

Offshore  
Wind  
Leasing  
Round 4

Resource and Constraints  
Assessment for Offshore Wind

Characterisation Area Report  
**South East**

9

# Characterisation Area Report: 9 - South East

38255-TCE-REP-014 Characterisation Area Report: 9 – South East		
Version	Status	Issue date
1.1	Draft	July 2018
1.2	Draft	November 2018
1.3	Final	September 2019

The information included in this report should be read in conjunction with the *Resource and Constraints Assessment for Offshore Wind: Methodology Report* and the *Summary Stakeholder Feedback Report*. The trigger distance for constraints to be included in the constraints analysis section of this report is 1 nautical mile (NM).

The Crown Estate has undertaken the analysis in this report using the evidence available to it, internal expertise and support from external advisers where appropriate. The analysis does not obviate any potential need for any Habitat Regulations Assessment (HRA) or any project level consideration of the potential impact of development. The analysis does not supersede any statutory policies or marine plans. The analysis, including the data and information contained in this document, presents a point in time assessment with changes likely to both the presence and nature of constraints.

This report is provided for information purposes only and no party may rely on the accuracy, completeness or fitness of its content for any particular purpose. The Crown Estate makes no representation, assurance, undertaking or warranty in respect of the analysis in the report including all data and information contained in it.

Receptor rating		Area rating	
Receptor assessed but no interaction noted		Receptor assessed but no interaction noted	
Interaction acceptable with best practice/accepted mitigation		The constraint will present the need to implement best practice/accepted mitigation measures to enable acceptable development within the whole area	
Interaction acceptable with moderate mitigation		The constraint will present the need to implement moderate mitigation measures to enable acceptable development within the whole area	
Interaction acceptable with significant mitigation		The constraint will present the need to implement significant and/or strategic level mitigation measures to enable acceptable development within the whole area	
Significant/insurmountable issue that would be challenging to mitigate within the area of influence of a receptor		Significant/insurmountable issue that would be challenging to mitigate for any development within the whole area	
No data coverage across the area		No data coverage across the area	

## Constraints analysis

Note that in addition to The Crown Estate leases/licences within this table, The Crown Estate has also identified key resource areas (KRAs) which may be suitable for the future development of different marine sectors. Information about overlapping KRAs that overlap this characterisation area is described in a latter section of this document.

Exclusions model - Hard constraints			Receptor rating	Area rating
	Present	Commentary		
The Crown Estate agreements	Telecoms and interconnector cables: there are numerous active and inactive cables intersecting the characterisation area as they land on the south coast at various locations.	The cables have been removed from the characterisation area and should be avoided where possible by using best practice/accepted mitigation. However, the large number of cables, particularly intersecting the central part of the characterisation area when also combined with aggregates sites may be a constraint on the area available for new arrays. Since cable crossings require cable protection (which may have adverse environmental effects), crossings should be minimised where practicable.		
	Rampion Wind Farm and OFTO: within the central part of the characterisation area.	The cumulative impact of offshore wind farm (OWF) developments and associated cable infrastructure will need to be considered in this area as there may be concerns around wind resource and proximity to the existing site. There will need to be a 5 km buffer around existing offshore wind projects – any new wind developments within 5 km will need the permission of the incumbent party. Since cable crossings require cable protection (which may have adverse environmental effects), crossings should be minimised where practicable.		
	Perpetuus Tidal Energy Centre (PETC): adjacent to the western boundary of the characterisation area.	May need buffer around site and negotiations with the existing rights holder.		
	There are 24 active aggregate dredge sites within the characterisation area.	These sites would require a 2 km buffer around them and negotiations with the customer.		
	The Crown Estate has completed a plan-level Habitats Regulations Assessment for 2017 Offshore Wind Extensions and intends to grant right for: <ul style="list-style-type: none"> <li>Rampion Wind Farm (extension of up to 400 MW).</li> </ul> This extension is situated in the central northern section of the characterisation area	As with other OWFs, a 5 km buffer will be in place around the final area under lease for this extension project. Any new wind developments within 5 km will need the permission of the incumbent party.  Proposals for projects coming forwards through new leasing should be cognisant of this extension and potential cumulative impacts on all receptors. There is potentially a significant increase to deployed capacity through this project however the area is relatively large so there may be opportunity elsewhere.		
Other energy infrastructure	None within the trigger distance.	No existing oil and gas infrastructure and no new licences under development in this area.		
Navigation	There is significant navigational dredging in and adjacent to the area related to the ports of Shoreham, Newhaven, Brighton Marina and Dover.	The dredge denotes a significant investment in maintaining access to the port facilities and should therefore be avoided. There is sufficient potential available in the area to allow mitigation/avoidance of interaction through appropriate siting.		
	The Channel traffic separation schemes run adjacent to the area.	The schemes mean that traffic is concentrated into defined routes due to volume of vessels and safety reasons. Any impact on the traffic separation scheme should be avoided where possible as the area is of significant importance to the UK and European economies although there appears to be sufficient potential within the area taking account of these constraints.		
Social	There are two designated wrecks intersecting the area (both off Eastbourne) and one 650 m north of the area (Brighton Marina).	There is sufficient potential available in the area to allow mitigation/avoidance of interaction through appropriate siting.		

