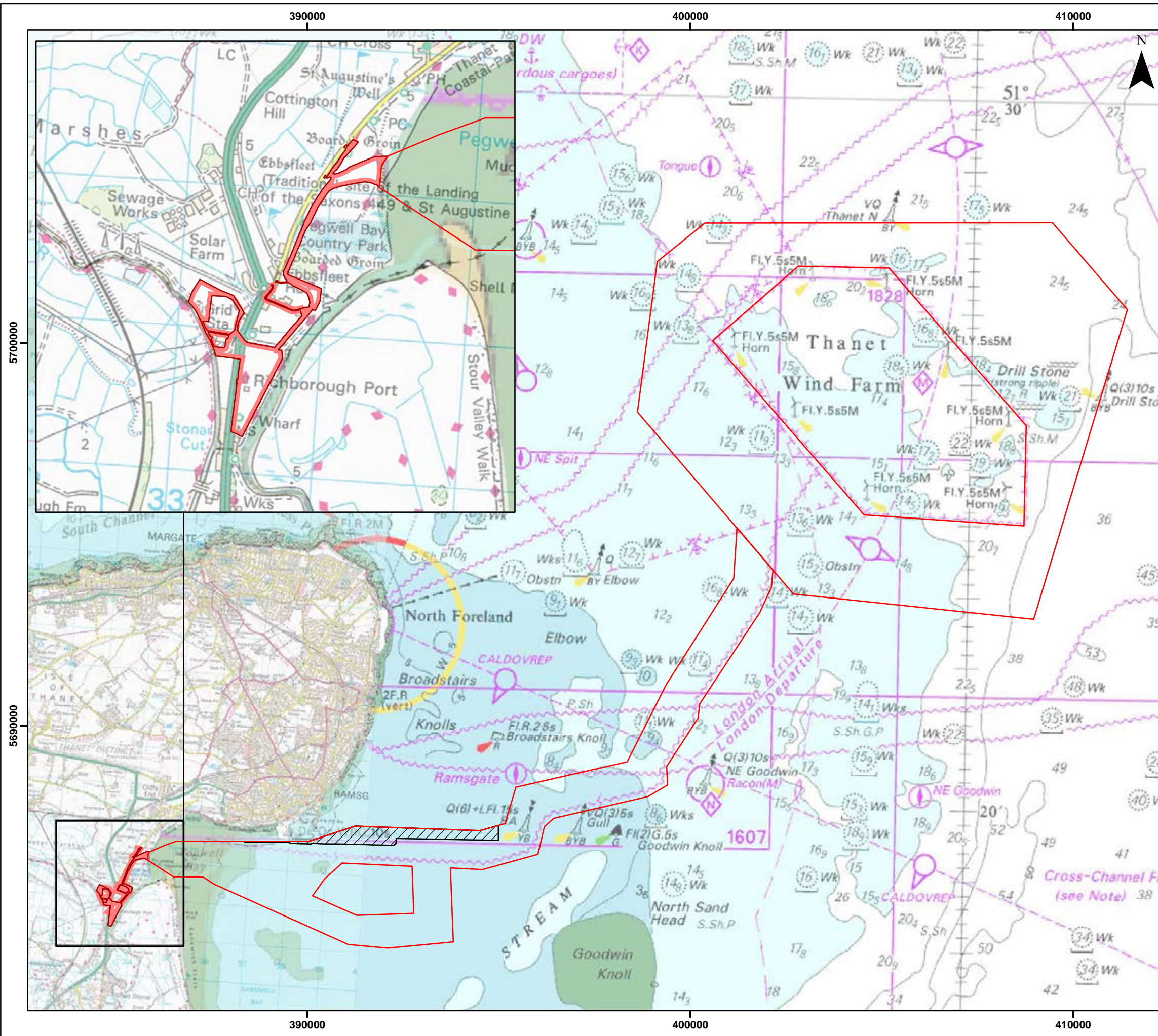
1.2 Background to the project

1.2.1 Vattenfall Wind Power Ltd (VWPL) is proposing the development of the Thanet Extension Offshore Wind Farm (Thanet Extension). The project would be located approximately 8 km offshore (at its closest point) from the Kent coast, in proximity to the operational Thanet Offshore Wind Farm (TOWF). It would have up to 34 Wind Turbine Generators (WTGs), with a maximum capacity each of 12+ MW, resulting in a generation capacity of up to 340 MW. Electricity generated would be transported to the shore by offshore export cables installed within the Offshore Export Cable Corridor (OECC) to the landfall location at Pegwell Bay, then through underground cables installed within the Onshore Cable Corridor (OCC) to the proposed onshore substation located at Richborough Port.

1.2.2 The location of Thanet Extension (including the wind farm array, offshore and onshore cable corridors and the onshore substation) is presented in Figure 1.1. More detail on the project is provided within the full Environmental Statement (ES), specifically within the following chapters and annexes (note that for ease of reference the PINS references have been added below, in section 1.4 or on first use; however, due to this being a revision B document, this has not been carried through the document for all references):

- Volume 1, Chapter 1: Introduction (PINS Ref APP-036/ Application Ref 6.1.1), providing an overview of the project, VWPL, the technical specialists involved and where and how to view project literature;
- Volume 1, Chapter 2: Policy and Legislation (PINS Ref APP-037/ Application Ref 6.1.2), providing an overview of the key policy and legislation driving the need for the project and governing the processes and requirements to be followed and applied by VWPL;
- Volume 1, Chapter 3: Environmental Impact Assessment Methodology (PINS Ref APP-038/ Application Ref 6.1.3), describes the assessment methodology used throughout the Environmental Impact Assessment (EIA) to identify and evaluate potential impacts associated with the development of Thanet Extension;
- Volume 1, Chapter 4: Site Selection and Alternatives (PINS Ref APP-040/ Application Ref 6.1.4), providing detail on the selection of the site including alternatives considered;

- Volume 2, Chapter 1: Project Description (Offshore) (PINS Ref APP-042/ Application Ref 6.2.1), providing a description of the offshore elements of the proposed development, including the project design and proposed methods of construction, Operations and Maintenance (O&M), and decommissioning;
- Volume 3, Chapter 1: Project Description (Onshore) (PINS Ref APP-057/ Application Ref 6.3.1), providing a description of the onshore elements of the proposed development, including the project design and proposed methods of construction, O&M, and decommissioning; and
- Volume 1, Annex 3-1: Cumulative Impact Assessment (PINS Ref APP-039/ Application Ref 6.1.3.1), providing details on the methodologies for each of the cumulative assessments and justification for the approach taken.



THANET EXTENSION OFFSHORE WIND FARM

Figure 1.1
Thanet Extension Development Area

Legend

- Offshore Red Line Boundary
- Onshore Red Line Boundary
- Cable Exclusion Area

Datum: ETRS 1989
Projection: UTM31N



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 Ordnance Survey 0100031673
 0 1 2 km 0 0.55 1.1 nm
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Drg No	Fig1.1_LocationMap			Figure 1.1
Rev	0.1	Date	01/02/2019	
By	RM	Layout	N/A	

1.3 Purpose of the report

1.3.1 The European Commission's guidance on Assessment of plans and projects significantly affecting Natura 2000 sites (2001), identifies a staged process to the assessment of the effects of plans and projects on European sites. Together, these stages are referred to as the Habitats Regulations Assessment (HRA), in order to clearly distinguish the whole process from the second stage within it, which is referred to as the 'Appropriate Assessment' (AA). There are potentially up to four stages to the HRA process:

- Screening;
- Appropriate Assessment;
- Assessment of alternatives; and
- Imperative Reasons of Overriding Public Interest (IROPI) and compensation.

1.3.2 This document has been produced as part of the overall HRA process for Thanet Extension. This report draws on the Screening Report (Annex 1 to this report) undertaken in 2017. The first draft of the Screening Report was issued to consultees in June/ July 2017 and re-issued in September 2017 as part of the Evidence Plan. A summary of the consultation process, including comments received and how/ where these are addressed, is provided in section 4.

1.3.3 Further project specific survey work was conducted following the issue of the Screening Report, together the finalisation of technical reporting and further refinements to the project design, with that information incorporated within the Report to Inform Appropriate Assessment (RIAA) submitted with the application in June 2018. During the Examination process, a project level decision has been made to propose to remove from the application one of the landfall Options for construction, specifically Option 2. In response to that decision, the RIAA has been redrafted, to ensure it correctly reflects the worst case construction scenarios remaining in the design envelope. The re-issuing of the RIAA in February 2019 has enabled consideration of the following:

- The proposed removal of Option 2 from the landfall Project Design Envelope;
- Comments received during Examination (specifically the Relevant and Written Representations);

- Further consideration of recent European Court of Justice (ECJ) authority; and
- An update to the in-combination sections.

1.3.4 The conclusions of the September 2017 Screening Report were initially revisited for the RIAA submitted at Application (dated June 2018) and have also been revisited here, to confirm where the conclusions remain valid together with where and why any such conclusions have changed. Such changes include those made in response to the addition of further designated sites, updates relevant to recent ECJ rulings (see paragraph 2.1.6) and in response to the comments received in the Relevant Representations (including transboundary documents available on the relevant PINS website¹). The updated conclusions on screening are presented in section 4.1.8.

1.3.5 This document applies the conclusions on the potential for a Likely Significant Effect (LSE), as drawn in the Screening Report, and updated here in section 7, with respect to the conservation objectives of the screened in European sites, to determine the potential for an Adverse Effect on Integrity (AEI). It is the information on the potential for an AEI that is required by the competent authority (in this case the Secretary of State (SoS) for Business, Energy and Industrial Strategy (BEIS)), although all LSE, including any that may be regulated by other competent authorities, have been addressed in order to undertake the AA (hence the document title 'Report to Inform Appropriate Assessment', or RIAA, applied here).

1.4 Project Literature

1.4.1 This RIAA has not been prepared in isolation, but instead forms part of a suite of documents being submitted as part of the application process. These documents include technical reports (both for site specific survey but also modelling and desk based studies), with many of these being the key source documents for the information (baseline and assessments) presented here. For ease of reference, and to minimise repetition, the main sources of project literature (including relevant ES chapters) for the current report are as follows:

- Offshore:
 - Volume 2, Chapter 2: Marine Geology, Oceanography and Physical Processes (PINS Ref APP-043/ Application Ref 6.2.2);

¹<https://infrastructure.planninginspectorate.gov.uk/projects/south-east/thanet-extension-offshore-wind-farm/?ipcsection=docs>

- Volume 4, Annex 2-1: Physical Processes – Technical Baseline (PINS Ref APP-070/ Application Ref 6.4.2.1);
- Volume 2, Chapter 4: Offshore Ornithology (PINS Ref APP-045/ Application Ref 6.2.4);
- Volume 4, Annex 4-1: Offshore Ornithology – Baseline Technical Report (PINS Ref APP-077/ Application Ref 6.4.4.1);
- Volume 4, Annex 4-4: Offshore Ornithology – Collision Risk Modelling Report (PINS Ref APP-080/ Application Ref 6.4.4.2);
- Volume 2, Chapter 5: Benthic Subtidal and Intertidal Ecology (PINS Ref APP-046/ Application Ref 6.2.5);
- Volume 4, Annex 5-1: Benthic Ecology – Intertidal Survey (PINS Ref APP-081/ Application Ref 6.4.5.2);
- Volume 4, Annex 5-2: Benthic Ecology – Subtidal Technical Report (PINS Ref APP-082/ Application Ref 6.4.5.1);
- Volume 2, Chapter 6: Fish and Shellfish Ecology (PINS Ref APP-047/ Application Ref 6.2.6);
- Volume 4, Annex 6-1: Fish and Shellfish – Technical Report (PINS Ref APP-084/ Application Ref 6.4.6.1);
- Volume 2, Chapter 7: Marine Mammals (PINS Ref APP-048/ Application Ref 6.2.7);
- Volume 4, Annex 6-3: Underwater Noise Technical Report (PINS Ref APP-086/ Application Ref 6.4.6.3);
- Volume 2, Chapter 8: Offshore Designated Sites (PINS Ref APP-049/ Application Ref 6.2.8);
- Volume 2, Chapter 10: Shipping and Navigation (PINS Ref APP-051/ Application Ref 6.2.10); and
- Volume 4, Annex 10-1: Navigation Risk Assessment (PINS Ref APP-089/ Application Ref 6.4.10.1).
- Onshore:
 - Volume 3, Chapter 5: Onshore Biodiversity (PINS Ref APP-061/ Application Ref 6.3.5);
 - Volume 5, Annex 5-4: Baseline Onshore and Intertidal Ornithology Report (PINS Ref APP-100/ Application Ref 6.5.5.4);
 - Volume 5, Annex 5-6: Terrestrial Invertebrate Assessment Report (PINS Ref APP-102/ Application Ref 6.5.5.6); and

- Volume 5, Annex 5-13: Intertidal waterfowl data analysis in relation to onshore works (PINS Ref APP-109/ Application Ref 6.5.5.13).

1.4.2 It is noted in Advice Note 10 (PINS, 2013) that the EIA and HRA apply differently to decision making, with the ES informing the decision (its findings must be taken into consideration) whereas the Development Consent Order (DCO) can only be made if the decision-maker has followed the stages prescribed by the 2010 Habitats Regulations (see Figure 2.1). Therefore, the information contained in the above chapters and documents has been used to inform the decisions made here in the RIAA, with the RIAA following the prescribed stages.

1.5 Structure of the RIAA

1.5.1 This document is set out in a number of stages that mirror the HRA process, with the overall structure of the document summarised below.

- **Section 1:** Introduction. Providing a background to the project, including the purpose and structure of the project and where additional project related information (including baseline environment and EIA) can be found;
- **Section 2:** Legislation, Policy and Guidance. To identify the legislation driving the need for the report and the policy and guidance providing the structure;
- **Section 3:** Roles and Responsibilities. Identifying key individuals and organisations with a role in the HRA process;
- **Section 4:** Consultation. Summarising the consultation undertaken, with whom, issues raised, how and where these have been addressed. Including the Evidence Plan and need for Transboundary Consultation;
- **Section 5:** Project Overview. Drawing on the information presented in relevant chapters of the ES, providing the maximum adverse scenario for each receptor group including temporal and spatial aspects;
- **Section 6:** Embedded Mitigation. To include project specific mitigation included per receptor group;
- **Section 7:** The Screening Process for the Project Alone. Summarising the screening undertaken, including the approach, conclusion on the potential for LSE and any changes following completion of the Preliminary Environmental Information Report (PEIR), consultation on the PEIR and relevant updates following the ECJ ruling;
- **Section 8:** The Screening Process for the Project In-Combination. Presenting the approach to identifying the plans and projects to consider in-combination;
- **Section 9:** Summary of Designated Sites. Summarising site specific information for all designated sites screened in;

- **Section 10:** Assessment Criteria. Providing the definitions against which the potential for an adverse effect has been determined, on a receptor by receptor basis;
- **Section 11:** Assessment of Adverse Effect Alone. Determination of whether the project alone will result in an adverse effect;
- **Section 12:** Assessment of Adverse Effect In-combination. Determination of whether the project in-combination with other plans and projects will result in an adverse effect;
- **Section 13:** Transboundary Statement;
- **Section 14:** Conclusion of the Assessment. Summarising the conclusions on adverse effect, alone and in-combination; and
- **Section 15:** References.

2 Legislation, policy and guidance

2.1 Legislative Context and Government Policy

- 2.1.1 The Habitats Directive (92/43/EEC) on the conservation of natural habitats and of wild fauna and flora, protects habitats and species of European nature conservation importance. Together with the Council Directive (2009/147/EC) on the conservation of wild birds (the 'Birds Directive'), the Habitats Directive establishes a network of internationally important sites, designated for their ecological status. SACs are designated under the Habitats Directive and promote the protection of flora, fauna and habitats. Special Protection Areas (SPAs) are designated under the Birds Directive in order to protect rare, vulnerable and migratory birds. These sites combine to create a Europe-wide 'Natura 2000' network of designated sites, which are hereafter referred to as 'European sites'.
- 2.1.2 Terrestrial areas of the UK, and territorial waters out to 12 nautical miles (nm), are covered under The Conservation of Habitats and Species Regulations 2017 (herein referred to as the Habitats Regulations) which transposes the European legislation into UK legislation. The Habitats Regulations incorporate all SPAs into the definition of 'European sites' and, consequently, the protections afforded to European sites under the Habitats Directive apply to SPAs designated under the Birds Directive.
- 2.1.3 The Conservation of Offshore Marine Habitats and Species Regulations 2017 (the Offshore Habitats Regulations) transpose the Habitats and Birds Directives into national law, covering waters beyond 12 nm, to the extent of the British Fishery Limits and UK Continental Shelf Designated Area.
- 2.1.4 In addition, UK Government policy (ODPM Circular 06/2005) states that internationally important wetlands designated under the Convention on Wetlands 1971, called the Ramsar Convention (Ramsar sites) are afforded the same protection as SPAs and SACs for the purpose of considering development proposals that may affect them. The Government also affords the same level of protection to potential SPAs (pSPAs) and candidate SACs (cSACs) and to sites identified, or required, as compensatory measures for adverse effects on any of the above sites.

- 2.1.5 Under the Habitats Regulations and the Offshore Habitats Regulations, before granting approval (i.e. planning permissions, licences and consents) for a development likely to have a significant effect on an SAC or SPA/ Ramsar site, an appropriate assessment must be made by a Competent Authority of its implications for the site in view of that site's conservation objectives.
- 2.1.6 Of note are recent rulings by the ECJ, referred to here as Sweetman II², and Holohan³. The RIAA issued in June 2018 with the application took account of the rulings available at that time, notably the Sweetman rulings. Since then, the effect of Sweetman II in particular has been reviewed, along with the Holohan decision, which post-dated the original RIAA.
- 2.1.7 Sweetman II is a recent decision by the CCJEU in the case of People Over Wind and Sweetman v Coillte Teoranta (C-323/17). It is also known as "People over Wind". The effect of the judgment is that measures intended to avoid or reduce the harmful effects of a proposed project on a European site may no longer be taken into account by competent authorities at the Habitat Regulations Assessment "screening stage." The ruling was issued shortly before finalisation of the June 2018 RIAA and was taken into account at that stage; however screening has now been revisited again to confirm compliance with the ruling. Any changes to screening are highlighted in sections 7 and 8 (screening for the project alone and in-combination) and, where relevant, followed through into sections 11 and 12 (determination of potential adverse effect).
- 2.1.8 Holohan is another relevant ruling (Holohan v. An Bord Pleanála (C-461/17)), where it was held that "an 'appropriate assessment' must, on the one hand, catalogue the entirety of habitat types and species for which a site is protected, and, on the other, identify and examine both the implications of the proposed project for the species present on that site, and for which that site has not been listed, and the implications for habitat types and species to be found outside the boundaries of that site, provided that those implications are liable to affect the conservation objectives of the site".
- 2.1.9 This approach should be an integral part of any RIAA, for example through consideration of non designated prey of designated species, or consideration of non designated habitat on which designated species may occur. It has been adopted in this RIAA, which has been reviewed following the Holohan judgment to verify that such considerations have been taken into account as relevant.

² <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A62017CJ0323>

³ <http://curia.europa.eu/juris/liste.jsf?language=en&td=ALL&num=C-461/17>

2.2 Guidance Documents

2.2.1 A number of guidance documents are available regarding the HRA process and associated topics. Some of these have been issued at European level, others at UK level (or constituent country). Documents are available that provide guidance on the whole HRA process, part of that process, or are relevant to a particular receptor. A summary of the available HRA guidance, as relevant to the current RIAA, is provided below; documents issued by the EC, UK Government (or devolved administrations) or statutory bodies are provided first, with documents issued by other agencies or organisations together with other relevant but not HRA specific guidance listed separately.

- European Commission (2018): Managing Natura 2000 sites. The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC;
- European Commission (2001): Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites;
- European Commission: EU Guidance on wind energy development in accordance with EU nature directives;
- European Commission (2000) Managing Natura 2000 Sites - the Provisions of Article 6 of the 'Habitats' Directive 92/43/EEC;
- European Commission (2001) Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC;
- Opinion of the Commission (2007) Guidance Document on Article 6(4) of the Habitats Directive 92/43/EEC – Clarification of the concepts of: Alternative Solutions, Imperative Reasons of Overriding Public Interest, Compensatory Measures;
- European Commission (2011) Guidance Document on Wind Energy Developments and Natura 2000;
- Department of Communities and Local Government: Guidance on 'Planning for the Protection of European Sites: Appropriate Assessment';
- Planning Inspectorate (PINS) Advice Note 9: Rochdale Envelope;
- PINS Advice Note 10: Habitat Regulations Assessment relevant to nationally significant infrastructure projects;
- Department of Energy and Climate Change: Guidelines on the Assessment of Transboundary Impacts of Energy Developments on Natura 2000 Sites Outside the UK;
- English Nature: Habitats Regulations Guidance Note (HRGN 1): The Appropriate Assessment (Regulation 48) The Conservation (Natural Habitats &c) Regulations, 1994;
- English Nature: Habitats Regulations Guidance Note (HRGN 3): The Determination of LSE under the Conservation (Natural Habitats &c) Regulations, 1994;

- English Nature: Habitats Regulations Guidance Note (HRGN 4): Alone or in combination;
- Natural England and JNCC: Interim advice on HRA screening for seabirds in the non-breeding season;
- Natural England and JNCC: Interim Advice Note – Presenting information to inform assessment of the potential magnitude and consequences of displacement of seabirds in relation to Offshore Windfarm Developments;
- Literature and discussions held during a series of workshops in 2016 and 2017 in connection with the Southern North Sea cSAC/SCI (pSAC at that point); and
- Guidance on when new marine Natura 2000 sites should be taken into account in offshore renewable energy consents and licences (the Department of Energy and Climate Change (DECC), 2016).

2.2.2 Additional documents of relevance are provided below.

- Statutory nature conservation agency protocol for minimising the risk of injury to marine mammals from piling noise (JNCC, 2010);
- JNCC guidelines for minimising the risk of injury to marine mammals from geophysical surveys (JNCC, 2017);
- JNCC guidelines for minimising the risk of injury to marine mammals from using explosives (JNCC, 2010);
- Managing underwater noise in European Waters (Tasker *et al.*, 2010);
- The protection of marine European Protected Species from injury and disturbance. Guidance for the marine area in England and Wales and the UK offshore marine area, (JNCC, NE and CCW 2010);
- Developing Guidance on Ornithological Cumulative Impact Assessment for Offshore Wind Farm Developers (King *et al.* 2009);
- Assessment methodologies for offshore wind farms (Maclean *et al.*, 2009);
- Cumulative Impact Assessment Guidelines – Guiding Principles for Cumulative Impacts Assessment in Offshore Wind Farms (RenewableUK 2013);
- Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, freshwater and coastal. (CIEEM, 2016);
- Advice on assessing displacement of birds from offshore wind farms (Statutory Nature Conservation Bodies (SNCBs), 2017);
- Collision risk modelling (CRM) to assess bird collision risks for offshore wind farms (Band, 2012);

- CRM incorporating variability and uncertainty to assess bird collision risks for offshore wind farms (Masden, 2015);
- Assessing the risk of offshore wind farm development to migratory birds (Wright *et al.*, 2012);
- Vulnerability of seabirds to offshore wind farms (Furness and Wade 2012; Furness *et al.*, 2013);
- Seabird sensitivity to offshore wind farms in English Territorial Waters (Bradbury *et al.*, 2014);
- The avoidance rates of collision between birds and offshore turbines (Cook *et al.*, 2014);
- Joint Response from the Statutory Nature Conservation Bodies to the Marine Scotland Science Avoidance Rate Review (JNCC *et al.*, 2014); and
- Consideration of quantifying impact assessments for selected seabird populations (MacArthur Green, 2016).

2.3 The HRA Process

- 2.3.1 The Habitats Regulations require that whenever a project that is not directly connected to, or necessary for the management of a Natura 2000 site, is likely to have a significant effect on the conservation objectives of the site (directly, indirectly, alone or in-combination with other plans or projects), then an AA must be undertaken by the Competent Authority (Regulation 63 of the Habitats Regulations). The AA must be carried out before consent or authorisation can be given for the project.
- 2.3.2 PINS Advice Note 10 'Habitat Regulations Assessment relevant to national significant infrastructure projects' (version 7, January 2016), defines HRA as a step by step process which determines LSE and (where appropriate) assesses adverse impacts on the integrity of a European site, examines alternative solutions, and provides justification of IROPI. As noted above in section 2, HRA includes a four stage process, as summarised below and illustrated in Figure 2.1.
- **HRA Stage 1** – Screening: Screening for LSE (alone or in-combination with other projects or plans);
 - **HRA Stage 2** – Appropriate Assessment: Assessment of implications of identified LSEs on the conservation objectives of a European site to ascertain if the proposal will adversely affect the integrity of a European site;
 - **HRA Stage 3** – Assessment of Alternatives: Where it cannot be ascertained that the proposal will not adversely affect the integrity of a European site, alternative solutions must be considered; and
 - **HRA Stage 4** – Assessment of IROPI: Where no alternatives are identified.

2.3.3 All four stages of the process are referred to as the HRA to clearly distinguish the whole process from the one step within it referred to as the 'AA'. The first stage (Screening), as noted above in section 2, has been completed for Thanet Extension alone and a summary available in section 4 (including updates to that screening where relevant). The full HRA screening is available in Annex 1 of this report (PINS Ref APP-032/ Application Ref 5.2.1). Screening for the Project in-combination with others is presented here in section 8. Where the screening process concludes the potential for a LSE, then there is a requirement for a focussed and tightly scoped AA (Stage 2). Screening for Thanet Extension has identified the possibility of LSE for certain features and effects. The required AA will be conducted by the SoS, with the information necessary to inform that assessment provided here.

2.3.4 Included within Advice Note 10 is the need for two matrices to be completed; the Screening Matrix and the Integrity Matrix. These have been completed in the required format and are included in Annex 2 (PINS Ref APP-033/ Application Ref 5.2.2).

2.3.5 The integrity of a site is defined as the coherence of the site's main ecological structure and function across the whole of its area, which enables it to sustain the habitat, complex of habitats and/ or populations of species for which the site has been designated (EC, 2001). An adverse effect on integrity is likely to be one which prevents the site from making the same contribution to favourable conservation status as it did at the time of designation.

2.3.6 PINS Advice Note 10 includes a number of points to be considered under Stage 2 and as such need to be considered in this RIAA. These are defined as follows (including the section where each is considered):

- Evidence about the project's impacts on the integrity of protected sites (consideration of adverse effect alone is presented in section 11);
- A description of any mitigation measures proposed which avoid or reduce each impact, and any residual effect (embedded mitigation measures are set out in section 6, with conclusions on adverse effect summarised in sections 11 and 12);
- A schedule indicating the timing of mitigation measures in relation to the progress of the development (timing of mitigation measures, where relevant, is included in section 6), with conclusions on adverse effect summarised in section 14;
- Cross references to the relevant DCO requirements and development consent obligations that secure these mitigation measures, and identification of any factors that might affect the certainty of their implementation (as highlighted in section 6 on embedded mitigation);

- A statement as to which (if any) residual effects constitute an adverse impact on the integrity of European sites either alone or in combination with other plans or projects and therefore need to be included within the AA (a summary of the conclusions on the potential for an adverse effect alone and in-combination is provided in section 14); and
- Evidence to demonstrate that the applicant has fully consulted and had regard to comments received by the relevant Statutory Nature Conservation Bodies (SNCBs) during pre-application consultation (consultation conducted to date is described in section 4).

2.3.7 Stages 3 and 4, as outlined in within Figure 2.1, are only required where a conclusion of adverse effect is drawn following Stage 2.

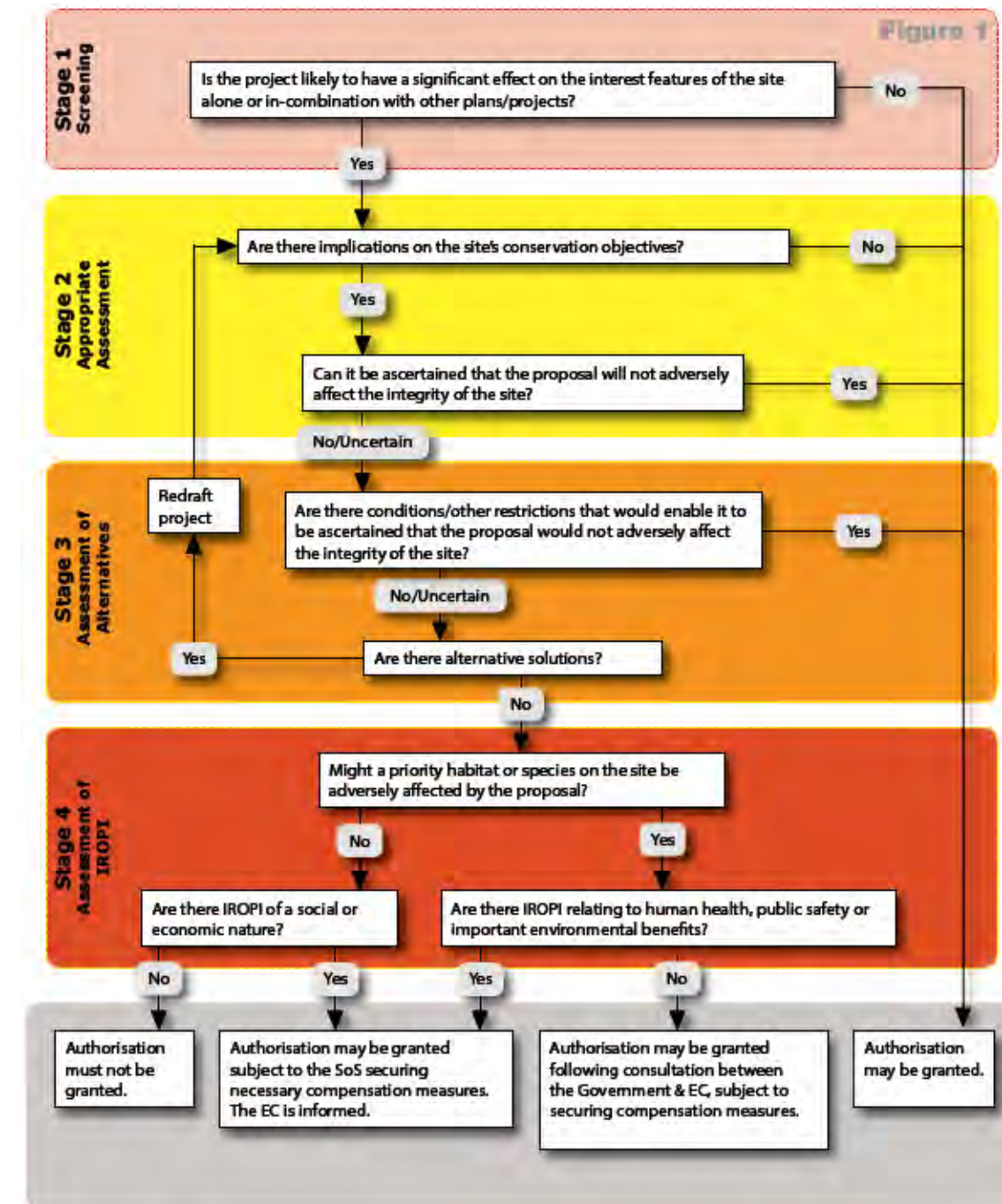


Figure 2.1: HRA stages (from PINS, 2016)

3 Roles and responsibilities

- 3.1.1 The purpose of a RIAA is to provide the information to the Competent Authority required to enable it to undertake the AA, in accordance with Regulation 63 of the Habitats Regulations. The Competent Authority for Thanet Extension is the SoS for BEIS.
- 3.1.2 This RIAA (and any supporting documentation, notably the attached appendices) produced as part of the application for a DCO for Thanet Extension provides the information required by the competent authority to enable it to undertake an appropriate assessment of the implications of the project on the integrity of designated interests of relevant European sites (in accordance with Article 6(3) of the Habitats Directive) and any relevant Ramsar sites (relevant site designations defined in section 2 above).

4 Consultation

4.1.1 Extensive consultation has been ongoing for Thanet Extension, with all consultation undertaken to the point of submission of the application summarised in the Consultation Report (PINS Ref APP-028/ Application Ref 5.1). Consultation during Examination is logged on the PINS website⁴. Consultation undertaken specifically with regard to the HRA process (and which is included within the Consultation Report or the PINS website as relevant) has been managed through the following:

- Consultation on the Scoping Report (COMPLETE, with consultation relevant to the HRA process summarised and taken into account within the Screening report included in Annex 1);
- Consultation on the draft Screening Report (COMPLETE, with consultation undertaken up to that point and relevant to the HRA process summarised and taken into account within the Screening report);
- Consultation on the final Screening Report (COMPLETE, with all comments received summarised and taken into account within the final RIAA);
- Meetings of the Thanet Extension Evidence Plan (COMPLETE, with all comments received by Monday 21 May 2018 summarised and taken into account within the final RIAA);
- Consultation on the draft RIAA (COMPLETE, with all comments received by Monday 21 May 2018 summarised and taken into account within the final RIAA);
- Preparation of Statements of Common Ground (SoCG) (ONGOING during Examination, and will be submitted during the DCO examination, with progress made up until Tuesday 15th January 2019 included within the RIAA);
- Relevant Representations (all received during Examination and taken into account, where relevant to the HRA process, within the RIAA);
- Deadline 1 submissions (those received up until 25th January 2019 included within the RIAA); and
- Transboundary responses received under Regulation 32 and the French response to Rule 6 (all received up until 12 December 2018 included within the RIAA); and

- The Examining Authority's questions (COMPLETE as of 18th December and included within the RIAA).

4.1.2 It was noted in the Scoping Opinion⁵ (Application Ref 6.8.1) that the SoS welcomed that an Evidence Plan Process would be undertaken to structure technical stakeholder consultation for HRA matters, with a particular note that the process would be appropriate to agree (where possible) timing and relevance of surveys and the methodologies to be used. The Evidence Plan process has been followed during the drafting of, and following the issue of the Screening Report, and has continued through the preparation of the RIAA.

4.1.3 The need for transboundary consultation was also acknowledged in the Scoping Opinion (paragraph 4.44 onwards). PINS Advice Note 10 (PINS, 2016) notes that where an application is 'likely to have a significant effect (either alone or in-combination) on a Natura 2000 site in another Member State, the applicant should obtain and provide all relevant information, as reasonably practicable with their DCO application'. That position is reiterated by DECC in their 2015 guidance on transboundary impacts on Natura 2000. DECC (2015) went on to say that 'the format and extent of transboundary consultation is for the applicant to agree with the Planning Inspectorate'.

4.1.4 The comments received in response to the Scoping Report, specifically in relation to the HRA process, are summarised in Table 3.1 within the HRA Screening Report (Application Ref 5.2.1), including where and how the comments were addressed. Those comments have therefore not been repeated here.

⁴<https://infrastructure.planninginspectorate.gov.uk/projects/south-east/thanet-extension-offshore-wind-farm/>

⁵<https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010084/EN010084-000025-Scoping%20Opinion.pdf>

- 4.1.5 PINS undertook transboundary screening in July 2017⁶ and again in June 2018⁷. The States notified were the Netherlands, Belgium, France, Germany and Denmark. Responses received are available on the PINS website⁸, with a summary of the points relevant to the RIAA received by June 2018 included in Table 4.1; comments subsequent to that point are noted below the table.
- 4.1.6 The RIAA provides the information necessary for transboundary consultation on HRA matters initially through the identification of transboundary sites where LSE applies in relation to the project alone in the Screening Report, followed by consideration of LSE in-combination and the determination of adverse effect alone and in-combination made here within the RIAA. That information is provided to inform the AA, to be undertaken by the SoS.
- 4.1.7 The draft Screening Report was issued on 15th June 2017 to Natural England, Royal Society for the Protection of Birds (RSPB), Kent County Council, Kent and Essex Inshore Fisheries and Conservation Authorities (IFCA), the Environment Agency, the Kent Wildlife Trust, Historic England, Marine Management Organisation (MMO), Cefas and Thanet District Council for comment, with the report re-issued on 4th July 2017 to MMO. The initial Evidence Plan meetings were subsequently held on 11th July (onshore) and 12th July (offshore) 2017, including discussion on the draft Screening Report. Written comments were requested by 28th July 2017 and all received by 2nd August 2017. The comments received on the draft Screening Report are summarised within Table 3.1 of the Screening Report, including where and how the comments have been addressed. Those comments were incorporated within the final Screening Report (Annex 1; Application Ref 5.2.1) and have not been repeated here.
- 4.1.8 The revised Screening Report was issued to the Environment Agency, MMO, Natural England, RSPB, Cefas and Kent Wildlife Trust on 27th September 2017, with a further Evidence Plan meeting held on 2nd October 2017 to discuss HRA matters (including screening). A summary of the consultation responses received in response to the revised Screening report, including that discussed at the Evidence Plan meeting on 2nd October 2017, are provided in Table 4.1 including where those comments have been addressed here.

- 4.1.9 In addition, statutory consultation was conducted on the Preliminary Environmental Information Report (PEIR) between 27th November 2017 and 12th January 2018, with this reported on in full in the Consultation Report (Application Ref 5.1). The majority of comments received were in relation to the PEIR (as that was the document available for comment), with a limited number specifically referencing the RIAA or wider HRA process. Where comments were received that apply specifically to the RIAA, these have been reviewed and included here in Table 4.1, including how and where these comments have been addressed within the RIAA. Comments aimed at the PEI more widely have been incorporated into the ES, on which the RIAA draws, and have therefore been taken into account during the preparation of the RIAA where relevant. These comments are therefore not repeated here but are summarised within the following documents (including reference to where and how each comment has been addressed):
- Comments made in relation to subtidal and intertidal benthic ecology are summarised in Table 5.5 of Volume 2, Chapter 5: Benthic Subtidal and Intertidal Ecology (Application Ref 6.2.5);
 - Comments made in relation to marine mammals are summarised in Table 7.2 of Volume 2, Chapter 7: Marine Mammals (Application Ref 6.2.7);
 - Comments that might relate to diadromous fish are summarised in Table 6.3 of Volume 2, Chapter 6: Fish and Shellfish Ecology (Application Ref 6.2.6);
 - Comments made in relation to offshore ornithology are summarised in Table 4.2 of Volume 2, Chapter 4: Offshore Ornithology (Application Ref 6.2.4); and
 - Comments made in relation to onshore biodiversity are summarised in Table 5.2 of Volume 3, Chapter 5: Onshore Biodiversity (Application Ref 6.3.5).
- 4.1.10 Further comments have been received during Examination, with those directly relating to the HRA process and received by 25th January 2019 taken into consideration within this revised RIAA.

⁶<https://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/projects/EN010084/EN010084-000078-Regulation%2024%20Transboundary%20Screening%20document%20.pdf>

⁷<https://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/projects/EN010084/EN010084-000720-TEOW%20-%20Regulation%2032%20Transboundary%20Screening.pdf>

⁸<https://infrastructure.planninginspectorate.gov.uk/projects/south-east/thanet-extension-offshore-wind-farm/?ipcsection=docs>

4.1.11 PINS Advice Note 10 recommends that agreement is sought via a SoCG with respect to the HRA process with relevant organisations, in particular the SNCBs. A SoCG is currently being drafted and will be submitted during examination (and therefore after application for a DCO). In the interests of facilitating agreements on HRA aspects, VWPL have consulted on the RIAA with the Evidence Plan HRA panel. Comments received up until Examination have been addressed within this document, as noted in Table 4.1, with comments received during Examination and up until 25th January 2019 similarly having been incorporated here, with relevant documents summarised below Table 4.1. The SoCG will clearly identify the extent to which relevant matters are agreed, and areas where disputes remain. The intention is to agree a SoCG with relevant authorities. Specifically, it is the intention of VWPL to undertake a SoCG with Natural England, MMO, RSPB and Kent Wildlife Trust.

4.1.12 In addition to the consultation summarised in Table 4.1, comments received from relevant organisations following submission of the application in June 2018 have also been incorporated into this updated version of the RIAA. In addition to the submission of a formal response to relevant representations at Deadline 1 (Appendix 1 of that Deadline 1 submission), representations considered as part of this revised RIAA include:

- Relevant Representation from Natural England dated 12th September 2018 (Project. Ref. RR-053);
- Relevant Representation from Environment Agency dated 4th September 2018 (Project. Ref. RR-043);
- Relevant Representation from Kent County Council dated 10th September 2018 (Project. Ref. RR-038);
- Relevant Representation from Kent Wildlife Trust dated 12th September 2018 (Project. Ref. RR-048);
- Relevant Representation from RSPB dated 12th September 2018 (Project. Ref. RR-057);
- Meetings with Natural England on 5th October 2018 (and related actions and further information provided by Natural England on 16th November 2018) and also on 23rd November 2018;
- Relevant Representation from Marine Management Organisation dated 12th September 2018 (PINS Ref RR-049);
- Written Representation from Natural England dated 15th January 2019 (PINS Ref REP1-113);
- Written Representation from Environment Agency dated 15th January 2019 (PINS Ref REP1-092);
- Written Representation from Kent County Council dated 15th January 2019 (PINS Ref REP1-096);
- Written Representation from Kent Wildlife Trust dated 15th January 2019 (PINS Ref REP1-102);
- Natural England's responses to Examining Authority First Written Questions dated 15th January 2019 (PINS Ref REP1-116);
- Environment Agency's responses to Examining Authority's First Written Questions dated 15th January 2019 (PINS Ref REP1-092);
- Kent County Council's responses to Examining Authority's First Written Questions dated 15th January 2019 (PINS Ref REP1-097);
- Kent Wildlife Trust's responses to Examining Authority's First Written Questions dated 15th January 2019 (PINS Ref REP1-103); and
- Teleconference with Natural England on 23rd January 2019.

Table 4.1: Summary of consultation relating to the HRA process subsequent to the issue of the Revised Screening Report

Date and consultation phase/ type	Consultation and key issues raised	Section where comment addressed
30/08/2017 Email reply to PINS from Ministère de la transition écologique et solidaire	Under the Birds Directive (Wintering and Breeding Birds): ZPS Cap Gris Nez FR3110085 and ZPS Bancs des Flandres FR3112006.	<p>Note that onshore features are screened out due to the distances involved, with screening limited to species that occur offshore only.</p> <p>These two sites identified through the transboundary consultation were not included in the earlier HRA Screening Report. They have now been screened for LSE (section 13).</p>
	Under the Habitats directive (harbour porpoises, grey seals and harbour seal): ZSC Bancs des Flandres FR3102002, ZSC Ridens et dunes hydrauliques FR3102004 and ZSC Récifs et Caps Gris Nez Blanc Nez FR3102003.	<p>Marine mammals assessment alone (section 11.3) and in-combination (section 12.3) includes the following sites as relevant:</p> <ul style="list-style-type: none"> • Bancs des Flandres (harbour porpoise, harbour seal and grey seal); • Ridens et dunes hydrauliques (species screened in are harbour seal and grey seal, screened out based on screening distance is harbour porpoise, as the site is 30 km from the OECC and 50 km from the array); and • Récifs et Caps Gris Nez (screened out for harbour porpoise due to range (minimum distance of 43 km from the array – Table 7.6 of the Screening Report (Application Ref 5.2.1), screened in for harbour seal and grey seal only).
Offshore Ornithology Meeting minutes (04/10/2017)	The assessment, dependent on the date of submission, might be based on less than 24 months of project specific offshore survey.	The assessment is based on the three months of boat based survey data and 24 months of aerial survey data (presented in the Baseline Technical Report – Volume 4, Annex 4-1 (Application Ref 6.4.4.1)).
	Collision Risk Modelling (CRM) would be based on the Band method but its implementation (in a MicroSoft (MS)Excel or R-software package) would depend on the advice received from the SNCBs on the outputs of the reviews of the R-software package that they had commissioned.	CRM (section 11.4) is based on the Band method implemented in MSEXcel. The R-software package (Masden, 2015) was tested at an earlier stage and found to have issues. The cessation of its use was discussed and agreed with Natural England and RSPB. For further information on the CRM modelling see Volume 4, Annex 4-2: Collision Risk Modelling (Application Ref 6.4.4.2).
	The in-combination assessment of collision risk would build on the most recent set of predictions agreed by Natural England – that for East Anglia THREE.	The in-combination assessment of collision risk (section 11.4) does build on the collision predictions agreed by Natural England during the East Anglia THREE application process.
	Assessing disturbance and displacement – Natural England sought that the latest guidance from the SNCBs (2017) was followed.	The latest guidance from the SNCBs informs the assessment of disturbance and displacement (section 2).

Date and consultation phase/ type	Consultation and key issues raised	Section where comment addressed
	<p>The screening distance for potential disturbance of red-throated diver – Natural England and VWPL sought a distance based on different sources of evidence to be used.</p>	<p>The screening distance applied in the HRA Screening Report is that derived from a study of the construction phase of the London Array Offshore Wind Farm (OWF) (APEM, 2016).</p>
	<p>The in-combination assessment of red-throated diver disturbance and displacement was at risk of an unbalanced approach if data was drawn from past ESs without any revision to account for up-to-date knowledge.</p>	<p>The approach to the in-combination assessment of red-throated diver disturbance and displacement (section 12) has been altered. It is now based on an approach that applies the SeaMaST density data and as-built or proposed wind farm boundaries. This avoids the problems identified with collating figures from past ESs. This revised approach was discussed and agreed with RSPB and Natural England.</p>
<p>HRA Evidence Plan meeting (02/10/2017)</p>	<p>The revision in the project RLB was discussed, including the small area of subtidal for which no survey data is held (outside a designated site). Discussed and agreed with Natural England as not representing a risk to designated sites or EPS.</p>	<p>Noted.</p>
	<p>The permanent loss of a small area of saltmarsh was highlighted. Located within the Sandwich Bay SAC (not a designated feature) and Thanet Coast and Sandwich Bay SPA.</p>	<p>Since the Application was made, in response to further design refinement and relevant representations received, the Applicant has decided to propose the removal of landfall Option 2 from the proposed project design envelope. Therefore, there would be no permanent loss of saltmarsh habitat.</p>
	<p>Confirmed and agreed with Natural England that the RIAA will not repeat Screening in full, but would instead provide a summary (including any changes to screening) and append the Screening Report for reference.</p>	<p>Screening summarised in section 7, including changes to screening following issue of the Screening Report. The full Screening Report included as Annex 1 (Application Ref 5.2.1).</p>
	<p>Discussion was held on the screening distance for red-throated diver. VWPL proposed to apply a screening distance of 6.5 km, being applied purely as a screening range to determine the site(s) to be included for assessment - the range is not equivalent to LSE or AEoI. The value was derived from data at London Array and represents the distance at which a statistically significant level of displacement was found. Natural England noted that evidence exists at other, more distant, OWFs for a range greater than 6.5 km.</p>	<p>Screening carried out using 6.5 km. A footnote is appended to Table 7.3 in the HRA Screening Report.</p>
	<p>Clarification added that the assessment of AEoI would first provide an assessment of that affect, with the assessment based on conservation objectives (where available), the nature of the effect, existing project literature (including ES conclusions on significance) and project mitigation.</p> <p>In terms of transboundary sites screened in, no conservation objectives are available and it was agreed with Natural England to apply the SNS cSAC/SCI conservation objectives to assessment on harbour porpoise and the standard definition of Favourable Conservation Status (FCS) for assessment of harbour seal and grey seal.</p>	<p>Methodology for AEoI alone presented in section 11, for in-combination in section 12.</p> <p>Relevant aspects of transboundary sites (including harbour porpoise conservation objectives and standard FCS definition) provided in section 13.</p>

Date and consultation phase/ type	Consultation and key issues raised	Section where comment addressed
	<p>Confirmed that the in-combination assessment will be based on those plans and projects identified within relevant ES chapters, with these screened based on the maximum relevant screening distance. Determination of LSE in-combination to take account of available information, effect-pathway-receptor issues and potential for a physical/ temporal interaction. Tiering will be applied. Natural England agreed the presented approach seemed reasonable.</p>	<p>Methodology for AEol in-combination in section 12.</p>
	<p>The assessment for harbour porpoise will draw on the consideration of Permenant Threshold Shift (PTS) in the ES for consideration of viability. Information on Temporary Treshold Shift (TTS) is provided within the ES (Volume 2, Chapter 7: Marine Mammals (Application Ref 6.2.7)).</p> <p>In terms of disturbance, an Effective Deterrent Radius (EDR) of 26 km will be applied for piling and Unexploded Ordnance (UXO) clearance, with 5 – 10 km applied for seismic survey (10 km for air gun only).</p> <p>Natural England agreed with the parameters.</p>	<p>Definition of viability and disturbance for harbour porpoise presented in section 9.</p>
	<p>Embedded mitigation will remove direct LSE from the bird features of the SPA/ Ramsar, with intertidal mitigation during construction to follow that applied to Nemo (i.e. seasonal restriction between October and March). Work hours discussed at the time related to 7am to 7pm working (7 days a week) in broad working areas, with a request for 24 hour working at landfall for cable pulling. If Option 1 cable route is selected, a short discrete event may be required to cross the TOWF cable within Sandwich road. Other discrete events may be required for 24 hour working during commissioning or concrete laying as exceptional events – would involve staff present with hand tools and not heavy plant.</p> <p>Further work is required to determine issues around habitats of the Thanet Coast and Sandwich Bay SPA and Thanet Coast and Sandwich Bay Ramsar.</p>	<p>The project design has since been amended and a revised list of possible exceptions to 7am to 7pm working is provided (sections 5 and 6).</p> <p>Note that changes have been made to the cable route options following consultation (sections 5 and 6).</p> <p>Embedded mitigation is detailed in Table 6.1.</p> <p>Updates to Screening are presented in section 7.</p> <p>The potential for AEol for the intertidal habitats of the Thanet Coast and Sandwich Bay SPA and Thanet Coast and Sandwich Bay Ramsar is assessed and presented in section 11 (alone) and section 12 (in-combination).</p>
	<p>Natural England requested information on the efficacy of saltmarsh recovery and mitigation from previous cables in the local area. GoBe confirmed that there was rapid recovery (2010-2012) of saltmarsh for TOWF, with the saltmarsh habitat relevant to Thanet Extension being similar to that found at the TOWF landfall. The landfall for Thanet Extension has been selected partly due to the existing narrowing in the saltmarsh habitat, to minimise interaction with the saltmarsh. Horional Directional Drilling (HDD) under the saltmarsh is considered high risk and if it failed would require lengthy trenching through primary saltmarsh.</p>	<p>Noted.</p> <p>HDD under the saltmarsh is now included as a potential option, although its feasibility can only be confirmed following Site Investigation works, which have yet to be completed (section 5).</p>

Date and consultation phase/ type	Consultation and key issues raised	Section where comment addressed
	UXO clearance will be included within the RIAA.	UXO clearance included for the assessment on AEoI alone in section 11 (alone) and section 12 (in-combination).
	RSPB confirmed they had no further comment on the HRA and agreed on the proposed in-combination approach.	Noted.
Letter from Natural England (by email) dated 26/10/2017	A full appraisal of why the southern landfall route has been dropped is required, including quantitative reasoning and evidence.	Volume 1, Chapter 4: Site Selection and Alternatives (Application Ref 6.1.4). A summary is provided in section 5.
	The landfall will result in a permanent loss of saltmarsh, which falls within the Sandwich Bay SAC, Thanet Coast and Sandwich Bay SPA and Thanet Coast and Sandwich Bay Ramsar. Natural England is concerned about the amount of saltmarsh being lost and the associated cumulative impacts during and after construction. Any permanent loss needs to be clearly put in the context of the designated sites, with the potential area to be lost stated in m ² / km ² , with associated figures illustrating the potential loss provided. The potential construction footprint must be provided to determine how far reaching disturbance will be. The evidence for why there has to be a loss of designated saltmarsh and if any alternatives were considered needs to be presented.	Since the Application was made, in response to further design refinement and relevant representations received, the Applicant has decided to propose the removal of landfall Option 2 from the proposed project design envelope. Therefore, there would be no permanent loss of saltmarsh habitat.
	The extension of the seawall has the potential to act as a barrier to the natural accretion and erosion of saltmarsh in the area, which could encourage erosion or accretion. Further information on coastal geomorphology in the area is required.	Since the Application was made, in response to further design refinement and relevant representations received, the Applicant has decided to propose the removal of landfall Option 2 from the proposed project design envelope. Therefore, there would be no extension to the seawall.
	Further consideration is required for indirect effects caused by displacement of recreational pressure from the country park to other areas	The issue has been screened in for potential LSE (section 7) and therefore assessed for potential adverse effects on qualifying bird species for the Thanet Coast and Sandwich Bay SPA and Thanet Coast and Sandwich Bay Ramsar in section 11 (Thanet Extension alone) and section 12 (in-combination).
	Feasibility of applying the SeaMAST mapping tool to assess the cumulative EIA for red-throated diver.	The approach has been used of applying the SeaMaST data set in the cumulative / in-combination assessment of red-throated diver disturbance and displacement.

Date and consultation phase/ type	Consultation and key issues raised	Section where comment addressed
Response by Natural England under Section 42 (by email) dated 12/01/2018	Key concern is the proposed permanent loss of saltmarsh at the landfall, with respect to the Thanet Coast and Sandwich Bay SPA. The proposals are a permanent loss (of up to 1,399 m ²) and there is no assessment of potential impacts to changes in physical processes (such as erosion and accretion), potential for leachate contamination from the landfill or functional loss of habitat for SPA birds. There is a lack of information about alternative cable routes and/ or installation methodologies discounted. It is anticipated that further information regarding extensive mitigation, offsetting habitat losses and biodiversity enhancement options will follow, once a landfall option has been agreed.	Since the Application was made, in response to further design refinement and relevant representations received, the Applicant has decided to propose the removal of landfall Option 2 from the proposed project design envelope. Therefore, there would be no permanent loss of saltmarsh habitat.
	The Outer Thames Estuary Extension SPA has now been designated and treated as a whole site.	Text throughout has been updated to reflect the change, with the assessment made on that basis (see section 11 and 12).
	Consideration of the Habitats Regulations should not be excluded from the PEI and eventual ES.	Full consideration of the Habitats Regulations provided within the RIAA, with the Habitats Regulations referred to within the ES as relevant.
	Concerned about disturbance by construction vehicles on protected sites and species within the vicinity of the landfall.	Impacts resulting from construction disturbance to qualifying features for the Thanet Coast and Sandwich Bay SPA and Thanet Coast and Sandwich Bay Ramsar and their supporting habitats are considered in the revised screening in section 7 and, where relevant, in section 11 (Thanet Extension alone) and section 12 (in-combination).
	The potential cumulative and disturbance effects the replacement of the existing Thanet cable will potentially cause.	The Thanet Cable Replacement project is no longer being pursued and as such an in-combination impact assessment is not required.
	Natural England would like to see use of HDD being revisited and discussions around mitigation and further landfall options, whether further north or south and both within and outside of Pegwell Bay, to continue. Welcome further site investigation works.	HDD under the saltmarsh is now included as a potential option, although its feasibility can only be confirmed following Site Investigation works, which have yet to be completed (section 5).
	Natural England disagrees with the assumption that no red-throated divers are displaced from the 4 km buffer to the proposed extension. We advise that the assessment should be based on an assumption of 100 % displacement occurring out to 4 km, as per the 2017 joint SNCB advice note on assessing disturbance.	The assessment of displacement has been carried out using the local site based evidence of no displacement from outside of the proposed Thanet Extension. Supplementary information has been provided to identify what is the population in the 4 km buffer to allow Natural England to draw their conclusions if they judge that appropriate (section 11).
	Natural England deem it inappropriate to assess the cumulative impacts on red throated diver by taking figures from environmental statements, and instead data should be taken from a single source such as JNCC designation data.	The approach of using a single source has been adopted and the SeaMaST data set has been applied in the cumulative/ in-combination assessment of red-throated diver disturbance and displacement (section 12).

Date and consultation phase/ type	Consultation and key issues raised	Section where comment addressed
	The assessment of displacement mortality for each season is presented separately without consideration of impacts on populations across the whole annual cycle. Natural England advise that displacement impacts calculated for individual seasons should be summed across seasons to allow assessment of the annual impact on the population.	Information on individual seasons and the sum across the seasons has been applied in the assessment (section 11).
	The use of the Masden model for collision risk modelling, it is still currently undergoing testing and we advise that the Band (2012) model is used and that the outputs are presented to account for variability in the input parameters (especially densities of birds in flight, flight heights and avoidance rates).	CRM is based on the Band method implemented in MSEXcel (section 11).
	From Thursday 30 November 2017, the Conservation of Habitats and Species Regulations 2010 and the Offshore Marine Conservation (Natural Habitats, &c.) Regulations 2007 were consolidated and replaced with the Conservation of Habitats and Species Regulations 2017 (or 'the Habitats Regulations 2017') and the Conservation of Offshore Marine Habitats and Species Regulations 2017 (or the 'Offshore Habitats regulations 2017').	Text amended throughout
	Based on the Marine water and sediment quality chapter, Natural England agrees that no LSE can be concluded for the topics of Marine Water and Sediment Quality.	Noted
	Requested greater consideration to the possible effects of visitor displacement to more sensitive areas of the coast and how any effects can be mitigated, particularly around busy periods of the year such as national holidays.	The issue has been screened in for potential LSE (section 7) and therefore assessed for potential adverse effects on qualifying bird species for the Thanet Coast and Sandwich Bay SPA and Thanet Coast and Sandwich Bay Ramsar in section 11 (Thanet Extension alone) and section 12 (in-combination).
	Requested further information regarding the habitat requirements of Ramsar wetland invert assemblage species in order to determine how likely they are to be affected. Also requested further details of relevant mitigation measures.	Updates to screening, including screening of the potential for LSE in respect of the Thanet Coast and Sandwich Bay Ramsar wetland invertebrate assemblage, are discussed in section 7. Embedded mitigation measures are set out in Table 6.1. Assessment of adverse effects is provided in section 11 (Thanet Extension alone) and section 12 (in-combination).

