

# Vattenfall Wind Power Ltd

## Thanet Extension Offshore Wind Farm

### Environmental Statement Volume 2

### Chapter 15: Offshore Conclusions

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Drafted By:	GoBe Consultants Ltd
Approved By:	Helen Jameson
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Vattenfall Wind Power Ltd  
First Floor  
1 Tudor Street  
London  
EC4Y 0AH  
T +44 207 451 1150

[www.vattenfall.co.uk](http://www.vattenfall.co.uk)

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## 15 Offshore Conclusions

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### 15.1 Introduction

- 15.1.1 This chapter of the Environmental Statement (ES) presents a summary of the key environmental issues associated with the Thanet Extension Offshore Wind Farm (Thanet Extension), as identified via the impact assessment work carried out to date. The content of this summary section is taken from the individual chapters contained in Volume 2 of the ES.
- 15.1.2 The potential impacts of the proposed development were identified and then assessed by considering both the magnitude (which may include spatial extent, duration and frequency) and the sensitivity (which may consider the vulnerability, recoverability and importance of the receptor) for each potential impact.
- 15.1.3 The significance of effect was judged according to a matrix such as that illustrated in Table 3.1 of Volume 1, Chapter 3: EIA Methodology (Document Ref: 6.1.3). Effects arising, both adverse and beneficial, were graded on a scale ranging from 'Negligible' to 'Major'. Effects rated as 'Moderate' to 'Major' are considered to be 'significant' and will usually require mitigation. Effects rated as 'Minor' or 'Negligible' are not considered to be significant in EIA terms. However, there are exceptions to this for certain topics such as in the Volume 2, Chapter 9: Shipping and Navigation (Document Ref: 6.2.9), where an industry standard risk assessment protocol has been adopted. Where such variations to the standard approach have been adopted, this is clearly set out within the individual topic chapter.
- 15.1.4 In order to provide a full summary of the potential effects of the offshore components of Thanet Extension, all impacts have been listed in summary tables below in Section 0, Table 15.1 to Table 15.13.
- 15.1.5 Where proposed, additional mitigation measures to address the key issues is included and the significance of the residual effect is provided. There are a range of embedded mitigation measures (built into the project design) which have been drawn from the impact assessment process. The assessment of effects has therefore taken into account of all measures that form part of the proposed development process and to which VWPL is committed.

### 15.2 EIA outcomes

- 15.2.1 The EIA process has been carried out with reference to accepted methods covering the approach to defining baseline conditions, methods for assessment, definitions and criteria for identifying potential impacts, and ascribing significance levels to potential effects.

- 15.2.2 Consultation has also played a key role in this, with stakeholders and statutory bodies inputting to the methodologies and scope of assessments to ensure that all relevant issues have been fully considered. This ES is a full and detailed summary of the assessments carried out to date and the ES clearly identifies significant effects, where these are considered likely to occur, as well as any necessary mitigation measures to reduce such effects to acceptable levels.

### 15.3 Key conclusions of the assessment

- 15.3.1 Based on the results of the EIA undertaken against the worst-case scenario and reported in this ES, the offshore components of the proposed Thanet Extension development are predicted to result in a limited number of significant adverse effects. These are listed in the following tables (Table 15.1 to Table 15.13), along with proposed mitigation measures, where appropriate, and the residual significance once the proposed mitigation has been applied.

## 15.4 Summary of potential effects

Table 15.1: Summary of predicted effects on Marine Geology, Oceanography and Physical Processes

Description of impact	Effect	Possible mitigation measures	Residual effect
Construction			
Increases in SSC and deposition of disturbed sediments to the seabed due to dredging for seabed preparation prior to foundation installation.	(Pathway)	(No mitigation measures necessary)	(Pathway)
Increases in SSC and deposition of disturbed sediments to the seabed due to the release of drill arisings during foundation installation.	(Pathway)	(No mitigation measures necessary)	(Pathway)
Increases in SSC and deposition of disturbed sediment to the seabed due to cable installation within the Thanet Extension array area and within the OECC.	(Pathway)	(No mitigation measures necessary)	(Pathway)
Sand wave crest level preparation resulting in a change to local hydrodynamic, wave and sediment transport processes.	(Pathway)	(No mitigation measures necessary)	(Pathway)
Impacts to sand bank receptors (due to construction activities).	<b>Negligible</b> adverse	(No mitigation measures necessary)	<b>Negligible</b> adverse
Impacts to designated coastal feature receptors (due to construction activities).	<b>Minor</b> adverse	Completion of cable specification and installation plan	<b>Minor</b> adverse
O&M			
Changes to the tidal regime.	(Pathway)	(No mitigation measures necessary)	(Pathway)
Changes to the wave regime.	(Pathway)	(No mitigation measures necessary)	(Pathway)
Changes to sediment transport and sediment transport pathways.	(Pathway)	(No mitigation measures necessary)	(Pathway)
Scour of seabed sediments.	(Pathway)	(No mitigation measures necessary)	(Pathway)
Development of turbid wake features.	(Pathway)	(No mitigation measures necessary)	(Pathway)
Impacts to designated coastal feature receptors (due to construction activities).	<b>Negligible</b> adverse	(No mitigation measures necessary)	<b>Negligible</b> adverse

Description of impact	Effect	Possible mitigation measures	Residual effect
Impacts to designated coastal feature receptors (due to wind farm operation).	<b>Minor</b> adverse	Completion of cable specification and installation plan	<b>Minor</b> adverse
Impacts to designated chalk feature receptors (due to wind farm operation).	<b>Negligible</b> adverse	(No mitigation measures necessary)	<b>Negligible</b> adverse
Decommissioning			
Increases in SSC and deposition of disturbed sediment to the seabed within the Thanet Extension array area and the OECC.	(Pathway)	(No mitigation measures necessary)	(Pathway)
Impacts to designated coastal feature receptors (due to decommissioning activities).	<b>Minor</b> adverse	(No mitigation measures necessary)	<b>Minor</b> adverse
Cumulative effects			
Cumulative temporary increases in SSC and seabed levels as a result of Thanet Extension export cable installation and dredge disposal activities.	(Pathway)	(No mitigation measures necessary)	(Pathway)
Cumulative temporary increases in SSC and seabed levels as a result of Thanet Extension export cable installation and aggregate dredging activities.	(Pathway)	(No mitigation measures necessary)	(Pathway)

Table 15.2: Summary of predicted effects on Marine Water and Sediment Quality

Description of impact	Effect	Possible mitigation measures	Residual effect
<b>Construction</b>			
Deterioration in water quality due to re-suspension of sediments-WFD waterbodies	<b>Minor</b> adverse	N/A	<b>Minor</b> adverse
Deterioration in water quality due to re-suspension of sediments-non-designated sites	<b>Minor</b> adverse	N/A	<b>Minor</b> adverse
Deterioration in water quality due to re-suspension of sediments-BW	<b>Minor</b> adverse (see Volume 4, Annex 3-2: Water Framework Directive Assessment (Document Ref: 6.4.3.1))	N/A	<b>Minor</b> adverse <sup>‡</sup>
Deterioration in water quality due to re-suspension of sediments-SFWs	<b>Minor</b> adverse (see Volume 2, Chapter 6: Fish and Shellfish Ecology (Document Ref: 6.2.6))	N/A	<b>Minor</b> adverse <sup>α</sup>
Release of contaminants from disturbed sediments	<b>Minor</b> adverse	N/A	<b>Minor</b> adverse
Accidental releases or spills of construction materials or chemicals	<b>Minor</b> adverse	N/A	<b>Minor</b> adverse
Contamination from leachate from the historic landfill	<b>Minor</b> adverse and <b>Negligible</b> adverse	N/A	<b>Minor</b> adverse and <b>Negligible</b> adverse
Release of bentonite from HDD at the landfall	<b>Minor</b> adverse and <b>Negligible</b> adverse	N/A	<b>Minor</b> adverse and <b>Negligible</b> adverse
<b>O&amp;M</b>			
Deterioration in water quality due to re-suspension of sediments-scour-designated sites	<b>Minor</b> adverse	N/A	<b>Minor</b> adverse
Deterioration in water quality due to re-suspension of sediments-scour-non-designated sites	<b>Negligible</b> adverse	N/A	<b>Negligible</b> adverse
Deterioration in water quality due to re-suspension of sediments – turbid wakes-designated sites	<b>Minor</b> adverse	N/A	<b>Minor</b> adverse
Deterioration in water quality due to re-suspension of sediments – turbid wakes-non-designated sites	<b>Negligible</b> adverse	N/A	<b>Negligible</b> adverse