Restrictions model — Soft constraints			Receptor rating	Area rating
<b>Economic tier</b>				
Navigation	The area intersects with eight anchorage areas located around Portsmouth Harbour to the east of the Isle of Wight.	These areas should be avoided if possible. Although they can be moved they are sited in area that have appropriate shelter/seabed for safe anchoring. The extent of the area covered by these mean that they will not have a huge impact on development in the area.	Yellow	Green
	The area intersects Dover and close to Newhaven Harbour Authority Areas.	There is sufficient potential available in the area to allow mitigation/avoidance of interaction through appropriate siting, however, development within these jurisdictions will present a significant constraint.	Yellow	Green
	A large volume of traffic navigates through the channel including through the characterisation area.	Need to be cautious not to inhibit traffic in the channel area as the area is important to the UK and European economies. The traffic is not restricted to the navigation channels and it may present a significant constraint to development in the area.	Red	Yellow
	There are 11 disposal sites located around the area including a license for burial at sea at Newhaven.	There is sufficient area potentially available to allow mitigation/avoidance of interaction through appropriate siting.	Green	Green
Subsurface	None within the trigger distance.		Light Green	Light Green
Fishing	See fisheries commentary below.		N/A	Yellow

<b>Environmental tier</b>						
<p>The assessment of the sensitivity of Marine Protected Areas (MPAs) to pressures caused by offshore wind development and operation is assessed in a separate spreadsheet which will be made available as part of the Round 4 evidence base. Commentary has been noted in the relevant characterisation document where MPAs either overlap or are within 1 NM of the characterisation area and have been assessed as a yellow rating or above. For more information on the methodology for this assessment, please refer to the methodology report.</p> <p>Royal Society for the Protection of Birds (RSPB) considers that development within this characterisation area has a risk of displacing breeding guillemot, razorbill and fulmar from various protected sites in the region.</p> <p>Assessments of Annex II species have not been made as part of the characterisation process. Such assessments will need to be undertaken at project level for individual developments within the characterisation area.</p>						
Type of designation	Name of designation	Designated features/species	Conservation objectives	Commentary	Receptor rating	Area rating
European marine designations	Special Areas of Conservation (SAC)	Pevensey Levels (1.2 km), Folkestone to Etchinghill Escarpment (1.5 km), Isle of Wight Downs (1.8 km) Wight-Barfleur Reef		Assessed as low risk; details available in separate spreadsheet.	Green	Green
	SAC	Bassurelle Sandbank	Sandbanks which are slightly covered by seawater all the time	For the Sandbanks feature to be in favourable condition through maintaining or restoring the habitat. The site condition is currently unfavourable.	Red	Green

					Consideration should be given to the SNCB's report on cable sensitivity entitled 'Natural England and JNCC advice on key sensitivities of habitats and Marine Protected Areas in English Waters to offshore wind farm cabling within Proposed Round 4 leasing areas'.		
SAC	South Wight Maritime	Reefs Vegetated sea cliffs Sea caves		Maintain/restore features as appropriate. The original (2001) Reg 33 advice for the site has a conservation objective to maintain the reef features.	<p>The site includes a number of subtidal reefs that extend into the intertidal zone. To the west and south-west some of the most important subtidal British chalk reefs occur, representing over 5% of Europe's coastal chalk exposures. Since the SAC area has largely been excluded from the characterisation area the rocky (largely chalk) reefs are not likely to be directly affected by development. The reefs may be sensitive to cabling, but impacts are likely to be avoidable - especially since the cliffs/rocky nature of much of the shore are likely to make landfall through the SAC unlikely.</p> <p>Consideration should be given to the SNCB's report on cable sensitivity entitled 'Natural England and JNCC advice on key sensitivities of habitats and Marine Protected Areas in English Waters to offshore wind farm cabling within Proposed Round 4 leasing areas'.</p>		
SAC (France)	Ridens et dunes hydrauliques du détroit du Pas-de-Calais (50 m)	1365 common seal 1364 grey Seal 1351 harbour porpoise 1170 Reefs 1110 Sandbanks which are slightly covered by seawater at all times		No information available.	<p>The site comprises dynamic sandbanks (Colbort Bank, Vergoyer Bank and the French section of the Bassurelle sandbank) with typical mobile sandbank fauna. The Ridens de Bologne is a gravelly rocky reef which supports maerl beds with high biodiversity. The site also supports resident and wintering populations of harbour porpoise and resident populations of grey and harbour seal.</p> <p>Given that the site lies seaward of the characterisation area it is unlikely that there would be any impacts on the sandbank or reef features from cabling. There is the potential for noise impacts to affect the seal and harbour porpoise features of the site, but this is likely to be manageable with appropriate mitigation – it is notable that neither Rampion nor Thanet Extension identified possible likely significant effect on this site as part of their HRA processes.</p>		
Sites of Community Importance (SCIs)	None within the trigger distance						
Harbour porpoise SAC	None within the trigger distance						
Ramsar	Pevensy Levels (1.2 km)				Assessed as low risk; details available in separate spreadsheet.		
Special Protection Areas (SPA)	Dungeness, Romney Marsh and Rye Bay	great bittern (Non-breeding) Bewick's swan (Non-breeding) northern shoveler (Non-breeding) Eurasian marsh harrier (Breeding)		Maintain/restore as appropriate.	This SPA was recently extended seaward with the aim of protecting the sea foraging areas for little tern, common tern and sandwich tern which breed within the previous SPA boundary.		