Date and consultation phase/ type	Consultation and key issues raised	Section where comment addressed
	<p>Construction impacts on European golden plover (non-breeding) – the desk study showed no evidence of farmland use within the RLB and none recorded during bird surveys. Therefore, the only issue is birds using the saltmarsh and other intertidal areas. Primary embedded mitigation measure to address most construction impacts is timing of all intertidal and shoreline works to avoid the key months of Oct-March, which has been accepted as appropriate mitigation for other similar schemes. Construction Environment Management Plan (CEMP) is considered to address any air and water pollution issues. Overall conclusion is that adverse effects from construction would not be significant. NE agree this conclusion is accurate, although requested further information within a draft CEMP.</p>	<p>Noted.</p> <p>Timing restrictions would apply to construction works in the intertidal and at the landfall (see Table 6.1).</p> <p>Updates to screening of the potential for LSE in respect of the Thanet Coast and Sandwich Bay SPA and Thanet Coast and Sandwich Bay Ramsar, are discussed in section 7. The potential for AEoI is assessed and presented in section 11 (alone) and section 12 (in-combination).</p> <p>A Code of Construction Practice (CoCP), which includes a section setting out the principles upon which a detailed CEMP will be based, is provided with the application (Application Ref 8.1). A detailed CEMP will be provided in accordance with the CoCP pre-commencement.</p>
	<p>Construction impacts on ruddy turnstone (non-breeding) – the peak count from winter surveys was 0.9% of the SPA population. The majority of the population was found in northern areas of the SPA towards Whitstable. The low numbers displayed and the species general tolerance of disturbance and artificial habitats is stated. CEMP to address pollution issues. Overall conclusion is that adverse impacts from construction would not be significant. The embedded mitigation for European golden plover regarding the timing of works will also benefit ruddy turnstone.</p>	<p>Noted.</p> <p>As above, a CoCP, which includes a section setting out the principles upon which a detailed CEMP will be based, is provided with the application (Application Ref 8.1). A detailed CEMP will be provided in accordance with the CoCP pre-commencement.</p>
	<p>Welcomed the intention to continue the timing of any intertidal or shoreline O&M works to avoid key over-wintering bird period of Oct-March.</p>	<p>Timing restrictions would apply to construction works in the intertidal and at the landfall (see Table 6.1).</p> <p>Updates to screening of the potential for LSE in respect of the Thanet Coast and Sandwich Bay SPA and Thanet Coast and Sandwich Bay Ramsar, are discussed in section 7. The potential for AEoI is assessed and presented in section 11 (alone) and section 12 (in-combination).</p>
<p>Response by MMO under Section 42 (by email) dated 11/01/2018</p>	<p>The PEIR refers to mitigation which is to be secured through reports (e.g. Marine Pollution Contingency Plan, Marine Mammal Mitigation Plan). When the DCO and embedded DML is drafted, any such reports which require approval must be secured via conditions within the DML.</p>	<p>Embedded mitigation, including the route for securing the mitigation, is presented in Table 6.1.</p>
	<p>The met mast, which is included in the overall Project Description, needs to be assessed in all relevant chapters.</p>	<p>Project description for each topic has been drawn from the relevant ES chapter and includes the met mast as appropriate.</p>
	<p>The Thanet cable replacement needs to be included in the in-combination assessment.</p>	<p>The Thanet Cable Replacement project is no longer being pursued and as such an in-combination impact assessment is not required.</p>

Date and consultation phase/ type	Consultation and key issues raised	Section where comment addressed
	UXO removal or detonation (if required) has licensing requirements and Rochdale Envelope applies.	UXO removal or detonation is included (where relevant) in the assessment alone (section 11) and in-combination (section 12), with a worst-case scenario assumed (in terms of anticipated number, type, location of UXO).
	Assessment of the cofferdam will be included within the final application.	The impacts from the use of a cofferdam during works to the seawall have been assessed in the relevant ES chapters and is included here as regards temporary disturbance during construction in relation to relevant designated site features.
Response by Kent Wildlife Trust under Section 42 dated 12/01/2018	Queried the cable route selection suggesting that a “favoured route” had already been selected by Vattenfall prior to consultation. KWT believe the proposed cable route is potentially a highly environmentally-damaging choice, likely to cause significant harm to an internationally and nationally designated site and strongly object to the proposal.	The consideration of alternatives is discussed in section 5.3.
	Expressed concerns regarding cumulative impacts and highlighted the potential for cumulative impacts in relation to the repair of cables for the existing Thanet Offshore Wind Farm.	The assessment of adverse effects in-combination is provided in section 12. The Thanet Cable Replacement project is no longer being pursued and as such an in-combination impact assessment is not required.
	It is important that a site based approach is taken to the Southern North Sea cSAC/SCI HRA assessment. The Wildlife Trusts do not support the existing threshold based approach to assessment. More monitoring of harbour porpoise is required in relation to the cSAC, including pre, during and post construction monitoring of noise levels. In addition, a programme of harbour porpoise monitoring is required, again pre, during and post construction, to understand harbour porpoise distribution and the impacts of wind farm development on this.	The assessment of the SNS cSAC/SCI follows current SNCB guidance and best practice advice.
	UXO noise impacts need to be included.	UXO is included within the assessment for marine mammals alone (section 11) and in-combination (section 12).
	The marine mammal cumulative assessment needs to include all activities, including UXO clearance, geophysical surveys, aggregate extraction and dredging, navigation and shipping (presence/numbers and collision risk), commercial fishing, cables and pipelines and coastal developments.	The in-combination assessment for marine mammals includes all relevant plans and projects screened in, and follows the precedent set by previous such assessments (including the recent BEIS AA for East Anglia ONE ⁹).

⁹<https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010025/EN010025-002920-East%20Anglia%20ONE%20Requirement%2036%20-%20Record%20of%20Appropriate%20Assessment%20of%2017%20.pdf>

Date and consultation phase/ type	Consultation and key issues raised	Section where comment addressed
Response by Environment Agency under Section 42 dated 12/01/2018	Permanent loss of habitat at landfall. Objection to the loss and suitable alternatives have not been considered sufficiently.	Since the Application was made, in response to further design refinement and relevant representations received, the Applicant has decided to propose the removal of landfall Option 2 from the proposed project design envelope. Therefore, there would be no permanent loss of saltmarsh habitat.
Section 42 Consultation Response to PEIR from RSPB dated 12/01/18	Collection of a full 24 months of baseline data is needed for the assessment. We strongly recommend the use of 24 months of data to capture environmental and seasonal variability.	The assessment is based on the three months of boat based survey data and 24 months of aerial survey data (presented in the Baseline Technical Report – Volume 4, Application Ref 6.4.4.1).
	Both for construction and operational impacts for red-throated diver, we do not agree that the spatial extent of the displacement assessment should be limited to the presentation of impacts on birds within the extension footprint and both should include a 4km buffer. We maintain that a precautionary approach would be to assume all birds within the 4km were potentially affected during both construction and operation.	The assessment of displacement has been carried out using the local site based evidence of no displacement from outside of the proposed Thanet Extension. Supplementary information has been provided to identify what is the population in the 4 km buffer to allow the RSPB to draw their conclusions if they judge that appropriate (section 11).
	Whilst there is uncertainty around the validity of the outputs of the R-based stochastic CRM (“Masden” model) then the previous spread-sheet based Band model should be reverted to, whilst still incorporating some uncertainty.	CRM is based on the Band method implemented in spreadsheets run in MSEXcel (section 11).
	We accept that cumulative / in-combination assessment is problematic as are the multiple issues surrounding the use of ‘historical’ data. To circumvent these issues, we suggest the use of a ‘common’ underlying dataset of diver abundance, which covers the region of interest; to which the same impact (100% displacement over 4km buffers) could be applied to all sites of interest. This, for example, could use the SeaMaSTs data set and previously discussed during consultation meetings.	The approach of using a single source has been adopted and the SeaMaST data set has been applied in the cumulative / in-combination assessment of red-throated diver disturbance and displacement (section 12).
	Requested further detail on the amount and location of intertidal habitat, potentially used by SPA designated species such as European golden plover and ruddy turnstone, to be permanently lost. Also requested details of mitigation measures proposed for permanent loss of designated and functionally linked habitat.	Updates to screening, including screening of the importance of the saltmarsh which may be lost for qualifying features of Thanet Coast and Sandwich Bay SPA and Thanet Coast and Sandwich Bay Ramsar are discussed in section 7.
	Requested further information regarding usage of inland non-intertidal habitat by European golden plover, noting that usage may vary between daytime and night time.	Updates to screening, including screening of the potential for LSE in respect of inland non-intertidal habitat used by European golden plover, are discussed in section 7.

Date and consultation phase/ type	Consultation and key issues raised	Section where comment addressed
	Noted that little tern was identified as a designated species of the SPA. It is acknowledged that the species is not currently breeding at the SPA but requested guarantees that none of the work will have an impact on the historical breeding site that would prevent the species from recolonising in the future.	Updates to screening, including screening of the potential for LSE in respect of breeding little tern, are discussed in section 7.
Ministere de la Transition Ecologique et Solidaire dated 12/01/2018	<p>Thanet Extension could impact some species and habitats listed under the Habitats and Birds Directives, as follows:</p> <ul style="list-style-type: none"> • Bancs des Flandres (grey seal and harbour porpoise); • Ridens et dunes hydrauliques (grey seal, harbour seal and harbour porpoise); • Recifs Gris Nez Blanc Nez (grey seal, harbour seal, harbour porpoise); • Bancs des Flandres (lesser black-backed gull, great black-backed gull, northern gannet and black-legged kittiwake); • Cap Griz Nez (northern gannet, black-legged kittiwake, razorbill, red throated diver, lesser black-backed gull, great black-backed gull, herring gull and guillemot); • Littoral seino-marin (northern gannet, black-legged kittiwake, razorbill, red throated diver, lesser black-backed gull, great black-backed gull, herring gull and guillemot) and • Estuaire de la Canche (red throated diver). 	<p>Sites for marine mammals included through screening in section 7.</p> <p>Bird interest features:</p> <p>Bancs des Flandres SPA was included in the additional screening process (Section 7)</p> <p>Cap Griz Nez SPA was included in the additional screening process (Section 7)</p> <p>Littoral Seino-marin SPA was considered in the early scoping phase of the LSE screening process and the additional screening process (Section 7) but as it is at a greater distance from Thanet Extension (~160 km) than either Bancs des Flandres SPA or Cap Griz Nez SPA, it was excluded from the scope of screening.</p> <p>Estuaire de la Canche SPA was considered in the early scoping phase of the LSE screening process and the additional screening process (Section 7) but as it is at a greater distance from Thanet Extension (~100 km) than either Bancs des Flandres SPA or Cap Griz Nez SPA, it was excluded from the scope of screening.</p>
	In-combination to include French offshore wind farm projects at Fecamp, Courseulles s/Mer and Dieppe-Le Treport.	Included within the in-combination screening assessment in section 8.
Agence Francaise pour la Biodiversite (Technical Report) dated 12/01/2018	Focus is on the marine mobile species, such as sea birds and marine mammals, as qualifying features within French Natura 2000 sites.	Noted
	Questioned how effects are considered significant and assessed	The relevant topic chapters within the ES define significance for each topic, with the method followed within the RIAA for determining potential adverse effect defined within sections 11 (alone) and 12 (in-combination).
	Recommended screening in qualifying mobile species that may interact with potential effects associated with Thanet Extension.	The screening ranges applied (see section 7 and the original Screening Report in Annex 1 (Application Ref 5.2.1) take account of the spatial extent of relevant effects.

Date and consultation phase/ type	Consultation and key issues raised	Section where comment addressed
	<p>The main effect is underwater noise associated with piling – the Bancs des Flandres site (harbour porpoise and grey seal) requires consideration. Other sites that may be affected (harbour porpoise, harbour seal and grey seal) are the Recifs Gris Nez Blanc Nez and Ridens et Dunes hydrauliques</p>	<p>All these designated sites are included for screening in section 7.</p>
	<p>Plans that should be considered in-combination for underwater noise are the Dieppe-Le Treport OWF and the Dunkirk OWF</p>	<p>Proposals added to the in-combination screening process in section 8.</p>
	<p>Nesting seabirds and their foraging areas that could overlap Thanet Extension require consideration. As regards collision risk, potential LSE could be identified for the Bancs des Flandres (northern gannet, kittiwake, lesser black-backed gull and great black-backed gull), Cap Gris Nez (northern gannet and kittiwake) and Littoral Seino-marin (northern gannet, kittiwake, razorbill, guillemot, lesser black-backed gull, herring gull and great black-backed gull. There is a particular concern for lesser black backed gull and great black backed gull from Bancs des Flandres and kittiwake in Cap Gris Nez as their foraging ranges overlap the array.</p>	<p>Bancs des Flandres SPA and Cap Griz Nez SPA were included in the additional screening process and screened out for the reasons given in Section 7.</p> <p>Littoral Seino-marin SPA was considered in the early scoping phase of the LSE screening process and the additional screening process (Section 7) but as it is at a greater distance from Thanet Extension (~160 km) than either Bancs des Flandres SPA or Cap Griz Nez SPA, it was excluded from the scope of screening.</p>
	<p>Plans that should be considered in-combination for collision risk are the Calvados OWF, Fecamp OWF (both permitted but not yet implemented), Dieppe-Le Treport OWF (submitted but not yet permitted) and the Dunkirk OWF (not yet attributed)</p>	<p>As above, where not previously included for incombination sceening, proposals have been added for consideration in section 8.</p>
	<p>It is recommended that the barrier effect for birds is considered for lesser black backed gull and great black backed gull at the Bancs des Flandres and kittiwake at Cap Gris Nez during the breeding season (although birds are less sensitive to barrier than collision).</p>	<p>Bancs des Flandres SPA and Cap Griz Nez SPA were included in the additional screening process and screened out for the reasons given in Section 7.</p>
	<p>Disturbance and displacement is more significant during operation and maintenance. Most sensitive species are Bancs des Flandres (razorbill, guillemot, red throated diver), Cap Gris Nez (red throated diver, razorbill and guillemot), Estuarire de la Canche (red throated diver) and Littoral Seino-marin (red throated diver, razorbill and guillemot). The barrier effect must be considered as a significant effect for red throated diver.</p>	<p>Bancs des Flandres SPA was included in the additional screening process (Section 7)</p> <p>Cap Griz Nez SPA was included in the additional screening process (Section 7)</p> <p>Littoral Seino-marin SPA was considered in the early scoping phase of the LSE screening process and the additional screening process (Section 7) but as it is at a greater distance from Thanet Extension (~160 km) than either Bancs des Flandres SPA or Cap Griz Nez SPA, it was excluded from the scope of screening.</p> <p>Estuaire de la Canche SPA was considered in the early scoping phase of the LSE screening process and the additional screening process (Section 7) but as it is at a greater distance from Thanet Extension (~100 km) than either Bancs des Flandres SPA or Cap Griz Nez SPA, it was excluded from the scope of screening.</p>

Date and consultation phase/ type	Consultation and key issues raised	Section where comment addressed
	Regarding the cumulative effect of disturbance, displacement and barrier effect, the assessment needs to take account of the Calvados, Fecamp, Dieppe-Le Treport and Dunkirk OWFs during migration.	As above, where not previously included for in-combination scening, proposals have been added for consideration in section 8.
	Areas of ecological functional importance require consideration for seabirds, marine mammals, fish and shellfish.	The assessment includes consideration of the conservation objectives for the designated sites when considering the potential for an adverse effect. Broader issues around ecological importance are addressed within the ES.
	There is a general recommendation for sharing information between UK and French projects.	Noted. The in-combination assessment draws on publicly available information.
	Uncertainty regarding the screening ranges applied – particularly 55km for diadromous fish and 26km for marine mammals – greater explanation required.	The screening ranges applied (see Table 7.3 in the original Screening Report in Annex 1 (Application Ref 5.2.1)) take account of the spatial extent of relevant effects.
	The Alderney west coast and Burhou Islands Ramsar includes northern gannet and requires consideration.	The Alderney West Coast and Burhou Islands Ramsar site and its breeding interest feature gannet was considered in the early scoping phase of the LSE screening process and the additional screening process (Section 7) but as gannet were only recorded in very small numbers in the surveys conducted during the breeding season and the Ramsar site is at a greater distance from Thanet Extension (~340 km) than either Bancs des Flandres SPA or Cap Griz Nez SPA, it was excluded from the scope of screening.
Agence Francaise pour la Biodiversite dated 12/01/2018	<p>The main significant effect during construction for qualifying mobile species is underwater noise from piling, which could affect marine mammals at distance including at:</p> <ul style="list-style-type: none"> • Bancs des Flandres SAC (harbour porpoise concentration in the winter, some haul out sites for grey seal, together with foraging range of harbour seal, grey seal and harbour porpoise); • Recifs Gris Nez Blanc Nez SAC (foraging range of harbour seal, grey seal and harbour porpoise); • Ridens et dunes hydrauliques (foraging range of harbour seal, grey seal and harbour porpoise). 	All these designated sites have been considered through screening in section 7, with underwater noise considered for LSE.
	<p>Nesting seabirds</p> <p>Bancs des Flandres SPA and the breeding interest features lesser black-backed gull and great black-backed gull</p> <p>Cap Griz Nez SPA and the breeding interest feature kittiwake</p>	Bancs des Flandres SPA and Cap Griz Nez SPA were included in the additional screening process and screened out for the reasons given in Section 7.

Date and consultation phase/ type	Consultation and key issues raised	Section where comment addressed
	<p>Wintering/migrating birds</p> <p>Bancs des Flandres SPA and the wintering/migrating interest features red-throated diver, razorbill and guillemot</p> <p>Cap Griz Nez SPA and the wintering/migrating interest features red-throated diver, razorbill and guillemot</p> <p>Littoral Seino-marin SPA and the wintering/migrating interest features red-throated diver, razorbill and guillemot</p> <p>Estuaire de la Canche SPA and the wintering/migrating interest feature red-throated diver</p>	<p>Bancs des Flandres SPA was included in the additional screening process and screened out for the reasons given in Section 7.</p> <p>Cap Griz Nez SPA was included in the additional screening process and screened out for the reasons given in Section 7.</p> <p>Littoral Seino-marin SPA was considered in the early scoping phase of the LSE screening process and the additional screening process (Section 7) but as it is at a greater distance from Thanet Extension (~160 km) than either Bancs des Flandres SPA or Cap Griz Nez SPA, it was excluded from the scope of screening.</p> <p>Estuaire de la Canche SPA was considered in the early scoping phase of the LSE screening process and the additional screening process (Section 7) but as it is at a greater distance from Thanet Extension (~100 km) than either Bancs des Flandres SPA or Cap Griz Nez SPA, it was excluded from the scope of screening.</p>
	<p>In-combination assessment of underwater noise to include French offshore wind farm projects at Dieppe-Le Treport and eventually Dunkirk.</p>	<p>As above, where not previously included for incombination scening, proposals have been added for consideration in section 8.</p>
	<p>In-combination assessment of offshore birds at Fecamp, Calvados, Dieppe-Le Treport and eventually Dunkirk.</p>	<p>As above, where not previously included for incombination scening, proposals have been added for consideration in section 8.</p>
<p>Email from Natural England dated 26th February 2018</p>	<p>Ramsar Invertebrate Assemblage – Natural England confirmed that the wetland invertebrate assemblage qualifying feature for the Thanet Coast and Sandwich Bay Ramsar Site refers to the 14 species listed in Section 22 (page 6) of the Ramsar Information Sheet.</p> <p>Displacement of recreational users from Pegwell Bay Country Park – Natural England confirmed that their main concern is that people will be displaced from the Country Park onto the intertidal areas of Pegwell Bay itself, north of the river Stour in particular.</p>	<p>Updates to screening, including screening of the potential for LSE in respect of the Thanet Coast and Sandwich Bay Ramsar wetland invertebrate assemblage, are discussed in section 7.</p> <p>Embedded mitigation measures are set out in Table 6.1.</p> <p>Assessment of adverse effects on Ramsar wetland invertebrate assemblage species is provided in section 11 (Thanet Extension alone) and section 12 (in-combination).</p> <p>The issue has been screened in for potential LSE (section 7) and therefore assessed for potential adverse effects on qualifying bird species for the Thanet Coast and Sandwich Bay SPA and Thanet Coast and Sandwich Bay Ramsar in section 11 (Thanet Extension alone) and section 12 (in-combination).</p>
<p>Kent Wildlife Trust response to the draft RIAA dated 18th May 2018</p>	<p>Distribution of Evidence Plan documents to interested parties.</p> <p>KWT noted that the RIAA document should have been circulated to interested parties and stakeholders to ensure transparency in the process and a better level of understanding of the project for those involved.</p>	<p>VWPL have consulted with the Evidence Plan throughout with regards the RIAA and confirm that the RIAA will be available for review with the wider application documents following submission of the application.</p>

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	<p>Re-direction to other documents: KWT noted issues inherent in directing readers to other documents, identifying some of these were not available for review.</p>	<p>VWPL are aware that readers are referenced to more detailed documents for specific information at key points in the RIAA. This is partly to ensure that the RIAA remains at a manageable size but also to avoid overburdening consultees by presenting the same information multiple times. Please note that ES chapters do build on the PEIR, which is already available, with the HRA Screening Report having been issued for consultation in 2017. All the documents referred to in the RIAA will be available with the final application (unless specifically noted to follow).</p> <p>Please note that paragraph 5.3.3 of the RIAA (within section 5.3 Consideration of Alternatives) references the ES chapter and not the PEIR chapter.</p>
	<p>Onshore Cable replacement; request for additional information on the reasons for the Thanet Cable Replacement Project being cancelled.</p>	<p>Further consideration of Thanet Cable Replacement (beyond identification of the withdrawal of the project and therefore its removal from consideration within the Thanet Extension RIAA) is not considered relevant to this document or Application. No further update or information is therefore available or provided here.</p>
	<p>Onshore consideration of alternatives. Issues and questions raised relating to site selection and highlighting that KWT consider that alternatives should be considered prior to applying mitigation to reduce effects on an option selected which interacts with designated sites.</p>	<p>Please note that 2 options remain for the landfall option with option 2 now discounted.</p> <p>Reference to where site selection and alternatives is addressed has been added to the Natural England comment.</p> <p>Regards Section 5.3 of the RIAA, this section is not intended to present the results of consultation (or the position of individual consultees), with that information presented in Table 4.1. The purpose of this section is to summarise the process followed and who has been involved.</p> <p>Regarding the designations mentioned at the landfall, please note that the RIAA is only concerned with the SAC, SPA and Ramsar. All designations are addressed within the ES. As regards consideration of site selection and alternatives, this is presented in the PEIR and has been updated within the main ES chapter as referenced here (volume 1 chapter 4).</p>
	<p>Onshore habitat loss – welcomed the inclusion of certain wetland invertebrate species in the RIAA but suggested that other species and assemblages should also be included, including the plant species tansy (<i>Tanacetum vulgare</i>) which supports an assemblage of nationally rare invertebrates.</p> <p>Disagreed that habitat loss for breeding little tern should be screened out and noted that substantial efforts to encourage little terns to return to breed in the SPA were ongoing.</p>	<p>Natural England has confirmed that the wetland invertebrate assemblage qualifying feature for the Thanet Coast and Sandwich Bay Ramsar Site refers only to the 14 species listed in Section 22 (page 6) of the Ramsar Information Sheet. Of these species, only three species (<i>Eluma caelata</i>, <i>Alysson lunicornis</i> and <i>Ectemnius ruficornis</i>) could potentially be present within Stonelees based on their habitat requirements (see ES Volume 5, Annex 5-6: Invertebrate Assessment (Application Ref 6.5.5.6)). The other invertebrate species and assemblages referred to, including invertebrates associated with tansy, are therefore not relevant to the RIAA. An assessment of effects on invertebrates not forming part of the Ramsar wetland invertebrate assemblage is provided in the ES, Volume 3, Chapter 5: Onshore Biodiversity (Application Ref 6.3.5).</p> <p>As set out in Section 7.5 of the RIAA, little tern has not bred at Pegwell Bay for a number of years. Furthermore, the former breeding site was located to the east of the River Stour, which will not be affected by the proposed development. Both Natural England and RSPB have agreed that LSE relating to habitat loss for little tern can be screened out.</p>

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	<p>Offshore habitat loss.</p> <p>Further detail requested on the increase in subtidal benthic habitat loss (since PEIR) and the habitats affected.</p> <p>KWT questioned the loss of chalk reef as a ‘temporary’ impact.</p> <p>Anchoring on chalk seabed identified as being highly damaging to the habitat and should not be permitted during construction or O&M activities.</p>	<p>Further detail on this is provided within the relevant chapter of the ES (Volume 2, Chapter 5: Benthic Subtidal and Intertidal Ecology), which updates that of the PEIR. The RIAA takes account of offshore habitat loss as it relates to the relevant designated sites only, with the ES addressing all habitat loss.</p> <p>The comment regarding chalk reef in the Thanet Coast SAC - is presumed to relate to Table 7.3. Potential for habitat loss or disturbance is considered during construction/decommissioning (with any such affects being temporary) and in O&M (with any such effects being permanent). Please note that this table relates to issues screened in for LSE - ie the issues carried forward to subsequent sections of the RIAA.</p> <p>The comment regarding vessel anchoring has been deleted. Regarding chalk reefs, please note the committment to micro-siting referenced in Table 6.1.</p>
	<p>Offshore micro-routing and micro-siting.</p> <p>KWT queried the potential to avoid the Thanet Coast SAC and MCZ entirely and if not possible then micro-routeing should be adopted to avoid key features. The potential for Sabellaria reefs to form in the area was also highlighted.</p>	<p>The MCZ is addressed separately and is not within the RIAA.</p> <p>See Table 6.1 for confirmation of micrositing.</p> <p><i>Sabellaria spinulosa</i> reef are not included as a feature within any of the designated sites assessed and therefore have not been assessed within the RIAA. Biogenic reefs are addressed within the ES.</p>
	<p>Offshore mitigation efforts</p> <p>Requests made that the principles underpinning the Biogenic Reef Mitigation Plan would commence with avoidance as a first step, with mitigation brought in where this is not possible.</p> <p>Information was also sought on the timings of UXO clearance as well as the opportunity to see details of the mitigation plans associated with the project as and when these become available.</p>	<p>Regarding the biogenic reef mitiation plan, we would refer you to Table 6.1 where it references the plan including that it will be developed and agreed with the relevant stakeholders prior to construction and secured through the DCO.</p> <p>Please note that the MCZ is not part of the RIAA but is considered within the ES.</p> <p>Consultation on the MMMP (piling) will follow. Should a requirement for UXO clearance be confirmed, then a UXO-MMMP will be drafted as part of the Marine Licence application, including consultation, at that point.</p> <p>The various mitigation plans will be issued as noted in Section 8.5.</p>
	<p>MCZ assessment; KWT noted its enthusiasm to review the MCZ assessment, raising the need to include the Goodwin Sands rMCZ.</p>	<p>The MCZ assessment is outwith the RIAA.</p>
<p>Natural England response to the draft RIAA dated 21st May 2018</p>	<p>Sweetman II Judgement</p> <p>NE identified that, though an official position is yet to be determined, the Sweetman II case should be considered with respect to the screening of LSE.</p>	<p>LSE screening has been revisited, with any effects previously screened out based on relevant mitigation screened back in (see Sections 7 and 8) and subsequently assessed for AEoI in Sections 11 and 12 as appropriate.</p>

Date and consultation phase/ type	Consultation and key issues raised	Section where comment addressed
	<p>Loss of saltmarsh habitat</p> <p>NE noted that of the three landfall options, the decision on two of these relied upon additional data being collected and suggested that it would welcome the acquisition of such data as soon as possible.</p> <p>NE also noted that the permanent loss of saltmarsh habitat raised the potential for a LSE to occur on the Thanet Coast and Sandwich Bay SPA and Ramsar (as a supporting habitat) and subsequently advised the Competent Authority that on this basis an Appropriate Assessment would therefore be required.</p>	<p>Since the Application was made, in response to further design refinement and relevant representations received, the Applicant has decided to propose the removal of landfall Option 2 from the proposed project design envelope. Therefore, there would be no permanent loss of saltmarsh habitat.</p>
	<p>Cable route selection</p> <p>NE stated that the final landfall location seemed to have comparable interactions in terms of the number of designated sites with other options put forward, with more precaution afforded to options further east. Whilst NE accepted that issues around designated sites had been considered, NE felt that the options put forward appeared to be based on the number of site interactions rather than actual sensitivity and recoverability within the sites. NE require further justification and detail around the current landfall locations before agreement can be made.</p>	<p>The RIAA summarises site selection and alternatives in section 5.3, drawing on Volume 1 Chapter 4 of the ES where these are considered in more detail. Final selection of the landfall option is dependant on site investigation works that are pending.</p>
	<p>Core reef approach</p> <p>NE questioned whether there is enough data to successfully identify where areas of core reef occur and what index would be appropriate to use to determine areas of core reef based on the available data.</p> <p>NE advised that the developers present their approach to it for comment as soon as possible. Without an agreed core reef approach any reef areas found in a pre-construction survey should be avoided. As per previous advice a core reef approach is more appropriate to permanent and on-going activities such as foundation locations. For short-term activities such as cable laying it may be more appropriate to avoid reef that is found in a recent survey</p>	<p><i>Sabellaria</i> reef is not a feature of any of the designated sites included within the RIAA. However, the biogenic reef mitigation plan, as referenced in Table 6.1 and will be developed in consultation with stakeholders and submitted with the DCO, will also take account of any chalk reef, should any be identified during pre-construction surveys. Additional reference has been added to table 6.1 to highlight this.</p>

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	<p>Chalk habitat and cabling through Thanet SAC</p> <p>NE raised concerns about the potential interaction of cabling operations within the Thanet SAC and the sites associated features, primarily the chalk habitat. As has been noted the cable corridor impinges only slightly on the SAC, and there have been discussions stating that there is no chalk habitat in the vicinity of the cable corridor. NE require further evidence regarding this and advise that cabling and associated cable protection should be avoided within this site. Without this further evidence NE cannot currently agree there will be no likely significant effect (LSE) to the site.</p>	<p>Thanet SAC (chalk reefs) has been screened in for LSE on a number of issues, with these assessed further.</p> <p>Specifically regarding habitat loss and disturbance, the issue is assessed during construction/decommissioning in 13.2.12 <i>et seq</i> and for O&M in 13.2.55 <i>et seq</i>. It can be confirmed that the site specific surveys carried out did not identify the presence of the designated chalk reef feature. As stated in both the construction/decommissioning and O&M sections, should any designated chalk reef feature be identified during the preconstruction surveys, then appropriate measures will be taken to ensure no direct loss of the designated chalk reef (micrositing). The commitment is provided for through the biogenic reef mitigation plan, as referenced in section 13.2 but also in Table 6.1.</p>
	<p>Signposting of evidence used to support statements</p> <p>NE highlighted that throughout the [draft] RIAA references are made to documents that supposedly provide more evidence or contain further information on potential mitigation measures. NE have not seen the vast majority of these documents and assume they are associated with the environmental statement which is yet to be submitted. As a result, NE cannot fully determine the conclusions of LSE without this further evidence and mitigation options.</p>	<p>It is acknowledged that the draft RIAA referenced documents that have not yet been provided. However, it is also noted that these documents will be prepared (where relevant) in consultation with statutory bodies, including Natural England (where relevant). The documents will be available at the time of application (unless specifically stated). The RIAA is clear where these documents are held and (where relevant) how they will be secured.</p> <p>It is not the intention of the RIAA to reproduce all supporting documents, to avoid unnecessary repetition.</p>
	<p>Conclusions on Likely Significant Effect</p> <p>Overall, NE determine that the application should move to the AA stage. Several conclusions of no LSE and Adverse Effect on Integrity (AEoI) have been made without sufficient evidence currently being presented, furthermore sufficient information on mitigation plans have not yet been developed nor agreed. On the latter point, and as stated above, the Sweetman II judgement has now determined that any mitigation measures have now got to be taken forward to be considered at the AA stage.</p>	<p>The RIAA, or Report to Inform Appropriate Assessment, is intended to provide the competent authority with the information necessary to undertake an Appropriate Assessment. It is therefore considered that an AA will follow (as stated here).</p> <p>Consideration of the Sweetman II judgement has been incorporated in the assessment.</p> <p>It is noted that of the comments provided, there is comment on the consideration of LSE and AEoI. It is intended that the responses provided to the general comments will address these concerns.</p>
	<p>General Comments</p>	
	<p>General comment 1</p> <p>Section 5.2 (Table 1) - As the environmental statement has not yet been submitted, NE cannot successfully refer to documents referenced throughout the RIAA.</p>	<p>Noted - these will be available at application (unless specifically noted to follow)</p>

Date and consultation phase/ type	Consultation and key issues raised	Section where comment addressed
	<p>General comment 2</p> <p>Section 5.2.3 – NE note that there have been slight changes to the landfall options since the publication of the PEIR. It is not particularly clear what these options entail, especially options 1 and 3. It would help to provide a figure to visually represent the changes to these options.</p>	<p>It is correct that changes have been made to landfall options since PEIR. The final option has not yet been selected, the final design to be determined following site investigation works and in line with the DCO. The RIAA has assessed the option that represents the worst-case scenario only and full details of each scenario have not been presented here. Further detail on each option (including diagrams) is provided within Volume 2 Chapter 1: Project Description. Note that since the Application was made, in response to further design refinement and relevant representations received, the Applicant has decided to propose the removal landfall Option 2 from the proposed project design envelope.</p>
	<p>General comment 3</p> <p>Section 5.3.5 - NE note that several landfall locations/ routes and their potential interactions with designated sites and sensitive features were considered within the PEIR. However, as stated in our PEIR response, the final landfall location seems to have comparable interactions in terms of the number of designated sites with other options put forward, with more precaution afforded to options further east. Whilst NE accepted that issues around designated sites had been considered, NE felt that the options put forward appeared to be based on the number of site interactions rather than actual sensitivity and recoverability within the sites. NE require further justification and detail around the current landfall locations before agreement can be made.</p>	<p>The RIAA does not detail full consideration of all alternatives, but instead assesses the worst-case scenario for each. Full detail on each option is provided in Volume 2 Chapter 1 Project Description, with alternatives addressed in full in Volume 1 Chapter 4 Site Selection and Alternatives.</p>
	<p>General comment 4</p> <p>Table 5.2 (Row 2) - NE note that these figures have been refined since the publication of the PEIR. We also note that ploughing looks to have been confirmed as the preferred burial technique. NE need reassurances that this technique will be successful in burying the cable without remedial works in the future, particularly as it was not successful for many of the inter-array cables at the Thanet project location. Any lessons that can be learnt from the recent NEMO works or the original Thanet cable should be put into practice</p>	<p>We agree that it is important that the construction techniques selected are successful and it is the intention of Vattenfall to ensure that this is the case. However, should there be a need for remedial works, these are provided for in the assessment.</p>
	<p>General comment 5</p> <p>Table 5.2 (Row 6) - There is some inconsistency between rows 2 and 6. In row 2 it states that inter array and export cables will be installed by ploughing whereas in row 6 it states jetting. Has the installation technique been decided upon? Are there other techniques which could be assessed which would be more effective in this area, given that both ploughing and jetting were unsuccessful at the Thanet project site for inter-array cables.</p>	<p>All options available are detailed in Volume 2 Chapter 1: Project Description. For the purposes of Table 5.2, this presents the maximum design scenario relevant to each project parameter and each receptor group. Depending on the parameter/receptor combination, the design scenario that represents the maximum may differ. The approach ensures that the worst-case has been assessed.</p>

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	<p>General comment 6 – Requested clarification of the location of areas within the SPA that could be directly affected (Table 5.2 (Row 7)).</p>	<p>The figure of 10,500 m² of the SPA and Ramsar which could be disturbed (Table 5.2) relates to the area within Stonelees Nature Reserve (corridor of length 350m x 30m width), which will be affected by cabling works. The Transition Joint Bays (TJBs) and substation will not be located within the SPA and Ramsar. The wording in Table 5.2 has been amended to clarify this point.</p>
	<p>General comment 7 – Requested regular updates from the Ecological Clerk of Works (ECoW) during the works. Requested site of the Saltmarsh Mitigation and Reinstatement Plan as soon as possible.</p>	<p>The ECoW will provide regular updates throughout the works. Text has been added to Table 6.1 to address this. A Saltmarsh Mitigation, Reinstatement and Monitoring Plan is provided with the Application (Application Ref 8.13).</p>
	<p>General comment 8 Table 6.1 (Row 4) - Every effort should be made to bury the cables sufficiently. Cable protection should not be assumed to be used for mitigating the effects of EMF, especially in protected sites. The adverse effects of using cable protection may be a lot greater than EMF, especially in a soft sediment dominated area. Additionally, the benefits and disadvantages should be considered on a location specific basis rather than defaulting to cable protection as mitigation for EMF impacts.</p>	<p>It can be confirmed that every effort will be made to bury the cable sufficiently, however measures are required in case this is not feasible. The assessment includes consideration of cable protection (to a maximum level identified in Table 5.2) in case cable protection is not achieved sufficiently. Please note the project commitment not to use cable protection in the intertidal (soft sediments within designated sites).</p>
	<p>General comment 9 – questioned the buffer of 250m for works between October and Marsh which are not covered by seasonal restrictions. Noted that timing restrictions will now need to be incorporated into an Appropriate Assessment as mitigation, rather than used to screen out LSE for bird disturbance.</p>	<p>Annex 5-7 of the PEIR proposed a maximum zone of influence of 250 m for all SPA, Ramsar and SSSI intertidal waterbird qualifying interest species. No objections to this were raised in Section 42 consultation responses. The 250 m distance was based on a combination of professional judgment and relevant literature, e.g. Cutts <i>et al.</i> (2009) and Collop <i>et al.</i> (2016). It is accepted that very loud infrequent noise (i.e. driven piling) may cause disturbance at greater distances, however any piling associated with cofferdams required during construction at the landfall and TJBs will be subject to timing restrictions. Further detail has been added to Table 6.1 and Section 11.5 of the RIAA to address this point. Following the Sweetman II ruling the mitigation provided by the proposed timing restriction is no longer included in the consideration of LSE. LSE is therefore no longer screened out and the assessment of disturbance to SPA and Ramsar qualifying waterbird species is now assessed in Section 11 of the RIAA.</p>

Date and consultation phase/ type	Consultation and key issues raised	Section where comment addressed
	<p>General comment 10 – stated that screening for the TJBs will have to be particularly effective. Suggested a monitoring condition is put in place for any works on the periphery of the 250m buffer to monitor potential disturbance to birds, sound levels and movements of plant traffic. Requested further discussions regarding these works and monitoring.</p>	<p>Further information regarding proposed screening is provided in the Outline Landscape and Ecology Management Plan (LEMP) (Application Ref 8.7). The production, agreement and implementation of a detailed LEMP forms the subject of a DCO Requirement (Application Ref 3.1) and the final screening proposals will therefore be subject to agreement with Natural England. Most noise associated with construction of the TJBs and cabling works will be regular in character and birds are therefore likely to quickly habituate to it. Any percussive piling associated with works at the landfall or TJBs will be subject to timing restrictions. Further details have been added to Table 6.1 and Section 11.5 of the RIAA to address these points.</p> <p>Monitoring during construction is not proposed due to the difficulty in attributing any observed disturbance to construction works at a site which is already subject to high levels of recreational disturbance.</p>
	<p>General comment 11 – welcomed consideration given to mitigating possible effects of displacement of recreational visitors from the country park. Requested regular updates from the ECoW on this issue during the works.</p>	<p>The ECOW will provide regular updates throughout the works. Text has been added to Table 6.1 to address this.</p>
	<p>General comment 12 Section 7.5.5 - NE query which plans had been prepared in consultation with ourselves? Although we accept sufficient plans should and will be in place to minimise the potential of accidental pollution, it would be naïve to determine at this stage, without further SI data, that accidental pollution has been determined to be no LSE. This is particularly true at the landfall location, with the potential interaction with the landfill.</p>	<p>Additional text has been added as paragraphs 7.5.5 and 7.5.7, to highlight that the landfall option has not yet been selected. The final option selected, together with the detailed design, will be informed by the findings of the site investigation works. Each option includes embedded mitigation to manage the risk of accidental pollution by avoiding the introduction of a contamination pathway, as required by the wider consenting for the project. The CMS includes provision to ensure that the final option selected would not result in such a contamination pathway, as part of that embedded project design. It is therefore considered that the conclusion on no LSE remains appropriate.</p>
	<p>General comment 13 – requested details of relevant mitigation measures included for Richborough Connection and Discovery Park.</p>	<p>Brief details of relevant mitigation measures proposed for Richborough Connection and Discovery Park are provided in Table 12.1.</p>
	<p>Benthic, Intertidal and Subtidal</p>	
	<p>General comment 14 Table 5.2 Page 5-36 – There has been no specific amount or worst-case scenario provided for potential direct disturbance to benthic ecology due to cable repairs and the potential for LSE if these repairs were to take place within designated sites. As a result, no cable repairs can be currently permitted. This means that the application cannot be considered complete.</p>	<p>Additional clarification to project description added to row 4 under O&M in Table 5.2, together with additional consideration in paragraph 11.2.50 <i>et seq.</i> Please note that comment was provided in paragraph 11.2.56 that 'should any maintenance be required along the length of the OECC that falls within (or in close proximity to) the Thanet Coast SAC, appropriate measures would be taken to ensure no loss of any chalk reef feature, with these to be determined in relation to the required works and the results of any surveys undertaken at the time'.</p>

Date and consultation phase/ type	Consultation and key issues raised	Section where comment addressed
	<p>General comment 15</p> <p>Table 6.1 Page 6-44 – Currently no core reef approach has been agreed and NE question whether there will be enough data to successfully identify these areas of core reef. Without an agreed approach any reef areas found in pre-construction surveys should be avoided.</p>	<p>The core reef approach is mentioned here in relation to the biogenic reef mitigation plan only as none of the designated sites considered within the RIAA include Sabellaria reef as a feature. However, the biogenic reef mitigation plan does include a proviso for chalk reef, hence its relevance here.</p>
	<p>General comment 16 – stated that saltmarsh is a supporting habitat for the birds of the Thanet Coast and Sandwich Bay SPA and therefore must be considered with regards to the conservation objectives of the site. Noted that NE is currently working towards updating conservation advice for European Marine Sites (EMS) in which supporting habitats will be clearly highlighted.</p>	<p>Although it is noted that Natural England is currently updating the conservation advice package for the EMS that information has not yet been made available. Saltmarsh is not listed as a sub-feature for the SPA in the current Regulation 33 document for the North East Kent EMS. Whilst it is agreed that some of the saltmarsh within the SPA provides supporting habitat for qualifying features, the area of upper saltmarsh that could be permanently lost does not provide suitable habitat for them, as set out in section 7.</p>
	<p>General comment 17</p> <p>Section 11.2.6 to 11.2.8 - NE note that the Thanet Coast SAC overlaps with the Offshore Export Cable Corridor (OECC). From looking at previous figures with the OECC in relation to the SAC it is unclear how much, if any, of the cabling activities will actually be taking place within the SAC, as the width of the OECC is wider than the cable itself. NE would like a more accurate figure of the likely disturbance within the designated site, and we advise that interactions with the SAC, should be avoided in the first instance where there is an option within the cable corridor.</p>	<p>The text in sections 11.2.6-11.2.8 is intended to give overall information, to be drawn on for the following consideration of relevant designated sites. The information requested for the OECC within the Thanet Coast SAC is presented in paragraph 11.2.12 <i>et seq.</i></p>
	<p>General comment 18</p> <p>Section 11.2.12 - This paragraph needs rewording slightly. NE acknowledge that only a small percentage of the SAC will be disturbed, however we question why the OECC could not be refined further in this area to totally avoid the SAC. NE assume this is taking into account the worst-case scenario of utilising 4 export cables, however if only two were required would that reduce the RLB further to avoid the SAC? Avoiding the SAC would reduce the potential for mitigation works, and there is always the potential of further disturbance during the O&M phase.</p>	<p>Paragraph 11.2.12 has been updated with further information on the width of the area of overlap, to clarify that the cable that could be installed within that area of overlap. Noting that any such cable installation would be subject to the mitigation provided for chalk reefs (namely preconstruction surveys, resulting in the avoidance of any identified chalk reef).</p>
	<p>General comment 19</p> <p>Section 11.2.15 – NE advises that further evidence is provided to prove that the current cable corridor does not overlap with the chalk habitat in Thanet SAC. Currently there is not enough evidence to determine that there would be no AEoI. Preferably, maps depicting the cable corridor with known areas of chalk habitat overlain would provide a further evidence of the potential effects.</p>	<p>Please note that no chalk reef has been identified during site specific surveys. Therefore there is no data on the location of chalk reef to overlay on the cable corridor. The project commitment, as referenced in paragraph 11.2.14, to undertake pre-construction surveys will, as part of the biogenic reef mitigation plan, confirm the presence/absence of any chalk reef within the Thanet Coast SAC along the cable corridor and enable micro-siting to avoid any such reef, if identified.</p>

Date and consultation phase/ type	Consultation and key issues raised	Section where comment addressed
	<p>General comment 20</p> <p>Section 11.2.17 – As recently discussed, NE would need to see a detailed saltmarsh mitigation plan as soon as possible, before we can agree there is no adverse impact or loss of functionality. Detailed maps and photos of the landfalls proposed impacts would allow us to effectively assess the likely significant effect. It should also be noted that although the saltmarsh around the original Thanet cable has recovered well, it cannot be assumed the same would occur at this proposed landfall site. Recent observations of the landfall area of the NEMO interconnector have indicated that the topography of the saltmarsh has changed, creating an area of standing water potentially hampering recovery. This change in topography should be considered and avoided.</p>	<p>The Saltmarsh Mitigation, Reinstatement and Monitoring Plan, as referenced in paragraph 11.2.20 and in Table 6.1, has been provided and submitted as part of the application (Application Ref 8.13).</p>
	<p>General comment 21</p> <p>Section 11.2.39 – NE query if the effects of suspended sediment can reach Margate and Long Sands SAC, then should the aggregate extraction be screened in for the in-combination assessment? Furthermore, NE have an updated conservation advice package for this site which can help determine the potential effects of increased sedimentation levels. Overall, NE agree there would no adverse effect alone.</p>	<p>Additional text has been added to paragraph 11.2.31 to highlight that beyond the immediate area of works (ie within a few 100 m and therefore not extending the 3km minimum range between the array boundary and the Margate and Long Sands SAC boundary) the sediment plume would be formed from fine grained material that will not settle with measurable thickness.</p> <p>Further, it can be noted in paragraph 2.10.52 of Volume 2 Chapter 2: Marine Geology, Oceanography and Physical Processes, in relation to the magnitude of impact on sand banks including the designated Margate banks, that no sediment would be removed from the system and therefore sediment supply to the banks would remain unaltered.</p> <p>It is clear from the assessment that, at most, any effect would be negligible and unmeasurable. On that basis, it is not considered that the construction, operation & maintenance or decommissioning of Thanet Extension would have any greater effect on the Margate and Long Sands SAC above de minimis and therefore there would be no need to consider an in-combination assessment with other activities including marine aggregate dredging.</p>
	<p>General comment 22</p> <p>Section 11.2.56 – The developers need to be confident that if the cable was protected along the whole length going through the Thanet SAC that it would not impact on any features. There is currently not enough information to support that conclusion yet. If there is overlap with features then an AA is recommended as there may be a permanent impact. Additionally, if the cable route allows the developers to wholly avoid the SAC then this should be the preferred option. Regardless, areas of chalk habitat should be avoided.</p>	<p>Please note that no chalk reef has been identified during site specific surveys. However, as noted above there is a project commitment, as referenced in paragraph 11.2.14, to undertake pre-construction surveys which will, as part of the biogenic reef mitigation plan, confirm the presence/absence of any chalk reef within the Thanet Coast SAC along the cable corridor and enable micro-siting to avoid any such reef, if identified.</p>

Date and consultation phase/ type	Consultation and key issues raised	Section where comment addressed
	<p>General comment 23</p> <p>Section 11.2.56 – Within this section it states: ‘...should any maintenance be required along the length of the OECC that falls within (or in close proximity to) the Thanet Coast SAC, appropriate measures would be taken to ensure no loss of any chalk reef feature, with these to be determined in relation to the required works and the results of any surveys undertaken at the time.’ If the developer wants a dML that includes maintenance of the cables, then they need to fully consider what that would entail or apply for a separate license for maintenance post consent. However, this is not recommended as it would mean the application is incomplete as all potential impacts of the project are not fully considered.</p>	<p>Additional text has been added to paragraph 11.2.55 and 11.2.56.</p>
	<p>General comment 24</p> <p>Section 11.2.59 - Lessons learnt from other recent offshore windfarms have highlighted the problems of cabling in the intertidal area, especially when the cable is damaged during construction. Every effort should be made to ensure the cables are fit for purpose so when trenching and burial has occurred they do not have to be revisited either immediately or during the lifetime of the project. This will ensure disturbance levels will be kept to minimum and the ban on works during the overwintering period will be maintained.</p>	<p>It is agreed that every effort will be made to ensure that cables are fit for purpose and it is in the interest of the project to do so.</p>
	<p>General comment 25</p> <p>Section 11.2.70 – Stating the minimum cable burial depth/ amount of cable protection would be more useful than stating the maximum scenarios. NE wish to ensure that the developers confidence in achieving the correct burial depth is high. Additional cable protection within an SAC is highly undesirable and should be avoided.</p>	<p>The minimum burial depth is 0 m (as reported in table 1.9 Volume 2 Chapter 2: Project Description (Offshore)). However, as noted in the RIAA it is intended to seek a depth of 3 m depending on the cable burial risk assessment. Where cable cannot be sufficiently buried, provision is made for cable protection. Both these scenarios have been assessed.</p> <p>Please note the project commitment to avoid use of cable protection in the intertidal (and hence in the designated sites within that area) together with the mitigation for micro siting within the Thanet Coast SAC, to avoid chalk reefs (should any be identified during pre construction surveys) and should cable protection be required there.</p>

Date and consultation phase/ type	Consultation and key issues raised	Section where comment addressed
	<p>General comment 26</p> <p>Section 11.2.77 – For this section and other sections where suspended sediment is discussed, it would be good to state the worst-case scenario depth and the area of potential smothering.</p>	<p>Paragraph 11.2.77 <i>et seq</i> relates to the O&M phase of works, stating in paragraph 11.2.76 that 'minor amounts of sediment may be released into suspension, with subsequent deposition, during the O&M phase, for example should cable repairs be required or resulting from scour. However, the degree of sediment disturbance and any resulting increase in SSC and subsequent deposition will be much reduced when compared to the construction phase'.</p> <p>It is clear that the construction (and decommissioning phase) has the potential to result in greater levels of sediment being released than the O&M phase, with that aspect considered in greater depth in paragraph 11.2.27 <i>et seq</i> (with minor changes made to paragraph 11.2.31). Here greater detail on sediment levels in suspension and the range that such sediment may travel is provided, together with deposition rates in proximity to foundations and cables. The assessment concluded no adverse effect during construction and therefore the reduced levels of sediment that may be released (and deposited) during O&M were similarly found to result in no adverse effect.</p>
	<p>General comment 27</p> <p>Section 11.2.81 - Have the in-combination effects from dredging been considered?</p>	<p>As noted in the response to general comment 21 above, additional text has been added to paragraph 11.2.31 to highlight that beyond the immediate area of works (ie within a few 100m and therefore not extending the 3km minimum range between the array boundary and the Margate and Long Sands SAC boundary) that the sediment plume would be formed from fine grained material that will not settle with measurable thickness.</p> <p>Further, it can be noted in paragraph 2.10.52 of Volume 2 Chapter 2: Marine Geology, Oceanography and Physical Processes, in relation to the magnitude of impact on sand banks including the designated Margate banks, that no sediment would be removed from the system and therefore sediment supply to the banks would remain unaltered.</p> <p>It is clear from the assessment that, at most, any effect would be negligible and unmeasurable. On that basis, it is not considered that the construction, operation & maintenance or decommissioning of Thanet Extension would have any greater effect on the Margate and Long Sands SAC above de minimis and therefore there would be no need to consider an in-combination assessment with other activities including marine aggregate dredging.</p>
	<p>Marine Mammals</p>	
	<p>General comment 28</p> <p>Table 7.3 Page 7-61 – Unexploded Ordinances (UXOs) are not mentioned in the potential for LSE with other construction activities and the Southern North Sea cSAC/SCI for harbour porpoise.</p>	<p>UXO is not mentioned specifically in the table, as construction noise in general is referred to here to cover all aspects, but is included within the assessment. The table has been amended to include mention of UXO.</p>

Date and consultation phase/ type	Consultation and key issues raised	Section where comment addressed
	<p>General comment 29</p> <p>Section 8.3.4 – While there is no future information on oil and gas projects, it should be possible to provide a generic assessment of average oil and gas activities across the relevant area based on historic activity or on the marine noise registry.</p>	<p>It is considered that it is not possible or appropriate to predict future oil and gas activities beyond those known and applied for, with the assessment made on best available information which can be sourced from the public domain. Any future licensable activities, where appropriate, would be expected to undertake their own assessment at that time.</p>
	<p>General comment 30</p> <p>Section 8.3.6 – Data can also be provided by the MMO on offshore wind farms that are, or plan to, detonate UXOs. Over 30 UXOs have been found in certain locations associated with wind farm development. Therefore, it is a fair assumption that other wind farms in the vicinity will find similar numbers, which can be built into the assessment. NE does not agree that UXOs can be considered de minimis and believe an assessment should be undertaken within the HRA.</p>	<p>Paragraph 8.3.6 refers to the OSPAR data only - this being a record of historic UXO clearance across the OSPAR region. Closer examination of these data revealed that within 2014, just 5 UXO were detonated in-situ within 26 km of either the winter or summer extents of the SNS cSAC/SCI. Further, it is noted that discussions with Dutch officials revealed that clearances in Dutch waters were expected to decrease from such levels. It is in relation to such wider UXO clearances that the conclusion of very low risk and de minimis has been drawn. Project specific UXO clearance however (where known in the public domain) has been screened in for assessment.</p>
	<p>General comment 31</p> <p>Table 8.4 – Hornsea 2 is not under construction at the current time.</p>	<p>Noted - Hornsea Project 2 has been deleted from the relevant part of Table 8.4.</p>
	<p>General comment 32</p> <p>Section 10.3.2 – 10 km is the EDR for small seismic (airgun) surveys after the 2013 Thompson paper. Larger airgun arrays may cause larger deterrent distances and other types of equipment (SBPs) may cause smaller deterrence distances.</p>	<p>Paragraph 10.3.2 has been amended to refer to small air guns for the 10 km range.</p>
	<p>General comment 33</p> <p>Section 11.3.11 to 11.3.13 – NE notes that the introduction of the NOAA 2016 thresholds has meant that the potential auditory injury zone (PTS) can be much greater than previously thought. Therefore, NE will require noise modelling of the range of potential UXOs on site to determine potential injury zones and relevant mitigation. It should be noted that 100% deterrence cannot be guaranteed after approximately 1km. Vattenfall need to be aware that ADDs may not be sufficient as mitigation and other options may be required (and should be considered now, potentially with other developers, given the lead in time before any UXO detonation will be required). In terms of paragraph 11.3.13 NE notes that individual animals are EPS and are therefore protected from injury.</p>	<p>The consideration of UXO (including risk of PTS) has drawn on Volume 2 Chapter 7 (Marine Mammals). It can be confirmed that underwater noise modelling for UXO has been undertaken and applied the NOAA 2016 thresholds.</p> <p>Comment has been added to paragraph 11.3.10 to highlight this.</p>
	<p>General comment 34</p> <p>Section 11.3.16 – A reference to figure 11.2 is required.</p>	<p>Figure reference added.</p>

Date and consultation phase/ type	Consultation and key issues raised	Section where comment addressed
	<p>General comment 35</p> <p>Section 11.3.97 – NE suggests that a condition stating that Thanet Extension cannot undertake more than one activity (piling / UXO detonation / geophysical survey) within a single 24 hour period is put on the licence.</p>	<p>The assessment is based on that scenario, however it is noted that sufficient headroom remains within the daily (20%) and seasonal (10%) thresholds to enable further relevant activity. As such it is not proposed to include a restriction within the DCO on undertaking more than one activity in 24 hours to provide for flexibility going forward.</p>
	<p>General comment 36</p> <p>Table 12.1 – This table references the scoping report for Hornsea 3 which is out of date. The PEIR for Hornsea 3 was issued in July 2017, so there has been time for this section to be updated with more relevant information. The PEIR for Hornsea 3 states that construction (piling) is due to take place between 2022 and 2023. In addition, the more up to date Norfolk Vangard PEIR states that Norfolk Boreas could be constructing in 2023. These wind farms need to be built into the assessment.</p>	<p>Reference to Hornsea Project Three has been updated throughout using the PEIR.</p> <p>Information used on individual projects has been drawn from project specific literature only and therefore, for Norfolk Boreas, is limited to the Scoping report. No change has been made for that project.</p>
	<p>General comment 37</p> <p>Table 12.2 – This table (and subsequent calculations) requires updating to reflect that Hornsea 3 could be constructing at the same time as Thanet Extension. In addition, the developers should confirm whether Norfolk Boreas could be constructing at the same time as Thanet Extension and the table updated accordingly (as suggested by the Norfolk Vangard PEIR).</p>	<p>As above, reference to Hornsea Project Three has been updated throughout using the PEIR.</p> <p>Information used on individual projects has been drawn from project specific literature only and therefore, for Norfolk Boreas, is limited to the Scoping report. No change has been made for that project.</p>
	<p>General comment 38</p> <p>Figure 12.2 – It would be helpful if this figure had the cSAC boundary (plus summer winter boundary) on it.</p>	<p>Figure has been updated to include the SNS cSAC/SCI (including seasonal extents) and Hornsea Project Three.</p>
	<p>General comment 39</p> <p>Section 12.3.7 – Other wind farms may still be undertaking UXO detonation at the same time as piling, for example EA3 – as evidenced by recent wind farms.</p>	<p>It is acknowledged that other projects may submit applications to clear UXO. However, until (and unless) such applications are submitted, it is considered that the assessment should only be (and can only be) undertaken on the basis of information in the public domain. As for the oil and gas seismic surveys referenced above (in response to general comment 29), the assessment has been based on known future activities rather than attempting to predict such activities that are not known at this time. These future activities (seismic surveys and UXO detonations) are licensable activities and, where appropriate, potential impacts from these types of activities would be assessed as part of the relevant applications for marine licences at that time. The assessment presented within the RIAA comprehensively covers the known activities with a risk of overlap.</p>

Date and consultation phase/ type	Consultation and key issues raised	Section where comment addressed
	<p>General comment 40</p> <p>Section 12.3.15 – NE does not agree with this paragraph. Thanet Extension has the same constraints as these tier 2-4 wind farms in terms of achieving CfD, so there is more chance of overlap. Thanet Extension must assess the potential in combination effects of all the wind farms that could overlap with its construction timeframes, as per every other development to date. In any case, if any of the listed wind farms was awarded CfD in late 2019, they could be commencing geophysical/UXO activities in 2021 and could foreseeably be piling by 2022, which is within the construction timeframe for Thanet Extension.</p>	<p>The Thanet Extension RIAA has adopted the standard tiered approach to in-combination assessment that has been used and agreed with NE in other RIAAs for the SNS cSAC/SCI. Whilst the concerns raised by NE are understood, it is not considered appropriate to predict activities of other future projects. As set out in our response to comments 29 and 39 above, the Thanet Extension RIAA must be based on known future activities.</p> <p>Further information on the justification for the approach is presented in paragraph 12.3.13 <i>et seq.</i></p>
	<p>General comment 41 Table 12.3 – The Dutch Borssele wind farms need to be added to this table and assessed in subsequent tables and text in terms of in combination impacts on the porpoise SAS cSAC.</p>	<p>The GIS shape files are now available for Borssele projects and the minimum distance recalculated (being 21 km distant from the winter extents of the SNS cSAC/SCI at its nearest point). The assessment has been adjusted to include Borssele as a Tier 1 project for the SNS cSAC/SCI.</p>
	<p>Ornithology</p>	
	<p>General comment 42 – questions whether LSE can be ruled out in relation to noise and visual disturbance during construction. Accept that mitigation measures can be implemented and taken into account to remove any potential for adverse effect.</p>	<p>Following the Sweetman II ruling the mitigation provided by the proposed timing restriction is no longer included in the consideration of LSE. LSE is therefore no longer screened out and the assessment of noise and visual disturbance to SPA and Ramsar qualifying waterbird species is now assessed in Sections 11 and 12 of the RIAA.</p>
	<p>General comment 43 – noted that European golden plover and ruddy turnstone do not particularly favour areas of dense and tall vegetation. Requested an indication of the density of the vegetation currently at the proposed landfall location.</p>	<p>Further information regarding the approximate height of vegetation at the proposed landfall location has been added in Section 7.5.</p>
	<p>General comment 44</p> <p>Section 8.1.6 – It states: “... it is acknowledged that the potential contribution to an AEol in-combination by Thanet Extension could stem not only from those effects where LSE exists in relation to the project alone (as highlighted in Table 7.3 above), but also ... in-combination. As such, consideration has been given where the potential exists for Thanet Extension, despite no LSE alone, to contribute to LSE in-combination.” NE would disagree that there is no potential for LSE alone from Thanet Extension.</p>	<p>It is agreed that Thanet Extension has the potential to result in a LSE alone and in-combination. The purpose of the paragraph is to highlight that consideration of the project in-combination may include aspects that were considered below the threshold for LSE for the project alone.</p>

Date and consultation phase/ type	Consultation and key issues raised	Section where comment addressed
	<p>General comment 45</p> <p>There needs to be an in-combination assessment of the displacement impacts of razorbill and guillemot from the Flamborough and Filey Coast pSPA.</p>	<p>Guillemot and razorbill were screened out because of the non-significant contribution to the in-combination effect, for instance <2 guillemot mortalities attributed to the Flamborough and Filey Coast SPA (Section 8)</p>
	<p>Consideration to be given to screening in little gull in relation to collision risk, little gull being an interest feature of the Greater Wash SPA [noting that in the response it was described as a pSPA but the site was classified on March 28th 2018].</p>	<p>Little gull was screened out as it was only recorded on a single occasion, during the boat based survey carried out in January 2016 (Section 7).</p> <p>The approach to screening in those instances where only very small numbers were recorded in recent site based surveys is described in section 7 of the original Screening Report in Annex 1 (Application Ref 5.2.1). Little gull fulfils the criteria for screening out.</p>
	<p>Clarity sought on why Sandwich, common and little tern are screened in for operational collision risk alone but screened out for operational collision risk in-combination.</p>	<p>The three tern species were screened out for operational collision risk in-combination because of the finding that alone the project makes a zero or negligible contribution (Section 7).</p>
	<p>Proposed that a 2 km buffer for displacement of red-throated diver was applied around construction vessels.</p>	<p>The site based evidence from the construction of the Thanet OWF was applied in the assessment that there was no displacement outside of the wind farm boundary in the construction period (Section 11).</p>
	<p>Sought that the assessment was carried out following the SNCB standard displacement approach of a 4 km buffer for effects on red-throated diver outside of the wind farm boundary.</p>	<p>The site based evidence from the construction and operation of the Thanet OWF was applied in the assessment that there was no displacement of red-throated diver outside of the wind farm boundary (Section 11).</p>
	<p>Sought that the assessment was carried out following the SNCB standard displacement approach of a 2 km buffer for effects on auks outside of the wind farm boundary.</p>	<p>The site based evidence from the construction and operation of the Thanet OWF was applied in the assessment that displacement of auks was limited to 1 km outside of the wind farm boundary Section 11).</p>
	<p>The PEIR Offshore Ornithology chapter contained an insufficient cumulative assessment of potential effects of disturbance and displacement on red-throated diver.</p>	<p>This RIAA contains an in-combination assessment of potential effects of disturbance and displacement on red-throated diver using an approach discussed and agreed in principle with Natural England (Section 12)</p>
	<p>Sought the detailed collision risk modelling information based on 24 months of survey.</p>	<p>This detailed information is provided in the CRM Annex to the ES Offshore Ornithology Chapter (Volume 4, Annex 4-2: Offshore Ornithology – Collision Risk Modelling (Application Ref 6.4.4.2)).</p>
	<p>Onshore Biodiversity</p>	
	<p>General comment 72 – welcomed the update to the screening of LSE for breeding little tern, noting that they are not currently breeding at the SPA and there is no imminent likelihood of recolonization.</p>	<p>Noted – no change required and little tern remains screened out (see section 7).</p>

Date and consultation phase/ type	Consultation and key issues raised	Section where comment addressed
	General comment 73 - welcomed consideration given to mitigating possible effects of displacement of recreational visitors from the country park. Requested regular updates from the ECoW on this issue during the works.	The RIAA summarises site selection and alternatives in section 5.3, drawing on Volume 1 Chapter 4 of the ES where these are considered in more detail. Final selection of the land fall option is dependant on site investigation works that are pending.
	General comment 74 – encouraged the developer to progress the LEMP at the earliest opportunity.	An Outline LEMP is included as part of the application (Application Ref 8.7).
	General comment 75 - welcomed consideration given to mitigating possible effects of displacement of recreational visitors from the country park. Requested further discussion to determine where best to utilise additional signage and monitor disturbance.	Further details of proposed mitigation for potential disturbance resulting from possible displacement of recreational visitors to Pegwell Bay Country Park will be developed as part of the detailed LEMP. The production, agreement and implementation of the detailed LEMP forms the subject of a DCO Requirement (Application Ref 3.1). Text has been added to Table 6.1 to clarify this.
	General comment 76 – asked to receive the CEMP ideally before post consent.	A CoCP, which includes a section setting out the principles upon which a detailed CEMP will be based, is provided as part of the application (Application Ref 8.1). A detailed CEMP will be provided in accordance with the CoCP pre-commencement. Table 6.1 has been updated to reflect this.
	General comment 77 – requested further justification for why remaining Ramsar wetland invertebrate assemblage species are not likely to be present.	The invertebrate assessment (ES Volume 5, Annex 5-6 (Application Ref 6.5.5.6) provides detailed information on the habitat requirements of the 14 Ramsar wetland invertebrate species. This information has been used to determine the likelihood that assemblage species could be present within the RLB. An additional cross reference has been added in the relevant paragraph in section 7.5.
	General comment 78 – in relation to the in-combination assessment, NE highlighted a potential new housing development at the Manston Airport site, for which they have requested bespoke mitigation as well as a Strategic Access Management & Monitoring Plan (SAMM) contribution.	It is assumed that this comment refers to the proposed Stone Hill Park development, submitted in May 2018. A full review of plans and projects to be considered in the in-combination assessment has been conducted and reported in the ES, Volume 1, Annex 3-1: Cumulative Effects Assessment (Application Ref 6.1.3.1). The list of project considered in the submitted RIAA in June 2018 was finalised and agreed prior to submission of the Stone Hill Park proposal and it was not possible to include additional in-combination projects at that late stage in the application process. The Stone Hill Park development has been included in the in-combination assessment in this updated version of the RIAA.
	General comment 79 – content that residential developments which are not likely to have a direct effect on SPA qualifying features can be excluded from the in-combination assessment.	Noted – no change to the scope of the in-combination assessment is required.
	General comment 80 – highlighted that the North East Kent Site Improvement Plan (SIP) provides a high level overview of issues affecting the condition of the qualifying features of Thanet Coast SAC.	Noted – the assessment has considered relevant aspects relating to the SIP in relation to the Thanet Coast SAC, with the relevant aspects of the SIP (as these relate to designated features of the Thanet Coast SAC) highlighted in section 9.2.
	General comment 81 – highlighted that the SIP may also provide relevant information with regard to the Thanet Coast and Sandwich Bay SPA.	Section 9.4 has been updated to refer to the key issues affecting the condition of the SPA, based on the North East Kent SIP.

