



Marine
Management
Organisation

South East Inshore Marine Plan Sustainability Appraisal. Non-Technical Summary. Final Report.



INVESTORS
IN PEOPLE

Bronze



South East Marine Plan Sustainability Appraisal. Non-Technical Summary. Final Report.

Report prepared by: ClearLead Consulting Ltd. in association with WSP UK Ltd. and MarineSpace Ltd.



Project funded by: Marine Management Organisation

Version	Author	Note
1	KH/KD	First draft
2	VP/KD	Final
3	Various	Final with amendments
4	Various	Post Consultation first draft
5	Various	Post Consultation second draft
6	IT	Final

© Marine Management Organisation 2020

You may use and re-use the information featured on this publication (not including logos) free of charge in any format or medium, under the terms of the Open Government Licence. Visit www.nationalarchives.gov.uk/doc/open-government-licence/ to view the licence or write to:

Information Policy Team
The National Archives
Kew
London
TW9 4DU
Email: psi@nationalarchives.gsi.gov.uk

Information about this publication and further copies are available from:

Marine Management Organisation
Lancaster House
Hampshire Court
Newcastle upon Tyne
NE4 7YH

Tel: 0300 123 1032
Email: info@marinemanagement.org.uk
Website: www.gov.uk/mmo

Disclaimer

This report contributes to the Marine Management Organisation (MMO) evidence base which is a resource developed through a large range of research activity and methods carried out by both MMO and external experts.

The opinions expressed in this report do not necessarily reflect the views of MMO nor are they intended to indicate how MMO will act on a given set of facts or signify any preference for one research activity or method over another. MMO is not liable for the accuracy or completeness of the information contained nor is it responsible for any use of the content.

When referencing this publication, please cite as:

MMO (2020). South East Marine Plan Sustainability Appraisal. Non-Technical Summary. Final Report. A report produced for the Marine Management Organisation, MMO, October 2020, 39pp.

Contents

1. Introduction	1
1.1 This report	1
1.2 What is a sustainability appraisal?	1
2. Background to the South East Marine Plan	2
2.1 Introduction	2
2.2 The South East Marine Plan	2
2.3 Relationship with other plans and programmes	2
2.4 Habitats Regulations Assessment (HRA)	3
3. The Sustainability Baseline	4
3.1 Introduction	4
4. How the Assessment was Undertaken	13
4.1 The SA Process	13
4.2 Stage A: Scoping	14
4.3 Stage B: Assessing the Options	16
4.4 Stage B: Assessing the Draft and Final South East Marine Plan	16
4.5 Stage C: Preparing the SA Report	18
4.6 Stage D: Consulting on the SA Report	18
4.7 Stage E: Monitoring	19
4.8 Difficulties encountered	19
5. Potential Significant Effects of the Plan	20
5.1 Introduction	20
6. Cumulative Effects Assessment	29
6.1 Introduction	29
6.2 Potential Cumulative Effects of all Policy Groupings	29
6.3 Potential Cumulative Effects with other programmes, plans, policies and projects	32
7. Mitigation	33
8. Monitoring of Residual Effects	34

Figures

Figure 1: Stages in the SA Process	13
--	----

Tables

Table 1: Sustainability Baseline Summary: Key Sustainability Baseline, Issues and Characteristics of the South East Marine Plan Area	5
Table 2: SA framework	15
Table 3: Policies Assessment Criteria	17

Table 4: Assessment results: Cultural Heritage.	20
Table 5: Assessment results: Geology, Substrates and Coastal Processes.	21
Table 6: Assessment results: Seascape and Landscape.	22
Table 7: Assessment results: Water.	22
Table 8: Assessment results: Air Quality.	23
Table 9: Assessment results: Climate.	23
Table 10: Assessment results: Communities, Health and Wellbeing.	24
Table 11: Assessment results: Economy.	25
Table 12: Assessment results: Biodiversity, Flora and Fauna.	26
Table 13: Summary of cumulative effects.	30

Appendices

Technical Appendix A: SA Database

Technical Appendix B: Assessment of the South East Marine Plan

1. Introduction

1.1. This report

The Marine Management Organisation (MMO) has simultaneously prepared marine plans for England's south west, north west and north east inshore and offshore marine plan areas and the south east inshore marine plan area. The marine plans for the [south inshore and offshore](#) and the [east inshore and offshore](#) marine plan areas have already been published.

As part of the marine plan-making process, a Sustainability Appraisal (SA) has been undertaken. The SA process and subsequent report (including this Non-Technical Summary) is a requirement of the Marine and Coastal Access Act 2009 and incorporates the requirements of The Environmental Assessment of Plans and Programmes Regulations 2004.

This SA has been carried out by ClearLead Consulting Ltd, in association with WSP UK Ltd and MarineSpace Ltd. on behalf of the MMO.

This is the Non-Technical Summary (NTS) of the final South East Marine Plan Sustainability Report (SA Report).

The SA Report is split into a number of parts:

- Non-Technical Summary (this report)
- The SA Reports incorporating
 - Part 1: Introduction and Methodology
 - Part 2: Scoping Information
 - Part 3: Results of the Assessment

1.2. What is a sustainability appraisal?

SA is a process, incorporating the requirements of the Strategic Environmental Assessment (SEA) Directive, which considers the economic, social and environmental impacts of an emerging plan (the three dimensions of sustainable development). The aim in undertaking SA is to identify a plan's likely significant effects and take steps to avoid and/or mitigate the negative effects as well as identify opportunities to maximise a plan's contribution to sustainability.

The SA Report and this NTS conform to the requirements of the SEA Directive, and so the layout and feel of both the full Report and this NTS is influenced by these requirements. The SA has been undertaken throughout the development of the South East Marine Plan and has informed the consideration of options as well as assessing the effects of the draft and final plans.

2. Background to the South East Marine Plan

2.1. Introduction

Marine plans set the direction for decision making to ensure efficient and sustainable use of our marine resources. Once prepared the marine plans will cover a 20 year period and will be reviewed regularly. Marine plans are intended to guide users to the most suitable locations for different activities, assist in managing marine resources to ensure sustainable levels and to ensure that a holistic approach to decision making is taken.

2.2. The South East Marine Plan

The UK Government vision for the marine environment is for, 'clean, healthy, safe, productive and biologically diverse oceans and seas'. The Marine Policy Statement (MPS)¹ is the framework for preparing Marine Plans and taking decisions affecting the marine environment. The UK high level marine objectives (HLMOs)², which form part of the MPS, set the broad outcomes for the marine areas in achieving this vision, and reflect the principles for sustainable development, which are:

- achieving sustainable marine economy
- ensuring a strong, healthy and just society
- living within environmental limits
- promoting good governance
- using sound science responsibly.

The South East Marine Plan has a defined vision which is outlined in section two of the South East Marine Plan SA Report Part 1: Introduction and Methodology.

2.3. Relationship with other plans and programmes

The South East Marine Plan fits into an existing hierarchy of plans, programmes, strategies and environmental protection objectives and these are set out in detail in SA Report: Part 2. The South East Marine Plan has the following relationship with other plans and programmes:

- international legislation and policy which sets a number of targets, objectives and obligations which the South East Marine Plan should seek to contribute to
- national legislation and policy which outlines measures to achieve many of these obligations through setting regional and local targets for public bodies to achieve and by outlining principles which planning policies and decisions needs to adhere to
- local and regional policy which sets out more specific local targets and local actions needed to achieve them.

