

**Vattenfall Wind Power Ltd**  
**Thanet Extension Offshore Wind Farm**

**Environmental Statement Volume 2**  
**Chapter 8: Offshore Designated Sites**

June 2018, Revision A

Document Reference: 6.2.8

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Vattenfall Wind Power Ltd  
Thanet Extension Offshore Wind Farm  
Volume 2  
Chapter 8: Offshore Designated Sites  
June 2018

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Date of Approval	June 2018
Revision	A

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## 8 OFFSHORE DESIGNATED SITES

### 8.1 Introduction

8.1.1 This chapter presents information regarding designated sites, habitats and species in relation to the offshore components of the proposed Thanet Extension Offshore Wind Farm (Thanet Extension). The designated sites, habitats and species considered were identified during the Scoping phase and the associated consultation period, following the publication of the Scoping Report (VWPL, 2016) and Preliminary Environmental Information Report (PEIR) submitted for formal consultation under Section 42 (S42) of the Planning Act 2008. This chapter includes an examination of the effects of construction, Operations and Maintenance (O&M) and decommissioning of Thanet Extension on the identified designated sites, habitats and species. Onshore nature conservation aspects of Thanet Extension are assessed in Volume 3, Chapter 5: Onshore Biodiversity (Document Ref: 6.3.5).

8.1.2 This chapter draws on the information presented in individual chapters of Volume 2 of this Environmental Statement (ES), which characterise the baseline environment and assess the potential impacts offshore. Therefore, this chapter should be read in conjunction with:

- Volume 2, Chapter 2: Marine Geology, Oceanography and Physical Processes (Document Ref: 6.2.2);
- Volume 2, Chapter 4: Offshore Ornithology (Document Ref: 6.2.4);
- Volume 2, Chapter 5: Benthic Subtidal and Intertidal Ecology (Document Ref: 6.2.5);
- Volume 2, Chapter 7: Marine Mammals (Document Ref: 6.2.7); and
- The associated technical Annexes (Document Ref: 6.4.4.1, 6.4.5.1, 6.4.5.2, and 6.4.7.1).

8.1.3 The following sections of this chapter include:

- A summary of relevant legislation and planning policy;
- A description of the methodology for the assessment, including details of the study area and the approach to the assessment of effects;
- A summary of consultation with stakeholders;
- A review of baseline (existing) conditions;
- Details of the measures proposed as part of the project to avoid or reduce environmental effects, including mitigation and design measures that form part of the project (embedded mitigation);
- An assessment of the likely effects for the construction, O&M and decommissioning phases of the project, taking into account the measures proposed;

- Identification of any further mitigation measures or monitoring required in relation to likely significant residual effects; and
- Assessment of any cumulative effects with other proposed developments.

### 8.2 Statutory and policy context

8.2.1 Full information on the legislation and policy of relevance to Thanet Extension is provided within Volume 1, Chapter 2: Policy and Legislation of the ES (Document Ref: 6.1.2). The legislation and policy of relevance to the nature conservation assessment are as follows:

- EU Council Directive 92/43/EEC on the conservation of natural habitats and of wild flora and fauna (the ‘Habitats Directive’);
- EU Council Directive 79/409/EEC on the conservation of wild birds (the ‘Birds Directive’);
- Marine and Coastal Access Act 2009;
- The Wildlife and Countryside Act 1981;
- Natural Environment and Rural Communities (NERC) Act 2006;
- The Infrastructure Planning (Environmental Impact Assessment (EIA)) Regulations 2017 (the ‘EIA Regulations’);
- The Offshore Marine Conservation (Natural Habitats, &c.) Regulations 2007 which implement the Habitats Directive and Birds Directive in relation to marine areas where the UK has jurisdiction beyond territorial waters (generally 12 nautical miles (nm) to 200 nm);
- The Conservation of Habitats and Species Regulations 2017 which implement the Habitats Directive and Birds Directive in relation to England and Wales as far as the limit of territorial waters (usually 12 nm); and
- The UK Biodiversity Action Plan (BAP).

8.2.2 Guidance on the issues to be assessed for offshore renewable energy developments has been obtained through reference to the Overarching National Policy Statement (NPS) for Energy (NPS EN-1; Department for Energy and Climate Change (DECC), 2011a), the National Policy Statement for Renewable Energy Infrastructure (NPS EN-3, DECC, 2011b), the NPS for Electricity Networks Infrastructure (NPS EN-5; DECC, 2011c) and the UK Marine Policy Statement (MPS) (HM Government, 2011). NPS EN-3 also contains guidance related to potential secondary or indirect impacts that may arise from physical changes to the environment and should be considered.

8.2.3 While the NPSs provide guidance on information to be assessed, they also provide guidance as to the considerations that must be made by the Secretary of State (SoS) during the decision process.

8.2.4 The legislation and policy documents of relevance to particular ‘receptor’ areas are considered further in Volume 2, Chapter 2: Marine Geology, Oceanography and Physical Processes (Document Ref: 6.2.2), Chapter 4: Offshore Ornithology (Document Ref: 6.2.4), Chapter 5: Benthic Subtidal and Intertidal Ecology (Document Ref: 6.2.5) and Chapter 7: Marine Mammals (Document Ref: 6.2.4).

8.2.5 The provisions within the policy documents as relevant to nature conservation are outlined in Table 8.1 and Table 8.2 with signposting to where the provisions have been addressed within this chapter and/ or the ES.

**Table 8.1: Relevant provisions of the NPSs**

Policy/legislation	Key provisions	Section where provision addressed
NPS EN-1	Applicants should ensure that the Environmental Statement (ES) clearly sets out any effects on internationally, nationally and locally designated sites of ecological or geological importance, on protected species and on habitats and other species identified as being of principle importance for the conservation of biodiversity (paragraph 5.3.3).	The construction, O&M and decommissioning of Thanet Extension have been assessed as part of the EIA process for designated sites as well as for protected species and habitats (section 8.10 - section 8.12). This includes an assessment of impacts on the sites according to the EIA regulations.
	Applicants should demonstrate how the project has taken advantage of opportunities to conserve and enhance biodiversity (and geological) conservation interests (paragraph 5.3.4).	Opportunities to conserve and enhance biodiversity have been explored and noted where relevant.
NPS EN-3	Applicants should assess the effects on the offshore ecology and biodiversity for all stages of the lifespan of the proposed offshore wind farm (paragraph 2.6.64).	Construction, O&M and decommissioning phases of Thanet Extension have been assessed as part of the EIA process (section 8.10 - section 8.12).
	Applicants should assess the potential for the scheme to have both positive and negative effects on marine ecology and biodiversity (paragraph 2.6.67).	Both the positive and negative effects of Thanet Extension have been assessed (section 8.10 - section 8.12).

Policy/legislation	Key provisions	Section where provision addressed
	The designation of an area a Natura 2000 site does not necessarily restrict the construction or operation of offshore wind farms in or near that area (paragraph 2.6.69).	Natura 2000 sites have been considered during the Thanet Extension EIA process (section 8.10 - section 8.12).
	Mitigation may be possible in the form of careful design of the development itself and the construction techniques employed (paragraph 2.6.70).	Mitigation embedded into the development is detailed in section 8.9.
	Ecological monitoring is likely to be appropriate during the construction and O&M phases to identify the actual impact so that, where appropriate, adverse effects can then be mitigated and to enable further useful information to be published relevant to future projects (paragraph 2.6.71).	Pre-construction monitoring for potential Annex I habitat and saltmarsh monitoring (before, during and post construction) will be undertaken and is included as part of the embedded mitigation for Thanet Extension (section 8.9).
NPS EN-5	Effects on ecology are uncertain at this level, as they depend on the sensitivity of the environment and the location and design of specific infrastructure.	There has been through inclusion of a description of the maximum design envelope and baseline description of the environment (paragraph 8.7.1 <i>et seq.</i> ) in the relevant associated chapters and Annexes, in order to account for this uncertainty and ensure a robust assessment has taken place.

**Table 8.2: Relevant provisions in the MPS**

Policy/legislation	Key provisions	Section where provision addressed
MPS	Development should aim to avoid harm to marine ecology, biodiversity and geological conservation interests (including geological and morphological features), including through location, mitigation and consideration of reasonable alternatives. Where significant harm cannot be avoided, then appropriate compensatory measures should be sought. Additional requirements apply in relation to developments affecting Natura 2000 sites (paragraph 2.6.1.3 of MPS).	All relevant Natura 2000 sites have been considered and assessed as part of the ES process (sections 8.10 - 8.12). The reasons for each sites designation is outlined in section 8.7. These reasons include ecological and geological aspects. The individual ecology chapters consider habitats and species of principle importance.
	It is also recognised that the benefits of development may include benefits for marine ecology, biodiversity and geological conservation interests and that these may outweigh potential adverse effects (paragraph 2.6.1.4 of the MPS).	Both positive and negative effects on the marine ecology and biodiversity have been assessed in the EIA process (sections 8.10 - 8.12).

**Table 8.3: Relevant Provisions in the East and South Inshore and Offshore Marine Plans**

Policy/legislation	Key provisions	Section where provision addressed
East Marine Plans	CAB1 (Cable Policy) Preference should be given to proposals for cable installation where the method of installation is burial. Where burial is not achievable, decisions should take account of protection measures for the cable that may be proposed by the applicant.	Policy considerations detailed within the CAB1 Policy have been met through assessment of other cable installations in the area (see cumulative impact assessment in section 8.13) and appropriate cable protection. Cables will be buried where practicable to do so and appropriate protection installed.
	ECO1 (Environment Policy) Cumulative impacts affecting the ecosystem of the East Marine Plans and adjacent areas (marine, terrestrial) should be addressed in decision-making and plan implementation.	Cumulative impacts are considered in the cumulative impact assessment (section 8.13).
	MPA1 (Environment Policy) Any impacts on the overall Marine Protected Area (MPA) network must be taken account of in strategic level measures and assessments, with due regard given to any current agreed advice on an ecologically coherent network.	Regional MPAs are considered within this chapter and within the Habitats Regulation Assessment (HRA) documentation (Report to Inform Appropriate Assessment (Document Ref: 5.2)).

8.2.6 Thanet Extension is situated within the South East Marine Plan Area, however, “the policies are in development and are not a consideration when drafting applications or making a decision”<sup>1</sup>. While it is noted that in the absence of the South East Marine Plan policies the MPS should be used, it is also suggested that the East Marine Plans should be considered as they border the South East Marine Plan area.

<sup>1</sup> <http://mis.marinemanagement.org.uk/south-east> (accessed 26/06/17)

8.2.7 A number of guidance documents regarding the assessment of potential impacts have been produced both by industry and by government advisors. This assessment draws on the following:

- Guidelines for ecological impact assessment in Britain and Ireland. Marine and Coastal, Final Document (IEEM, 2010);
- Guidelines for ecological impact assessment in the UK and Ireland (Second Edition). Terrestrial, Freshwater and Coastal (CIEEM, 2016); and
- Guidance Note for EIA in Respect of Food and Environment Protection Act (FEPA) and Coast Protection Act (CPA) Requirements (Cefas *et al.*, 2004).

8.2.8 In addition, the ES follows the legislative framework as defined by the Offshore Marine Conservation (Natural Habitats, & c.) Regulations 2007 (as amended); the Conservation of Habitats and Species Regulations 2017 (Habitats Regulations); the Wildlife and Countryside Act 1981 (as amended); and the Marine and Coastal Access Act, 2009. The full EIA methodology is presented in ES, Volume 1, Chapter 3: EIA Methodology (Document Ref: 6.1.3), with topic specific variations within relevant chapters.