Date and consultation phase/ type	Consultation and key issues raised	Section where comment addressed
	<p>General comment 82 – noted that paragraph 11.5.14 referred to the use of a temporary warden at the country park to mitigate against possible visitor disturbance but that this was not reflected in Table 6.1.</p>	<p>Table 6.1 has been updated so it is consistent with section 11.5. To clarify, the proposed mitigation involves employment of either an ECoW or temporary warden / natural ambassador to monitor visitor disturbance to intertidal areas across all parts of Pegwell Bay during the sensitive October to March period and speak to visitors to discourage them from entering intertidal habitats, if required. Further details of proposed mitigation for potential disturbance resulting from possible displacement of recreational visitors to Pegwell Bay Country Park will be developed as part of the detailed LEMP.</p>
<p>RSPB response to the draft RIAA 18th May 2018</p>	<p>Section 4 - consultation. Table 4.1 - page 4.10 Paragraphs 4-6 – stated that RSPB is content that the permanent loss of saltmarsh is screened out in respect of the qualifying features for Thanet Coast and Sandwich Bay SPA, Thanet Coast and Sandwich Bay Ramsar and Sandwich Bay SAC. Stated that RSPB is content that permanent or temporary loss of habitat used by non-breeding European golden plover is screened out. Also content that the loss of breeding habitat for little tern and temporary increase in SSC is screened out.</p>	<p>We note and welcome RSPB agreement to the screening out of these effects.</p>
	<p>Sought information and results from the full 24 months of aerial survey.</p>	<p>This is provided in the Baseline Technical report that accompanies the ES (Volume 4, Annex 4-1: Offshore Ornithology – Baseline Technical Report (Application Ref 6.4.4.1)).</p>
	<p>Had concerns over the application of screening criteria for small numbers of birds recorded in surveys in the absence of the information and results from the full 24 months of aerial survey.</p>	<p>The provision of the aerial survey results in the Baseline Technical report that accompanies the ES (Volume 4, Annex 4-1: Offshore Ornithology – Baseline Technical Report (Application Ref 6.4.4.1)) will allow the RSPB to verify the application of the screening criteria.</p>
	<p>Sought information on the effects on collision predictions of the levels of uncertainty in CRM parameters.</p>	<p>This detailed information is provided in the CRM Annex to the ES Offshore Ornithology Chapter (Volume 4, Annex 4-2: Offshore Ornithology – Collision Risk Modelling (Application Ref 6.4.4.2)).</p>
	<p>Sought that the assessment was carried out following the SNCB standard displacement approach with generic buffers applied for red-throated diver (4 km) and auks (2 km) and generic rates of displacement (100%).</p>	<p>The site based evidence from the construction and operation of the Thanet OWF was applied in the displacement assessment of red-throated diver and auks with the size of buffer and rate of displacement based on that evidence (Section 11).</p>
	<p>Noted that floating wind farm schemes in Scottish waters have not been included in Table 8.4.</p>	<p>The two floating wind schemes (Hywind and Kincardine) have been added in to Table 8.4.</p>
	<p>Noted that there has been no assessment of the potential in-combination effects of displacement on guillemot or razorbill.</p>	<p>Guillemot and razorbill were screened out because of the non-significant contribution to the in-combination effect, for instance <2 guillemot mortalities attributed to the Flamborough and Filey Coast SPA (Section 8)</p>

4.1.13 Table 4.1 relates to consultation responses received until the submission of the application. The current RIAA has been updated during Examination, specifically in response to the following:

- The proposed removal of Option 2 from the project design at landfall;
- Comments received post submission; and
- Recent RCJ rulings, in particular Sweetman II.

4.1.14 The key change resulting from the above is a shift in construction methodology (and the worst case scenario) at the landfall. The removal of Option 2 affects the worst case scenarios for the landfall identified in the version of the RIAA submitted alongside the application and will have an influence on how consultation responses are addressed within the RIAA, since many of the comments regarding the landfall relate to that Option. The RIAA has been updated based on the revised worst case scenarios (following the removal of Option 2) and has taken the opportunity to take account of consultee comments where these relate specifically to the RIAA and where these remain applicable (i.e. it does not address comments that relate solely to Option 2). With regard to comments received during consultation post submission, changes made are primarily focused on clarifications around transboundary sites, together with an updated in-combination assessment for marine mammals (specifically harbour porpoise) and issues around offshore ornithology. The Sweetman II ruling has resulted in some precautionary changes to the matters which were taken into account as part of the “screening” for Likely Significant Effects, in particular accidental pollution. The aspects of consultation during Examination that have been included here are summarised below, noting that all these documents are available on the PINS website. These comments have not been reproduced in full here in the interest of brevity.

Table 4.2: Summary of consultation relating to the HRA process subsequent to the issue of the Revised Screening Report

Form of Consultation	Applicant's Response held	Key changes made within the RIAA	Relevant Designated Site
Relevant Representation received from the Marine Management Organisation	Applicant's response at Deadline 1	The in-combination assessment for harbour porpoise has been revisited	Southern North Sea cSAC/SCI
Relevant Representation received from Natural England	Applicant's response at Deadline 1	Removal of Option 2	Thanet Coast and Sandwich Bay SPA Thanet Coast and Sandwich Bay Ramsar
		Amendments to the offshore ornithological text	Outer Thames Estuary SPA Flamborough and Filey Coast SPA
		The in-combination assessment for harbour porpoise has been revisited	Southern North Sea cSAC/SCI
		Revision of the OECC to ensure cables are not installed in the Thanet Coast SAC	Thanet Coast SAC
Relevant Representation received from the Environment Agency	Applicant's response at Deadline 1	Removal of Option 2	Thanet Coast and Sandwich Bay SPA Thanet Coast and Sandwich Bay Ramsar
Relevant Representation received from the RSPB	Applicant's response at Deadline 1	Amendments to the offshore ornithological text	Outer Thames Estuary SPA SPAs in general (displacement and collision risk)
Relevant Representation received from Kent Wildlife Trust	Applicant's response at Deadline 1	Proposed removal of Option 2	Thanet Coast and Sandwich Bay SPA Thanet Coast and Sandwich Bay Ramsar
Regulation 32 Response from Ministere de la Transition Ecologique et Solidaire	Applicant's response at Deadline 1	Clarity added regarding the screening process (including screening distances) and why some sites/species have been screened out alone or in-combination.	Bancs des Flandres SCI Ridens et dunes hydrauliques SCI Recifs Gris Nez Blanc Nez SCI
Response to Rule 6 from Ministere de la Transition Ecologique et Solidaire	Applicant's response at Deadline 1	Clarity added regarding the screening process (including the 26km screening distance) for harbour porpoise and why some sites have been screened out alone and in-combination Clarity added regarding French offshore wind farm projects included in-combination, including updates to that assessment for harbour porpoise	Bancs des Flandres SCI Ridens et dunes hydrauliques SCI Recifs Gris Nez Blanc Nez SCI
Examining Authority Questions (published 18 December 2018)	Applicant's response at Deadline 1	Confirmation that Sweetman II is complied with (specifically through screening in accidental pollution for LSE for sites/features located in proximity to Thanet Extension, in line with the Screening Report (Appendix 1)	Various sites (including Thanet Coast SAC)
		Marine mammal in-combination assessment has been updated to include new project information (post June 2018) and to include consideration of Tier 2 projects	Southern North Sea cSAC/SCI Transboundary sites
		Removal of Option 2	Thanet Coast and Sandwich Bay SPA Thanet Coast and Sandwich Bay Ramsar
		Amendments to the offshore ornithological text	Flamborough and Filey Coast SPA
		Clarification to project design parameters	Various sites

Form of Consultation	Applicant's Response held	Key changes made within the RIAA	Relevant Designated Site
Written Representation received from Natural England	Applicant's response at Deadline 2	Removal of Option 2	Thanet Coast and Sandwich Bay SPA Thanet Coast and Sandwich Bay Ramsar
		Amendments to the offshore ornithological text	Outer Thames Estuary SPA Flamborough and Filey Coast SPA
		The in-combination assessment for harbour porpoise has been revisited	Southern North Sea cSAC/SCI
		Revision of the OECC to ensure cables are not installed in the Thanet Coast SAC	Thanet Coast SAC
Written Representation received from the Environment Agency	Applicant's response at Deadline 2	Removal of Option 2	Thanet Coast and Sandwich Bay SPA Thanet Coast and Sandwich Bay Ramsar
Written Representation received from Kent Wildlife Trust	Applicant's response at Deadline 2	Removal of Option 2	Thanet Coast and Sandwich Bay SPA Thanet Coast and Sandwich Bay Ramsar
Responses to Examining Authority's Questions	Applicant's response at Deadline 2	Removal of Option 2	Thanet Coast and Sandwich Bay SPA Thanet Coast and Sandwich Bay Ramsar
		Marine mammal in-combination assessment has been updated to include new project information (post June 2018) and to include consideration of Tier 2 projects	Southern North Sea cSAC/SCI Transboundary sites
		Amendments to the offshore ornithological text	Flamborough and Filey Coast SPA
		Clarification to project design parameters	Various sites

5 Project Overview

5.1 Introduction

- 5.1.1 VWPL is proposing the development of Thanet Extension. The project will be located approximately 8 km offshore from the Kent coastline (at its closest point), in proximity to the operational TOWF. It would have a generation capacity of up to 340 MW. Up to 34 WTGs would be located in the array, an area approximately 73 km² in size. Electricity generated would be transported to the shore by offshore export cables installed within the proposed OECC to the landfall at Pegwell Bay, then through export cables installed within the proposed OCC to an onshore substation at Richborough, which will in turn connect to the existing National Grid substation (see Figure 1.1).
- 5.1.2 Full details on the project description are presented within the ES, specifically in Volume 2, Chapter 1: Offshore Project Description and Volume 3, Chapter 1: Onshore Project Description (Application Refs: 6.2.1 and 6.3.1 respectively). It is noted that for a number of aspects of the project, a range of options are available, particularly during the construction phase. To understand the potential for impact, and in line with both the Thanet Extension EIA and PINS Advice Note 9: Rochdale Envelope, the project elements that represent the maximum adverse scenario for each topic (the 'Rochdale Envelope') have been identified within each topic specific chapter of the EIA.
- 5.1.3 The information presented below is divided into the project description, which summarises the relevant information contained within the relevant ES chapters referenced above, followed by the maximum adverse scenario, as it applies here to the RIAA.

5.2 Project Description

- 5.2.1 Thanet Extension will comprise of WTGs and all infrastructure required to transmit the power generated by the WTGs to the national grid network via the grid connection location at Richborough. It will also comprise any onshore and offshore infrastructure required to operate and maintain the wind farm and associated infrastructure. It should be noted that the project at the point of application (June 2018) included three options for the landfall. The Applicant now proposed to remove Option 2, this being the primary driver for the reissue of the RIAA, with Option 1 and Option 3 remaining. This section (and the following sections of the RIAA) have been updated to reflect that change.
- 5.2.2 The key components of Thanet Extension are likely to include (noting the inclusion of the 2 remaining options for the onshore works – further detail on these is provided in Application Ref 6.3.1, including further specifics on the design envelope for the cable corridor):
- Offshore WTGs (maximum of 34);

- OSS (if required);
 - Met mast (if required);
 - Foundations (for WTGs, and OSS and met mast if required);
 - Subsea inter-array cables linking the individual WTGs;
 - Subsea export cables from the wind farm to shore (up to four);
 - Scour protection around foundations and on inter-array and export cables (if required);
 - Cable landfall, where offshore cables are brought ashore;
 - Up to four TJBs;
 - Up to four onshore export cable circuits;
 - One onshore substation at Richborough Port; and
 - Up to two cables for the grid connection from the onshore substation to National Grid Electricity Transmission's (NGET) existing substation at Richborough Energy Park, comprising of up to six ducts (three per cable circuit) one duct per cable installed by Horizontal Directional Drilling (HDD). The final section of these cables will be trenched.
- 5.2.3 The onshore export cables will be buried throughout the entire route.
- 5.2.4 The general wind farm site information is shown in Table 5.1 below, including the envelope within the now two landfall options (Option 1 and Option 3).

Table 5.1: General wind farm site information

Parameter	Maximum design envelope	
Total site area (array) (km ²)	70	
Total offshore export cable corridor area (km ²)	28	
Shortest distance from array area to shore (km)	8	
Site capacity (MW)	340	
Maximum number of WTGs	34	
Maximum number of OSSs	1	
Maximum number of met masts	1	
Onshore cable corridor (approximate length) (km)	2.6	
Maximum TJB size (m ²)	48	
Maximum no. of TJBs required	4	
Maximum construction space required for TJB compound (m ²)	192	
Temporary access route track width (m)	6	
Temporary access route track length (m)	Up to 350	
Design Envelope for the two landfall options	Option 1	Option 3
Temporary works area (m ²)	50 x 60	30 x 40
Length (assuming approximately north-south alignment) of cofferdam (m)	N/A	165
Seaward width of temporary cofferdam area (m)	N/A	25
Maximum excavated material for TJBs (m ³)	1408	1408

5.3 Consideration of Alternatives

5.3.1 Thanet Extension has been through an extensive process to determine final site selection and for consideration of alternatives. The process followed, together with the reasons behind the final project site selection and the alternatives considered (in terms of location and methods) is presented in full in Volume 1, Chapter 4: Site Selection and Alternatives (Application Ref 6.1.4). Following submission of the ES in June 2018 and continuing discussions with stakeholders, Option 2 is now proposed to be removed from the consent application to avoid any permanent impacts on the saltmarsh at the landfall location. Of note are the two remaining options for the onshore cable corridor – including options from landfall to the substation. These options remain in the maximum design envelope pending results of site investigation works, and the need to consider the potential release of contamination from the historic landfall.

5.3.2 The approach taken to site selection and alternatives has involved early engagement with stakeholders, together with a range of electrical, engineering, ecological and socio-economic appraisal studies. Stakeholders involved in the consultation process on site selection and alternatives are as follows:

- The Planning Inspectorate;
- Thanet District Council;
- Dover District Council;
- Kent County Council;
- The Environment Agency;
- Natural England;
- The Marine Management Organisation;
- The Kent Wildlife Trust;
- Cefas;
- Trinity House;
- Port of London Authority
- Utility Providers;
- Landowners;
- Parish Councils; and
- Members of the public through consultation events and scoping.

5.3.3 The PEIR (published November 2017) considered alternative routing options, together with alternative methods of construction, O&M and decommissioning, alongside different technologies and materials in order to assess, as far as possible the potential environmental effects. The information was revisited during the drafting of the ES (Volume 1, Chapter 4: Site Selection and Alternatives (Application Ref 6.1.4)), resulting in the final scheme design described above. The lengthy process followed has allowed consultation at numerous intervals on project aspects such as site selection offshore, identification of cable corridors and landfall locations, routes taken for onshore components and methods of installation.

5.3.4 Key principles applied during the process can be summarised as follows:

- Shortest route preference for cable routing to minimise environmental impact, disturbance, cost and transmission losses;
- Avoidance of key sensitive features where possible and where not, seek to mitigate impacts;
- Minimise the disruption to populated areas; and
- The need to accommodate the range of technology sought within the design envelope, and exclude those options outwith the envelope (i.e. ruling out overhead lines).

5.3.5 Site selection and alternatives has been specifically influenced by nature conservation considerations through the following:

- Offshore ornithological considerations during the delineation of the array RLB (specifically in relation to red-throated diver and the Outer Thames SPA);
- Environmental considerations played a key role during the selection of the landfall/ substation location and cable route, with several locations/ routes considered and issues around designated sites taken into account during final landfall/ route selection, particularly aimed at minimising interaction with sensitive features such as designated bird species and habitats, with the relative risk in terms of designated sites considered for each option;
- The array boundary has been trimmed in response to statutory consultation; and
- The OECC has been reduced to align with the landfall location, with the area of overlap with the Thanet Coast SAC reduced.

5.4 Maximum Adverse Scenario

5.4.1 The 'worst-case' scenario, referred to throughout the EIA and here in the RIAA as the 'maximum adverse scenario', is applied here within the assessment of adverse effect. This approach ensures that the scenario that would have the greatest impact (e.g. largest footprint, longest exposure, or tallest dimensions, depending on the topic) is assessed; it can then be assumed that any other (lesser) scenarios will have an impact that is no greater than that assessed. The maximum adverse scenario has been updated here, and in following sections, having regard to the proposed removal of Option 2 as a landfall option.

5.4.2 The Screening Report identified a number of receptor groups, with the topic specific maximum adverse scenario for each group presented within the relevant chapter from the ES, with those drawn on here. The receptor groups are outlined below, together with the relevant ES chapter and Table number.

- Table 5.10 from Volume 2, Chapter 5: Benthic Subtidal and Intertidal Ecology (Application Ref 6.2.5);
- Table 4.9 from Volume 2, Chapter 4: Offshore Ornithology (Application Ref 6.2.4);
- Table 7.14 from Volume 2, Chapter 7: Marine Mammals (Application Ref 6.2.7); and
- Table 5.10 from Volume 3, Chapter 5: Onshore Biodiversity (Application Ref 6.3.5).

5.4.3 The maximum adverse scenario following the removal of Option 2, as it applies to each receptor group, is defined below in Table 5.2. For clarity regarding the differences between receptor groups, the information is presented according to individual project parameters, including a note regarding why the scenario is relevant to that receptor. Where relevant, the information includes any designed-in mitigation.

5.4.4 Table 5.2 has been updated in line with the Project Description Audit (Annex A to Appendix 1 of the Applicant's Deadline 1 Submission (PINS Ref REP1-023)) submitted for Deadline 1, with all numbers in this table now aligning with the audit document. Therefore, while there may be discrepancies between the values presented below and the relevant chapters, the Project Description Audit addresses all discrepancies.

Table 5.2: Maximum project design scenario

Project Parameter	Receptor Group	Maximum design scenario assessed	Justification
Construction Parameter			
Direct disturbance within the subtidal arising from jack-up vessel operations	Subtidal benthic habitats	<p>For up to 34 WTGs, one Offshore Substation (OSS) and one meteorological mast; total disturbance of 32,044.32 m².</p> <p>For up to 34 WTGs, one Offshore Substation (OSS) and one meteorological mast; total disturbance of 5,400 m².</p> <p>Temporary direct habitat disturbance = 37,444.32 m².</p> <p>Note that only a proportion of such disturbance may occur within a designated site.</p>	Volume 2, Chapter 5: Benthic Ecology (Application Ref 6.2.5), Table 5.10
Direct disturbance within the subtidal arising from cable installation	Subtidal benthic habitats	<p>Temporary habitat disturbance of:</p> <ul style="list-style-type: none"> 64,000 m² from burial of 64 km of inter-array cables, by ploughing (10 m disturbance corridor); 30,600 m² from cable barge anchor placement associated with cable laying for inter-array cables – six anchors (footprint per anchor of 10 m²) with 15 anchoring operations per installation (6 x 10 m² x 15 x 34 inter-array cables = 30,600 m²); 1,440,000 m² from burial of 120 km of export cables (4 x 12 m width trenches of 30 km length) by ploughing 48,000 m² from cable pre-sweeping (dredging) (24 km x 20 m); and 34,560 m² from cable barge anchor placement associated with cable laying for export cables - six anchors (footprint of 10 m²) (6 x 10 m² x 144 operations per installation x 4 export cables = 34,560 m²). Note that only a proportion of such disturbance may occur within a designated site. 	Volume 2, Chapter 5: Benthic Subtidal and Intertidal Ecology (Application Ref 6.2.5), Table 5.10
Direct disturbance to subtidal potential habitats of conservation importance during cable installation	Subtidal benthic habitats	<p><i>Sabellaria spinulosa</i> reef is known to be present within the region, including inside the existing TOWF array area and has the potential to form within Thanet Extension proposed array area prior to construction.</p> <p>The maximum adverse scenario is associated with the installation of up to four export cables and inter-array cables for up to 34 WTGs.</p>	Volume 2, Chapter 5: Benthic Subtidal and Intertidal Ecology (Application Ref 6.2.5), Table 5.10
Direct disturbance to the intertidal from cable installation operations, including in the saltmarsh	<p>Intertidal benthic habitats</p> <p>Onshore Biodiversity (in respect of birds only)</p>	<p>Four cable trenches will be installed across the intertidal, between Mean Low Water Spring (MLWS) and the edge of the saltmarsh. Trench width will be up to 10 m wide (28 m including spoil, based on a 30 degree slope), with burial up to 3 m below the seabed. Each cable will be separated by 5 m. A temporary access track of 6 m will also be utilised.</p> <p>Four trenches will be installed through the saltmarsh. Trenches will be 1 m wide, with 5 m either side to be used for vehicle movement and spoil. This will result in a maximum width of shoreline of 80 m. Under Option 3 for the landfall, a cofferdam will be installed around the section of sea wall that is being extended or opened for cable installation. The cofferdam will result in construction space (which includes the trench) in the saltmarsh totalling 3,872 m².</p>	<p>Volume 2, Chapter 5: Benthic Subtidal and Intertidal Ecology (Application Ref 6.2.5), Table 5.10</p> <p>Volume 3, Chapter 5: Onshore Biodiversity (Application Ref 6.3.5), Table 5.10</p>

Project Parameter	Receptor Group	Maximum design scenario assessed	Justification
Indirect disturbance from increased Suspended Sediment Concentrations (SSC) and associated sediment deposition arising from foundation installation and seabed preparation and cable installation	Subtidal and intertidal benthic habitats	<p>Temporary increases in SSCs and sediment deposition as a result of:</p> <ul style="list-style-type: none"> • The installation of 30 suction caissons and associated seabed preparation works (seabed preparation volume per foundation = 9,600m³), resulting in 288,000 m³ of sediment dredged and deposited at the surface; • Installation of 64 km of inter-array cable by jetting, to a depth of 3 m resulting in 48,000 m³ of sediment being displaced; • Installation of 120 km of export cable by jetting, to a maximum depth of 3 m resulting in 900,000 m³ of sediment displaced; and • Pre-sweeping, using a dredger, of 6 km of each export cable route for the purposes of sandwave clearance with all sediment disposed of in the water column along the cable route (1,440,000 m³). 	Volume 2, Chapter 5: Benthic Subtidal and Intertidal Ecology (Application Ref 6.2.5), Table 5.10
Direct disturbance to terrestrial habitats due to construction of the TJBs, cable installation and construction of the substation	Onshore Biodiversity	<p>Terrestrial habitats including semi-improved and amenity grassland, scrub, hardstanding and ephemeral / short perennial communities will be subject to disturbance during construction works.</p> <p>A maximum of four TJBs will be constructed within Pegwell Bay Country Park, inland of the landfall location. These will have a combined footprint of up to 192 m² within a temporary works area of up to 3,000 m². A haul road of up to 350 m in length x 6 m in width would also be required. All areas affected, including the haul road, would be reinstated to grassland (see Table 6.1).</p> <p>Up to 725 m of cabling will be required within Pegwell Bay Country Park, which will be reinstated to grassland. The maximum width of the working corridor will be 30 m.</p> <p>350 m of cabling will be required within Stonelees Nature Reserve, which represents the only part of the onshore RLB forming part of the Thanet Coast and Sandwich Bay SPA and Thanet Coast and Sandwich Bay Ramsar. This will be buried and the affected area will be reinstated to grassland as soon as possible following cable installation (see Table 6.1). The maximum area within the SPA and Ramsar which could be affected is 10,500 m², i.e. 350 m length x 30 m width.</p> <p>To the south of Stonelees Nature Reserve a further 750 m of cabling will be required to reach the substation. This will largely be buried beneath hard standing and amenity grassland (sports pitches), which would be reinstated following completion of the works. Onward cabling between the substation and the National Grid will either be by HDD under the A256 or buried beneath existing roads and hardstanding, which would be reinstated upon completion.</p>	Volume 3, Chapter 5: Onshore Biodiversity (Application Ref 6.3.5), Table 5.10 (amended here to reflect the proposed removal of landfall option 2 from the Project)
Direct permanent loss of terrestrial habitats	Onshore Biodiversity	<p>Terrestrial habitats including scrub, broad-leaved woodland, scattered trees, semi-improved grassland, hardstanding, ephemeral/ short perennial communities may be permanently lost due to construction works. In addition at least one small, ephemeral water body may be lost within Stonelees Nature Reserve.</p> <p>Most of the semi-natural habitats to be lost will be reinstated to grassland and any water bodies lost will be replaced. Approximately 2.4 ha of ephemeral/ short perennial habitat will be permanently lost during construction of the substation, although some of this will be restored following substation construction and approximately 0.4 ha of retained ephemeral/ short perennial habitat will be managed to increase its value (see Table 6.1).</p>	Volume 3, Chapter 5: Onshore Biodiversity (Application Ref 6.3.5), Table 5.10 (amended here to reflect the proposed removal of landfall option 2 from the Project)

Project Parameter	Receptor Group	Maximum design scenario assessed	Justification
Disturbance from increased noise, light and vibration from construction activities (noise/ light/ vibration/ visual).	Onshore Biodiversity	<p>Programme: Landfall: 5 months construction period and cabling up to 18 months construction period (excluding cable pulling). The total duration of the construction period may be up to a maximum of 30 months. There may be gaps in the construction programme where no works are undertaken.</p> <p>Noise: maximum construction noise levels are set out in Volume 3, Chapter 1, Project Description (Application Ref 6.3.1). It is assumed that percussive piling may be required during installation of the landfall cofferdam (as required under landfall option 3) and any cofferdam that may be required in Pegwell Bay Country Park to prevent the migration of contaminants. This would generate noise levels of up to 132 dB. Noise from percussive piling would be irregular in character and could last for a period of 33 days at each cofferdam.</p> <p>Lighting: most works would only take place between the hours of 07.00 and 19.00. Lighting would be restricted to lighting of working areas whilst works were taking place and there would be no requirement for lighting overnight, except for security lighting at the substation. 24-hour working may be required for HDD and for some works at the substation, e.g. during commissioning.</p>	Volume 3, Chapter 5: Onshore Biodiversity (Application Ref 6.3.5), Table 5.10 (amended here to reflect the proposed removal of landfall option 2 from the Project)
Indirect disturbance from increased noise and vibration from construction activities	Subtidal and intertidal benthic habitats	Installation of 36 monopiles (34 WTGs, one OSS and one met mast) using percussive piling at the maximum hammer energy of 5,000 kJ.	Volume 2, Chapter 5: Benthic Subtidal and Intertidal Ecology (Application Ref 6.2.5), Table 5.10
Indirect disturbance from increased SSC and sediment deposition in the intertidal	Intertidal benthic habitats	Installation of up to four export cables within the intertidal of two km per cable. Assumes a 10 m trench per cable with a maximum of 80,000 m ² of sediment positioned to the side of the trench.	Volume 2, Chapter 5: Benthic Subtidal and Intertidal Ecology (Application Ref 6.2.5), Table 5.10
Direct and indirect seabed disturbances leading to the release of sediment contaminants	Subtidal and intertidal benthic habitats	Seabed disturbance arising from installation of foundations and cables as described above for temporary increases in suspended sediments.	Volume 2, Chapter 5: Benthic Subtidal and Intertidal Ecology (Application Ref 6.2.5), Table 5.10
Change in air quality (dust)	Onshore Biodiversity	In accordance with IAQM (2014a) guidance dust impacts have been assessed for sensitive ecological receptors within 200 m of the Red Line Boundary or 200 m of the route(s) used by construction vehicles on the public highway, up to 500 m from the site entrance(s).	Volume 3, Chapter 5: Onshore Biodiversity (Application Ref 6.3.5), Table 5.10 Volume 3 Chapter 9: Air Quality, Table 9.15 (Application Ref 6.3.9)
Accidental pollution	Onshore Biodiversity	Pollution of water-based resources from the above construction activities. In the absence of mitigation works at the landfall construction could create pathways for the migration of potential contaminants from the landfill. Works could take place within/ across areas with potentially contaminated soils and groundwater (subject to the findings of planned Site Investigation works).	Volume 3, Chapter 5: Onshore Biodiversity (Application Ref 6.3.5), Table 5.10
Indirect disturbance arising from the accidental release of pollutants	Subtidal and intertidal benthic habitats	<p>Synthetic compound, heavy metal and hydrocarbon contamination resulting from offshore infrastructure installation and a maximum of 1,160 round trips to port by construction vessels over the construction period. Water-based drilling muds associated with drilling to install foundations, should this be required.</p> <p>Potential contamination of intertidal habitats resulting from machinery use and vehicle movement.</p>	Volume 2, Chapter 5: Benthic Subtidal and Intertidal Ecology (Application Ref 6.2.5), Table 5.10

Project Parameter	Receptor Group	Maximum design scenario assessed	Justification
<p>Construction activities: Underwater Noise</p>	<p>Marine mammals</p>	<p>WTG:</p> <ul style="list-style-type: none"> • Maximum site capacity 340 MW; • Maximum one piling operation at any one time (single vessel piling only); • Maximum piling period expected to be six working months in total, phased over a 28 month period. <p>Worse-case (spatial extent, largest impact footprint): Pile-driving of all foundations (RIAA assuming up to a maximum of 36 foundations in total, with the ES worst-case assuming 28 WTG as these would be 12+ MW turbines with the largest pile diameter):</p> <ul style="list-style-type: none"> • Max pile diameter 10 m; • Maximum hammer driving energy 5,000 kJ; • Soft start – starting hammer energy 250 kJ; • Soft start duration one hour; • Soft start 15 blows per minute; • Maximum 30 blows per minute; • Average 20 blows per minute; • Maximum 8,000 blows per foundation; and • Maximum piling time per foundation (assuming issues such as low blow rate, refusal etc) six hours. <p>Worst-case (temporal extent, longest duration of piling): Pile-driving of quadropod jacket foundations (RIAA assuming up to a maximum of 36 foundations, with the ES worst-case assuming 34 WTG as these would be 10 MW turbines):</p> <ul style="list-style-type: none"> • Four piles per foundation; • Maximum pile diameter 3 m; • Maximum hammer driving energy 2,700 kJ; • Soft start starting hammer energy 270 kJ; • Soft start duration one hour; • Soft start 15 blows per minute; • Maximum 30 blows per minute; • Average 30 blows per minute; • Maximum 8,400 blows per foundation; and • Maximum piling time per foundation (assuming issues such as low blow rate, refusal, etc) 8 hours. <p>OSS:</p> <ul style="list-style-type: none"> • Maximum one OSS; • Monopile or tripod foundation; • Maximum pile diameter 10 m for monopile, 3 m for tripod; • Maximum hammer driving energy 2,700 kJ; • Soft start starting hammer energy 270 kJ; • Soft start duration 0.33 hours; • Soft start 20 blows per minute; 	<p>Volume 2, Chapter 7, Marine Mammals (Application Ref 6.2.7), Table 7.14</p>

Project Parameter	Receptor Group	Maximum design scenario assessed	Justification
		<ul style="list-style-type: none"> • Maximum 30 blows per min; and • Maximum piling time per foundation (assuming issues such as low blow rate, refusal, etc) six hours. <p>Cable installation (export and array cables)</p> <ul style="list-style-type: none"> • Cable will be buried using ploughing, trenching, jetting, cutting, mass flow excavation or pre-sweeping (or combination); • 25% of cable route may require additional protection (e.g. rock dumping or mattresses); and • At closest point, export cable corridor route is 1.5 km from known seal haul-out locations in Goodwin Sands. There are potential seal haul-out areas within the export cable corridor route and landfall in Pegwell Bay. 	
UXO clearance	Marine mammals	<p>The following has been assumed:</p> <ul style="list-style-type: none"> • 30 UXOs • Clearance dates: 2019 at the earliest (with 2020 being more likely) • Number UXO clearances/ 24 hour period: up to 8 per 24 hour period (assuming up to 4 per day but 8 per 24 hours, should pm work combine with subsequent am work), requiring 8 days in total (assuming up to 4 per day) but up to 30 days maximum • Charge weights: between 0.05 and 130 kg (with a soft start approach involving scare charges for weights 130 kg) 	Volume 2, Chapter 7, Marine Mammals (Application Ref 6.2.7), Table 7.14
Vessel Interactions: Disturbance and collision risk	Marine mammals	<p>Worst-case:</p> <p>A maximum of 48 vessels may be in operation onsite during the construction phase for construction (although unlikely that all will be onsite at the same time):</p> <ul style="list-style-type: none"> • Three seabed preparation vessels; • Two transition piece installation vessels; • Six scour installation vessels; • Five vessels engaged in foundations; • Six WTG installation vessels; • Seven commissioning vessels; • One accommodation vessel; • Four IA cable vessels; • Six export cable vessels; • Two landfall cable installation vessels; • Three substation/ collector IV; and • Three other vessels. <p>1,160 round trips to port for 340 MW project over 3 years.</p>	Volume 2, Chapter 7, Marine Mammals (Application Ref 6.2.7), Table 7.14
Changes in water quality: Increased suspended sediments arising from construction activities with the potential to	Marine mammals	<p>Foundations: Seabed preparation for 30 quadropod suction caisson foundations (28 turbine foundations, one OSS and one met-mast (9,600 m³ each)), resulting in 288,000 m³ of sediment being dredged and re-deposited.</p> <p>Cable installation:</p>	Volume 2, Chapter 5: Benthic Subtidal and Intertidal Ecology (Application Ref 6.2.5), Table 5.10

Project Parameter	Receptor Group	Maximum design scenario assessed	Justification
affect the foraging ability of marine mammals		<p>Installation of 64 km of inter-array cable by jetting, to a maximum depth of 3 m resulting in 48,000 m³ of sediment being displaced;</p> <p>Installation of 120 km of export cable by jetting, to a depth of 3 m resulting in 900,000 m³ of sediment being displaced; and</p> <p>Pre-sweeping, assuming 20% of the export cable route requires pre-sweeping and 60 m³ of sediment is swept per metre, resulting in 1,440,000 m³ of sediment being dredged and re-deposited.</p> <p>Total: Maximum volume of displaced sediment of up to 2,388,000 m³ of sediment.</p>	
Loss of prey resources from changes in benthic habitats and/or changes in the fish and shellfish community from impacts during construction	Marine mammals	<p>The maximum adverse design scenario for the fish and shellfish ecology assessment is presented in Volume 2, Chapter 6: Fish and Shellfish.</p> <p>The maximum adverse design scenario for the Benthic habitats is presented in Volume 2, Chapter 5: Benthic Subtidal and Intertidal Ecology</p>	Volume 2, Chapter 7: Marine Mammals Ecology (Application Ref 6.2.7), Table 7.14
WTG	Offshore Ornithology	<p>No more than one foundations/ towers/ nacelles/ blades are installed at any one time.</p> <p>Number and diameter of turbines in relation to collision risk addressed in operational section of this table.</p>	Volume 2, Chapter 4: Offshore Ornithology (Application Ref 6.2.4), Table 4.9
Array cables and OECC	Offshore Ornithology	<p>Cable laying is carried out by six specialist vessels for export cables.</p> <p>Cable laying is carried out by four specialist vessels for inter-array cables.</p> <p>The cable laying operation is not restricted to any period of the year.</p>	Table 4.9 of Volume 2, Chapter 4: Offshore Ornithology (Application Ref 6.2.4)
Landfall	Offshore Ornithology	<p>Installation of cable at landfall is carried out by two specialist vessels.</p> <p>The installation of cable at landfall can only occur in April to September inclusive.</p>	Volume 2, Chapter 5: Benthic Subtidal and Intertidal Ecology (Application Ref 6.2.5), Table 5.10
Seabed preparation	Offshore Ornithology	<p>Temporary increases in SSCs and sediment deposition as a result of:</p> <ul style="list-style-type: none"> • The installation of 29 suction caissons and associated seabed preparation works (seabed preparation volume per foundation = 9,600m³), resulting in 278,400 m³ of sediment dredged and deposited at the surface; • Installation of 64 km of inter-array cable by jetting, to a depth of 3 m resulting in 48,000 m³ of sediment being displaced; • Installation of 120 km of export cable by jetting, to a maximum depth of 3 m resulting in 900,000 m³ of sediment displaced; and • Pre-sweeping, assuming 20% of the export cable route requires pre-sweeping and 60 m³ of sediment is swept per metre, resulting in 1,440,000 m³ of sediment being dredged and re-deposited. <p>Total: Maximum volume of displaced sediment of up to 2,666,400 m² of sediment.</p>	Volume 2, Chapter 5: Benthic Subtidal and Intertidal Ecology (Application Ref 6.2.5), Table 5.10
Offshore structures	Offshore Ornithology	Minimum spacing of 716 x 480 m between WTGs, 1 OSS and 1 met mast.	Volume 2, Chapter 4: Offshore Ornithology (Application Ref 6.2.4), Table 4.9

Project Parameter	Receptor Group	Maximum design scenario assessed	Justification
Vessel activities	Offshore Ornithology	Up to 48 vessels in operation on site at the same time.	Volume 2, Chapter 4: Offshore Ornithology (Application Ref 6.2.4), Table 4.9
O&M			
Habitat loss of seabed habitat through presence of foundations, scour protection and cable protection	Subtidal benthic ecology	<p>The maximum adverse scenario for long-term habitat loss also includes the use of cable protection (i.e. rock placement or concrete mattresses) along 25% of the export cable (30,000 m x 7 m = 210,000 m²). Up to 80,000 m² export cable crossings.</p> <p>Up to 1,256 m² per foundation footprint for the 12 MW WTGs (area of 20 m diameter buckets x four legs), one OSS and one met mast on quadropod suction bucket foundations (30 x 1,256m² = 37,680 m²). A further 7,854 m² area is predicted to be lost per foundation to prevent scour protection for the 28 WTGs (12 MW), one OSS and one met mast (7,854 m² x 30 foundations = 235,260 m²).</p> <p>80,000 m² inter-array cable protection for unburied cable (25% of the maximum 64 km), 12,000 m² array cable crossings, and 17,500 m² for inter-array cable protection approaching turbine foundations (50 m x 5 m x 70 (2 x 35 (foundation number (excluding the met mast)))).</p> <p>Long-term total habitat loss of: 0.68 km².</p>	Volume 2, Chapter 5: Benthic Subtidal and Intertidal Ecology (Application Ref 6.2.5), Table 5.10
Direct introduction and subsequent colonisation of hard substrate (WTGs/ scour protection/ cable protection) may affect benthic ecology and biodiversity	Subtidal benthic ecology	Total area of introduced hard substrate: 0.68 km ²	Volume 2, Chapter 5: Benthic Subtidal and Intertidal Ecology (Application Ref 6.2.5), Table 5.10
Direct disturbance to the seabed arising from maintenance operations (use of jack-up vessels, inspection of cables and foundations, repair of subtidal cables)	Subtidal and intertidal benthic ecology	<p>Temporary habitat loss/ disturbance from up to 340 jack-up visits over the 30¹⁰ year lifetime of the project.</p> <p>Preventative maintenance of subsea cables including routine inspections to ensure the cable is buried to an adequate depth and not exposed. The integrity of the cable and cable protection system (i.e. bending restrictors and bend stiffeners where used) will also be inspected. Maintenance works to rebury/ replace and carry out repair works on subsea cables should this be required and the associated increase in SSC and sediment deposition arising from these repair and replacement works.</p>	<p>Volume 2, Chapter 5: Benthic Subtidal and Intertidal Ecology (Application Ref 6.2.5), Table 5.10</p> <p>Volume 2, Chapter 1: Project Description (Offshore) (Application Ref 6.2.1), Table 1.33</p>

¹⁰ The operational life is expected to be 30 years, although may be extended as the project nears decommissioning, as technology/ maintenance improves

Project Parameter	Receptor Group	Maximum design scenario assessed	Justification
		<p>A worst-case assumption for the entire export cable corridor of one failure per cable every 5 years, requiring reburial or repair (through removal and re-laying of 300 m of cable), with a disturbance width of 10 m and a total area of reburial of 3,000 m².</p> <p>A worst-case assumption for the inter-array cables of 7 failures over the assumed 30 year lifetime of the project, with up to 2,000 m of cable being replaced, with a disturbance width of 10 m and a total area of disturbance of 20,000 m² per replacement.</p> <p>A worst-case assumption for reburial of the inter-array cables of all cables requiring reburial every 6 years (64,000 m), with a disturbance width of 10 m and a total area of disturbance of 3,840,000 m² over the lifetime of the project.</p> <p>No substantive maintenance work is expected to be required to the intertidal cables. Temporary disturbance in the intertidal from periodic will arise from preventative maintenance work, including geophysical investigations. The most likely scenario is that there would be planned yearly inspections of all cables within the intertidal, combined with 'unscheduled' inspections following extreme events (e.g. large storm events). The inspections are likely to comprise two or three persons accessing the intertidal on foot or small 4 wheel drive vehicle (use of low pressure vehicles such as an ARGO Cat or the use of hovercraft will also be considered) for a duration of approximately two to three weeks.</p>	
Indirect disturbance arising from electromagnetic fields generated by the current flowing through the cables buried to less than 1.5 m below the surface	Subtidal benthic ecology	Up to 64 km of inter-array cable connecting 34 WTGs operating at 66 kilovolts (kV) and up to 120 km of export cable (four cables of approximately 30 km length each) operating at up to 220 kV buried less than 1.5 m below the surface.	Volume 2, Chapter 5: Benthic Subtidal and Intertidal Ecology (Application Ref 6.2.5), Table 5.10
Indirect disturbance leading to alterations of seabed habitats arising from scour effects and changes in the sediment and wave regime	Subtidal benthic ecology	<p>The greatest changes to the tidal and wave regimes and the sediment transport in the array arise from the use of the 12 MW suction bucket caisson foundations and the use of the maximum volume of cable protection and 80 cable crossings, using concrete mattresses.</p> <p>Scour effects are assessed within the Marine Geology, Oceanography and Physical Processes Technical Annex (Volume 4, Annex 2-1).</p>	Volume 2, Chapter 5: Benthic Subtidal and Intertidal Ecology (Application Ref 6.2.5), Table 5.10
Indirect disturbance arising from the accidental release of pollutants	Subtidal benthic ecology	<p>Synthetic compound, heavy metal and hydrocarbon contamination resulting from up to 34 WTGs, one OSS and one met mast. Accidental pollution may also result from up to 307 round-trips to port by O&M vessels (including crew supply vessels and jack-up vessels) per year over the 30-year design lifetime.</p> <p>A typical 12 MW WTG is expected to contain approximately 2,000 litres of grease, 2,000 litres of synthetic or hydraulic oil, 200 litres of liquid nitrogen, 2,000 kg of silicone oil and 100 kg SF6 gas.</p> <p>The OSS is expected to contain approximately 200,000 litres of diesel, 1,000 litres of grey water, 1,000 litres of black water, 600,000 litres of transformer coolant water, 10 litres of UPS batteries, 20,000 litres of fire suppressant material, 1,500 kg of SF6, 5 m³ of engine oil and 5 m³ of HVAC coolant (glycol).</p>	Volume 2, Chapter 5: Benthic Subtidal and Intertidal Ecology (Application Ref 6.2.5), Table 5.10
Accidental pollution	Onshore Biodiversity	Potential contamination of intertidal and terrestrial habitats resulting from machinery use and vehicle movement is possible during O&M.	Volume 3, Chapter 5: Onshore Biodiversity (Application Ref 6.3.5), Table 5.10

Project Parameter	Receptor Group	Maximum design scenario assessed	Justification
		<p>Onshore, planned maintenance is likely to be restricted to weekly visits to the substation, up to eight checks of joint pits per year and annual checks of TJBs, all of which will take place for the lifetime of the wind farm (40 years). These checks would involve the use of up to two people and a light vehicle only, with up to two HGV visits to the substation also required each month.</p> <p>Planned maintenance in the intertidal zone will include periodic preventative maintenance work, including geophysical investigations. The most likely scenario is that there would be planned yearly inspections of all cables within the intertidal, combined with 'unscheduled' inspections following extreme events (e.g. large storm events). The inspections are likely to comprise two or three persons accessing the intertidal on foot or small four wheel drive vehicle (use of low pressure vehicles such as an ARGO Cat or the use of hovercraft will also be considered) for a duration of approximately two to three weeks.</p> <p>The extent or nature of any corrective maintenance required can't be predicted at this stage and therefore possible effects in terms of accidental pollution can't be assessed. Any corrective maintenance required would be subject to any necessary consents and consultation with the relevant nature conservation bodies.</p>	
Disturbance due to O&M activities (noise/ light/ vibration/ visual)	Onshore Biodiversity	During normal operation noise will only be generated by the substation, at a level of 90 dB (regular noise). There will be no lighting or visual disturbance during normal operation. Disturbance is possible during planned and corrective maintenance – see above regarding accidental pollution for maximum design scenario assessed.	Volume 3, Chapter 5: Onshore Biodiversity (Application Ref 6.3.5), Table 5.10
Vessel Interactions: disturbance and collision risk	Marine Mammals	<ul style="list-style-type: none"> • 300 small CTV O&M vessels • Two large O&M vessels • One lift vessel • One cable maintenance vessel • One auxiliary vessel <p>Total of 307 vessel round trips to port per year, per vessel (mostly small O&M vessels)</p>	Volume 2, Chapter 7: Marine Mammals Ecology (Application Ref 6.2.7), Table 7.14
Subsea Operational noise	Marine Mammals	Up to 34 x 10 MW WTGs operating over a lifetime of 30 years.	Volume 2, Chapter 7: Marine Mammals Ecology (Application Ref 6.2.7), Table 7.14
Change in prey resources resulting from changes in benthic habitats and/ or changes in the fish and shellfish community from impacts during operation	Marine Mammals	<p>The maximum adverse design scenario for the fish and shellfish ecology assessment is presented in Volume 2, Chapter 6: Fish and Shellfish.</p> <p>The maximum adverse design scenario for the Benthic habitats is presented in Volume 2, Chapter 5: Benthic Subtidal and Intertidal Ecology</p>	Volume 2, Chapter 7: Marine Mammals Ecology (Application Ref 6.2.7), Table 7.14
WTG	Offshore Ornithology	34 x 10 MW WTGs	Volume 2, Chapter 4: Offshore Ornithology (Application Ref 6.2.4), Table 4.9
Vessel activities	Offshore Ornithology	<ul style="list-style-type: none"> • 300 small CTV O&M vessels • Two large O&M vessels 	Volume 2, Chapter 4: Offshore Ornithology (Application Ref 6.2.4), Table 4.9

Project Parameter	Receptor Group	Maximum design scenario assessed	Justification
		<ul style="list-style-type: none"> • One lift vessel • One cable maintenance vessel • One auxiliary vessel Total of 307 vessel round trips to port per year, per vessel (mostly small O&M vessels)	
Decommissioning			
Direct disturbance due to operations to remove foundations, inter-array cables, export cables (including use of jack-up vessels)	Subtidal and intertidal benthic ecology	Total subtidal temporary habitat loss = 556,071.6 m ² ; and Total intertidal temporary habitat loss = 80,000 m ² . Assuming disturbance from cable removal results in 3 m wide disturbances and one jack-up vessel operation is required for the removal of each piece of wind farm infrastructure (i.e. each WTG or the OSS or the met mast). Export cable disturbance: 120 km x 3 m = 360,000 m ² (0.360 km ²) Inter-array cable disturbance: 64 km x 1 m = 64,000 m ² (0.064 km ²) Jack-up vessel footprint: 32,044 m ²	Volume 2, Chapter 5: Benthic Subtidal and Intertidal Ecology (Application Ref 6.2.5), Table 5.10
Indirect disturbance from increased SSC and associated sediment deposition from removal of foundations, inter-array cables and export cables	Subtidal and intertidal benthic ecology	Increases in suspended sediment and associated sediment deposition from the removal of up to 36 foundations (i.e. 34 WTGs, one OSS and one met mast) and 184 km of inter-array and export cable.	Volume 2, Chapter 5: Benthic Subtidal and Intertidal Ecology (Application Ref 6.2.5), Table 5.10
Direct and indirect seabed disturbances leading to the release of sediment contaminants	Subtidal and intertidal benthic ecology	As above for construction impacts.	Volume 2, Chapter 5: Benthic Subtidal and Intertidal Ecology (Application Ref 6.2.5), Table 5.10
Direct loss of species and habitats from the removal of foundations	Subtidal benthic ecology	Maximum surface area of 1,257 m ² per foundation provided by suction bucket foundations for 28 WTGs, one OSS and one met mast.	Volume 2, Chapter 5: Benthic Subtidal and Intertidal Ecology (Application Ref 6.2.5), Table 5.10
Direct permanent loss of habitat due to presence of scour and cable protection left <i>in situ</i> post-decommissioning	Subtidal benthic ecology	Permanent habitat loss of: 0.68 km ²	Volume 2, Chapter 5: Benthic Subtidal and Intertidal Ecology (Application Ref 6.2.5), Table 5.10
Indirect disturbance arising from the accidental release of pollutants	Subtidal and intertidal benthic ecology	Synthetic compound, heavy metal and hydrocarbon contamination resulting from a maximum of 34 WTGs, one OSS and one met mast, together with necessary round trips to port for decommissioning vessels over the decommissioning period. Potential contamination in the intertidal resulting from machinery use and vehicle movement.	Volume 2, Chapter 5: Benthic Subtidal and Intertidal Ecology (Application Ref 6.2.5), Table 5.10

Project Parameter	Receptor Group	Maximum design scenario assessed	Justification
Direct temporary habitat loss to the intertidal and saltmarsh from cable removal operations	Intertidal benthic ecology Onshore Biodiversity (in respect of birds only)	<p>The impacts and thus resultant effects for decommissioning, are expected to be similar to construction (see above), but over a slightly reduced timescale, and with a lower requirement for land take, since the assets are already <i>in situ</i>, resulting in a possible maximum 80,000 m² temporary loss of intertidal habitat.</p> <p>The programme for decommissioning is expected to be similar in duration to the construction phase. Any final decommissioning methodology would adhere to industry best practice, rules and regulations at the time of decommissioning. No permanent land take would result. The detailed activities and methodology for decommissioning will be determined later within the project lifetime, but worst-case would be expected to include:</p> <ul style="list-style-type: none"> • Dismantling and removal of electrical equipment; • Removal of cabling from site where required (it is expected some would be cut and left <i>in situ</i>); • Removal of any building services equipment; • Demolition of the buildings and removal of fences; and • Landscaping and reinstatement of the site. 	<p>Volume 2, Chapter 5: Benthic Subtidal and Intertidal Ecology (Application Ref 6.2.5), Table 5.10</p> <p>Volume 3, Chapter 5: Onshore Biodiversity (Application Ref 6.3.5), Table 5.10</p>
Direct disturbance to terrestrial habitats from decommissioning activities	Onshore Biodiversity	<p>Some disturbance to terrestrial habitats is likely during decommissioning, similar to during construction. The area affected is expected to be considerably smaller than during construction however since the assets are already <i>in situ</i> and some assets would remain <i>in situ</i> (e.g. TJBs, cable ducts, etc). Any final decommissioning methodology would adhere to industry best practice, rules and regulations at the time of decommissioning.</p>	Volume 3, Chapter 5: Onshore Biodiversity, (Application Ref 6.3.5), Table 5.10
Disturbance from decommissioning activities. (noise/ light/ vibration/ visual).	Onshore Biodiversity	<p>Disturbance effects during decommissioning are expected to be similar to construction (see above) but with a smaller area affected since the assets are already <i>in situ</i> and some assets would remain <i>in situ</i>. Any final decommissioning methodology would adhere to industry best practice, rules and regulations at the time of decommissioning.</p>	Volume 3, Chapter 5: Onshore Biodiversity (Application Ref 6.3.5), Table 5.10
Accidental pollution (including dust pollution)	Onshore Biodiversity	<p>Potential contamination of intertidal and terrestrial habitats is possible during decommissioning as during construction (see above), but with a smaller area affected since the assets are already <i>in situ</i> and some assets would remain <i>in situ</i>. Any final decommissioning methodology would adhere to industry best practice, rules and regulations at the time of decommissioning.</p>	Volume 3, Chapter 5: Onshore Biodiversity (Application Ref 6.3.5), Table 5.10
Impacts from decommissioning	Marine Mammals	<p>Impacts from decommissioning are expected to be similar to those listed above for construction, if project infrastructure is removed from the seabed at the end of the development's operational life. If it is deemed closer to the time of decommissioning that removal of certain parts of the development (e.g. cables) would have a greater environmental impact than leaving <i>in situ</i>, it may be preferable to leave those parts <i>in-situ</i>. In this case, the impacts would be similar to those described for the operational phase.</p>	Volume 2, Chapter 7: Marine Mammals (Application Ref 6.2.7), Table 7.14
Impacts from decommissioning	Offshore Ornithology	<p>Impacts from decommissioning are expected to be similar to those listed above for construction.</p>	Volume 2, Chapter 4: Offshore Ornithology (Application Ref 6.2.4), Table 4.9

5.5 Construction Programme

5.5.1 A high level indicative programme of relevant works is presented in Table 5.3 below, illustrating the main project infrastructure elements and the duration within which construction will occur. Overall, offshore construction is scheduled to commence in 2021 and lasting for up to 28 months, with pre-construction works required prior to that period (potentially including geophysical survey and clearance of UXO), these occurring from 2019 onwards (more likely to be 2020). Onshore construction is scheduled to occur within the period September 2020 to February 2023, requiring an indicative 30 months in total. It should be noted that there is a seasonal restriction for works in the intertidal and at the shoreline, as provided for in section 6 (Embedded Mitigation), which ensures no works within the intertidal area or at the shoreline during the period October to March inclusive.