			<p>hen harrier (Non-breeding)                  pied avocet (Breeding)                  European golden plover (Non-breeding)                  ruff (Non-breeding)                  Mediterranean gull (Breeding)                  Sandwich tern (Breeding)                  common tern (Breeding)                  little tern (Breeding)                  aquatic warbler (Non-breeding)                  waterbird assemblage (any season)</p>		<p>Since the extension area has been excluded from the characterisation area, impacts on the tern species would be minimised and are likely to be at an acceptable level. Similarly, impacts on other seabirds at the coastal SPA are likely to be reduced by the exclusion of the SPA area from the characterisation area.                  Cabling through the SPA is not likely to have significant impacts, but there could be impacts on the terrestrial habitats within the SPA. These impacts are likely to be mitigable /avoidable with choice of landfall location and cabling methodology.</p>		
	SPA	Cap Gris-Nez (400 m)	<p>razorbill                  white fronted goose                  greylag goose                  scaup                  brent goose                  barnacle goose                  sanderling                  fulmar                  black-throated diver                  great northern diver                  red-throated diver                  velvet scoter                  common scoter                  smew                  red-breasted merganser                  spoonbill                  Slavonian grebe                  great crested grebe                  red-necked grebe                  black-necked grebe                  kittiwake                  eider                  Sandwich tern</p>	No information available.	<p>The sites in a marine extension of the original Cap Gris-Nez SPA (FR3110085). It supports a wide variety of breeding, wintering and on-passage seabirds. The location of the site seaward from the characterisation area makes direct impacts from cabling unlikely (and disturbance effects on (for example) diver species unlikely). The foraging range of some seabirds from the site is likely to overlap the characterisation area and the site may need to be taken into consideration as part of the HRA process for developments within the area. However, it is notable that this site did not feature in the HRA processes for either Rampion or Thanet Extension (which are the closest UK offshore wind projects). It is likely that impacts on birds from the site will be manageable.</p>		
	Potential Special Protection Area (pSPA)	Solent and Dorset Coast	<p>Sandwich tern (breeding)                  common tern (breeding)                  little tern (breeding)</p>	Maintain/restore as appropriate.	<p>The pSPA has been proposed to protect foraging areas for the tern colonies which breed in adjacent coastal SPAs (Poole Harbour SPA, Solent &amp; Southampton Water SPA and Chichester &amp; Langstone Harbour SPA). The majority of the pSPA area has been excluded from the characterisation area, and therefore impacts on terns are expected to be minimal. Although the issue of impacts on terns is likely to come up during project-level HRA, the absence of turbines within the SPA is likely to be sufficient to mitigate concerns.</p>		
Marine Conservation Zones (MCZs)		Beachy Head West, Dover to Folkestone, Folkestone Pomerania, Offshore Brighton, Offshore Overfalls, Beachy Head East,			Assessed as low risk; details available in separate spreadsheet.		

	Selsey Bill and The Hounds, Bembridge, Inner Bank					
	Kingmere	black seabream ( <i>Spondyliosoma cantharus</i> ) Infralittoral rock and thin mixed sediment Subtidal chalk	The management approach for this site is to recover all features to favourable condition.	<p>The majority of the MCZ has been excluded from the characterisation area, which means that impacts on the habitat features are likely to be limited to cabling. These are likely to be avoidable/mitigable. Black seabream at the site are sensitive to noise from piling - the nearby Rampion OWF has a piling restriction to protect the fish during the breeding season, and it is likely that new offshore wind developments in the area could have similar restrictions. It is therefore considered that impacts from development within the characterisation area are likely to be at a manageable level.</p> <p>The Wildlife Trusts note that all features at the site need to recover to favourable condition, and that the site should therefore be considered very sensitive to cabling impacts. They note that the infralittoral rock and thin mixed sediment feature is important habitat for the black seabream feature.</p> <p>Consideration should also be given to the SNCB's report on cable sensitivity entitled 'Natural England and JNCC advice on key sensitivities of habitats and Marine Protected Areas in English Waters to offshore wind farm cabling within Proposed Round 4 leasing areas'.</p>		
Sites of Special Scientific Interest (SSSIs)	Lympne Escarpment (1.6 km), Seabrook Stream (1.1 km), Seaford to Beachy Head, Pevensey Levels (1 km), Folkestone to Etchinghill Escarpment (1.5 km), Folkestone Warren (100 m), Bonchurch Landslips (1.3 km), Compton Chine to Steephill Cove (1.4 km), Ventnor Downs (1.8 km),			Assessed as low risk; details available in separate spreadsheet.		