8.2.9 All cetaceans are European Protected Species (EPS) under Annex IV of the Habitats Directive (EU Directive 92/43/EEC). A licence is required if the risk of injury or disturbance to EPS is assessed as likely under regulations 41(1) (a) and (b) in the Conservation of Habitats and Species Regulations and 39(1)(a) and (b) in the Offshore Marine Conservation (Natural Habitats, &c.) Regulations 2007 (as amended).

8.2.10 For the proposed Thanet Extension development, the risk of disturbance to EPS during construction is considered in section 8.10. The need for an EPS licence will be considered with the Marine Management Organisation (MMO) in consultation with Natural England.

### 8.3 Consultation and Scoping

8.3.1 As part of the EIA for Thanet Extension, consultation has been started with various statutory and non-statutory authorities, through the agreed Evidence Plan process (being used for the EIA process as well as for the HRA). A formal Scoping Opinion was sought from the SoS following submission of the Scoping Report (VWPL, 2016). The Scoping Opinion (The Planning Inspectorate (PINS), 2017) was issued in January 2017. Following the submission of the PEIR, comments were received as part of the formal S42 consultation.

8.3.2 A summary of the responses relevant to the offshore designated sites chapter in the Scoping Opinion and S42 consultation phase are summarised in Table 8.4 below.

**Table 8.4: Summary of consultation relating to Offshore Designated Sites**

Date and consultation phase/ type	Consultation and key issues raised	Section where provision addressed
January 2017 Scoping Opinion	The SoS notes that at present section 2.5 of the Scoping Report makes no reference to the Thanet Coast Marine Conservation Zone (MCZ) or the Goodwin Sands recommended MCZ (rMCZ), any effects to these sites will need to be assessed and presented in the ES.	The MCZ's have been detailed within the existing environment description (section 8.7), with any impacts on the sites or features assessed in sections 8.10 - 8.13. Also refer to the MCZ Assessment (Document Ref: 6.4.5.3)
January 2017 Scoping Opinion	The Southern North Sea candidate Special Area of Conservation (SNS cSAC) should be specifically addressed as part of the ES and cross referred to in considering potential risks to EPS and any need for EPS licences for example, for harbour porpoises and grey seal.	Impacts on marine mammals (including harbour porpoise and the SNS cSAC have been assessed in sections 8.10 - 8.13 and in Volume 2, Chapter 7: Marine Mammals (Document Ref: 6.2.7).
January 2017 Scoping Opinion	Seal haul-out sites will be given further particular consideration in light of the landfall locations. There is also a known presence of harbour seals at a haul-out point on the River Stour Estuary and Goodwin sands.	Impacts on marine mammals (including seal haul-out locations) have been assessed in sections 8.10 - 8.13 and in Volume 2, Chapter 7: Marine Mammals (Document Ref: 6.2.7).
January 2017 Scoping Opinion	EIA and HRA should also include reference to Special Protection Areas (SPAs) that may be affected directly and indirectly in terms of cumulative or in-combination effects.	Cumulative impacts on ornithological receptors and SPA are assessed in section 8.13.
January 2017 Scoping Opinion	NE advise that the Offshore Designated Sites assessment should include SPAs that will be affected in combination and not just those directly impacted.	Cumulative impacts on Offshore Designated Sites has been assessed in section 8.13.

Date and consultation phase/ type	Consultation and key issues raised	Section where provision addressed
January 2017 Scoping Opinion	NE advise that the following designated site should be included in the assessment: Thanet Coast and Sandwich Bay SPA and Ramsar, Thanet Coast Site of Special Scientific Interest (SSSI), Thanet Coast MCZ and Goodwin Sands rMCZ.	The existing environment section describes the sites that have been included within the assessment (section 8.7). This includes those listed in the scoping opinion. Consideration has been made with regards to the habitats and features inside the proposed boundary of the Goodwin Sands rMCZ in the benthic ecology chapter (Volume 2, Chapter 5 (Document Ref: 6.2.5)). Following the responses to the S42 consultation, Goodwin Sands rMCZ has been included within this chapter in section 8.7.
January 2018 S42 Consultation Natural England	It should be noted that the Outer Thames Estuary Extension pSPA has now been designated and should be treated as one whole site with the relevant new features.	Details of Outer Thames Estuary SPA have been updated to include new features gained by its extension (Paragraph 8.7.13 and Table 8.5). It has been treated as one whole site.
January 2018 S42 Consultation Natural England	The Outer Thames Estuary Extension pSPA has now been fully designated.	Details of Outer Thames Estuary SPA have been updated to include new features gained by its full designation (Paragraph 8.7.13 and Table 8.5).
January 2018 S42 Consultation Natural England	Cofferdam: Further information needs to be provided on the expected size and specification and the installation method of a cofferdam, particularly as it will be occurring within the saltmarsh habitat.	Information and impact of the cofferdam has been added in section 8.10.  More detail is provided in the ES, Volume 2, Chapter 1: Project Description (Offshore) (Document Ref: 6.2.1), Volume 2, Chapter 5: Benthic Subtidal and Intertidal Ecology (Document Ref: 6.2.5) and Volume 3, Chapter 1: Project Description (Onshore) (Document Ref: 6.3.1).

Date and consultation phase/ type	Consultation and key issues raised	Section where provision addressed
January 2018 S42 Consultation Natural England	Further information on the potential use of a cofferdam needs to be provided as soon as possible. This should include the size and specification and any installation methods that may be used. The installation may be quite damaging in itself, regardless of it protecting the leaking of leachate into the environment. Overall, the proposed landfall locations at Pegwell Bay sited throughout the PEIR seem to display many uncertainties and are damaging in several instances. As a result, NE repeat that we are particularly concerned with these landfall options and the potential damage they might cause.	More detail has been provided in the ES, Volume 2, Chapter 1: Project Description (Offshore) (Document Ref: 6.2.1) and Volume 3, Chapter 1: Project Description (Onshore) (Document Ref: 6.3.1) which note the overall reduction in landfall size, and the extent of the proposed cofferdam works.  Assessment of the Impacts on the saltmarsh within the Sandwich Bay to Hacklinge Marshes have been added to section 8.10 and 8.11.  A saltmarsh mitigation and reinstatement plan will be submitted with the ES (Document Ref: 8.13).  Consideration of the potential effects on the designated features is presented in Sections 8.10.24 and 8.11.17 within this chapter and in Volume 2, Chapter 5: Benthic Subtidal and Intertidal Ecology (Document Ref: 6.2.5).
January 2018 S42 Consultation Natural England	Saltmarsh is a notified feature of Sandwich Bay and Hacklinge Marshes SSSI and the permanent loss of habitat would be considered an operation likely to damage the special interest of the site. As a result, consent from Natural England would be required to carry out any operations within this area. Therefore, we encourage further consultation with ourselves to mitigate and compensate any potential significant impacts or losses, respectively.	Assessment of the impacts on the saltmarsh within the Sandwich Bay to Hacklinge Marshes SSSI is presented in section 8.10 and 8.11.  A saltmarsh mitigation and reinstatement plan will be submitted with the ES (Document Ref: 8.13).



Date and consultation phase/ type	Consultation and key issues raised	Section where provision addressed
January 2018 S42 Consultation Natural England	The saltmarsh is considered an important supporting habitat for the Thanet Coast and Sandwich Bay SPA species. As a result, the large amounts of disturbance and proposed permanent loss of saltmarsh within the bay is of concern, particularly on the effects of SPA birds.	Assessment of the Impacts on the saltmarsh within the Sandwich Bay to Hacklinge Marshes SSSI is presented in section 8.10 and 8.11.  The Report to Inform Appropriate Assessment (Document Ref: 5.2) has considered the potential effects on the SPA species, in the context of the proposed seasonal restriction on works within the intertidal area. Section 11.2 presents a summary of these findings in the context of the EIA.  A saltmarsh mitigation and reinstatement plan will be submitted with the ES (Document Ref: 8.13).
January 2018 S42 Consultation Natural England	Pre-construction surveys should extend further than those listed under Annex 1 of the Habitats Directive and should include a review of habitats listed on Section 41 of the NERC Act which may be potentially affected by the project as well.	This chapter specifically assesses potential effects on designated sites, clearly stating the reason for designation. NERC Section 41 habitats and species are assessed, when present, in specific chapters of the ES. E.g. Volume 2, Chapter 5: Benthic Subtidal and Intertidal Ecology (Document Ref: 6.2.5); Chapter 4: Offshore Ornithology (Document Ref: 6.2.4); and Volume 3, Chapter 5: Onshore Biodiversity (Document Ref: 6.3.5).
January 2018 S42 Consultation Natural England	"Goodwin Sands rMCZ - Given that Defra are now in the process of considering a third tranche of MCZs we would like to see further consideration of this site, as recent applications by other developers have done.	Consideration of Goodwin Sands rMCZ has been addressed in paragraph 8.7.18 and the MCZ Assessment (Document Ref: 6.4.5.3).

Date and consultation phase/ type	Consultation and key issues raised	Section where provision addressed
January 2018 S42 Consultation MMO	The MMO notes that The Goodwin Sands recommended marine conservation zone (rMCZ) has been scoped out of the PEIR (Volume 2 Chapter 8 - Designated sites, Table 8.4) as it has not been taken forward for consultation, and that consideration has been made with regards to the habitats and features inside the proposed boundary of the Goodwin Sands rMCZ in the benthic ecology chapter (Volume 2, Chapter 5). The MMO recommends that an assessment of the rMCZ is undertaken in order to future proof the project as the status may change if it is put forward prior to the proposed Project construction. The MMO reiterates that it is at the applicant's risk to not include an assessment of the rMCZ.	Consideration of Goodwin Sands rMCZ has been addressed in paragraph 8.7.18 in the context of the habitats present. In the absence of conservation objectives for the site it is not possible to undertake a detailed MCZ assessment.
January 2018 S42 Consultation MMO	The MMO defers to Natural England on the suitability of the assessment of the Thanet Coast MCZ.	Noted
January 2018 S42 Consultation Natural England	Goodwin Sands rMCZ: As previously stated, NE advise that Vattenfall should assess impacts to the site in order to future proof their project/application and should follow the route taken by other developers recently, who have fully considered the site.	Consideration of Goodwin Sands rMCZ has been addressed in paragraph 8.7.18.

Date and consultation phase/ type	Consultation and key issues raised	Section where provision addressed
January 2018 S42 Consultation Kent Wildlife Trust	There appears to be some uncertainties regarding the presence of <i>Sabellaria spinulosa</i> reef in the Thanet Extension area. In Chapter 8 it is stated that, “no <i>S. spinulosa</i> reef was identified within the proposed development area for the Thanet Extension in the baseline surveys”, yet in Chapter 6, it is stated that “There was evidence of <i>S. spinulosa</i> reef recorded at three of the 16 tow locations sampled” in the Thanet Extension area. It will be essential to undertake thorough pre-construction surveys, as proposed, to determine the distribution of reefs in order to avoid damage.	On further investigation one site was classified as low potential <i>S. spinulosa</i> reef with another site identified as not reef (Volume 2, Chapter 5: Benthic Subtidal and Intertidal Ecology (Document Ref: 6.2.5)). Clarification on the survey results for <i>S. spinulosa</i> have been addressed in paragraph 8.10.7.  Pre-construction surveys will be conducted and a Biogenic Reef Mitigation Plan (Document Ref: 8.15) outlining the core reef approach has been submitted with the application.
January 2018 S42 Consultation Kent Wildlife Trust	We suggest that the South Marine Plan (due for publication imminently) should be considered in Table 8.3 in addition to the East Marine Plan, since both lie adjacent to the Plan area covering the proposed development.	The publication date for the South Marine Plan is Summer 2020. Therefore, this cannot be included within the ES before submission. Further details on the timeline for publication can be found at: <a href="http://mis.marinemangement.org.uk/south-east">http://mis.marinemangement.org.uk/south-east</a>
January 2018 S42 Consultation Natural England	Further comments on the SSSI are provided in the summary of comments for the introductory site selection chapter. However, certain permissions from NE may be required under the wildlife and countryside act, particularly if such large levels of disturbance are proposed to be occurring.	Mitigation plans will be submitted for key habitat/ species within the scope of the development. These will be reviewed with the relevant statutory bodies to gain any licences or permissions required before construction.