Table 5.3: Indicative Constructive Programme

Construction Activity	Indicative construction date/period
Foundation installation	Within the period Q1 2021-Q2 2023 Total duration of approximately 6 months (including 1 month weather downtime)
Inter-array and cable export installation	Within the period Q1 2021-Q2 2023 Total duration of approximately 6 months (including 1 month weather downtime)
OSS (if required)	Within the period Q1 2021-Q2 2023 Total duration of approximately 2.5 months (including 2 weeks for foundation installation and weather downtime)
Met mast (if required)	Within the period Q1 2021-Q2 2023 Total duration of approximately 2.5 months (including 2 weeks for foundation installation and weather downtime)
WTG installation	Within the period Q1 2021-Q2 2023 Total duration of approximately 6 months (including 1 month weather downtime)
Scour protection	Within the period Q1 2021-Q2 2023 Total duration of approximately 1 month (including 2 weeks weather downtime)
Landfall works (including TJBs)	Indicative Q1 2021 – Q3 2021 subject to seasonal constraints Total duration of 5 months
Onshore cable circuits	Q1 2021 – Q2 2022 Total duration of 18 months (not including cable pulling and jointing)
Substation works	Q3 2020 – Q2 2022 Total duration of 24 months
NGET grid connection works	Q2 2021 – Q3 2022 Total duration of 3 months

5.6 Operation, Maintenance and Decommissioning Programme

- 5.6.1 Full details of the operation, maintenance and decommissioning programme is available in Volume 2, Chapter 1: Project Description (Offshore) and Volume 3, Chapter 1: Project Description (Onshore) (Application Refs: 6.2.1 and 6.3.1 respectively), with a summary provided here.
- 5.6.2 Thanet Extension is expected to be fully constructed within 2023, including testing and commissioning. The offshore operation life is expected to be 30 years, and onshore expected to be 40 years, following commissioning. Once the site is operational, the O&M phase begins; the schedule for O&M will be agreed via the O&M strategy, which will be finalised once the technical specifications are known. Decommissioning will follow the O&M phase; a decommissioning plan and programme would be required to be submitted prior to the construction of Thanet Extension.
- 5.6.3 The operation and control of Thanet Extension would be managed by a Supervisory Control and Data Acquisition (SCADA) system, connecting each WTG to the onshore control room. The SCADA system would enable the remote control of individual WTGs, the wind farm in general, as well as remote interrogation, information transfer, storage and the shutdown or restart of any WTG if required.
- 5.6.4 O&M activities will take place from the existing hub in Ramsgate. Maintenance activities can be categorised into two levels: preventative and corrective maintenance. Preventative maintenance is according to scheduled services whereas corrective maintenance covers unexpected repairs, component replacements, retrofit campaigns and breakdowns.
- 5.6.5 The O&M will be both preventative and corrective. The offshore O&M strategy will include an onshore (harbour based) O&M base at the existing hub in Ramsgate. Due to the proximity of the wind farm to the shore, it is unlikely that a Special Operations Vessel (SOV) would perform the function of an offshore accommodation base. The general O&M strategy may rely on Crew Transfer Vessels (CTVs), supply vessels, and helicopters for the O&M services that will be performed at the wind farm.
- 5.6.6 Onshore, the O&M requirements will be largely corrective, accompanied by infrequent on-site inspections of the onshore transmission infrastructure. However, the onshore infrastructure will be consistently monitored remotely, and there may be O&M staff visiting the onshore substation to undertake works on a regular basis (expected to be once per week). The onshore substation will not be manned, and lighting will only be required during O&M activities. Lighting will be required at the NGET connection at REP, although this is assumed to be existing. Periodic access to link boxes and test pits may also be required for inspection, estimated to be annually.
- 5.6.7 Worst-case O&M estimates are provided in the project descriptions chapters; Application Refs: 6.2.1 and 6.3.1. Relevant consents or licenses would be applied for if required during the O&M phase.

- 5.6.8 The scope of the decommissioning works onshore and offshore would be determined by the relevant legislation, policy and guidance at the time of decommissioning, but would most likely involve the removal of accessible installed components. Offshore this is likely to include; all of the WTG components, part of the foundations (those above seabed level) and the sections of the inter-array cables close to the offshore structures, as well as sections of the export cables. The process for removal of foundations is generally the reverse of the installation process. Onshore, it is likely that the onshore cables will be removed from the ducts and recycled, with the transition pits and ducts capped and sealed then left *in situ*.
- 5.6.9 The DCO includes a requirement on the project for an offshore decommissioning plan to be submitted to the SoS for BEIS under the Energy Act (2004) prior to construction. Any such plan would be updated at the time of decommissioning according to changing best practice and new technologies.

6 Embedded mitigation

- 6.1.1 The information on embedded mitigation per receptor draws on individual topic chapters and (if relevant and appropriate) mitigation specific to the RIAA. All embedded mitigation relevant to the RIAA is summarised below in Table 6.1 including the route for securing each mitigation measure. The determination of potential for adverse effect is made incorporating the embedded mitigation within the design scenario assessed.
- 6.1.2 As highlighted in Section 2 above, following the Sweetman II ruling, the Applicant has undertaken an assessment on the basis that all mitigation included within the project will not be taken into account during the process of screening for LSE, but remains relevant for consideration of adverse effect. This remains the case even for mitigation measures that would be applied as a result of other relevant legislation (such as pollution control measures). All mitigation measures presented below in Table 6.1 are taken into consideration during determination of adverse effect.

Table 6.1: Embedded mitigation

Mitigation measures embedded into the project design	Aim of the mitigation	Mechanism for Securing Mitigation
Subtidal and benthic intertidal habitats		
Definition of development boundaries	The development boundary selection was made following a series of constraints analyses, with the array area and OECC route selected to ensure the impacts on the environment and other marine users are minimised.	DCO
To address direct impacts during construction on benthic habitats of conservation importance	<p>Although habitats of conservation importance have not been identified in the baseline surveys, biogenic reef has been identified during the TOWF pre- and post-construction surveys and are known to be present in this area. Therefore, pre-construction surveys will be undertaken to identify any areas of core reef, which will then be micro-sited around to avoid impacts. A biogenic reef mitigation plan will be developed and agreed with the relevant stakeholders prior to construction. Biogenic reefs are not a designated feature of any of the sites considered within the RIAA. However, the mitigation plan is relevant here with respect to chalk reefs (geogenic reef). Should any chalk reefs be identified during these preconstruction surveys, then chalk reef would similarly be included within the biogenic reef mitigation plan, with micro siting to avoid direct impact. Further, a refinement to the OECC has been made to ensure that cables are not installed within the Thanet Coast SAC. This refinement sits alongside a cable exclusion area to enable temporary works (such as deployment of buoys, anchor handling etc) to be carried out within the SAC during the construction phase. The cable exclusion zone also coincides with the maintained dredged approach channel to Ramsgate Harbour.</p> <p>An ECoW will oversee the construction works in the intertidal area to ensure that impacts do not exceed those described within this assessment.</p> <p>A Phase 1 walkover survey will also be undertaken of the intertidal area prior to construction to provide an up-to-date assessment and delineation of sensitive habitats present and ensure that impacts to the intertidal area do not exceed those within this assessment. This will feed into the Saltmarsh Mitigation and Reinstatement Plan that will be produced as part of the application.</p>	DCO
Pollution prevention	<p>A Project Environment Management Plan (PEMP) will be produced post consent in consultation with SNCBs and followed to cover the construction and O&M phases of Thanet Extension. The PEMP will identify mitigation for accidental pollution, through incorporating plans to cover accidental spills, potential contaminant release and include key emergency contact details (e.g. MMO, Maritime Coastguard Agency (MCA) and the project site coordinator). The PEMP will require sign off by SNCBs. A Decommissioning Programme will be developed to cover the decommissioning phase.</p> <p>Typical measures will include: only using chemicals approved by Cefas under the Offshore Chemicals Regulations 2002; storage of all chemicals in secure designated areas with impermeable bunding (generally to 110% of the volume); and double skinning of pipes and tanks containing hazardous materials. The purpose of these measures ensures that potential for contaminant release is strictly controlled and therefore provides protection to ecology across all phases of the life of the wind farm.</p>	DCO
Electromagnetic Frequency (EMF)	Inter-array and export cables will be buried to a maximum target depth of 3 m, subject to a cable burial risk assessment. Where it is not possible to bury the cables sufficiently, cable protection will be used. While cable protection or burial does not decrease the strength of EMF at source, it does increase the distance between the cables and benthic receptors, thereby reducing the received EMF (from attenuation of the EMF) and potentially reducing the effect on those receptors.	DCO
Marine Mammals		
Pile driving WTG	<p>Monopiles:</p> <p>A one hour soft-start (during which the hammer energy will gradually be ramped up from approximately 10% energy to maximum over a period of approximately one hour) will be used for all piling activities. Piling will commence at a maximum of 200 kJ (8 and 10 MW WTG) or 250 kJ (12+ MW WTG) hammer energy. Hammer energy</p>	Included in the draft MMMP secured by dML

Mitigation measures embedded into the project design	Aim of the mitigation	Mechanism for Securing Mitigation
	<p>will ramp up to full hammer energy of 4,000 kJ (8 and 10 MW WTG) or 5,000 kJ (12+ MW WTG). The strike rate will increase from 15 blows per minute during the soft start to a maximum of 30 blows per minute during full piling.</p> <p>Quadropod jacket:</p> <p>A one hour soft-start will be used for all piling activities. Piling will commence at a maximum of 270 kJ. Hammer energy will ramp up to full hammer energy of 2,700 kJ. The strike rate will increase from 15 blows per minute during the soft start to a maximum of 30 blows per minute during full piling.</p>	
Pile-driving OSS and met mast (if required)	A one hour soft-start will be used for all piling activities. Piling will commence at a maximum of 270 kJ hammer energy. Hammer energy will ramp up to full hammer energy of 2,700 kJ. The strike rate will increase from 20 blows per minute during the soft start to a maximum of 30 blows per minute during full piling. This is the same irrespective of the foundation type (monopile, tripod or quadropod).	Included in the draft MMMP secured by dML
All pile-driving	Following JNCC (2010) guidelines, a Marine Mammal Mitigation Plan will be produced and followed to cover the construction phase. This will outline the soft-start procedure, monitoring, and any other agreed mitigation options deemed necessary, to reduce to negligible levels the potential risk of injury or death to marine mammals in close proximity to piling operations.	Included in the draft MMMP secured by dML
UXO clearance	The exact details of the mitigation required during UXO detonation will be agreed at such time as detailed information is available on the location, number and size of the detonations required. However it is likely that any UXO-MMMP will include visual monitoring of a mitigation search zone to be conducted for one hour, followed by the deployment of Acoustic Deterrent Devices (ADDs) for 40 minutes prior to the detonation of any UXO. Where practicable and safe to do so after a specific dynamic Risk Assessment, a 'soft-start approach' may be conducted before detonation of any UXO 130 kg or over, which involves the detonation of three small charges of 50 g, 100 g and 150 g spaced at five minute intervals with a further five minutes before the main UXO is detonated.	To be included in a UXO-MMMP as required
Pollution prevention	A PEMP will be produced post consent in consultation with SNCBs and followed to cover the construction and O&M phases. This will also incorporate plans to cover accidental spills, potential contaminant release and include key emergency contact details (e.g. MMO, Maritime and Coastguard Agency (MCA) and the project site co-ordinator). The PEMP will require sign off by SNCBs. A decommissioning programme will be developed to cover the decommissioning phase. The purpose of the measures to be implemented ensure that potential for contaminant release is strictly controlled and therefore provides protection to marine life across all phases of the life of the project.	DCO
EMF	Cable burial to a minimum target depth of 1 m (subject to risk assessment) will increase the distance between cables and benthic receptors, thereby reducing the strength of the received EMF.	DCO
Decommissioning	Embedded mitigation measures implemented in the Decommissioning Phase are likely to be similar to those implemented during the construction phase.	DCO
Offshore Ornithology		
Red-throated diver, interest feature of Outer Thames Estuary SPA	The original (pre-scoping) site boundary was reduced in size to ensure that the nearest WTG was separated by 4 km to the Outer Thames Estuary SPA.	Part of array layout described in DCO.
Onshore Biodiversity		

Mitigation measures embedded into the project design	Aim of the mitigation	Mechanism for Securing Mitigation
Project design	Careful routeing of the onshore cable route to avoid key areas of sensitivity, with the onshore RLB avoiding Sandwich Bay SAC.	Project design process
Project design	Aim to minimise the land take for works where reasonably practicable and locate (and micro-site within the red line boundary) those works away from the more valued designated site, habitat and species receptors where possible.	Project design process
ECoW	A suitably qualified ECoW will be employed for the duration of the construction period (and any subsequent reinstatement works), although this may not necessarily be a full-time role throughout. The ECoW will oversee the implementation of a LEMP and check that the works comply with applicable wildlife legislation and the relevant commitments made in this ES and associated management plans. The ECoW will provide regular reports to Natural England and other relevant stakeholders throughout the construction period (and subsequent reinstatement). The frequency and format of these updates will be agreed as part of the detailed LEMP.	DCO
Seasonally restricted works	Seasonal restrictions will be implemented to restrict works with potential to cause significant disturbance to the non-breeding waterbirds, including European golden plover and ruddy turnstone, in Pegwell Bay. These restrictions will apply to all works within inter-tidal habitats and at the shoreline, including all works on or within any cofferdam at the proposed landfall location. This will prevent any works taking place in these areas during the period October to March inclusive. Any driven/ percussive piling elsewhere within Pegwell Bay Country Park, e.g. if additional cofferdams are required to prevent the migration of contaminants, would be subject to a timing restriction and would not take place during the period October to March. HDD works (landfall option 1), if feasible, would also be subject to the same timing restriction. Further details of proposed timing restrictions are provided in the Outline LEMP (Application Ref 8.7).	DCO
Screening of works	Any works within 250m of intertidal habitats, which are undertaken between October and March but are not covered by seasonal restrictions and are in direct line of sight from intertidal habitats, e.g. works on the TJBs, will only take place following the erection of screening fencing to avoid visual disturbance to non-breeding waterbirds, including European golden plover and ruddy turnstone, using intertidal habitats. The details of proposed screening will be provided in the detailed LEMP and will be subject to agreement with Natural England. Further details are provided in the Outline LEMP (Application Ref 8.7).	DCO
Saltmarsh mitigation and reinstatement (in respect of intertidal habitat for non-breeding waterbirds)	Details of measures to reinstate and restore saltmarsh habitat providing supporting habitat for non-breeding waterbirds, including European golden plover and ruddy turnstone, following construction, are provided in the draft Saltmarsh Mitigation, Reinstatement and Monitoring Plan (Application Ref 8.13). The purpose of the plan is to ensure a like for like reinstatement of the existing saltmarsh habitat, whereby conditions at the site will replicate conditions prior to construction.	DCO
Mitigation for terrestrial invertebrates	<p>A Terrestrial Invertebrate Mitigation Strategy (TIMS), informed by a detailed invertebrate survey of affected areas, will form part of the detailed LEMP to be developed and agreed with the relevant planning authorities, in consultation with Natural England and other relevant stakeholders, post consent but prior to construction commencing. The TIMS will include details of specific measures to avoid and reduce effects on important species (including species forming part of the Thanet Coast and Sandwich Bay Ramsar wetland invertebrate assemblage, if present) and to ensure that suitable habitat for these species is maintained and enhanced following construction works. The precise selection of measures to be employed would depend on the results of the detailed invertebrate survey and the final design solution adopted, although at this stage it is considered likely that the measures relevant to Ramsar wetland invertebrate assemblage species would include:</p> <ul style="list-style-type: none"> • avoidance of habitats occupied by Ramsar wetland invertebrate species, e.g. by micro-siting, where possible; • protection of retained habitats occupied by Ramsar wetland invertebrate species against inadvertent damage, e.g. by use of temporary fencing and ECoW supervision; • reinstatement of suitable habitat for the relevant species as soon as possible following construction; and 	DCO

Mitigation measures embedded into the project design	Aim of the mitigation	Mechanism for Securing Mitigation
	<ul style="list-style-type: none"> where possible, translocation of habitat features supporting the relevant species, e.g. dead wood or other refugia. <p>Further details are provided in the Outline LEMP (Application Ref 8.7).</p>	
Mitigation for possible displacement of recreational visitors to Pegwell Bay Country Park	<ul style="list-style-type: none"> Mitigation measures will be employed to minimise disturbance to non-breeding waterbirds, including European golden plover and ruddy turnstone, from displaced visitors. The precise selection of measures to be employed would depend on the final design solution adopted, although at this stage it is considered likely that the measures would include: erection of additional signs to discourage people from entering intertidal habitats during sensitive periods; and The ECoW (or temporary warden / natural ambassador) would monitor visitor disturbance to intertidal areas across all parts of Pegwell Bay during the sensitive October to March period and, if required, would speak to visitors to discourage them from entering intertidal habitats. Regular reports to Natural England and other relevant stakeholders regarding the outcome of the monitoring and visitor interactions will be provided throughout the construction period. The frequency and format of these updates will be agreed as part of the detailed LEMP. <p>Further details are provided in the Outline LEMP (Application Ref 8.7). These details will be developed further as part of the detailed LEMP and will be subject to agreement with Natural England and other relevant stakeholders.</p>	DCO
Construction works (general)	A CoCP, which includes a section setting the principles for the CEMP and other subject-specific management plans (SSMPs), forms part of the application (Application Ref 8.1). A detailed CEMP and other SSMPs will be submitted post consent in accordance with the CoCP. The CoCP includes details of measures to minimise construction impacts within the onshore environment, including accidental pollution and the spread of invasive non-native species (INNS). It also includes a list of more detailed plans to be produced and agreed post consent.	DCO
Pollution Prevention	<p>A PEMP is standard for works below MHWS and will be produced post consent in consultation with SNCBs and followed to cover the construction and O&M phases of Thanet Extension. This will incorporate plans to cover accidental spills, potential contaminant release and include key emergency contact details (e.g. MMO, MCA and the project site coordinator). The PEMP will require sign off by SNCBs. A Decommissioning Programme will be developed to cover the decommissioning phase.</p> <p>The CoCP (Application Ref 8.1) provides details of measures to avoid accidental spills and potential release of contaminants within the onshore environment. Further details will be provided in the detailed CEMP and other SSMPs to be submitted and agreed post consent.</p>	DCO
Mitigation for possible disturbance during O&M works	<p>Planned O&M works at the shoreline or within intertidal habitats will avoid the period October to March inclusive (as for construction). Planned inspections will follow an agreed methodology, set out in the detailed LEMP, designed to avoid damage to sensitive habitats or disturbance to sensitive species. Further details are provided in the Outline LEMP (Application Ref 8.7).</p> <p>Unplanned works are by their nature unpredictable, however such works will be undertaken in consultation with SNCBs at the time such works are required, to determine the need for mitigation in relation to the works required, including the nature and timing of those works.</p>	DCO
Decommissioning	Embedded mitigation measures implemented in the Decommissioning Phase are likely to be similar to those implemented during the Construction Phase.	DCO

7 The Screening Process for the Project Alone

7.1 Screening Undertaken for Thanet Extension

- 7.1.1 As noted in section 1 above, the first stage to the HRA process is Screening, the process followed to identify the potential for LSE from the project, alone and in-combination, on European sites of nature conservation importance. Screening for Thanet Extension alone was undertaken during PEIR, with the Screening Report undergoing consultation prior to finalisation in September 2017 (see section 4).
- 7.1.2 The Screening Report, as finalised at that time, has been appended to the RIAA (Annex 1 (Application Ref 5.2.1)) but not repeated in full. Instead, the approach taken has been to revisit the screening within section 7 of the RIAA and update conclusions on LSE where relevant, for example where subsequent consultation identified an additional designated site for consideration.
- 7.1.3 Shortly before finalisation of the RIAA at the point of submission for examination in June 2018, the Sweetman II ruling was issued (as referenced in Section 2). That ruling has implications for screening of LSE in that the process for identifying the potential for a LSE to arise should be conducted in advance of the application of any additional mitigation to reduce an impact on a receptor. This represents a change in current practice where all relevant mitigation has been considered as being applied in the LSE screening process (rather than in the assessment of potential adverse effect as is now considered to be the case).
- 7.1.4 This subsequent revision of the RIAA, driven by the removal of Option 2 from the landfall, has included further changes to the screening, primarily by way of further response to Sweetman II. All changes to screening following the issue of the Screening Report are described in the following section, with the final decision on screening (ie the sites, features and effects taken forward under LSE) summarised in Table 7.3.
- 7.1.5 As noted in Section 2.1, the RIAA has been reviewed to ensure compliance with the Holohan ruling (Holohan v. An Bord Pleanála (C-461/17)) . In broad terms, the ruling requires a developer to consider species and habitats which are not protected, if they may have an impact on the protected species or site. For example, if the protected feature is a carnivorous animal, then it would need to be clear that the impact of the project on the prey species have been considered. Similarly, non-designated habitat of protected species should also be considered. The assessment needs to take account of the conservation objectives.
- 7.1.6 Such an approach is an integral part of any RIAA; and indeed has been incorporated as standard within the current RIAA and the Screening Report (included as Annex 1) that preceded it.

- 7.1.7 For example, the Southern North Sea cSAC/SCI is designated solely for harbour porpoise. However, the third conservation objective for the site make reference to both prey species and habitat, with both of these considered through screening. For example, in Table 7.3 of the Screening Report, potential effects identified for consideration during screening included 'changes in prey availability and behaviour', with Table 8.1 of that report concluding no LSE. Further, the potential for an impact on habitat was considered in Table 8.1 of the Screening Report, with no LSE concluded. The consideration of the third conservation objective, as presented in the assessments of the project alone (Section 11) and in-combination (Section 12), further draws on the ES conclusions including those for physical processes (Volume 2, Chapter 2: Marine Geology, Oceanography and Physical Processes) to conclude that no adverse effect will result.
- 7.1.8 A similar approach applies throughout for all designated sites assessed, with the assessment therefore considered to be compliant with the Holohan ruling.

7.2 Approach to Screening

- 7.2.1 The purpose of Screening is to identify the European and Ramsar sites (with their associated features) for consideration within the overall HRA process. Once screened in for consideration, the potential for LSE is determined. The screening process followed a series of defined criteria, to ensure a clear and transparent process. The criteria applied are summarised below in Table 7.1 (it should be noted that an additional quantitative assessment was also carried out in relation to offshore ornithology). All screened in sites and features are summarised in Table 7.1, including the conclusions on the potential for LSE.

Table 7.1: Screening criteria for the initial identification of SACs, SPAs and Ramsar sites

Criteria used for initial identification of European and Ramsar sites		Specific criteria
1	European or Ramsar site that overlaps with Thanet Extension boundary (array, cable corridor, substation AoS).	Physical overlap between project boundary and designated site.
2	SAC supports mobile populations of qualifying features (e.g. marine mammals, migratory fish, bats and otters) that may interact with potential effects associated with Thanet Extension. <i>SPA or Ramsar site has interest features that nest and raise their young within the site during the breeding season and then occur in the region of Thanet Extension outside the breeding season, either on migration (passage) or throughout the winter.</i>	Where a designated site hosts a mobile species whose range may include Thanet Extension– e.g. North Sea Management Unit for cetaceans. <i>Identified by the application of the information on migratory movements and winter distribution (e.g. Wernham et al., 2002; Balmer et al., 2013).</i>
3	SAC with qualifying species whose mean maximum foraging or migratory range overlaps with Thanet Extension. <i>SPA or Ramsar site is outside the offshore zone (i.e. above MLWS) but has interest features that, whilst nesting onshore, forage offshore during the breeding season.</i>	Where a qualifying species has a known foraging or migratory range that includes Thanet Extension (e.g. seals). <i>Identified by the application of the mean maximum foraging range from the standard reference: Thaxter et al. (2012).</i>
4	SAC and/ or a qualifying feature located within the potential range of effect associated with Thanet Extension. <i>SPA or Ramsar site overlaps with the potential extent of impacts associated with Thanet Extension.</i>	Where the potential effects associated with Thanet Extension extend beyond the boundary of the project and reach a designated site. <i>Identified by a physical overlap of the designated site and the potential extent of impact.</i>
5	SAC qualifying habitat or species recorded during site specific surveys. <i>SPA or Ramsar site has interest features that use that site in the non-breeding season and then occur in the region of Thanet Extension on migration (passage).</i>	Presence of a qualifying habitat or species at Thanet Extension that can be associated with a SAC. <i>Identified by the application of the information on migratory movements to and from the UK in the standard reference: Wright et al., 2012.</i>

7.3 Definition of the Study Area

- 7.3.1 The extent of the study area for each receptor group is a function of the screening process, and therefore takes account of the ecology of the habitat(s) and/ or species and the potential for effect (the latter including the predicted scale of effect).
- 7.3.2 The study area for **subtidal and intertidal benthic habitats** included designated sites that triggered one or more of the following:
- Designated sites with a physical overlap with the array or offshore cable corridor (including landfall); and
 - Designated sites within the maximum range of relevant effect (being up to 14 km from the project boundary).
- 7.3.3 The study area for the highly mobile **marine mammal** species is within that applied within the ES (Volume 2, Chapter 7: Marine Mammals (Application Ref 6.2.7)), with the ES marine mammal study area being species specific but taking account of ecology and behaviour. For the RIAA, a species specific screening range has been applied within the wider ES study area, applied from the project extents and to identify relevant designated sites. For seals, the screening area was effectively defined by the foraging range of harbour seal (*Phoca vitulina*) and grey seal (*Halichoerus grypus*), being 120 km and 145 km respectively (SMRU, 2011 for harbour seal and Thompson *et al.* 1996 for grey seal). For harbour porpoise (*Phocoena phocoena*), the range applied is 26 km (derived from the draft advice issued by JNCC, which identified that ‘Habitats Regulations Assessment (HRA) will be considered for all new developments (coastal and marine) using pile driving within the site or within 26 km’ (JNCC, 2016)).
- 7.3.4 The study area for **onshore biodiversity** included all European Sites within 2 km of the RLB, plus (onshore) European sites of ornithological importance (i.e. SPAs and some Ramsar sites) within a distance of up to 20 km.
- 7.3.5 For **offshore ornithology** receptors, the study area was focused on the proposed WTG array and a 4 km buffer placed around it and it was within this area that new survey work was carried out using the aerial digital stills survey technique (the method is described in the Baseline Technical Report – Volume 4, Annex 6-1). Account had to be taken of the fact that birds are mobile and those observed within the study area may be associated with SPA and Ramsar sites that can be some distance away. For instance non-breeding auk species observed in the winter months in the study area may have come from breeding colonies that could be hundreds of kilometres away.

7.4 Definition of Effects (Subtidal and Intertidal Benthic Habitats)

7.4.1 The Screening Report identified a number of potential effects with respect to subtidal and intertidal benthic habitats that may arise during the construction, O&M and decommissioning of Thanet Extension. The terminology applied followed that applied within the PEIR and now within the ES, however it is recognised that the terminology may differ from that applied within relevant Advice on Operations (e.g. the advice contained within the Regulation 35 advice provided for the Margate and Long Sands SAC¹¹). For simplicity and consistency, a comparison of relevant terms is provided below in Table 7.2.

Table 7.2: Comparison of relevant terms used to define potential effect for subtidal and intertidal benthic ecology

Potential effect term applied here	Equivalent term(s) from Advice on Operations
Temporary habitat loss/ disturbance	<ul style="list-style-type: none"> • Abrasion/ disturbance of the substrate on the surface of the seabed • Habitat structure changes - removal of substratum (extraction) • Penetration and/ or disturbance of the substratum below the surface of the seabed, including abrasion
Increases in suspended sediments, with subsequent deposition	<ul style="list-style-type: none"> • Changes in suspended solids (water clarity) • Smothering and siltation rate changes (Light-heavy)
Accidental pollution	<ul style="list-style-type: none"> • Deoxygenation • Temperature decrease (Cables – in operation) • Temperature increase (Cables – in operation)
Changes to physical processes	<ul style="list-style-type: none"> • Water flow (tidal current) changes, including sediment transport considerations
Long-term physical loss of habitat	<ul style="list-style-type: none"> • Habitat structure changes - removal of substratum (extraction) • Penetration and/ or disturbance of the substratum below the surface of the seabed, including abrasion • Physical loss (to land or freshwater habitat)
Introduction of hard substrate	<ul style="list-style-type: none"> • Introduction or spread of Invasive Non-Native Species (INNS) • Physical change (to another sediment type)
EMF	<ul style="list-style-type: none"> • Electromagnetic changes

¹¹ <http://publications.naturalengland.org.uk/file/3271272>

7.5 Confirmation of Screening

7.5.1 A summary of the changes made to the conclusions on LSE (as updated post Sweetman II and provided in Annex 1 of the Screening Report (Annex 1; Application Ref 5.2.1)) subsequent to the issue of the revised Screening report (but independent of Sweetman II) is provided below, including reference to the reason for the change.

All Receptor Groups

7.5.2 During the preparation of the Screening Report, the potential for accidental pollution to occur throughout the project area during construction, O&M and decommissioning was recognised. Initially, the potential for accidental pollution was concluded to result in no LSE for all receptor groups, as a result of anticipated project mitigation typically applied to OWFs. However, in their response of 26th July 2017, Natural England found that:

'We acknowledge that a CoCP and EPMP will be agreed with the aim to avoid impacts through accidental pollution. However, given the early stage of the process, we are unable to agree that there will be no LSE until these documents have been agreed between relevant parties.'

7.5.3 Accidental pollution was therefore ruled in for LSE for all receptors associated with sites in close proximity to the works.

7.5.4 Similarly, the potential for the introduction of hard substrate following construction of Thanet Extension to result in the spread of Invasive Non-Native Species (INNS) were screened in by the Screening Report for potential LSE for a number of designated sites, with Natural England highlighting the risk primarily for onshore sites in their letter dated 26th July 2017.

7.5.5 Following the finalisation of the Screening Report in September 2017 until submission of the application (June 2018), considerable progress was made with regards the relevant plans that address concerns around accidental pollution and the risk from INNS during construction. It should be noted that such pollution control measures are included as an integral part of the project design and form part of the wider project compliance requirements. As such, at the time of submission for examination (June 2018), the RIAA considered these measures to be separate to and outside of the RIAA process, with the project as a whole requiring such measures in order to achieve consent. It was considered that these plans, prepared in consultation with Natural England (among others) and provided for within the DCO, provide sufficient certainty that the risk of accidental pollution at all stages of the project and the spread of INNS during construction is negligible and that measures will be in place to control and minimise such risk. The relevant plans are as follows (including where/ how these are or will be provided for):

- Code of Construction Practice (CoCP) (to be submitted at application) (Application Ref 8.1);

- Construction Environmental Management Plan (CEMP) (principles for the CEMP set out in the CoCP, with a detailed CEMP to be submitted post consent and in accordance with the CoCP);
- Outline Landscape Ecological Management Plan (LEMP) (submitted at application) (Application Ref 8.7);
- Construction Traffic Management Plan (TMP) (to be submitted post consent and in accordance with the CoCP);
- Air Quality Management Plan (AQMP) (to be submitted post consent); and
- Project Environment Management Plan (PEMP) (to be submitted post consent).

7.5.6 These set out measures that follow published guidelines and best working practice that include provision, among other requirements, for accidental pollution and the prevention of the release and spread of INNS. Further information on the relevant plans is provided within Table 6.1 on embedded mitigation.

7.5.7 With respect to the landfall, it is acknowledged that the historic landfill site represents a potential risk in terms of leachate. However, the option for construction at the landfall site is yet to be determined, being subject to results from site investigation works. The final option selected, together with the detailed design, will therefore be informed by the findings of those site investigation works. Each option includes embedded mitigation to manage the risk of accidental pollution by avoiding the introduction of a contamination pathway, as required by the wider consenting for the project. The CMS includes provision to ensure that the final option selected would not result in such a contamination pathway. It was therefore considered that LSE resulting from accidental pollution could be ruled out.

7.5.8 During O&M, there is a risk that hard substrate at Thanet Extension could be colonised by INNS. While colonisation by INNS of the hard substrate introduced at TOWF was not recorded in the post-construction surveys, the surveys were not able to fully determine whether colonisation had occurred and therefore it is possible that non-native species are present. However, it is noted that the construction of Thanet Extension would only enlarge the available habitat in this location rather than create a separate 'stepping stone' and as such the contribution of Thanet Extension to the increase in risk of non-native species is minimal.

7.5.9 Despite the earlier decision to screen accidental pollution and INNS out from LSE, a further review of Sweetman II has resulted in a precautionary decision to screen accidental pollution in for LSE for the sites/ receptors originally screened in for LSE in the Screening Report (Appendix 1). The subsequent sections have been amended to reflect that decision. As regards INNS, this remains screened out for offshore receptors but has been screened in for onshore receptors, with INNS offshore therefore not taken forward for consideration of the potential for an AEol.

Subtidal and Intertidal Benthic Habitats

7.5.10 The Screening Report identified the anticipated effects from Thanet Extension on relevant offshore receptors in Table 7.3. These include the potential range of effect. At the time that the table (and assessment) were drafted, the physical processes chapter for PEIR was not available. Therefore, an assumption was made regarding the potential range of effect in relation to the potential for a temporary increase in suspended sediments, with subsequent deposition. The assumption made was as follows:

'It was concluded in the TOWF assessment that sand and coarse materials would only be dispersed over a short distance (typically meters) however silt and chalk would be carried in suspension across the full spring tidal excursion (approximately 10 km). Chalk sands, even at low concentrations, would cause the seawater to appear 'milky' when in suspension. A full physical processes assessment, including tidal excursions, will be undertaken for Thanet Extension and could be used to inform an AA. A dispersion of 10 km for very fine material is also supported by the observed turbid wakes at TOWF (ABPmer, 2017). This will be re-visited if required on receipt of the tidal excursion assessment being undertaken for Thanet Extension'

7.5.11 Following issue of the physical processes PEIR chapter, it became apparent that although the assumed 10 km range holds true for sediment disturbed during the installation of the cable, it does not hold true for sediment that may be disturbed during drilling of WTG foundations. For the latter, a range of up to 14 km is noted, subsequently amended to 13km in the ES physical processes chapter. The increase in range does not, however, change the conclusions on the potential for LSE as it does not screen in any additional sites.

7.5.12 Specifically in relation to the Thanet Coast SAC, the Screening Report considered the potential for effect on all features, however for clarity it should be noted that where potential for LSE was found (with the exception of accidental pollution and INNS, addressed above), this related to the chalk reef feature only and not submerged sea caves – the latter having been screened out of assessment for all effects other than accidental pollution. The screening out of effects on the sea caves has now been supported by Natural England in response to the first Written Questions from the Examining Authority (Natural England's response to WQ 1.1.3 (PINS Ref REP1-112)).

7.5.13 Following refinements made during examination to the OECC, there will now be no overlap between physical cable installation activities and the Thanet Coast SAC. Therefore, as this measure is considered to be an integral component of the project rather than mitigation, permanent impacts and EMF impacts on the chalk features within the SAC are now screened out.

7.5.14 Further information on intertidal habitats is provided for below under onshore biodiversity (a function of the overlap between onshore ecological features and intertidal habitats).

Marine Mammals

7.5.15 During the transboundary consultation undertaken by PINS in July and August 2017, Natura 2000 sites were highlighted with respect to marine mammals by the Ministère de la transition écologique et solidaire in French waters¹², specifically the Ridens et dunes hydrauliques, Bancs des Flandres and Récifs et Caps Gris Nez Blanc Nez). These were already considered within the Screening Report and therefore no change was required for these sites.

7.5.16 Further, during the Section 42 consultation, additional transboundary responses were received from the Ministère de la Transition Ecologique et Solidaire, referencing a number of sites for marine mammals. These included the Bancs des Flandres (grey seal and harbour porpoise), Ridens et dunes dydrauliques (grey seal, harbour seal and harbour porpoise) and Recifs Gris Nez Blanc Nez (grey seal, harbour seal and harbour porpoise). All these sites were considered during the screening process and therefore no change required. The Agence Francaise pour la Biodiversite similarly referred to these designated sites and species.

¹²<https://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/projects/EN010084/EN010084-000089->

<Reg%2024%20notifcation%20response%20from%20France%20Point%20Focal%20Convention%20de%20Espoo.pdf>

- 7.5.17 A further Regulation 32 response was received from the Ministère de la Transition Ecologique et Solidaire following the submission of application. The response reinforced their previous comments, while noting that the RIAA included more French sites than they had previously raised. No marine mammal sites or species were identified that had not already been subject to screening. A final response was received from the Ministère de la Transition Ecologique et Solidaire as a response to rule 6 on 11 December 2018. That letter focused on harbour porpoise and specifically the 26km screening distance – including questions around why that had resulted in all but one SCI (Bancs des Flandres) within French waters being screened out of further assessment. The letter also raised comments as regards in-combination, specifically in relation to French offshore wind farms at Courseulles-sur-Mer, Fecamp and Dieppe le Treport, with these considered in section 8.
- 7.5.18 It can be confirmed that all the transboundary sites raised by the French authorities have been included within the screening process, following the same screening criteria as applied to all sites regardless of the member state within which the site is located.
- 7.5.19 The approach to screening for harbour porpoise applied within the RIAA, namely the application of 26km, has become standard for such assessments in the UK (e.g. BEIS, 2018 and MMO, undated) and was applied to all Natura 2000 sites considered, regardless of the member state within which the site occurred. The need for an approach outside UK waters was driven by transboundary sites screened in for assessment and the lack of conservation objectives at all relevant Natura 2000 sites in French waters (none of the three SCIs referenced by the Ministère de la Transition Ecologique et Solidaire have conservation objectives attached to them)¹³. Similarly, no advice has been located as regards assessment methodologies for harbour porpoise or marine mammals in French waters although general EIA advice has been located¹⁴ (with investigations into these matters carried out by Vattenfall internally through their French team).
- 7.5.20 The 26km range applied in screening has been derived from Table 2 of the 'Draft Conservation Objectives and Advice on Activities' prepared for the Southern North Sea cSAC (JNCC, 2016), which in turn draws on published literature (eg Dahne et al 2013 and Tougaard et al, 2014). That published literature draws on monitoring of harbour porpoise undertaken during construction of a number of offshore wind farms across Europe. Table 2 within JNCC (2016) found that:

'A Habitats Regulations Assessment (HRA) will be considered for all new developments (coastal and marine) using pile driving within the site or within 26km'.

- 7.5.21 In practice, that means that any piling activity located beyond 26km is not included within the assessment and similarly no designated sites beyond 26km from piling are screened in. 26km has been applied, in agreement with Natural England during the Evidence Plan Process, as a maximum screening range from all noisy activities at Thanet Extension in relation to sites designated to harbour porpoise. It is as a result of the screening range that the only transboundary site screened in for harbour porpoise is the Bancs des Flandres SCI; all other transboundary sites lie beyond that 26km range.

Onshore Biodiversity

- 7.5.22 The conclusions on potential LSE for onshore biodiversity within the Screening Report are summarised below (drawing on Table 8.1 of the Screening Report, as updated post Sweetman II and provided in Appendix 1 of the HRA Screening Report (Annex 1; Application Ref 5.2.1). The conclusions on potential LSE have been updated here in response to comments received since the RIAA was submitted in June 2018, a review of the Sweetman II ruling and having regard to proposed changes to the Project (i.e. the removal of landfall Option 2).
- Habitat loss (permanent and/ or temporary) for Sandwich Bay SAC, Thanet Coast and Sandwich Bay SPA, Thanet Coast and Sandwich Bay Ramsar (construction, O&M);
 - Temporary increase in SSC and deposition for Thanet Coast and Sandwich Bay SPA, Thanet Coast and Sandwich Bay Ramsar (ornithological features only) (construction, O&M);
 - Accidental pollution for Thanet Coast and Sandwich Bay SPA, Thanet Coast and Sandwich Bay Ramsar (construction, O&M);
 - Spread of INNS for Thanet Coast and Sandwich Bay SPA, Thanet Coast and Sandwich Bay Ramsar (construction);
 - Noise disturbance for Thanet Coast and Sandwich Bay SPA, Thanet Coast and Sandwich Bay Ramsar (ornithological features only) (construction, O&M);

¹³ <http://reseau-manchemerdunord.n2000.fr/>

¹⁴ https://www.ecologique-solidaire.gouv.fr/sites/default/files/guide_etude_impact_eolien_mer_2017_complet.pdf

- Visual disturbance for Thanet Coast and Sandwich Bay SPA, Thanet Coast and Sandwich Bay Ramsar (ornithological features only) (construction, O&M);
- Accidental pollution for Thanet Coast and Sandwich Bay SPA, Thanet Coast and Sandwich Bay Ramsar (construction, O&M and decommissioning); and
- Change to physical processes for Thanet Coast and Sandwich Bay SPA, Thanet Coast and Sandwich Bay Ramsar (ornithological features only) (O&M).

7.5.23 Changes to the conclusions drawn in the Screening Report are described and justified below, taking each potential effect in turn.

Habitat Loss

7.5.24 Since the production of the Screening Report (Annex 1, Application Ref 5.2.1), scheme development has included the amendment of the onshore RLB to avoid the Sandwich Bay SAC onshore boundary and therefore remove any potential LSE associated with onshore qualifying habitats, i.e. fixed coastal dunes with herbaceous vegetation (grey dunes), embryonic shifting dunes, shifting dunes along the shoreline with *Ammophila arenaria* (white dunes), dunes with *Salix repens* spp. *argentea* (*Salicion arenaria*) and humid dune slacks. Following submission of the ES, further project refinement has taken place with the decision made to drop landfall Option 2 (extension of the seawall). LSE relating to the Sandwich Bay SAC are therefore now screened out.

7.5.25 Breeding little tern is included as a qualifying feature for the Thanet Coast and Sandwich Bay SPA and Table 8.1 of the Screening Report highlighted the potential for LSE on this feature in respect of habitat loss (permanent and/ or temporary). However, little tern has not bred at Pegwell Bay for a number of years with Natural England (2014) stating that the species has not bred within the site for over ten years (see also ES Volume 5, Annex 5-4 Ornithology Baseline Report (Application Ref 6.5.5.4)). Furthermore, the former breeding site was located to the east of the River Stour and will not be affected by the proposed development. LSE relating to habitat loss for little tern have therefore been screened out.

7.5.26 European golden plover and ruddy turnstone are included as qualifying features for the Thanet Coast and Sandwich Bay SPA and non-breeding ruddy turnstone is a qualifying feature for the Thanet Coast and Sandwich Bay Ramsar. Following the decision to remove landfall Option 2 from the Project there will no longer be any permanent loss of saltmarsh habitat. This therefore removes the potential for LSE and the permanent loss of intertidal habitats potentially used by these species is now screened out.

7.5.27 RSPB requested further information in their Section 42 consultation response (see Table 4.1) regarding usage of inland non-intertidal habitat by European golden plover, noting that usage may vary between daytime and night time. Terrestrial habitats within and adjacent to the RLB include semi-improved grassland, which is mostly rank and interspersed with scrub, scrub and woodland/ scattered trees, amenity grassland and hard standing with early pioneer communities currently used for vehicle storage. None of these habitats are potentially suitable for European golden plover. There will therefore be no permanent or temporary loss of terrestrial habitat used by non-breeding European golden plover and therefore the loss of terrestrial habitat for European golden plover has been screened out.

7.5.28 Since the production of the screening report a more detailed assessment of the likelihood that species forming part of the wetland invertebrate assemblage qualifying feature of the Thanet Coast and Sandwich Bay Ramsar Site could be affected by the proposed development has been carried out (see ES Volume 4, Annex 5-6 Terrestrial Invertebrate Assessment Report (Application Ref 6.5.5.6)). Three wetland invertebrate assemblage species: the wasp *Didineis lunicornis* (referred to by its old name *Alysson lunicornis* in the Ramsar Information Sheet (RIS)), the wasp *Ectemnius ruficornis* and the woodlouse *Eluma caelata* (referred to as *E. purpurescens* in the RIS) are considered to have the potential to be present within the RLB based on their known distribution and habitat requirements. All three species favour terrestrial habitats. Potential LSE in terms of terrestrial habitat loss for these species during construction have been screened in and are assessed under the onshore biodiversity heading in Section 11. During the operational phase, activities within Stonelees Nature Reserve (the only part of the Thanet Coast and Sandwich Bay Ramsar included within the onshore RLB) would be limited to a maximum of eight visits per year to joint pits. Although these visits are unlikely to result in disturbance/ loss to habitats used by these species, in the absence of mitigation LSE cannot be ruled out and potential effects are therefore assessed in Section 11.

7.5.29 In their Relevant Representation Natural England (PINS Ref. RR-053) requested further consideration for one other wetland invertebrate assemblage species, the bug *Orthotylus rubidus*. This species is found on glassworts (*Salicornia* sp.) and occurs in intertidal areas which though saline, are not regularly inundated. The proposal to remove landfall option 2 from the Project would mean that there would be no permanent loss of intertidal habitat and therefore permanent habitat loss for *Orthotylus rubidus* is screened out. However, temporary disturbance/ loss of habitat for this species, both during construction and the operational phase, cannot be ruled out and potential effects are therefore assessed in Section 11.

7.5.30 All other wetland invertebrate assemblage species are not likely to be present within or adjacent to the RLB due to a lack of suitable habitat (see ES Volume 5, Annex 5-6: Terrestrial Invertebrate Assessment Report (Application Ref 6.5.5.6) for further details). There is therefore no potential for LSE on these species and effects due to habitat loss for these species have therefore been screened out.

7.5.31 Temporary disturbance/ loss of intertidal habitat used by non-breeding European golden plover and ruddy turnstone (during construction and O&M) remains screened in and is addressed as part of the benthic intertidal assessment. The consideration of these effects is followed by an assessment of the implications for the qualifying bird features.

Temporary Increase in SSC

7.5.32 Effects on intertidal habitat used by non-breeding European golden plover and ruddy turnstone due to a temporary increase in SSC (during construction and O&M) remain screened in and are addressed as part of the benthic intertidal assessment. The consideration of these effects is followed by an assessment of the implications for the qualifying bird features. As noted above, little tern has not bred at Pegwell Bay for a number of years and effects on habitats used by little tern have been screened out.

Noise and Visual Disturbance

7.5.33 Since the production and agreement of the screening report, a number of embedded mitigation measures have been proposed to avoid potential noise and visual disturbance to European golden plover and ruddy turnstone using intertidal habitats (see Table 6-1). However, following the Sweetman II ruling, these measures cannot be taken into account during the initial screening for LSE. As such, assuming the absence of any mitigation measures, potential noise and visual disturbance effects remain screened in for LSE and are addressed in section 11.5.

7.5.34 As noted above, little tern has not bred at Pegwell Bay for a number of years and disturbance effects on little tern have therefore been screened out.

Changes to Physical Processes

7.5.35 Effects on intertidal habitat used by non-breeding European golden plover and ruddy turnstone due to changes to physical processes during O&M have been screened out following the dropping of Option 2. As noted above, little tern has not bred at Pegwell Bay for a number of years and effects on habitats used by little tern due to changes to physical processes have therefore been screened out.

Displacement of Recreational Visitors to Pegwell Bay Country Park

7.5.36 Since the production of the screening report, Natural England raised concerns in October 2017 (see Table 4.1) regarding the possible effects of visitor displacement during construction from Pegwell Bay Country Park to more sensitive areas of the coast, which could in turn lead to potential LSE on non-breeding European golden plover and ruddy turnstone forming part of the Thanet Coast and Sandwich Bay SPA population. A precautionary approach has been adopted and this potential effect has therefore been screened in and is assessed under the onshore biodiversity heading in Section 11.

7.5.37 In summary, the remaining effects screened in for LSE in relation to onshore biodiversity therefore relate to:

- Temporary disturbance/ loss of intertidal habitats (including saltmarsh) for Thanet Coast and Sandwich Bay SPA qualifying species (non-breeding European golden plover and ruddy turnstone) and Thanet Coast and Sandwich Bay Ramsar qualifying features (non-breeding ruddy turnstone and the wetland invertebrate assemblage species *Orthotylus rubidus*, if present) (construction, O&M) (assessed within the intertidal and subtidal benthic ecology assessment);
- Possible habitat loss (temporary) for three species forming part of the Thanet Coast and Sandwich Bay Ramsar wetland invertebrate assemblage (if present): the wasps *Didineis lunicornis* and *Ectemnius ruficornis* and the woodlouse *Eluma caelata* (construction, O&M) (assessed within the onshore biodiversity assessment);
- Temporary increase in SSC and deposition for the intertidal habitats of the qualifying features for Thanet Coast and Sandwich Bay SPA (non-breeding European golden plover and ruddy turnstone and the wetland invertebrate assemblage species *Orthotylus rubidus*, if present) and Thanet Coast and Sandwich Bay Ramsar (non-breeding ruddy turnstone) (construction, O&M) (assessed within the intertidal and subtidal benthic ecology assessment);
- Noise and visual disturbance to Thanet Coast and Sandwich Bay SPA qualifying species (non-breeding European golden plover and ruddy turnstone) and the Thanet Coast and Sandwich Bay Ramsar qualifying species non-breeding ruddy turnstone (construction, O&M) (assessed within the onshore biodiversity assessment);
- Possible displacement of recreational users from Pegwell Bay Country Park causing disturbance to the qualifying features for Thanet Coast and Sandwich Bay SPA (non-breeding European golden plover and ruddy turnstone) and Thanet Coast and Sandwich Bay Ramsar (non-breeding ruddy turnstone) (construction only) (assessed within the onshore biodiversity assessment);
- Accidental pollution of intertidal habitats potentially used by Thanet Coast and Sandwich Bay SPA qualifying features (non-breeding European golden plover and ruddy turnstone) and Thanet Coast and Sandwich Bay Ramsar qualifying features (non-breeding ruddy turnstone and the wetland invertebrate assemblage species *Orthotylus rubidus*, if present) (construction, O&M) (assessed within the intertidal and subtidal benthic ecology assessment);
- Accidental pollution of terrestrial habitats used by three species forming part of the Thanet Coast and Sandwich Bay Ramsar wetland invertebrate assemblage (if present): the wasps *Didineis lunicornis* and *Ectemnius ruficornis* and the woodlouse *Eluma caelata* (construction, O&M) (assessed within the onshore biodiversity assessment);

- Spread of INNS affecting intertidal habitats for Thanet Coast and Sandwich Bay SPA qualifying species (non-breeding European golden plover and ruddy turnstone) and Thanet Coast and Sandwich Bay Ramsar qualifying features (non-breeding ruddy turnstone and the wetland invertebrate assemblage species *Orthotylus rubidus*, if present) (construction) (assessed within the intertidal and subtidal benthic ecology assessment); and
- Spread of INNS affecting terrestrial habitats used by three species forming part of the Thanet Coast and Sandwich Bay Ramsar wetland invertebrate assemblage (if present): the wasps *Didineis lunicornis* and *Ectemnius ruficornis* and the woodlouse *Eluma caelata* (construction) (assessed within the onshore biodiversity assessment).

Offshore Ornithology

Transboundary consultation

7.5.38 During the transboundary consultation undertaken by PINS in July and August 2017, the French Ministère de la Transition Écologique et Solidaire identified two sites classified under the Birds Directive for their ornithology interest features. These sites were Cap Gris Nez SPA and Bancs des Flandres SPA. In further submissions made in October 2018 and just prior to the start of the Examination in December 2018 the French Ministère de la Transition Écologique et Solidaire re-stated their identification of Cap Gris Nez SPA and Bancs des Flandres SPA as warranting screening for LSE and identified two more SPAs that they considered warranted screening for LSE - Estuaire de la Canche SPA and Littoral Seineo-marin SPA (PINS Ref OD-0098).

7.5.39 To ensure full consideration of the comments received, these sites have all been screened for LSE. The screening process and outcomes for these four transboundary SPAs with offshore ornithology interest features is described here. As noted in Table 7.3 of Annex 1 (Document Ref: 5.2.1), all onshore features are screened out from assessment due to the distance between Thanet Extension and the designated sites. With regard to the offshore ornithology interest features, these four French sites were screened for LSE in the same manner as the SPA and Ramsar sites occurring in UK waters (Tables 7.1 and 7.3 of Annex 1 (Document Ref: 5.2.1)).

Cap Gris Nez SPA

7.5.40 This site has listed 72 interest features, of which 34 are marine/seabirds i.e. offshore ornithology interest features, 19 are intertidal interest features and 19 are terrestrial interest features. The latter two categories are onshore interest features and are screened out as described above. The species that are offshore interest features are:

- Red-throated diver;
- Black-throated diver;
- Great northern diver;

- Great crested grebe;
- Red-necked grebe;
- Slavonian grebe;
- Black-necked grebe;
- Fulmar;
- Scopoli's shearwater;
- Manx shearwater;
- Storm petrel;
- Gannet;
- Cormorant;
- Shag;
- Eider;
- Common scoter;
- Velvet scoter;
- Smew;
- Red-breasted merganser;
- Pomarine skua;
- Arctic skua;
- Great skua;
- Mediterranean gull;
- Kittiwake;
- Sandwich tern;
- Roseate tern;
- Common tern;
- Arctic tern;
- Little tern;
- White-winged black tern;
- Black tern;
- Guillemot;
- Razorbill; and
- Puffin.

7.5.41 The distance from Thanet Extension Array Area to the nearest point of this SPA (an offshore component) is 39 km and the nearest terrestrial part of this SPA (where seabirds might nest) is 50 km.

7.5.42 The initial screening of the potential for LSE was based on the detection of a species in more than very small numbers or more than very infrequently during the 26 consecutive months of baseline characterisation surveys. On that basis the following offshore ornithology interest features (with in parenthesis the life cycle period for which they are listed) were considered against the more detailed second level of screening:

- Red-throated diver (non-breeding winter and passage migrant);
- Gannet (non-breeding winter and passage migrant);
- Kittiwake (non-breeding winter and passage migrant);
- Guillemot (non-breeding winter and passage migrant); and
- Razorbill (non-breeding winter and passage migrant).

7.5.43 The conclusions of the second level of screening carried out by applying the five offshore ornithology relevant screening criteria to the five seabird species that occur in more than very small numbers or more than very infrequently during the 26 consecutive months of baseline characterisation surveys were:

- Physical overlap of SPA/ pSPA/ Ramsar with the project boundary – there is no overlap; not screened in on that basis;
- Breeding interest feature of SPA/ pSPA/ Ramsar whose migratory movements and/ or winter distribution coincides with Thanet Extension – the site is classified for its non-breeding interest; not screened in as no breeding interest features;
- Breeding interest feature of SPA/ pSPA/ Ramsar that forages offshore during the breeding season – the site is classified for its non-breeding interest; not screened in as no breeding interest features;
- Physical overlap of SPA/ pSPA/ Ramsar with the potential extent of impacts associated with Thanet Extension – there is no overlap as the extent of potential impacts from Thanet Extension is not as far as this SPA that is 39 km from the array area and the nearest coastal part of the SPA is 50 km from the array area; not screened in on that basis; and
- Non-breeding interest features of SPA/ pSPA/ Ramsar occurs in the region of Thanet Extension on migration – the migratory pathways of the non-breeding seabirds, seaducks, divers, grebes, and terns take them along the French and Belgian coasts (flying through rather than across the Channel) and not across the proposed Thanet Extension; not screened in on that basis.

Conclusion: The Cap Gris Nez SPA is not screened in.

Bancs des Flandres SPA

7.5.44 This site has listed 25 interest features, of which 24 are marine/seabirds i.e. offshore ornithology interest features, one is an intertidal interest feature and none are terrestrial interest features. The latter two categories are onshore interest features and are screened out as described above. The species that are offshore interest features are:

- Red-throated diver;
- Black-throated diver;
- Great crested grebe;
- Red-necked grebe;
- Fulmar;
- Leach's petrel;
- Gannet;
- Eider;
- Common scoter;
- Velvet scoter;
- Red-breasted merganser;
- Pomarine skua;
- Arctic skua;
- Great skua;
- Mediterranean gull;
- Little gull;
- Kittiwake;
- Sandwich tern;
- Common tern;
- Arctic tern;
- Little tern;
- Black tern;
- Guillemot; and
- Razorbill.

7.5.45 The distance from Thanet Extension Array Area to the nearest point of this SPA (an offshore component) is 24 km and the nearest terrestrial part of this SPA (where seabirds might nest) is 50 km.

7.5.46 The initial screening of the potential for LSE was based on the detection of a species in more than very small numbers or more than very infrequently during the 26 consecutive months of baseline characterisation surveys. On that basis the following offshore ornithology interest features, with in parenthesis the life cycle period for which they are listed, were considered against the more detailed second level of screening:

- Red-throated diver (non-breeding winter and passage migrant);
- Gannet (non-breeding winter and passage migrant);
- Kittiwake (non-breeding winter and passage migrant);
- Guillemot (non-breeding winter and passage migrant); and
- Razorbill (non-breeding winter and passage migrant).