Description of impact	Effect	Possible mitigation measures	Residual effect
Release of contaminants from disturbed sediments- designated sites	<b>Minor</b> adverse	N/A	<b>Minor</b> adverse
Release of contaminants from disturbed sediments- non-designated sites	<b>Negligible</b> adverse	N/A	<b>Negligible</b> adverse
Accidental releases or spills of construction materials or chemicals-designated sites	<b>Minor</b> adverse	A MPCP would be in place and agreed with the MMO in line with the IPPC Directive.	<b>Minor</b> adverse
Accidental releases or spills of construction materials or chemicals-non-designated sites	<b>Negligible</b> adverse	A MPCP would be in place and agreed with the MMO in line with the IPPC Directive.	<b>Negligible</b> adverse
Decommissioning			
Deterioration in water quality due to re-suspension of sediments	<b>Minor</b> adverse	N/A	<b>Minor</b> adverse
Release of contaminants from disturbed sediments	<b>Minor</b> adverse	N/A	<b>Minor</b> adverse
Accidental releases or spills of construction materials or chemicals	<b>Minor</b> adverse	N/A	<b>Minor</b> adverse
Cumulative effects			
Release of contaminants from disturbed sediments-designated sites	<b>Minor</b> adverse	N/A	<b>Minor</b> adverse
Release of contaminants from disturbed sediments-non-designated sites	<b>Negligible</b> adverse	N/A	<b>Negligible</b> adverse

<sup>‡</sup> see Volume 4, Annex 3-2: Water Framework Directive Assessment (Document Ref: 6.4.3.2).

<sup>α</sup> see Volume 2, Chapter 6: Fish and Shellfish (Document Ref: 6.2.6).



Table 15.3: Summary of predicted effects on offshore ornithology

Description of impact	Effect	Possible mitigation measures	Residual effect
Construction			
Direct disturbance and displacement	Red-throated diver: <b>Minor</b> adverse Razorbill: <b>Negligible</b> adverse Guillemot: <b>Minor</b> adverse	N/A	Red-throated diver: <b>Minor</b> adverse Razorbill: <b>Negligible</b> adverse Guillemot: <b>Minor</b> adverse
Indirect impacts through effects on habitats and prey species	All seabirds: <b>Negligible</b> adverse	N/A	All seabirds: <b>Negligible</b> adverse
O&M			
Direct disturbance and displacement	Red-throated diver: <b>Minor</b> adverse Gannet: <b>Negligible</b> adverse Razorbill: <b>Negligible</b> adverse Guillemot: <b>Negligible</b> or <b>Minor</b> adverse	N/A	Red-throated diver: <b>Minor</b> adverse Gannet: <b>Negligible</b> adverse Razorbill: <b>Negligible</b> adverse Guillemot: <b>Negligible</b> or <b>Minor</b> adverse
Indirect impacts through effects on habitats and prey species	All seabirds: <b>Negligible</b> adverse	N/A	All seabirds: <b>Negligible</b> adverse
Collision risk	Gannet: <b>Minor</b> adverse Kittiwake: <b>Minor</b> adverse Lesser black-b'd gull: <b>Negligible</b> adverse Great black-b'd gull: <b>Minor</b> adverse Herring gull: <b>Minor</b> adverse	N/A	Gannet: <b>Minor</b> adverse Kittiwake: <b>Minor</b> adverse Lesser black-b'd gull: <b>Negligible</b> adverse Great black-b'd gull: <b>Minor</b> adverse Herring gull: <b>Minor</b> adverse
Barrier effect	Gannet: <b>Negligible</b> adverse Kittiwake: <b>Negligible</b> adverse Lesser black-b'd gull: <b>Negligible</b> adverse Great black-b'd gull: <b>Negligible</b> adverse Herring gull: <b>Negligible</b> adverse	N/A	Gannet: <b>Negligible</b> adverse Kittiwake: <b>Negligible</b> adverse Lesser black-b'd gull: <b>Negligible</b> adverse Great black-b'd gull: <b>Negligible</b> adverse Herring gull: <b>Negligible</b> adverse

Decommissioning			
Direct disturbance and displacement	Red-throated diver: <b>Minor</b> adverse Razorbill: <b>Negligible</b> adverse Guillemot: <b>Negligible</b> adverse	N/A	Red-throated diver: <b>Minor</b> adverse Razorbill: <b>Negligible</b> adverse Guillemot: <b>Negligible</b> adverse
Indirect impacts through effects on habitats and prey species	All seabirds: <b>Negligible</b> adverse	N/A	All seabirds: <b>Negligible</b> adverse
Cumulative effects			
Offshore cables construction phase direct disturbance and displacement	Red-throated diver: <b>Negligible</b> adverse Razorbill: <b>Negligible</b> adverse Guillemot: <b>Negligible</b> adverse	N/A	Red-throated diver: <b>Negligible</b> adverse Razorbill: <b>Negligible</b> adverse Guillemot: <b>Negligible</b> adverse
Offshore wind farms O&M phase direct disturbance and displacement	Red-throated diver: <b>Minor to Moderate</b> adverse (but no material contribution from Thanet Extension) Razorbill: <b>Negligible</b> adverse Guillemot: <b>Negligible</b> adverse	N/A	Red-throated diver: <b>Minor to Moderate</b> adverse (but no material contribution from Thanet Extension) Razorbill: <b>Negligible</b> adverse Guillemot: <b>Negligible</b> adverse
Offshore wind farms O&M phase collision risk	Gannet: <b>Minor</b> adverse Kittiwake: <b>Negligible</b> adverse Lesser black-b'd gull: <b>Negligible</b> adverse Great black-b'd gull: <b>Moderate</b> adverse Herring gull: <b>Negligible</b> adverse Note: no material contribution from Thanet Extension	If the impact of Thanet Extension were to be removed from this cumulative assessment, a Moderate and Minor adverse effect would still be predicted for Gannet and Great black-b'd gull respectively based on the levels of impact from the other projects considered. It is not possible to apply project specific mitigation that would decrease this below Moderate and Minor. Therefore, the project's contribution to the cumulative impact is considered to be Negligible for Gannet and Great black-b'd gull.	Gannet: <b>Negligible</b> adverse Kittiwake: <b>Negligible</b> adverse Lesser black-b'd gull: <b>Negligible</b> adverse Great black-b'd gull: <b>Negligible</b> adverse Herring gull: <b>Negligible</b> adverse

Table 15.4: Summary of predicted effects on Benthic Subtidal and Intertidal Ecology

Description of impact	Effect	Possible mitigation measures	Residual effect
<b>Construction</b>			
Temporary habitat disturbance from construction activities	<b>Minor</b> adverse	N/ A	<b>Minor</b> adverse
Temporary habitat disturbance in the intertidal area from cable installation	<b>Minor</b> adverse	N/ A	<b>Minor</b> adverse
Temporary increase in SSC and sediment deposition	<b>Minor</b> adverse	N/ A	<b>Minor</b> adverse
Temporary increase in SSC and sediment deposition in the intertidal area	<b>Minor</b> adverse	N/ A	<b>Minor</b> adverse
Impacts on benthic ecology from noise arising from foundation installation	Not significant	N/ A	Not significant
Direct and indirect seabed disturbances leading to the release of sediment contaminants	<b>Minor</b> adverse	N/A	Not significant
<b>O&amp;M</b>			
Long-term habitat loss/ change from the presence of foundations, scour protection and cable protection	<b>Minor</b> adverse	N/ A	<b>Minor</b> adverse
Colonisation of the WTGs and scour/ cable protection may affect benthic ecology and biodiversity	<b>Minor</b> adverse	N/ A	<b>Minor</b> adverse
Permanent loss of saltmarsh habitat from alterations to sea wall	<b>Minor</b> adverse	N/ A	<b>Minor</b> adverse
Direct disturbance to seabed from jack-up vessels and cable maintenance activities	<b>Minor</b> adverse	N/ A	<b>Minor</b> adverse
Indirect disturbance to benthic habitats from electromagnetic fields generated by inter-array and export cables	Not significant	N/ A	Not significant
Introduction of turbid wakes from presence of foundations	<b>Negligible</b> adverse	N/A	Not significant
Long-term changes to the seabed habitats from scour effects and changes in the sediment regime	Not significant	N/ A	Not significant