Date and consultation phase/ type	Consultation and key issues raised	Section where provision addressed
January 2018 S42 Consultation Natural England	NE welcome and acknowledge that further pre-construction data will be collected to identify areas of habitats of conservation importance. The remit for these surveys should extend further than those listed under Annex 1 of the Habitats Directive and should include a review of habitats listed on Section 41 of the NERC Act which may be potentially affected by the project as well.	Noted
January 2018 S42 Consultation Natural England	NE welcome and acknowledge that the reef assemblages of <i>M. edulis</i> and <i>S. Spinulosa</i> will be identified and avoided during intertidal works.	Noted

### 8.4 Scope and methodology

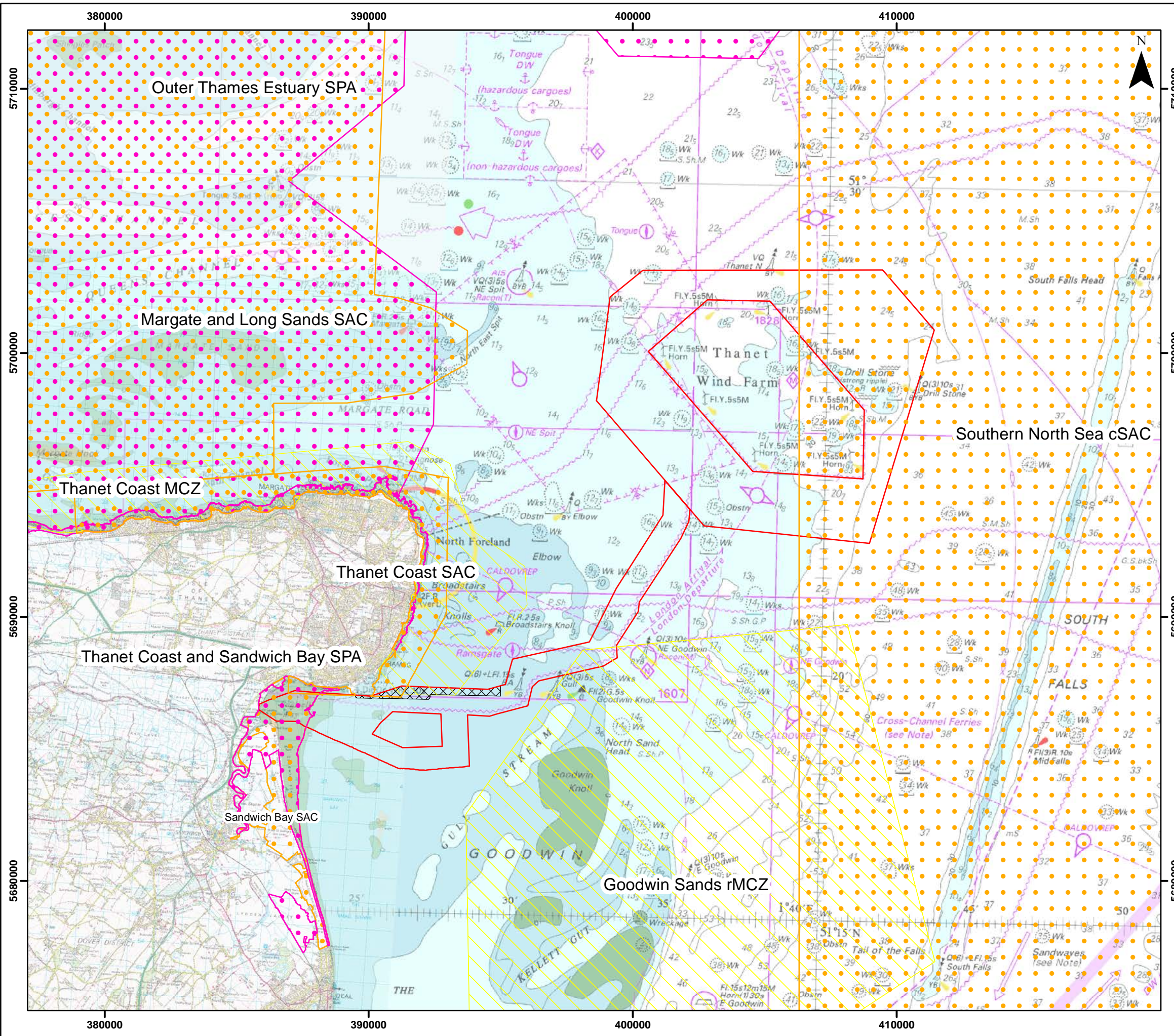
8.4.1 The study area for the purposes of the nature conservation assessment is considered to be closely linked to the relevant receptors and is strongly influenced by the study areas defined within the appropriate chapters. Volume 2, Chapters 2: Marine Geology, Oceanography and Physical Processes (Document Ref: 6.2.2), Volume 2, Chapter 4: Offshore Ornithology (Document Ref: 6.2.4), Volume 2, Chapter 5: Benthic Subtidal and Intertidal Ecology (Document Ref: 6.2.5) and Volume 2, Chapter 7: Marine Mammals (Document Ref: 6.2.7), describe the study areas relevant for nature conservation in detail, with further information provided within the associated Technical Annexes.

- 8.4.2 In summary, the study area for physical processes and benthic ecology is set at a local (~ 12 km from the proposed boundary) level up to Mean High Water Springs (MHWS), reflecting the potential zone of influence associated with the project and these receptors. As such, the primary study area extends north around the coast to the Isle of Sheppey and south towards Dover. The study areas associated with offshore ornithology and marine mammals consider a wider area in reflection of the wider ranging mobile nature of these receptor groups as noted in Volume 2, Chapter 4: Offshore Ornithology (Document Ref: 6.2.4) and Volume 2, Chapter 7: Marine Mammals (Document Ref: 6.2.7). In summary, the study area for marine mammals extends across the whole of the North Sea, while for offshore ornithology the immediate study area is limited to four kilometres around the development boundary, however consideration is also given to sites at a greater distance (up to 36 km distant) from the study area.
- 8.4.3 The baseline description of nature conservation interests is focused on those designated sites detailed in the Scoping Report (VWPL, 2016) and S42 consultation, with these shown in Figure 8.1 and Figure 8.2 and the features of interest outlined in Table 8.5.

# THANET EXTENSION OFFSHORE WIND FARM

**Figure 8.1**  
Relevant Offshore and Intertidal Designated Sites.

- Legend**
- Offshore Red Line Boundary
  - Special Protection Area
  - Special Area of Conservation
  - Marine Conservation Zone
  - Cable Exclusion Area



Datum: ETRS 1989  
Projection: UTM31N



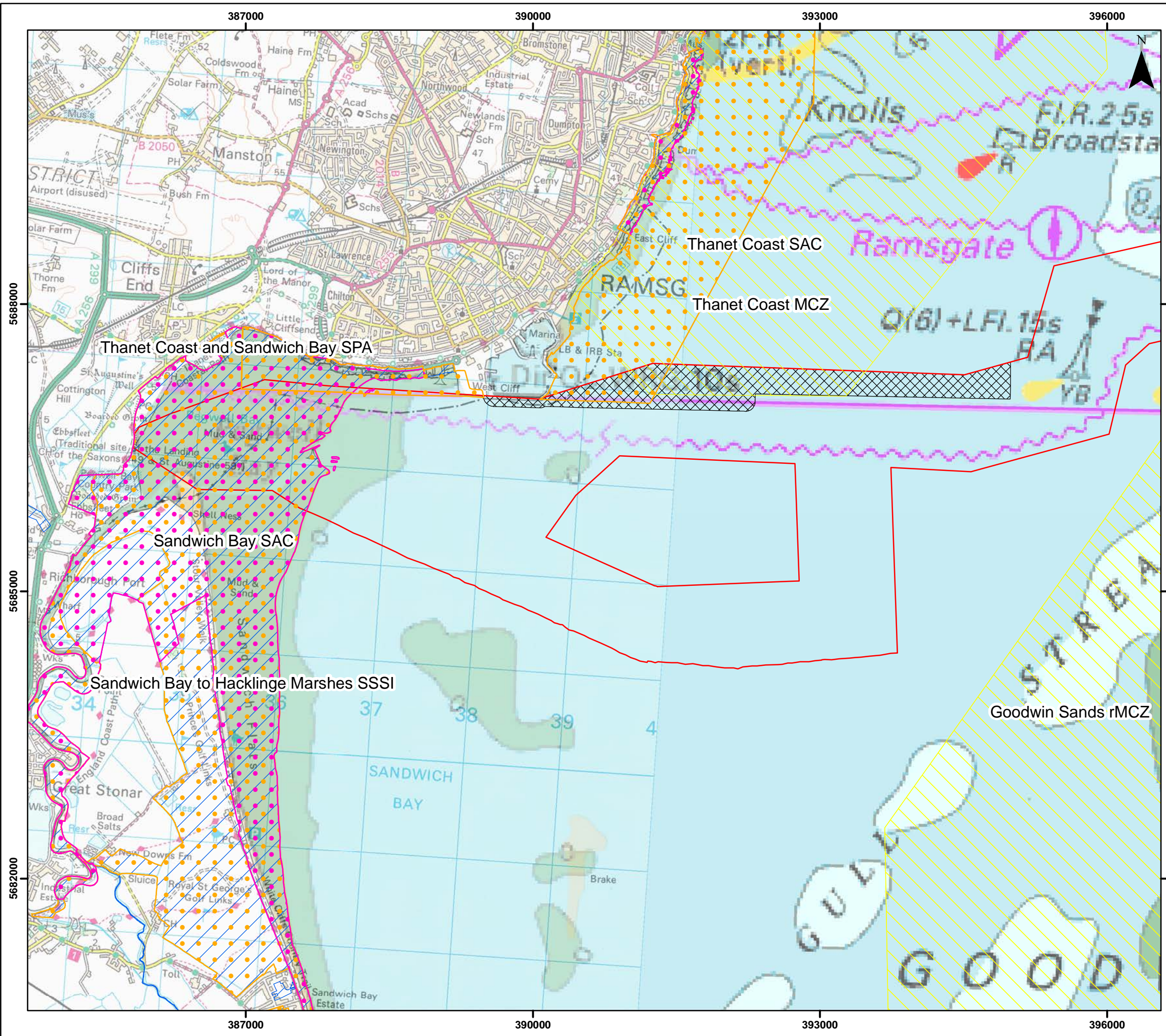
© Vattenfall Wind Power Ltd 2018. Contains JointNature Conservation, Committee data © copyright and database right 2018. Contains Natural England data © copyright and database right 2018. © Crown copyright and database rights 2017. Ordnance Survey 0100031673. © Crown Copyright, 2016. All rights reserved License No. EK001-412013. NOT TO BE USED FOR NAVIGATION

1:145,000 0 1.5 3 km 0 0.8 1.6 nm

Drg No	TEOW_ES_DSoff_Fig.8.1			<b>Figure 8.1</b>
Rev	0.1	Date	25/05/2018	
By	DP	Layout	N/A	

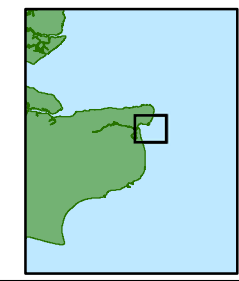
# THANET EXTENSION OFFSHORE WIND FARM

**Figure 8.2**  
Relevant Inshore Designated Sites.



- Legend**
- Offshore Red Line Boundary
  - Special Protection Area
  - Special Area of Conservation
  - Marine Conservation Zones
  - Sites of Special Scientific Interest
  - Cable Exclusion Area