7.5.47 The conclusions of the second level of screening carried out by applying the five offshore ornithology relevant screening criteria to the five seabird species that occur in more than very small numbers or more than very infrequently during the 26 consecutive months of baseline characterisation surveys were:

- Physical overlap of SPA/ pSPA/ Ramsar with the project boundary – there is no overlap; not screened in on that basis;
- Breeding interest feature of SPA/ pSPA/ Ramsar whose migratory movements and/ or winter distribution coincides with Thanet Extension – the only breeding interest feature is little tern that has been screened out on the basis of not occurring in more than very small numbers or more than very infrequently during the 26 consecutive months of baseline characterisation surveys and, in addition, its migration to more southerly waters in the non-breeding season will not be across the proposed Thanet Extension; not screened in on that basis
- Breeding interest feature of SPA/ pSPA/ Ramsar that forages offshore during the breeding season – the breeding interest feature is little tern that has been screened out on the basis of not occurring in more than very small numbers or more than very infrequently during the 26 consecutive months of baseline characterisation surveys and, in addition, whose mean maximum foraging range is 6.3 km, the French coast within the Bancs des Flandres SPA is 50 km distant from the array area and accordingly it will not forage across the proposed Thanet Extension array area and be placed at risk of collision; not screened in on that basis;

- Physical overlap of SPA/ pSPA/ Ramsar with the potential extent of impacts associated with Thanet Extension – there is no overlap as the extent of potential impacts from Thanet Extension is not as far as this SPA that is 24 km from the array area and the nearest coastal part of the SPA is 50 km from the array area; not screened in on that basis; and
- Non-breeding interest features of SPA/ pSPA/ Ramsar occurs in the region of Thanet Extension on migration – the migratory pathways of the non-breeding seabirds, seaducks, divers, grebes, and terns take them along the French and Belgian coasts (flying through rather than across the Channel) and not across the proposed Thanet Extension; not screened in on that basis.

Conclusion: The Bancs des Flandres SPA is not screened in.

Estuaire de la Canche SPA

7.5.48 This site has listed 46 interest features, of which 10 are marine/seabirds i.e. offshore ornithology interest features, 11 are intertidal interest features and 25 are terrestrial interest features. The latter two categories are onshore interest features and are screened out as described above. The species that are offshore interest features are:

- Red-throated diver;
- Black-throated diver;
- Smew;
- Red-necked phalarope;
- Mediterranean gull;
- Sandwich tern;
- Common tern;
- Arctic tern;
- Little tern; and
- Black tern.

7.5.49 The distance from Thanet Extension array area to the nearest point of this SPA (an offshore component) is 91 km and the nearest terrestrial part of this SPA (where seabirds might nest) is 91 km.

7.5.50 Two French SPAs which include the same offshore ornithology interest features (Cap Gris Nez SPA and Bancs des Flandres SPA) and that are closer to the proposed Thanet Extension have already been screened out as described above. The Estuaire de la Canche SPA is at a greater distance from the proposed Thanet Extension and by logic of that greater distance it is also considered to be screened out. For reasons of clarity and to give certainty in the process, the second level of screening has also been carried out and is presented below.

7.5.51 The initial screening of the potential for LSE was based on the detection of a species in more than very small numbers or more than very infrequently during the 26 consecutive months of baseline characterisation surveys. On that basis the following offshore ornithology interest features, with in parenthesis the life cycle period for which they are listed, were considered against the more detailed second level of screening:

- Red-throated diver (non-breeding winter and passage migrant).

7.5.52 The conclusions of the second level of screening carried out by applying the five offshore ornithology relevant screening criteria to the one seabird species that occurs in more than very small numbers or more than very infrequently during the 26 consecutive months of baseline characterisation surveys were:

- Physical overlap of SPA/ pSPA/ Ramsar with the project boundary – there is no overlap; not screened in on that basis;
- Breeding interest feature of SPA/ pSPA/ Ramsar whose migratory movements and/ or winter distribution coincides with Thanet Extension – the breeding interest features are terrestrial species that will not forage in the area of Thanet Extension and their migration routes to and from the site will all be southward of Thanet Extension; not screened in as no offshore ornithology breeding interest features;
- Breeding interest feature of SPA/ pSPA/ Ramsar that forages offshore during the breeding season – the breeding interest features are terrestrial species that will not forage in the area of Thanet Extension; not screened in as no offshore ornithology breeding interest features;
- Physical overlap of SPA/ pSPA/ Ramsar with the potential extent of impacts associated with Thanet Extension – there is no overlap as the extent of potential impacts from Thanet Extension is not as far as this SPA that is 91 km from the Array Area and the nearest coastal part of the SPA is 91 km from the Array Area; not screened in on that basis; and
- Non-breeding interest features of SPA/ pSPA/ Ramsar occurs in the region of Thanet Extension on migration – the migratory pathways of the non-breeding seabirds, seaducks, divers, grebes, and terns take them along the French and Belgian coasts (flying through rather than across the Channel) and not across the proposed Thanet Extension; not screened in on that basis.

Conclusion: The Estuaire de la Canche SPA is not screened in.

Littoral Seineo-marine SPA

7.5.53 This site has listed 29 interest features, of which 20 are marine/seabirds i.e. offshore ornithology interest features, 3 are intertidal interest features and 6 are terrestrial interest features. The latter two categories are onshore interest features and are screened out as described above. The species that are offshore interest features are:

- Red-throated diver;
- Black-throated diver;
- Great crested grebe;
- Fulmar;
- Gannet;
- Cormorant;
- Shag;
- Pomarine skua;
- Arctic skua;
- Great skua;
- Mediterranean gull;
- Little gull;
- Lesser black-backed gull;
- Herring gull;
- Great black-backed gull;
- Kittiwake;
- Sandwich tern;
- Common tern;
- Guillemot; and
- Razorbill.

7.5.54 The distance from Thanet Extension array area to the nearest point of this SPA (an offshore component) is 147 km and the nearest terrestrial part of this SPA (where seabirds might nest) is 168 km.

7.5.55 The initial screening of the potential for LSE was based on the detection of a species in more than very small numbers or more than very infrequently during the 26 consecutive months of baseline characterisation surveys. On that basis the following offshore ornithology interest features, with in parenthesis the life cycle period for which they are listed, were considered against the more detailed second level of screening:

- Red-throated diver (non-breeding winter and passage migrant);
- Gannet (non-breeding winter and passage migrant);
- Lesser black-backed gull (breeding, resident and winter migrant);
- Herring gull (breeding and winter migrant);
- Great black-backed gull (breeding and winter migrant);
- Kittiwake (breeding and winter and passage migrant);
- Guillemot (non-breeding winter and passage migrant); and
- Razorbill (non-breeding winter and passage migrant).

7.5.56 The conclusions of the second level of screening carried out by applying the five offshore ornithology relevant screening criteria to the eight seabird species that occur in more than very small numbers or more than very infrequently during the 26 consecutive months of baseline characterisation surveys were:

- Physical overlap of SPA/ pSPA/ Ramsar with the project boundary – there is no overlap; not screened in on that basis;
- Breeding interest feature of SPA/ pSPA/ Ramsar whose migratory movements and/ or winter distribution coincides with Thanet Extension – the four breeding interest features are all species of gulls and of those for which a proportion of the population might be expected to migrate away in the winter (lesser black-backed gull and kittiwake) their migration to more southerly waters in the non-breeding season will not be across the proposed Thanet Extension; not screened in on that basis
- Breeding interest feature of SPA/ pSPA/ Ramsar that forages offshore during the breeding season – the four breeding interest features are all species of gulls whose mean maximum foraging ranges (from Thaxter et al, 2012) are as follows:
 - Lesser black-backed gull – 141 km;
 - Herring gull – 61 km;
 - Great black-backed gull – [n/a from Thaxter et al, 2012], 73 km (Maynard & Ronconi, 2018); and
 - Kittiwake – 60 km.

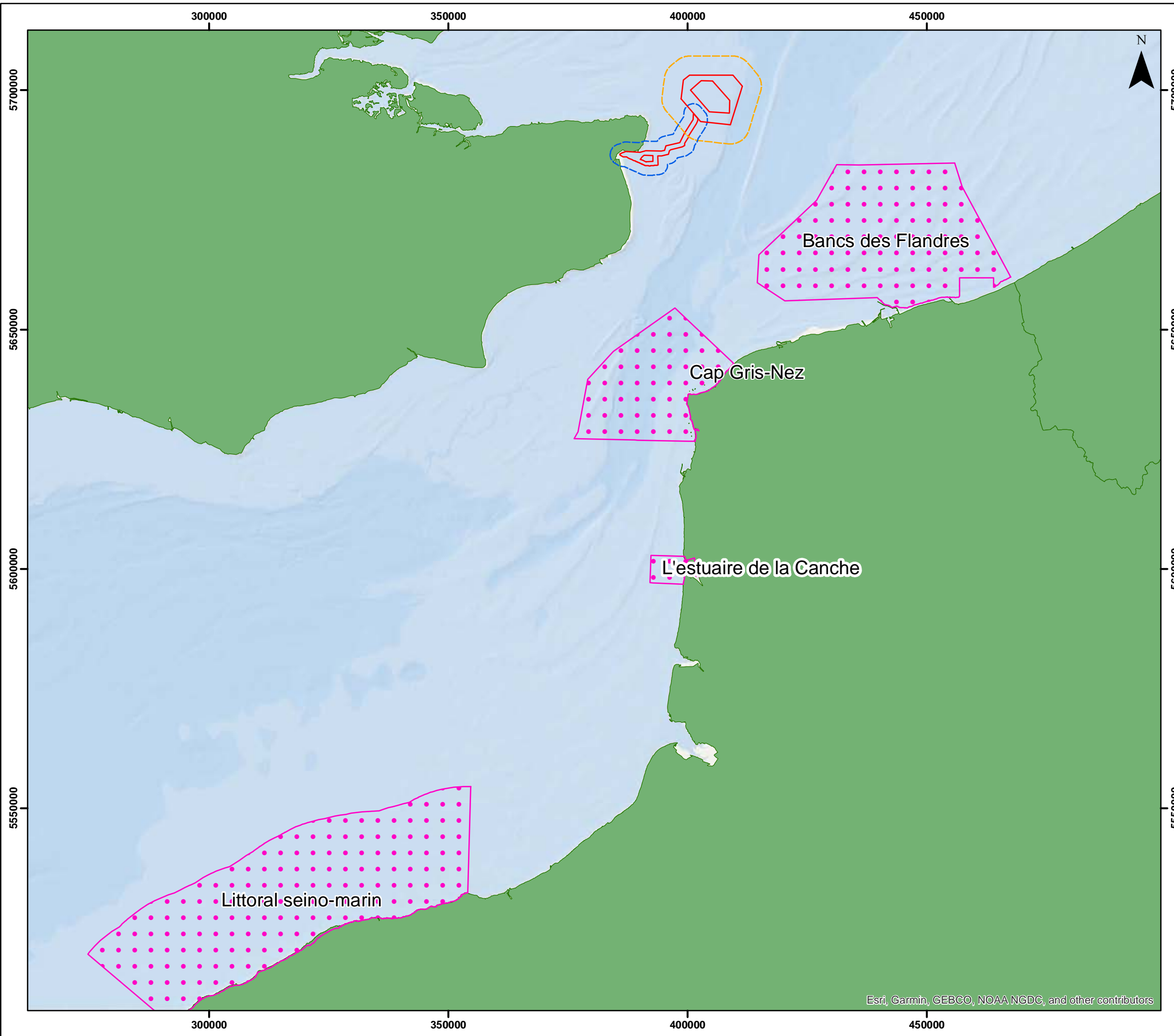
- The French coast within the Littoral Seineo-marin SPA is 168 km distant from the array area and accordingly none of these species nesting at this SPA can be expected to forage regularly or in significant numbers across the proposed Thanet Extension array area and be placed at risk of collision; not screened in on that basis;
- Physical overlap of SPA/ pSPA/ Ramsar with the potential extent of impacts associated with Thanet Extension – there is no overlap as the extent of potential impacts from Thanet Extension is not as far as this SPA that is 147 km from the array area and the nearest coastal part of the SPA is 168 km from the array area; not screened in on that basis; and
- Non-breeding interest features of SPA/ pSPA/ Ramsar occurs in the region of Thanet Extension on migration – the migratory pathways of the non-breeding seabirds, seaducks, divers, grebes, and terns take them along the French and Belgian coasts (flying through rather than across the English Channel) and not across the proposed Thanet Extension; not screened in on that basis.

Conclusion: The Littoral Seineo-marin SPA is not screened in.

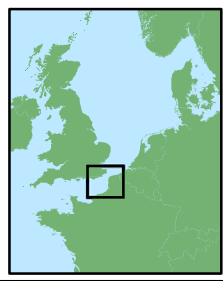
THANET EXTENSION OFFSHORE WIND FARM

Figure 7.1
French Transboundary SPAs in Relation to Thanet Extension

- Legend**
- Offshore Red Line Boundary
 - 2 km OECC Buffer
 - 4 km Array Area Buffer
 - French Transboundary SPA Sites



Datum: ETRS 1989
Projection: UTM31N



© Vattenfall Wind Power Ltd 2018
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1:800,000 0 8.5 17 km 0 4.5 9 nm

Esri, Garmin, GEBCO, NOAA NGDC, and other contributors

Drg No	Fig7.1_FrTransboundarySPAs		
Rev	0.1	Date	01/02/2019
By	PN	Layout	N/A

Figure 7.1

Consultation on the draft RIAA

- 7.5.57 The responses received to the consultation undertaken on the draft RIAA (Table 4.1) included a small number of comments that specifically related to the screening of interest features of particular sites.
- 7.5.58 Natural England suggested that consideration was given to screening in little gull in relation to collision risk, little gull being an interest feature of the Greater Wash SPA [noting that in the response it was described as a pSPA but the site was classified on March 28th 2018]. Little gull was only recorded on a single occasion, during the boat based survey carried out in January 2016. A single bird was recorded in flight within the area of the 4 km buffer placed around the proposed Thanet Extension. The approach to screening in those instances where only very small numbers were recorded in recent site based surveys is described in section 7 of the original Screening Report in Annex 1 (Application Ref 5.2.1). Little gull fulfils the criteria for screening out, it was previously screened out, no new information has been obtained and there is no change to that decision. Conclusion: Little gull, a non-breeding interest feature of the Greater Wash SPA is not screened in.

Recent changes to the classification of protected sites

- 7.5.59 The UK Government has a continuing programme to increase the extent to which Annex 1 and migratory birds when using marine waters are protected by the classification of SPAs. This includes through extending the species coverage of SPAs by adding further birds as interest features to existing SPAs, by extending the spatial coverage of SPAs by adding to their area and by classifying new SPAs such that seabirds which breed at onshore colonies are also protected when using offshore waters. Progress with this programme has meant that a number of sites that were not included in the HRA Screening Report now need to be considered as to whether the relevant sites and particular interest features should be screened in on account of the potential for LSE. That additional consideration of sites is carried out below with a conclusion made for each site and particular interest features.

- 7.5.60 At the time of the preparation of the HRA screening Report an extension had been proposed to the Outer Thames Estuary SPA to add common tern and little tern as interest features and increased the area of the SPA by including nearshore waters in Essex, Suffolk and Norfolk that are used by these two species when foraging away from the onshore breeding colonies. This extension to the Outer Thames Estuary SPA was screened for LSE on its offshore ornithology interest features in the same manner as were other SPA sites in the HRA Screening Report (Tables 7.1 and 7.3). In late 2017 an extended Outer Thames Estuary was classified by incorporating the proposals referred to above. For completeness of referencing to the screening process this paragraph refers to the proposed extension but all subsequent sections assess only the single, extended SPA and its interest features. The conclusions made with regard to the five relevant offshore ornithology screening criteria and in relation to particular interest features and phases of the proposed development were:

- Physical overlap of SPA/ pSPA/ Ramsar with the project boundary – there is no overlap, not screened in on that basis (applies to all interest features and phases of the proposed development);
- Breeding interest feature of SPA/ pSPA/ Ramsar whose migratory movements and/ or winter distribution coincides with Thanet Extension – the migration movements of common tern and little tern to or from more southerly waters in the non-breeding season will potentially be across the proposed Thanet Extension. Such passage birds are not considered sensitive to displacement or disturbance effects at any phase of the proposed development. Such passage birds from this nearby site might be placed at risk of collision during the operational phase of the proposed development. Common tern and little tern are screened out from potential LSE resulting from displacement or disturbance effects at any phase of the proposed development. Common tern and little tern are screened in for collision risk during the operational phase;
- Breeding interest feature of SPA/ pSPA/ Ramsar that forages offshore during the breeding season – the breeding interest features common tern and little tern have mean maximum foraging ranges of 15.2 km and 6.3 km respectively, the nearest breeding colony within onshore SPAs for which the proposed extension to include offshore waters are identified for common tern is at New England Creek within the Foulness SPA that is 46 km distant from the array and for little tern is at Shell Ness Point within the Thanet Coast and Sandwich Bay SPA (notwithstanding that the species does not currently breed there) that is 23 km distant from the array. Neither species is considered sensitive to displacement or disturbance effects at any phase of the proposed development. Neither species will forage across the proposed Thanet Extension array and be placed at risk of collision during the operational phase. Common tern and little tern are screened out from potential LSE resulting from displacement or disturbance effects and collision risk;

- Physical overlap of SPA/ pSPA/ Ramsar with the potential extent of impacts associated with Thanet Extension – there is no overlap as the extent of potential impacts from Thanet Extension is not as far as those locations within the proposed SPA where the two tern species will forage; not screened in on that basis (applies to all interest features and phases of the proposed development); and
- Non-breeding interest features of SPA/ pSPA/ Ramsar occurs in the region of Thanet Extension on migration – the proposed extension is to include common tern and little tern as breeding species interest features; not screened in as no non-breeding interest features added by the extension (applies to all interest features and phases of the proposed development).

Conclusion: The common tern and little tern interest features of the proposed extension to the Outer Thames Estuary SPA (now interest features of the classified SPA) are screened in for collision risk in the O&M phase.

7.5.61 Progress has been made with the classification of waters off the east coast of England and as a result of that the now classified Greater Wash SPA has been considered for screening. Its interest features are red-throated diver (non-breeding), common scoter (non-breeding), little gull (non-breeding), Sandwich tern (breeding), common tern (breeding) and little tern (breeding).

7.5.62 For the Greater Wash SPA, the conclusions made with regard to the five relevant offshore ornithology screening criteria and in relation to particular interest features and phases of the proposed development were:

- Physical overlap of SPA/ pSPA/ Ramsar with the project boundary – no overlap exists and on that basis is not screened in (applies to all interest features and all phases of the proposed development);

- Breeding interest feature of SPA/ pSPA/ Ramsar whose migratory movements and/ or winter distribution coincides with Thanet Extension – the migration movements of the three breeding tern species to or from more southerly waters in the non-breeding season will potentially be across the proposed Thanet Extension. Such passage birds are not considered sensitive to displacement or disturbance effects at any phase of the proposed development. Such passage birds from this more distant site than the Outer Thames Estuary SPA will mix with other breeding populations in the course of their migratory movement. The proportion of terns from the Greater Wash SPA within the numbers passing through the site of the proposed development will be low. The number of Sandwich, common and little tern recorded within and around the site of the proposed Thanet Extension was low or zero over the 24 month period of aerial surveys (the boat based surveys took place in the winter when terns are not present). Sandwich tern was only recorded in flight on three occasions, common (as common/Arctic species group) was only recorded in flight on two occasions and little tern was not recorded at all. As a result the number of Sandwich, common or little tern that might be placed at risk of collision during the operational phase of the proposed development is very low and insignificant. Sandwich, common and little tern are screened out from potential LSE resulting from displacement or disturbance effects at any phase of the proposed development and screened out for collision risk during the operational phase.

- Breeding interest feature of SPA/ pSPA/ Ramsar that forages offshore during the breeding season – the three breeding tern species have mean maximum foraging ranges from the identified breeding colonies that are shorter than the 126 km from the SPA boundary to the proposed Thanet Extension (the relevant tern breeding colonies are even further); not screened in on that basis (applies to all relevant breeding interest features and all phases of the proposed development);

- Physical overlap of SPA/ pSPA/ Ramsar with the potential extent of impacts associated with Thanet Extension – there is no overlap as the extent of potential impacts from Thanet Extension is not as far as this SPA which is 126 km distant; not screened in on that basis (applies to all interest features and all phases of the proposed development); and

- Non-breeding interest features of SPA/ pSPA/ Ramsar occurs in the region of Thanet Extension on migration - the migration movements of the non-breeding interest features red-throated diver, common scoter and little gull to or from more northerly breeding sites will not take them across the proposed Thanet Extension. As a result these non-breeding interest features are screened out from potential LSE (applies to all relevant interest features and all phases of the proposed development).

7.5.63 Conclusion: None of the interest features of the recently classified Greater Wash SPA are screened in for any of the potential effects identified in any phase of the development.

7.5.64 Progress has been made with the classification of waters off the north-east coast of England.

7.5.65 The now classified Flamborough and Filey Coast SPA was considered fully in the screening process when it was a pSPA. Its change in status to classified SPA, that occurred on 23rd August 2018, is reflected in the assessment of this site and its interest features that is carried out in Section 9.14. The Flamborough Head and Bempton Cliffs SPA, that was originally classified on 5th March 1993, has been completely replaced by the Flamborough and Filey Coast SPA and there is now no reference to the former Flamborough Head and Bempton Cliffs SPA in this RIAA (reference to it remains in the HRA Screening Report and the PEIR documents, reflecting the time at which they were prepared).

7.5.66 The now classified Northumberland Marine SPA has been considered for screening. Consequent upon that is that the associated onshore seabird colony SPAs also come in to scope for screening and that SPA which supports breeding guillemot (a species which regularly occurs in Thanet Extension offshore area in the non-breeding season) – the Farne Islands SPA - has also been considered for screening. Both these SPAs were screened for LSE on their offshore ornithology interest features in the same manner as were other SPA sites in Annex 1 (Tables 7.1 and 7.3).

7.5.67 For the Northumberland Marine SPA, the conclusions made with regard to the five relevant offshore ornithology screening criteria and in relation to particular interest features and phases of the proposed development were:

- Physical overlap of SPA/ pSPA/ Ramsar with the project boundary – there is no overlap, not screened in on that basis (applies to all interest features and phases of the proposed development);
- Breeding interest feature of SPA/ pSPA/ Ramsar whose migratory movements and/ or winter distribution coincides with Thanet Extension - the migration movements of the five species of tern (Arctic, common, little, roseate and Sandwich) that are breeding interest features will take them through the Channel but none or very few were recorded in the surveys (see Volume 4, Annex 4-1: Ornithology Baseline Report (Application Ref 6.4.4.1)) and those individuals from this site will be mixed with birds from other SPAs and non-designated sites. Such passage birds are not considered sensitive to displacement or disturbance effects at any phase of the proposed development. Individuals from this site will make up a low proportion of the few terns observed that might be placed at risk of collision during the operational phase of the proposed development. Puffin, which is a breeding interest feature, was not recorded in the baseline surveys or in the post-consent surveys for TOWF (Percival, 2015). Guillemot, which is a breeding interest feature, was recorded in the baseline surveys and hence its winter distribution does include the proposed Thanet Extension. Arctic, common, little, roseate and Sandwich tern are screened out from potential LSE resulting from displacement or disturbance effects and collision risk in all phases of the proposed development. Puffin is screened out as it does not occur. Guillemot is screened out from collision risk during the operational phase. Guillemot is screened in for displacement or disturbance effects in all phases of the proposed development;

- Breeding interest feature of SPA/ pSPA/ Ramsar that forages offshore during the breeding season – the breeding interest features have mean maximum foraging ranges that are considerably shorter than the 458 km to the proposed Thanet Extension; not screened in on that basis (applies to all interest features and phases of the proposed development);
- Physical overlap of SPA/ pSPA/ Ramsar with the potential extent of impacts associated with Thanet Extension – there is no overlap as the extent of potential impacts from Thanet Extension is not as far as this SPA which is 458 km distant; not screened in on that basis (applies to all interest features and phases of the proposed development); and
- Non-breeding interest features of SPA/ pSPA/ Ramsar occurs in the region of Thanet Extension on migration - the interest features are all breeding species; not screened in as no non-breeding interest features (applies to all interest features and phases of the proposed development).

Conclusion: The Arctic, common, little, roseate and Sandwich tern and puffin interest features of the Northumberland Marine SPA are screened out at all phases of the proposed development. The guillemot interest features of the Northumberland Marine SPA are screened in for displacement or disturbance effects at all phases of the proposed development but screened out for collision risk.

7.5.68 For the Farne Islands SPA, the conclusions made with regard to the five relevant offshore ornithology screening criteria and in relation to particular interest features and phases of the proposed development were:

- Physical overlap of SPA/ pSPA/ Ramsar with the project boundary – there is no overlap, not screened in on that basis (applies to all interest features and phases of the proposed development);

- Breeding interest feature of SPA/ pSPA/ Ramsar whose migratory movements and/ or winter distribution coincides with Thanet Extension - the migration movements of the three species of tern (Arctic, common and Sandwich) that are breeding interest features will take them through the Channel but none or very few were recorded in the surveys (Application Ref 6.4.4.1) and those individuals from this site will be mixed with birds from other SPAs and non-designated sites. Such passage birds are not considered sensitive to displacement or disturbance effects at any phase of the proposed development. Individuals from this site will make up a low proportion of the few terns observed that might be placed at risk of collision during the operational phase of the proposed development. Guillemot, which is a breeding interest feature, was recorded in the baseline surveys and hence its winter distribution does include the proposed Thanet Extension. Arctic, common and Sandwich tern are screened out from potential LSE resulting from displacement or disturbance effects and collision risk in all phases of the proposed development. Guillemot is screened out from collision risk during the operational phase. Guillemot is screened in for displacement or disturbance effects in all phases of the proposed development;
- Breeding interest feature of SPA/ pSPA/ Ramsar that forages offshore during the breeding season – the breeding interest features have mean maximum foraging ranges that are considerably shorter than the 512 km to the proposed Thanet Extension; not screened in on that basis (applies to all interest features and phases of the proposed development);
- Physical overlap of SPA/ pSPA/ Ramsar with the potential extent of impacts associated with Thanet Extension – there is no overlap as the extent of potential impacts from Thanet Extension is not as far as this SPA which is 512 km distant; not screened in on that basis (applies to all interest features and phases of the proposed development); and
- Non-breeding interest features of SPA/ pSPA/ Ramsar occurs in the region of Thanet Extension on migration - the interest features are all breeding species; not screened in as no non-breeding interest features (applies to all interest features and phases of the proposed development).

Conclusion: The Arctic, common and Sandwich tern interest features of the Farne Islands SPA are screened out at all phases of the proposed development. The guillemot interest features of the Farne Islands SPA is screened in for displacement or disturbance effects at all phases of the proposed development but screened out for collision risk.

Updated Screening for the Project Alone

- 7.5.69 Table 7.3 is adapted from Appendix 1 of Annex 1 (Application Ref 5.2.1), which provides an update to the original Table 8.1 from the Screening report reflecting the changes considered relevant following the Sweetman II ruling and the changes made during Examination. Table 7.3 therefore incorporates the changes in LSE screening described above and is also considered to be compliant with the Sweetman II ruling. The table summarises, on a site by site basis, the features screened in for LSE from the project alone. Where the Screening Report, or the changes described above, conclude no LSE, these are not included here. As such, the information presented summarises the sites, including the relevant habitats and species, screened in for LSE alone, including the relevant effects, and therefore confirms those sites (and the relevant features) for consideration of adverse effect. The full list of designated sites and potential effects considered are given in the revised HRA Screening report (Annex 1, Application Ref 5.2.1, as updated post Sweetman II and provided in Appendix 1 of that document), together with the additions made above.

Table 7.3: Summary of Potential for LSE

Designated Site	Feature(s) screened in*	Potential for Likely Significant Effect		
		Construction	O&M	Decommissioning
Thanet Coast SAC	Chalk Reefs	<p>Potential for temporary, direct habitat loss and disturbance due to cable laying operations (including anchor placements) and seabed preparation.</p> <p>Where possible, cable route will be micro-routed to avoid features present.</p>	<p>The impacts from temporary habitat disturbance are likely to be similar to those for construction but the magnitude will be less. The frequency and duration of these impacts will be determined by the O&M requirements of the site.</p>	<p>Similar to and potentially less than those outlined in the construction phase.</p>
		<p>Increased SSCs may arise due to cable laying operations (including anchor placements), foundation installations and seabed preparation. Sediment deposition will occur as sediments settle out of the water column.</p> <p>Potential overlap between Annex I habitats (chalk reefs) and the defined Screening distance of increased suspended sediments.</p>	<p>Minor amounts of sediment may be released into suspension, with subsequent deposition, during the O&M phase. Although such quantities are typically likely to be small, localised and intermittent, should cable repairs be required, there is potential for further sediment to be released, with designated Annex I habitats (chalk reef) potentially being within the range of effect.</p> <p>The presence of manmade structures such as scour protection and foundations may result in localised changes in hydrodynamics and wave regimes. Therefore, as a secondary affect the sediment transport pathways may be altered.</p> <p>Potential for overlap between designated Annex I habitats (chalk reefs) and relevant range of effect. Any potential change in physical processes is likely to be localised and small scale.</p>	
	Chalk reefs	<p>There is a risk of accidental pollution at all stages of the project. A number of mitigation measures will be implemented to reduce the potential for accidental pollution events and to provide a process to deal with any, should they occur. Adhering to such approaches means that significant effects on Annex I habitats or Annex II species will not arise. However, to ensure consistency with Sweetman II these measures have not been taken into consideration during screening on a precautionary basis.</p>		

Designated Site	Feature(s) screened in*	Potential for Likely Significant Effect		
		Construction	O&M	Decommissioning
	Submerged or partially submerged sea caves			
Margate and Long Sands SAC	Sand banks which are slightly covered by sea water all the time	<p>Increased SSCs may arise due to cable laying operations (including anchor placements), foundation installations and seabed preparation. Sediment deposition will occur as sediments settle out of the water column.</p> <p>Potential for the defined Screening distance of increased suspended sediments to overlap with Annex I habitats.</p>	<p>Minor amounts of sediment may be released into suspension, with subsequent deposition, during the O&M phase. Although such quantities are typically like to be small, localised and intermittent, should cable repairs be required, there is potential for further sediment to be released, with Annex I habitats potentially being within the range of effect.</p> <p>The presence of manmade structures such as scour protection and foundations may result in localised changes in hydrodynamics and wave regimes. Therefore, as a secondary affect the sediment transport pathways may be altered.</p> <p>Potential for overlap between Annex I habitats and relevant range of effect. Any potential change in physical processes is likely to be localised and small scale.</p>	Similar to and potentially less than those outlined in the construction phase.
		<p>There is a risk of accidental pollution at all stages of the project. A number of mitigation measures will be implemented to reduce the potential for accidental pollution events and to provide a process to deal with any should they occur. Adhering to such approaches means that significant effects on Annex I habitats or Annex II species will not arise, However, to ensure consistency with Sweetman II these measures have not been taken into consideration during screening on a precautionary basis.</p>		
Thanet Coast & Sandwich Bay SPA	Ruddy turnstone (Non-breeding) European golden plover (Non-breeding)	Potential temporary disturbance/ loss of intertidal habitat (including saltmarsh) used by the qualifying species.	Potential temporary loss of intertidal habitat (including saltmarsh) used by the qualifying species.	Similar to and potentially less than those outlined in the construction phase.
		<p>Increased SSCs may arise due to cable laying operations in the intertidal and subtidal (including anchor placements), foundation installations and seabed preparation. Sediment deposition will occur as sediments settle out of the water column.</p> <p>Potential for the defined screening distance of increased suspended sediments to overlap with intertidal habitats used by the qualifying species.</p>	<p>Minor amounts of sediment may be released into suspension, with subsequent deposition, during the O&M phase. Although such quantities are typically like to be small, localised and intermittent, should cable repairs be required, there is potential for further sediment to be released, with intertidal habitats used by qualifying species potentially being within the range of effect.</p>	

Designated Site	Feature(s) screened in*	Potential for Likely Significant Effect		
		Construction	O&M	Decommissioning
		<p>Potential for noise and visual disturbance (in the absence of mitigation measures) during construction works in intertidal habitats and at the landfall. Noise disturbance also possible due to driven/ percussive piling within Pegwell Bay Country Park (if required). Visual disturbance also possible for works within 250 m of intertidal habitats and in direct line of sight.</p> <p>Possible displacement of recreational visitors to Pegwell Bay Country Park leading to disturbance of the qualifying species elsewhere within the SPA.</p> <p>Potential for accidental pollution (in the absence of mitigation measures) during construction works at the landfall and within intertidal habitats to affect intertidal habitats used by the qualifying species.</p> <p>Potential for construction works (in the absence of mitigation measures) to result in the spread of INNS which could affect intertidal habitats used by the qualifying species.</p>	<p>Potential for noise and visual disturbance (in the absence of mitigation measures) during planned maintenance work at the landfall and within intertidal habitats.</p> <p>Potential for accidental pollution (in the absence of mitigation measures) during planned maintenance work at the landfall and within intertidal habitats to affect intertidal habitats used by the qualifying species.</p>	
Thanet Coast & Sandwich Bay Ramsar	Ruddy turnstone (non-breeding) Wetland invertebrate assemblage	<p>Potential temporary disturbance/ loss of intertidal habitat (including saltmarsh) used by the qualifying species (ruddy turnstone and one species forming part of the wetland invertebrate assemblage: the bug <i>Orthotylus rubidus</i>, if present).</p> <p>Possible temporary loss of habitat for three species forming part of the wetland invertebrate assemblage: the wasps <i>Didineis lunicornis</i> and <i>Ectemnius ruficornis</i> and the woodlouse <i>Eluma caelata</i> (if present) during works within Stonelees Nature Reserve.</p> <p>Increased SSCs may arise due to cable laying operations in the intertidal and subtidal (including anchor placements), foundation installations and seabed preparation. Sediment deposition will occur as sediments settle out of the water column.</p> <p>Potential for the defined screening distance of increased suspended sediments to overlap with intertidal habitats used by the qualifying bird species (ruddy turnstone and one species forming part of the</p>	<p>Potential temporary loss of intertidal habitat (including saltmarsh) used by the qualifying bird species (ruddy turnstone and one species forming part of the wetland invertebrate assemblage: the bug <i>Orthotylus rubidus</i>, if present).</p> <p>Possible disturbance or temporary loss of habitat to the three species forming part of the wetland invertebrate assemblage: the wasps <i>Didineis lunicornis</i> and <i>Ectemnius ruficornis</i> and the woodlouse <i>Eluma caelata</i> (if present) during planned maintenance works within Stonelees Nature Reserve.</p> <p>Minor amounts of sediment may be released into suspension, with subsequent deposition, during the O&M phase. Although such quantities are typically like to be small, localised and intermittent, should cable repairs be required, there is potential for further sediment to be released, with the intertidal habitats used by qualifying bird species (ruddy turnstone and one species forming part of the wetland</p>	Similar to and potentially less than those outlined in the construction phase.

Designated Site	Feature(s) screened in*	Potential for Likely Significant Effect		
		Construction	O&M	Decommissioning
		wetland invertebrate assessmblage (the bug <i>Orthotylus rubidus</i> , if present)).	invertebrate assessmblage (the bug <i>Orthotylus rubidus</i> , if present), potentially being within the range of effect.	
		Potential for noise and visual disturbance to the qualifying bird species (ruddy turnstone) (in the absence of mitigation measures) during construction works in intertidal habitats and at the landfall. Noise disturbance also possible due to driven/ percussive piling within Pegwell Bay Country Park (if required). Visual disturbance also possible for works within 250 m of intertidal habitats and in direct line of sight.	Potential for noise and visual disturbance to the qualifying bird species (ruddy turnstone) (in the absence of mitigation measures) during planned maintenance work at the landfall and within intertidal habitats.	
		Possible displacement of recreational visitors from Pegwell Bay Country Park leading to disturbance of the qualifying bird species (ruddy turnstone) elsewhere within the Ramsar.	N/A	
		Potential for accidental pollution (in the absence of mitigation measures) during construction works at the landfall and within intertidal habitats to affect intertidal habitats used by the qualifying species (ruddy turnstone and one species forming part of the wetland invertebrate assessmblage: the bug <i>Orthotylus rubidus</i> , if present). Potential for accidental pollution (in the absence of mitigation measures) during construction works in or adjacent to Stonelees Nature Reserve to affect terrestrial habitats used by the qualifying species (three species forming part of the wetland invertebrate assessmblage: the wasps <i>Didineis lunicornis</i> and <i>Ectemnius ruficornis</i> and the woodlouse <i>Eluma caelata</i> , if present).	Potential for accidental pollution (in the absence of mitigation measures) during planned maintenance work at the landfall and within intertidal habitats to affect intertidal habitats used by the qualifying species (ruddy turnstone and one species forming part of the wetland invertebrate assessmblage: the bug <i>Orthotylus rubidus</i>). Potential for accidental pollution (in the absence of mitigation measures) during planned maintenance work in or adjacent to Stonelees Nature Reserve to affect terrestrial habitats used by the qualifying species (three species forming part of the wetland invertebrate assessmblage: the wasps <i>Didineis lunicornis</i> and <i>Ectemnius ruficornis</i> and the woodlouse <i>Eluma caelata</i> , if present).	
		Potential for construction works (in the absence of mitigation measures) to result in the spread of INNS which could affect intertidal habitats used by the qualifying species (ruddy turnstone and one species forming part of the wetland invertebrate assessmblage: the bug <i>Orthotylus rubidus</i> , if present). Potential for construction works (in the absence of mitigation measures) to result in the spread of INNS which could affect terrestrial habitats used by the qualifying species (three species		

Designated Site	Feature(s) screened in*	Potential for Likely Significant Effect		
		Construction	O&M	Decommissioning
		forming part of the wetland invertebrate assemblage: the wasps <i>Didineis lunicornis</i> and <i>Ectemnius ruficornis</i> and the woodlouse <i>Eluma caelata</i> , if present).		
Southern North Sea cSAC/SCI	Harbour porpoise (<i>Phocoena phocoena</i>)	Construction activities, in particular the pile-driving of foundations but also clearance of UXOs (if required), will result in high levels of underwater noise. Increased vessel traffic during construction may also result in increased noise levels. Thanet Extension is located within 0 km of the cSAC. There is potential for a significant effect.	N/A	Similar to and potentially less than those outlined in the construction phase.
		There is a risk of accidental pollution at all stages of the project. A number of mitigation measures will be implemented to reduce the potential for accidental pollution events and to provide a process to deal with any should they occur. Adhering to such approaches means that significant effects on Annex I habitats or Annex II species will not arise. However, to ensure full compliance with Sweetman II these measures have not been taken into consideration during screening on a precautionary basis.		
Single transboundary site for harbour porpoise: Bancs des Flandres SCI ¹⁵	Harbour porpoise (<i>Phocoena phocoena</i>) (see below for seals)	Construction activities, in particular the pile-driving of foundations, will result in high levels of underwater noise. Increased vessel traffic during construction may also result in increased noise levels. The range applied to UK harbour porpoise sites for Screening of effect is 26 km. Bancs des Flandres SCI falls within 23 km, with potential for a LSE.	N/A	Similar to and potentially less than those outlined in the construction phase.
		There is a risk of accidental pollution at all stages of the project. A number of mitigation measures will be implemented to reduce the potential for accidental pollution events and to provide a process to deal with any should they occur. Adhering to such approaches means that significant effects on Annex I habitats or Annex II species will not arise. However, to ensure full compliance with Sweetman II these measures have not been taken into consideration during screening on a precautionary basis.		

¹⁵ Noting that the screening process, through the application of the 26km screening distance for harbour porpoise (as agreed with Natural England at the HRA Evidence Plan meeting of 2nd February 2017) screened out other transboundary sites for harbour porpoise, although the larger screening ranges for harbour seal and grey seal mean that a greater number of transboundary sites have been screened in for those species.

Designated Site	Feature(s) screened in*	Potential for Likely Significant Effect		
		Construction	O&M	Decommissioning
<p>Eight transboundary sites for harbour seal: Bancs des Flandres</p> <p>Baie de Canche et couloir des trois estuaires</p> <p>Vlakte van de Raan</p> <p>Voordelta</p> <p>Estuaires et littoral picards (baies de Somme et d'Authie)</p> <p>Recifs Gris-Nez Blanc-Nez</p> <p>Vlaamse Banken</p> <p>Ridens et dunes hydrauliques du détroit du Pas-de-Calais</p>	<p>Harbour seal (<i>Phoca vitulina</i>)</p> <p>(see above for harbour porpoise and below for grey seal)</p>	<p>Construction activities, in particular the pile-driving of foundations, will result in high levels of underwater noise. Increased vessel traffic during construction may also result in increased noise levels.</p> <p>All the designated sites fall in the foraging range of harbour seal, with potential for a LSE.</p>	N/A	<p>Similar to and potentially less than those outlined in the construction phase.</p>
<p>Eleven transboundary sites for grey seal: Bancs des Flandres</p> <p>Baie de Canche et couloir des trois estuaires</p> <p>Vlakte van de Raan</p> <p>Voordelta</p> <p>Estuaires et littoral picards (baies de Somme et d'Authie)</p> <p>Recifs Gris-Nez Blanc-Nez</p> <p>Vlaamse Banken</p> <p>SBZ 1</p> <p>SBZ 2</p> <p>SBZ 3</p>	<p>Grey seal (<i>Halichoerus grypus</i>)</p> <p>(see above for harbour porpoise and harbour seal)</p>	<p>Construction activities, in particular the pile-driving of foundations, will result in high levels of underwater noise. Increased vessel traffic during construction may also result in increased noise levels.</p> <p>All the designated sites fall in the foraging range of grey seal, with potential for a significant effect.</p>	N/A	<p>Similar to and potentially less than those outlined in the construction phase.</p>

Designated Site	Feature(s) screened in*	Potential for Likely Significant Effect		
		Construction	O&M	Decommissioning
Ridens et dunes hydrauliques du détroit du Pas-de-Calais				
Outer Thames Estuary SPA	Red-throated diver	Potential for disturbance and displacement of species will be species dependant, but up to 4 – 6 km for the most sensitive species Displacement extent of red-throated diver could extend to distance between Thanet Extension and SPA	Potential for disturbance and species will be species dependant, but up to 4 - 6 km for the most sensitive species Displacement extent of red-throated diver could extend to distance between Thanet Extension and SPA	Similar to and potentially less than those outlined in the construction phase.
	Common tern Little tern	N/A	Potential for the scale of collision mortality to result in a population decline for the tern species	N/A
Flamborough and Filey Coast SPA	Gannet Kittiwake Guillemot Razorbill	Potential for disturbance and displacement of species will be species dependant and can extend beyond the footprint of the array (drawing on experience from post-construction studies at operating OWFs) Potential for disturbance and displacement for guillemot and razorbill, not for gannet and kittiwake, could extend to a distance of 2 – 4 km beyond the array	Potential for disturbance and displacement of species will be species dependant and can extend beyond the footprint of the array Potential for disturbance and displacement for guillemot and razorbill, not for gannet and kittiwake, could extend to a distance of 2 – 4 km beyond the array	Similar to and potentially less than those outlined in the construction phase.
			Potential for the scale of collision mortality to result in a population decline for gannet and kittiwake but not guillemot and razorbill Screened in the HRA Screening Report drawing on the experience of CRM carried out for other consented OWFs	
Northumberland Marine SPA	Guillemot	Potential for disturbance and displacement of species will be species dependant and can extend beyond the footprint of the array (drawing on experience from post-construction studies at operating OWFs) Potential for disturbance and displacement for guillemot could extend to a distance of 2 – 4 km beyond the array	Potential for disturbance and displacement of species will be species dependant and can extend beyond the footprint of the array (drawing on experience from post-construction studies at operating OWFs) Potential for disturbance and displacement for guillemot could extend to a distance of 2 – 4 km beyond the array	Similar to and potentially less than those outlined in the construction phase.

Designated Site	Feature(s) screened in*	Potential for Likely Significant Effect		
		Construction	O&M	Decommissioning
Farne Islands SPA	Guillemot	<p>Potential for disturbance and displacement of species will be species dependant and can extend beyond the footprint of the array (drawing on experience from post-construction studies at operating OWFs)</p> <p>Potential for disturbance and displacement for guillemot could extend to a distance of 2 – 4 km beyond the array</p>	<p>Potential for disturbance and displacement of species will be species dependant and can extend beyond the footprint of the array (drawing on experience from post-construction studies at operating OWFs)</p> <p>Potential for disturbance and displacement for guillemot could extend to a distance of 2 – 4 km beyond the array</p>	Similar to and potentially less than those outlined in the construction phase.
St Abb’s Head to Fast Castle SPA	Kittiwake Guillemot Razorbill	<p>Potential for disturbance and displacement of species will be species dependant and can extend beyond the footprint of the array (drawing on experience from post-construction studies at operating OWFs)</p> <p>Potential for disturbance and displacement for guillemot and razorbill, not for the herring gull and kittiwake, could extend to a distance of 2 – 4 km beyond the array</p>	<p>Potential for disturbance and displacement of species will be species dependant and can extend beyond the footprint of the array</p> <p>Potential for disturbance and displacement for guillemot and razorbill, not for the herring gull and kittiwake, could extend to a distance of 2 – 4 km beyond the array</p> <p>Potential for the scale of collision mortality to result in a population decline for kittiwake</p> <p>Screened in the HRA Screening Report drawing on the experience of CRM carried out for other consented OWFs</p>	Similar to and potentially less than those outlined in the construction phase.
Foulness (Mid-Essex Coast Phase 5) SPA	Sandwich tern	N/A	<p>Potential for the scale of collision mortality to result in a population decline for Sandwich tern</p> <p>Screened in the HRA Screening Report drawing on the experience of CRM carried out for other consented OWFs</p>	N/A
Alde-Ore Estuary SPA	Lesser black-backed gull	N/A	<p>Potential for the scale of collision mortality to result in a population decline for lesser black-backed gull</p> <p>Screened in the HRA Screening Report drawing on the experience of CRM carried out for other consented OWFs</p>	N/A
Alde-Ore Estuary Ramsar	Lesser black-backed gull	N/A	<p>Potential for the scale of collision mortality to result in a population decline for lesser black-backed gull</p> <p>Screened in the HRA Screening Report drawing on the experience of CRM carried out for other consented OWFs</p>	N/A

* Note that additional feature(s) may be included within the designation; however those detailed here are limited to the habitat and/ or species screened in for LSE.

8 The Screening Process for the Project In-combination

8.1 Overview to In-combination Screening

8.1.1 Regulation 63 of the Habitats Regulations includes a requirement for the Competent Authority to make the AA alone and in-combination with other plans or projects, where these are not directly connected with or necessary to the management of the site. Screening for the project alone is summarised in section 7, with screening for the project in-combination being provided here.

8.1.2 The legislation does not provide a definition of alone or in-combination. The following (not exhaustive) list has been applied to Thanet Extension when identifying plans and projects for consideration in-combination:

- Permitted ongoing activities, such as discharge consents and abstraction licences;
- Approved or consented plans which have not yet been completed;
- Plans and projects where the application for consent has been submitted but has not yet been approved by the competent authorities; and
- Plans and projects which are reasonably foreseeable, i.e. projects for which an application has not yet been submitted, but which are likely to progress before completion of the development being assessed and which sufficient information is available to adequately assess the likelihood of cumulative and in-combination effects.

8.1.3 A full review of such plans and projects has been conducted for Thanet Extension and reported in Volume 1, Annex 3-1: Cumulative Effects Assessment (Application Ref 6.1.3.1). Each individual topic chapter for the ES has screened the full list of projects, plans and activities for consideration, to identify those relevant to individual receptor groups. The relevant plan/ project screening tables to the receptor groups within the RIAA are presented within the ES chapters as follows:

- Table 4.25 within Volume 2, Chapter 4: Offshore Ornithology (Application Ref 6.2.4);
- Table 5.16 within Volume 2, Chapter 5: Benthic Subtidal and Intertidal Ecology (Application Ref 6.2.5);
- Table 7.35 within Volume 2, Chapter 7: Marine Mammals (Application Ref 6.2.7); and
- Table 5.14 within Volume 3, Chapter 5: Onshore Biodiversity (Application Ref 6.3.5).

8.1.4 In addition, through consultation (see Table 4.1) additional plans and projects have been highlighted in French waters. The projects highlighted were the OWFs of Fécamp (already also known as Parc éolien en mer de Fécamp Offshore Wind Farm and Fécamp Offshore and included within the in-combination screening), Courseulles s/Mer (also referred to as Calvados or Parc éoliennes cour seules sur mer, and already included in in-combination screening), Dieppe-Le Treport (added to the screening process) and Dunkirk (added to the screening process). The additional responses received from the French Government in the Regulation 32 Response and the Response to Rule 6 confirmed the view that the offshore windfarms at Courseulles-sur-Mer, Fécamp and Dieppe Le Tréport should be included in the in-combination assessment for marine mammals and offshore ornithology. It can be confirmed that all these projects have already been considered through the screening process for projects in-combination.

8.1.5 In addition, it is acknowledged that (in addition to Thanet Extension), a further 7 projects have been highlighted by The Crown Estate for possible extension. However, given that the plan level HRA is pending at the time of writing (January 2019), it is not possible at the current time to include these projects here.

8.1.6 With respect to in-combination effects within the HRA process, the Screening Report (Annex 1, Application Ref 5.2.1) identified the broad categories of plans and projects to be considered within this RIAA. The specific plans and projects relevant to individual receptors draw on those identified within the individual ES chapters, as highlighted above. The intention of screening in-combination is to determine, for the plans and projects relevant to each receptor group, which of the designated sites screened in for determination of LSE alone may be affected by a spatial and/ or temporal overlap of effect from a relevant plan or project.

8.1.7 Further, it is acknowledged that the potential contribution to an AEoI in-combination by Thanet Extension could stem not only from those effects where LSE exists in relation to the project alone (as highlighted in Table 7.3 above), but also potentially from a *de minimis* aspect of the project alone that may become more relevant in-combination. As such, consideration has been given where the potential exists for Thanet Extension, to contribute to LSE in-combination, immaterial of whether an LSE alone applies or not.

8.1.8 The determination of LSE in-combination takes into account the following:

- Level of detail available for project/ plans;
- Potential for an effect-pathway-receptor link;
- Potential for a physical interaction; and
- Potential for temporal interaction.

8.1.9 The approach applied to screening in-combination is outlined below. The overall aim is to determine the plans or projects that may affect the designated sites considered for potential LSE for the project alone.

8.1.10 As is typical for an in-combination assessment, for many plans and projects there is uncertainty regarding project design and timeframe but also quantified environmental impacts. For this reason, in common with the ES, a Tiered approach has been applied to the in-combination assessment following the determination of LSE, with more detail on this approach provided below. The approach to the in-combination assessment for offshore ornithology follows the advice provided by Natural England and the description of that receptor specific approach is given under the offshore ornithology heading (section 8.5).

8.1.11 All relevant projects/ plans considered in-combination with Thanet Extension have been allocated into 'Tiers', reflecting their current stage within the planning and development process. This allows the in-combination impact assessment to consider several future development scenarios, each with a differing potential for being ultimately built out. Appropriate weight may therefore be given to each scenario (Tier) in the decision making process when considering the potential in-combination impact associated with Thanet Extension.

8.1.12 The tier structure presented below (for all receptors apart from offshore ornithology, which is presented separately) is intended to ensure that there is a clear understanding of the level of confidence in the in-combination assessment within the RIAA is as follows:

Tier 1

8.1.13 Thanet Extension considered alongside other projects/ plans already constructed or currently under construction and/ or those consented but not yet implemented, where data confidence in the project design envelope and timeline for construction is high. This means that these projects have a Contract for Difference (CfD) in place and/ or have commenced with the formal submission of discharge plans to the regulators, and therefore there can be confidence as to final scheme design and timing.

8.1.14 Built and operational projects will be included within this tier of the in-combination assessment where they have not been included within the environmental characterisation survey, i.e. they were not operational when baseline surveys were undertaken, and/ or any residual impact may not have yet fed through to and been captured in estimates of 'baseline' conditions.

Tier 2

8.1.15 Thanet Extension considered alongside other projects/ plans which are consented but not yet implemented, and where data confidence in the project design envelope and timeline for construction is medium. For example, the consented envelope may not be what is constructed, or timelines might have changed since the ES was submitted. The project may not yet proceed as a result of financial or other considerations. This Tier includes consented UK projects which have not yet been awarded a CfD.

Tier 3

8.1.16 Thanet Extension considered alongside other projects/ plans which have submitted applications but are not yet consented. The submitted application will have been accompanied by an ES but prior to any hearing or decision, there is the possibility that the design could change, and the project could be withdrawn or refused consent.

Tier 4

8.1.17 The above plus projects on relevant plans and programmes that have been announced by developers and that are listed on the appropriate planning systems (the PINS Programme of Projects and MMO 'Marine Case Management System' being the source most relevant for this assessment). Specifically, all projects where the developer has advised PINS in writing that they intend to submit an application in the future were considered.

8.1.18 It should be noted that Tier 4 has been added into the marine mammal assessment within the ES only, as a result of the necessity to differentiate the certainty in project envelope and timing for the impact of pile-driving in particular. It is difficult to generate a realistic schedule for the degree to which different projects might overlap in terms of piling periods. Therefore, another tier was added differentiating consented projects with more certainty in respect of project plans and timelines (e.g. where significant post-consent development and discussions have taken place) from those that have been consented but there is significant uncertainty as to when they will actually go ahead.

8.2 Subtidal and Intertidal Benthic Ecology

8.2.1 The initial step to screening for plans and projects in-combination for subtidal and intertidal benthic ecology receptors is to identify those plans and projects located within sufficient proximity to the relevant designated sites (based on a receptor specific screening range). Where plans and projects are identified, these will then be considered further to determine if LSE in-combination with Thanet Extension applies.

8.2.2 For subtidal and intertidal benthic habitats, the full list of plans and projects identified for cumulative assessment within Volume 2, Chapter 5 of the ES (Benthic Subtidal and Intertidal Ecology) are provided within Table 5.16 of that chapter. For the purposes of RIAA, these have been filtered, through the use of a Geographical Information System (GIS), to identify those plans and projects located within 14 km of one or more of the following designated sites (applying the maximum project specific screening range):

- Thanet Coast SAC;
- Margate and Long Sands SAC;
- Thanet Coast and Sandwich Bay SPA (in relation to intertidal habitats used by the designated features European golden plover and ruddy turnstone, with further comment provided in section 8.6 'onshore biodiversity' below); and

- Thanet Coast and Sandwich Bay Ramsar (in relation to intertidal habitats used by the designated feature, ruddy turnstone, with further comment provided in section 8.6 'onshore biodiversity' below).
- 8.2.3 The conclusions of that screening are provided in Table 8.1 below. Projects/ plans to be considered in-combination for specific designated sites are highlighted in grey bold.

Table 8.1: Summary Plans and Projects to be considered in-combination in relation to subtidal and/ or intertidal benthic habitats

Project/ Plan				Range to Designated Site			
Development Type	Project	Status	Tier	Thanet Coast SAC	Margate & Long Sands SAC	Thanet Coast & Sandwich Bay SPA	Thanet Coast & Sandwich Bay Ramsar
Cable installation	Nemo Interconnector Cable	Constructed	1	< 1 km	8 km	0 km	0 km
Disposal area	Nemo Disposal Site B	Open	1	20 km	22 km	21 km	21 km
Disposal area	Nemo Disposal Site C	Open	1	1 km	10 km	2 km	2 km
Disposal area	Pegwell Bay	Open	2	1 km	10 km	3 km	3 km
Disposal area	Pegwell Bay B	Open	2	0 km	9 km	1 km	1 km
Disposal site	Ramsgate Harbour Site A	Open	2	0 km	9 km	1 km	1 km
Disposal site	Ramsgate Harbour Site B	Open	2	0 km	9 km	1 km	1 km
Maintenance Dredging (Water injection)	Ramsgate Harbour	Active	1	0 km	9 km	1 km	1 km
Cable installation	Gridlink Interconnector	Pre planning	4	Unknown	Unknown	Unknown	Unknown

8.2.4 For the plans and projects highlighted above as being within sufficient proximity to the relevant designated sites, it is considered that there is potential for LSE in-combination with Thanet Extension. The potential for such an effect will vary, depending on parameters such as the timing of works and the nature of those works, with these to be considered in full in the determination of AEoI.

8.3 Marine Mammals

8.3.1 For marine mammals, screening in-combination has considered those designated sites where the potential for LSE was identified for the project alone. For all other designated sites, the distance is such that there is no pathway for effect from Thanet Extension to reach the designated site boundary and therefore no potential for an in-combination effect. The screening ranges applied are the same as those applied for the project alone. The ranges vary between species and have been agreed with Natural England during the HRA Evidence Plan Process (see Table 4.1), being 26 km for harbour porpoise (JNCC, 2016), 120 km for harbour seal (SMRU, 2011) and 145 km for grey seal (Thompson *et al.* 1996). The ranges have been applied in GIS to each of the designated sites highlighted below to identify, from the full list of plans and projects identified for marine mammal cumulative assessment within the ES, together with the two additional projects highlighted during transboundary consultation, those to consider further for potential LSE in-combination with Thanet Extension. The screening therefore considers the following designated sites:

- Southern North Sea cSAC/SCI (harbour porpoise);
- Transboundary harbour porpoise site (Bancs des Flandres SCI);
- Transboundary harbour seal sites (Bancs des Flandres SCI, Baie de Canche et couloir des trois estuaires, Vlake van de Raan, Voordelta, Estuaires et littoral picards (baies de Somme et d'Authie), Recifs Gris-Nez Blanc-Nez, Vlaamse Banken and Ridens et dunes hydrauliques); and
- Transboundary grey seal sites (Bancs des Flandres SCI, Baie de Canche et couloir des trois estuaires, Vlake van de Raan, Voordelta, Estuaires et littoral picards (baies de Somme et d'Authie), Recifs Gris-Nez Blanc-Nez, Vlaamse Banken, Ridens et dunes hydrauliques, SBZ1, SBZ2 and SBZ3).

8.3.2 The potential for LSE has been determined based on the following:

- For a plan or project where there is potential for the construction period to have temporal overlap with that of Thanet Extension (i.e. the plan/ or project is identified by 'yes' in terms of construction window overlap in receptor specific chapters) OR the potential for construction overlap is unknown (i.e. the plan/ or project is identified by 'unknown' in terms of construction window overlap in receptor specific chapters) AND the plan/ or project is within the relevant species specific screening range of the designated site; and
- For a plan/ or project where there is no potential for temporal overlap with the construction period (i.e. the plan/ or project is identified by 'no' in terms of construction window overlap in receptor specific chapters), only those designated sites with physical overlap with the plan/ or project are screened in for LSE.

8.3.3 The differentiation between construction period and O&M period impacts is made here for marine mammals, in light of the typical scale of effects that may occur during construction compared to those during O&M (as evidenced by section 7.12 of Volume 2, Chapter 7: Marine Mammals (Application Ref 6.2.7) of the ES).

8.3.4 It is acknowledged that other activities have the potential to contribute to an in-combination effect, specifically with regard to underwater noise. Previous assessments of AEoI on the SNS cSAC/SCI have included consideration of seismic survey associated with oil and gas activity, together with UXO detonations. Where seismic survey is known in association with the plans and projects identified in Table 8.1, these will be screened in for assessment. Given the timeframes involved (with offshore works at Thanet Extension due to start in 2021), the available information regarding planned oil and gas works¹⁶ currently extends to mid 2019 only (website accessed December 2018) and therefore does not cover the required period, with no certainty regarding what or where (if anything) further applications would come forward in the relevant timeframe. It is therefore not possible to include such oil and gas works.