Description of impact	Effect	Possible mitigation measures	Residual effect
Decommissioning			
Temporary habitat disturbance from removal of foundations and cables	Minor adverse	N/ A	Minor adverse
Increased SSC and sediment deposition from removal of foundations and cables	Minor adverse	N/ A	Minor adverse
Loss of introduced habitat from the removal of foundations	Minor adverse	N/ A	Minor adverse
Permanent habitat loss from scour protection and cable protection left <i>in situ</i>	Minor adverse	N/ A	Minor adverse
Cumulative effects			
Cumulative temporary habitat loss	Minor adverse	N/ A	Minor adverse
Cumulative increases in SSC and associated sediment deposition	Minor adverse	N/ A	Minor adverse
Cumulative long-term habitat loss/ change	Minor adverse	N/ A	Minor adverse
Cumulative permanent habitat loss/ change	Minor adverse	N/ A	Minor adverse

Table 15.5: Summary of predicted effects on Fish and Shellfish Ecology

Description of impact	Effect	Possible mitigation measures	Residual effect
<b>Construction</b>			
Direct damage (e.g. crushing) and disturbance to mobile demersal and pelagic fish and shellfish species arising from construction activities.	<b>Minor</b> adverse	N/A	<b>Minor</b> adverse
Temporary localised increases in suspended sediment concentrations and smothering.	<b>Minor</b> adverse	N/A	<b>Minor</b> adverse
Direct and indirect seabed disturbances leading to the release of sediment contaminants.	<b>Minor</b> adverse	N/A	<b>Minor</b> adverse
Mortality, injury, behavioural changes and auditory masking arising from noise and vibration.	<b>Minor</b> adverse	N/A	<b>Minor</b> adverse
<b>O&amp;M</b>			
Long-term loss of habitat due to the presence of turbine foundations, scour protection and cable protection.	<b>Minor</b> adverse	N/A	<b>Minor</b> adverse
Increased hard substrate and structural complexity as a result of the introduction of turbine foundations, scour protection and cable protection.	<b>Minor</b> adverse	N/A	<b>Minor</b> adverse
Underwater noise as a result of operational turbines.	<b>Negligible</b> adverse	N/A	<b>Negligible</b> adverse
Electromagnetic fields (EMF) effects arising from cables.	<b>Minor</b> adverse	N/A	<b>Minor</b> adverse
Direct disturbance resulting from maintenance during operation.	<b>Negligible</b> adverse	N/A	<b>Negligible</b> adverse
Increases in SSCs and associated sediment deposition as a result of O&M activities.	<b>Minor</b> adverse	N/A	<b>Minor</b> adverse
Indirect disturbance resulting from the accidental release of pollutants.	<b>Minor</b> adverse	N/A	<b>Minor</b> adverse
Potentially reduced fishing pressure within the Thanet Extension array area and increases fishing pressure outside the array area due to displacement.	<b>Negligible</b> adverse	N/A	<b>Negligible</b> adverse

Decommissioning			
Impacts from decommissioning are expected to be similar to those listed for construction, if project infrastructure is removed from the seabed at the end of the development's operational life. If it is deemed closer to the time of decommissioning that removal of certain parts of the development (e.g. cables) would have a greater environmental impact than leaving <i>in situ</i> , it may be preferable to leave those parts <i>in situ</i> . In this case, the impacts for decommissioning would be similar to those described for the operational phase, except where effects are dependent on the operation of the wind farm (e.g. operational noise and EMF from operational cables).			
Cumulative effects			
Cumulative temporary habitat loss as a result of construction activities.	Minor adverse	N/A	Minor adverse
Cumulative increases in SSC and associated sediment deposition.	Minor adverse	N/A	Minor adverse
Cumulative effects from construction noise and vibration.	Minor adverse	N/A	Minor adverse
Cumulative long-term habitat loss/ change as a result of the presence of foundations and scour/ cable protection.	Minor adverse	N/A	Minor adverse
Cumulative effects of electromagnetic fields (EMF) from subsea cables.	Minor adverse	N/A	Minor adverse

Table 15.6: Summary of predicted effects on Marine Mammals

Description of impact	Effect	Possible mitigation measures	Residual effect
Construction			
Underwater Noise (lethal and non-auditory injury)	No potential for any effect	N/A	No potential for any effect
Underwater Noise (PTS)	Harbour porpoise: <b>Minor</b> adverse significance Seals: <b>Minor</b> adverse significance	N/A	Harbour porpoise: <b>Minor</b> adverse significance Seals: <b>Minor</b> adverse significance
Underwater Noise (TTS)	Not assessed in terms of magnitude/sensitivity	N/A	N/A
Underwater Noise (Disturbance)	<b>Minor</b> adverse significance	N/A	<b>Minor</b> adverse significance
UXO clearance (PTS)	<b>Minor</b> adverse significance	N/A	Minor adverse significance
UXO clearance (Disturbance)	<b>Minor</b> adverse significance	N/A	<b>Minor</b> adverse significance
Vessel Interactions	<b>Minor</b> adverse significance	N/A	<b>Minor</b> adverse significance
Disturbance at Haul-outs	<b>Minor</b> adverse significance	N/A	<b>Minor</b> adverse significance
Prey Species	No indirect impacts	N/A	No indirect impacts
Water Quality	<b>Negligible</b> significance	N/A	<b>Negligible</b> significance
O&M			
Operational Noise	<b>Minor</b> adverse significance	N/A	<b>Minor</b> adverse significance
Vessel Interactions	<b>Minor</b> adverse significance	N/A	<b>Minor</b> adverse significance

Description of impact	Effect	Possible mitigation measures	Residual effect
Vessel Noise	<b>Negligible</b> significance	N/A	<b>Negligible</b> significance
Indirect impacts: Impacts on Prey Species	<b>Minor</b> beneficial significance	N/A	<b>Minor</b> beneficial significance
Decommissioning			
Underwater Noise	<b>Negligible</b> significance	N/A	<b>Negligible</b> significance
Vessel Interactions	<b>Minor</b> adverse significance	N/A	<b>Minor</b> adverse significance
Water Quality	<b>Negligible</b> significance	N/A	<b>Negligible</b> significance
Indirect impacts: Impacts on Prey Species	No indirect impacts	N/A	No indirect impacts
Cumulative effects			
Underwater Noise	Harbour porpoise: Tier 1: <b>Minor</b> adverse significance Tier 1 & 2: <b>Moderate</b> adverse significance but no significant long-term effect on the size or health of the population Seals: <b>Negligible-Minor</b> adverse significance	Not possible to apply project specific mitigation that would decrease this below Moderate	Harbour porpoise: <b>Moderate</b> adverse significance but no significant long-term effect on the size or health of the population (This effect is assessed as moderate even in the absence of Thanet Extension, such that no mitigation is able to decrease this effect below moderate).
Vessel Interactions	<b>Minor</b> adverse significance	N/A	<b>Minor</b> adverse significance
Indirect impacts: Impacts on Prey Species	No indirect impacts	N/A	No indirect impacts



Table 15.7: Summary of potential effects on Offshore Designated Sites

Description of impact	Effect	Possible mitigation measures	Residual effect
<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

Description of impact	Effect	Possible mitigation measures	Residual effect
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 <b>Negligible</b> and project specific mitigation would not change the level of effect significance.	Seals – <b>Minor</b> adverse Harbour porpoise – <b>Moderate</b> adverse (This effect is assessed as moderate even in the absence of Thanet Extension, such that no mitigation is able to decrease this effect below moderate).
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
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>