Datum: ETRS 1989  
Projection: UTM31N



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Ordnance Survey 0100031673. © Crown Copyright, 2016. All rights reserved License No. EK001-412013.  
NOT TO BE USED FOR NAVIGATION

1:40,000

0 0.4 0.8 km 0 0.2 0.4 nm

Drg No	TEOW_ES_DSin_Fig 8.2			<b>Figure 8.2</b>
Rev	0.1	Date	25/05/2018	
By	DP	Layout	N/A	

**Table 8.5: Summary of the Designated Sites and Habitats and Species of Nature Conservation Interest**

Name and Designation	Relevant Feature(s)	Baseline Data
Thanet Coast SAC	Subtidal chalk reefs and submerged or partially submerged sea caves (both Annex I habitats that are primary reasons for selection of the site)	Volume 2, Chapter 5: Benthic Subtidal and Intertidal Ecology (Document Ref: 6.2.5). The citation is available at <a href="http://jncc.defra.gov.uk/protectedsites/acselection/sac.asp?EUCode=UK0013107">http://jncc.defra.gov.uk/protectedsites/acselection/sac.asp?EUCode=UK0013107</a> .
Sandwich Bay SAC	Embryonic shifting dunes, 'white dunes', 'grey dunes' and dunes with <i>Salix repens</i> ssp. <i>argentea</i> (all Annex I habitats that are primary reasons for selection of the site)	Volume 2, Chapter 5: Benthic Subtidal and Intertidal Ecology (Document Ref: 6.2.5). The citation is available at <a href="http://jncc.defra.gov.uk/protectedsites/acselection/sac.asp?EUCode=UK0013077">http://jncc.defra.gov.uk/protectedsites/acselection/sac.asp?EUCode=UK0013077</a> .
SNS cSAC	Harbour porpoise ( <i>Phocoena phocoena</i> )	Volume 2, Chapter 7: Marine Mammals (Document Ref: 6.2.7). The citation is available at <a href="http://jncc.defra.gov.uk/page-7243">http://jncc.defra.gov.uk/page-7243</a> .
Margate and Long Sands Site of Community Importance (SCI)	Sandbanks which are covered by seawater all the time (Annex I habitat which is the primary reason for selection of the site)	Volume 2, Chapter 2: Marine Geology, Oceanography and Physical Processes (Document Ref: 6.2.2) and Volume 2, Chapter 5: Benthic Subtidal and Intertidal Ecology (Document Ref: 6.2.5). The citation is available at <a href="http://jncc.defra.gov.uk/protectedsites/acselection/sac.asp?EUCode=UK0030371">http://jncc.defra.gov.uk/protectedsites/acselection/sac.asp?EUCode=UK0030371</a> and Regulation 35 advice published by NE (2012).
Thanet Coast and Sandwich Bay SPA	European golden plover ( <i>Pluvialis apricaria</i> ), ruddy turnstone ( <i>Arenaria interpres</i> ) and little tern ( <i>Sternula albifrons</i> )	Volume 2, Chapter 4: Offshore Ornithology (Document Ref: 6.2.4). The citation is available at <a href="http://publications.naturalengland.org.uk/publication/6009926887407616">http://publications.naturalengland.org.uk/publication/6009926887407616</a> .

Name and Designation	Relevant Feature(s)	Baseline Data
Outer Thames Estuary SPA	Red-throated diver ( <i>Gavia stellata</i> )  Common tern ( <i>Sterna hirundo</i> ) and little tern ( <i>Sternula albifrons</i> )	Volume 2, Chapter 4: Offshore Ornithology (Document Ref: 6.2.4). The citation is available at <a href="http://publications.naturalengland.org.uk/publication/3233957?category=3212324">http://publications.naturalengland.org.uk/publication/3233957?category=3212324</a>  Further information is available at <a href="http://jncc.defra.gov.uk/page-7249">http://jncc.defra.gov.uk/page-7249</a> .
Thanet Coast MCZ	Blue mussel and ross worm reefs, stalked jellyfish ( <i>Haliclystus auricular</i> and <i>Lucernariopsis cruxmelitensis</i> ), peat and clay exposures, subtidal chalk, moderate energy infra- and circalittoral rock, subtidal sands, mixed sediments and coarse sediments	Volume 2, Chapter 2: Marine Geology, Oceanography and Physical Processes (Document Ref: 6.2.2) and Volume 2, Chapter 5: Benthic Subtidal and Intertidal Ecology (Document Ref: 6.2.5). The citation is available at <a href="http://publications.naturalengland.org.uk/publication/5573527184867328">http://publications.naturalengland.org.uk/publication/5573527184867328</a> .
Goodwin Sands rMCZ	At the time of publishing Goodwin Sands rMCZ is currently under review in the third tranche of recommended MCZs. A decision is due in summer 2018 and conservation objectives are currently not confirmed.	Volume 2, Chapter 2: Marine Geology, Oceanography and Physical Processes (Document Ref: 6.2.2) and Volume 2, Chapter 5: Benthic Subtidal and Intertidal Ecology (Document Ref: 6.2.5).  Details of the proposed site can be found in Defra (2015 & 2018).
Sandwich Bay to Hacklinge Marshes SSSI	Sand dunes, sandy coastal grassland, mudflats, saltmarsh, chalk cliffs, winter assemblages of wading birds, Pegwell Bay cliffs are of geological interest	Volume 2, Chapter 2: Marine Geology, Oceanography and Physical Processes (Document Ref: 6.2.2) and Chapter 5: Benthic Subtidal and Intertidal Ecology (Document Ref: 6.2.5). The citation is available at <a href="https://necmsi.esdm.co.uk/PDFsForWeb/Citation/1001128.pdf">https://necmsi.esdm.co.uk/PDFsForWeb/Citation/1001128.pdf</a> .

Name and Designation	Relevant Feature(s)	Baseline Data
Thanet Coast SSSI	Internationally and nationally important assemblages of wading birds, marine algae communities	Volume 2, Chapter 2: Marine Geology, Oceanography and Physical Processes (Document Ref: 6.2.2) and Volume 2, Chapter 5: Benthic Subtidal and Intertidal Ecology (Document Ref: 6.2.5). The citation is available at <a href="https://necmsi.esdm.co.uk/PDFsForWeb/Citation/1003560.pdf">https://necmsi.esdm.co.uk/PDFsForWeb/Citation/1003560.pdf</a> .
Habitats of nature conservation importance	Potential presence of habitats of nature conservation importance (e.g. <i>Sabellaria spinulosa</i> reef)	The Thanet Offshore Wind Farm (TOWF) ES identified the presence of <i>S. spinulosa</i> reef in the surrounding area. The baseline surveys described in Volume 2, Chapter 5: Benthic Subtidal and Intertidal Ecology of this ES (Document Ref: 6.2.5) identified two areas of potential reef in the array area, with one assessed as not reef and the other a low potential for reef. The baseline surveys also identified an area of potential chalk reef that was assessed as not reef along the Offshore Export Cable Corridor (OECC).

### 8.5 Assessment criteria and assignment of significance

8.5.1 The methodology for assessing the potential significance of effect (including definitions of sensitivity and magnitude) is defined within each relevant chapter in Volume 2, as follows:

- Chapter 2: Marine Geology, Oceanography and Physical Processes (Section 2.5) (Document Ref: 6.2.2);
- Chapter 4: Offshore Ornithology (Section 4.5) Document Ref: 6.2.4);
- Chapter 5: Benthic Subtidal and Intertidal Ecology (Section 5.5) (Document Ref: 6.2.5); and
- Chapter 7: Marine Mammals (Section 7.5) (Document Ref: 6.2.7).

8.5.2 The impact assessment presented in this chapter has been prepared based on the embedded mitigation identified within each of the above chapters being implemented, where relevant. Significance has been defined based on the matrix outlines in Table 8.6.

Table 8.6: Significance of potential effects

		Sensitivity			
		High	Medium	Low	Negligible
Negative Magnitude	High	Major	Major	Moderate	Minor
	Medium	Major	Moderate	Minor	Negligible
	Low	Moderate	Minor	Minor	Negligible
	Negligible	Minor	Minor	Negligible	Negligible
Beneficial Magnitude	Negligible	Minor	Minor	Negligible	Negligible
	Low	Moderate	Minor	Minor	Negligible
	Medium	Major	Moderate	Minor	Negligible
	High	Major	Major	Moderate	Minor

Note: shaded cells are defined as significant effects in respect of the EIA.

### 8.6 Uncertainty and technical difficulties encountered

8.6.1 The consideration of nature conservation draws on the information presented within the Volume 2 chapters for Marine Geology, Oceanography and Physical Processes (Document Ref: 6.2.2), Benthic Subtidal and Intertidal Ecology (Document Ref: 6.2.5), Marine Mammals (Document Ref: 6.2.7) and Offshore Ornithology (Document Ref: 6.2.4) and is therefore subject to the uncertainties and technical difficulties described therein. Some notable potential uncertainties identified within the relevant chapters include:

- The use of the Band (2012) Collision Risk Model at ES stage for offshore ornithology as this model, while agreed as the most appropriate with NE, is currently under review by NE and Marine Scotland and new guidance is due to be published with regards to this model; and
- The ability to predict the response of marine mammals to underwater noise and the associated impacts is restricted to the limited available empirical data, with particular data gaps including how observed effects on marine mammals are manifested in terms of effects on individual fitness; and
- The designation features used to assess the Goodwin Sands rMCZ are the features put forward for its designation. These are not necessarily the features Goodwin Sands rMCZ will be designated for if it is taken forward and designated.

## 8.7 Existing environment

8.7.1 The description of the existing baseline summarised here is limited to the sites and features identified in Table 8.5, with the data sources used highlighted.

### Thanet Coast SAC

8.7.2 The Thanet Coast SAC<sup>2</sup> is situated to the north of the OECC and the northerly OECC section leading to the landfall partially overlaps with the SAC, although this overlap encompasses the cable exclusion area. Therefore, no infrastructure will be installed, however, anchoring of vessels may take place (Figure 8.2). The SAC has been designated for:

- Annex I habitats that are the primary reason for selection of the site:
  - Reefs; and
  - Submerged or partially submerged sea caves.

8.7.3 The Thanet Coast is the longest continuous stretch of coastal chalk in the UK and the reefs and sea caves supporting some rare algal species, including some that were first described from Thanet and have never been recorded elsewhere. Additionally, the chalk outcroppings provide hard substrates which are an unusual feature in this region. As noted within the physical processes and benthic ecology chapters (Document Ref: 6.2.2 and 6.2.5 respectively), none of these habitats were identified in the site-specific surveys undertaken.

### Sandwich Bay SAC

8.7.4 The Sandwich Bay SAC<sup>3</sup> is located at the landfall location of the OECC as shown in Figure 8.2. The Sandwich Bay SAC is designated for the following features:

- Annex I habitats that are a primary reason for selection of the site:
  - Embryonic shifting dunes;
  - “Shifting dunes along the seashore with *Ammophila arenaria* (‘white dunes’)”;
  - “Fixed coastal dunes with herbaceous vegetation (‘grey dunes’)”; and
  - Dunes with *Salix repens* ssp. *argentea* (*Salicion arenariae*).

- Annex I habitats present as a qualifying feature, but not a primary reason for selection of the site:

- Humid dune slacks.

8.7.5 The Annex I sand dune features are present to the south of the Stour Estuary (from the mouth of the Stour south to Deal) to the south of the OECC, with saltmarsh, while not a qualifying feature of the SAC, being present to the north of the Stour, within the SAC boundary.