SSSI	Brighton to Newhaven Cliffs	kittiwake (breeding) Geological/Earth Heritage Lowland calcareous grassland (and associated invertebrates) Littoral rock/inshore sublittoral rock (and associated invertebrates)	Majority of features are in favourable condition with some in unfavourable (recovering) condition.	The majority of features at this site are terrestrial and are not exposed to activity in the characterisation area. The presence of cliffs probably precludes landfall at the site, so impacts are expected to be negligible. During site assessment in 2010 it was noted that the kittiwake colony has mostly moved to the Seaford to Beachy Head SSSI; in any case, impacts on the colony are likely to be mitigable at project level.  RSPB consider that there could be a potential impact on the regionally important kittiwake population from this SSSI if offshore wind is developed within the characterisation area.		
Spawning and nursery grounds	There are a few overlaps of high-intensity nursery and spawning grounds in the area (maximum is three).  There is a herring spawning ground in the east English Channel, close to the median line. Natural England advise that black bream spawn in the area and are sensitive to offshore wind development.			Noise disturbance has the potential to be an issue with the potential for seasonal restrictions on piling during breeding. It will depend if the spawning grounds are still active and their precise locations (which may need to be determined by surveys).		
Social tier						
Royal Yachting Association (RYA) Automatic Identification System (AIS)	This is relatively heavy recreational vessel traffic transiting through the area.			There is sufficient potential available in the area to allow mitigation/avoidance of interaction through appropriate siting.		
Marinas	There are four marinas near the area.			There is sufficient potential available in the area to allow mitigation/avoidance of interaction through appropriate siting.		
Bathing beaches	There are 24 bathing beaches close to the area all along the coast.			The area extends very close to shore around Eastbourne. The impact on these beaches should be mitigatable with appropriate siting of development.		
Visibility from sensitive receptors	See visual analysis below.					

## Review layers

### Visibility from landscape designations and the coast

The bands of significant visual impact are taken from the OSEA3<sup>1</sup> environmental report. It should be noted that these bands were challenged through the statutory stakeholder engagement by the Statutory Nature Conservation Bodies (SNCBs) so further analysis and engagement should be conducted to understand the visual constraint in potential development areas more fully.

The visibility from landscape designations analysis has been conducted using designations which include protections for landscapes and settings namely: National Parks, Areas of Outstanding Natural Beauty (AONBs), Heritage Coasts and World Heritage sites. For more information on these, please consult the methodology report. The analysis draws on visibility from these designations but not the sensitivity of them to offshore wind developments. Proposals should draw on the relevant management plans or local policies to fully understand the level of constraint that exists in the vicinity of these landscape designations. As such, more analysis is required to fully understand the potential constraint.

	Band of significant visual impact	% of overlap with region	Commentary	Area rating
Medium sensitivity receptors	0-13 km (3.6 MW turbines)	35%	A significant proportion of this area is within 30 km. The remaining area is in the central channel of the traffic separation scheme. This means that development in this area may potentially be significantly constrained by visual impacts.	
	13-20 km (4-8 MW turbines)	13%		
	20-30 km (10-15 MW turbines)	17%		
High sensitivity receptors	0-30 km	65%		

Visibility from landscape designations		Receptor rating	Area rating
Designations that should be considered include: <ul style="list-style-type: none"> <li>• South Downs National Park</li> <li>• Kent Downs AONB</li> <li>• High Weald AONB</li> <li>• Isle of Wight AONB</li> <li>• Dorset AONB</li> <li>• Chichester Harbour AONB</li> <li>• South Foreland Heritage Coast</li> <li>• Dover – Folkestone Heritage Coast</li> <li>• Sussex Heritage Coast</li> <li>• Tennyson Heritage Coast.</li> </ul>	<p>The coastal and western sections of the area present a significant visual constraint. The best opportunity appears to be further from shore. Due to significant amount of the characterisation area within 30 km along a highly designated coastline, the area rating has been marked as needing significant mitigation.</p> <p>The National Trust has noted that there is a potential for onshore impacts from cable activity along sensitive areas of the coastline which have a high landscape value. Visual impacts of onshore infrastructure in this area will need to be carefully considered, along with the impacts of cabling through protected landscape sites.</p>		

### Ornithology outside of Special Protection Areas (SPAs) for high-risk species

Joint Nature Conservation Committee (JNCC), Natural England and Royal Society for the Protection of Birds (RSPB) advise that there are a number of information sources which should be taken into consideration in the assessment of potential impacts from offshore wind development in this characterisation area. These are:

- Site Information Centres on the JNCC website (<http://jncc.defra.gov.uk/page-6895>) which provide up-to-date information on protected areas, their features and status.
- Marine Ecosystems Research Programme (MERP) seabird distribution maps ([https://marine-ecosystems.org.uk/Research\\_outcomes/Top\\_predators](https://marine-ecosystems.org.uk/Research_outcomes/Top_predators)).
- Future of the Atlantic Marine Environment (FAME) and Seabird Tracking and Research (STAR) tracking data from the RSPB (<https://rspb.maps.arcgis.com/apps/Cascade/index.html?appid=d6c3aa1ec7184a2895a01cebf451c7b3>).

<sup>1</sup> BEIS (2016), OSEA3 Environmental Report. Crown copyright 2016, p 291. URN 16D/033.