Table 15.8: Summary of predicted effects on Commercial Fisheries

Description of impact	Effect	Possible mitigation measures	Residual effect
Construction			
Commercially Exploited fish and shellfish population	N/A	N/A	Not exceed <b>Minor</b>
UK Drift and Static Netters	Medium	Low	<b>Minor</b>
UK Potters	Medium	Low	<b>Minor</b>
UK Demersal Trawlers (under 10 m)	Medium	Low	<b>Minor</b>
UK Demersal Trawlers (over 10 m)	Low	Negligible	<b>Negligible</b>
UK Dredgers	Low	Negligible	<b>Negligible</b>
Belgium Beam Trawlers	Low	Low	<b>Minor</b>
French Demersal and Pelagic Trawlers	Low	Low	<b>Minor</b>
Dutch Demersal and Pelagic Trawlers	Negligible	Negligible	<b>Negligible</b>
Safety Issues for fishing vessels	N/A	N/A	Within acceptable limits
Increased steaming time to fishing grounds	Low	Low	<b>Minor</b>
Interference with Fishing activities (static gear)	Medium	Low	<b>Minor</b>
Interference with Fishing activities (mobile gear)	Low	Negligible	<b>Negligible</b>
Displacement of fishing activity into other areas	Not exceeding values calculated for temporary loss or restricted access to traditional fishing grounds as previously described in this table.		
Obstacles on the seabed post construction	N/A	N/A	<b>Negligible</b>

Description of impact	Effect	Possible mitigation measures	Residual effect
O&M			
UK Drift and Static Netters	Medium	Low – Static nets Medium – Drift nets	<b>Minor</b> – Static nets <b>Minor</b> – Drift Nets (general) <b>Moderate</b> - Drift nets (some individuals – only those which overlap with the project boundary, otherwise <b>Minor</b> )
UK Potters	Medium	Low	<b>Minor</b>
UK Demersal Trawlers (under 10 m)	Low	Negligible	<b>Negligible</b>
UK Demersal Trawlers (over 10 m)	Low	Negligible	<b>Negligible</b>
UK Dredgers	Low	Negligible	<b>Negligible</b>
Belgium Beam Trawlers	Low	Low	<b>Minor</b>
French Demersal and Pelagic Trawlers	Low	Low	<b>Minor</b>
Dutch pulse wing trawlers	<b>Negligible</b>		
Safety Issues for fishing vessels	N/A	N/A	Within acceptable limits
Increased steaming time to fishing grounds	Low	Negligible	<b>Negligible</b>
Interference with Fishing activities (static gear)	Medium	Low	<b>Minor</b>
Interference with Fishing activities (mobile gear)	Low	Negligible	<b>Negligible</b>
Displacement of Fishing activity into other areas – Belgian, Dutch and French fleet	Negligible	Negligible	<b>Negligible</b>
Displacement of Fishing activity into other areas – UK Trawlers, Dredgers and Potters	Negligible	Negligible	<b>Minor</b>

Description of impact	Effect	Possible mitigation measures	Residual effect
Displacement of Fishing activity into other areas – UK static netters	Medium	Low	<b>Minor</b>
Displacement of Fishing activity into other areas – UK drift netters	Medium	Medium	<b>Minor</b>
Decommissioning			
Not greater and in all probability, will be less than construction values.			
Cumulative effects			
In a regional, national and international context - overall	N/A	N/A	<b>Minor</b>

**Table 15.9: Summary of predicted effects on Shipping and Navigation**

Description of impact	Embedded Mitigation	Likelihood	Consequence	Impact	Additional Mitigation to Reduce the Risks to ALARP	Residual impact
Construction/ Decommissioning						
Impact on Ship Collision Risk	<ul style="list-style-type: none"> <li>Reduction in RLB;</li> <li>Promulgation;</li> <li>Planning and coordination between developer and operators;</li> <li>Incident/Near-miss reporting;</li> <li>ERCOP; and</li> <li>Competent and Trained Personnel.</li> </ul>	Unlikely	High	<b>Tolerable</b>	<ul style="list-style-type: none"> <li>Adopt safety zones;</li> <li>Guard Vessel(s);</li> <li>Develop Co-operation Plan with PLA; and</li> <li>Communication between project, sub-contractors and fishermen/leisure groups.</li> </ul>	<b>Tolerable</b>
Impact on Ship Contact Risk	<ul style="list-style-type: none"> <li>Reduction in RLB;</li> <li>Promulgation;</li> <li>Incident/Near-miss reporting;</li> <li>ERCOP;</li> <li>Aids to Navigation Plan;</li> <li>Layout Plan;</li> <li>Update navigational charts;</li> <li>Competent and Trained Personnel; and</li> <li>Maintaining lines of orientation and symmetry.</li> </ul>	Probable	Medium	<b>Tolerable</b>	<ul style="list-style-type: none"> <li>Adopt safety zones;</li> <li>Guard Vessel(s);</li> <li>Communication between project, sub-contractors and fishermen/leisure groups; and</li> <li>Relocation of buoyage.</li> </ul>	<b>Tolerable</b>
Impact on Vessel Traffic Routeing	<ul style="list-style-type: none"> <li>Planning and coordination between developer and operators.</li> </ul>	Likely	Negligible	<b>Minor</b>	<ul style="list-style-type: none"> <li>Develop Co-operation Plan with PLA;</li> <li>Communication between project, sub-contractors and fishermen/leisure users.</li> </ul>	<b>Minor</b>
Impact on Pilotage Operations	<ul style="list-style-type: none"> <li>Reduction in RLB.</li> </ul>	Probable	Medium	<b>Tolerable</b>	<ul style="list-style-type: none"> <li>Guard Vessels;</li> <li>Develop Co-operation Plan with PLA; and</li> <li>Communication between project, sub-contractors and fishermen/leisure groups.</li> </ul>	<b>Tolerable</b>

Description of impact	Embedded Mitigation	Likelihood	Consequence	Impact	Additional Mitigation to Reduce the Risks to ALARP	Residual impact
Impact on Recreational Vessel Activity	<ul style="list-style-type: none"> <li>Reduction in RLB;</li> <li>Reduction in OECC;</li> <li>Promulgation;</li> <li>Incident/Near-miss reporting; and</li> <li>Maintaining lines of orientation and symmetry.</li> </ul>	Probable	Medium	<b>Tolerable</b>	<ul style="list-style-type: none"> <li>Adopt safety zones;</li> <li>Guard Vessel(s);</li> <li>Cooperation during Cable Laying with Port of Ramsgate; and</li> <li>Communication between project, sub-contractors and fishermen/leisure groups.</li> </ul>	<b>Minor</b>
Impact on Fishing Vessel Activity	<ul style="list-style-type: none"> <li>Reduction in RLB;</li> <li>Reduction in OECC;</li> <li>Promulgation;</li> <li>Incident/Near-miss reporting;</li> <li>Aids to Navigation;</li> <li>Update navigational charts; and</li> <li>Maintaining lines of orientation and symmetry.</li> </ul>	Probable	Medium	<b>Tolerable</b>	<ul style="list-style-type: none"> <li>Adopt safety zones;</li> <li>Guard Vessel(s);</li> <li>Cooperation during Cable Laying with Port of Ramsgate; and</li> <li>Communication between project, sub-contractors and fishermen/leisure groups.</li> </ul>	<b>Minor to Tolerable</b>
Impact on Navigation During Cable Laying	<ul style="list-style-type: none"> <li>Reduction in OECC; and</li> <li>Promulgation.</li> </ul>	Probable	Medium	<b>Tolerable</b>	<ul style="list-style-type: none"> <li>Guard Vessel (s);</li> <li>Co-operation during cable laying with the Port of Ramsgate;</li> <li>Develop Co-operation Plan with PLA; and</li> <li>Communication between project, sub-contractors and fishermen/leisure groups.</li> </ul>	<b>Minor</b>
<b>Operational Phase</b>						
Impact on Ship Collision Risk	<ul style="list-style-type: none"> <li>Reduction in RLB;</li> <li>Promulgation;</li> <li>Planning and coordination between developer and operators;</li> <li>Incident/Near-miss reporting;</li> <li>ERCOP; and</li> <li>Competent and Trained Personnel.</li> </ul>	Unlikely	High	<b>Tolerable</b>	<ul style="list-style-type: none"> <li>Develop Co-operation Plan with PLA; and</li> <li>Communication between project, sub-contractors and fishermen/leisure groups.</li> </ul>	<b>Tolerable</b>