8.3.5 Similarly, as regards UXO clearance, where any planned works associated with projects screened in are known, these will be included within the assessment. As regards UXO clearance more widely, previous projects have considered ongoing UXO clearance, with OSPAR data providing a comprehensive source of information¹⁷.

¹⁶ Sourced from https://itportal.beis.gov.uk/eng/fox/live/PETS_EXTERNAL_PUBLICATION/main

¹⁷ Information contained <https://www.ospar.org/work-areas/eiha/munitions> and data held http://odims.ospar.org/odims_data_files/

- 8.3.6 The RIAA only takes account (and should only take account) of planned/consented works within the licensing process. It is not considered appropriate to undertake a speculative in-combination assessment in HRA terms based on historic activity for either oil and gas works or UXO clearance. The position is reinforced by the recent response issued by BEIS to the request for an amendment to a MMMP at East Anglia ONE¹⁸. It is noted that in this instance under paragraph 4.2 part ii (with respect to the potential for disturbance of harbour porpoise within the Southern North Sea cSAC), the Applicant did not take account of a variation request by a separate project because at the time the Applicant (East Anglia ONE) had made and submitted its Application, the separate project had not submitted its license Application. The approach taken in that Application made by East Anglia ONE was regarded as appropriate at the time of the decision and in the circumstances of this case, the Applicant should not be required to take account of activity for which no information is available.
- 8.3.7 Further, a similar approach has been confirmed by BEIS in its AA undertaken for the non-material change application for Triton Knoll¹⁹. Here, it is clear in paragraph 5.27 that only planned/ licensed activities were included in the in-combination assessment - noting that further such campaigns would be subject to a separate licensing regime and must comply with the Habitats Regulations.
- 8.3.8 It is therefore considered appropriate within the RIAA to limit the in-combination assessment to works known to be occurring and not based on an assumption of past activity continuing. In any case, any activity that would be included within an in-combination assessment (but for which no information is as yet in the public domain) would be expected to undertake the HRA process in its own right and would therefore be the subject of assessment at that point.

- 8.3.9 Data interrogation of the OSPAR UXO data undertaken for the RIAA submitted in June 2018 considered the dataset available from 2014 as the most recent dataset available at that point. That dataset revealed that of the 653 munitions recorded in total in 2014, just five were found and detonated within 26 km of the SNS cSAC/SCI. During the redrafting of the RIAA for Deadline 1, a 2016 dataset was sourced on the OSPAR website. That dataset includes 359 UXO in total, of which just 2 were found within 26km of the SNS cSAC/SCI. Given the uncertainty regarding the ongoing requirement for such UXO clearance (previous investigations, via discussion with the Ministry of Infrastructure and the Environment in the Netherlands specifically Rijkswaterstaat, RWS, have revealed clearances in Dutch waters are anticipated to continue to decrease), together with uncertainty regarding the location of any such UXO and the timing of any such clearance (i.e. that for an in-combination effect to occur, a UXO would need to be found and detonated within 26 km of the SNS cSAC/SCI and on a day coinciding with the relevant season and with relevant activity being undertaken at Thanet Extension, with just 5 potentially relevant UXO noted for the whole of 2014), the potential for UXO clearance across the OSPAR region to contribute to an AEoI on the SNS cSAC/SCI in-combination is deemed to be both very low risk and *de minimis*. The tier most relevant to such clearance is Tier 4. Any such clearance cannot be associated with a specific designated site and are therefore not included in Table 8.2 below.

¹⁸<https://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/projects/EN010025/EN010025-002922-East%20Anglia%20ONE%20OWF%20Letter%20of%202%20October%202018%20to%20East%20Anglia%20ONE%20Limited.pdf>

¹⁹<https://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/projects/EN010005/EN010005-000905-HRA%20TRITON%20KNOLL%20OFFSHORE%20WIND%20FARM%20%E2%80%93%20NON%20MATERIAL%20CHANGE.pdf>

Table 8.2: Summary of Plans and Projects screened in for the marine mammal assessment in-combination

Project/ Plan				Range to Designated Site (screening range in km)																				
Type	Project	Overlap with construction	Tier	Harbour Porpoise Sites (26 km)		Grey seal sites (145 km)										Harbour seal sites (120 km)								
				SNS cSAC/SCI	Bancs des Flandres SCI	Bancs des Flandres	Recifs Gris-Nez Blanc-Nez	Baie de Canche et couloir des trois	Vlakte van de Raan	Vlakte van de Raan	Estuaires et littoral picards	Vlaamse Banken	Voordelta	SBZ 1	SBZ 2	SBZ 3	Ridens et dunes hydrauliques	Bancs des Flandres	Baie de Canche et couloir des trois	Vlakte van de Raan	Voordelta	Estuaires et littoral picards	Recifs Gris-Nez Blanc-Nez	Vlaamse Banken
Offshore wind farm	Borssele 1 & 2, 3 & 4, 5 ²⁰	Yes	1	21	> 26	58	120	> 145	34	> 145	34	27	56	39	28	134	58	> 120	34	27	> 120	120	34	> 120
	Courseulles-sur-mer	Yes	2	>26	>26	> 145	> 145	> 145	> 145	> 145	> 145	> 145	> 145	> 145	> 145	> 145	> 120	> 120	> 120	> 120	> 120	> 120	> 120	> 120
	Dieppe le Treport ²¹	No	2	>26	>26	113	74	18	>145	21	>145	>145	>145	>145	>145	30	113	18	>120	>120	21	74	>120	30
	Dogger Bank Creyke Beck A & B	Yes	2	0	> 26	> 145	> 145	> 145	> 145	> 145	> 145	> 145	> 145	> 145	> 145	> 145	> 120	> 120	> 120	> 120	> 120	> 120	> 120	> 120
	Dogger Bank Teesside A	Yes	2	24	> 26	> 145	> 145	> 145	> 145	> 145	> 145	> 145	> 145	> 145	> 145	> 145	> 120	> 120	> 120	> 120	> 120	> 120	> 120	> 120
	Sofia ²²	Yes	2	0	>26	> 145	> 145	> 145	> 145	> 145	> 145	> 145	> 145	> 145	> 145	> 145	> 120	> 120	> 120	> 120	> 120	> 120	> 120	> 120
	Dunkirk ²³	Unknown	4	>26	0	0	53	85	65	102	7	143	11	28	53	73	0	85	65	>120	102	53	7	73

²⁰ Note that Borssele consists of separate projects however all are located within the same zone and all are planned to construct in the same year (2020) – for practical purposes therefore these have all been considered as a single project (<https://english.rvo.nl/subsidies-programmes/sde/offshore-wind-energy/borssele-wind-farm-sites-i-ii>)

²¹ Currently subject to Public Inquiry (December 2018)

²² Sofia was previously known as Dogger Bank Teesside B and has been renamed

²³ Note that there is significant uncertainty regarding the location of the Dunkirk project, with a centre point location only available. There is, therefore, the possibility that, once a project boundary is available, that the project would be within 26km of the SNScSAC. However at present, insufficient data is available to enable this to be determined.

Project/ Plan				Range to Designated Site (screening range in km)																				
Type	Project	Overlap with construction	Tier	Harbour Porpoise Sites (26 km)		Grey seal sites (145 km)										Harbour seal sites (120 km)								
				SNS cSAC/SCI	Bancs des Flandres SCI	Bancs des Flandres	Recifs Gris-Nez Blanc-Nez	Baie de Canche et couloir des trois	Vlakte van de Raan	Vlakte van de Raan	Estuaires et littoral picards	Vlaamse Banken	Voordelta	SBZ 1	SBZ 2	SBZ 3	Ridens et dunes hydrauliques	Bancs des Flandres	Baie de Canche et couloir des trois	Vlakte van de Raan	Voordelta	Estuaires et littoral picards	Recifs Gris-Nez Blanc-Nez	Vlaamse Banken
	East Anglia Norfolk Boreas	No	4	0	> 26	> 145	> 145	> 145	> 145	> 145	> 145	118	> 145	> 145	> 145	> 145	> 120	> 120	> 120	118	> 120	> 120	> 120	> 120
	Norfolk Vanguard East	Yes	3	0	> 26	> 145	> 145	> 145	> 145	> 145	> 145	106	> 145	> 145	> 145	> 145	> 120	> 120	> 120	106	> 120	> 120	> 120	> 120
	Norfolk Vanguard West	Yes	3	0	> 26	> 145	> 145	> 145	> 145	> 145	> 145	131	> 145	> 145	> 145	> 145	> 120	> 120	> 120	> 120	> 120	> 120	> 120	> 120
	East Anglia ONE	No	1	0	> 26	76	118	> 145	80	> 145	52	73	87	76	82	> 145	76	> 120	80	73	> 120	118	52	> 120
	East Anglia ONE North	Unknown	4	0	> 26	110	> 145	> 145	109	> 145	87	93	122	110	113	> 145	110	> 120	109	93	> 120	> 120	87	> 120
	East Anglia TWO	Unknown	4	0	> 26	82	123	> 145	89	> 145	59	84	94	84	92	132	82	> 120	89	84	> 120	> 120	59	> 120
	East Anglia THREE	Yes	2	0	> 26	136	> 145	> 145	121	> 145	112	95	143	128	126	> 145	> 120	> 120	> 120	95	> 120	> 120	112	> 120
	Fecamp – Seine-Maritime ²⁴	Unknown	2	> 26	> 26	> 145	131	87	> 145	87	> 145	> 145	> 145	> 145	65	> 120	87	> 120	> 120	87	> 120	> 120	65	> 120
	Hollandse Kust noord 1	Unknown	2	> 26	> 26	> 145	> 145	> 145	> 145	> 145	> 145	66	> 145	> 145	> 145	> 145	> 120	> 120	> 120	66	> 120	> 120	> 120	> 120
	Hollandse Kust noord 2	Unknown	2	> 26	> 26	> 145	> 145	> 145	> 145	> 145	> 145	64	> 145	> 145	> 145	> 145	> 120	> 120	> 120	64	> 120	> 120	> 120	> 120

²⁴ Currently (as of December 2018) subject to legal challenge that is delaying progress of the project.

Project/ Plan				Range to Designated Site (screening range in km)																				
Type	Project	Overlap with construction	Tier	Harbour Porpoise Sites (26 km)		Grey seal sites (145 km)										Harbour seal sites (120 km)								
				SNS cSAC/SCI	Bancs des Flandres SCI	Bancs des Flandres	Recifs Gris-Nez Blanc-Nez	Baie de Canche et couloir des trois	Vlakte van de Raan	Vlakte van de Raan	Estuaires et littoral picards	Vlaamse Banken	Voordelta	SBZ 1	SBZ 2	SBZ 3	Ridens et dunes hydrauliques	Bancs des Flandres	Baie de Canche et couloir des trois	Vlakte van de Raan	Voordelta	Estuaires et littoral picards	Recifs Gris-Nez Blanc-Nez	Vlaamse Banken
	Hollandse Kust zuid 1 & 2	Unknown	3	> 26	> 26	> 145	> 145	> 145	94	> 145	125	20	141	118	103	> 145	> 120	> 120	94	20	> 120	> 120	> 120	> 120
	Hollandse Kust zuid 3 & 4	Unknown	3	> 26	> 26	> 145	> 145	> 145	96	> 145	125	22	142	119	104	> 145	> 120	> 120	96	22	> 120	> 120	> 120	> 120
	Hornsea Project ONE	Yes	1	0	> 26	> 145	> 145	> 145	> 145	> 145	> 145	> 145	> 145	> 145	> 145	> 145	> 120	> 120	> 120	> 120	> 120	> 120	> 120	> 120
	Hornsea Project TWO	Yes	1	0	> 26	> 145	> 145	> 145	> 145	> 145	> 145	> 145	> 145	> 145	> 145	> 145	> 120	> 120	> 120	> 120	> 120	> 120	> 120	> 120
	Hornsea Project THREE	Yes	3	1	> 26	> 145	> 145	> 145	> 145	> 145	> 145	> 145	> 145	> 145	> 145	> 145	> 120	> 120	> 120	> 120	> 120	> 120	> 120	> 120
	Mermaid	Unknown	2	18	> 26	47	108	145	38	> 145	23	36	48	34	39	124	47	> 120	38	36	> 120	108	23	> 120
	Seastar	Unknown	2	> 26	> 26	46	108	144	29	> 145	22	26	44	28	31	124	46	> 120	29	26	> 120	108	22	> 120
	Triton Knoll	Yes	1	21	> 26	> 145	> 145	> 145	> 145	> 145	> 145	> 145	> 145	> 145	> 145	> 145	> 120	> 120	> 120	> 120	> 120	> 120	> 120	> 120

8.4 Diadromous Fish

- 8.4.1 Screening for LSE alone highlighted a single designated site, Vlaamse Banken, located at least 39 km from the array area. No other sites were identified, for which migratory fish are listed as a feature, with the screening range applied being 55 km (see Table 7.3 of the Screening Report (Application Ref 5.2.1) for justification of that range). The range applied is considered highly precautionary, with the assessment alone concluding no LSE for migratory fish species. Of the plans and projects screened in for cumulative assessment within Table 6.15 of Volume 2, Chapter 6: Fish and Shellfish Ecology (Application Ref 6.2.6), chapter from the ES, the majority are disposal grounds together with a cable installation (Nemo) and East Anglia ONE (offshore construction in 2018). Of these, none are considered to have the potential to give rise to an effect with potential for sufficient physical and/ or temporal interaction with effects associated with Thanet Extension to result in an in-combination effect; to do so, the effects would either need to reach the designated site and/ or occur within the relevant timetable for offshore construction of Thanet Extension (offshore construction to start 2021, UXO clearance and geophysical survey to predate that).
- 8.4.2 Therefore, designated sites for diadromous sites are screened out of in-combination assessment.

8.5 Offshore Ornithology

- 8.5.1 For offshore ornithology the approach to 'tiers' follows the advice of Natural England and accounts for the discussions held during the Evidence Plan process. It is based on the approach initially recommended by JNCC and Natural England in the consenting process for East Anglia ONE OWF (JNCC and Natural England, 2013) and subsequently taken forward in other recent OWF assessments as a 'five tier approach'. These five tiers are categorised along with consideration about the certainty of the assessment and relevant data available in Table 8.3.

Table 8.3: Tiering applied to plans and projects screened in for in-combination assessment of offshore ornithology

Tier	Description	Availability of information about the assessment and associated data and level of confidence
Tier 1	Built and operational projects	<p>To gain consent the developer will have submitted an ES, potentially supplementary information and, in the case of NSIP developments, additional information during the course of the Hearing. There may also be post-construction monitoring information.</p> <p>Any variation in project design (within the scope of the Rochdale Envelope) will have been decided.</p> <p>With regard to impact induced mortality of birds, this effect, even though arising from an operational project, may not have yet fed through to, and been captured in, estimates of “baseline” population conditions i.e. the background distribution and/ or mortality rate of birds. Accordingly, such projects are included within the in-combination assessment rather than excluded on the basis that they are part of the baseline/ background.</p> <p>High confidence</p>
Tier 2	Projects that are under construction	<p>To gain consent the developer will have submitted an ES, potentially supplementary information and, in the case of NSIP developments, additional information during the course of the Hearing.</p> <p>Any variation in project design (within the scope of the Rochdale Envelope) will have been decided.</p> <p>High confidence</p>
Tier 3	Consented applications not yet implemented	<p>To gain consent the developer will have submitted an ES, potentially supplementary information and, in the case of NSIP developments, additional information during the course of the Hearing.</p> <p>The consented project design may not be the one that is constructed and a reduced scale project (i.e. within the scope of the Rochdale Envelope) might be implemented.</p> <p>The consented project may not yet proceed because of financial or other considerations.</p> <p>Medium confidence</p>

Tier	Description	Availability of information about the assessment and associated data and level of confidence
Tier 4	Submitted applications not yet determined	<p>The submitted application will have been accompanied by an ES but prior to the decision there is still the possibility that supplementary information and, in the case of NSIP developments, additional submissions during the course of the Hearing will be provided that contains significant changes to predicted impacts.</p> <p>The proposed project might be withdrawn or consent refused.</p> <p>Low confidence</p>
Tier 5	Future [foreseeable] projects	<p>Projects that have been announced by the developer, projects that are listed in the PINS programme of projects and projects that are at the pre-scoping and scoping stage will not have any published assessment or data available about impacts.</p> <p>The proposed project might not progress to an application for consent.</p> <p>Low confidence</p>

8.5.2 This approach with five tiers for offshore ornithology differs from that applied for other interest features. Natural England (2014) has argued that a higher number of tiers provide for a better resolution of the different stages that different projects are at in their lifecycle. The five tier approach still differentiates between those projects with high, medium and low confidence in the data that is applied in a three or four tier approach for other interest features. Both allow the decision maker to give more weight to those projects for which there is higher confidence in the data.

8.5.3 The projects and plans selected as relevant to the assessment of impacts to offshore ornithology are based upon an initial screening exercise undertaken on a long list (HRA Screening Report). This long list included a wide range of different types of activity including marine aggregate extraction, port dredging disposal, other OWFs, oil and gas extraction, cables (including those from OWFs), pipelines, shipping, coastal developments and commercial fisheries. Each project, plan or activity has been considered and scoped in or out on the basis of effect–receptor-pathway, data confidence and the temporal and spatial scales involved.

- 8.5.4 Projects related to marine aggregate extraction, port dredgings disposal, oil and gas extraction, pipelines, shipping, coastal developments and commercial fisheries have been screened out on a series of factors including those that do not overlap spatially with Thanet Extension, those that do not give rise to effects that are cumulative with relevant effects from Thanet Extension, those that are recurring or ongoing from before the baseline period and those that are ongoing activities rather than projects with a consenting process.
- 8.5.5 Two categories of project have been screened in for in-combination assessment: OWFs and offshore cables. For these two categories consideration has to be given to the types of impact that might result in in-combination impact. The following three types of in-combination impact, by project category, are considered:
- Offshore cables construction phase direct disturbance and displacement;
 - OWFs O&M phase direct disturbance and displacement; and
 - OWFs O&M phase collision risk
- 8.5.6 The specific projects scoped into this in-combination assessment, and the tiers into which they have been allocated are presented in Table 8.4. The list of projects in the table is first divided by project type (offshore wind farm and offshore cable) and then listed alphabetically within each tier. Within Tier 4 those projects that are at the PEIR stage are identified from those at the later ES stage in response to comments from stakeholders that this particular phase in the application process be identified in the table of tiers.

Table 8.4: Projects included in the in-combination assessment

Development type	Project	Status	Data confidence assessment/ phase	Tier
Offshore Wind Farm	Beatrice Demonstrator	Built, formerly operational but at present out of commission	High: Data in applicant's ES	1
Offshore Wind Farm	Blyth	Built, formerly operational but at present out of commission	High: Data in applicant's ES	1
Offshore Wind Farm	Blyth Demonstrator Array 2	Operational	High: Data in applicant's ES	1
Offshore Wind Farm	Dudgeon	Operational	High: Data in applicant's ES	1
Offshore Wind Farm	EOWDC [Aberdeen]	Operational	High: Data in applicant's ES	1
Offshore Wind Farm	Galloper	Operational	High: Data in applicant's ES	1
Offshore Wind Farm	Greater Gabbard	Operational	High: Data in applicant's ES	1
Offshore Wind Farm	Gunfleet Sands 1 & 2	Operational	High: Data in applicant's ES	1
Offshore Wind Farm	Humber Gateway	Operational	High: Data in applicant's ES	1
Offshore Wind Farm	Hywind	Operational	High: Data in applicant's ES	1
Offshore Wind Farm	Kentish Flats	Operational	High: Data in applicant's ES	1
Offshore Wind Farm	Kentish Flats Extension	Operational	High: Data in applicant's ES	1
Offshore Wind Farm	Lincs	Operational	High: Data in applicant's ES	1

Development type	Project	Status	Data confidence assessment/ phase	Tier
Offshore Wind Farm	London Array	Operational	High: Data in applicant's ES	1
Offshore Wind Farm	Lynn and Inner Dowsing	Operational	High: Data in applicant's ES	1
Offshore Wind Farm	Race Bank	Operational	High: Data in applicant's ES	1
Offshore Wind Farm	Rampion	Operational	High: Data in applicant's ES	1
Offshore Wind Farm	Scroby Sands	Operational	High: Data in applicant's ES	1
Offshore Wind Farm	Sheringham Shoal	Operational	High: Data in applicant's ES	1
Offshore Wind Farm	Teesside	Operational	High: Data in applicant's ES	1
Offshore Wind Farm	Thanet	Operational	High: Data in applicant's ES	1
Offshore Wind Farm	Westermost Rough	Operational	High: Data in applicant's ES	1
Offshore Wind Farm	Beatrice	Under construction	High: Data in applicant's ES	2
Offshore Wind Farm	East Anglia ONE	Under construction	High: Data in applicant's ES	2
Offshore Wind Farm	Hornsea Project One	Under construction	High: Data in applicant's ES	2
Offshore Wind Farm	Kincardine	Under construction	Medium: Data in applicant's ES but design might change	2

Development type	Project	Status	Data confidence assessment/ phase	Tier
Offshore Wind Farm	Dogger Bank Creyke Beck Projects A and B	Consented but not implemented	Medium: Data in applicant's ES but design might change	3
Offshore Wind Farm	Dogger Bank Teesside Project A	Consented but not implemented	Medium: Data in applicant's ES but design might change	3
Offshore Wind Farm	Firth of Forth (Seagreen) Alpha and Bravo	Consented but not implemented	Medium: Data in applicant's ES but design might change	3
Offshore Wind Farm	Hornsea Project Two	Consented but not implemented	Medium: Data in applicant's ES but design might change	3
Offshore Wind Farm	Inch Cape	Consented but not implemented	Medium: Data in applicant's ES but design might change	3
Offshore Wind Farm	Moray Firth (Eastern DA)	Consented but not implemented	Medium: Data in applicant's ES but design might change	3
Offshore Wind Farm	Neart na Gaoithe	Consented but not implemented	Medium: Data in applicant's ES but design might change	3
Offshore Wind Farm	Sofia (Dogger Bank Teesside B)	Consented but not implemented	Medium: Data in applicant's ES but design might change	3
Offshore Wind Farm	Triton Knoll	Consented but not implemented	Medium: Data in applicant's ES but design might change	3
Offshore Wind Farm	East Anglia THREE	Consented but not implemented	Low: Data in applicant's ES but design might change	3

Development type	Project	Status	Data confidence assessment/ phase	Tier
Offshore Wind Farm	Hornsea Project 3	Application submitted	Low: ES data available but design might change prior to consent	4
Offshore Wind Farm	Moray Firth (Western DA)	Pre-application (Scoping Report submitted)	Low: Scoping Report data available	5
Offshore Wind Farm	Norfolk Vanguard	Application submitted	Low: ES data available but design might change prior to consent	4
Offshore Wind Farm	Norfolk Boreas	Pre-application (Scoping Report submitted)	Low: Scoping Report data available	5
Offshore Wind Farm	East Anglia ONE North	Pre-application (Scoping Report submitted)	Low: Scoping Report data available	5
Offshore Wind Farm	East Anglia TWO	Pre-application (Scoping Report submitted)	Low: Scoping Report data available	5
Offshore Cable	Nemo Link (UK-Belgium interconnector)	Constructed	High: Data in applicant's ES	2
Offshore cable	Gridlink Interconnector	Pre planning	Low – no reports available	5

- 8.5.7 Uncertainty arises with a number of OWF projects in Scotland whose progress has been delayed through being the subject of court action (Inch Cape, Neart na Gaoithe, Seagreen Alpha and Seagreen Bravo). The decision of the UK Supreme Court in November 2017 not to allow RSPB to appeal the consents means that the consents are valid and the developments could progress with the consented design. It is the predictions in the ES's for those designs that have been included in the in-combination assessment. In the meantime, the developers of these wind farms (Inch Cape, Neart na Gaoithe and a combined Seagreen Alpha and Seagreen Bravo proposal called Seagreen Phase 1) have submitted applications to the Scottish Government for revised proposals that are, broadly, for a smaller number of larger WTGs. In addition, a further Scottish consented OWF, Moray East, has submitted a Scoping Report that is for a development of a smaller number of larger WTGs. It can be expected that project design changes will result in changes to the scale of impacts predicted. At present the consented projects fall in to Tier 3. Should a new application be submitted for any of these projects and it is made clear that the previous consented application will not be implemented, then such projects will move to Tier 4.
- 8.5.8 The projects screened in for potential in-combination effects with Thanet Extension and the relevant SPA/ pSPA/ Ramsar sites and their interest features are presented, in Table 8.5 and Table 8.6, for offshore cables construction phase direct disturbance and displacement; offshore wind farms operational phase direct disturbance and displacement; and OWFs operational phase collision risk respectively.
- 8.5.9 The approach taken to considering where the potential impacts fall resulting from in-combination effects differs between that for offshore cables and that for OWFs in their operational phase.
- 8.5.10 The approach taken for offshore cables considers the potential spatial and temporal coincidence of offshore cable construction in an area around the proposed Thanet Extension and how that in-combination might affect SPA/ pSPA/ Ramsar sites in that area. This is reflected in the list of designated sites presented in Table 8.7.

- 8.5.11 The approach taken for OWFs in their operational phase differs because it considers the in-combination effect of constructed and proposed OWFs along the eastern coast of Britain, totals the potential impacts for specific interest features and then apportions that total amongst designated sites. This approach is required in order to account for the mobile nature of seabirds, with birds breeding at colony SPAs at some considerable distance but then a proportion of those breeding birds potentially occurring in the non-breeding season in and around Thanet Extension.
- 8.5.12 For disturbance and displacement in-combination effects the assessment considers those SPA/ pSPA/ Ramsar sites with non-breeding red-throated diver as an interest feature which can be associated with the population of non-breeding red-throated diver that occurs within and adjacent to the proposed Thanet Extension. The site considered is the Outer Thames Estuary SPA.
- 8.5.13 The potential for disturbance and displacement in-combination effects on guillemot and razorbill during the non-breeding season on SPA/ pSPA/ Ramsar sites with these two auk species as breeding interest features (Flamborough and Filey Coast SPA, Northumberland Marine SPA, Farne Islands SPA and St Abb's Head to Fast Castle SPA) has not been included in the assessment because the numbers potentially displaced that can be attributed to these colonies will not make a significant contribution to the in-combination assessment. This can be evidenced by way of example for guillemot from the Flamborough and Filey Coast SPA. The total number guillemots occurring on an annual basis (i.e. across all four seasons) within the Thanet Extension site was 986 individuals and in a 1 km buffer surrounding Thanet Extension it was 449 individuals. Applying the site based evidence for 70% displacement within an operating wind farm and 25% displacement around an operating wind farm then an estimated 690 and 112 individuals, or 802 in total, may be subject to potential displacement. Within this number of birds, those that can be attributed to the Flamborough and Filey Coast SPA is in proportion to the number from the pSPA to the number in the UK North Sea non-breeding BDMPS. Furness (2015) identifies that the Flamborough and Filey Coast SPA supports 79,282 adult birds, that 90% of these stay in UK North Sea waters outside the breeding season and that the total number of birds in UK North Sea waters outside the breeding season is 1,617,306, of which 955,860 are adult birds. Of the 802 in total that may be subject to potential displacement, the number of birds that can be apportioned to the Flamborough and Filey Coast SPA is only 35 adult birds. Applying the consequential mortality rates of 1% or 5% leads to a predicted mortality contribution of less than one and two adult birds respectively.
- 8.5.14 For collision risk, the assessment considers SPA/ pSPA/ Ramsar sites with breeding gannet, kittiwake and lesser black-backed gull as interest features. These sites are (noting that not all sites have all of the seabird species listed as interest features): Alde-Ore Estuary SPA, Alde-Ore Estuary Ramsar site, Flamborough and Filey Coast SPA, Northumberland Marine SPA, Farne Islands SPA and St Abb's Head to Fast Castle SPA.

Table 8.5: Projects included in the in-combination assessment of offshore cable construction phase direct disturbance and displacement

Project			Distance to Designated Site (km)
Offshore Cable Project	Status	Tier	Outer Thames Estuary SPA
Nemo Link (UK-Belgium interconnector)	Constructed	2	7
Gridlink Interconnector	Pre planning	5	Unknown

Table 8.6: Projects included in the in-combination assessment of OWF O&M phase direct disturbance and displacement

Offshore Wind Farm Project	Status	Tier
Beatrice Demonstrator	Built, formerly operational but at present out of commission	1
Blyth	Built, formerly operational but at present out of commission	1
Blyth Demonstrator Array 2	Operational	1
Dudgeon	Operational	1
EOWDC [Aberdeen]	Operational	2
Galloper	Operational	1
Greater Gabbard	Operational	1
Gunfleet Sands I & 2	Operational	1
Hywind	Operational	1
Humber Gateway	Operational	1
Kentish Flats	Operational	1
Kentish Flats Extension	Operational	1
Lincs	Operational	1
London Array	Operational	1
Lynn and Inner Dowsing	Operational	1
Race Bank	Operational	1
Rampion	Operational	1
Scroby Sands	Operational	1
Sheringham Shoal	Operational	1
Teesside	Operational	1

Offshore Wind Farm Project	Status	Tier
Thanet	Operational	1
Westermost Rough	Operational	1
Beatrice	Under construction	2
East Anglia ONE	Under construction	2
Hornsea Project One	Under construction	2
Kincardine	Under construction	2
Dogger Bank Creyke Beck Projects A and B	Consented but not implemented	3
Dogger Bank Teesside Project A	Consented but not implemented	3
Firth of Forth (Seagreen) Alpha and Bravo	Consented but not implemented	3
Hornsea Project Two	Consented but not implemented	3
Inch Cape	Consented but not implemented	3
Moray Firth (Eastern DA)	Consented but not implemented	3
Nearr na Gaoithe	Consented but not implemented	3
Sofia (Dogger Bank Teesside B)	Consented but not implemented	3
Triton Knoll	Consented but not implemented	3
East Anglia THREE	Consented but not implemented	3
Hornsea Project 3	Application submitted	4
Moray Firth (Western DA)	Application submitted	4
Norfolk Vanguard	Application submitted	4

Table 8.7: Projects included in the in-combination assessment of OWF O&M phase collision risk

Offshore Wind Farm Project	Status	Tier
Beatrice Demonstrator	Built, formerly operational but at present out of commission	1
Blyth	Built, formerly operational but at present out of commission	1
Blyth Demonstrator Array 2	Operational	1
Dudgeon	Operational	1
EOWDC [Aberdeen]	Under construction	2
Galloper	Operational	1
Greater Gabbard	Operational	1
Gunfleet Sands I & 2	Operational	1
Hywind	Operational	1
Humber Gateway	Operational	1
Kentish Flats	Operational	1
Kentish Flats Extension	Operational	1
Lincs	Operational	1
London Array	Operational	1
Lynn and Inner Dowsing	Operational	1
Race Bank	Operational	1
Rampion	Operational	1
Scroby Sands	Operational	1
Sheringham Shoal	Operational	1
Teesside	Operational	1

Offshore Wind Farm Project	Status	Tier
Thanet	Operational	1
Westermost Rough	Operational	1
Beatrice	Under construction	2
East Anglia ONE	Under construction	2
Hornsea Project One	Under construction	2
Kincardine	Under construction	2
Dogger Bank Creyke Beck Projects A and B	Consented but not implemented	3
Dogger Bank Teesside Project A	Consented but not implemented	3
Firth of Forth (Seagreen) Alpha and Bravo	Consented but not implemented	3
Hornsea Project Two	Consented but not implemented	3
Inch Cape	Consented but not implemented	3
Moray Firth (Eastern DA)	Consented but not implemented	3
Nearr na Gaoithe	Consented but not implemented	3
Sofia (Dogger Bank Teesside B)	Consented but not implemented	3
Triton Knoll	Consented but not implemented	3
East Anglia THREE	Consented but not implemented	3
Hornsea Project 3	Application submitted	4
Moray Firth (Western DA)	Application submitted	4
Norfolk Vanguard	Application submitted	4

8.6 Onshore Biodiversity

8.6.1 The projects and plans selected as relevant to the in-combination assessment for onshore biodiversity are based upon an initial screening exercise undertaken as part of the EIA. The full list of plans and projects identified during this screening exercise is provided in Volume 3, Chapter 5, Onshore Biodiversity (Application Ref 6.3.5; Table 5.12). For the purposes of the RIAA, as set out in the screening report, the in-combination assessment includes projects:

- Which are located within 5 km of the RLB; and
- Have the potential to have an in-combination effect on the European sites for which LSE have been identified for Thanet Extension alone, i.e. Thanet Coast and Sandwich Bay SPA and Thanet Coast and Sandwich Bay Ramsar.

8.6.2 The initial screening exercise to identify other plans and projects relevant to the in-combination assessment was updated in December 2018 via a search of the National Infrastructure Planning²⁵, Thanet District Council²⁶ and Dover District Council²⁷ websites.

8.6.3 In respect of the qualifying features of the Thanet Coast and Sandwich Bay SPA and Thanet Coast and Sandwich Bay Ramsar the following types of other development could give rise to in-combination effects:

- Other developments which could result in loss or change (permanent and/ or temporary) to habitats used by non-breeding European golden plover or ruddy turnstone. This could include developments affecting functionally linked habitats outside the European site boundaries;
- Other developments which could result in loss or change (permanent and/ or temporary) to terrestrial habitats supporting any of the three wetland invertebrate assemblage species *Didineis lunicornis*, *Ectemnius ruficornis* and *Eluma caelata*. It is assumed that the Ramsar population of these species is effectively restricted to the land within the Ramsar site itself. Other developments with the potential to affect these species would therefore have to be located within or immediately adjacent to the Ramsar site;

- Other developments which could result in loss or change (permanent and/ or temporary) to intertidal habitats potentially supporting the wetland invertebrate assemblage species *Orthotylus rubidus*;
- Other developments which could result in the displacement of recreational users, who could potentially be displaced into areas where they could cause disturbance to non-breeding European golden plover and ruddy turnstone; and
- Other developments which could result in visual or noise disturbance to non-breeding European golden plover or ruddy turnstone. This could include disturbance to qualifying features using functionally linked habitats outside the European site boundaries.
- Other developments which could result in accidental pollution of intertidal habitats used by non-breeding European golden plover or ruddy turnstone or potentially used by the wetland invertebrate assemblage species *Orthotylus rubidus*.
- Other developments which could result in accidental pollution of terrestrial habitats potentially supporting any of the three wetland invertebrate assemblage species *Didineis lunicornis*, *Ectemnius ruficornis* and *Eluma caelata*. Other developments with the potential to affect these species would need to be located within or immediately adjacent to the Ramsar site.
- Other developments which could result in the spread of INNS which could adversely affect intertidal habitats used by non-breeding European golden plover or ruddy turnstone or potentially used by the wetland invertebrate assemblage species *Orthotylus rubidus*.
- Other developments which could result in the spread of INNS which could adversely affect terrestrial habitats potentially supporting any of the three wetland invertebrate assemblage species *Didineis lunicornis*, *Ectemnius ruficornis* and *Eluma caelata*. Other developments with the potential to affect these species would need to be located within or immediately adjacent to the Ramsar site.

²⁵ <https://infrastructure.planninginspectorate.gov.uk/> [last accessed 21st December 2018]

²⁶ <https://planning.thanet.gov.uk/online-applications/> [last accessed 21st December 2018]

²⁷ <https://planning.dover.gov.uk/online-applications/> [last accessed 21st December 2018]

8.6.4 Each project, plan or activity identified in Table 5.14 of Volume 3, Chapter 5, Onshore Biodiversity (Application Ref 6.3.5), or identified during the updated review of potentially relevant plans or projects in December 2018, has been considered and screened in or out on the basis of effect–receptor pathway, data confidence and the temporal and spatial scales involved. Projects which are considered to have potential to give rise to in-combination effects, and are therefore screened in, are highlighted in Table 8.8. The potential for in-combination effects will vary, depending on parameters such as the timing and nature of the proposed works, with these to be considered in full in the determination of AEol.

Table 8.8: Plans and Projects for Consideration In-Combination with Thanet Extension for Onshore Biodiversity

Development type	Project	Status	Data confidence assessment/ phase	Tier
Biomass combined heat and power (CHP) plant	Biomass CHP Plant, Discovery Park, Sandwich	Operational	High - Third party project details published in the public domain.	Tier 1
Mixed use development	Mixed use development, Discovery Park, Sandwich	Consented	High - Third party project details published in the public domain.	Tier 1
Transmission connection between Richborough and Canterbury	Richborough Connection Project	In construction	High - Third party project details published in the public domain.	Tier 1

Development type	Project	Status	Data confidence assessment/ phase	Tier
Transmission connection – cabling and substation	Nemo Link	Constructed	High - Third party project details published in the public domain.	Tier 1
Airport	Manston Airport Re-opening and Redevelopment	DCO application submitted in July 2018 and examination in progress	High - Third party project details published in the public domain.	Tier 3
Mixed use development	Stone Hill Park, Manston Airport ²⁸	Application awaiting determination (application submitted in May 2018).	High - Third party project details published in the public domain.	Tier 3

8.6.5 All other projects identified in Table 5.14 of Volume 3, Chapter 5, Onshore Biodiversity (Application Ref 6.3.5), or identified during the updated review of potentially relevant plans or projects in December 2018, are considered unlikely to have in-combination effects. Projects have primarily been screened out of consideration in the in-combination assessment due to their distance from the Thanet Coast and Sandwich Bay SPA / Thanet Coast and Sandwich Bay Ramsar and/or their distance from functionally linked habitat used by European golden plover or ruddy turnstone. Proximity to functionally linked habitat for European golden plover and ruddy turnstone has been determined through consideration of survey information submitted for the other developments and/or the results of a survey of European golden plover carried out during the winter of 2016/2017 (Sutherland, 2017).

²⁸ Note that the Manston Airport Re-opening and Redevelopment proposal and the Stone Hill Park proposal occupy the same site and only one of these development proposals will be able to be consented.

- 8.6.6 In response to potential increases in recreational pressure, Thanet District Council has produced a Strategic Access Management & Monitoring Plan (SAMM) in respect of the Thanet Section of the Thanet Coast & Sandwich Bay SPA. Residential development within 6 km of the SPA is expected to make financial contributions to the implementation of the SAMM in order to mitigate potential disturbance to SPA qualifying features from increased recreational pressure (which may result from increases in population associated with new residential development). For the purposes of this in-combination assessment it is assumed that developer contributions to the SAMM will effectively mitigate possible indirect effects resulting from increased recreational pressure. Residential development which is not likely to have a direct effect on SPA qualifying features is therefore excluded from the in-combination assessment.
- 8.6.7 Consideration of the potential for an in-combination effect on the intertidal habitats of the Thanet Coast and Sandwich Bay SPA and Thanet Coast and Sandwich Bay Ramsar is addressed as part of the intertidal benthic in-combination assessment, including a conclusion regarding the implications for the designated features of those sites, specifically ruddy turnstone (Thanet Coast and Sandwich Bay Ramsar & SPA), European golden plover (Thanet Coast and Sandwich Bay SPA) and one species forming part of the wetland invertebrate assemblage: the bug *Orthotylus rubidus*, if present (Thanet Coast and Sandwich Bay Ramsar).

9 Summary of Designated Sites

9.1.1 Summary information on each designated site screened in for LSE alone and/ or in-combination is provided below, including the designated feature(s), key literature sources describing the site and the features/ effects screened in under LSE. The conservation objectives for each site are also provided.

9.2 Thanet Coast SAC

9.2.1 The Thanet Coast SAC was designated in 2005 and covers some 2,815.95 ha²⁹ of primarily marine habitat along a stretch of approximately 23 km of chalk cliff coastline. The receptor group 'subtidal benthic habitats' is relevant to the Thanet Coast SAC. Key literature sources, including relevant project literature, are as follows:

- Volume 2, Chapter 2: Marine Geology, Oceanography and Physical Processes (Application Ref 6.2.2);
- Volume 2, Chapter 5: Benthic Subtidal and Intertidal Ecology (Application Ref 6.2.5);
- Volume 4, Annex 5-2: Benthic Ecology – Subtidal Technical Report (Application Ref 6.4.5.2);
- Volume 2, Chapter 8: Offshore Designated Sites (Application Ref 6.2.8);
- North east Kent European Marine Site Regulation 33 Advice (Natural England, 2000);
- Citation for Special Area of Conservation: Thanet Coast SAC (Natural England, 2005); and
- Condition assessment of Thanet Coast Special Area of Conservation (Natural England, 2015).

9.2.2 The site is designated for the following Annex I habitats:

- Chalk reefs; and
- Submerged or partially submerged sea caves.

9.2.3 Thanet coast holds the longest continuous stretch of coastal chalk in the UK, hosting 20% of UK chalk reefs and 12% of European chalk reefs. Infralittoral kelp forests are absent on the coast, due to the high turbidity of water, however there is an unusually rich littoral algal flora (Natural England, 2015). Natural England (2000) also found that the chalk reef communities are strongly influenced by the naturally turbid seawater. There are a number of sub-features to the site (Natural England, 2000), including the following:

- Intertidal chalk cliff algal and lichen communities, occurring around the high water mark and splash zone;
- Intertidal red algal turfs communities, being widespread on the lower to mid shore reef;
- Kelp dominated communities on animal bored rock, the distribution of which being heavily influenced by the turbid water; and
- Subtidal animal bored chalk communities, being widespread throughout the subtidal part of the site.

9.2.4 The coastline provides the second most extensive representation of chalk caves in the UK, with some submerged calves extending up to 30 m into the cliffs and reaching 6 – 10 m in height. The caves support a specialised algal and lichen community. As for the chalk reef feature, there is a sub-feature (Natural England, 2000), specifically:

- Intertidal chalk cliff algal and lichen communities, occurring at and around the high water mark.

9.2.5 A Site Improvement Plan (SIP) for North East Kent (Thanet) was published in 2014³⁰. With respect to the designated features of Thanet Coast SAC, the SIP raised the following pressures or threats:

- Invasive species (notably Pacific pyster (*Crassostrea gigas*));
- Public access/ disturbance; and
- Commercial marine and estuarine fisheries.

²⁹ <http://jncc.defra.gov.uk/protectedsites/sacselection/sac.asp?EUCode=UK0013107>

³⁰ <http://publications.naturalengland.org.uk/file/6055004372729856>

9.2.6 Table 7.3 found potential for LSE for the chalk reef feature only, both during construction and O&M, with the potential for LSE during decommissioning found to be similar to and potentially less than those outlined in the construction phase. The potential for LSE can be summarised as follows:

- Temporary habitat loss and habitat disturbance (construction and O&M);
- Temporary increases in SSCs, deposition of sediments and smothering (construction and O&M);
- Changes to physical processes (O&M); and
- Accidental pollution (construction, O&M and decommissioning).

9.2.7 No Supplementary Advice has been sourced for the Thanet Coast SAC, and as such no determination of the current conservation status of the designated features is available³¹. However, The Conservation Objectives for the site³² as made in 2014 are available as follows:

Ensure that the integrity of the site is maintained or restored as appropriate, and 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.

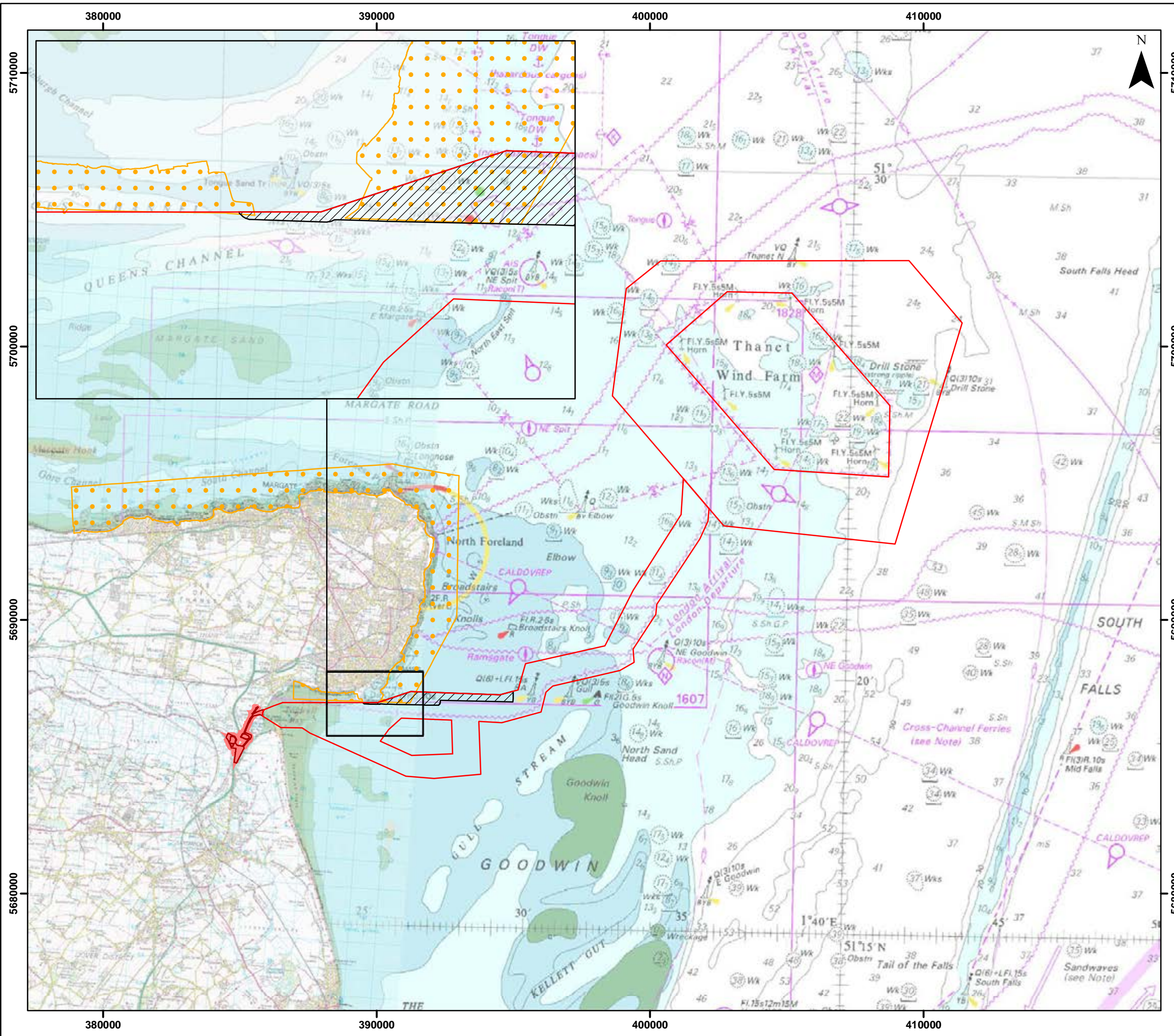
³¹ <http://publications.naturalengland.org.uk/publication/5766780467281920>

³² <http://publications.naturalengland.org.uk/file/6264865140244480>

THANET EXTENSION OFFSHORE WIND FARM

Figure 9.1
Thanet Coast SAC in Relation to Thanet Extension

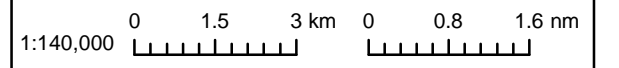
- Legend**
- Offshore Red Line Boundary
 - Onshore Red Line Boundary
 - Cable Exclusion
 - Thanet Coast SAC



Datum: ETRS 1989
Projection: UTM31N



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By	RM	Layout	N/A	

9.3 Margate and Long Sands SAC

9.3.1 The Margate and Long Sands SAC was formally submitted as a cSAC in 2010 and became an SAC in September 2017. The SAC covers some 64,876.85 ha³³ of marine habitat. The receptor group 'subtidal benthic habitats' is relevant to the Margate and Long Sands SAC. Key literature sources, including relevant project literature, are as follows:

- Volume 2, Chapter 2: Marine Geology, Oceanography and Physical Processes (Application Ref 6.2.2);
- Volume 2, Chapter 5: Benthic Subtidal and Intertidal Ecology (Application Ref 6.2.5);
- Volume 4, Annex 5-2: Benthic Ecology – Subtidal Technical Report (Application Ref 6.4.5.2);
- Volume 2, Chapter 8: Offshore Designated Sites (Application Ref 6.2.8);
- Natural England website³⁴
- Margate and Long Sands Candidate Special Area of Conservation formal Advice under Regulation 35(3) (Natural England, 2012);
- Inshore Special Area of Conservation (SAC): Margate and Long Sands SAC Selection Assessment (Natural England, 2010); and
- Margate and Long Sands Natura 2000 Standard Data Form (JNCC, 2011).

9.3.2 The site is designated for the following Annex I habitat:

- Sand banks which are slightly covered with seawater all the time.

9.3.3 The sand bank habitat of the Margate and long Sands SAC can be divided into subfeatures, as follows:

- Dynamic sand communities; and
- Gravelly muddy sand communities.

9.3.4 The site contains a number of the sand bank features, the largest being Long Sands. The sand banks are typically composed of well sorted sandy sediments, with muddier and more gravelly sediments in the troughs. The upper crests of some banks dry at low water. The fauna of the bank crests is characteristic of species-poor, mobile sand environments, with the troughs and slopes having a higher diversity of benthic species. In addition to the sand bank features, the Regulation 35 advice also notes the presence of *Sabellaria spinulosa* at the site; however, the distribution is understood to be patchy and forming crusts rather than reefs, with biogenic reefs not listed as a qualifying feature.

9.3.5 Table 7.3 found potential for LSE, both during construction and O&M, with the potential for LSE during decommissioning found to be similar to and potentially less than those outlined in the construction phase. The potential for LSE can be summarised as follows:

- Temporary increases in SSCs, deposition of sediments and smothering (construction and O&M);
- Accidental pollution (construction, O&M); and
- Changes to physical processes (O&M).

³³ <http://jncc.defra.gov.uk/protectedsites/sacselection/n2kforms/UK0030371.pdf>

³⁴ <https://designatedsites.naturalengland.org.uk/Marine/MarineSiteDetail.aspx?SiteCode=UK0030371&SiteName=gate&countyCode=&responsiblePerson=&SeaArea=&IFCAArea>

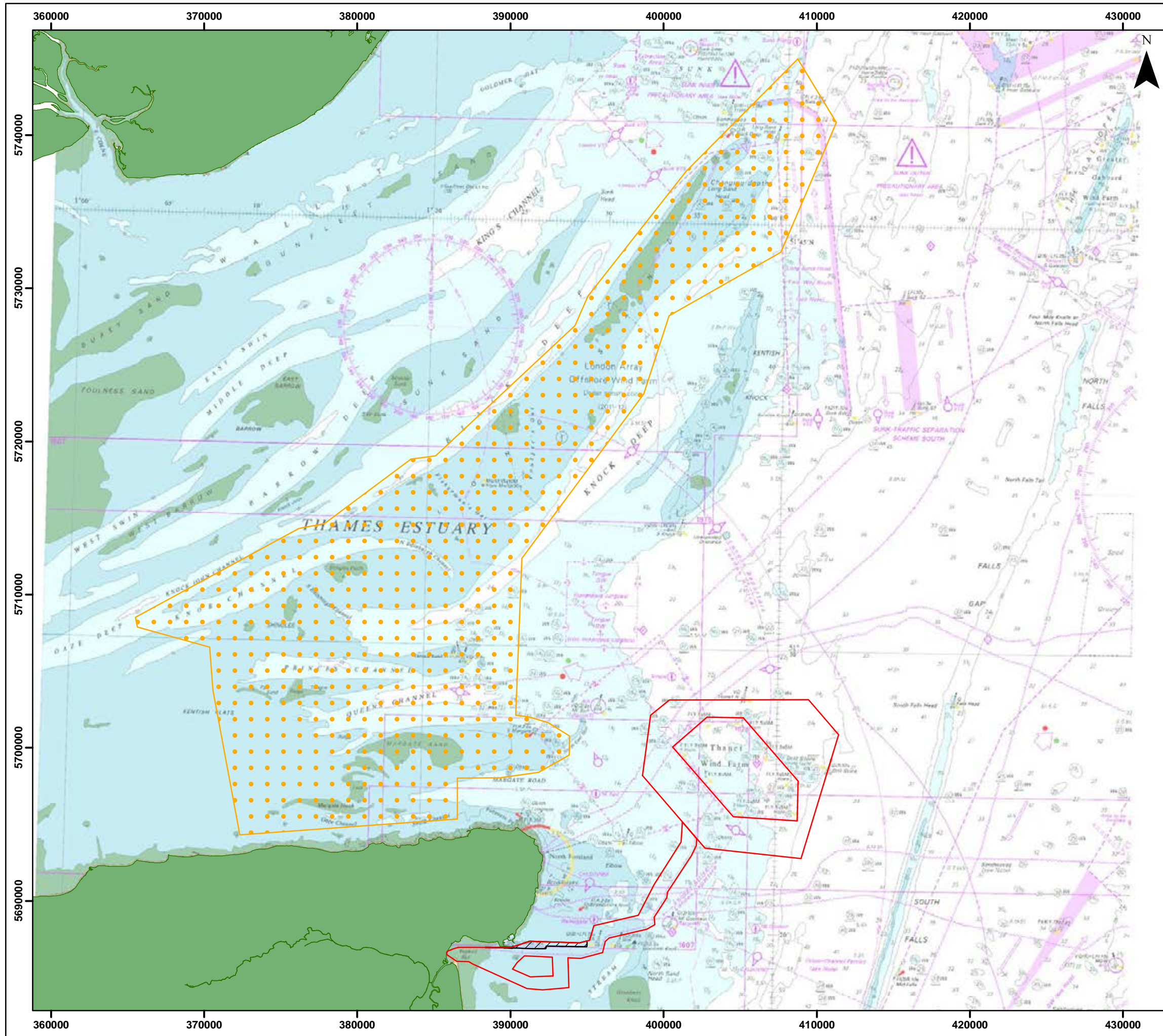
9.3.6 The Supplementary Advice sourced for the Margate and Long Sands SAC identified that the feature is currently considered to be in good condition and/ or currently unimpacted by anthropogenic activities³⁵. The Conservation Objectives for the site³⁶ as made in September 2017 are available as follows:

The objectives are to ensure that, subject to natural change, the integrity of the site is maintained or restored as appropriate, and 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 and habitats of the qualifying species
- the structure and function (including typical species) of qualifying natural habitats
- the structure and function of the habitats of the qualifying species
- the supporting processes on which qualifying natural habitats and the habitats of qualifying species rely
- the populations of qualifying species
- the distribution of qualifying species within the site

³⁵<https://designatedsites.naturalengland.org.uk/Marine/SupAdvice.aspx?SiteCode=UK0030371&SiteName=gate&SiteNameDisplay=Margate+and+Long+Sands+SCI&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=>

³⁶<https://designatedsites.naturalengland.org.uk/Marine/MarineSiteDetail.aspx?SiteCode=UK0030371&SiteName=gate&countyCode=&responsiblePerson=&unitId=&SeaArea=&IFCAArea=#SiteInfo>



THANET EXTENSION OFFSHORE WIND FARM

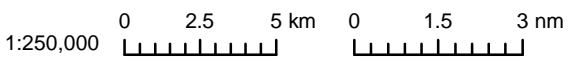
Figure 9.2
Margate and Long Sands SAC in Relation to Thanet Extension

- Legend**
- Offshore Red Line Boundary
 - Cable Exclusion Area
 - Margate and Long Sands SAC

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Rev	0.1	Date	01/02/2019	
By	RM	Layout	N/A	

9.4 Thanet Coast and Sandwich Bay SPA

9.4.1 The citation for the Thanet Coast and Sandwich Bay SPA is dated 1992, with the site covering some 1,870.16 ha of marine and coastal habitat supporting breeding/ wintering seabirds/ waders in east Kent. The receptor group 'subtidal and intertidal benthic habitats' is relevant to the intertidal habitats used by the designated features of the Thanet Coast and Sandwich Bay SPA; receptor group 'onshore biodiversity' is relevant to the qualifying features European golden plover and ruddy turnstone. Key literature sources, including relevant project literature, are as follows:

- Volume 2, Chapter 2: Marine Geology, Oceanography and Physical Processes (Application Ref 6.2.2);
- Volume 2, Chapter 5: Benthic Subtidal and Intertidal Ecology (Application Ref 6.2.5);
- Volume 4, Annex 5-2: Benthic Ecology – Subtidal Technical Report (Application Ref 6.4.5.2);
- Volume 2, Chapter 8: Offshore Designated Sites (Application Ref 6.2.8);
- Volume 3, Chapter 5: Onshore Biodiversity (Application Ref 6.3.5);
- Volume 5, Annex 5-4: Baseline Onshore and Intertidal Ornithology Report (Application Ref 6.5.5.4);
- Volume 5, Annex 5-13: Intertidal Waterfowl Data Analysis in Relation to Onshore Works (Application Ref 6.5.5.13);
- SPA Citation for Thanet Coast (Kent) (HTR/DAS 1992);
- Thanet Coast and Sandwich Bay SPA Standard Data form (JNCC, 2006);
- North East Kent European Marine Sites (comprising Thanet Coast cSAC, Thanet Coast and Sandwich Bay SPA and Sandwich Bay cSAC) Regulation 33(2) Advice (English Nature, 2000);
- North East Kent European marine sites Management Scheme 2007-2012³⁷;
- Thanet Coast & Sandwich Bay SPA Conservation Objectives (Natural England, 2014); and
- Site Improvement Plan (SIP): North East Kent (Thanet) (Natural England, 2014).

9.4.2 The site is designated for the following qualifying features:

- *Pluvialis apricaria*; European golden plover (Non-breeding);
- *Arenaria interpres*; Ruddy turnstone (Non-breeding); and
- *Sterna albifrons*; Little tern (Breeding).

9.4.3 Since the time of the original citation little tern has ceased to breed at the site and numbers of European golden plover have declined significantly. The SPA review (Stroud *et al.*, 2001), which included a comprehensive review of the UK's Special Protection Areas, therefore recommended the removal of little tern and European golden plover as qualifying features. However, the findings of the SPA review have yet to be formally ratified and until that time the legal list of qualifying species remains that given on the SPA citation. European golden plover and little tern are therefore both still considered as qualifying features in this report.

9.4.4 The original 1992 citation also notes that the SPA includes a wide variety of coastal habitats, including areas of chalk cliff, rocky shore, shingle, sand and mudflats, saltmarsh and sand dunes. As well as its value for breeding and wintering birds, the site supports outstanding communities of terrestrial and marine plant species, a significant number of rare invertebrate species, and is of considerable geological importance.

9.4.5 The 1992 citation details qualification of the SPA under Article 4.1 for supporting:

- A nationally important breeding population of little tern (30 pairs over 1% of the British population, and
- A nationally important wintering population of European golden plover (five year period 1985/86-1989/90 an average peak count of 1,980 golden plover representing 15% of the British wintering population.

9.4.6 The 1992 citation also details qualification of the SPA under Article 4.2 for regularly supporting an internationally important wintering population of ruddy turnstone, 1,340 individuals representing at least 3% of the British wintering population and 2% of the East Atlantic Flyway population (five year peak mean 1986/87 - 1990/91).