¹ Marine Policy Statement available at: <https://www.gov.uk/government/publications/uk-marine-policy-statement>

² HMG,NIE, WAG, SG (2009) Our Seas A Shared Resource - High Level Marine Objectives (online) available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/182486/ourseas-2009update.pdf

Particularly important for the South East Marine Plan is the following:

- the national MPS and the United Kingdom-wide High Level Marine Objectives which together provide the policy framework for the preparation of marine plans
- the National Planning Policy Framework and associated National Policy Statements
- the EU Maritime Spatial Planning Directive (2014/89/EU) which came into force in July 2014 in support of the Integrated Maritime Policy for the European Union. The Directive introduces a framework for maritime spatial planning and aims to promote the sustainable development of marine areas and marine resources. It also sets out a number of minimum requirements for marine plans.

As well as supporting the HLMOs set out in the MPS, the policies of the South East Marine Plan will support other relevant government aspirations such as those set out in the [25 Year Environment Plan](#), the [Industrial Strategy](#), the [Clean Growth Strategy](#) and sustainable development³ of the marine area.

Regulations require that the SA considers how environmental protection objectives are taken into account in the development of the plan or programme. For the South East Marine Plan SA, a full review of the key objectives within other plans and policy documents has been undertaken for each topic and is reported in Part 2 of the SA Report. These objectives have then been used to inform the development of an SA framework. The SA framework is then used to test the South East Marine Plan and recommendations are made to strengthen the plan.

2.4. Habitats Regulations Assessment (HRA)

The South East Marine Plan has also been subject to a Habitats Regulations Assessment (HRA), which aims to look at the implications of a proposed plan on one or more European designated sites in view of the sites' conservation objectives. The South East Marine Plan HRA process consists of screening of potential significant effects and a fuller assessment process. Further details can be found in the Appropriate Assessment Information Report.

All Appropriate Assessment reports are available at the following weblink:
<https://www.gov.uk/topic/planning-development/marine-planning>

³ As defined in [United Kingdom Sustainable Development Strategy](#)

3. The Sustainability Baseline

3.1. Introduction

It is important to understand the existing conditions (known as baseline conditions) and the key issues that should be covered as part of the SA process. The sustainability baseline comprises information on aspects of the environment, economy and society that could be affected positively or negatively by the implementation of the South East Marine Plan. Further information relating to the scope of each of the SA topics, background information and baseline issues ubiquitous to all marine plan areas is presented in sections 3-11 within the SA Report Part 2: Scoping Information. The baseline information identified which is specific to the South East Marine Plan, has been summarised in Table 1 below.

Table 1: Sustainability Baseline Summary: Key Sustainability Baseline, Issues and Characteristics of the South East Marine Plan Area.

Key Sustainability Baseline, Issues and Characteristics of the South East Marine Plan Area
<p>Cultural Heritage</p>
<ul style="list-style-type: none"> • there are very large numbers of heritage assets in the immediate vicinity of the marine plan area. They include both designated and non-designated heritage assets • there are numerous scheduled monuments, listed buildings and registered parks and gardens, including in estuaries and tidal rivers within the marine plan area • there are nine wrecks protected under the Protected Wrecks Act (1973) within the south east inshore marine plan area • during the First and Second World Wars, a wide variety of military activity took place in the waters off the South East of England. As such the Dover Sector contains the remains of a number of significant heritage assets relating to this crucial period of history • the Registered Battlefield of the Battle of Maldon Ford abuts the south east inshore marine plan area • there are numerous development pressures on heritage assets along Thames and Kent and Essex waterways, and related to the setting of World Heritage Sites • designated heritage assets in the vicinity of marine plan areas include World Heritage Sites (The Royal Botanic Gardens, Kew; Maritime Greenwich; Palace of Westminster, Westminster Abbey and St. Margaret's Church), Scheduled Monuments, Listed Buildings, Registered Parks and Gardens and Registered Battlefields • various activities in marine plan areas have implications for the conservation of heritage assets but are not subject to licensing or, directly, to public authority decision-making. Depending on circumstances, these may include activities such as anchoring, diving and some forms of fishing. The character and magnitude of effects on the marine historic environment arising from unregulated activities may not have been quantified. Marine plans will need to consider what indirect measures can be taken to conserve heritage assets in respect of activities that are not regulated directly.
<p>Geology, Substrates and coastal processes</p>
<ul style="list-style-type: none"> • there are four Shoreline Management Plans (SMPs) covering the south east inshore marine plan area: Isle of Grain to South Foreland, comprised of 27 policy units; River Medway and Swale Estuary, comprised of 30 policy units; Essex and South Suffolk Langard Point to Two Tree Island, comprised of 102 policy units; and South Foreland to Beachy Head, comprised of 4 policy units. The South Foreland to Beachy Head SMP extends beyond the area of the south east inshore marine plan and mainly covers the south marine plan area • flooding in the Thames tidal floodplain puts numerous people, assets and designated habitats at risk, including: 25 million

Key Sustainability Baseline, Issues and Characteristics of the South East Marine Plan Area

residents; over 500,000 homes; 400,000 commercial and industrial properties; 400 schools, 16 hospitals; major transport links (e.g. London underground, Port of London and Thames Gateway); key government buildings; 55 km² of designated habitats; and 4 World Heritage Sites

- Hold the Line (HTL) is the preferred or predominant policy in 95 policy units; No Active Intervention (NAI) is the preferred or predominant policy in 19 policy units; Managed Realignment (MR) is the preferred or predominant policy in 47 policy units; and Advance the Line (ATL) is the preferred or predominant policy in 2 policy units. The policy of NAI across many undeveloped sections of coastline will see the dynamic nature of the coast sustained, and likely accelerated due to climate change. Some natural, geological and archaeological assets will be lost to the sea (coastal squeeze), whilst new ones will be revealed
- development will need to be designed to take account of the impacts of climate change over its lifetime, including: water conservation and drainage, the need for summer cooling, risk of subsidence, flood risk from the River Thames and its tributaries
- geology and coastal processes are affected through the implementation of rock armouring and scour protection of wind farm turbines, cabling and pipeline protection, which in turn can alter subtidal habitats. This altering of coastal processes is likely to increase as coastal defences are further expanded to meet the needs of increasing populations.

Seascape and Landscape

- there are numerous local landscape issues and policies in the south east inshore marine plan area that could influence the marine plans
- Bradwell power station within the south east inshore marine plan area is being considered as a new site for nuclear power. All UK nuclear power stations are located at marine/estuarine sites and hence have a significant impact on seascape
- views to development behind the coastal edge (e.g. wind turbines near Calais which are visible from the Kent coast) can impact on the rural backdrop and setting of the Strait. Current and future port developments are also impacting on the levels of tranquillity and dark night skies of surrounding seascapes
- Dover and Calais are seen by many as entry/exit ports rather than visitor destinations in their own right. Dover in particular is not recognised by many passing through as a gateway to an adjacent seascape of significant natural and cultural heritage value
- seascape encompasses landscapes with views of the coast or seas, and coasts and the adjacent marine environment with cultural, historical and archaeological links with each other
- all nuclear power stations within the United Kingdom are located at marine/estuarine sites and hence have a significant impact on seascape
- seascape encompasses landscapes with views of the coast or seas, and coasts and the adjacent marine environment with cultural, historical and archaeological links with each other.