### Southern North Sea cSAC

8.7.6 The SNS cSAC<sup>4</sup> partially overlaps with the boundary of the array area, with the eastern section of the array area being within the cSAC. A cSAC is a site that has been proposed to the European Commission (EC) as a SAC, but has not yet been adopted, however, it is provided with the same protections as a full SAC. The SNS cSAC has been designated for the following features:

- Annex II species that are a primary reason for selection of this site:
  - Harbour porpoise (*Phocoena phocoena*).

8.7.7 This site is unusual in that it has been identified that the dependence of the species (harbour porpoise) on different areas of the site varies throughout the year, with the southern section (which overlaps with Thanet Extension) being considered of greater importance during winter (i.e. October to March), while the northern section is considered to be of greater importance during the summer. This is reflected in the management advice, which identifies that impacts on the cSAC from human activity (i.e. piling) need only be considered during the relevant season for that section of the cSAC (JNCC, 2016).

### Margate and Long Sands SCI

8.7.8 The Margate and Long Sands SCI<sup>5</sup> is situated 5.1 km to the west of the Thanet Extension array area at its nearest point and is shown in Figure 8.1 and the site does not overlap with the OECC. An SCI is a site that has been adopted by the EC but has not yet been formally designated by the relevant national government, it is afforded the same level of protection as a fully designated SAC. The site is designated for:

<sup>2</sup> <http://jncc.defra.gov.uk/protectedsites/sacselection/sac.asp?EUCode=UK0013107>

<sup>3</sup> <http://jncc.defra.gov.uk/protectedsites/sacselection/sac.asp?EUCode=UK0013077>

<sup>4</sup> <http://jncc.defra.gov.uk/page-7243>

<sup>5</sup> <http://jncc.defra.gov.uk/protectedsites/sacselection/sac.asp?EUCode=UK0030371>



- Annex I habitats that are a primary reason for the selection of the site:
  - Sand banks that are slightly covered by sea water at all times.

8.7.9 The diversity of the sand banks within the SCI varies, the tops are predominantly of lower diversity, with the fringes and troughs having a greater diversity (NE, 2017). Additionally, *S. spinulosa* is known to be present within the SCI, however, it has not been recorded as forming reefs, rather it is thought to form crusts, which then support a high diversity of attached epifauna.

#### Thanet Coast and Sandwich Bay SPA

8.7.10 The Thanet Coast and Sandwich Bay SPA<sup>6</sup> overlaps with the landfall location of the OECC (Figure 8.1 and Figure 8.2). The qualifying features of the SPA are:

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

8.7.11 The SPA was designated to protect over 1% of the British population of little tern, 1% of the overwintering British population of golden plover and 3% of the British wintering population of turnstone. The site also hosts nationally important wintering assemblages of ringed plover, grey plover, sanderling and Lapland bunting. The SPA citation also identifies the supporting habitats for the bird species, including the mudflats and saltmarsh within Pegwell Bay.

8.7.12 It is noted within the HRA Screening Report (Document Ref: 5.2.1) that the population of little tern within the SPA has declined and that little tern have not been recorded breeding within the site for a number of years.

#### Outer Thames Estuary SPA

8.7.13 The Outer Thames Estuary SPA<sup>7</sup> is positioned 6.2 km to the west of the Thanet Extension array area at its closest point (Figure 8.1). It was extended in November 2017 towards the north-east. This section is situated 53 km from the closest point of the array. The SPA has been designated for:

- Red-throated diver (*Gavia stellata*);

- Little tern (*S. albifrons*) (foraging areas); and
- Common tern (*Sterna hirundo*) (foraging areas).

8.7.14 The SPA has been set up to protect the foraging areas of the red-throated diver, little tern and common tern. This area represents 38% of the UK wintering population of red-throated diver and 19.64% and 2.66% of the population of little tern and common tern during the breeding season respectively.

#### Thanet Coast MCZ

8.7.15 The Thanet Coast MCZ<sup>8</sup> partially overlaps with the proposed OECC, although this area will not have any infrastructure located within, as shown in Figure 8.2. The MCZ partially overlaps with the Thanet Coast SAC and is designed to protect additional features to those designated as part of the SAC. Amongst other features, the MCZ has been designated to protect an area of subtidal chalk that extends seaward from the SAC. The full list of features protected by the MCZ are:

- Subtidal coarse sediment;
- Subtidal mixed sediments;
- Subtidal sand;
- Moderate energy infralittoral rock;
- Moderate energy circalittoral rock;
- Blue mussel (*M. edulis*) beds;
- Peat and clay exposures;
- Ross worm (*S. spinulosa*) reefs;
- Subtidal chalk;
- Stalked jellyfish (*Haliclystus auricula*); and
- Stalked jellyfish (*Lucernariopsis cruxmelitensis*).

<sup>6</sup> <http://jncc.defra.gov.uk/page-2045-theme=default>

<sup>7</sup> <http://publications.naturalengland.org.uk/publication/3233957>

<sup>8</sup> <http://publications.naturalengland.org.uk/publication/5573527184867328>

- 8.7.16 The MCZ contains the best examples of a variety of features found within the south-east region, including part of the longest continuous stretch of coastal chalk in the UK, including reefs, cliffs and coves, and it is also the only designated MCZ to protect the stalked jellyfish *L. cruxmelitensis*. Additionally, the MCZ includes an unusual composition of *M. edulis* bed and *S. spinulosa* reefs that have formed a complex intertidal biogenic reef.
- 8.7.17 The physical processes and benthic ecology chapters (Document Ref: 6.2.2 and 6.2.5 respectively) and offshore surveys reported therein did not identify any chalk reefs within the proposed OECC. The MCZ assessment (Report to Inform Appropriate Assessment (Document Ref: 6.4.5.3)) provides full detail of the features and any potential impacts on the features of the MCZ.

#### Goodwin Sands rMCZ

- 8.7.18 Goodwin Sands was considered in the first round of recommended MCZs as part of the network of Marine Protected Areas (MPAs) in UK waters under the Balanced Seas initiative in 2011 (Balanced Seas RSG, 2011). It was not selected in the first and second tranche of MCZs, however, it is being proposed for the third tranche and therefore could come into effect before/ during the construction of Thanet Extension.
- 8.7.19 Goodwin Sands rMCZ is located approximately 5 km east offshore from the Kent coast Figure 8.1. If implemented the north western tip of Goodwin Sands rMCZ would overlap with the OECC. If designated Goodwin sands would protect the following features (Defra, 2018):
- Moderate energy circalittoral rock;
  - Subtidal coarse sediment;
  - Subtidal sand;
  - Blue mussel beds;
  - Ross worm (*Sabellaria spinulosa*) reefs; and
  - English Channel outburst flood features.
- 8.7.20 The locations of the broadscale habitats can be seen in Defra (2015) and show that the areas of rock and subtidal coarse sediment are located to the south and east of the rMCZ proposed area. The section which overlaps with the OECC is mostly composed of subtidal sand and subtidal mixed sediments. These broadscale habitats are wide spread both within the rMCZ and the surrounding area. This can be seen in ES, Volume 2, Chapter 5: Benthic Subtidal and Intertidal Ecology Figure 5.2 (Document Ref: 6.2.5).
- 8.7.21 The Defra (2015) surveys could not confidently identify blue mussel beds and ross worm reefs across the whole site. The areas that could be identified were located at least 2.5 km to the east and further to the south of the overlap with the OECC. These surveys also recorded no species FOCI for the rMCZ.
- 8.7.22 No Annex I habitats were identified within the OECC during the baseline surveys and embedded mitigation methods for construction activities will avoid any direct impact on these habitats (ES, Volume 2, Chapter 5: Benthic Subtidal and Intertidal Ecology Table 5.11 (Document Ref: 6.2.5)).
- 8.7.23 The physical processes and benthic ecology chapters (Document Ref: 6.2.2 and 6.2.5 respectively), offshore surveys reported therein, and the MCZ assessment (Report to Inform Appropriate Assessment (Document Ref: 6.4.5.3)) provide more detail of the features and any potential impacts on the features of the Goodwin Sands rMCZ.

### Sandwich Bay to Hacklinge Marshes SSSI

8.7.24 The Sandwich Bay to Hacklinge Marshes SSSI<sup>9</sup> overlaps with the proposed landfall location and also partially overlaps with the Thanet Coast and Sandwich Bay SPA and the Sandwich Bay SAC as shown in Figure 8.2. Many of the features protected under the SSSI are incorporated within the SPA and SAC, although the SSSI does protect additional habitats and species (particularly of note is the intertidal mudflats and the saltmarsh) and the boundary of the SSSI extends outside of the SPA and SAC, protecting a wider area. The reasons for notification are as follows:

- Sand dunes;
- Sandy coastal grassland;
- Mudflats;
- Saltmarsh;
- Chalk cliffs;
- Freshwater grazing marsh;
- Scrub; and
- Woodland.

8.7.25 There are a wide variety of species associated with these habitats that are identified within the citation, including bird species not included within the SPA designation such as dunlin (*Calidris alpina*) and nationally important numbers of grey plover (*Pluvialis squatarola*), sanderling (*Calidris alba*) and ringed plover (*Charadrius hiaticula*).

8.7.26 The site also incorporates areas of geological interest, including fossil beds which show a diversity not found elsewhere in Western Europe and containing many as yet undescribed species. Pegwell Bay is also of interest for the overlying sediments on the chalk, which represents one of the most important areas in the UK for loess (a type of aeolian sediment formed by the accumulation of wind-blown dust) studies.

### Thanet Coast SSSI

8.7.27 The Thanet Coast SSSI<sup>10</sup> is situated 1.3 km to the north of the proposed OECC at its closest point and 7.9 km to the west of the proposed array area and is shown in Figure 8.2. The SSSI partially overlaps with the Sandwich Bay and Thanet Coast SPA and the Thanet Coast SAC and MCZ. Consequently, many of the features of the SSSI are further protected within these other designations. The reasons for notification are as follows:

- Unstable cliff and foreshore (including shingle, sand and mudflats);
- Saltmarsh;
- Coastal lagoons;
- Coastal gill woodland; and
- Cliff-top grassland.

8.7.28 The SSSI is particularly noted for its bird populations, most of which are protected under the SPA.

### Habitats of Nature Conservation Importance

#### *The array*

8.7.29 During the benthic surveys of the array and OECC, two locations within the array area were identified as potentially representing *S. spinulosa* reef and consequently were assessed for being biogenic reef as per the Gubbay (2007) guidelines. One station was assessed as being low potential for being *S. spinulosa* reef, while the second station was identified as not reef.

8.7.30 However, *S. spinulosa* reef has been identified previously in the area around Thanet Extension, including within the TOWF array area. A full pre-construction survey to identify any *S. spinulosa* reef will be carried out prior to construction and will underpin an Annex I Mitigation Plan.

<sup>9</sup>

<https://designatedsites.naturalengland.org.uk/SiteDetail.aspx?SiteCode=S1001128&SiteName=HacklingeMarshes&countyCode=&responsiblePerson=>

<sup>10</sup> <https://designatedsites.naturalengland.org.uk/SiteDetail.aspx?SiteCode=s1003560>

*The OECC*

- 8.7.31 One station along the OECC was assessed for potential geogenic reef, however, this site was identified to not be reef and was composed of exposed flat chalk outcrops, overlain by sand.
- 8.7.32 Pegwell Bay is known to support an unusual reef assemblage of *M. edulis* and *S. spinulosa*. The locations of this reef assemblage will be identified and avoided during the intertidal works.