Description of impact	Embedded Mitigation	Likelihood	Consequence	Impact	Additional Mitigation to Reduce the Risks to ALARP	Residual impact
Impact on Ship Contact Risk	<ul style="list-style-type: none"> <li>• Reduction in RLB;</li> <li>• Promulgation;</li> <li>• Incident/Near-miss reporting;</li> <li>• ERCOP;</li> <li>• Aids to Navigation Plan;</li> <li>• Blade Clearance;</li> <li>• Layout Plan;</li> <li>• Update navigational charts;</li> <li>• Competent and Trained Personnel; and</li> <li>• Maintaining lines of orientation and symmetry.</li> </ul>	Unlikely	Medium	<b>Tolerable</b>	<ul style="list-style-type: none"> <li>• Communication between project, sub-contractors and fishermen/leisure groups; and</li> <li>• Relocation of buoyage.</li> </ul>	<b>Tolerable</b>
Impact on Vessel Traffic Routeing	<ul style="list-style-type: none"> <li>• Reduction in RLB; and</li> <li>• Planning and coordination between developer and operators.</li> </ul>	Likely	Negligible	<b>Minor</b>	<ul style="list-style-type: none"> <li>• Communication between project, sub-contractors and fishermen/leisure users.</li> </ul>	<b>Minor</b>
Impact on Pilotage Operations	<ul style="list-style-type: none"> <li>• Reduction in RLB.</li> </ul>	Probable	Low	<b>Tolerable</b>	<ul style="list-style-type: none"> <li>• Communication between project, sub-contractors and fishermen/leisure groups; and</li> <li>• Develop Co-operation Plan with PLA.</li> </ul>	<b>Tolerable</b>
Impact on Recreational Vessel Activity	<ul style="list-style-type: none"> <li>• Promulgation;</li> <li>• Incident/Near-miss reporting;</li> <li>• Blade Clearance; and</li> <li>• Maintaining lines of orientation and symmetry.</li> </ul>	Unlikely	Low	<b>Minor</b>	<ul style="list-style-type: none"> <li>• Communication between project, sub-contractors and fishermen/leisure groups.</li> </ul>	<b>Minor</b>



Description of impact	Embedded Mitigation	Likelihood	Consequence	Impact	Additional Mitigation to Reduce the Risks to ALARP	Residual impact
Impact on Fishing Vessel Activity	<ul style="list-style-type: none"> <li>• Revision to OECC;</li> <li>• Promulgation;</li> <li>• Incident/Near-miss reporting;</li> <li>• Cable burial/protection;</li> <li>• Aids to Navigation;</li> <li>• Periodic cable inspections;</li> <li>• Update navigational charts; and</li> <li>• Maintaining lines of orientation and symmetry.</li> </ul>	Probable	Medium	<b>Tolerable</b>	<ul style="list-style-type: none"> <li>• Communication between project, sub-contractors and fishermen/leisure groups.</li> </ul>	<b>Minor</b>
Impact on Marine Navigation and Communication Systems	<ul style="list-style-type: none"> <li>• Reduction in RLB;</li> <li>• Promulgation; and</li> <li>• Layout Plan.</li> </ul>	Likely	Negligible	<b>Minor</b>	<ul style="list-style-type: none"> <li>• Communication between project, sub-contractors and fishermen/leisure groups; and</li> <li>• Maintaining lines of orientation and symmetry.</li> </ul>	<b>Minor</b>
Impact on SAR	<ul style="list-style-type: none"> <li>• Promulgation;</li> <li>• Planning and coordination between developer and operators;</li> <li>• ERCOP; and</li> <li>• Layout Plan.</li> </ul>	Probable	Low	<b>Tolerable</b>	<ul style="list-style-type: none"> <li>• Maintaining lines of orientation and symmetry in the wind farm.</li> </ul>	<b>Minor</b>
Impact on Existing Aids to Navigation	<ul style="list-style-type: none"> <li>• Layout Plan; and</li> <li>• Aids to Navigation management plan.</li> </ul>	Likely	Negligible	<b>Minor</b>	<ul style="list-style-type: none"> <li>• Relocation of buoyage.</li> </ul>	<b>Minor</b>
Impact on Vessel Anchorages	<ul style="list-style-type: none"> <li>• Reduction in RLB; and</li> <li>• Cable burial/protection.</li> </ul>	Unlikely	Low	<b>Minor</b>	N/A	<b>Minor</b>
Impact Associated with Cable	<ul style="list-style-type: none"> <li>• Reduction in OECC;</li> <li>• Promulgation;</li> <li>• Cable burial/protection;</li> <li>• Periodic cable inspections; and</li> <li>• Update navigational charts.</li> </ul>	Unlikely	Medium	<b>Tolerable</b>	<ul style="list-style-type: none"> <li>• Communication between project, sub-contractors and fishermen/leisure groups.</li> </ul>	<b>Minor</b>

Description of impact	Embedded Mitigation	Likelihood	Consequence	Impact	Additional Mitigation to Reduce the Risks to ALARP	Residual impact
Cumulative effects						
Cumulative Impact due to Increased Vessel Activity	<ul style="list-style-type: none"> <li>Promulgation;</li> <li>Planning and coordination between developer and operators; and</li> <li>Incident/Near-miss reporting.</li> </ul>	Probable	Low	<b>Tolerable</b>	<ul style="list-style-type: none"> <li>Communication between project, sub-contractors and fishermen/leisure groups.</li> </ul>	<b>Minor</b>
Cumulative Impact on Vessel Routeing	<ul style="list-style-type: none"> <li>Promulgation.</li> </ul>	Unlikely	Low	<b>Minor</b>	<ul style="list-style-type: none"> <li>Relocation of buoyage.</li> </ul>	<b>Minor</b>
Cumulative Impact from Cable Route	<ul style="list-style-type: none"> <li>Reduction in OECC;</li> <li>Promulgation;</li> <li>Cable burial/protection</li> <li>Periodic cable inspections; and</li> <li>Update navigational charts.</li> </ul>	Probable	Low	<b>Tolerable</b>	<ul style="list-style-type: none"> <li>Communication between project, sub-contractors and fishermen/leisure groups.</li> </ul>	<b>Minor</b>

Table 15.10: Summary of potential effects on Infrastructure and Other Users

Description of impact	Effect	Possible mitigation measures	Residual effect
<b>Construction</b>			
Disturbance to the O&M activities of other OWFs due to the use of the Port of Ramsgate	<b>Minor</b> adverse	N/A	<b>Minor</b> adverse
Disturbance to existing cables and pipelines during construction	<b>Minor</b> adverse	N/A	<b>Minor</b> adverse
Restriction of access to existing cables and pipelines during construction	<b>Minor</b> adverse	N/A	<b>Minor</b> adverse
Increased burial of existing cables and pipelines as a result of increased sediment deposition	<b>Minor</b> adverse	N/A	<b>Minor</b> adverse
Impacts to disposal sites from increased sediment deposition	<b>Minor</b> adverse	N/A	<b>Minor</b> adverse
Restriction of use of disposal sites during construction	<b>Minor</b> adverse	N/A	<b>Minor</b> adverse
<b>O&amp;M</b>			
Disturbance to the O&M activities of other OWFs due to the use of the Port of Ramsgate	<b>Minor</b> adverse	N/A	<b>Minor</b> adverse
Restriction of use of disposal sites during O&M activities	<b>Minor</b> adverse	N/A	<b>Minor</b> adverse
<b>Decommissioning</b>			
Impacts from decommissioning are expected to be similar to those listed for construction, if project infrastructure is removed from the seabed at the end of the development's operational life. If it is deemed closer to the time of decommissioning that removal of certain parts of the development (e.g. cables) would have a greater environmental impact than leaving <i>in situ</i> , it may be preferable to leave those parts <i>in situ</i> . In this case, the impacts for decommissioning would be similar to those described for the operational phase, except where effects are dependent on the operation of the wind farm.			
<b>Cumulative effects</b>			
No projects identified	N/A	N/A	N/A