Key Sustainability Baseline, Issues and Characteristics of the South East Marine Plan Area

Water

- the south east marine plan area has been identified as having potential for wave, tidal stream and tidal range energy resources
- warming in the south east marine plan area has been identified to be one of the most pronounced areas, at 0.7°C per decade over the last three decades
- the south east covers a small area, yet comparatively there are a large number of beaches designated for bathing, totalling approximately 40. Approximately 90% of these are achieving good or above status. Leigh Bell Wharf beach was identified in 2019 as having sufficient water quality and Clacton (Groyne 41) was identified as poor
- there are 16 blue flag beaches located within the south east: Botany Bay, Brightlingsea, Harwich, Margate, Minnis Bay, Minster Leas, Sheerness Beach, Shoebury East, Shoeburyness, St Mildreds Bay, Stone Bay, Tankerton, Three Shells Beach, Thorpe Bay, West Bay and Westbrook Bay
- toxicity of PCBs and other persistent pollutants to invertebrates and fish, sediment-dwelling organisms and bioaccumulation of PCBs in fish, birds and Annex II sea mammals with known sublethal toxicological effects; endocrine disruption in birds and sea mammals posing a hazard to populations of these animals. Evidence suggests particular problems of PCBs to killer whales, bottlenose dolphins and harbour porpoise around inshore waters of the UK
- at present, the UK does not propose implementing measures to reduce persistent legacy contamination in sediments on the grounds that the actions would be disproportionately costly
- persistent oestrogenic compounds in waters in estuaries have also been indicated as an increasing problem
- there is a problem with beach litter. It has social, amenity and biodiversity impacts. There is evidence to suggest that the problem is getting worse over time
- there are likely to be effects on commercial fisheries if salinity changes in the future as this will affect the range and distribution of many marine species
- most of the north east region has a tidal range of between 1m and 4m
- the flow rate of the river Thames can be so strong that it prevents fish and other species from travelling upstream. This is compounded at spring tides and during the storm season as two water bodies meet and increase water levels. This issue may have impacts on diadromous species and wider connectivity.

Air Quality

- although the south east inshore is the smallest marine plan area, it is heavily utilised by a wide variety of shipping and, being part of the English Channel, is one of the busiest areas for shipping in the world
- ports such as Dover do not show 'hotspots' of sulphur dioxide concentrations indicating it is not necessarily shipping itself that accounts for the peaks, but the nearby industry linked to the ports

Key Sustainability Baseline, Issues and Characteristics of the South East Marine Plan Area

- increased shipping activity, port expansion and associated industry growth could lead to increased sulphur oxides and nitrous oxides emissions at coastal locations, which in turn could contribute to the breach of national objectives for air quality. Such examples include:
 - London Gateway port development
 - Planned expansion of Port of Felixstowe
 - Port of Dover Masterplan
 - Port of Liverpool Masterplan.
- there is increasing pressure upon the maritime sector to reduce its carbon and pollutant emissions. In 2020 a sulphur cap came into force. The International Maritime Organisation (IMO) has recently agreed ambitious global targets for at least 50% carbon reduction by shipping by 2050.

Climate

- the impacts of climate change are already being observed, and impacts are predicted to continue
- the Thames tidal flood defence system is made up of the Thames Barrier (which spans 520 metres across the River Thames near Woolwich), and eight other major flood barriers owned and operated by the Environment Agency. It also includes 36 industrial flood gates, more than 400 smaller movable structures and over 330 km of walls and embankments which are in over 3000 different ownerships. This system protects the London and Thames estuary tidal floodplain. Climate change will increase risks due to sea level rise, increased storm surge height and frequency in the North Sea and increased peak freshwater flows for the Thames
- the Thames Barrier will continue to provide flood protection to London through most of this century with some modification. However, significant improvements to the current tidal defence system will be needed before 2070 including raising the crest level of most of the flood defences and replacement of a large proportion of the defence structures as they reach the end of their lives. Fifteen per cent of the city's surface area lies on the floodplains of London's rivers, although much of it currently benefits from existing flood defences
- fisheries may also be impacted by seasonal changes and mismatch in food availability at key times, leading to poor stock health
- the Dover Strait's natural and culturally significant sand banks and shoals, such as Goodwin Sands and Bancs des Flandres, may be subject to more intense natural modification from storm surges. This could have knock-on effects for marine transportation (increasing demands for dredging), ecological integrity and their role in providing shelter to other parts of the Strait.
- without any further investment in flood defences, the number of properties in England at medium or high risk could rise from 0.75 million to 1.29 million in 50 years.

Key Sustainability Baseline, Issues and Characteristics of the South East Marine Plan Area

Communities, health, wellbeing

- aquaculture is a growing marine activity and is seen as the means to increase seafood supplies and in turn increase employment
- the highest tourism employment dependency is in the South West of England at 8.63% followed by London at 7.03%, South East England at 6.62% and North West at 6.48%. Additionally, the South West of England is most dependent on tourism for GVA (3.53%) followed by London (3.12%)
- the Paramount theme park, as a nationally significant infrastructure project, will provide economic benefits (e.g. increased employment and investment in the local area) but may contribute to challenges in the local area (e.g. increased congestion and changes to the local landscape)
- an opportunity exists for the plans to increase employment opportunities, which will have social benefits.

Economy

- shipping is an essential and valuable economic activity for the UK. There are significant movements of ships around the UK coast and into and out of UK ports serving the UK's economic interests
- the south east marine plan area has several important ports, with London Gateway the largest of several within the Thames. Others include Sheerness Port in the mouth of the Medway and Thamesport in the Medway. The associated pressures that will need consideration within the plan include, pressure for port expansion and its impacts on coastal habitats and maintenance dredging to support the shipping channel
- native oysters were once extensive and supported a large industry in this area. Restoration of the native oyster is the focus of a project being run by the Kent and Essex Inshore Fisheries and Conservation Authority (IFCA). This is a key factor in shellfisheries and aquaculture within the south east marine plan area
- under climate change scenarios more frequent extreme storms and waves may affect safety of fishing vessels and negative impacts may be exacerbated by low oxygen conditions, and presence of pollutants and marine contaminants. Sea temperature rise, ocean acidification, changes in fluvial flows (particularly in estuarine nursery grounds) and ocean currents may lead to a decrease in abundance, survival and growth of some exploitable fish species and an increase in abundance, survival and growth of non-indigenous pest species. This could affect fishery and aquaculture activity
- effects of poor water quality are had on fisheries and aquaculture, which in turn can impact the inshore
- in addition to marine fish stocks associated with commercial sea fishing, the coastal environment is important as a corridor for migrating Atlantic salmon and European eel, and in providing the marine feeding ground for sea trout. These important species that support coastal and inland commercial fishing and recreational angling could be vulnerable to a wide range of coastal activities
- access to the River Thames can be poor. New development in London needs to take account of riverside walks, cycle paths and public access to the water

Key Sustainability Baseline, Issues and Characteristics of the South East Marine Plan Area

- the south coast (including the south east) dominates participation in boating activities
- the south east marine plan area is not a significant area for marine manufacturing, although ports such as Port of London are key in exporting UK manufactured goods overseas
- economic growth could be constrained by environmental limits of activities
- sea training is carried out within defined military practice and exercise (PEXA) training areas. Seventeen percent of the south east inshore plan area is dedicated as PEXA
- effects of vessel traffic in Port of Harwich are had on aggregate extraction
- effects of the mobile Longsands sand bank encroach on aggregate extraction sites
- high levels of aggregate extraction in the south east inshore marine plan area place a locally significant pressure on subtidal sediments
- tidal key resource areas identified within the south east marine plan area include the Thames estuary
- offshore energy projects can result in effects on fish and cetaceans as well as birds
- in October 2015 the Government's Energy Secretary proposed that a nuclear power station be constructed at Bradwell-on-Sea
- the south east marine plan area has potential for gas storage and carbon capture usage and storage projects.

Biodiversity, Flora and Fauna

- electric beam trawling within the plan area can have a potential impact on inshore fisheries, affecting both target and non-target species
- there is potential seabird bycatch from driftnet and gillnet fisheries in the south east marine plan area
- the south east marine plan area has a number of consented and proposed offshore wind farms
- effects of pollution from marine activities (aquaculture, shipping, oil and gas, marine construction) are had on benthic and intertidal habitats and species, including cumulative impacts from increasing levels of contaminants
- the south east marine plan area has several important ports, with London Gateway the largest of several within the Thames. Others include Sheerness Port in the mouth of the Medway and Thamesport in the Medway. The associated pressures that will need consideration within the plan include, pressure for port expansion and its impacts on coastal habitats and maintenance dredging to support the shipping channel
- reduced prey availability for some benthic and intertidal organisms due to impacts of ocean acidification on plankton increasingly affecting food webs
- change in habitat condition and habitat loss through sea level rise, coastal squeeze, storm events from climate change and creation of coastal defences.