³⁷ <http://www.thanetcoast.org.uk/factfile/ne-kent-mpa-management-scheme/management-scheme-2007-to-2012/>

9.4.7 The relevant Regulation 33 advice noted that the important bird populations require a functional ecosystem, capable of supporting intertidal habitat for feeding and roosting. The most important factors related to this are:

- Current extent and distribution of suitable feeding and roosting habitat (e.g. intertidal mudflats);
- Sufficient prey availability (e.g. small fish, crustaceans and worms);
- Minimal levels of disturbance; and
- Water quality necessary to maintain intertidal plant and animal communities.

9.4.8 The Regulation 33 Advice also notes the following sub-features:

- Shingle shores - sparsely vegetated shingle areas are an important nesting area for little terns within the SPA;
- Shallow coastal waters - little tern feed in shallow coastal waters mainly on small fish (e.g. sandeel, pipefish, and gobies) and also crustacea (shrimps, prawns and crabs);
- Intertidal mud and sandflats - Mudflats and sandflats provide roosting grounds for European golden plover and provide feeding grounds for ruddy turnstones, as do the sandy beaches located in the bays between the outcropping chalk platform;
- Sand and shingle shores – ruddy turnstones can roost on coarse intertidal sediments as well as areas above the high tide mark;
- Chalk shores - the chalk foreshore provide important foraging areas for ruddy turnstones which forage on loose stones and seaweed for periwinkles and crustaceans.

9.4.9 Table 7.3 found potential for LSE, both during construction and O&M, with the potential for LSE during decommissioning found to be similar to and potentially less than those outlined in the construction phase. The potential for LSE can be summarised as follows:

- Temporary habitat loss or disturbance to intertidal habitats used by qualifying species (construction, O&M and decommissioning);
- Temporary increases in SSCs, deposition of sediments and smothering and their effect on intertidal habitats used by qualifying species (construction, O&M and decommissioning);

- Noise and visual disturbance to qualifying species (construction, O&M and decommissioning);
- Possible displacement of recreational users of Pegwell Bay Country Park leading to disturbance of qualifying species elsewhere within the SPA (construction and decommissioning);
- Accidental pollution (construction and O&M); and
- Potential for the spread of INNS which could affect intertidal habitats used by the qualifying species (construction and decommissioning).

9.4.10 No Supplementary Advice has been sourced for the Thanet Coast and Sandwich Bay SPA, and as such no determination of the current conservation status of the designated features is available³⁸. However, the Conservation Objectives for the site³⁹ as updated in 2014, are available and are set out below. In addition, the SIP (Natural England, 2014) sets out the main issues that are currently impacting or threatening the condition of the features. These include: changes in species distributions (notably a decline in ruddy turnstone numbers and the loss of little tern as a breeding species); invasive species, notably Pacific oyster (*Crassostrea gigas*); recreational pressure; and water pollution.

Conservation Objectives

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or 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 population of each of the qualifying features, and
- The distribution of the qualifying features within the site.

³⁸ <http://publications.naturalengland.org.uk/publication/6009926887407616>





³⁹ <http://publications.naturalengland.org.uk/file/4690519175200768>

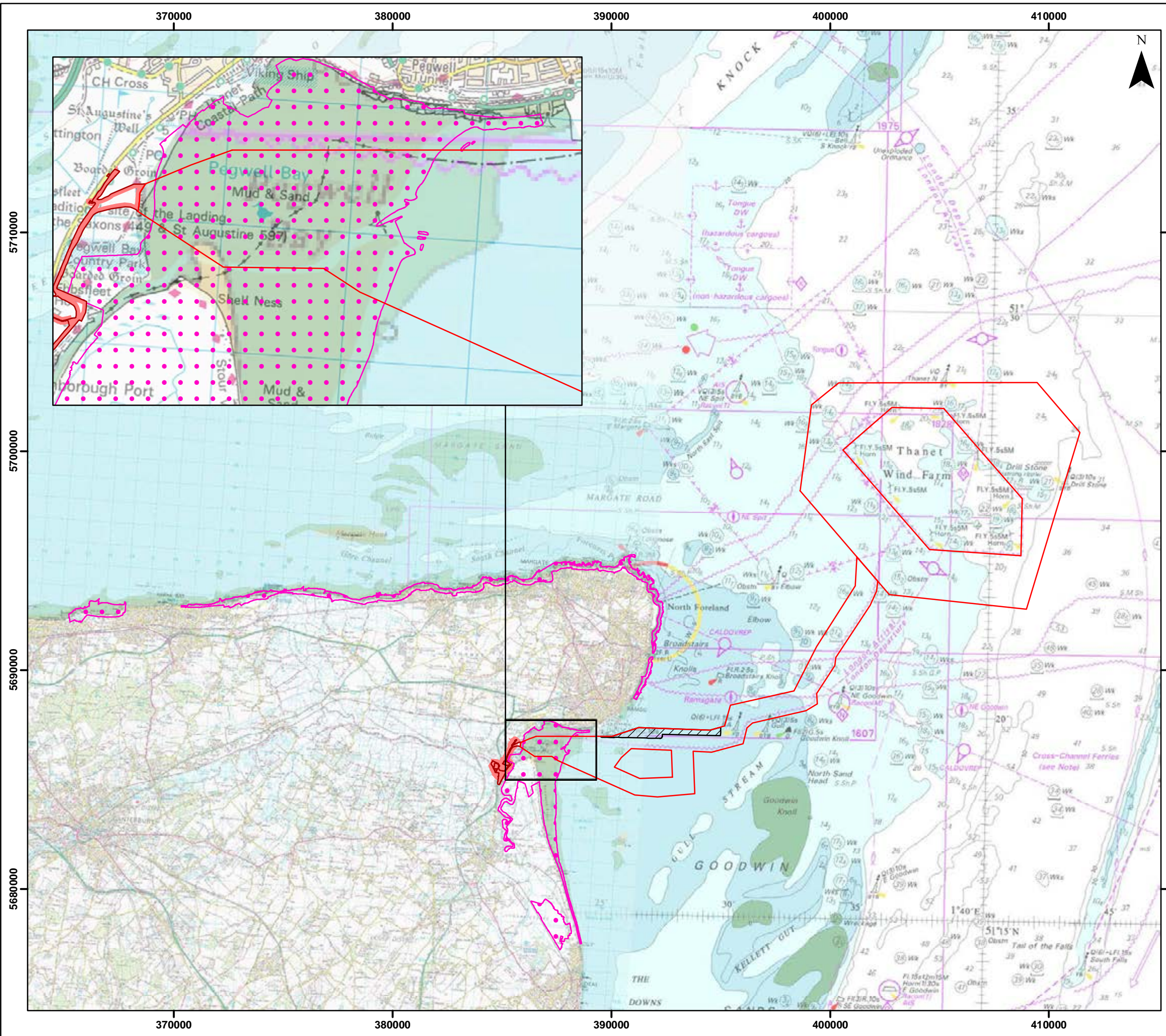
THANET EXTENSION OFFSHORE WIND FARM

Figure 9.3

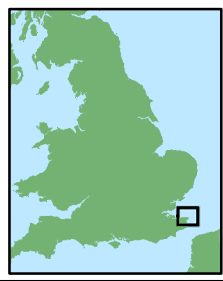
Thanet Coast and Sandwich Bay SPA in Relation to Thanet Extension

Legend

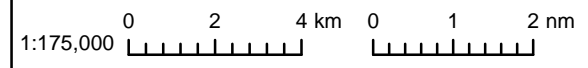
-  Offshore Red Line Boundary
-  Onshore Red Line Boundary
-  Cable Exclusion Area
-  Thanet Coast and Sandwich Bay SPA



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By	RM	Layout	N/A	

9.5 Thanet Coast and Sandwich Bay Ramsar

9.5.1 The Information Sheet on Ramsar Wetlands (RIS) for the Thanet Coast and Sandwich Bay Ramsar is dated 1994, with the site covering some 2,169.23 ha of marine and coastal habitat. The receptor group 'subtidal and intertidal benthic habitats' is relevant to the intertidal habitats used by the designated ornithological features of the Thanet Coast and Sandwich Bay Ramsar; the receptor group 'onshore biodiversity' is relevant to all designated features. Key literature sources, including relevant project literature, are as follows:

- Volume 2, Chapter 2: Marine Geology, Oceanography and Physical Processes (Application Ref 6.2.2);
- Volume 2, Chapter 5: Benthic Subtidal and Intertidal Ecology (Application Ref 6.2.5);
- Volume 4, Annex 5-2: Benthic Ecology – Subtidal Technical Report (Application Ref 6.4.5.2);
- Volume 2, Chapter 8: Offshore Designated Sites (Application Ref 6.2.8);
- Volume 3, Chapter 5: Onshore Biodiversity (Application Ref 6.3.5);
- Volume 5, Annex 5-4: Baseline Onshore and Intertidal Ornithology Report (Application Ref 6.5.5.4);
- Volume 5, Annex 5-6: Terrestrial Invertebrate Assessment Report (Application Ref 6.5.5.6);
- Volume 5, Annex 5-13: Intertidal Waterfowl Data Analysis in Relation to Onshore Works (Application Ref 6.5.5.13);
- RIS for Thanet Coast and Sandwich Bay Ramsar;
- North East Kent European Marine Sites (comprising Thanet Coast cSAC, Thanet Coast and Sandwich Bay SPA and Sandwich Bay cSAC) Regulation 33(2) Advice (English Nature, 2000); and
- North East Kent European marine sites Management Scheme 2007-2012⁴⁰.

9.5.2 The site is designated for the following qualifying features:

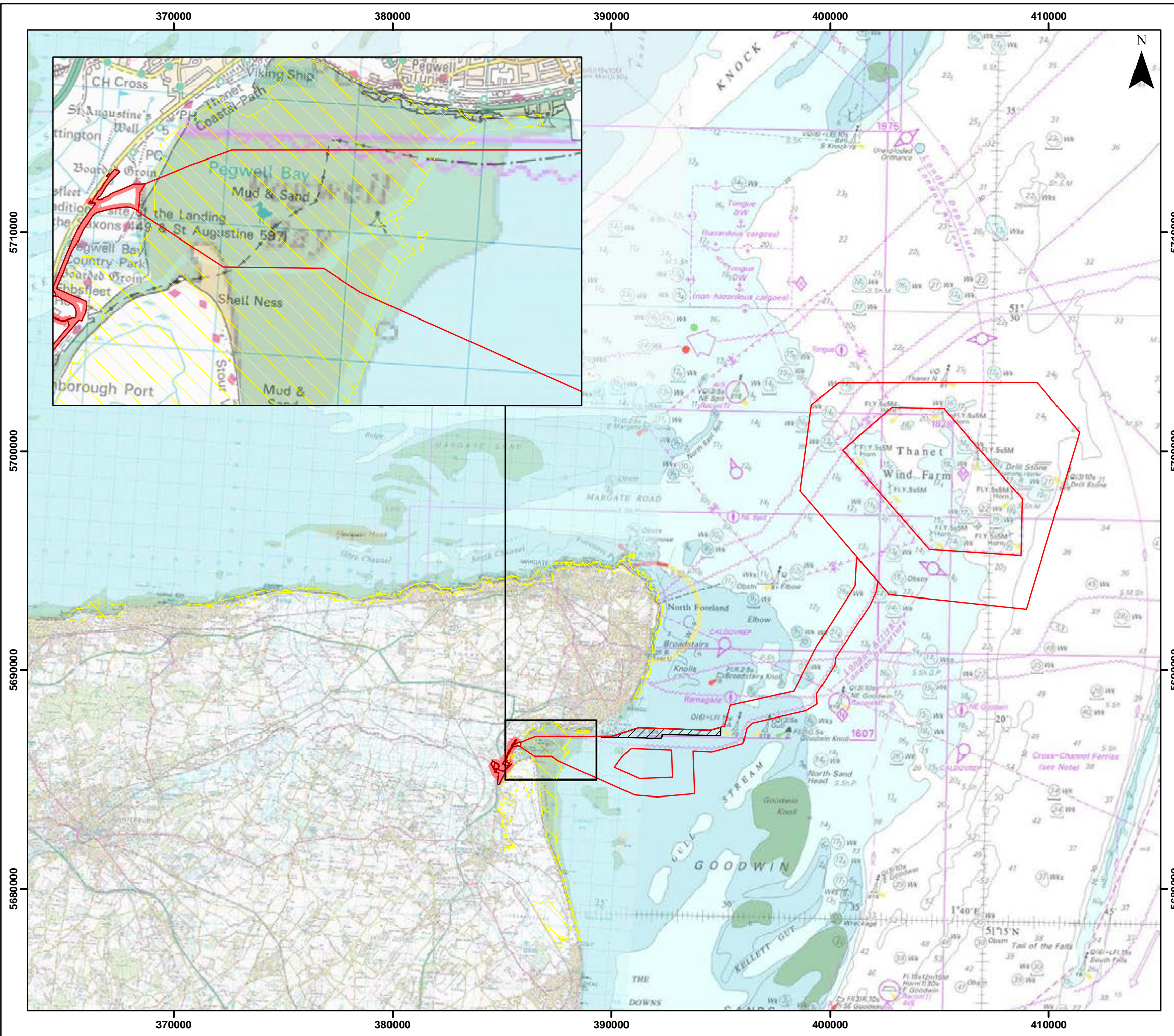
- Ramsar criterion 2: supports 15 British Red Data Book wetland invertebrates; and
 - Ramsar criterion 6 – species/ populations occurring at levels of international importance. Qualifying Species/ populations (as identified at designation): species with peak counts in winter: ruddy turnstone.
- 9.5.3 The RIS describes the site as consisting of a long stretch of rocky shore, adjoining areas of estuary, sand dune, maritime grassland, saltmarsh and grazing marsh.
- 9.5.4 Table 7.3 found potential for LSE, both during construction and O&M, with the potential for LSE during decommissioning found to be similar to and potentially less than those outlined in the construction phase. The potential for LSE can be summarised as follows:
- Temporary habitat loss or disturbance to intertidal habitats used by qualifying bird species (construction, O&M and decommissioning);
 - Possible loss (temporary) of habitats supporting the three wetland invertebrate assemblage species *Didineis lunicornis*, *Ectemnius ruficornis* and *Eluma caelata* (construction, O&M and decommissioning);
 - Temporary increases in SSCs, deposition of sediments and smothering and their effect on intertidal habitats used by qualifying bird species (construction, O&M and decommissioning);
 - Noise and visual disturbance to qualifying bird species (construction, O&M and decommissioning);
 - Possible displacement of recreational users of Pegwell Bay Country Park leading to disturbance of qualifying bird species elsewhere within the Ramsar site (construction and decommissioning);
 - Potential for accidental pollution to affect intertidal or terrestrial habitats used by the qualifying species (construction, O&M and decommissioning); and
 - Potential for the spread of INNS which could affect intertidal or terrestrial habitats used by the qualifying species (construction and decommissioning).

⁴⁰ <http://www.thanetcoast.org.uk/factfile/ne-kent-mpa-management-scheme/management-scheme-2007-to-2012/>

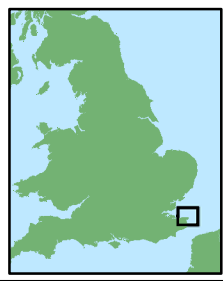
THANET EXTENSION OFFSHORE WIND FARM

Figure 9.4
Thanet Coast and Sandwich Bay Ramsar in Relation to Thanet Extension

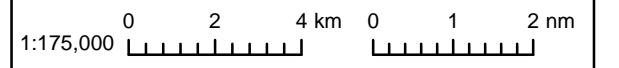
- Legend**
- Offshore Red Line Boundary
 - Onshore Red Line Boundary
 - Cable Exclusion Area
 - Thanet Coast and Sandwich Bay Ramsar



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By	RM	Layout	N/A	

9.6 Southern North Sea cSAC/SCI

9.6.1 JNCC and Natural Resources Wales (NRW) consulted on five possible sites for harbour porpoise in Welsh, Northern Irish, English and offshore waters in 2016, with these subsequently given Ministerial clearance and submitted to the EC for approval to designate on 30th January 2017. The relevant such site for Thanet Extension is the Southern North Sea candidate SAC (SNS cSAC/SCI). Located to the east of England, the site covers some 36,951 km² between the Straits of Dover in the south to the central North Sea (north of Dogger Bank). Key literature sources, including relevant project literature, are as follows:

- Volume 2, Chapter 5: Fish and Shellfish Ecology (Application Ref 6.2.5);
- Volume 4, Annex 6-1: Fish and Shellfish Baseline – Spring (Application Ref 6.4.6.1);
- Volume 4, Annex 6-2: Fish and Shellfish Baseline – Spring (Application Ref 6.4.6.2);
- Volume 2, Chapter 7: Marine Mammals (Application Ref 6.2.7);
- Volume 2, Chapter 8: Offshore Designated Sites (Application Ref 6.2.8);
- JNCC, 2015. SAC Selection Assessment: Southern North Sea. January, 2016. Joint Nature Conservation Committee, UK.;
- JNCC, 2016 Harbour Porpoise Possible Area of Conservation Consultation;
- JNCC, 2016. Southern North Sea pSAC: Site Summary Leaflet. Joint Nature Conservation Committee, UK.;
- JNCC, 2016. Harbour Porpoise (*Phocoena phocoena*) possible Special Area of Conservation: Southern North Sea. Draft Conservation Objectives and Advice on Activities. Joint Nature Conservation Committee, UK.;
- JNCC, 2016. 2016 Consultation on possible Special Areas of Conservation for Harbour Porpoise. Post-Consultation Report. JNCC Report 597;
- JNCC, 2017a. A potential approach to assessing the significance of disturbance against conservation objectives of the harbour porpoise cSACs. Discussion document version 3.0; and

- JNCC, 2017b. Harbour porpoise SACs noise management stakeholder workshop. Report.
- 9.6.2 The site is designated under the Habitats Directive (92/43/EEC) for the Annex II species harbour porpoise only; there are no sub-features for the site. The receptor group ‘marine mammals’ is therefore relevant to the SNS cSAC/SCI.
- 9.6.3 Table 7.3 found potential for LSE during construction and O&M, with the potential for LSE during decommissioning found to be similar to and potentially less than those outlined in the construction phase. The potential for LSE can be summarised as follows:
- Increase in underwater noise (construction and decommissioning); and
 - Accidental pollution (construction and O&M).
- 9.6.4 It is relevant to note that the SNS cSAC/SCI has areas identified for their importance during the summer and/ or winter periods – Thanet Extension array falls partially within an area noted for importance during the winter (1st October to 31st March inclusive), with the array boundary being at least 229 km distant from the area identified for importance during the summer (1st April to 30th September inclusive). The seasonal components of the cSAC are important considerations for HRA, as highlighted during discussions held with the SNCBs regarding the SNS cSAC/SCI (JNCC 2017a and 2017b). Specifically, the following:
- ‘plans or projects occurring within the boundary of a SAC but operating outside of the season for which the SAC was designated, will not contribute to a ‘significant portion’; instead such activities will be considered through the regular channels for EPS’*
- 9.6.5 The North Sea Management Unit (MU) extends across approximately 678,540 km² of the North Sea (GIS files supplied by JNCC October 2015), including but not limited to UK waters, with the SNS cSAC/SCI covering 36,951 km² of the North Sea MU⁴¹. The northerly two thirds of the SNS cSAC/SCI form the summer component (27,000 km² of the total cSAC), with the southerly part, together with a single discrete area to the north, forming the winter component (12,687 km² of the total cSAC) (Figure 9.5). Thanet Extension array area extends for some 73 km², some 30.7 km² of which overlaps with the SNS cSAC/SCI, representing approximately 0.08% of the total cSAC extent and approximately 0.005% of the North Sea MU.

⁴¹ The area of the SNS cSAC/SCI has been sourced from the JNCC (<http://jncc.defra.gov.uk/page-7243>), with the extent of the seasons calculated based on the most recent JNCC shapefile (downloaded October 2017), converted into a ETRS89 UTM31N projection. This provides a slightly

smaller overall area of the seasonal components of the cSAC compared to using the native projection of the issued shapefiles. It is important for all calculations to be based on the same

9.6.6 As highlighted above, various documents have been produced and published by the JNCC in relation to the cSAC, collectively termed 'site identification documents', which have been produced in support of the identification and management of the site; these are available on the JNCC website together with the post consultation report and advice to government. Specific to the SNS cSAC/SCI, these include the Natura 2000 standard data form, the draft Conservation Objectives and Advice on Activities and the updated SAC selection document, with additional information pending. Additional documents were made available during workshops conducted in 2016 and 2017; these provide information on a proposed approach to assessing the significance of the impact of certain activities on the Conservation Objectives (JNCC 2017a and 2017b). Included within the documents provided by the JNCC was existing information on Management Units and the supporting literature for the social and economic impact of the cSACs.

9.6.7 For the purposes of this RIAA, the key points contained within the cSAC literature are considered to be as follows:

- The location and extent of the SNS cSAC/SCI is based on a combination of numerous data sets (including that collected from aerial, ship and land based platforms) and computer modelling;
- The level of uncertainty within the model results is variable (geographically and temporally), with uncertainty tending to be greatest in the winter;
- The SNS cSAC/SCI falls wholly within the North Sea MU (estimated abundance of 227,298 individuals across the entire North Sea MU);
- Harbour porpoise density appears to be influenced by oceanographic (e.g. stratification) and anthropogenic pressures (e.g. shipping density), with the most important anthropogenic pressure on harbour porpoise in north west European waters being commercial fisheries bycatch;
- Seasonal distribution tends to result in a higher density in the summer to the north of the SNS cSAC/SCI, with winter density tending to be greatest to the south. However, it should be noted that overall the distribution is not considered static, with seasonal and longer term shifts in distribution;

- Winter is defined as October to March inclusive, summer as April to September inclusive; and
- The temporal variability in distribution and abundance is considered extremely important, with significant implications for the way in which anthropogenic pressures are managed.

9.6.8 According to Annex III criterion (c), as a wide ranging species, harbour porpoise within SACs cannot be considered isolated in relation to the rest of the population and are therefore considered as part of the wider MU population. The SNS cSAC/SCI is estimated to support 17.5% of the proportion of the North Sea MU population that falls within UK waters, supporting approximately 18,500 individuals for at least part of the year, although seasonal differences and the use of a one month survey from a single year to derive that estimate lead the JNCC, in the site selection assessment document, to conclude that:

'it cannot be considered as a specific population number for the site... therefore not appropriate to use site population estimates in any assessments of effects of plans or projects (i.e. Habitat Regulations Assessments), as these need to take into consideration population estimates at the MU level, to account for daily and seasonal movements of animals'.

9.6.9 The draft Conservation Objectives for the SNS cSAC/SCI are presented below⁴². The focus of the Conservation Objectives is on addressing pressures that may affect site integrity. The critical point as regards site integrity is not the extent or degree of impact resulting from a pressure, but the potential to affect (alone or in-combination) the ability of the SNS cSAC/SCI to meet the Conservation Objectives and maintain the existing FCS of the species.

projection to avoid displacement issues, with the conversion being inherently more conservative. The SNS cSAC/SCI extents within GIS, as applied to the calculations made here, extends across 36,927 km².

⁴²<http://jncc.defra.gov.uk/pdf/SouthernNorthSeaConservationObjectivesAndAdviceOnActivities.pdf>

To avoid deterioration of the habitats of the harbour porpoise or significant disturbance to the harbour porpoise, thus ensuring that the integrity of the site is maintained and the site makes an appropriate contribution to maintaining Favourable Conservation Status (FCS) for the UK harbour porpoise.

To ensure for harbour porpoise that, subject to natural change, the following attributes are maintained or restored in the long-term:

- The species is a viable component of the site.
- There is no significant disturbance of the species.
- The supporting habitats and processes relevant to harbour porpoises and their prey are maintained.

9.6.10 The focus of the above Conservation Objectives relates to the potential for the following:

- Killing or injuring a significant number of harbour porpoise (direct or indirect);
- Preventing their use of significant parts of the site (disturbance/ displacement);
- Significant damage to relevant habitats; or
- Significant reduction in prey base.

9.6.11 The meaning of the three conservation objectives is considered central to the subsequent determination of AEoI (the latter presented in section 11 alone and section 12 in-combination). How these are interpreted has been established by previous such assessments within the SNS cSAC/SCI, with a summary presented here.

The species is a viable component of the site

9.6.12 Harbour porpoise are considered to be a viable component of the site if they are able to survive and live successfully within it. The intent of this objective is to minimise the risk posed by activities within the site to the species viability, specifically activities that kill, injure or significantly disturb harbour porpoise.

9.6.13 The protection afforded harbour porpoise as an EPS, given its listing on Annex IV of the Habitats Directive, means that the species is protected from deliberate killing (or injury), capture and disturbance throughout its range. The definition of deliberate disturbance is given in 39(1)(b) of the Offshore Marine Conservation (Natural Habitats, etc.) Regulations 2007 Offshore Marine Regulations, (as amended). It is an offence under these regulations to deliberately disturb an EPS in such a way as to:

- Impair their ability to survive, to breed or reproduce, or to rear or nurture their young; or;
- To affect significantly the local distribution or abundance of that species.

No significant disturbance of the species within the site

9.6.14 The second Conservation Objective refers to disturbance of harbour porpoise. The cSAC literature identifies disturbance as generally, but not exclusively, deriving from activities that cause underwater noise. Existing JNCC guidelines are referenced with regard to minimising the risk of physical injury from various sources of loud underwater noise. Disturbance in the context of this SNS cSAC/SCI RIAA is considered to be a behavioural response to noise, which may lead some harbour porpoise individuals to exhibit displacement behaviour (noting that the level of response exhibited in response to noise is likely to vary greatly between individuals).

9.6.15 In the context of a designated site, the worst effect of disturbance is the effective loss of available habitat. The presence of persistently high harbour porpoise densities in the SNS cSAC/SCI is attributed to an assumed availability of good feeding opportunities. The Conservation Objective therefore brings a requirement that any disturbance across the site is managed, to ensure that any disturbance will not lead to harbour porpoise being excluded from a significant portion of the site for a significant period of time. In particular, the following point made at the close of the Conservation Objective information is noted:

'This Conservation Objective aims to ensure that the site contributes, as best it can, to maintaining the Favourable Conservation Status of the wider harbour porpoise population. As such, how the impacts within the site translate into effects on the North Sea Management Unit population are of greatest concern'

9.6.16 Discussion on what would constitute significance in terms of disturbance has been ongoing since the sites were put forward as pSACs in early 2016, with these advocating a 'space and time' approach. Essentially, the aim is to enable sufficient availability of habitat for sufficient time, to ensure that disturbance does not lead to the exclusion of harbour porpoise from a significant proportion of the SAC for a period of time. How that significance has been defined is discussed in the determination of AEoI alone (section 11.3).

The Supporting Habitats and Processes relevant to Harbour Porpoise and their Prey are Maintained

9.6.17 The availability of sufficient suitable prey is particularly important for harbour porpoise. Although they have a wide variety of known prey species, the precise dietary composition of harbour porpoise specifically within the SNS cSAC/SCI is unknown.

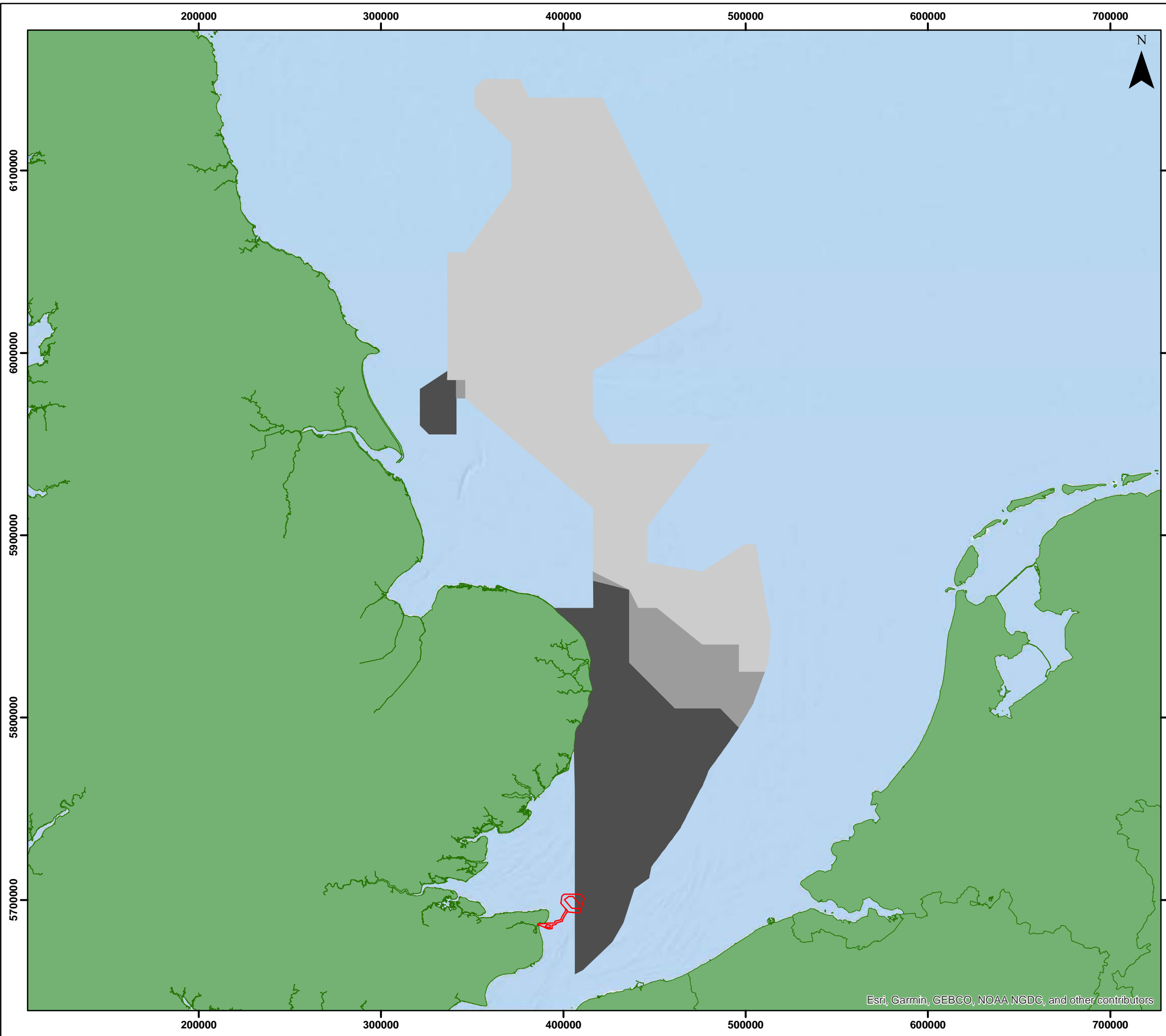
9.6.18 Harbour porpoise prey habitat in the context of this SNS cSAC/SCI refers to the characteristics of the seabed and water column. It is noted that the modelling of harbour porpoise distribution undertaken as part of the SNS cSAC/SCI identification (Heinänen & Skov, 2015) found links between water depth and stratification during both summer and winter seasons, although the influence of these characteristics on harbour porpoise is unknown.

9.6.19 Volume 2, Chapter 6: Fish and Shellfish Ecology of the ES characterises the fish resource, with Volume 2, Chapter 2: Marine Geology, Ocenaography and Physical Processes (Application Refs: 6.2.6 and 6.2.2 respectively) of the ES describing relevant aspects of the seabed and water column as part of the baseline description of the receiving environment. This evidence base was drawn on to inform the assessments (as presented within the relevant ES chapters and the HRA) on the potential effects on these receptors from the proposed development. This SNS cSAC/SCI RIAA will draw on this existing evidence to inform consideration of potential effects on this Conservation Objective.

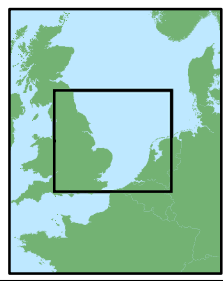
THANET EXTENSION OFFSHORE WIND FARM

Figure 9.5
Southern North Sea cSAC
in Relation to Thanet
Extension

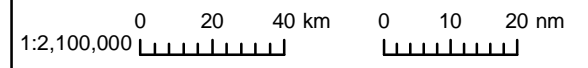
- Legend**
- Offshore Red Line Boundary
 - SNS cSAC Summer and Winter Area
 - SNS cSAC Summer Area
 - SNS cSAC Winter Area



Datum: ETRS 1989
Projection: UTM31N



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Drg No	Fig9.5_SNScSAC		
Rev	0.1	Date	01/02/2019
By	RM	Layout	N/A

**Figure
9.5**

9.7 Bancs des Flandres SCI

9.7.1 The Bancs des Flandres SCI (Bank of Flanders) was first proposed in 2010, with the site information sourced dated May 2017⁴³. The site is located in French waters and extends for some 112,919 ha. Key literature sources, including relevant project literature, are as follows:

- Volume 2, Chapter 5: Fish and Shellfish Ecology (Application Ref 6.2.5);
- Volume 4, Annex 6-1: Fish and Shellfish Baseline – Spring (Application Ref 6.4.6.1);
- Volume 4, Annex 6-2: Fish and Shellfish Baseline – Spring (Application Ref 6.4.6.2);
- Volume 2, Chapter 7: Marine Mammals (Application Ref 6.2.7);
- Volume 2, Chapter 8: Offshore Designated Sites (Application Ref 6.2.8); and
- Information available on the Inventaire National du Patrimoine Naturel⁴⁴.

9.7.2 The site is wholly marine, being below low water, and designated for the following Annex I habitat and Annex II species:

- Sand banks which are slightly covered by sea water all the time;
- Harbour porpoise;
- Harbour seal; and
- Grey seal.

9.7.3 The information available indicates that the area is one of two French sites commonly frequented by harbour porpoise, especially for feeding.

9.7.4 The harbour seal and grey seal features associated with the site are covered separately below, with the receptor group 'marine mammals' being relevant to the potential effects identified. Screening did not identify potential LSE for the subtidal sand bank feature.

9.7.5 Table 7.3 found potential for LSE in relation to harbour porpoise during construction, with the potential for LSE during decommissioning found to be similar to and potentially less than those outlined in the construction phase. The potential for LSE can be summarised as follows:

- Increase in underwater noise (construction and decommissioning); and
- Accidental pollution (construction and O&M).

9.7.6 No draft Conservation Objectives have been sourced for the Bancs des Flandres SCI, with no management plan available and the information indicating that an objectives document is yet to be produced⁴⁵. Therefore, as a proxy and to ensure consistency across the RIAA, the conservation objectives for the SNS cSAC/SCI have been assumed to apply to the site as regards harbour porpoise and are presented below⁴⁶. The focus of the Conservation Objectives is on addressing pressures that may affect site integrity.

To avoid deterioration of the habitats of the harbour porpoise or significant disturbance to the harbour porpoise, thus ensuring that the integrity of the site is maintained and the site makes an appropriate contribution to maintaining Favourable Conservation Status (FCS) for the UK harbour porpoise.

To ensure for harbour porpoise that, subject to natural change, the following attributes are maintained or restored in the long-term:

- The species is a viable component of the site.
- There is no significant disturbance of the species.
- The supporting habitats and processes relevant to harbour porpoises and their prey are maintained.

⁴³ <https://inpn.mnhn.fr/site/natura2000/FR3102002>

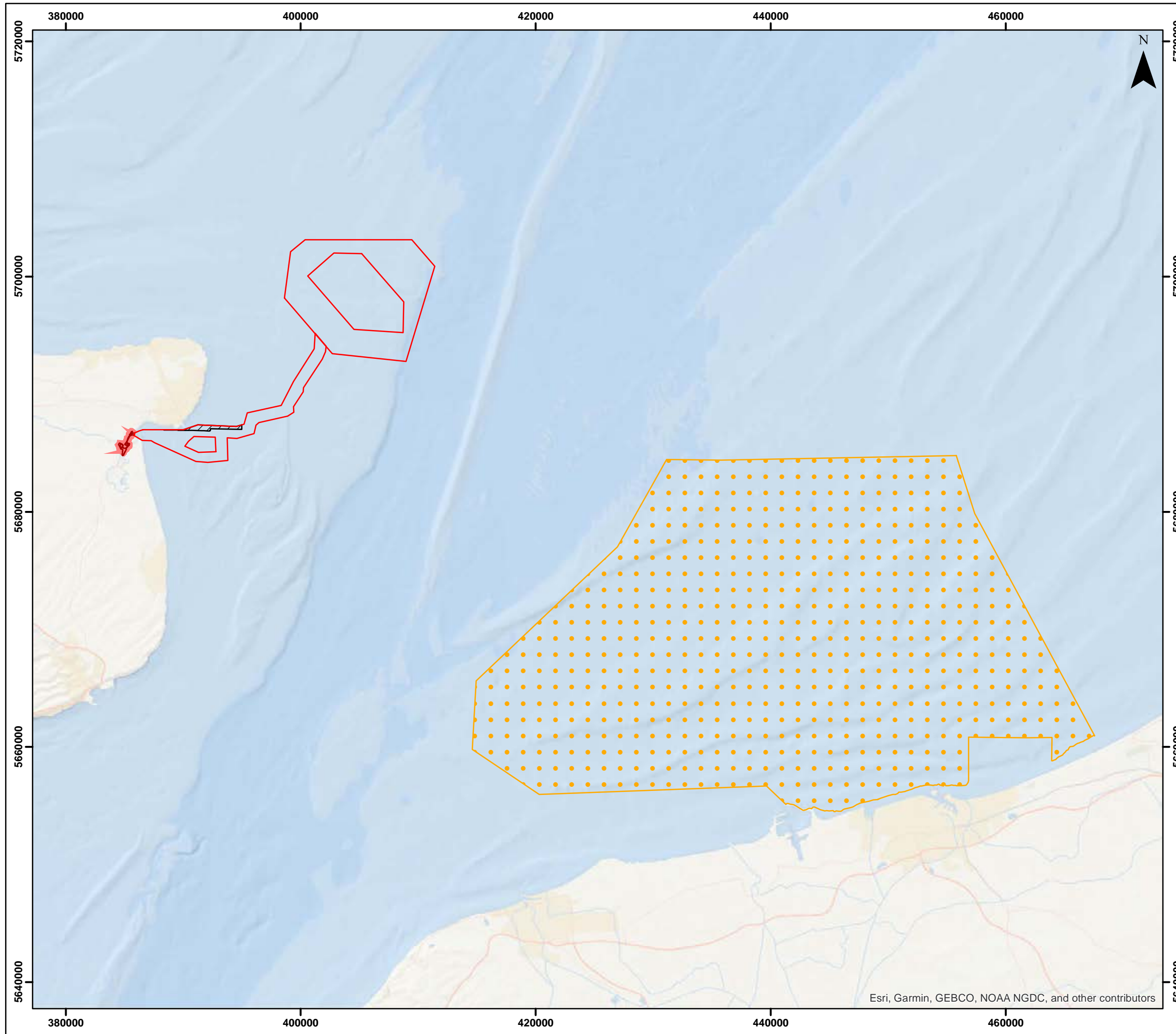
⁴⁴ <https://inpn.mnhn.fr/site/natura2000/FR3102002>

⁴⁵ <https://inpn.mnhn.fr/site/natura2000/FR3102002/tab/gestion>

⁴⁶ <http://jncc.defra.gov.uk/pdf/SouthernNorthSeaConservationObjectivesAndAdviceOnActivities.pdf>

9.7.7 The focus of the above Conservation Objectives relates to the potential for the following:





- Killing or injuring a significant number of harbour porpoise (direct or indirect);
- Preventing their use of significant parts of the site (disturbance/ displacement);
- Significant damage to relevant habitats; or
- Significant reduction in prey base.



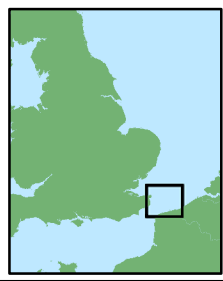
THANET EXTENSION OFFSHORE WIND FARM

Figure 9.6
Bancs de Flandres SCI in
Relation to Thanet
Extension

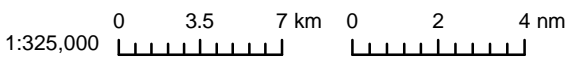
Legend

-  Offshore Red Line Boundary
-  Onshore Red Line Boundary
-  Cable Exclusion Area
-  Bancs de Flandres SCI

Datum: ETRS 1989
Projection: UTM31N



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Drg No	Fig9.6_BancsdeFlandres		
Rev	0.1	Date	01/02/2019
By	RM	Layout	N/A

**Figure
9.6**

9.8 Transboundary: Harbour Seal

9.8.1 The screening process identified eight transboundary sites of relevance for harbour seal, including the Bancs des Flandres SCI (Bank of Flanders) as included above for harbour porpoise. These sites are summarised in Table 9.1, including all habitats and species for which the sites have been designated (although it should be noted that only harbour seal is relevant in this table, with harbour porpoise considered above and grey seal considered below, with no other features from these sites screened in for LSE).

9.8.2 The receptor group 'marine mammals' is relevant to the harbour seal feature screened in from these sites. Key literature sources, including relevant project literature, are as follows:

- Volume 2, Chapter 5: Fish and Shellfish Ecology (Application Ref 6.2.5);
- Volume 4, Annex 6-1: Fish and Shellfish Baseline – Spring (Application Ref 6.4.6.1);
- Volume 4, Annex 6-2: Fish and Shellfish Baseline – Spring (Application Ref 6.4.6.2);
- Volume 2, Chapter 7: Marine Mammals (Application Ref 6.2.7);
- Volume 2, Chapter 8: Offshore Designated Sites (Application Ref 6.2.8); and
- Relevant websites identified in Table 9.1.

9.8.3 Table 7.3 found potential for LSE during construction and decommissioning only, specifically in relation to the increase in underwater noise, with the potential for LSE during decommissioning found to be similar to and potentially less than those outlined in the construction phase.

9.8.4 No draft Conservation Objectives or other site literature have been sourced in English for the above sites. The JNCC identify the European status and distribution of the species⁴⁷, finding a near circumpolar distribution, with one of the four sub species (*P. vitulina vitulina*) occurring in Europe across a range stretching from Iceland and northern Norway south to northern France. The UK population of between 48,000 - 56,000 represents about 5% of the world population and approximately 50% of the EU population, the latter having shown a marked recovery after the viral epidemic of the late 1980s.

9.8.5 Therefore, as a proxy and to ensure consistency across the RIAA, the conservation objectives applied here for harbour seal are taken from the definition of favourable conservation status in Article 1 (JNCC, 2009), as below.

The conservation status will be taken as 'favourable' when:

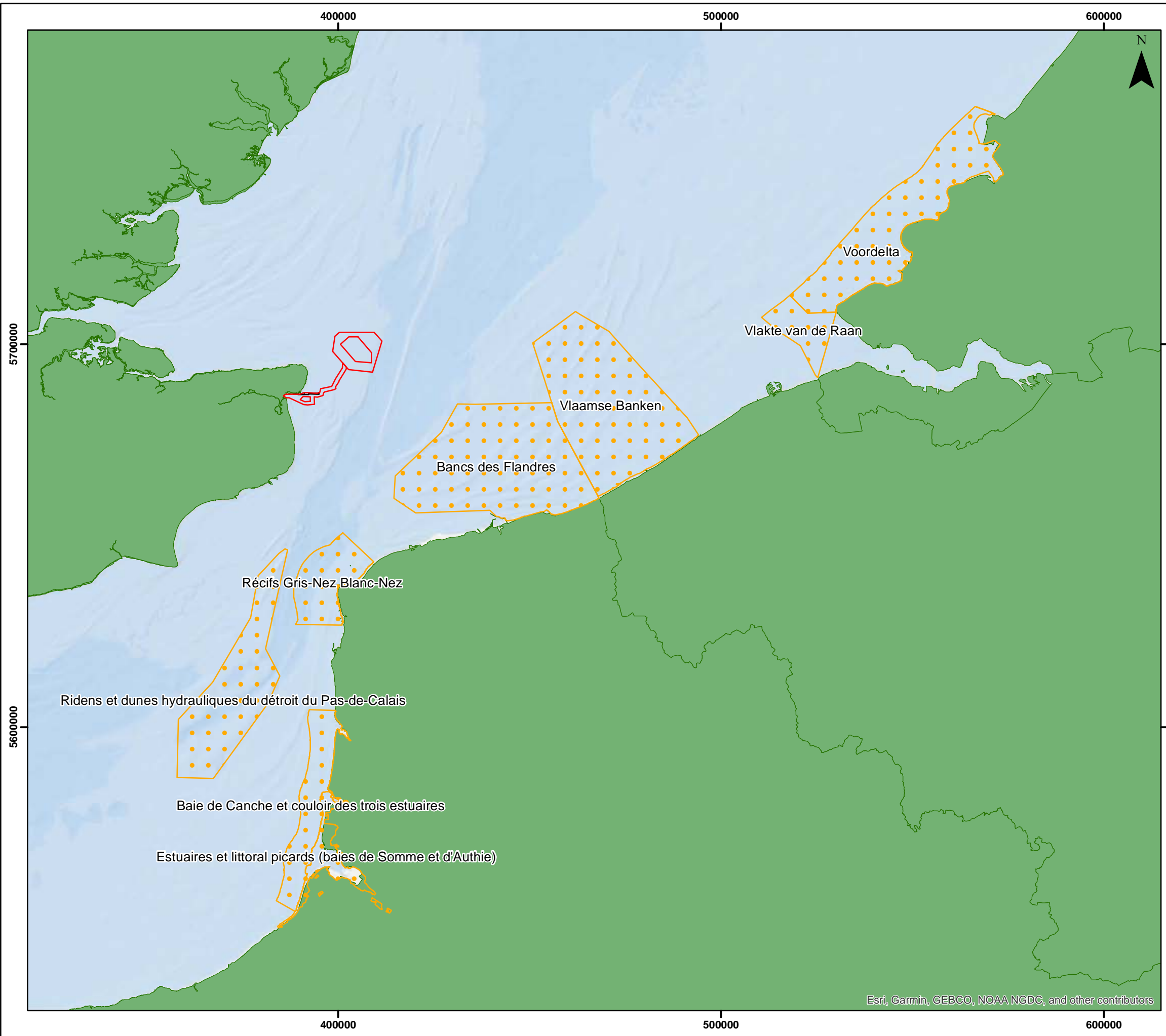
- population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and
- the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and;
- there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

⁴⁷ <http://jncc.defra.gov.uk/ProtectedSites/SACselection/species.asp?FeatureIntCode=S1365>

Table 9.1: Summary of Site Information for Sites screened in for the Annex II Species Harbour Seal only

Site	Country	Area	Annex I Habitats	Annex II Species	Literature Source
Bancs des Flandres SCI	France	112,919ha	Sand banks which are slightly covered by sea water all the time	Harbour porpoise, harbour seal and grey seal	https://inpn.mnhn.fr/site/natura2000/FR3102002
Baie de Canche et couloir des trois estuaires SCI	France	33,306ha	Sand banks which are slightly covered by sea water all the time Estuaries Mudflats and sandflats not covered by seawater at low tide Annual vegetation of drift lines Salicornia and other annuals colonising mud and sand Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	Harbour porpoise, harbour seal and grey seal Sea lamprey River lamprey Allis shad Atlantic salmon	https://inpn.mnhn.fr/site/natura2000/FR3102005?lg=en
Vlakte van de Raan	Belgium	17,500ha	Sand banks which are slightly covered by sea water all the time	Harbour porpoise, harbour seal and grey seal River lamprey Sea lamprey Twait shad	http://www.rwsnatura2000.nl/Gebieden/VvdR_Vlakte+van+d+e+Raan/default.aspx
Voordelta	Holland	92,367ha	Sand banks which are slightly covered by seawater all the time Mudflats and sandflats not covered by seawater at low tide Salicornia and other annuals colonizing mud and sand Spartina swards (Spartinion maritimae) Atlantic salt meadows (Glauco-Puccinellietalia maritimae) Embryonic shifting dunes	Grey seal, Harbour seal Sea lamprey River lamprey Allis shad Twait shad	https://www.synbiosys.alterra.nl/natura2000/gebiedendatabase.aspx?subj=n2k&groep=6&id=n2k113
Estuaires et littoral picards (baies de Somme et d'Authie)	France	15,662ha	Estuaries Coastal lagoons Annual vegetation of drift lines Perennial vegetation of stony banks Vegetated sea cliffs of the Atlantic and Baltic coasts Salicornia and other annuals colonising mud and sand Atlantic salt meadows (Glauco-Puccinellietalia maritimae) Mediterranean and thermo-Atlantic halophilous scrubs (Sarcocornetea fruticosi)	Geoffroys bat Bottlenose dolphin Harbour porpoise Grey seal Harbour seal Great crested newt River lamprey Jersey tiger moth	https://inpn.mnhn.fr/site/natura2000/FR2200346

Site	Country	Area	Annex I Habitats	Annex II Species	Literature Source
			<p>Embryonic shifting dunes</p> <p>Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes)</p> <p>Fixed coastal dunes with herbaceous vegetation (grey dunes)</p> <p>Dunes with <i>Hippophae rhamnoides</i></p> <p>Dunes with <i>Salix repens</i> ssp. <i>argentea</i> (<i>Salicion arenaria</i>)</p> <p>Wooded dunes of the Atlantic, Continental and Boreal region</p> <p>Sand banks which are slightly covered by sea water all the time</p> <p>Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>)</p> <p>Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp.</p> <p>Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> - type vegetation</p> <p>Molinia meadows on calcareous, peaty or clayey-siltladen soils (<i>Molinion caeruleae</i>)</p> <p>Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels</p> <p>Alkaline fens</p> <p>Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>)</p> <p>Mudflats and sandflats not covered by seawater at low tide</p> <p>Reefs</p>	<p>Creeping marshwort</p> <p>Fen orchid</p>	
Recifs Gris-Nez Blanc-Nez	France	29,156ha	<p>Reefs</p> <p>Sand banks which are slightly covered by sea water all the time</p>	<p>Harbour porpoise, Grey seal, Harbour seal</p>	<p>https://inpn.mnhn.fr/site/natura2000/FR3102003</p>
Vlaamse Banken	Belgium	109,940ha	<p>Reefs</p> <p>Sand banks which are slightly covered by sea water all the time</p>	<p>Harbour porpoise, grey seal, Harbour seal</p> <p>Twait shad, River lamprey, Sea lamprey</p>	<p>http://natura2000.eea.europa.eu/natura2000/SDF.aspx?site=BEMNZ0001</p>
Ridens et dunes hydrauliques	France	69,245ha	<p>Sand banks which are slightly covered by seawater all the time</p> <p>Reefs</p>	<p>Harbour porpoise</p> <p>Grey seal</p> <p>Harbour seal</p>	<p>https://inpn.mnhn.fr/site/natura2000/FR3102004</p>

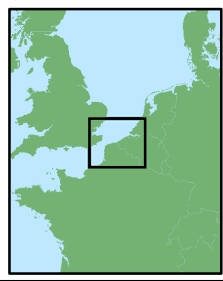


THANET EXTENSION OFFSHORE WIND FARM

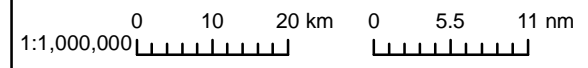
Figure 9.7
Transboundary Harbour Seal Sites in Relation to Thanet Extension

- Legend**
- Offshore Red Line Boundary
 - Cable Exclusion Area
 - Transboundary Sites Identified for Harbour Seal

Datum: WGS 1984
Projection: UTM31N



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Drg No	Fig9.7_HarbourSeal		
Rev	0.1	Date	01/02/2019
By	RM	Layout	N/A

Figure 9.7

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9.9 Transboundary: Grey Seal

- 9.9.1 The screening process identified eleven transboundary sites of relevance for grey seal, including the Bancs des Flandres SCI (Bank of Flanders) as included above for harbour porpoise and all sites screened in above for harbour seal. These sites are summarised in Table 9.2 below, including all habitats and species for which the sites have been designated (although it should be noted that only grey seal is relevant in this table, with harbour porpoise and harbour seal considered above in sections 9.7 and 9.8 respectively, with no other features from these sites screened in).
- 9.9.2 The receptor group 'marine mammals' is relevant to the grey seal feature screened in from these sites. Key literature sources, including relevant project literature, are as follows:
- Volume 2, Chapter 5: Fish and Shellfish Ecology (Application Ref 6.2.5);
 - Volume 4, Annex 6-1: Fish and Shellfish Baseline – Spring (Application Ref 6.4.6.1);
 - Volume 4, Annex 6-2: Fish and Shellfish Baseline – Spring (Application Ref 6.4.6.2);
 - Volume 2, Chapter 7: Marine Mammals (Application Ref 6.2.7);
 - Volume 2, Chapter 8: Offshore Designated Sites (Application Ref 6.2.8); and
 - Relevant websites identified in Table 9.2 above.
- 9.9.3 Table 7.3 found potential for LSE during construction and decommissioning only, specifically in relation to the increase in underwater noise, with the potential for LSE during decommissioning found to be similar to and potentially less than those outlined in the construction phase.
- 9.9.4 No draft Conservation Objectives or other site literature have been sourced in English for the above sites. The JNCC identify the European status and distribution of the species⁴⁸, finding that grey seals are among the rarest seals in the world. Globally, there are three stocks of grey seal, with the east Atlantic stock extending from Iceland and northern Norway southwards to northern France, with the majority breeding around Great Britain and Ireland.

- 9.9.5 Therefore, as a proxy and to ensure consistency across the RIAA, the conservation objectives applied here for grey seal are taken from the definition of favourable conservation status in Article 1 (JNCC, 2009), as below.

The conservation status will be taken as 'favourable' when:

- population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and
- the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and;
- there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

⁴⁸ <http://jncc.defra.gov.uk/ProtectedSites/SACselection/species.asp?FeatureIntCode=s1364>

Table 9.2: Summary of Site Information for Sites screened in for the Annex II Species Grey Seal only

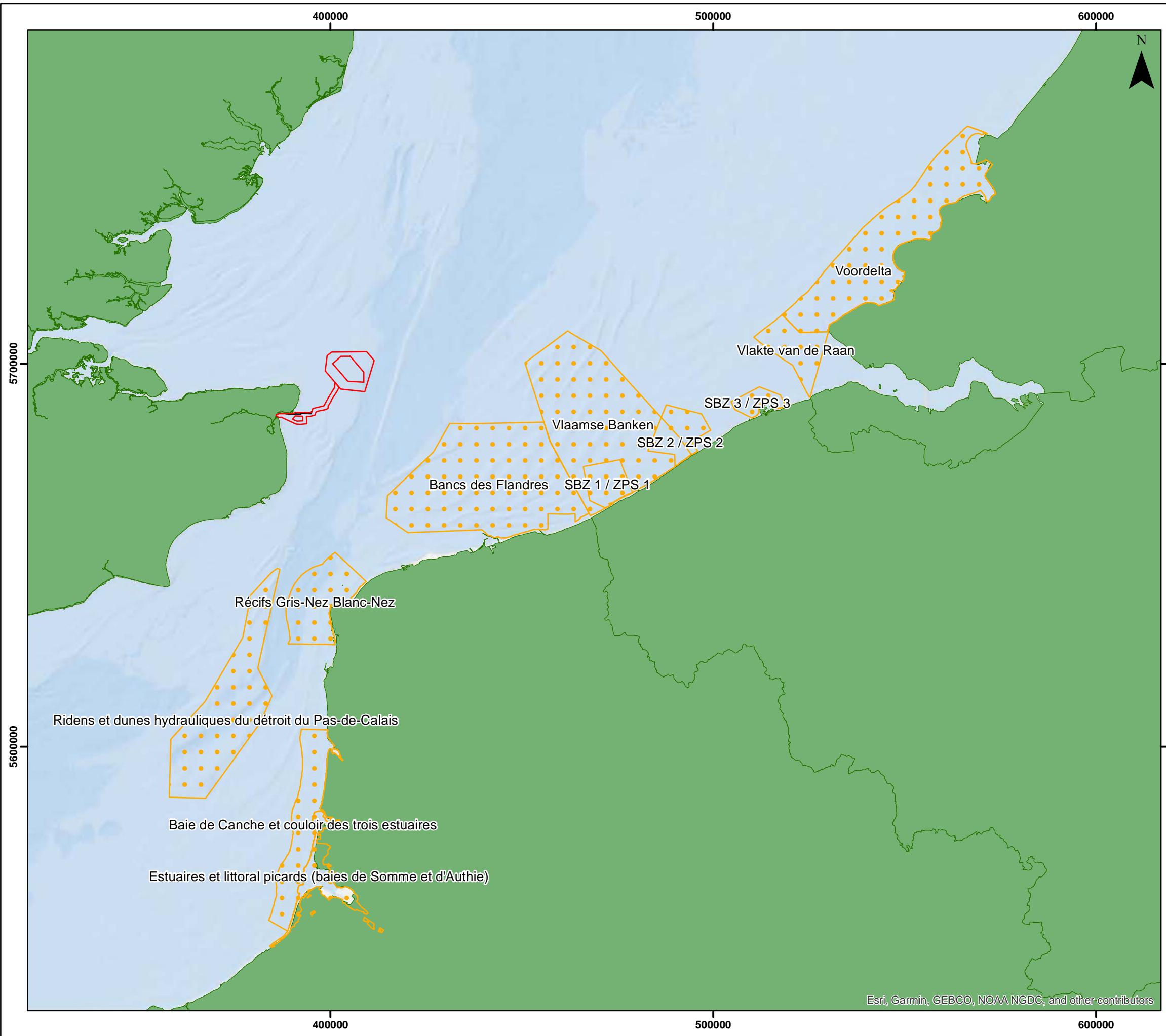
Site	Country	Area	Annex I Habitats	Annex II Species	Literature Source
Bancs des Flandres SCI	France	112,919 ha	Sand banks which are slightly covered by sea water all the time	Harbour porpoise, harbour seal and grey seal	https://inpn.mnhn.fr/site/natura2000/FR3102002
Baie de Canche et couloir des trois estuaires SCI	France	33,306 ha	Sand banks which are slightly covered by sea water all the time Estuaries Mudflats and sandflats not covered by seawater at low tide Annual vegetation of drift lines Salicornia and other annuals colonising mud and sand Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>)	Harbour porpoise, harbour seal and grey seal Sea lamprey, River lamprey, Allis shad, Atlantic salmon	https://inpn.mnhn.fr/site/natura2000/FR3102005?lg=en
Vlakte van de Raan	Belgium	17,500 ha	Sand banks which are slightly covered by sea water all the time	Harbour porpoise, harbour seal and grey seal Sea lamprey, River lamprey, Twait shad	http://www.rwsnatura2000.nl/Gebieden/VvdR_Vlakte+van+de+Raan/default.aspx
Voordelta	Holland	92,367 ha	Sand banks which are slightly covered by seawater all the time Mudflats and sandflats not covered by seawater at low tide <i>Salicornia</i> and other annuals colonizing mud and sand <i>Spartina</i> swards (<i>Spartinion maritima</i>) Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) Embryonic shifting dunes	Grey seal , Harbour seal Sea lamprey, River lamprey Allis shad, Twait shad	https://www.synbiosys.alterra.nl/natura2000/gebiedendatabase.aspx?subj=n2k&groep=6&id=n2k113
Estuaires et littoral picards (baies de Somme et d'Authie)	France	15,662 ha	Estuaries Coastal lagoons Annual vegetation of drift lines Perennial vegetation of stony banks Vegetated sea cliffs of the Atlantic and Baltic coasts Salicornia and other annuals colonising mud and sand Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) Mediterranean and thermo-Atlantic halophilous scrubs (<i>Sarcocornetea fruticosi</i>) Embryonic shifting dunes Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) Fixed coastal dunes with herbaceous vegetation (grey dunes)	Harbour porpoise, Grey seal , Harbour seal Geoffroys bat Bottlenose dolphin Great crested newt River lamprey Jersey tiger moth Creeping marshwort Fen orchid	https://inpn.mnhn.fr/site/natura2000/FR2200346

Site	Country	Area	Annex I Habitats	Annex II Species	Literature Source
			<p>Dunes with <i>Hippophae rhamnoides</i></p> <p>Dunes with <i>Salix repens</i> ssp. <i>argentea</i> (<i>Salicion arenariae</i>)</p> <p>Wooded dunes of the Atlantic, Continental and Boreal region</p> <p>Sand banks which are slightly covered by sea water all the time</p> <p>Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>)</p> <p>Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp.</p> <p>Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> - type vegetation</p> <p>Molinia meadows on calcareous, peaty or clayey-siltladen soils (<i>Molinion caeruleae</i>)</p> <p>Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels</p> <p>Alkaline fens</p> <p>Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>)</p> <p>Mudflats and sandflats not covered by seawater at low tide</p> <p>Reefs</p>		
Recifs Gris-Nez Blanc-Nez	France	29,156 ha	<p>Reefs</p> <p>Sand banks which are slightly covered by sea water all the time</p>	Harbour porpoise, Grey seal , Harbour seal	https://inpn.mnhn.fr/site/natura2000/FR3102003
Vlaamse Banken	Belgium	109,940 ha	<p>Reefs</p> <p>Sand banks which are slightly covered by sea water all the time</p>	Harbour porpoise, Grey seal , Harbour seal Twait shad, Sea lamprey, River lamprey	http://natura2000.eea.europa.eu/natura2000/SDF.aspx?site=BEMNZ0001
SBZ 1	Belgium	6315.60 ha	<p>Reefs</p> <p>Sand banks which are slightly covered by sea water all the time</p>	Harbour porpoise, Harbour seal, Grey seal Twait shad, Sea lamprey, River lamprey	http://eunis.eea.europa.eu/sites/BEMNZ0002
SBZ 2	Belgium	8139.70 ha	<p>Reefs</p> <p>Sand banks which are slightly covered by sea water all the time</p>	Harbour porpoise, Harbour seal, Grey seal Twait shad, Sea lamprey, River lamprey	http://eunis.eea.europa.eu/sites/BEMNZ0003
SBZ 3	Belgium	5675.60 ha	<p>Reefs</p> <p>Sand banks which are slightly covered by sea water all the time</p>	Harbour porpoise, Harbour seal, Grey seal Twait shad, Sea lamprey, River lamprey	http://eunis.eea.europa.eu/sites/BEMNZ0004
Ridens et dunes hydrauliques	France	69,245 ha	<p>Sand banks which are slightly covered by seawater all the time</p> <p>Reefs</p>	Harbour porpoise Grey seal Harbour seal	https://inpn.mnhn.fr/site/natura2000/FR3102004

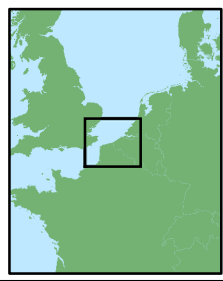
THANET EXTENSION OFFSHORE WIND FARM

Figure 9.8
Transboundary Grey Seal Sites in Relation to Thanet Extension

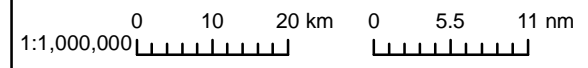
- Legend**
- Offshore Red Line Boundary
 - Cable Exclusion Area
 - Transboundary Sites identified for Grey Seal



Datum: ETRS 1989
Projection: UTM31N



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Drg No	Fig9.8_GreySeal			Figure 9.8
Rev	0.1	Date	01/02/2019	
By	RM	Layout	N/A	

9.10 Outer Thames Estuary SPA

9.10.1 The Outer Thames Estuary SPA is a 392,451.66 km² area of marine and coastal habitat supporting wintering red throated diver off the coast of Kent, Essex, Suffolk and Norfolk and foraging areas for little tern and common tern during the breeding season. The site amalgamates the existing Outer Thames Estuary SPA with the Outer Thames Estuary Extension. The interest features of the site are described in the following documents:

- The Natural England Conservation Advice Package⁴⁹;
- Natura 2000 standard data form⁵⁰;
- Outer Thames Estuary SPA Citation⁵¹;
- Outer Thames Estuary Conservation Objectives⁵²;
- The 'Departmental Brief' for the proposed extension (Natural England and JNCC, 2015);
- The consultation document published on the proposed extension⁵³; and
- The Site Improvement Plan for this SPA⁵⁴.