**Table 15.11: Summary of potential effects on Seascape, Landscape and Visual receptors (O&M phase)**

Receptor	Sensitivity to Change	Magnitude of Change	Duration	Permanent/reversible	Summary of Likely Significant Effect
<b>Seascape Effects</b>					
The effect of the Offshore WTG Array on seascape character during O&M is assessed as <b>not significant</b> on all of the SCAs assessed in the SLVIA, with the exception of the following two SCAs covering a localised area of inshore waters between the Offshore WTG Array and the Thanet coast, which are assessed as having <b>significant</b> effects:					
<b>Broadstairs Knolls and Ramsgate Road SCA (I2A)</b>	Medium-high	Medium-high	Long-term	Reversible	The Offshore WTG array will result in <b>significant</b> , long-term but reversible effects on the seascape character of the inshore waters of the Broadstairs Knolls and Ramsgate Road SCA (I2A) and the Margate Roads SCA (I2F), which are located between the Thanet coast and the Offshore WTG Array. The extension of the Offshore WTG Array towards these SCAs is assessed as <b>significant</b> as they are of medium-high sensitivity and the Offshore WTG array will result in a medium-high magnitude of change to the existing seascape character. Although the existing seascape is much influenced by the presence of TOWF, the Offshore WTG Array represents an extension in influence of the wind farm character, arising particularly from the presence of WTGs on all sides of TOWF, nearer to these inshore waters, and at greater height than the TOWF WTGs. These changes are considered significant to the character of the inshore waters around the north-east headland of Thanet, despite the existing OWF influence.
<b>Margate Roads SCA (I2F)</b>	Medium-high	Medium-high	Long-term	Reversible	The effect on seascape character of the Dover Strait Channel North SCA (O1A), in which the Offshore WTG Array is located, is assessed as <b>not significant</b> because its character at its northern end is already characterised by TOWF, which creates a wind farm seascape, in addition to the large scale shipping influences of the channel. The addition of the Offshore WTG Array, while increasing the wind farm influence, is assessed as <b>not significant</b> , as the Dover Strait Channel North SCA (O1A) has medium-low susceptibility to change and the changes resulting from the Offshore WTG Array will not re-define the existing seascape character of the northern part of this SCA where OWFs already form the prevailing characteristic.

Receptor	Sensitivity to Change	Magnitude of Change	Duration	Permanent/reversible	Summary of Likely Significant Effect
<b>Landscape Effects</b>					
The effect of the Offshore WTG Array on landscape character during O&M is assessed as <b>not significant</b> on all of the LCAs assessed in the SLVIA, with the exception of the following three LCAs covering a localised area around the north-east headland of Thanet, which are assessed as having <b>significant</b> effects:					
<b>Foreness Point and North Foreland LCA (F2)</b>	High	High	Long-term	Reversible	The Offshore WTG Array will result in <b>significant</b> , long-term but reversible effects on the landscape character of the coastal LCAs around the north-east headland of Thanet, between Ramsgate, Foreness Point and Margate – consisting of the Foreness Point and North Foreland (F2) LCA; the Ramsgate and Broadstairs Cliffs LCA (G1) and the North Thanet Coast (G2) LCA. The extension of the Offshore WTG Array towards these closest coastal LCAs is assessed as <b>significant</b> as they are of medium-high to high sensitivity to change and the Offshore WTG array will result in medium-high to high magnitude of change to the existing landscape character. Although the existing landscape character of these coastal areas of the Isle of Thanet is much influenced by the presence of TOWF, the Offshore WTG Array represents an extension in influence of the wind farm character, arising particularly from the presence of WTGs on all sides of TOWF, nearer to the coast, and at greater height than the TOWF WTGs. These changes are considered significant to the character of the coastal landscape around the north-east headland of Thanet, despite the existing OWF influence.
<b>Ramsgate and Broadstairs Cliffs LCA (G1) (Broadstairs to North Foreland (C1E))</b>	High	High	Long-term	Reversible	
<b>North Thanet Coast LCA (G2)</b>	Medium-high	Medium-high	Long-term	Reversible	
<b>Visual Effects</b>					
The visual effect of the Offshore WTG Array during O&M is assessed as <b>not significant</b> from 17 of the 29 viewpoints assessed in the SLVIA (Viewpoints 1, 3, 7, 9, 10, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28 and 29). The visual effect of the lighting of the Offshore WTG Array in views at night is as assessed as <b>not significant</b> from all viewpoints. The visual effect of the Offshore WTG Array is assessed as <b>significant</b> on the following 12 viewpoints assessed in the SLVIA:					
<b>Viewpoint 2 - Westbrook POS (Margate)/Thanet Coastal Path (Figure 12.28)</b>	Visitors (Westbrook, Margate) and walkers (Thanet Coastline Path, Kent Coastline Walk, Viking Coastal Trail and RCR 15): Medium	Medium-high	Long-term	Reversible	The Offshore WTG Array will result in <b>significant</b> , long-term but reversible effects on the visual amenity experienced by receptors from these representative viewpoint locations located on the north and east coast of the Isle of Thanet; and from the Sandwich Bay area of Dover District. <b>Significant</b> visual effects identified arise on viewpoints located at distances from 8.6 km at the closest locations to the Offshore WTG Array on the north-east headland of Thanet, such as from Kingsgate Bay (Viewpoint 4) and Foreness Point (Viewpoint 13), up to a distance of 19.9 km at Sandwich Bay (Viewpoint 8).
<b>Viewpoint 4 - Kingsgate/North Foreland, Coastal Path (Figure 12.30)</b>	Visitors (Kingsgate Bay), walkers (Thanet Coastline Path, Kent Coastline Walk, Viking Coastal Trail and RCR 15) and residents (Kingsgate/North Foreland): High Road users (B2052): Medium	High	Long-term	Reversible	