Key Sustainability Baseline, Issues and Characteristics of the South East Marine Plan Area

- increases in sea temperature may facilitate the introduction or expansion of harmful species into UK waters from more southerly areas, via shipping activity, drifting debris or natural range expansion
- impacts to subtidal sediments from mobile fishing gear (such as bottom trawls and dredges) can cause damage and create disturbance resulting in loss of benthic habitats and species
- impacts on subtidal sediments and their inhabitant flora and fauna from human pressures (e.g. aggregate extraction, dredging, and offshore energy production) is an issue
- increasing levels of pollution and nutrient enrichment within benthic and intertidal sediments. Deteriorating intertidal sediment habitats in all inshore plan areas due to cumulative effects associated with historical land claim, presence of coastal structures, the presence of invasive non-native species and beach litter
- the Shoreline Management Plan for the Medway and Swale proposes realignment over all land that is not currently built upon, to allow creation of new intertidal habitat
- within the south east inshore plan area, the following marine protected areas are designated:
 - Berwick to St Mary's MCZ
 - Thanet Coast and Sandwich Bay MCZ, SAC and SPA
 - Goodwin Sands MCZ
 - Foreland MCZ
 - Dover to Deal MCZ
 - Dover to Folkestone MCZ
 - Foulness (Mid-Essex Coast Phase 5) Ramsar and SPA
 - Dengie (Mid-Essex Coast phase 1) Ramsar and SPA
 - Colne Estuary (Mid-Essex Coast Phase 2) Ramsar and SPA
 - Blackwater Estuary (Mid-Essex Coast Phase 4) Ramsar and SPA
 - Stour and Orwell Estuaries SPAs and Ramsar
 - Hamford Water Ramsar and SPA
 - Thames Estuary and Marshes Ramsar and SPAs
 - Medways Estuary and Marshes Ramsar SPAs
 - The Swale Ramsar and SPA
 - Margate and Long Sands SAC
 - Southern North Sea cSAC
 - Essex Estuaries SAC

Key Sustainability Baseline, Issues and Characteristics of the South East Marine Plan Area

- Outer Thames Estuary SPA
- Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) SPAs
- Benfleet and Southend Marshes SPAs
- further work is required to address the potential long-term impact of light pollution on commercial fish species and marine life in general
- the proliferation of invasive non-native species can also prompt unwelcome changes in the wider ecosystem that climate change might further exacerbate. For example, invasive non-native filter feeders can multiply at such a rate that they strip phytoplankton and nutrients from water systems, altering the food web and habitat. They can also block pipes and filters, causing problems that water companies must pay to resolve
- broad-scale changes in habitats and species are increasingly likely, resulting from rising sea temperatures due to climate change.
- the UK seabird indicator stands at 22% below the 1986 baseline, with most of this decline occurring since the mid-2000s
- habitat suitability around the UK for seabirds is projected to shift northward over the next century and bird distributions may shift with changing conditions. Declines in European ranges are also predicted.

4. How the Assessment was Undertaken

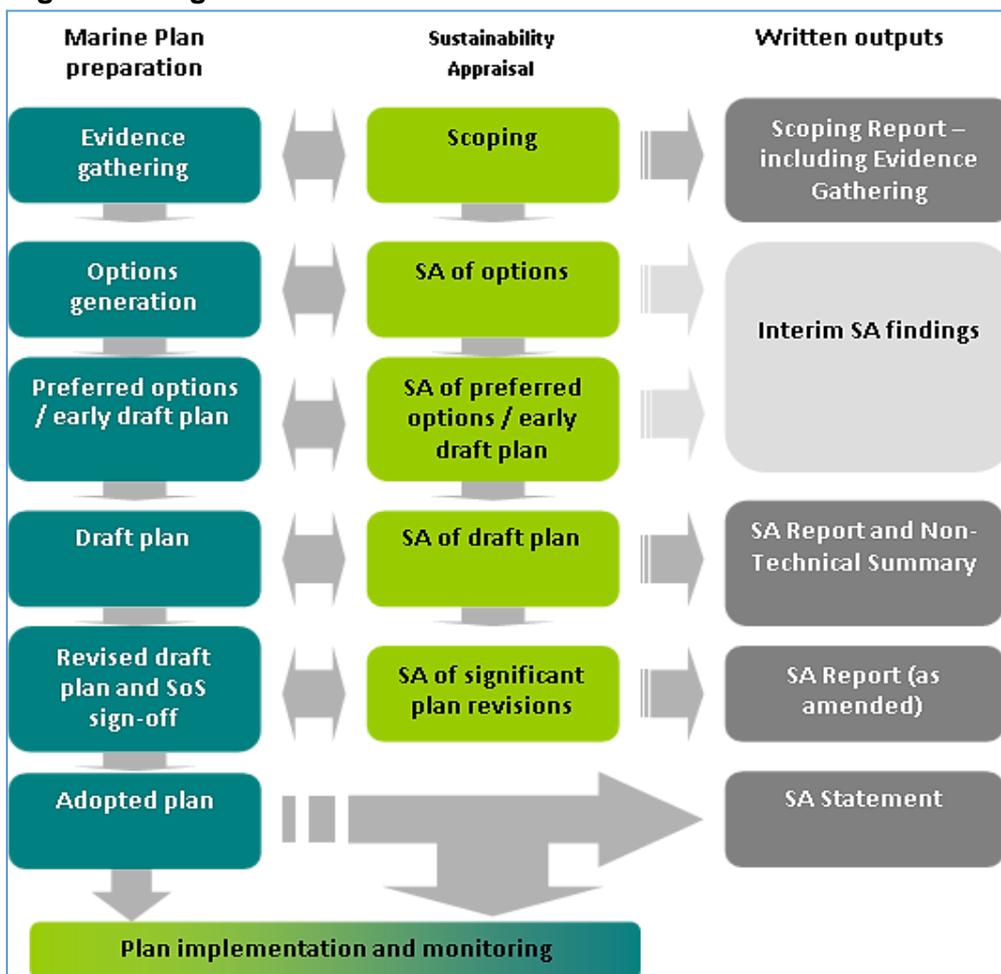
4.1. The SA Process

The stages in the SA process have been developed to take into account the five procedural stages of SEA:

- Stage A: (scoping) setting the context, establishing the baseline and deciding on the scope of the assessment
- Stage B: developing and refining alternatives and appraising the effects
- Stage C: preparing the SA Report
- Stage D: consulting on the SA Report and the South East Marine Plan and assessing any significant changes
- Stage E: monitoring the significant effects of implementing the South East Marine Plan.

In practice, the SA is an iterative process which has been undertaken in parallel with the development of the South East Marine Plan and has fed into the development of the South East Marine Plan at appropriate intervals – see Figure 1.

Figure 1: Stages in the SA Process.



4.2. Stage A: Scoping

The purpose of the scoping stage was to decide the coverage (scope) and the level of detail of the SA. The scoping report was produced by a consortium composed of Ramboll Environ, ClearLead Consulting Ltd and Marine Planning Consultants (MPC) Ltd in April 2016. The draft scoping report was engaged on from 11 April 2016 to the 13 May 2016. Following some small factual changes, the final scoping report was published by the MMO. The scoping report forms part of the suite of documents which support this SA Report.