9.10.2 The interest features of this site are listed below along with the populations for which the classification was made and whether or not that interest feature was screened in or not based on individual effect categories and LSE.

- Red-throated diver; non-breeding; 6,466 individuals;
 - Screened in for potential disturbance and displacement at the construction stage alone;
 - Screened in for potential disturbance and displacement at the operational stage alone;
 - Screened in for potential disturbance and displacement at the offshore cable construction stage in-combination; and
 - Screened in for potential disturbance and displacement at the operational stage in-combination.

- Common tern; breeding; 266 pairs
 - Screened out for potential disturbance and displacement at the construction stage alone and in-combination;
 - Screened out for potential disturbance and displacement at the operational stage alone and in-combination;
 - Screened in for potential collision mortality at the operational stage alone; and
 - Screened out for potential collision mortality at the operational stage in-combination.
- Little tern; breeding; 373 pairs
 - Screened out for potential disturbance and displacement at the construction stage alone and in-combination;
 - Screened out for potential disturbance and displacement at the operational stage alone and in-combination;
 - Screened in for potential collision mortality at the operational stage alone; and
 - Screened out for potential collision mortality at the operational stage in-combination.

⁴⁹ <http://publications.naturalengland.org.uk/publication/3233957>

⁵⁰ <http://jncc.defra.gov.uk/pdf/SPA/UK9020309.pdf>

⁵¹ <http://publications.naturalengland.org.uk/file/5459831745413120>

⁵² <http://publications.naturalengland.org.uk/file/6636505681887232>

⁵³ <http://publications.naturalengland.org.uk/publication/5078960463413248>

⁵⁴ <http://publications.naturalengland.org.uk/publication/4668757523824640>

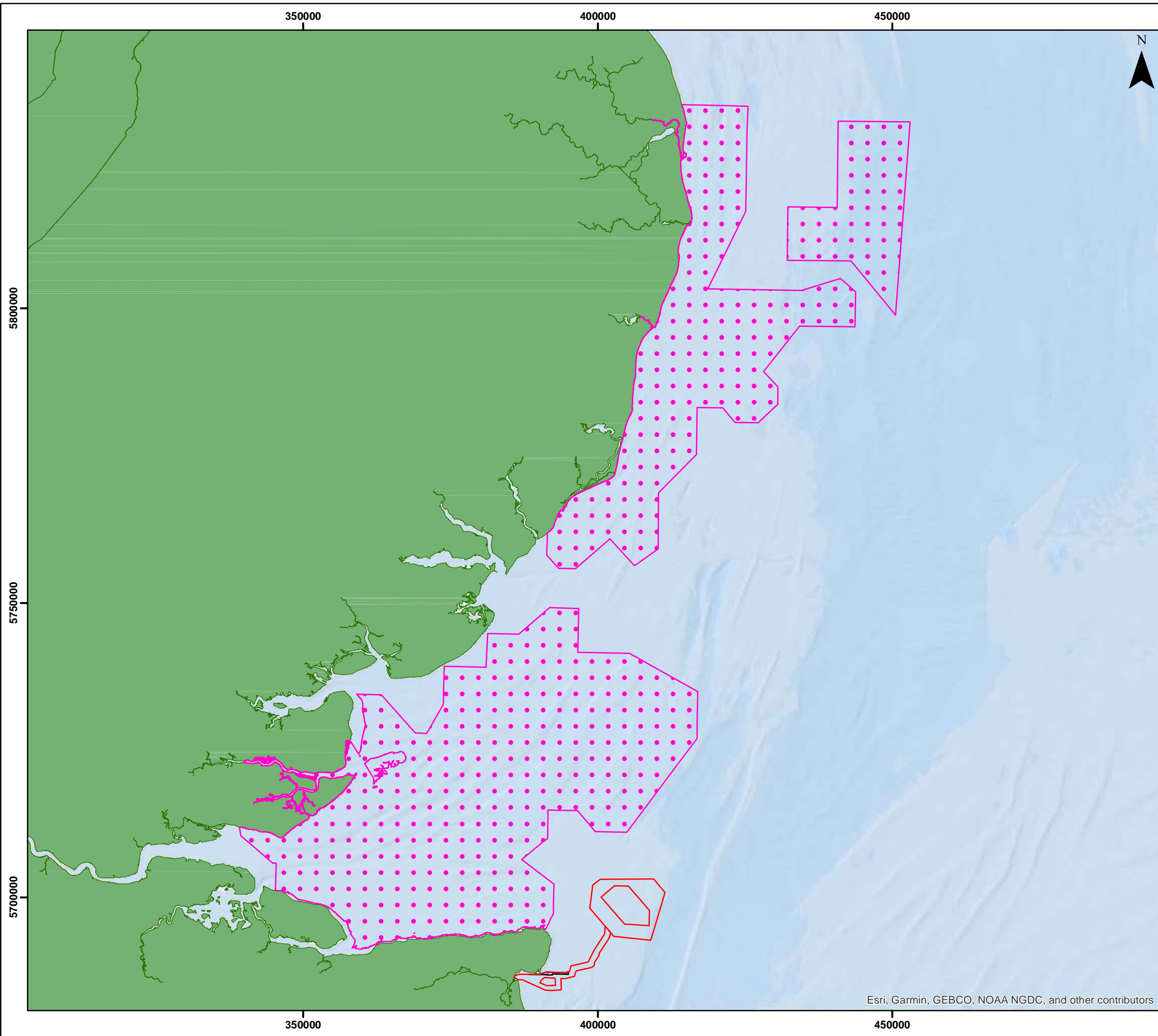
9.10.3 The Conservation Objectives for the site are provided in Natural England (2016) as follows:

Conservation Objectives

With regard to the SPA and the individual species and/ or assemblage of species for which the site has been classified (the 'Qualifying Features'), and subject to natural change;

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or 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 population of each of the qualifying features, and,
- The distribution of the qualifying features within the site.

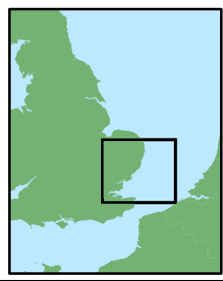


THANET EXTENSION OFFSHORE WIND FARM

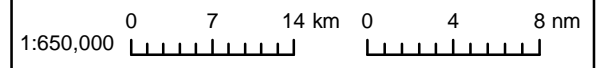
Figure 9.9
Outer Thames Estuary
SPA in Relation to
Thanet Extension

- Legend**
- Offshore Red Line Boundary
 - Cable Exclusion Area
 - Outer Thames Estuary SPA

Datum: ETRS 1989
Projection: UTM31N



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Drg No	Fig9.9_OutThamesSPA		
Rev	0.1	Date	01/02/2019
By	RM	Layout	N/A

**Figure
9.9**

9.11 Foulness (Mid Essex Coast Phase 5) SPA

9.11.1 The Foulness (Mid Essex Coast Phase 5) SPA is a 10,941 ha area of intertidal habitat supporting breeding waders and seabirds; non-breeding waders, wildfowl and hen harrier; and a non-breeding waterbird assemblage in Essex. The interest features of the site are described in the following documents:

- Natural England supplementary advice⁵⁵;
- Natura 2000 standard data form⁵⁶; and
- The Site Improvement Plan for the Essex Estuaries⁵⁷.

9.11.2 The interest features of this site are listed below along with the population for which the classification was made and whether or not that interest feature was screened in or not based on individual effect categories and LSE.

- Avocet; breeding; 26 pairs; non-breeding; 100 individuals;
 - Screened out for all types of potential effects alone and in-combination.
- Bar-tailed godwit; non-breeding; 7,639 individuals;
 - Screened out for all types of potential effects alone and in-combination.
- Common tern; breeding; 220 pairs;
 - Screened out for all types of potential effects alone and in-combination.
- Dark-bellied brent goose; non-breeding; 13,075 individuals;
 - Screened out for all types of potential effects alone and in-combination.
- Grey plover; non-breeding; 4,209 individuals;
 - Screened out for all types of potential effects alone and in-combination.
- Hen harrier; non-breeding; 1 - 19 individuals;
 - Screened out for all types of potential effects alone and in-combination.
- Knot; non-breeding; 40,429 individuals;

- Screened out for all types of potential effects alone and in-combination.
- Little tern; breeding; 24 pairs;
 - Screened out for all types of potential effects alone and in-combination.
- Oystercatcher; non-breeding; 11,756;
 - Screened out for all types of potential effects alone and in-combination.
- Redshank; non-breeding; 1,369 individuals;
 - Screened out for all types of potential effects alone and in-combination.
- Ringed plover; breeding; 1 - 135 pairs;
 - Screened out for all types of potential effects alone and in-combination.
- Sandwich tern; breeding; 320 pairs; and
 - Screened in for potential collision mortality at the operational stage alone; and
 - Screened out for potential collision mortality at the operational stage in-combination.
- Wintering waterbird assemblage with the following named species: Avocet, bar-tailed godwit, dark-bellied brent goose, dunlin, grey plover, oystercatcher and redshank.
 - Screened out for all types of potential effects alone and in-combination.

⁵⁵ <https://designatedsites.naturalengland.org.uk/Marine/SupAdvice.aspx?SiteCode=UK9009246>

⁵⁶ <http://jncc.defra.gov.uk/pdf/SPA/UK9009246.pdf>

⁵⁷ <http://publications.naturalengland.org.uk/publication/5131941422563328>

9.11.3 The Conservation Objectives for the site were provided by Natural England in 2014⁵⁸ as follows:

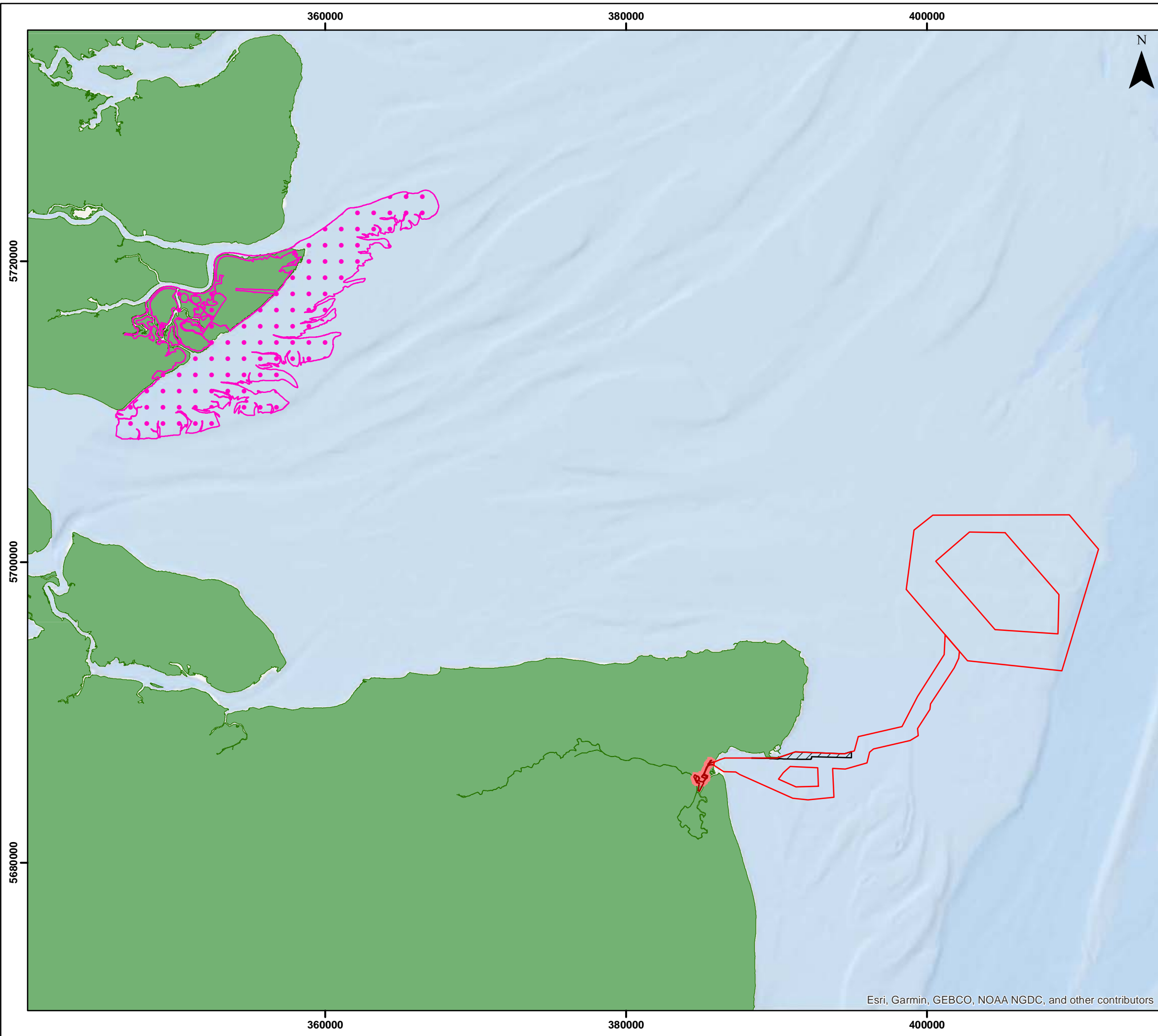
Conservation Objectives

With regard to the SPA and the individual species and/ or assemblage of species for which the site has been classified (the 'Qualifying Features'), and subject to natural change;

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or 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 population of each of the qualifying features, and,
- The distribution of the qualifying features within the site.

⁵⁸ <http://publications.naturalengland.org.uk/publication/5131941422563328>

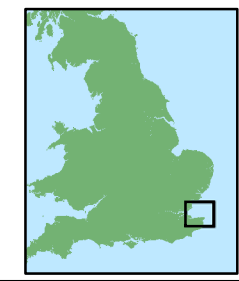


THANET EXTENSION OFFSHORE WIND FARM

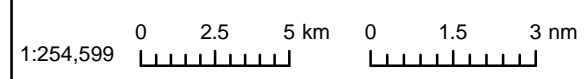
Figure 9.10
Foulness (Mid-Essex Coast
Phase 5) SPA in Relation
to Thanet Extension

- Legend**
- Offshore Red Line Boundary
 - Onshore Red Line Boundary
 - Cable Exclusion Area
 - Foulness (Mid-Essex Coast Phase 5) SPA

Datum: ETRS 1989
Projection: UTM31N



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Drg No	Fig9.10_Foulness			Figure 9.10
Rev	0.1	Date	01/02/2019	
By	RM	Layout	N/A	

9.12 Alde-Ore Estuary SPA

9.12.1 The Alde-Ore Estuary SPA is a 2,404 ha area of coastal and intertidal habitat supporting breeding waders, seabirds and marsh harrier and wintering waders in Suffolk. The interest features of the site are described in the following documents:

- Natural England Conservation Advice for Marine Protected Areas: Alde-Ore Estuary SPA⁵⁹; and
- Natura 2000 standard data form⁶⁰.

9.12.2 The interest features of this site are listed below along with the population for which the classification was made and whether or not that interest feature was screened in or not based on individual effect categories and LSE.

- Avocet; breeding; 104 pairs; non-breeding; 766 individuals;
 - Screened out for all types of potential effects alone and in-combination.
- Lesser black-backed gull; breeding; 14,070 pairs;
 - Screened in for potential collision mortality at the operational stage alone and in-combination.
- Little tern; breeding; 48 pairs;
 - Screened out for all types of potential effects alone and in-combination.
- Marsh harrier; breeding; three pairs;
 - Screened out for all types of potential effects alone and in-combination.
- Redshank; non-breeding; 1,919 individuals;
 - Screened out for all types of potential effects alone and in-combination.
- Ruff; non-breeding; three individuals; and
 - Screened out for all types of potential effects alone and in-combination.

- Sandwich tern; breeding; 170 pairs.
 - Screened out for all types of potential effects alone and in-combination.

9.12.3 The Conservation Objectives for the site were provided by Natural England in 2014⁶¹ as follows:

Conservation Objectives

With regard to the SPA and the individual species and/ or assemblage of species for which the site has been classified (the 'Qualifying Features'), and subject to natural change;

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or 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 population of each of the qualifying features, and,
- The distribution of the qualifying features within the site.




⁵⁹<https://designatedsites.naturalengland.org.uk/Marine/MarineSiteDetail.aspx?SiteCode=UK9009112&SiteName=alde-ore&countyCode=&responsiblePerson=>

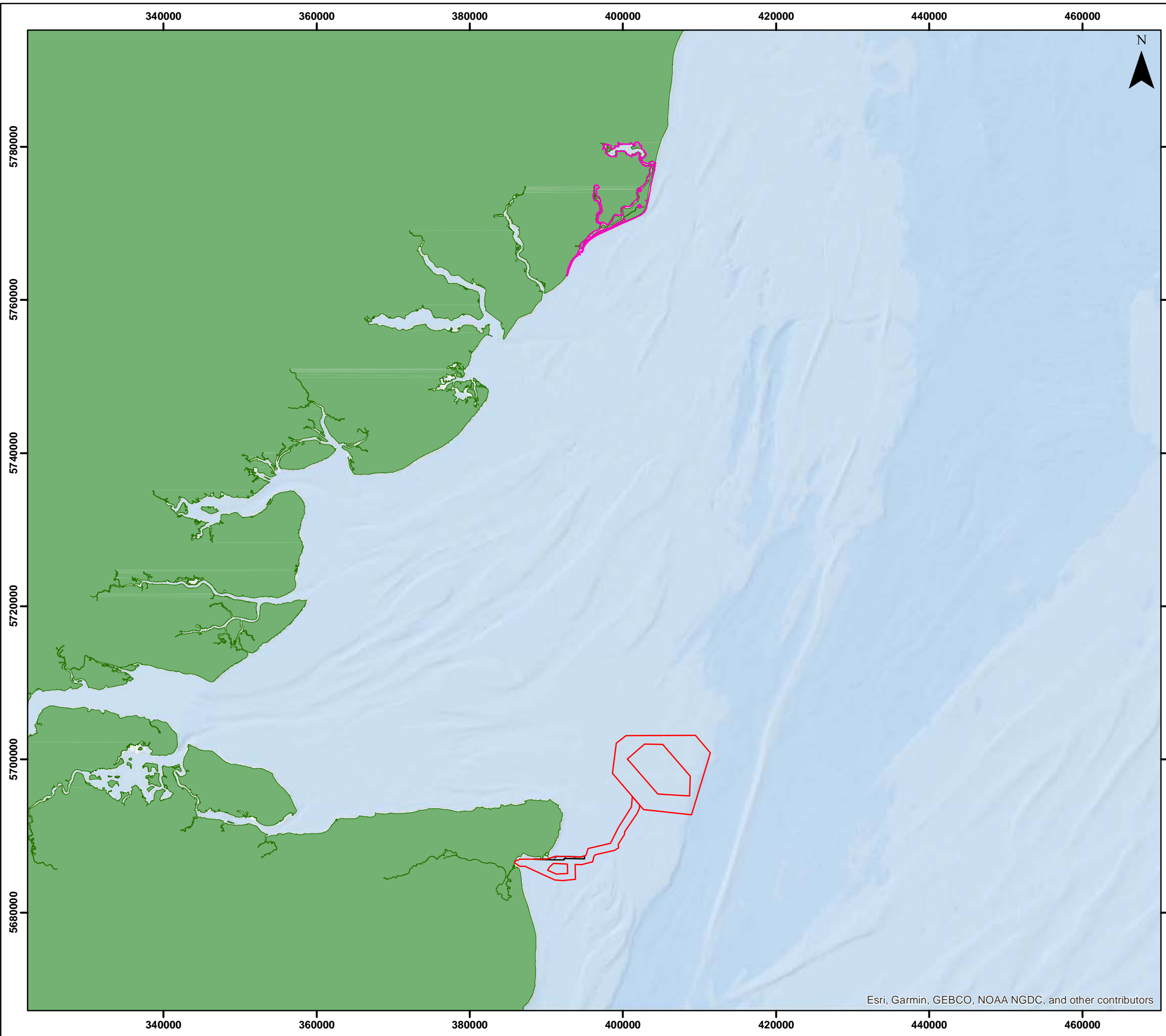
⁶⁰ <http://jncc.defra.gov.uk/pdf/SPA/UK9009112.pdf>

⁶¹<http://publications.naturalengland.org.uk/publication/5170168510545920?category=6581547796791296>

THANET EXTENSION OFFSHORE WIND FARM

Figure 9.11
Alde-Ore Estuary SPA in
Relation to Thanet
Extension

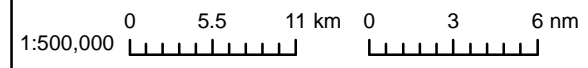
- Legend**
-  Offshore Red Line Boundary
 -  Cable Exclusion Area
 -  Alde-Ore Estuary SPA



Datum: ETRS 1989
Projection: UTM31N



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Drg No	Fig9.11_Alde-OreSPA			Figure 9.11
Rev	0.1	Date	01/02/2019	
By	RM	Layout	N/A	

9.13 Alde-Ore Estuary Ramsar

9.13.1 The Alde-Ore Estuary Ramsar is a 2,547 ha area of coastal and intertidal habitat supporting breeding seabirds and marsh harrier and non-breeding wildfowl and waders in Suffolk. The interest features of the site are described in the following documents:

- Natural England Conservation Advice for Marine Protected Areas: Alde-Ore Estuary Ramsar⁶²; and
- Ramsar Information Sheet⁶³.

9.13.2 The interest features of this site are listed below along with the population for which the classification was made and whether or not that interest feature was screened in or not based on individual effect categories and LSE.

- Avocet; non-breeding; 1,187 individuals;
 - Screened out for all types of potential effects alone and in-combination.
- Lesser black-backed gull; breeding; 5,790 apparently occupied nests;
 - Screened in for potential collision mortality at the operational stage alone and in-combination.
- Redshank; non-breeding; 2,368 individuals;
 - Screened out for all types of potential effects alone and in-combination.
- Breeding wetland bird assemblage; lesser black-backed gull, little tern, marsh harrier, Mediterranean gull and Sandwich tern; and
 - Screened out for all types of potential effects except for lesser black-backed gull already listed above.
- Wintering wetland bird assemblage; avocet, white-fronted goose, pintail, shelduck, shoveler, teal, redshank and wigeon.
 - Screened out for all types of potential effects alone and in-combination.

9.13.3 Conservation objectives are not published for Ramsar Sites. The Conservation Objectives for the SPA will be applied:

Conservation Objectives

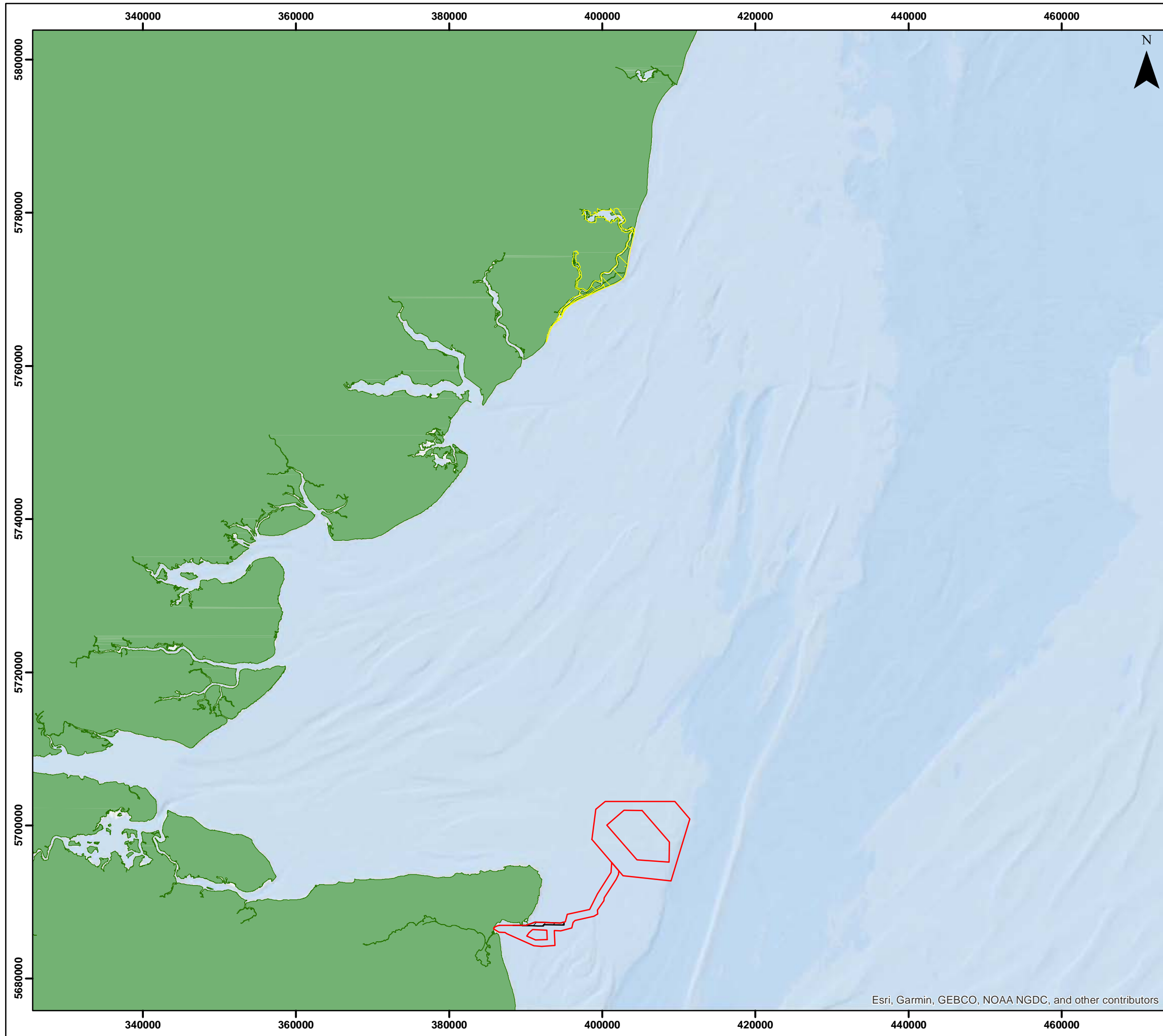
With regard to the SPA and the individual species and/ or assemblage of species for which the site has been classified (the 'Qualifying Features'), and subject to natural change;

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or 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 population of each of the qualifying features, and,
- The distribution of the qualifying features within the site.

⁶²<https://designatedsites.naturalengland.org.uk/Marine/MarineSiteDetail.aspx?SiteCode=UK11002&SiteName=&countyCode=&responsiblePerson=&SeaArea=&IFCAAra=>

⁶³<http://jncc.defra.gov.uk/pdf/RIS/UK11002.pdf>

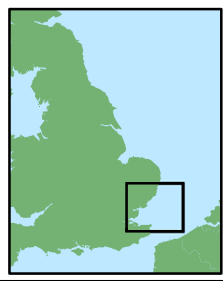


THANET EXTENSION OFFSHORE WIND FARM

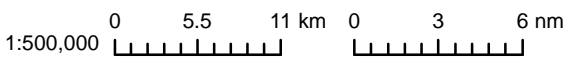
Figure 9.12
Alde-Ore Estuary Ramsar
in Relation to Thanet
Extension

- Legend**
- Offshore Red Line Boundary
 - Cable Exclusion Area
 - Alde-Ore Ramsar

Datum: ETRS 1989
Projection: UTM31N



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Rev	0.1	Date	01/02/2019
By	RM	Layout	N/A

**Figure
9.12**

Esri, Garmin, GEBCO, NOAA NGDC, and other contributors

9.14 Flamborough and Filey Coast SPA

9.14.1 The Flamborough and Filey Coast SPA is a 7,858 ha area of coastal and marine habitat supporting breeding seabirds in Yorkshire. The site was classified on 23rd August 2018 and constitutes an extension to, and replacement of the name of, the Flamborough Head and Bempton Cliffs SPA originally classified on 5th March 1993.

9.14.2 The interest features of the site are described in the following document:

- The ‘classification citation’ for the Flamborough and Filey Coast SPA (Natural England, 2018).

9.14.3 The interest features of this site are listed below along with the population for which the classification was made, and whether or not that interest feature was screened in or not based on individual effect categories and LSE.

- Gannet; breeding; 8,469 pairs;
 - Screened in for potential collision mortality at the operational stage alone and in-combination.
- Guillemot; breeding; 41,607 pairs;
 - Screened in for potential disturbance and displacement at the construction stage alone;
 - Screened in for potential disturbance and displacement at the operational stage alone;
 - Screened in for potential disturbance and displacement at the offshore cable construction stage in-combination; and
 - Screened in for potential disturbance and displacement at the operational stage in-combination.
- Kittiwake; breeding; 44,520 pairs
 - Screened in for potential collision mortality at the operational stage alone and in-combination.
- Razorbill; breeding; 10,570 pairs

- Screened in for potential disturbance and displacement at the construction stage alone;
- Screened in for potential disturbance and displacement at the operational stage alone;
- Screened in for potential disturbance and displacement at the offshore cable construction stage in-combination; and
- Screened in for potential disturbance and displacement at the operational stage in-combination.
- Breeding seabird assemblage; Fulmar, gannet, guillemot, kittiwake and razorbill
 - Only fulmar screened out for all types of potential effects, all other assemblage species as listed above.

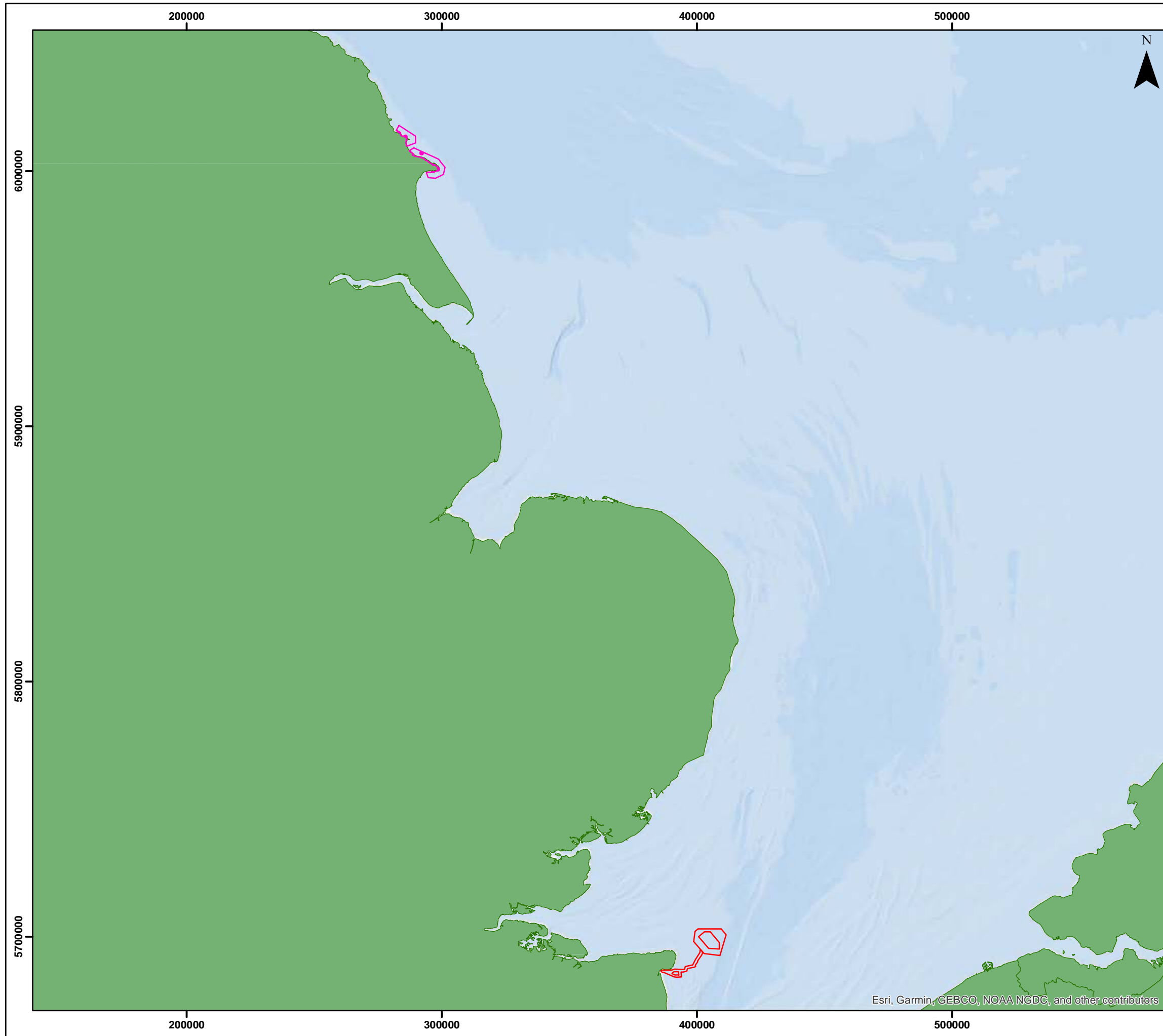
9.14.4 The Conservation Objectives for the site were published by Natural England in 2018⁶⁴ as follows:

Conservation Objectives

With regard to the SPA and the individual species and/ or assemblage of species for which the site has been classified (the ‘Qualifying Features’ listed below), and subject to natural change; Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or 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 population of each of the qualifying features, and,
- The distribution of the qualifying features within the site.

⁶⁴<http://publications.naturalengland.org.uk/file/5534523496595456>

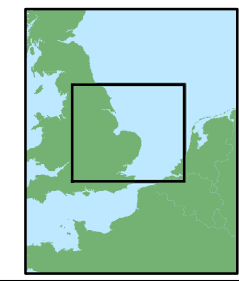


THANET EXTENSION OFFSHORE WIND FARM

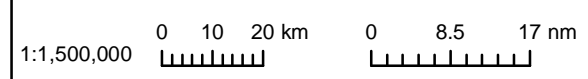
Figure 9.13
Flamborough and Filey Coast SPA in Relation to Thanet Extension

- Legend**
- Offshore Red Line Boundary
 - Flamborough and Filey Coast SPA

Datum: WGS 1984
Projection: UTM31N



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Drg No	Fig9.13_FlamFileySPA			Figure 9.13
Rev	0.1	Date	01/02/2019	
By	RM	Layout	N/A	

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9.15 St. Abb's Head to Fast Castle SPA

9.15.1 The St. Abb's Head to Fast Castle SPA is a 1,737 ha area of coastal habitat supporting breeding seabirds in south east Scotland. The interest features of the site are described in the following documents:

- SNH (Scottish Natural Heritage) Sitelink Site Details for St. Abb's Head to Fast Castle SPA⁶⁵; and
- Natura 2000 standard data form⁶⁶.

9.15.2 The interest features of this site are listed below along with the population for which the classification was made and whether or not that interest feature was screened in or not based on individual effect categories and LSE.

- Guillemot; breeding; 31,300 pairs;
 - Screened in for potential disturbance and displacement at the construction stage alone;
 - Screened in for potential disturbance and displacement at the operational stage alone;
 - Screened in for potential disturbance and displacement at the offshore cable construction stage in-combination; and
 - Screened in for potential disturbance and displacement at the operational stage in-combination.
- Herring gull; breeding; 1,160 pairs;
 - Screened out for all types of potential effects alone and in-combination.
- Kittiwake; breeding; 21,170 pairs;
 - Screened in for potential collision mortality at the operational stage alone and in-combination.
- Razorbill; breeding; 2,180 pairs;

- Screened in for potential disturbance and displacement at the construction stage alone;
- Screened in for potential disturbance and displacement at the operational stage alone;
- Screened in for potential disturbance and displacement at the offshore cable construction stage in-combination; and
- Screened in for potential disturbance and displacement at the operational stage in-combination.
- Shag; breeding; 560 pairs; and
 - Screened out for all types of potential effects alone and in-combination.
- Breeding seabird assemblage; guillemot, herring gull, kittiwake, razorbill and shag.
 - Only herring gull and shag screened out for all types of potential effects, all other assemblage species as listed above.

9.15.3 The Conservation Objectives for the site are provided by SNH⁶⁷ as follows:

Conservation Objectives

To avoid deterioration of the habitats of the qualifying species (listed below) or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and

To ensure for the qualifying species that the following are maintained in the long-term:

- Population of the species as a viable component of the site
- Distribution of the species within site
- Distribution and extent of habitats supporting the species
- Structure, function and supporting processes of habitats supporting the species
- No significant disturbance of the species

⁶⁵ https://gateway.snh.gov.uk/sitelink/siteinfo.jsp?pa_code=8579

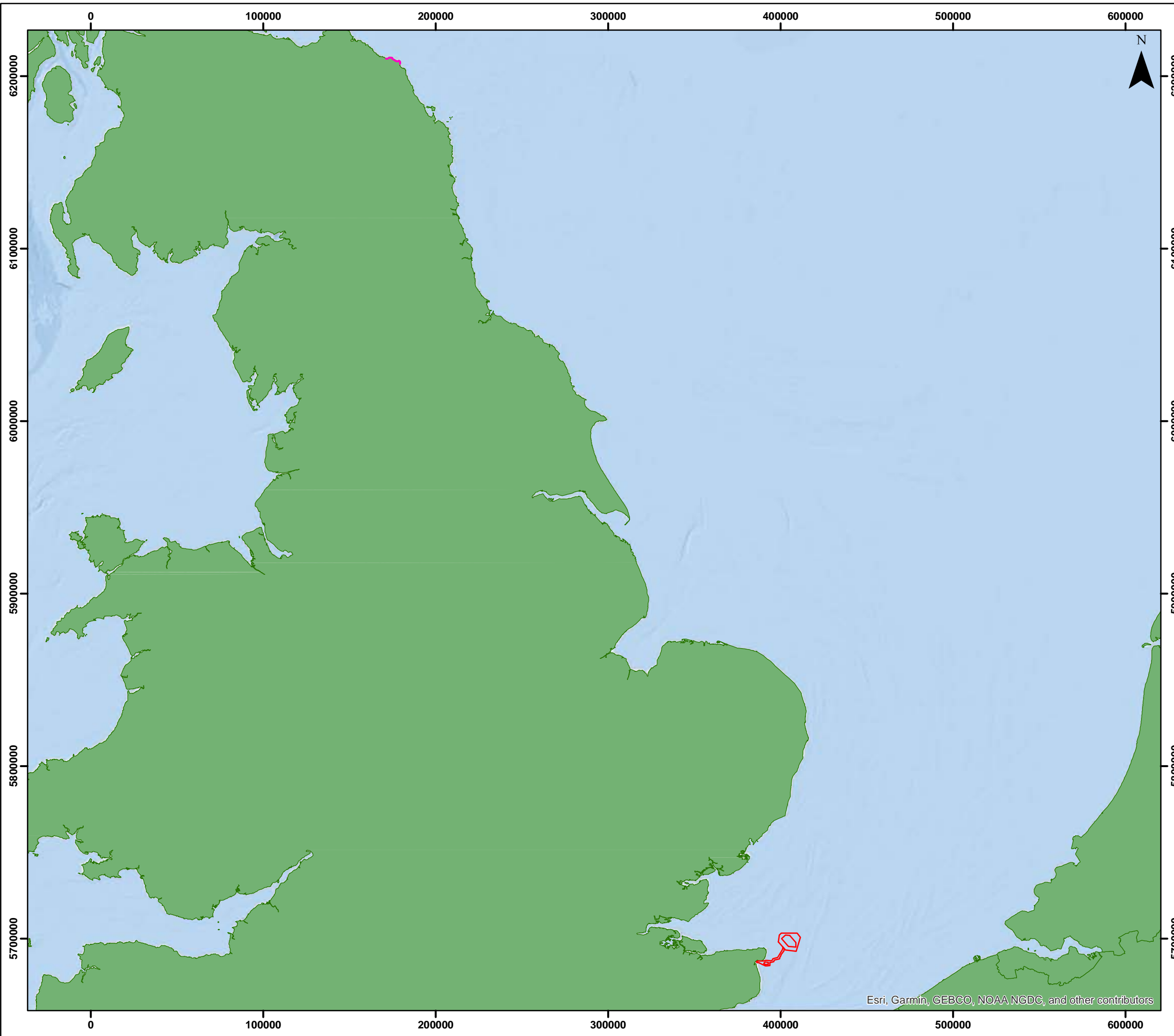
⁶⁶ <http://jncc.defra.gov.uk/pdf/SPA/UK9004271.pdf>

⁶⁷ https://gateway.snh.gov.uk/sitelink/siteinfo.jsp?pa_code=8579

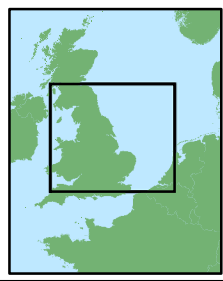
THANET EXTENSION OFFSHORE WIND FARM

Figure 9.14
St. Abb's Head to Fast
Castle SPA in Relation to
Thanet Extension

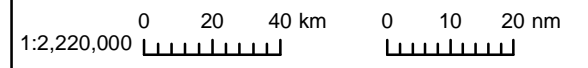
- Legend**
- Offshore Red Line Boundary
 - St Abb's Head to Fast Castle SPA



Datum: ETRS 1989
Projection: UTM31N



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Drg No	Fig9.14_StAbbFastCastle		
Rev	0.1	Date	01/02/2019
By	RM	Layout	N/A

**Figure
9.14**

9.16 Northumberland Marine SPA

9.16.1 The Northumberland Marine SPA is a 88,498 ha area of marine habitat supporting breeding seabirds in Northumberland. The interest features of the site are described in the following documents:

- Natural England Conservation Advice for Marine Protected Areas: Northumberland Marine SPA⁶⁸; and
- Natura 2000 standard data form⁶⁹.

9.16.2 The interest features of this site are listed below along with the population for which the classification was made and whether or not that interest feature was screened in or not based on individual effect categories and LSE.

- Arctic tern; breeding; 4,782 pairs;
 - Screened out for all types of potential effects alone and in-combination.
- Common tern; breeding; 1,286 pairs;
 - Screened out for all types of potential effects alone and in-combination.
- Guillemot; breeding; 32,876 pairs;
 - Screened in for potential disturbance and displacement at the construction stage alone;
 - Screened in for potential disturbance and displacement at the operational stage alone;
 - Screened in for potential disturbance and displacement at the offshore cable construction stage in-combination; and
 - Screened in for potential disturbance and displacement at the operational stage in-combination.
- Little tern; breeding; 45 pairs;
 - Screened out for all types of potential effects alone and in-combination.

- Puffin; breeding; 54,242 pairs;
 - Screened out for all types of potential effects alone and in-combination.
- Roseate tern; breeding; 80 pairs;
 - Screened out for all types of potential effects alone and in-combination.
- Sandwich tern; breeding; 2,162 pairs; and
 - Screened out for all types of potential effects alone and in-combination.
- Breeding seabird assemblage; Arctic tern, black-headed gull, common tern, cormorant, guillemot, kittiwake, little tern, puffin, roseate tern, Sandwich tern and shag.
 - Only guillemot screened in, all other assemblage species screened out for all types of potential effects as listed above.

9.16.3 The Conservation Objectives for the site were provided by Natural England in 2016⁷⁰ as follows:

Conservation Objectives

With regard to the SPA and the individual species and/ or assemblage of species for which the site has been classified (the 'Qualifying Features'), and subject to natural change;

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or 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 population of each of the qualifying features, and,
- The distribution of the qualifying features within the site.

⁶⁸ <https://designatedsites.naturalengland.org.uk/Marine/MarineSiteDetail.aspx?SiteCode=UK9020325&SiteName=northumberland&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=>

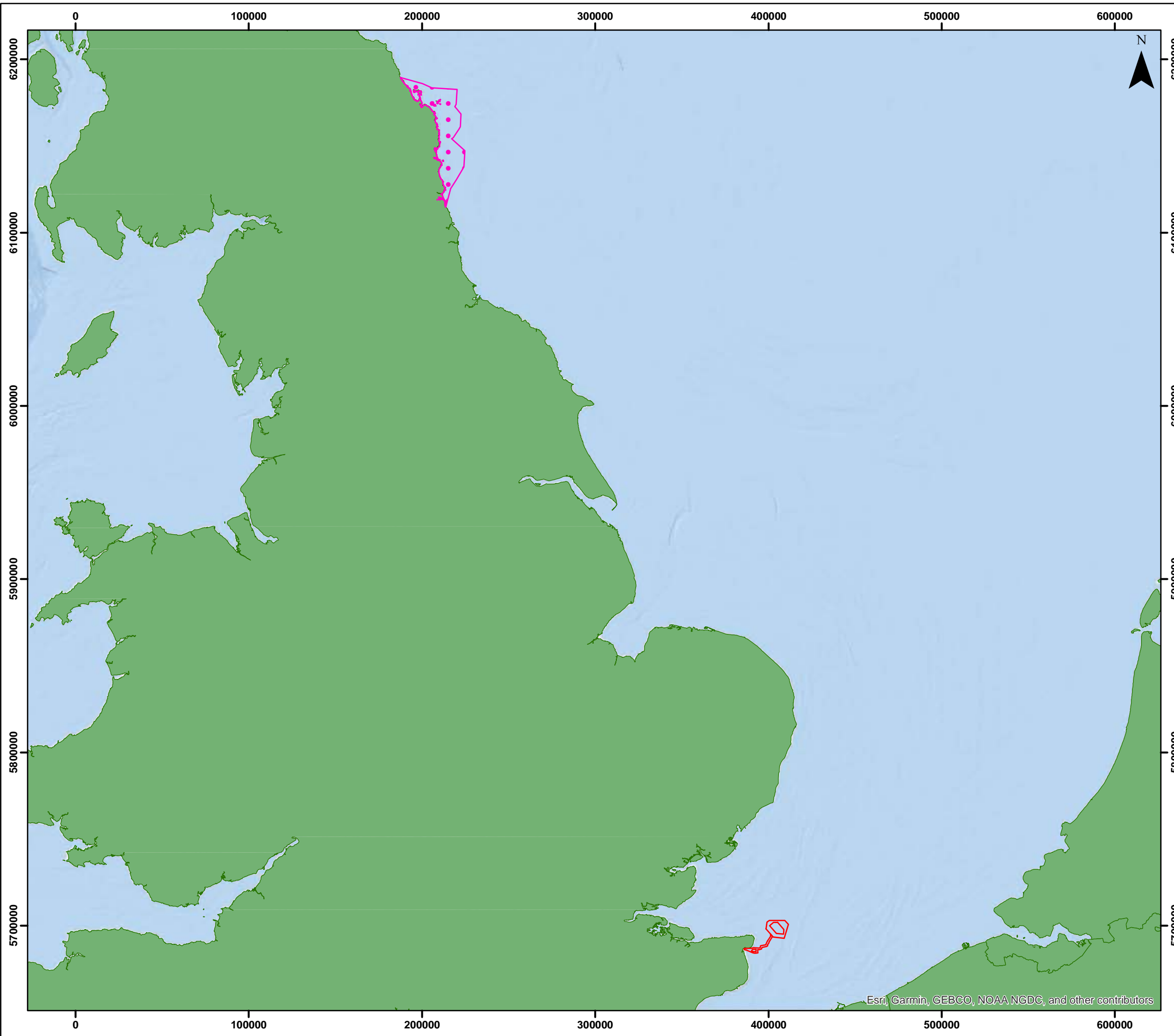
⁶⁹ <http://jncc.defra.gov.uk/pdf/SPA/UK9020325.pdf>

⁷⁰ <http://publications.naturalengland.org.uk/publication/4891545554649088>

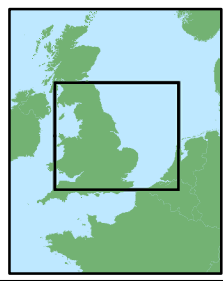
THANET EXTENSION OFFSHORE WIND FARM

Figure 9.15
Northumberland Marine
SPA in Relation to Thanet
Extension

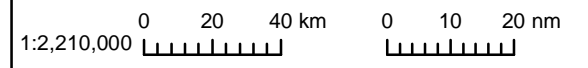
- Legend**
- Offshore Red Line Boundary
 - Northumberland Marine SPA



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By	RM	Layout	N/A

**Figure
9.15**

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9.17 Farne Islands SPA

9.17.1 The Farne Islands SPA is a 101 ha area of coastal habitat supporting breeding seabirds in Northumberland. The interest features of the site are described in the following documents:

- Natura 2000 standard data form⁷¹.

9.17.2 The interest features of this site are listed below along with the population for which the classification was made, [whether the population is in favourable conservation status] and whether or not that interest feature was screened in or not based on individual effect categories and LSE.

- Arctic tern; breeding; 2,840 pairs;
 - Screened out for all types of potential effects alone and in-combination.
- Common tern; breeding; 230 pairs;
 - Screened out for all types of potential effects alone and in-combination.
- Guillemot; breeding; 32,875 pairs;
 - Screened in for potential disturbance and displacement at the construction stage alone;
 - Screened in for potential disturbance and displacement at the operational stage alone;
 - Screened in for potential disturbance and displacement at the offshore cable construction stage in-combination; and
 - Screened in for potential disturbance and displacement at the operational stage in-combination.
- Sandwich tern; breeding; 2,070 pairs; and
 - Screened out for all types of potential effects alone and in-combination.
- Breeding seabird assemblage; cormorant, shag, kittiwake and puffin, roseate tern.
 - Only guillemot screened in, all other assemblage species screened out for all types of potential effects as listed above.

9.17.3 The Conservation Objectives for the site were provided by Natural England in 2014⁷² as follows:

Conservation Objectives

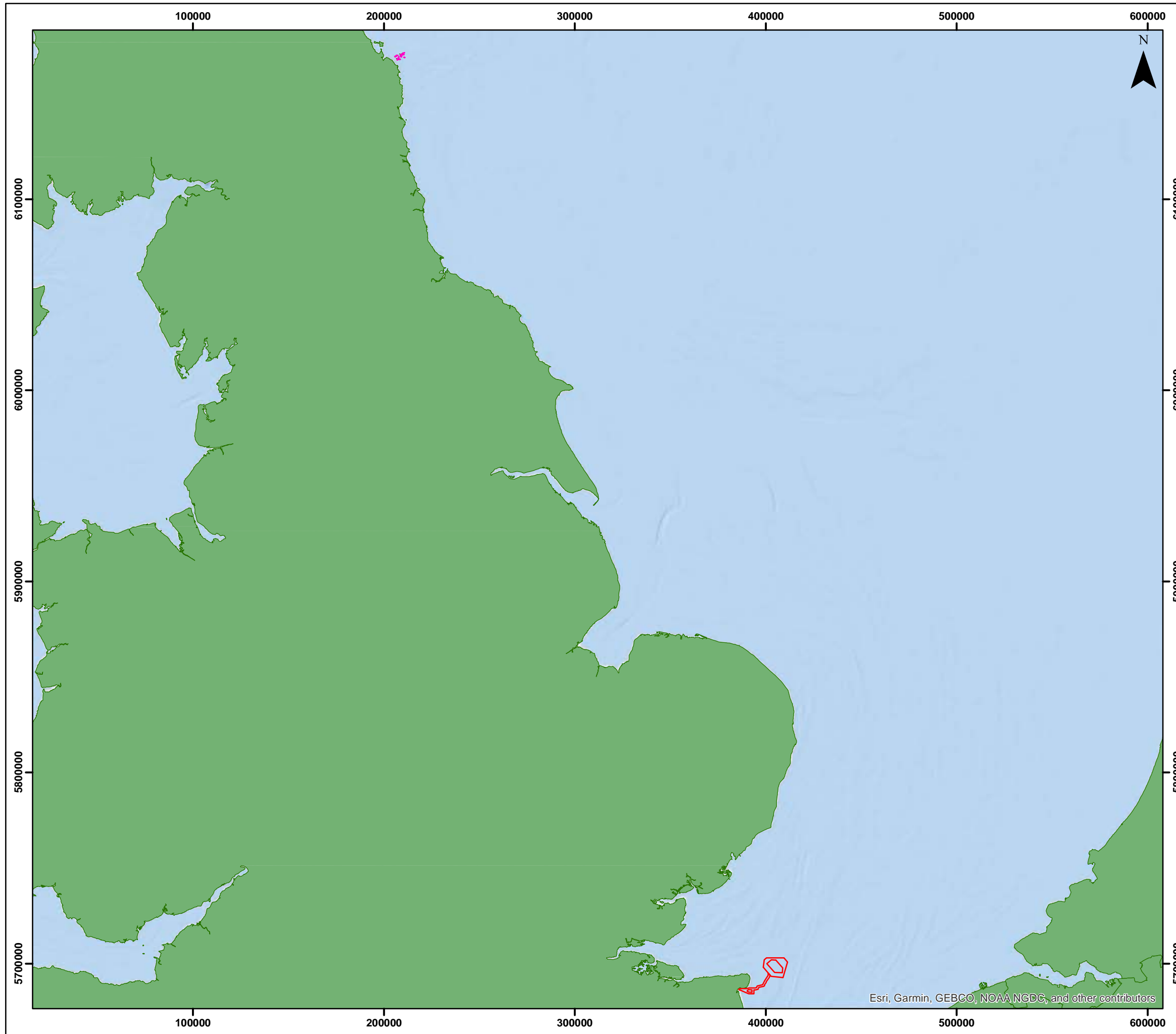
With regard to the SPA and the individual species and/ or assemblage of species for which the site has been classified (the 'Qualifying Features'), and subject to natural change;

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or 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 population of each of the qualifying features, and,
- The distribution of the qualifying features within the site.

⁷¹ <http://jncc.defra.gov.uk/pdf/SPA/UK9006021.pdf>

⁷² <http://publications.naturalengland.org.uk/publication/4521874151178240>

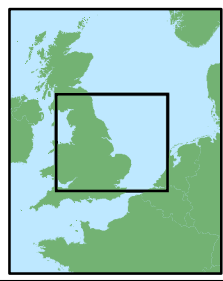


THANET EXTENSION OFFSHORE WIND FARM

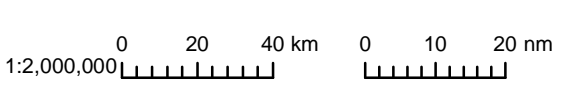
Figure 9.16
Farne Islands SPA in
Relation to Thanet
Extension

- Legend**
- Offshore Red Line Boundary
 - Farne Islands SPA

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Projection: UTM31N



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Drg No	Fig9.16_FarneIslands			Figure 9.16
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By	RM	Layout	N/A	