- Wakefield, E., Owen, E., Baer, J., Carroll, M., Daunt, F., Dodd, S., Green, J., Guilford, T., Mavor, R., Miller, P., Newell, M., Newton, S., Robertson, G., Shoji, A., Soanes, L., Votier, S., Wanless, S. & Bolton, M. (2017) Breeding density, fine-scale tracking, and large-scale modelling reveal the regional distribution of four seabird species. *Ecological Applications* <https://doi.org/10.1002/eap.1591>.
- Cleasby, I.R., Owen, E., Wilson, L.J., Bolton, M. (2018) Combining habitat modelling and hotspot analysis to reveal the location of high-density seabird areas across the UK: Technical Report. RSPB Research Report no. 63.
- Kober, K., Webb, A., Win, I., Lewis, M., O'Brien, S., Wilson, L.J., Reid, J.B. (2010) An analysis of the numbers and distribution of seabirds within the British Fishery Limit aimed at identifying areas that qualify as possible marine SPAs. JNCC Report 431 (and the distribution maps therein) (<http://jncc.defra.gov.uk/page-5622>).
- Sansom, A., Wilson, L.J., Caldow, R.W.G. & Bolton, M. 2018. Comparing marine distributions maps for seabirds during the breeding season derived from different survey and analysis methods. *PLOS ONE* <https://doi.org/10.1371/journal.pone.0201797>.
- Bradbury, G., Trinder, M., Furness, B., Banks, A.N., Caldow, R.W.G. & Hume, D. 2014. Mapping Seabird Sensitivity to Offshore Wind Farms. *PLoS ONE* 9(9): e106366. doi:10.1371/journal.pone.0106366.
- Thaxter, C.B., Ross-Smith, V., Bouten, W., Clark, N., Conway, G., Rehfish, M. & Burton, N. (2015) Seabird–wind farm interactions during the breeding season vary within and between years: A case study of lesser black-backed gull *Larus fuscus* in the UK. *Biological Conservation* 186: 347-358.

Species	Site	Commentary on coverage	Area rating
lesser black-backed gull	Alde-Ore Estuary SPA	<p>The lesser black-backed gull mean maximum seaward foraging range extends 141 km from the Alde-Ore Estuary SPA, with the north-eastern end of the south-east characterisation area overlapping this foraging range.</p> <p>Given the high level of existing offshore wind development within this foraging range, cumulative impacts of development within the south-east area with other offshore wind development will be a consent consideration. Cumulative collision risk will also be affected by planned developments within this range, i.e. Norfolk Boreas, Norfolk Vanguard, East Anglia One North, East Anglia Two, and Thanet Extension. However, given that this characterisation area's slight overlap is on the periphery of the foraging range, any contribution of development in this location is likely to be considered <i>de minimis</i>.</p> <p>Summer density of the lesser black-backed gull is low through most of the South East characterisation area; locating any development beyond the Alde-Ore Estuary SPA foraging range (i.e. &gt; 141 km) would reduce any impacts on the colony and strengthen the <i>de minimis</i> argument with respect to cumulative impacts.</p> <p>RSPB have concerns over the potential for significant cumulative impact on lesser black-backed gull from the Alde-Ore Estuary SPA, especially in the light of existing and potential offshore wind development in the area. They are concerned that mitigation measures proposed for the Galloper offshore wind farm have not yet been successfully implemented.</p> <p>Natural England note that there is a significant amount of information to inform cumulative impacts on lesser black-backed gull at project level. This includes Thaxter <i>et al.</i> 2015 and lesser black-backed gull tracking data collected by RSPB and British Trust of Ornithology (<a href="https://www.bto.org/science/migration/tracking-studies/tracking-lesser-black-backed-gulls">https://www.bto.org/science/migration/tracking-studies/tracking-lesser-black-backed-gulls</a>).</p>	
Sandwich tern	Chichester and Langstone harbours SPA; Solent and Southampton Water SPA	<p>The Sandwich tern mean maximum seaward foraging range extends 49 km from the Chichester and Langstone Harbours SPA and the Solent and Southampton Water SPA. The western end of the South East characterisation area overlaps these overlapping foraging ranges. Given the relatively restricted foraging range of the species and limited existing offshore wind development with the foraging range, cumulative impacts of development within the South East area with other offshore wind development are likely to be less of a concern than with other sandwich tern colonies.</p> <p>Summer density of sandwich tern is relatively low across the two SPA foraging ranges, with a slightly higher density of the species occurring around the Isle of Wight, extending to the east and west. Most of the South East area that overlaps the two SPA foraging ranges is in an area of low sandwich tern density; however, locating any development in the South East area in the central and eastern parts of the area and beyond the mean maximum foraging range (i.e. &gt; 49 km) would reduce any impacts on these SPA colonies.</p> <p>RSPB note that they consider that there could be a risk to sandwich tern populations from these two SPAs.</p>	

### Ministry of Defence (MoD) activity

	Issues when using 250 m tip heights	Issues when using 350 m tip heights	Receptor rating
Air traffic control (ATC)	Royal Navy Air Service (RNAS) Portland Primary Surveillance Radar (PSR) concerns which provides ATC for the Danger Areas 36, 37, 38, 39 & 40.	Royal Navy Air Service (RNAS) Portland PSR concerns which provides ATC for the Danger Areas 36, 37, 38, 39 & 40.	
Air defence radar (ADR)	No ADR concerns.	No ADR concerns.	