The scoping report outlines an SA framework which the South East Marine Plan and its alternatives are measured against in order to test their sustainability. The SA framework is set out in Table 2.

The scoping process also sets out the geographical and temporal scope of the SA:

Geographical: The South East Marine Plan includes the south east inshore marine plan area only; there is no south east offshore marine plan area. The south east inshore marine plan area covers an area of approximately 1,400 kilometres of coastline stretching from Felixstowe to near Dover, taking in a total of over 3,900 square kilometres of sea.

Temporal: The South East Marine Plan covers a 20 year period, and therefore the SA has considered the effects of the plan over the next 20 years and beyond where possible.

The scoping report was issued to the following statutory bodies:

- Natural England
- Historic England
- The Environment Agency.

In addition to statutory bodies, the scoping report was issued to 20 organisations for comments. The full list is located within section 3 of Part 1 of the SA Report.

Table 2: SA framework.

	Overarching SA topic	SA sub-topic
Physical and Chemical Aspects	Cultural Heritage	<ul style="list-style-type: none"> • heritage assets within marine plan areas • heritage assets adjacent to marine plan areas.
	Geology, Substrates and Coastal Processes	<ul style="list-style-type: none"> • seabed substrates and bathymetry • coastal features and processes.
	Seascape and Landscape	<ul style="list-style-type: none"> • effects on seascape and landscape.
	Water	<ul style="list-style-type: none"> • tides and currents • water temperature and salinity • pollution and water quality • marine litter.
	Air Quality	<ul style="list-style-type: none"> • air pollutants.
	Climate	<ul style="list-style-type: none"> • greenhouse gas emissions • climate change resilience and adaptation.
Social and Economic Aspects	Communities, Health and Wellbeing	<ul style="list-style-type: none"> • health and wider determinants of health • effects on communities • effects on protected equality groups.
	Economy	<ul style="list-style-type: none"> • ports and shipping • fisheries and aquaculture • leisure/recreation • tourism • marine manufacturing • defence • aggregate extraction • energy generation and infrastructure development • seabed assets.
Ecological Aspects	Biodiversity, Habitats, Flora and Fauna	<ul style="list-style-type: none"> • protected sites and species • benthic and intertidal ecology • fish and shellfish • marine megafauna • plankton • ornithology • invasive non-native species.

4.3 Stage B: Assessing the Options

The SEA Directive requires that the assessment identifies and evaluates reasonable 'alternatives' to what is proposed within the plan.

This stage involved assessment of the alternative options against the SA framework, taking into account the evidence base provided within the SA Database (Technical Appendix A). The key features of the options assessment approach were:

- an approach that assessed each option as a whole and to the same level of detail. 264 policy options were packaged into 28 policy groupings⁴, and the assessment provided a comparison of the options within each grouping
- an evidence-led assessment which referred to the baseline information to provide quality assured evidence as the basis of the assessment
- a focus on identifying key potential significant effects to inform the decision making between options.

The assessment of options was undertaken in two stages:

- **Screening:** a screening process was carried out to determine whether the SA sub-topics were relevant to the specific grouping
- **Assessment of significant effects:** Each option was considered against the relevant SA Framework sub-topics. Expert judgement and the updated SA Database (developed at the scoping stage of the SA process and refreshed in August 2017 prior to the assessment) were used as evidence for the assessment.

The options assessment of the South East Marine Plan was reported in an options assessment SA report which can be found [here](#).

4.4. Stage B: Assessing the Draft and Final South East Marine Plan

The SA of the South East Marine Plan preferred policies has been undertaken as a 'baseline-led' assessment which considers how the baseline situation will change with the South East Marine Plan in place. This is shown in Part 3 of the South East SA Report.

A qualitative approach has been used, comprising the assessment and description of effects, rather than a quantitative approach which is not considered appropriate or feasible at this strategic level, in view of the form and content of the plan.

The SA of the draft South East Marine Plan focused on the preferred policies completed in July 2019. This consisted of 62 policies arranged within 29 groupings.

⁴ Four groupings (Cumulative Effects, Governance, Evidence Gaps and Implementation) contained options which are not possible to assess through the SA because they are overarching policies and the options were not distinct.

The same approach to assessment has been taken for the assessment of options, preferred policies and final policies:

- options and policies have firstly been screened to identify sub-topics of relevance to the policy grouping
- an assessment of significant effects was performed in relation to the relevant sub-topics only.

The assessment criteria set out within Table 3 have been used to identify the potential effects of the South East Marine Plan.

Table 3: Policies Assessment Criteria.

Notation	Description
Degree to which baseline conditions may change (significance of effect) compared with the future baseline situation	
++	Significant Positive Effect: The plan policies are likely to lead to significant improvements in baseline conditions.
+	Minor Positive Effect: The plan policies are likely to lead to some improvements in baseline conditions.
0	Neutral Effect: The plan policies are unlikely to alter baseline conditions significantly.
-	Minor Negative Effect: The plan policies are likely to lead to a deterioration in baseline conditions.
--	Significant Negative Effect: The plan policies are likely to lead to a significant deterioration in baseline conditions.
?	Uncertain Effect: It is not known whether the plan policies would lead to an improvement or deterioration in the baseline conditions ⁵ .
Direct/Indirect	
Direct	Effects that are a direct result of the plan policies.
Indirect	Effects that are secondary i.e. they occur away from the original effect or as a result of a complex pathway.
Reversibility of effects	
Reversible	It is considered that the effects upon the receptor group could be reversed if activities were to change in the future. The effects could be long-lasting but the receptor may hence be able to recover or indeed improvements could be diminished.
Irreversible	It is considered that the effects upon the receptor group could not be reversed. This may apply to situations where, for example, features are destroyed forever or systems/trends are irrevocably changed.
Permanence of effects	
Permanent	Effects could be lasting or intended to last or remaining unchanged indefinitely.
Temporary	Effects are not likely to be lasting or permanent.
Duration	
Short	Within three years of plan adoption – within the reporting period i.e. policy would have an immediate effect.

⁵ Please note that for the purpose of this SA, uncertain effects have been treated as potentially significant and mitigation measures suggested

Notation	Description
Medium	Within plan period (up to 20 years from adoption)
Long	Beyond plan period (more than 20 years from adoption)
Spatial Extent	
Beyond both plan boundaries	Effects are predicted to extend beyond the plan boundaries (i.e. transboundary) and could affect the terrestrial environment, neighbouring marine plan areas or other states.
Inshore and offshore plan-wide	Effects are predicted to occur within the inshore and offshore plan areas.
Inshore plan-wide only	Effects are predicted to occur within the inshore plan area only.
Offshore plan-wide only	Effects are predicted to occur within the offshore plan area only.
Localised	Effects are predicted to have a relatively small spatial extent, confined to the local area, typically <5km from source, within the plan boundaries.
Magnitude of effects	
High	Likely total loss of or major alteration to the receptor in question The effects are predicted to be permanent and irreversible.
Medium	Partial loss of/alteration/improvement to one or more key elements/features/characteristics of the receptor in question The effects are predicted to be medium-long term but reversible.
Low	Minor loss/alteration/improvement to one or more key elements/features/characteristics of the receptor in question The effects are predicted to be reversible and short term.

Following consultation on the draft South East Marine Plan between January 2020 and April 2020, the plan and the SA Report have been updated in response to the consultee comments received and residual significant effects have been identified.

4.5. Stage C: Preparing the SA Report

The SA Report for the South East Marine Plan constitutes three parts:

- Part 1: Introduction and Methodology
- Part 2: Scoping Information
- Part 3: Results of the Assessment.

Material and documents generated as part of the SA process are available [here](#).

4.6. Stage D: Consulting on the SA Report

The draft South East Marine Plan and accompanying SA Report were consulted on with the public and other key stakeholders between January 2020 and April 2020.