**8.8 Key parameters for assessment**

- 8.8.1 The Thanet Extension application is for the construction, O&M and decommissioning of an Offshore Wind Farm (OWF) with a capacity of up to 340 megawatts (MW), comprising of up to 34 Wind Turbine Generators (WTGs), with capacities ranging from 8 - 12 MW, up to one OSS and one Met mast as described in Volume 2, Chapter 1: Project Description (Offshore) (Document Ref: 6.2.1). Subject to final design it is possible that an alternative, larger capacity, WTG (i.e. >12 MW) type may be selected. In this scenario, the overall project capacity will remain at 340 MW and the physical parameters such as maximum blade tip height, rotor diameter, and height of nacelle will remain within the maximum envelope described in this chapter and subsequent technical assessment chapters. The maximum adverse scenarios assessed during construction, O&M and decommissioning for the relevant receptors are described within the chapters relevant to offshore designated sites, namely: Volume 2, Chapter 2: Marine Geology, Oceanography and Physical Processes (Document Ref: 6.2.2), Volume 2, Chapter 4: Offshore Ornithology (Document Ref: 6.2.4), Volume 2, Chapter 5: Benthic Subtidal and Intertidal Ecology (Documents Ref: 6.2.4) and Volume 2, Chapter 7: Marine Mammals (Document Ref: 6.2.7). This Offshore Designated Sites Chapter has taken the findings from the individual chapters and summarised the potential impacts in order to assess the significance of any effects arising on the qualifying features and integrity of the sites and on any other habitats or species of conservation interest.
- 8.9.3 Table 8.7. These measures are considered standard industry practice for this type of development. Mitigation measures that would apply to any Offshore Designated Sites issues associated with the development specifically are described separately in section 8.15.

- 8.8.2 A summary of the Rochdale design envelope has not been included in this chapter, as the 'worst-case' may vary between chapters and will be specific to the receptor being assessed. Details of the design scenarios on which the individual chapter assessments have been based are as described in the relevant chapters. These scenarios have been selected from the details provided within project description (Volume 2, Chapter 1: Project Description (Offshore) (Document Ref: 6.2.1)) as representing the 'worst-case' scenario. Any other scenario detailed within the project Design Envelope (e.g. different foundation type, turbine layout or cable installation method) is expected to result in effects no greater than those assessed here, should they be taken forward in the final design scheme.

**8.9 Embedded mitigation**

- 8.9.1 Mitigation measures of relevance to this chapter are drawn from the relevant other chapters in this ES. The subsequent assessment of potential impacts is based on the mitigation being incorporated into the project design, generally termed 'embedded mitigation'.
- 8.9.2 Mitigation measures that were identified and adopted into the project design through the evolution of the project design (embedded) and that are relevant to the Offshore Designated Sites are listed in

**Table 8.7: Embedded mitigation relating to Offshore Designated Sites**

Parameter	Mitigation measures embedded into the project design
General	
Project design	Careful positioning of all infrastructure where possible to minimise designated sites features.
Site selection	The pre-scoping site boundary was reduced in size in order that the 4 km buffer around it did not extend into the Outer Thames Estuary SPA.
Construction	
Impacts on benthic habitats of conservation interest	Seasonal restrictions on construction in the intertidal zone will be implemented between October and March to prevent impacts on overwintering birds.
	A Biogenic Reef Mitigation Plan (Document Ref: 8.15) will be developed and agreed with the relevant stakeholders prior to construction which will include consideration of <i>s. spinulosa</i> .
	A Saltmarsh Mitigation and Reinstatement Plan (Document Ref: 8.13) will be developed and agreed with the relevant stakeholders prior to construction.
Pile driving	A Marine Mammal Mitigation Protocol (draft provided as Document Ref: 8.11) will be developed and agreed with the relevant stakeholders prior to construction. This will outline the soft-start procedure, monitoring and any other agreed mitigation measures deemed necessary.
UXO	A Marine Mammal Mitigation Protocol (draft provided as Document Ref: 8.12) will be developed and agreed with the relevant stakeholders prior to construction. This will outline the procedure, monitoring and any other agreed mitigation measures deemed necessary.
O&M	
N/A	
Decommissioning	
N/A	

**8.10 Environmental assessment: construction phase**

8.10.1 The effects of the construction of Thanet Extension have been assessed on Offshore Designated Sites and are presented below.

**Temporary increases in suspended sediment concentrations**

8.10.2 The release of sediment during construction, from the installation of cables, drilling of foundations, etc., will result in a temporary increase in the suspended sediment concentrations (SSCs) in the water column, along with associated sediment deposition. The increase in SSC and sediment deposition will be temporary (only during construction), intermittent and localised. Volume 2, Chapter 2: Marine Geology, Oceanography and Physical Processes (Documents Ref: 6.2.2) identified that SSCs may reach thousands of mg/l during seabed preparation, however this will be only short-term during the settling stage of the plume. The passive stage of the plume may result in SSCs up to hundreds of mg/l for up to two hours, with the contribution of the works to SSCs reducing to less than 5mg/l within 24 hours, which is within natural variation. Cable installation works may result in SSCs of up to 10 mg/l above background levels up to 10 km from the cable route, however, this is within natural variation for the area. Sediment deposition may reach 0.05 m within approximately 560 m of the foundations during seabed preparation. Deposition arising from the cable installation may result in sediment deposition of up to 0.05 m within 150 m of the cable route.

8.10.3 The sites and habitats most sensitive to increased SSC and sediment deposition are:

- Sandwich Bay to Hacklinge Marshes SSSI; and
- Biogenic reefs, including *S. spinulosa* reefs.

8.10.4 The Sandwich Bay to Hacklinge Marshes SSSI, which is designated for mudflats amongst other features, is situated at the landfall location of the OECC and consequently will only be affected by the cable installation works. Close to the cable installation (within 150 m), the deposition is expected to be up to 0.05 m; however, this will be highly localised and will comprise of native sediments. The magnitude of impacts on the SSSI are therefore expected to be Low. As the deposited sediments will be predominantly the same as those present, the receptor sensitivity to such a change is considered to be Negligible and therefore the significance of effect on the SSSI will be **Negligible** adverse, which is not significant in EIA terms.

8.10.5 For the ecological interest features, including *S. spinulosa* reefs, Volume 2, Chapter 5: Benthic Subtidal and Intertidal Ecology (Documents Ref: 6.2.5) considers the potential impacts of an increase in SSC and sediment deposition of the habitats present in the area and found that the magnitude was Low. As described in detail in Volume 2, Chapter 5: Benthic Subtidal and Intertidal Ecology (Document Ref: 6.2.5), the maximum sensitivity of the habitats and species was identified as Low, leading to a significance of effect of **Minor** adverse, which is not significant in EIA terms.

#### Temporary habitat loss/ disturbance due to installation works (jack-up vessels operations, cable installation)

8.10.6 Construction activities will result in disturbance to the seabed and the temporary habitat loss in the direct footprint of the construction activities, including under the legs of the jack-up vessels, anchor footprints from installation vessels and the footprint of the cable installation. Of relevance to the Offshore Designated Sites chapter, this disturbance could result in impacts to *S. spinulosa* reefs.

8.10.7 During surveys two locations within the array area were highlighted as potentially representing *S. spinulosa* reef. On further investigation one site was classified as low potential *S. spinulosa* reef with another site identified as not reef (Volume 2, Chapter 5: Benthic Subtidal and Intertidal Ecology (Document Ref: 6.2.5)). Despite this, pre-construction surveys will be undertaken and the presence or absence of *S. spinulosa* reefs will be confirmed and any core reef will then be subject to the Biogenic Reef Mitigation Plan (Document Ref: 8.15). The mitigation plan will ensure that any impacts to core reef are avoided. Therefore, no direct impacts are expected to core *S. spinulosa* reef from the construction of Thanet Extension. The significance of effect is therefore assessed as **Negligible** adverse.

#### Disturbance to birds from construction activities

8.10.8 The construction phase will last for a maximum of 28 months. During this period, disturbance and displacement of birds within and around the site of the offshore and intertidal elements of Thanet Extension is possible through the presence of vessels and the installation of foundations, export cables and other infrastructure. The level of disturbance at each work location is dependent on the activities taking place and the susceptibility of different bird species varies greatly (Volume 2, Chapter 4: Offshore Ornithology (Document Ref: 6.2.4)). The Offshore Ornithology chapter identifies that only red-throated diver, razorbill and guillemot are screened in for sensitivity to disturbance from construction activities.

8.10.9 The only site containing one of the species identified as sensitive is the Outer Thames Estuary SPA.

8.10.10 Red-throated diver has been identified as a species that is particularly sensitive to disturbance, including vessel activity, and as such there is the potential for disturbance to non-breeding red-throated diver from the presence of vessels installing the offshore export cables. However, the cable laying vessels are frequently static for long periods of time, move only short distances as installation occurs and the noise impacts from cable laying are very low when compared to piling (Volume 2, Chapter 4: Offshore Ornithology (Documents Ref: 6.2.4)). Disturbance impacts to red-throated diver during the construction period in the array area are superseded by those in the O&M phase. A maximum of four birds during any one migration-spring season may be subject to mortality from displacement due to the construction activities for the export cables for Thanet Extension. When compared to the biologically defined minimum population scale for red-throated diver for the UK North Sea of 13,277 individuals, the potential loss of four individuals is considered of a negligible magnitude for Offshore Ornithology (Volume 2, Chapter 4 (Document Ref: 6.2.4)). Embedded mitigation will be in place restricting construction activities within the intertidal area between October and March (Table 8.7). The red-throated diver population in the Outer Thames Estuary SPA is 6,466 individuals. Assuming the worst-case scenario results in a potential loss of four individuals from this population, the magnitude of impact to the SPA is assessed as Negligible. Given that red-throated diver are the sole species of interest to the SPA, the sensitivity is assessed as High. This leads to a significance of effect of **Minor** adverse, which is not significant in EIA terms.

#### Disturbance of and vessel collision risk with marine mammals

8.10.11 Increased vessel traffic during construction has the potential to result in disturbance to marine mammals and heighten the risk of vessel collisions with marine mammals. The worst-case scenario for increased vessel traffic assumes a highly compressed construction schedule, with up to 48 construction vessels on site at the same time. The worst-case scenario arises from all activities taking place at the same time such as ground preparations, foundation installation, WTG installation and WTG commissioning. The likelihood of all these activities taking place at the same time is extremely low and therefore, realistically the number of vessels on site at any one time is expected to be much lower (Volume 2, Chapter 7: Marine Mammals (Document Ref: 6.2.7)).

8.10.12 The sites and species most sensitive to disturbance and collision injury from construction vessel traffic are:

- SNS cSAC;
- Harbour porpoise;
- Grey seal; and
- Harbour seal.

- 8.10.13 Disturbance to marine mammals from vessels is primarily expected from the noise of the vessel engines. The region around Thanet Extension is an area of high vessel movement and the number of vessels within and transiting to the array area will reduce during the construction phase compared to the baseline, as vessels will have to re-route to avoid construction safety zones. As such, the magnitude of the impact to marine mammals from vessel movement will be Low for all species. The sensitivity of the species to vessel noise is assessed as Low, which results in an effect significance of **Negligible** adverse, which is not significant in EIA terms.
- 8.10.14 Given that the baseline vessel activity in the area is high, it is not expected that the level of vessel activity during construction will result in an increase in the risk of mortality from collisions. The magnitude of the impact has been assessed as Low, with a sensitivity of Low for all species. This results in a significance of effect of **Negligible** adverse, which is not significant in EIA terms.
- 8.10.15 As there will be no significant effects on the harbour porpoise in the area from vessel noise or collisions, consequently the significance of effect on the cSAC is assessed as **Negligible** adverse, which is not significant in EIA terms.