Threat radar	No threat radar concerns.	No threat radar concerns.	
Low flying	No low flying concerns, however, there will be a lighting requirement.	No low flying concerns, however, there will be a lighting requirement.	
Ranges, danger & exercise areas	<p>Concerns relating to danger areas 36, 37, 38, 39 and 40 where Navy aircraft operate down to surface level. Turbines within this area could potentially affect the ability of Navy aircraft operating down to sea level and constrain the movement of aircraft.</p> <p>Concerns relating to the D044 and D141 Danger Areas which extend out to sea from the Lydd and Hythe live firing ranges on the Kent coast to the east of the area. Any turbines within the danger area would be a concern as the turbines would be damaged by bullets and constrain the types of munitions fired from the range. The turbines would also impact the range danger area radar.</p> <p>Unexploded Ordnance (UXO) should be taken into account. The MoD would need to review cable routes to ensure highly surveyed routes are not obstructed by cables or turbines or pass through any danger areas. The explosives dump at St Catherine's Deep south of the Isle of Wight should be considered.</p>	<p>Concerns relating to danger areas 36, 37, 38, 39 and 40 where Navy aircraft operate down to surface level. Turbines within this area could potentially affect the ability of Navy aircraft operating down to sea level and constrain the movement of aircraft.</p> <p>Concerns relating to the D044 and D141 danger areas which extend out to sea from the Lydd and Hythe live firing ranges on the Kent coast to the east of the area. Any turbines within the danger area would be a concern as the turbines would be damaged by bullets and constrain the types of munitions fired from the range. The turbines would also impact the range danger area radar.</p> <p>UXO should be taken into account. The MoD would need to review cable routes to ensure highly surveyed routes are not obstructed by cables or turbines or pass through any danger areas. The explosives dump at St Catherine's Deep south of the Isle of Wight should be considered.</p>	
Area commentary			Area rating
ATC and danger areas concerns however these are limited to the west of the area. Development in the danger areas will likely be highly constrained but mitigation solutions are available for ATC radar constraint.			
There will be a lighting requirement and consideration of UXO as per standard industry practice.			

**Fishing activity**

Gear type	Location and comments
Mobile gear	<ul style="list-style-type: none"> <li>This area is dominated by Beam trawlers and Dutch and UK seine netters.</li> <li>Shoreham host some beam trawlers fishing for scallops, also Rye Hastings and Newhaven and a big nomadic fleet.</li> <li>There are also a growing number of French seine netters in the area.</li> <li>There is a lot of queen scallop in the area which has a big market in the US. This is prompting investment in vessels and quota from buyers and processors.</li> </ul>
Static gear	<ul style="list-style-type: none"> <li>Other activity includes netting and potting.</li> <li>Hastings is the EU's biggest beach fleet. There is fleet of small inshore boats of 6-10 m that use static gear, netting for Dover sole, and fishing for crabs and lobster all along the south coast. It's hard to quantify how many boats there are and where they all work from. The Association of Inshore Fisheries and Conservation Authorities (IFCA) in the area would be worth consulting at an appropriate time.</li> </ul>
General	<ul style="list-style-type: none"> <li>The Rampion Wind Farm development overlaps some of a fishing ground so engagement required if further development is proposed in this area.</li> <li>There is a good mixed fishery that supports a viable fleet. This includes beach fleets such as in Hasting, to harbours like Newhaven, Shoreham and Portsmouth. Despite not having a port with market facilities there is a considerable amount of high-value fish and shellfish landed by mobile gear vessels and vessels using static gear in this area.</li> <li>This area of sea is already busy, and fisheries stakeholders consider that there is a risk of significant cumulative/in-combination impacts from new offshore wind development in this area.</li> </ul>
Area commentary	
This is a complex area with various interests but there are gaps available that could be engagement with local fishers.	
Area rating	

### Marine plans

South Marine Plan	Spatially explicit policies	Issues	Area rating
Aggregates	<p>S-AGG-3: proposals in areas where high potential aggregate resource occurs should demonstrate that they will in order of preference:</p> <ul style="list-style-type: none"> <li>a) avoid;</li> <li>b) minimise;</li> <li>c) mitigate significant adverse impacts on aggregate extraction; or,</li> <li>d) if it is not possible to mitigate significant adverse impacts, proposals should state the case for proceeding.</li> </ul>	<p>The whole characterisation area overlaps with areas of future technical opportunity for marine aggregates as identified in the South Marine Plan. Any new offshore wind development would need to consider impacts to the aggregates industry and negotiation with the sector would be required.</p> <p>Whilst The Crown Estate leases/licences seabed for offshore wind and aggregate extraction it should be noted that aggregates tendering rounds currently run every two years, and so the requirement for liaison between industries will be ongoing.</p>	
Aquaculture	<p>S-AQ-1: proposals in existing or within potential aquaculture production areas must demonstrate consideration of and compatibility with aquaculture production. Where compatibility is not possible, proposals should demonstrate in order of preference that they will:</p> <ul style="list-style-type: none"> <li>a) avoid;</li> <li>b) minimise;</li> <li>c) mitigate significant adverse impacts on aquaculture; or,</li> <li>d) if it is not possible to mitigate significant adverse impacts, proposals should state the case for proceeding.</li> </ul>	<p>There is some overlap in the northern part of the characterisation area with the potential aquaculture areas identified in the South Marine Plan. The overlap is however relatively small and is not considered to be a significant concern for future offshore wind development although some negotiation with the aquaculture sector may be required.</p>	
Ports and shipping	<p>S-PS-3: proposals that require static sea surface infrastructure or that significantly reduce under-keel clearance which encroaches upon high-density navigation routes, or that pose a risk to the viability of passenger services, must not be authorised unless there are exceptional circumstances.</p>	<p>The southern part of the characterisation area runs parallel to the high-density navigation routes as defined in the South Marine Plan. Other parts of the characterisation area, particularly the western part, intersect with these high-density routes. Where there is intersection it is unlikely that static infrastructure would gain consent but outside of these areas it is unlikely to be a significant concern.</p>	