Following consultation, responses relating to the SA have been reviewed and responded to. Amendments to the SA have been undertaken in response to consultees' comments as appropriate.

4.7. Stage E: Monitoring

Monitoring the effects of the plan will be the responsibility of the MMO. Monitoring recommendations will be put forward for integration into the MMO's marine plan monitoring within the SA Adoption Statement. See Part 3 of the SA Report for further details on monitoring.

4.8. Difficulties encountered

The South East Marine Plan is a regional scale plan which is not intended to address site or project-specific details. The large majority of the policies in the plan are generic or criteria-based policies and do not have a clear spatial dimension.

This results in uncertainty when predicting the effects of activities and consequently strategic impacts can be identified with the most certainty, together with the extent to which the marine plan seeks to avoid or offset these impacts. Correspondingly, this SA's predictions and proposed mitigation measures are primarily at a strategic level.

5. Potential Significant Effects of the Plan

5.1 Introduction

This section presents a summary of the assessment findings of the South East Marine Plan by SA topic, the summaries of which are presented in Table 4 to Table 12. The full assessment of the South East Marine Plan can be found within Technical Appendix B to the full SA Report.

Table 4: Assessment results: Cultural Heritage.

Cultural Heritage	
Uncertain Effects	?
<ul style="list-style-type: none"> the heritage assets policy grouping aims to protect heritage assets from developments that could result in adverse effects. However, the last clause of policy SE-HER-1 will allow for some harm to heritage assets to occur if harm to such assets cannot be avoided by development. Hence, an uncertain effect has been recorded for assets within and adjacent to the south east inshore marine plan area, as it will be dependent on implementation policy groupings cables, dredging and disposal, oil and gas and renewables all aim to protect current activity and promote future activity within the south east marine plan area. The baseline has identified the significant under exploited potential of buried heritage assets in the south east marine plan area, as well as the potential for adverse effects on those heritage assets that are already uncovered, from cables, dredging and disposal, oil and gas and renewables. Policy SE-HER-1 could provide protection to heritage assets, however, it is uncertain which policy would have precedence an uncertain effect has been recorded as a result of the cables policy grouping, on heritage assets adjacent to marine plan areas. This policy gives preference to buried subsea cables which has the potential to disturb both known and undiscovered archaeological sites. A preference for burying cables is included within the cables policies which could exacerbate disturbance on heritage assets, both within and adjacent to the south east marine plan area which could result in a negative effect on heritage assets adjacent to the marine plan area. However, this would be dependent on implementation, therefore and overall uncertain effect has been recorded. 	

Table 5: Assessment results: Geology, Substrates and Coastal Processes.

Geology, Substrates and Coastal Processes	
Significant Positive Effects	++
<ul style="list-style-type: none"> the climate change policy grouping seeks to increase resilience of geology to the effects of climate change, minimise adverse impacts on coastal change adaptation measures and support proposals which have the potential to increase flood defence and carbon sequestering habitats. A significant positive effect has been identified for the coastal features and processes SA sub-topic. 	
Uncertain Effects	?
<ul style="list-style-type: none"> dredging and disposal activities have the potential to affect areas of seabed altering sediment processes and physical processes and creating sediment plumes. The dredging and disposal policy grouping aims to safeguard dredging activity within the south east marine plan area, however, as dredging is an enabling activity which is essential to the functioning of ports and marinas, it is assumed that SE-DD-1 and SE-DD-2 will help dredging activity to continue. It is assumed that all new dredging proposals would be subject to an EIA, which would assess the potential effect on seabed substrate and bathymetry. This could help to mitigate potential negative effects. An uncertain effect, depending on implementation is recorded for the seabed substrates and bathymetry SA sub-topic aggregate activity can significantly change the hydrodynamic regime, which in turn could alter coastal processes. Although the aggregate policies may not result in further extraction sites within the south east marine plan area, the policies will help to safeguard existing aggregate sites. There is potential for both the seabed substrates and bathymetry and coastal features and processes SA sub-topics, to be negatively affected by the aggregates policies. However, it is assumed that all new aggregate proposals would be subject to an EIA. The Crown Estate leasing process also ensures that environmental receptors are taken into account and conditions are frequently applied to limit effects. However, it is assumed that all new aggregate proposals will be subject to an EIA, and The Crown Estate leasing process also ensures that environmental receptors are considered. An uncertain effect, depending on implementation, has therefore been identified for the seabed substrates and bathymetry and coastal processes SA sub-topics the effects of renewable energy installations on potentially sensitive environmental features are unknown at present. The installation of renewable technology and subsequent reduced contributions to climate change may help to appease the impacts of increased storminess such as coastal inundation within the marine environment. However, due to the unknown type and location of future renewable sites, an uncertain effect has been identified, for the coastal features and processes sub-topic. 	

Table 6: Assessment results: Seascape and Landscape.

Seascape and landscape	
Significant Positive Effects	++
<ul style="list-style-type: none"> there is a close relationship between the presence of heritage assets and the character, value and appreciation of landscape and seascape. Heritage policies aim to protect heritage assets from future proposals, ensuring that the diversity of the marine environment, and its cultural heritage, is protected landscape and seascape policies aim to maintain and improve the seascape and landscape within the south east marine plan area. Proposals which may harm the current seascape or landscape must demonstrate why this is necessary and mitigate adverse effects. 	
Uncertain Effects	?
<ul style="list-style-type: none"> there are no oil or gas fields or terminals in the south east marine plan area and no currently licenced areas to be awarded or offered in the south east marine plan area. At this stage, there is no certainty that the oil and gas policies will result in development, and for this reason an uncertain effect has been identified. 	

Table 7: Assessment results: Water.

Water	
Significant Positive Effects	++
<ul style="list-style-type: none"> marine litter is transboundary in nature, as litter moves in the marine environment and litter originating from one marine plan area or even country can affect another. The cross-border co-operation policy supporting text states that the alignment of marine planning with other planning, regulation and management bodies is necessary in order to manage pressures and aims to ensure transboundary impacts are minimised across international borders. This policy could therefore result in significant positive effects on the marine litter SA sub-topic the water quality policy aims to enhance and restore water quality and ensure that new proposals are accountable for their potential negative impact on water quality. For this reason, a significant positive effect has been identified for the pollution and water quality sub-topic a potential significant indirect positive effect has been identified in relation to the renewables policies on the water temperature and salinity SA sub-topic. It is assumed that an increase in renewable energy generation could work to counter the advance of climate change and the associated effects on water temperature and salinity. 	

Table 8: Assessment results: Air Quality.

Air Quality	
Significant Positive Effects	++
<ul style="list-style-type: none"> the air quality policy aims for all proposals to demonstrate consideration of their contribution to air pollution, both direct and cumulative. Given that air pollution is an issue in the south east marine plan area, the policy could effectively help to reduce air pollution. 	

Table 9: Assessment results: Climate.

Climate	
Significant Positive Effects	++
<ul style="list-style-type: none"> the climate change policy grouping could result in a potential significant positive effect on climate change resilience and adaptation SA sub-topic, as it seeks to increase resilience and adaptation to the effects of climate change the marine protected areas policy grouping and the climate change resilience and adaptation SA sub-topic, directly address the issue of climate change adaptation, with clear preference for proposals which enhance the adaptability of marine protected areas to climate change the renewables policy grouping policies support energy generation by marine renewables which in turn could alleviate demand on greenhouse gas-emitting fossil fuel energy generation, resulting in significant positive effects on the greenhouse gas emissions SA sub-topic the air quality policy grouping aims to ensure that developments which contribute to greenhouse gas emissions will need to consider the need to protect air quality, resulting in significant positive effects on the greenhouse gas emissions SA sub-topic. 	