#### Underwater noise impacts from piling and UXO on marine mammals

- 8.10.16 The source of the greatest noise impacts during construction will be from pile-driving to install the WTG foundations. Noise modelling has been undertaken at two locations within the Thanet Extension array site, in a shallow area to the south-west and a deep area to the east to represent a range of sound propagation conditions and covering locations closest to the highest densities for each marine mammal receptor (seal haul-out sites and harbour porpoise cSAC respectively). The installation of monopiles was determined to have the greatest spatial impact based on having the largest modelled noise contours, with the installation of pin piles having a greater temporal impact (more piles therefore overall piling duration would be greater).
- 8.10.17 The sites and species most sensitive to impacts from underwater noise from piling are:
- SNS cSAC;
  - Harbour porpoise;
  - Grey seal; and
  - Harbour seal.
- 8.10.18 Noise impacts to marine mammals from piling range from physical injury/ death to mild disturbance, depending on the received noise level. The higher the received noise level, the more severe the effect to the receptor. Four levels of effect were assessed in the Marine Mammals chapter (Volume 2, Chapter 7 (Document Ref: 6.2.7)), lethal and physical injury, Permanent Threshold Shift (PTS; auditory injury), Temporary Threshold Shift (TTS); and disturbance.

- 8.10.19 Noise levels sufficient to cause injury or instantaneous mortality will only occur within a few metres of the pile. The high degree of vessel movement prior to the start of the piling and the establishment of the marine mammal mitigation zones will ensure there are no marine mammals within the immediate vicinity of the pile. Therefore, there is no potential for effect from this impact.
- 8.10.20 The use of sound is critical for echolocation for harbour porpoise, therefore, while the impacts of PTS will primarily be at low frequencies, the impact of which on a high frequency specialist like harbour porpoise is arguably minimal, the sensitivity of harbour porpoise to PTS is Medium. Seals are less dependent on hearing for foraging, however it may be relied on for communication and predator avoidance. However, based on the population increase of seals at sites close to existing wind farms, including during their construction period, it appears that seals maybe less sensitive to PTS and TTS than first thought and consequently the sensitivity of grey seals and harbour seals is assessed as Low and Medium respectively (See Volume 2, Chapter 7: Marine Mammals (Document Ref: 6.2.7)). Piling noise results in the displacement of both harbour porpoise and seals from the area within the disturbance threshold for each species. Harbour porpoise have been assessed as having a sensitivity of Medium to disturbance and displacement as there is the potential for displacement to lesser foraging grounds and wastage of energy. Seals, due to their blubber layer which acts as an energy storage, are less sensitive to displacement to lesser foraging grounds and as such the sensitivity to disturbance for seals has been assessed as Low.
- 8.10.21 The Marine Mammals chapter (Volume 2, Chapter 7 (Document Ref: 6.2.7)) calculated the number of each species of marine mammal assessed that would be within the noise contours for PTS, TTS and disturbance and the magnitude of the impact for each was based on these calculations. For harbour porpoise and seals, the magnitude of the impact for PTS was assessed as Negligible as it is highly unlikely any individuals will be within the range of this impact. The magnitude of the impacts for TTS and disturbance for seals was assessed as Low, with the magnitude of the impact for disturbance for harbour porpoise also assessed as Low.
- 8.10.22 Based on the sensitivity of seals being Low to all noise impacts and the magnitude of the impacts being assessed as Negligible for PTS and Low for TTS/ disturbance, the significance of effect for PTS and TTS/ disturbance to seals arising from underwater noise from piling is **Negligible** adverse and **Minor** adverse respectively, which is not significant in EIA terms.
- 8.10.23 Based on the sensitivity of harbour porpoise being Medium to all noise impacts and the magnitude of the impacts being assessed as Negligible for PTS and Low for disturbance, the significance of effect for PTS and disturbance to harbour porpoise arising from underwater noise from piling is **Minor** adverse for all impacts, which is not significant in EIA terms. Consequently, the significance of effect on the cSAC is assessed as **Negligible** adverse, which is not significant in EIA terms.

### Temporary loss/ disturbance of saltmarsh habitat from cable installations

- 8.10.24 The landfall site for the OECC runs through saltmarsh which is a feature of the Sandwich Bay to Hacklinge Marshes SSSI. The worst-case scenario is based on landfall option three, using open trenching and not extending the sea defence, to install up to four offshore HVAC export cables. This option will utilise a temporary cofferdam to ensure leachate from the landfill site is not exposed to the wider environment when the sea defence is opened up to trench the cable ducts through. These trenches and associated spoil storage and vehicle access areas will cause temporary loss/ disturbance of saltmarsh habitat. The worst-case scenario will involve an area of 7,893 m<sup>2</sup> of saltmarsh being lost/ disturbed during cable installation. This encompasses a maximum of 3,190 m<sup>2</sup> of disturbance due to trenching activities and 4,703 m<sup>2</sup> of disturbance due to the area encircled by the cofferdam. This area represents 0.43% of the total saltmarsh within the SSSI.
- 8.10.25 The other landfall cable installation method is the use of Horizontal Directional Drilling (HDD). The impact of this on disturbance to saltmarsh is insignificant as the HDD process will take the export cable route underneath the sea defence and out into the intertidal area at least 100 m seaward from the sea defence and therefore not impacting the saltmarsh. For more details on the HDD option see ES, Volume 3, Chapter 1: Project Description (Onshore) (Document Ref: 6.3.1).
- 8.10.26 Saltmarsh is common throughout Pegwell Bay and is present throughout the study area including further south towards Sandwich Bay. As part of the mitigation measures embedded into the Thanet Extension development, prior to construction, a Saltmarsh Mitigation and Reinstatement Plan will be produced which will detail survey commitments, trenching and reinstatement procedures. The impacts to the saltmarsh will be localised and short-term and the Saltmarsh Mitigation and Reinstatement Plan will ensure that impacts are kept to an absolute minimum; therefore, the magnitude of the impact is assessed as low for saltmarsh within the intertidal.
- 8.10.27 Impacts to the saltmarsh in this region from the installation of cables is well known from TOWF and the recovery of the saltmarsh is known to be rapid (full recovery within two years) based on the post-construction monitoring undertaken for TOWF. While the tolerance (resistance) of the habitat to disturbance from the installation of the cables (and presence of vehicles) will be none, the recoverability (resilience) would be classed as high. This results in a sensitivity assessment of Medium.
- 8.10.28 The magnitude of the impact (taking the embedded mitigation into consideration) has been assessed as Low, with the sensitivity of the saltmarsh being assessed as Medium. Therefore, the significance of effects from direct disturbance occurring as a result of the export cable installation activities is **Minor** adverse, which is not significant in EIA terms.

### 8.11 Environmental assessment: O&M phase

#### Potential for introduced substrates on the benthos to affect the formation of biogenic reefs

- 8.11.1 The introduction of hard substrate in a predominantly sedimentary area provides a new habitat for colonisation of species and a change in the biodiversity of the area. Hard substrate, such as foundations, scour protection and cable protection that has been deployed at other OWFs is known to be colonised with a range of epifauna, specifically including *S. spinulosa* reefs.
- 8.11.2 The impacts on *S. spinulosa* reef during construction will be minimised through the Biogenic Reef Mitigation Plan (Document Ref: 8.15). Therefore, the introduction of the hard substrate, providing colonisation opportunities, represents a potential beneficial impact by expanding the available habitat for *S. spinulosa* reef to form and the Benthic Subtidal and Intertidal Ecology chapter (Volume 2, Chapter 5 (Document Ref: 6.2.5)) has assessed that there is a very low risk of colonisation by invasive species.
- 8.11.3 The introduced hard substrate will cover up to 1.67 km<sup>2</sup>, not all of which can be expected to form the basis of reef, therefore, the magnitude of impact is Negligible. The recoverability of *S. spinulosa* to most impacts is high, while the sensitivity of *S. spinulosa* to disturbance is Low which in this case is precautionary (due to this being a potentially beneficial impact to this species), which results in a significance of effect of **Negligible** adverse, which is not significant in EIA terms.

#### Disturbance of and vessel collision risk with marine mammals

- 8.11.4 During the O&M phase there will be increased vessel activity for ongoing O&M activities, with approximately 307 round trips per year associated with the O&M activities. There is the potential that the increased vessel traffic may result in an increase in disturbance to and an increase in collision risk with marine mammals.
- 8.11.5 The sites and species most sensitive to disturbance and collision injury from O&M vessel traffic are:
- SNS cSAC;
  - Harbour porpoise;
  - Grey seal; and
  - Harbour seal.



- 8.11.6 Disturbance to marine mammals from vessels is primarily expected from the noise of the vessel engines. The region around Thanet Extension is an area of high vessel movement and the number of a vessels within and transiting to the array area will reduce compared to the baseline as vessels will have to re-route to avoid operational safety zones. Any overall increase in ship traffic in the near vicinity that this represents is extremely small in relation to the high levels of existing baseline vessel activity. As such, the magnitude of the impact is assessed as Negligible. The sensitivity of the species to vessel noise is assessed as Low, which results in an effect significance of **Negligible** adverse, which is not significant in EIA terms.
- 8.11.7 Given that the baseline vessel activity in the area is high, it is not expected that the level of vessel activity during operation will result in an increase in the risk of mortality from collisions. The magnitude of the impact has been assessed as Low, with a sensitivity of Low for all species. This results in a significance of effect of **Negligible** adverse, which is not significant in EIA terms.
- 8.11.8 As there will be no significant effects on the harbour porpoise in the area from vessel noise or collisions, consequently the significance of effect on the cSAC is assessed as **Negligible** adverse, which is not significant in EIA terms.

#### Potential for bird disturbance/ displacement

- 8.11.9 Both the presence of the infrastructure and the O&M activities associated with the proposed development have the potential to directly disturb birds. These activities could potentially displace birds from important areas of feeding, moulting and loafing. full details are provided within Volume 2, Chapter 4: Offshore Ornithology (Document Ref: 6.2.4).
- 8.11.10 The Offshore Ornithology chapter identifies that only red-throated diver, gannet, razorbill and guillemot are screened in for sensitivity to disturbance during the O&M phase.
- 8.11.11 The only site containing one of the species identified as sensitive is:
- Outer Thames Estuary SPA.
- 8.11.12 Red-throated diver has been identified as a species that is particularly sensitive to disturbance, including vessel activity, and as such there is the potential for disturbance to non-breeding red-throated diver from the presence of operational turbines and vessels. Analysis in Volume 2, Chapter 4: Offshore Ornithology (Document Ref: 6.2.4) estimated that zero individuals would be subject to mortality due to displacement during the winter bio-season. Whilst between one and four individuals would be subject to mortality due to displacement during the migration-spring bio-season. As the species has high sensitivity to disturbance, the effect significance is **Minor** adverse during the migration-spring bio-season.

#### Potential for bird collisions with the offshore infrastructure

- 8.11.13 The potential for birds to collide with the WTGs (including the blades) and other wind farm infrastructure is a risk that will last throughout the lifetime of the project. Injury or fatalities may occur to the birds as they fly through the wind farm area on either migrations or while foraging. Collision Risk Modelling (CRM) has been used to identify the potential numbers of birds that may collide with the WTGs, with full details provided within Volume 2, Chapter 4: Offshore Ornithology (Document Ref: 6.2.4).
- 8.11.14 There are no sites that are designated to protect species deemed as sensitive to collision risk, however, the following species are protected under the Bird Directive and are sensitive to collision risk:
- Gannet;
  - Kittiwake;
  - Lesser black-backed gull;
  - Greater black-backed gull; and
  - Herring gull.
- 8.11.15 As a worst-case scenario, it must be assumed that all collisions with WTGs or other infrastructure will result in the mortality of the bird. As such, the sensitivity to collision for all the species identified above is High.
- 8.11.16 The magnitude of the impact was determined using the modelled number of individuals colliding within the WTGs and other infrastructure and comparing this with the level of natural mortality to determine the contribution of collisions with Thanet Extension to the mortality of each species. For all species, the mortality from collisions was determined to be less than one percent of the natural mortality and therefore, the magnitude of the impact was assessed as Negligible. Therefore, the significance of effect for all species was determined to be **Negligible** adverse.