Receptor	Sensitivity to Change	Magnitude of Change	Duration	Permanent/reversible	Summary of Likely Significant Effect
<b>Viewpoint 5 - Broadstairs Promenade (Figure 12.31)</b>	Visitors/tourists (Broadstairs), walkers (Thanet Coastline Path, Kent Coastline Walk, Viking Coastal Trail and RCR 15) and residents (Broadstairs): High	High	Long-term	Reversible	<p><b>Significant</b> visual effects have been assessed from numerous viewpoint locations representing views experienced from the communities, visitor/tourist attractions and coastal paths along the coastline over a localised area between Birchington-on-sea (Viewpoint 15) on the north Kent coast and Sandwich Bay (Viewpoint 8) on the east coast of Dover District.</p> <p>The Offshore WTG Array is likely to result in <b>significant</b> visual effects on views experienced along the north Kent coastline by tourists, walkers on the coastal path and people living on the immediate the coastal edge at Birchington-on-sea (Viewpoint 15), Westbrook (Viewpoint 2), Walpole Bay (Viewpoint 14) and Palm Bay/Foreness Point (Viewpoint 13). In views from the north Thanet coast, between Birchington-on-sea and Margate, the Offshore WTG Array will be viewed in close relationship with the landform of Thanet and its high chalk cliffs that form the coastline, with no open seascape separation between the combined TOWF/Offshore WTG Array and the landscape (e.g. Viewpoint 2, Figure 12.28 and Viewpoint 14, Figure 12.40). The combined TOWF/Offshore WTG Array attracts visual attention as a line of vertical elements that form a lateral extension to the headland into the sea horizon, in oblique views eastwards along the coast. Although the Offshore WTG Array is located at longer distances from these areas of the north Thanet coast and many of the WTGs are often screened by the landform of Thanet, the WTGs do not appear to be clearly 'offshore' and their scale is readily appreciated in relation to smaller scale features on the coast, such as the cliffs and urban areas/ buildings that prevail along the cliffs tops.</p> <p>The Offshore WTG Array is likely to result in <b>significant</b> visual effects on views experienced along the north-eastern coastline of the Isle of Thanet by tourists, walkers on the coastal path and people living on the immediate the coastal edge at Kingsgate/North Foreland (Viewpoint 4), Stone Bay (Viewpoint 12), Broadstairs (Viewpoint 5 and 17) and Ramsgate (Viewpoint 6). In these views, from the closest coastal areas of north-east Thanet, all of the Offshore WTG Array will be visible out to sea at distances of between 8 and 13 km to the north-east. The combined TOWF/Offshore WTG Array will form a notable focus of visual attention in these sea views, due to the vertical scale of the WTGs on the otherwise horizontal sea skyline and the lateral spread of WTGs on the horizon. The moving rotor blade sweep associated with the Offshore WTG Array also contributes substantially to drawing viewer attention. There is, however, in these views from the closest section of the Thanet coast, a perception that the combined TOWF/Offshore WTG Array is located at distance offshore and that it is clearly separate from</p>
<b>Viewpoint 6 – Wellington Crescent, Ramsgate (Figure 12.32)</b>	Visitors/tourists/residents (Ramsgate), road users (B2054) and walkers (Thanet Coastline Path, England Coastal Path, Kent Coastline Walk, Viking Coastal Trail and RCR 15): Medium-high Motorists (B2054): Medium	Medium-high	Long-term	Reversible	
<b>Viewpoint 8 - Princes Drive, Sandwich Bay Estate (Figure 12.34)</b>	Visitors/tourists (Sandwich Beach), Residents (Sandwich Bay Estate), walkers (Saxon Shore Way, England Coastal Path, White Cliffs Country Trail and Kent Coastline Walk) and golfers (Royal St Georges): Medium-high	Medium	Long-term	Reversible	
<b>Viewpoint 11 - Joss Bay/North Foreland (Figure 12.37)</b>	Visitors (Joss Bay beach), walkers (Thanet Coastline Path, Kent Coastline Walk, Viking Coastal Trail and RCR 15) and residents (North Foreland): High Road users (B2052): Medium	High	Long-term	Reversible	
<b>Viewpoint 12 - Stone Bay (Figure 12.38)</b>	Visitors (Stone Bay beach), walkers (Thanet Coastline Path, Kent Coastline Walk, Viking Coastal Trail and RCR 15) a residents (Stone Bay): High	High	Long-term	Reversible	
<b>Viewpoint 13 - Foreness Point/Palm Bay (Figure 12.39)</b>	Road users (B2051), Walkers (Thanet Coastline Path, Kent Coastline Walk, Viking Coastal Trail and RCR 15): Medium Residents (Cliftonville/Palm Bay): High	High	Long-term	Reversible	
<b>Viewpoint 14 - Walpole Bay (Margate) (Figure 12.40)</b>	Visitors (Walpole Bay), road users (B2051) and walkers (Thanet Coastline Path, Kent Coastline Walk, Viking Coastal Trail and RCR 15): Medium Residents (Walpole Bay, Margate): Medium-high	Medium-high	Long-term	Reversible	
<b>Viewpoint 15 - Birchington-on-Sea (Figure 12.41)</b>	Walkers (Thanet Coastline Path, Kent Coastline Walk, Viking Coastal Trail and RCR 15/ open spaces): Medium	Medium	Long-term	Reversible	

Receptor	Sensitivity to Change	Magnitude of Change	Duration	Permanent/reversible	Summary of Likely Significant Effect
	Residents (Birchington): Medium-high				the landform of Thanet, forming an array of WTGs in an open seascape (e.g. Viewpoints 4, Figure 12.30 and Viewpoint 13, Figure 12.39).
<b>Viewpoint 16 - Manston Road, Isle of Thanet (Figure 12.42)</b>	Residents (scattered dwellings, Thanet plateau) and walkers (PRoW): Medium-high Road users (Manston Road): Medium-low	Medium	Long-term	Reversible	In addition to these coastal views, the Offshore WTG Array is also likely to give rise to <b>significant</b> effects on views from the elevated plateau areas of central Thanet (such as Viewpoint 16, Manston Road) where the visual effect is assessed as <b>significant</b> as a result of the upper towers and rotors of the Offshore WTG Array being visible over the urban skyline, introducing a wind farm influence to views where TOWF is not visible (since it is screened by the intervening urban areas).
<b>Viewpoint 17 - Broadstairs, Dumpton Gap (Figure 12.43)</b>	Tourists/visitors (Dumpton Gap beach), walkers (promenade/ Thanet Coastline Path, Kent Coastline Walk, Viking Coastal Trail and RCR 15), and residents (Dumpton Gap): High	High	Long-term	Reversible	<p>In addition to these significant visual effects identified on receptors at representative viewpoints in Thanet, the Offshore WTG Array is likely to result in <b>significant</b> visual effects on views experienced from the Sandwich Bay area of Dover District, as represented by Viewpoint 8 (Sandwich Bay Estate/Sandwich Flats), where the Offshore WTG Array will be visible at distances of approximately 20 km and over to the north-east. The combined TOWF/Offshore WTG Array is plainly visible in very good or excellent visibility, but it will form a prevailing influence because of its apparent size and the perception that is located at long distance offshore and separated by open seascape from the landform of Thanet.</p> <p>From the majority of these representative viewpoints assessed as having significant effects, the Offshore WTG Array will consolidate the existing influence of TOWF, however the scale comparison between the existing TOWF WTGs and the larger WTGs of the Offshore WTG Array, sited at closer proximity in these views, is likely to give rise to some discordance that increases the magnitude of change and will often be the primary factor that results in significant visual effects.</p>

Table 15.12: Summary of potential effects on Seascape, Landscape and Visual receptors (Construction and decommissioning phases)

Receptor	Sensitivity to Change	Magnitude of Change	Duration	Permanent/ reversible
<b>Seascape Effects</b>				
The effect of the Offshore WTG Array on seascape character during construction and decommissioning is assessed as <b>not significant</b> on all of the SCAs assessed in the SLVIA, with the exception of the following two SCAs covering a localised area of inshore waters between the Offshore WTG Array and the Thanet coast, which are assessed as having <b>significant</b> effects:				
<b>Broadstairs Knolls and Ramsgate Road SCA (I2A)</b>	Medium-high	Medium-high	Short-term	Reversible
<b>Margate Roads SCA (I2F)</b>	Medium-high	Medium-high	Short-term	Reversible
<b>Landscape Effects</b>				
The effect of the Offshore WTG Array on landscape character during construction and decommissioning is assessed as <b>not significant</b> on all of the LCAs assessed in the SLVIA, with the exception of the following three LCAs covering a localised area around the north-east headland of Thanet, which are assessed as having <b>significant</b> effects:				
<b>Foreness Point and North Foreland LCA (F2)</b>	High	High	Short-term	Reversible
<b>Ramsgate and Broadstairs Cliffs LCA (G1)</b>	High	High	Short-term	Reversible
<b>North Thanet Coast LCA (G2)</b>	Medium-high	Medium-high	Short-term	Reversible
<b>Visual Effects</b>				
The visual effect of the Offshore WTG Array during construction and decommissioning is assessed as <b>not significant</b> from 17 of the 29 viewpoints assessed in the SLVIA (Viewpoints 1, 3, 7, 9, 10, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28 and 29). The visual effect of the Offshore WTG Array is assessed as <b>significant</b> on the following 12 viewpoints assessed in the SLVIA:				
<b>Viewpoint 2 - Westbrook POS (Margate)/Thanet Coastal Path (Figure 12.28)</b>	Visitors (Westbrook, Margate) and walkers (Thanet Coastline Path, Kent Coastline Walk, Viking Coastal Trail and RCR 15): Medium	Medium-high	Short-term	Reversible
<b>Viewpoint 4 - Kingsgate/North Foreland, Coastal Path (Figure 12.30)</b>	Visitors (Kingsgate Bay), walkers (Thanet Coastline Path, Kent Coastline Walk, Viking Coastal Trail and RCR 15) and residents (Kingsgate/North Foreland): High Road users (B2052): Medium	High	Short-term	Reversible