Table 10: Assessment results: Communities, Health and Wellbeing.

Communities, Health and Wellbeing	
Significant Positive Effects	++
<ul style="list-style-type: none"> • the baseline has identified income and employment deprivation issues associated with coastal communities across the south east marine plan area. It is assumed that the employment policy grouping will help to provide employment opportunities for all, including those from protected equality groups, therefore significant positive effects have been identified for the effects on communities and effects on protected equality groups SA sub-topics • increased access to tourism and recreation activities, as a result of tourism and recreation policies, could provide significant social benefits for communities through, greater social cohesion, improved health and wellbeing (both physical and mental) and job creation. Significant positive effects have therefore been recorded in relation to the health and the wider determinants of health and effect on communities SA sub-topics • the cross-border co-operation policy grouping aims for developments to consider cross-border impacts upon adjacent marine plan areas and the terrestrial environment including economic, social impacts. In order to achieve sustainable development, it is assumed that developments will need to consider their impact on communities (including health and wellbeing) • the social benefits policy grouping has potential to tackle existing health problems within the south east inshore marine plan area, hence a significant positive effect has been recorded in relation to the health and the wider determinants of health sub-topic. 	

Table 11: Assessment results: Economy.

Economy	
Significant Positive Effects	++
<ul style="list-style-type: none"> • the access, social benefits, employment and tourism and recreation policy groupings aim to increase access to the marine environment, providing greater leisure and recreational opportunities across the south east inshore marine plan area. For these reasons, significant positive effects have been identified in relation to the leisure and recreation SA sub-topic • aggregate policies could result in further aggregate extraction in the south east marine plan areas. The baseline has identified the significance of the UK marine aggregates and the importance they could play in the future for meeting housing demands and provision of fill for major coastal infrastructure projects, such as ports, coastal defences, renewable energy and nuclear energy projects, hence a potential significant positive effect has been recorded for the aggregates SA sub-topic • the infrastructure policy grouping aims to safeguard existing landing facilities within the south east marine plan area, which are predominantly used for aggregate activity. The policy should also result in a significant positive effect on aggregate extraction and the ports and shipping SA sub-topics • the cables policy grouping will help to enable further cable development within the plan area, and could ensure energy security for the future. Significant positive effects have been identified in relation to the energy generation and infrastructure development and seabed assets SA sub-topics • the development of a sustainable fishing industry, with good access to both fishing grounds is promoted within the fisheries policies, resulting in significant positive effects on the fisheries and aquaculture SA sub-topic • oil and gas policies could support future oil and gas extraction within the south east marine plan areas, through the safeguarding of sites. Carbon Capture Usage and Storage policies could also result in Carbon Capture Usage and Storage activity within the inshore marine plan area. Significant positive effects have been identified in relation to the energy generation and infrastructure development SA sub-topic • the tourism and recreation and social benefits policy groupings aim to protect existing leisure and recreational activities and could result in expansion and diversification of existing developments as well as new proposals. This has the potential to result in significant positive effects on both the leisure and recreation and tourism SA sub-topics • the renewable energy policy groupings aim to safeguard areas for future renewable development and promote new renewable technologies. Significant positive effects have been identified in relation to the energy generation and infrastructure development SA sub-topic • a potential significant positive effect has been identified in relation to the ports and shipping policy grouping, as it supports existing shipping infrastructure and open up new opportunities for short sea shipping 	

Economy
<ul style="list-style-type: none"> • it has been assumed that policy SE-CO-1 will support and maintain existing port activity within the region, hence a significant positive effect has been identified for the co-existence policy grouping • the co-existence policy grouping has highlighted that tourism and recreation activities in the south east inshore marine plan area are more popular in summer months and has therefore indicated that the optimisation of space, co-existence measures and co-operation between sectors is particularly important during these months. For this reason, a significant positive effect has been identified, in relation to the tourism sub-topic • the implementation of the employment policy grouping could result in significant positive effects on a number of SA sub-topics, by offering employment opportunities across multiple sectors. This has led to significant positive effects for the energy generation and infrastructure; fisheries and aquaculture; leisure and recreation; ports and shipping, and tourism SA sub-topics.

Table 12: Assessment results: Biodiversity, Flora and Fauna.

Biodiversity, Habitats, Flora and Fauna	
Significant Positive Effects	++
<ul style="list-style-type: none"> • the implementation of the marine protected areas policy grouping could have potential for significant positive effects on the marine protected areas network, including benthic and intertidal ecology, as it may increase the adaptability of benthic and intertidal environments to the effects of climate change, and make suitable arrangements for the spatial changes in distribution of habitat types • the cumulative effects policy is predicted to have a significant positive effect on the benthic and intertidal ecology and protected sites and species SA sub-topics, as it will address adverse cumulative effects from future proposals • the invasive non-native species policy grouping directly aims to prevent the introduction and increased spread (or increased distribution) of invasive non-native species throughout the plan area. Transport of invasive non-native species, as well as areas of potential colonisation are addressed within this grouping, which should help to form a well-rounded approach to tackling this issue • the south east marine plan area includes important fish spawning areas for cod, plaice, sand eel and sole, and nursery grounds for anglerfish and mackerel. The co-existence policy supporting text has identified the importance of this and has stated that it will optimise the use of these important grounds. This will help to protect fish and shellfish within the region and may have positive impacts on the fish and shellfish, protected sites and species and ornithology SA sub-topics • the invasive non-native species policy grouping has the potential to positively effect native fish and shellfish populations, such as the European Eels inhabiting the Severn Estuary. It clearly outlines the need to prevent the introduction of invasive non-native species through transport and construction, which could subsequently compete with native species. 	

Biodiversity, Habitats, Flora and Fauna

Significant Negative Effects

--

- ports and shipping activity could increase as a result of the ports and harbours policy grouping. This could result in increased disturbance, hence a potential significant negative effect has been identified in relation to seabirds.

Uncertain Effects

?

- fisheries pose a threat to fish and shellfish, particularly vulnerable or rare species. Whilst the fisheries policies seek to protect essential fish habitat, it is unclear whether this would apply only to fish habitat of commercially important species or all fish. Therefore, an uncertain effect has been recorded for the fish and shellfish and protected sites and species sub-topics
- the co-existence policy aims to help protect habitats and species, but it also aims to protect industries that are damaging to benthic and intertidal habitats. There is no indication within the supporting text whether the protection of industries or the protection of habitats take priority. For these reasons, an uncertain effect has been identified, in relation to the co-existence policy grouping and benthic and intertidal ecology
- the oil and gas policies may not directly result in further oil and gas developments within the south east marine plan areas, however, it is assumed that these policies will ensure that existing developments will continue. The production of noise in the marine environment can have varying effects on marine species. There is no certainty that the oil and gas policy grouping will result in development, hence an uncertain effect has been identified in relation to the benthic and intertidal ecology; marine megafauna; ornithology; and protected sites and species sub-topics
- the disturbance policy does not protect benthic or intertidal habitats; or sessile species from the effects of disturbance, which has the potential to lead to the irreversible loss of benthic and intertidal environments within the south east plan area. The biodiversity policy grouping may have the potential to mitigate for this, however, it is uncertain whether this would include the effects of disturbance
- the aggregates policy grouping aims to protect current aggregate activity, and support future development. Aggregate activity has the potential to result in the degradation and/or loss of the seabed, adversely affecting benthic species and habitats, marine megafauna and ornithology. Other policies in the plan and processes such as EIA and The Crown Estate leasing processes could help to identify and mitigate potential impacts, however it is unclear if this will be achieved in all cases. Hence, an uncertain effect has been recorded in relation to the benthic and intertidal ecology, marine megafauna and ornithology sub-topics
- sub-sea cables have the potential to adversely affect fish species, through disturbance during construction and through electromagnetic fields created during operation. There is potential for electromagnetic fields to alter migration, feeding and navigation in these organisms. However, the impact of electromagnetic fields on fish is not yet fully understood, hence an uncertain effect has been recorded

Biodiversity, Habitats, Flora and Fauna

- the implementation of the underwater noise policy grouping could have significant negative effects on all parts of the food web and ecosystem, including marine megafauna; fish and shellfish; and protected sites and species. Policies in this grouping could lead to the development of proposals which directly alter fish movement patterns, therefore altering energy expenditure. Species which are not "highly mobile" would not be protected by this policy. This could lead to the irreversible loss of populations. The populations of species which are "highly mobile", as well as those which are not could also be affected by activities that occur concurrently in key habitats, or at times or in areas that are crucial to part of their life-cycle e.g. spawning times.