### The Crown Estate key resource areas (KRAs) for other sectors

KRA category	Where?	Commentary	Receptor rating	Area rating
Cables	No interaction.			
Carbon Capture Storage (CCS)	No interaction.			
CCS infrastructure	No interaction.			
Minerals	Covers a large proportion of the area.	<p>Important gravel resource within east/west oriented valley south of Rampion. There is also significant amounts of future opportunity around the existing licences to the west of the area and in between the navigation traffic separation schemes close to the French Boarder. Localised and spatially constrained, but in deeper water so overlap with wind likely to be limited.</p>		

Pipelines	No interaction.			
Sandscaping	Covers all the area inside 12 NM.	This KRA is significant in size due to the knowledge of potential sites and resources for sandscaping schemes not being well known currently. As such, significant conclusions cannot be drawn from this key resource area.		
Tidal range	Very slight coverage to the east of the area.	Not a significant interest in this area and therefore does not present a significant constraint to development.		
Tidal stream	Some overlap to the west of the area.	This resource hosts the PETC demonstration site and intersects some tidal races around the Isle of Wight. There is significant opportunity for offshore wind development elsewhere in the area for this to not be deemed a significant issue.		
Wave	No interaction.			

### National Air Traffic Services (NATs) radar overlap

% Overlap with primary surveillance radars (PSR) assessment buffer (200 m turbines)	Commentary	Area Rating
31.94%	Some moderate overlap in the areas close to shore and to the east of the area. There is significant opportunity in the area to site potential projects outside of the consultation area.	

### Water Framework Directive (WFD)

Water bodies triggered	Water body details					
	Type	Is it heavily modified	Overall status	Ecological status	Chemical status	Target date to achieve good status
Isle of Wight east	Coastal	Yes	Good	Good	Good	2015
Kent South	Coastal	Yes	Moderate	Moderate	Good	2027
Sussex east	Coastal	Yes	Moderate	Moderate	Good	2027
Sussex	Coastal	Yes	Moderate	Moderate	Good	2027
% of the area covered	Spatial overlap with the area					Area rating
2%	Slight intersections along the coast at: Folkestone, Eastbourne, Newhaven, Brighton and the East of Isle of Wight.		This characterisation area is not particularly sensitive with the intersecting water bodies already being highly modified and overall status ranging from good to moderate. The overall overlap with the characterisation area is minimal and should not present a significant constraint.			