Receptor	Sensitivity to Change	Magnitude of Change	Duration	Permanent/ reversible
<b>Viewpoint 5 - Broadstairs Promenade (Figure 12.31)</b>	Visitors/tourists (Broadstairs), walkers (Thanet Coastline Path, Kent Coastline Walk, Viking Coastal Trail and RCR 15) and residents (Broadstairs): High	High	Short-term	Reversible
<b>Viewpoint 6 – Wellington Crescent, Ramsgate (Figure 12.32)</b>	Visitors/tourists/residents (Ramsgate), road users (B2054) and walkers (Thanet Coastline Path, England Coastal Path, Kent Coastline Walk, Viking Coastal Trail and RCR 15): Medium-high Motorists (B2054): Medium	Medium-high	Short-term	Reversible
<b>Viewpoint 8 - Princes Drive, Sandwich Bay Estate (Figure 12.34)</b>	Visitors/tourists (Sandwich Beach), Residents (Sandwich Bay Estate), walkers (Saxon Shore Way, England Coastal Path, White Cliffs Country Trail and Kent Coastline Walk) and golfers (Royal St Georges): Medium-high	Medium	Short-term	Reversible
<b>Viewpoint 11 - Joss Bay/North Foreland (Figure 12.37)</b>	Visitors (Joss Bay beach), walkers (Thanet Coastline Path, Kent Coastline Walk, Viking Coastal Trail and RCR 15) and residents (North Foreland): High Road users (B2052): Medium	High	Short-term	Reversible
<b>Viewpoint 12 - Stone Bay (Figure 12.38)</b>	Visitors (Stone Bay beach), walkers (Thanet Coastline Path, Kent Coastline Walk, Viking Coastal Trail and RCR 15) and residents (Stone Bay): High	High	Short-term	Reversible
<b>Viewpoint 13 - Foreness Point/Palm Bay (Figure 12.39)</b>	Road users (B2051), Walkers (Thanet Coastline Path, Kent Coastline Walk, Viking Coastal Trail and RCR 15): Medium Residents (Cliftonville/Palm Bay): High	High	Short-term	Reversible
<b>Viewpoint 14 - Walpole Bay (Margate) (Figure 12.40)</b>	Visitors (Walpole Bay), road users (B2051) and walkers (Thanet Coastline Path, Kent Coastline Walk, Viking Coastal Trail and RCR 15): Medium Residents (Walpole Bay, Margate): Medium-high	Medium-high	Short-term	Reversible
<b>Viewpoint 15 - Birchington-on-Sea (Figure 12.41)</b>	Walkers (Thanet Coastline Path, Kent Coastline Walk, Viking Coastal Trail and RCR 15/ open spaces): Medium Residents (Birchington): Medium-high	Medium	Short-term	Reversible

Receptor	Sensitivity to Change	Magnitude of Change	Duration	Permanent/ reversible
<b>Viewpoint 16 - Manston Road, Isle of Thanet (Figure 12.42)</b>	Residents (scattered dwellings, Thanet plateau) and walkers (PRoW) is Medium-high Road users (Manston Road): Medium-low	Medium	Short-term	Reversible
<b>Viewpoint 17 - Broadstairs, Dumpton Gap (Figure 12.43)</b>	Tourists/visitors (Dumpton Gap beach), walkers (promenade/ Thanet Coastline Path, Kent Coastline Walk, Viking Coastal Trail and RCR 15), and residents (Dumpton Gap): High	High	Short-term	Reversible

**Table 15.13: Summary of predicted effects on Offshore Archaeology and Cultural Heritage**

Description of impact	Effect	Possible mitigation measures	Residual effect
Construction			
Permanent physical loss/ disturbance of known and potential seabed receptors in shallow sediments	Seabed preparation and construction activities	Production of WSI to outline implementation of mitigation AEZs recommended around known, A1 features Avoidance of A2s or further assessment if impact cannot be avoided Archaeological input at the planning stages of any further survey, and archaeological review of any additional ROV, diver, and geophysical survey data ORPAD for unexpected discoveries	<b>Minor to Negligible</b> adverse  And/ or in some cases <b>Minor to Moderate</b> beneficial with appropriate pre-construction archaeological investigation
Permanent loss/ disturbance of known and potential palaeogeographic receptors	Construction activities that penetrate the seabed	Production of WSI to outline implementation of mitigation Phased archaeological assessment of existing geotechnical data Archaeological input at the planning stages of any further survey, and archaeological review of any additional geophysical and/ or geotechnical survey data	<b>Minor to Negligible</b> adverse And/ or <b>Minor to Moderate</b> beneficial significance
Indirect effects upon known and potential archaeological receptors	Changes to sedimentation and erosion patterns	Production of WSI to outline implementation of mitigation Extent of AEZs to protect known archaeological receptors Archaeological review of results of scour monitoring	<b>Minor</b> adverse
Indirect effects upon setting offshore and at the landfall	Impact on setting, visual impact	Production of WSI to outline implementation of mitigation For offshore: application of AEZs, avoidance, further assessment if sites will be impacted For onshore: effects are considered to be <b>Minor</b> , no mitigation recommended	<b>Minor to Negligible</b> adverse
Changes to the perceptions of HSC from construction activities	Impact on HSC	Update HSC to reflect changes	<b>Minor to Negligible</b> adverse
O&M			

Description of impact	Effect	Possible mitigation measures	Residual effect
Permanent physical loss/ disturbance of known and potential seabed receptors in shallow sediments	O&M activities that impact the seabed	Production of WSI to outline implementation of mitigation AEZs recommended around known, A1 features. Avoidance of A2s or further assessment if impact cannot be avoided Archaeological input at the planning stages of any further survey, and archaeological review of any additional survey data ORPAD for unexpected discoveries	<b>Minor to Negligible</b> adverse  And/ or in some cases <b>Minor to Moderate</b> beneficial with implementation of ORPAD
Permanent loss/ disturbance of known and potential palaeogeographic receptors	O&M activities that penetrate the seabed	Production of WSI to outline implementation of mitigation Archaeological input at the planning stages of any further survey, and archaeological review of any additional geophysical and/ or geotechnical survey data	<b>Minor to Negligible</b> adverse and/ or <b>Minor to Moderate</b> beneficial <b>significance</b>
Indirect effects upon known and potential archaeological receptors	Changes to sedimentation and erosion patterns	Production of WSI to outline implementation of mitigation Extent of AEZs to protect known archaeological receptors Archaeological review of results of scour monitoring	<b>Minor</b> adverse
Indirect effects upon setting offshore and at the landfall	Impact on setting, visual impact	Production of WSI to outline implementation of mitigation For offshore: application of AEZs, avoidance, further assessment if sites will be impacted For onshore: effects are considered to be <b>Minor</b> , no mitigation recommended	<b>Minor to Negligible</b> adverse
Changes to the perception of HSC from O&M	Impact on HSC	Assuming HSC has been updated during construction, no further mitigation required.	<b>Negligible</b> adverse
<b>Decommissioning</b>			
Permanent physical loss/ disturbance of known and potential seabed receptors in shallow sediments	Decommissioning activities that impact the seabed	Production of WSI to outline implementation of mitigation AEZs recommended around known, A1 features. Avoidance of A2s or further assessment if impact cannot be avoided Archaeological input at the planning stages of any further survey, and archaeological review of any additional ROV, diver, and geophysical survey data ORPAD for unexpected discoveries	<b>Minor to Negligible</b> adverse  And/ or in some cases <b>Minor to moderate</b> beneficial

Description of impact	Effect	Possible mitigation measures	Residual effect
Permanent loss/ disturbance of known and potential palaeogeographic receptors	Decommissioning activities that penetrate the seabed	Production of WSI to outline implementation of mitigation Archaeological input at the planning stages of any further survey, and archaeological review of any additional survey data.	<b>Minor to Negligible</b> adverse and/ or <b>Minor to moderate</b> beneficial <b>significance</b>
Indirect effects upon known and potential archaeological receptors	Changes to sedimentation and erosion patterns	Production of WSI to outline implementation of mitigation Extent of AEZs to protect known archaeological receptors Archaeological review of results of scour monitoring	<b>Minor</b> adverse
Indirect effects upon setting offshore and at the landfall	Impact on setting, visual impact	Production of WSI to outline implementation of mitigation For offshore: application of AEZs, avoidance, further assessment if sites will be impacted For onshore: effects are considered to be <b>Minor</b> , no mitigation recommended	<b>Minor to Negligible</b> adverse
Changes to the perceptions of HSC from decommissioning activities	Impact to HSC	Following decommissioning HSC should be updated to reflect the changes.	<b>Minor to Negligible</b> adverse
Cumulative effects			
Effects on known and potential archaeological receptors	Effects on known and potential archaeological receptors	Effects on known and potential archaeological receptors	Effects on known and potential archaeological receptors