#### Permanent loss of saltmarsh habitat from alterations to sea defences

- 8.11.17 Landfall option three that is described in detail in ES, Volume 3, Chapter 1: Project Description (Onshore) (Document Ref: 6.3.1) involves the extension of the sea defence seawards by 18.5 m to accommodate the over ground TJB. This extension would result in the permanent loss of part of the saltmarsh habitat within the Sandwich Bay to Hacklinge Marshes SSSI.

- 8.11.18 The total maximum area of saltmarsh loss due to the sea defence work is predicted to be 1,399 m<sup>2</sup>. This equates to 0.13% of the saltmarsh habitat within the benthic study area (including the River Stour). Given that this habitat is widespread and common throughout the area, this represents a very small footprint compared to the overall extent. While the impacts would be permanent, the impacts would be localised; therefore, the magnitude of the impact is assessed as low.
- 8.11.19 The saltmarsh habitat within Pegwell Bay varies in quality throughout the region (TOWF ES, 2004), with the saltmarsh habitat within the vicinity of the landfall location being considered of lower quality and lesser importance than the habitat found further north around the hoverport (Evidence plan meeting 26/ 05/ 17).
- 8.11.20 While the saltmarsh is a feature of the SSSI, it is not a feature of a Natura 2000 site. Combined with the lower quality of the area of saltmarsh that will be lost from the alterations to the sea defences compared to other areas of the saltmarsh, the sensitivity of the habitat to the permanent loss of this area of saltmarsh is assessed as medium.
- 8.11.21 The magnitude of the impact has been assessed as Low, with the sensitivity of the receptor assessed as Medium. Therefore, the significance of the effect from the permanent loss of saltmarsh is assessed as **Minor** adverse, which is not significant in EIA terms.

## 8.12 Environmental assessment: decommissioning phase

- 8.12.1 The impacts from the decommissioning of Thanet Extension will be the same as the construction phase, assuming that array and export cables are removed. If the cables remain *in situ*, the impacts will be less. Decommissioning works will be governed by the legislative framework in place at the time.

## 8.13 Environmental assessment: cumulative effects

- 8.13.1 Cumulative effects refer to effects upon receptors arising from Thanet Extension when considered alongside other proposed developments and activities and any other *reasonably foreseeable project(s)* proposals. In this context, the term *projects* is considered to refer to any project with comparable effects and is not limited to offshore wind projects.
- 8.13.2 The approach to cumulative assessment for Thanet Extension takes into account the Cumulative Impact Assessment Guidelines issued by RenewableUK in June 2013, together with comments made in response to other renewable energy developments within the Southern North Sea, and PINS 'Advice Note 9: Rochdale Approach'. The renewable energy developments that have informed this approach have been agreed within the Scoping Opinion (PINS, 2017), the suggested tiers, and the Cumulative Impact Assessment conducted for Thanet Extension.

- 8.13.3 The projects and plans selected as relevant to the assessment of impacts to Offshore Designated Sites are described within the relevant ES chapters. Specifically, for the consideration of potential cumulative impacts on offshore designated sites, the assessment draws on the detail contained within Volume 2 Chapter 2: Marine Geology, Oceanography and Physical Processes (Document Ref: 6.2.2), Volume 2, Chapter 4: Offshore Ornithology (Document Ref: 6.2.4), Volume 2, Chapter 5: Benthic Subtidal and Intertidal Ecology (Document Ref: 6.2.5) and Volume 2, Chapter 7: Marine Mammals (Document Ref: 6.2.7), along with the corresponding technical annexes (Volume 4). Where a specific chapter identified the potential for impact on a site, habitat or species considered within the offshore designated sites impact assessment, the relevant information is presented in Table 8.8. A summary of all the potential impacts outlined with this chapter can be found in Table 8.9.

**Table 8.8: Summary of the Potential for Cumulative Impacts on Offshore Designated Sites/ habitats**

Impact	Potential for cumulative impact
Cumulative impacts to benthic and intertidal ecology	<p>Potential cumulative impacts to the benthic subtidal and intertidal ecology were assessed in Volume 2, Chapter 5 (Document Ref: 6.2.5), with those points of relevance to offshore designated sites being as follows:</p> <ul style="list-style-type: none"> <li>• Cumulative temporary habitat loss during construction;</li> <li>• Cumulative impact from increased SSC and deposition;</li> <li>• Cumulative long-term habitat loss/ change (operation); and</li> <li>• Cumulative permanent habitat loss/ change (decommissioning).</li> </ul> <p>The assessment does not refer to specific habitats or features of offshore designated sites, instead adopting an approach analogous to a worst-case scenario – essentially concentrating on the biotope that has the highest sensitivity combined with the magnitude of impact used for the assessment of significance of effect. The potential for impact in all cases was found to be of <b>Minor</b> adverse significance, which is not significant in EIA terms.</p>
Cumulative impacts to marine mammals	<p>Potential cumulative impacts to marine mammals were assessed in Volume 2, Chapter 7 (Document Ref: 6.2.7), with those points of relevance to offshore designated sites being as follows:</p> <ul style="list-style-type: none"> <li>• Cumulative increased levels of underwater noise from construction activities; and</li> <li>• Cumulative increased vessel traffic during construction, O&amp;M and decommissioning leading to potential disturbance and collision risk.</li> </ul> <p>For seal species, all cumulative impacts were assessed as being of <b>Minor</b> adverse significance, which is not significant in EIA terms, based on a low sensitivity to noise and vessel interactions and a low magnitude of effect.</p> <p>For harbour porpoise, the cumulative impact of increased vessel traffic was assessed as <b>Minor</b> adverse significance, which is not significant in EIA terms, based on a low sensitivity and low magnitude. The cumulative effects of underwater noise on harbour porpoise was assessed as of <b>Minor</b> adverse significance for PTS based on a medium sensitivity and a negligible magnitude. For disturbance, cumulative impact of disturbance was assessed as of <b>Moderate</b> adverse significance. However, the contribution of Thanet Extension to cumulative effects and marine mammals and thus the SNS cSAC is negligible and this level of significance is reached with or without the inclusion of Thanet Extension and as such no project specific mitigation has been proposed.</p> <p>With regards to the SNS cSAC, there is the potential for a significant adverse effect for cumulative impacts. As the cSAC has a strong seasonal aspect, the cumulative impact would also be seasonal, with this occurring in the winter season. The potential cumulative (in-combination) effects on the SNS cSAC have been fully assessed within the Thanet Extension HRA (Document Ref: 5.2), that was submitted alongside the final application. The results of the HRA will inform the assessment of any significant effects on the SNS cSAC.</p>
Cumulative impacts to offshore ornithology	<p>Potential cumulative impacts to offshore ornithology receptors were assessed in Volume 2, Chapter 4 (Document Ref: 6.2.4), with those points of relevance to offshore designated sites being as follows:</p> <ul style="list-style-type: none"> <li>• Cumulative disturbance and displacement to red-throated diver from offshore cable construction; and</li> <li>• Cumulative collision risk from operational wind farms.</li> </ul> <p>Potential cumulative effects from cable installation with Thanet Extension were identified for the Nemo Interconnector cable installation. The current information identifies that installation of this cable will not overlap and therefore, it is highly unlikely that these projects will interact cumulatively. Therefore, it has been concluded that the cumulative impact of cable laying operations on red-throated diver will be <b>Negligible</b> adverse. As none of the cables pass through the Outer Thames SPA, the significance of effect on the SPA will also be <b>Negligible</b> adverse.</p> <p>As for the Thanet Extension impacts individually, the five-species assessed for cumulative collision risk were gannet, kittiwake, lesser black-backed gull, greater black-backed gull and herring gull. The contribution of Thanet Extension to total mortality arising from collision risk to these five species has been assessed as <b>Negligible</b> adverse and has been assessed as not making a material contribution to the overall cumulative collision mortality impact. (Volume 2, Chapter 4: Offshore Ornithology (Document Ref: 6.2.4)).</p>

## 8.14 Inter-relationships

- 8.14.1 Inter-relationships have been assessed within the relevant chapters. It is not expected that there will be any significant inter-related effects on any designated site. A summary of the inter-relationships assessments undertaken to date is contained within Volume 2, Chapter 14: Inter-relationships (Document Ref: 6.2.14).

## 8.15 Mitigation

- 8.15.1 No further mitigation measures are proposed beyond the embedded measures detailed within section 8.9 and within the relevant chapters.

## 8.16 Transboundary statement

- 8.16.1 This chapter only considers designated sites within UK waters. Any potential transboundary impacts on other European Economic Area (EA) states designated sites will be considered within the Thanet Extension HRA.

## 8.17 Summary of effects

- 8.17.1 This chapter has investigated potential effects on Offshore Designated Sites and species and habitats of conservation interest arising from Thanet Extension, drawing relevant information from the relevant other chapters of this ES. The range of potential impacts and associated effects considered in this chapter and summarised in Table 8.9 has been informed by the S42 consultation and scoping responses (Table 8.4) as well as reference to existing policy and guidance.

Table 8.9: Summary of predicted impacts of the Thanet Extension Offshore Wind Farm

Description of impact	Impact	Possible mitigation measures	Residual impact
<b>Construction</b>			
Temporary increases in SSC and sediment deposition	<b>Minor</b> adverse	None required	<b>Minor</b> adverse
Temporary habitat loss/ disturbance from installation activities	<b>Negligible</b> adverse	None required	<b>Negligible</b> adverse
Disturbance to birds from construction activities	<b>Minor</b> adverse	None required	<b>Minor</b> adverse
Disturbance of and vessel collision risk with marine mammals	<b>Negligible</b> adverse (for all species)	None required	<b>Negligible</b> adverse
Underwater noise impacts from piling on marine mammals	<b>Negligible</b> or <b>Minor</b> adverse	None required	<b>Negligible</b> or <b>Minor</b> adverse
Temporary loss/ disturbance of saltmarsh during cable installation	<b>Minor</b> adverse	None required	<b>Minor</b> adverse
<b>O&amp;M</b>			
Potential for new material on the benthos to be colonised	<b>Negligible</b> adverse	None required	<b>Negligible</b> adverse
Disturbance of and vessel collision risk with marine mammals	<b>Negligible</b> adverse	None required	<b>Negligible</b> adverse
Potential for bird collisions with offshore infrastructure	<b>Negligible</b> adverse	None required	<b>Negligible</b> adverse
Permanent loss of saltmarsh from sea defence alterations	<b>Minor</b> adverse	None required	<b>Minor</b> adverse
<b>Decommissioning</b>			
Removal activities of structures and cables will result in potential impacts that are similar to those during construction	Process to be governed by the legislative framework in place at the time in consultation with Statutory Nature Conservation Bodies.		
<b>Cumulative effects</b>			
Cumulative impacts to benthic and intertidal ecology	<b>Minor</b> adverse	None required	<b>Minor</b> adverse
Cumulative increased levels of underwater noise from construction activities	Seals – <b>Minor</b> adverse Harbour porpoise – <b>Moderate</b> adverse	Seals – None required Harbour porpoise – None proposed as contribution from Thanet Extension is negligible and project specific mitigation would not change the level of effect significance.	Seals – <b>Minor</b> adverse Harbour porpoise – <b>Moderate</b> adverse
Cumulative increased vessel traffic during construction, O&M and decommissioning leading to potential disturbance and collision risk	<b>Minor</b> adverse	None required	<b>Minor</b> adverse

Description of impact	Impact	Possible mitigation measures	Residual impact
Cumulative disturbance and displacement to red-throated diver from offshore cable construction	<b>Negligible</b> adverse	None required	<b>Negligible</b>
Cumulative collision risk from operational wind farms	<b>Negligible</b> adverse	None required	<b>Negligible</b>

## 8.18 References

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