**Marine cultural heritage**

Heritage asset type	Where?	Commentary on sensitivity from offshore wind development	Receptor rating
Maritime archaeology and wrecks	<p>Significant potential throughout characterisation area owing to the large number of losses in this area, but particularly in coastal locations (i.e. within 12 NM) and associated with ports and other important centres (i.e. off Folkestone, Eastbourne, Brighton, and to the east of the Isle of Wight).</p> <p>There are a number of protected wrecks in this characterisation area. These are concentrated close to the coast, mainly owing to their discovery through sports diving. Finds from the marine aggregate industry in the East English Channel demonstrate the potential further offshore.</p>	<p>Maritime archaeology including known wrecks, historic losses or casualty records, and associated cultural material such as isolated finds, all have potential to be affected by OWF development in the South East Coast characterisation area. The area contains a considerable number of wrecks and obstructions, with particular concentrations in the areas closer to the coast and associated with ports (i.e. off Folkestone, Eastbourne, Brighton, and to the east of the Isle of Wight).</p> <p>There are lower, but still significant, concentrations of known wrecks and historic losses in the areas further offshore i.e. the East English Channel. Many isolated finds of maritime archaeological material are known from the area, owing to the number of marine aggregate licence areas across the area in the East English Channel, Owers, and East of Isle of Wight dredging regions.</p> <p>As is commonplace throughout UK waters, there is a particular dominance of steel and metal vessels from the 19<sup>th</sup> and 20<sup>th</sup> Centuries in the known records, but the presence of a number of protected wrecks indicates the potential for recovery of significant wrecks from the Bronze Age (Langdon Bay) to the 20<sup>th</sup> Century (Holland No V submarine). There are a number of wrecks protected under the Protection of Military Remains Act in the wider area (e.g. UB-81 c.11 NM south-east of the Isle of Wight), and the area has particular potential for the recovery of wreck, vessels and material associated with trade and military activity at important ports and strategic locations along the south coast (e.g. Folkstone, Dover, Southampton etc.). The presence of these remains reflects the vital role this area played in the defence and supply of Britain at various points throughout history. There is potential for the recovery of remains from the earliest seafaring in the prehistoric period to the present day.</p> <p>Established procedures exist to ensure that any historic wrecks, both known and unknown, and associated remains are identified as part of any proposed OWF development and impacts are mitigated and minimised.</p>	High
Aviation archaeology	<p>High potential for recovery of aviation archaeological remains throughout the characterisation area, and in particular to the east and off the coast of Folkestone where aviation archaeological remains from the Battle of Britain may be anticipated.</p>	<p>There is potential within the South East characterisation area for the discovery of remains of crashed aircraft and associated cultural material from the birth of aviation at the start of the 20<sup>th</sup> century to the present. The greatest potential is associated with losses from the Second World War, owing to activity in the numerous airborne battles, skirmishes, patrols and in defence of strategic locations along the south coast. The Battle of Britain was fought in the skies off Folkestone in 1940, and as such significant remains may be anticipated here - although no known aircraft wrecks are currently understood to be in the east of the characterisation area. Historic records indicate a significant number of aircraft losses from the Second World War across the area and finds of aviation archaeological material have been reported from the aggregate areas across the characterisation area i.e. in the East English Channel. A partially intact Consolidated B-24 Liberator heavy bomber has been identified approximately 19 NM south-east of St Catherine's Point, however, known sites of crashed aircraft on the seabed remain rare. The characterisation area has great potential for the discovery of more material of this type.</p> <p>While existing standard mitigation measures may be utilised for specific projects in the area, further site-specific mitigation including excavation and recovery of significant remains that are encountered and where impacts are unavoidable may be required, although it should be noted that this is an extreme example and would only be undertaken following significant discussion with advisors and in rare cases where preservation <i>in situ</i> was not a feasible option.</p>	Medium
Submerged prehistoric landscapes	<p>Potential across characterisation area with enhanced potential in areas in close proximity to geomorphological features such as the palaeochannels and deposits being worked by the marine aggregate industry in the East English Channel, the Owers region, and to the east and south of the Isle of Wight.</p>	<p>During three major glaciations over the course of the Pleistocene (the Anglian, Wolstonian and Devensian) the characterisation area would have been continually exposed. It therefore presents potential for recovery of cultural material associated with the utilisation of the land surfaces during times of suitable climatic conditions. Any remains would be expected to be associated with geomorphological features such as palaeochannels and valleys, and the geological deposits from these periods.</p> <p>The valleys and terraces associated with the palaeochannels are thought to be the sites where prehistoric artefacts and objects are most likely to have survived; a number of finds of Palaeolithic date have been recovered from the gravel terraces of the Palaeo-Solent on land. There is potential for the survival of sediments and primary and secondary context artefactual material across the area in association with these channel features.</p> <p>A number of sites dating to the Pleistocene and early Holocene are known from the wider areas to the north of the characterisation area. Evidence of Mesolithic occupation and potential settlement, in the form of flint artefacts, deposits and wooden structures has been recorded during excavations of a now submerged site at Bouldner Cliff. Additionally, significant archaeological material from the Palaeolithic has been recovered from Priory Bay on the east coast of the Isle of Wight, and at Boxgrove.</p>	High

		<p>Significant deposits and possible finds may therefore be anticipated in association with Pleistocene and early Holocene channel systems and geomorphological features across the characterisation area that were present and exposed prior to marine transgression in the Mesolithic. This means there is potential for remains from this period to be present and impacted by OWF development in the characterisation area.</p> <p>Established procedures exist to ensure that any submerged prehistoric landscapes, associated geographical and geomorphological features, and associated deposits, features and finds are identified as part of any proposed OWF development so any impacts can be mitigated and minimised.</p>	
Area commentary			Area rating
<p>There are extensive heritage assets and potential for recovery of further remains across the area, with particular potential for significant historic wreck, and aviation archaeological material. The application of standard mitigation measures on a strategic and project specific basis will reduce the risk to underwater cultural heritage in this area.</p>			

## Glossary of acronyms and abbreviations

ADR	Air Defence Radar
AONB	Area of Outstanding Natural Beauty
ATC	Air Traffic Control
CCS	Carbon Capture Storage
FAME	Future of the Atlantic Marine Environment
HRA	Habitat Regulations Assessment
IFCA	Association of Inshore Fisheries and Conservation Authorities
JNCC	Joint Nature Conservation Committee
km	Kilometre
KRA	Key Resource Area
m	Metre
MCZ	Marine Conservation Zone
MERP	Marine Ecosystems Research Programme
MoD	Ministry of Defence
MPA	Marine Protected Area
MW	Mega watt
NATS	National Air Traffic Services
NM	Nautical Mile
OESEA3	Offshore Energy Strategic Environmental Assessment 3
OFTO	Offshore Transmission Owners
OWF	Offshore Wind Farm
PETC	Perpetuus Tidal Energy Centre
pSPA	Potential Special Protection Area
PSR	Primary Surveillance Radar
Ramsar	Ramsar Convention on wetlands of international importance especially as waterfowl habitat, also known as the 'Convention on Wetlands'.
RNAS	Royal Navy Air Service
RSPB	Royal Society for the Protection of Birds
RYA AIS	Royal Yachting Association (RYA) Automatic Identification System (AIS)
SAC	Special Area of Conservation
SCI	Site of Community Importance
SNCB	Statutory Nature Conservation Body
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
STAR	Seabird Tracking and Research
UXO	Unexploded Ordnance
WFD	Water Framework Directive