6. Cumulative Effects Assessment

6.1 Introduction

The SEA Regulations require an assessment of cumulative effects. Cumulative effects arise where:

- several individual effects of the plan have a combined effect on a single receptor
- several plans and policies each have insignificant effects but together have a significant effect.

The significance of cumulative effects resulting from a range of activities, or multiple incidences of one activity, may vary based on factors such as the nature of the projects proposed and the sensitivity of the receiving communities and environment.

The cumulative effects assessment therefore includes:

- consideration of how different aspects of the South East Marine Plan may interact to cause cumulative effects on a receptor
- how the South East Marine Plan can cause cumulative effects in association with other programmes, plans, policies and projects.

6.2 Potential Cumulative Effects of all Policy Groupings

Table 13 below summarises the potential significant positive, significant negative and uncertain cumulative effects identified for each SA topic from the assessment of policies.

The full details of the cumulative effects identified, as well as mitigation, for each of the SA topics in relation to the policy groupings, is outlined in Table 2 in section 13 of the SA Report: Part 3.

Table 13: Summary of cumulative effects.

SA topic	Associated Policy Groupings	Potential Negative or Uncertain Cumulative Effects	Potential Positive Cumulative Effects
Landscape and Seascape	seascape and landscape infrastructure	Potential negative cumulative effects on seascape and landscape could arise if a number of infrastructure developments along the coast were to come forward in combination. However, the potential significance of these cumulative effects is uncertain.	Seascape and landscape policy grouping working in combination with the marine protected areas and heritage assets policy groupings, could result in positive cumulative effects.
Economy	invasive non-native species underwater noise	Economic activity could be restricted by the implementation of a combination of the environmental policy groupings, however the significance of these cumulative effects is not yet known. Environmental policies could inhibit economic activity (e.g. underwater noise restrictions and control of invasive non-native species). However, some of these environmental policies do contain caveats to allow for development at the expense of the environmental receptors, which could help to mitigate adverse impacts on development.	N/A
Biodiversity	aggregates ports and harbours (including shipping) biodiversity	Aggregates and ports and harbours (including shipping) policies could result in uncertain negative cumulative effects on benthic and intertidal ecology and protected sites and species. In isolation, these developments may not be significant, but if numerous developments come forward as a result of a	A potential significant cumulative positive effect has been identified in relation to the marine protected areas policy grouping working in combination with the biodiversity grouping.

SA topic	Associated Policy Groupings	Potential Negative or Uncertain Cumulative Effects	Potential Positive Cumulative Effects
		<p>single policy or multiple policies, there is potential for negative effects on biodiversity.</p> <p>Cumulative effects would also be dependent upon how these policies are implemented and the preference given to biodiversity policies, and the nature (susceptibility to damage) and spatial extent of the biodiversity in question.</p>	

6.3 Potential Cumulative Effects with other programmes, plans, policies and projects

Table 3 within Section 13 of the SA Report: Part 3 presents the relevant international, national and regional plans, policies and strategies which could give rise to potential cumulative effects in combination with the South East Marine Plan.

The majority of the policies and plans reviewed will result in positive cumulative effects. This is because they strengthen environmental protection, for example by reducing greenhouse gas emissions, improving air or water quality, protecting designated sites for nature conservation, landscape or the historic environment. However, there is potential for development to cause negative cumulative effects, particularly where development in adjacent terrestrial or marine areas can act in-combination to impact on receptors. There are a number of policies within the South East Marine Plan which do help to mitigate these effects:

- Cumulative Effects Policy SE-CE-1
- Co-existence Policy SE-CO-1
- Cross-border Co-operation Policy SE-CBC-1
- environmental protection policies
- economic development (including fisheries) policies.

In addition, cumulative impact assessments undertaken as part of the consenting and EIA processes would also address and mitigate for potential cumulative effects of projects.

7. Mitigation

Mitigation measures are measures suggested to prevent, mitigate, reduce or offset negative, cumulative or uncertain effects. Where significant negative or uncertain effects were identified within the policy assessment, mitigation has been provided via the following (either as standalone or in combination):

- **general mitigation:** this may be provided through other policies within the South East Marine Plan; existing plans and policies (such as local plans, national park management plans) or through other processes, for example, environmental impact assessment (EIA)
- **specific mitigation:** this mitigation type has recommended alterations to either the supporting text or policy wording.

Responses to mitigation for each of the SA topics can be found in section 14 in SA Report: Part 3 and further detail will be provided within the SA Adoption Statement.

The mitigation proposed falls into the broad categories below:

- in some cases, mitigation would be applied at the planning application stage and would rely on the EIA and/or The Crown Estate leasing processes. Uncertainty remains in the SA but is likely to be mitigated at the project level, therefore no further action is required at the plan level
- in some cases, changes to policy supporting text proposed in the SA to mitigate potential effects has been rejected because discussing potential impacts caused by every sector in the supporting text would lead to an unduly long plan. As stated in section 2.3 of the marine plan, the plan must be taken as a whole and no policy should be taken in isolation. Therefore, no further action will be taken in these cases
- several uncertain cumulative effects are likely to be mitigated by the implementation of one or more policies within the plan. In particular, the cumulative effects policy grouping could help to mitigate such effects. The final outcome may not become clear until the implementation of the plan. Therefore, no further action is required in the SA
- there may be not mitigation for all cumulative effects, particularly those which could restrict development in order to protect the environment (and vice versa). Instead, it may have to be accepted as an effect of implementing policies, specifically those which will protect the environment, hence no further action is required
- spatial and temporal changes to development proposals could help to prevent adverse impacts on marine organisms. However, this level of detail will be decided at planning application stage, thus no further action is required
- an uncertain cumulative effect may have been identified due to a lack of data concerning links between certain SA sub-topics. In such cases, no further action is required. Instead, uncertain effects may be mitigated when further scientific evidence is published to clarify potential interactions.

8. Monitoring of Residual Effects

The SEA Regulations require that the significant environmental effects of plans and programmes be monitored. This intends to allow the early identification of unforeseen adverse effects so that appropriate remedial action can be taken.

Therefore, monitoring undertaken for the South East Marine Plan as part of the SA, and as part of the implementation and monitoring of the adopted South East Marine Plan, should help to:

- monitor the significant effects of the South East Marine Plan
- track whether the South East Marine Plan has had any unforeseen effects
- ensure that action can be taken to reduce/offset the significant negative effects of the plan.

The requirements of the SEA Regulations focus on monitoring the significant negative and unforeseen effects of the Marine Plan. Therefore, monitoring within these reports is only discussed within the context of residual effects which are significantly negative or uncertain.

The South East Marine Plan process will itself include a comprehensive monitoring programme which is focused on the achievement of the plan's objectives. This monitoring programme will enable the MMO to track the success of policies and also to monitor the baseline environmental, economic and social conditions of the marine plan areas. The monitoring also contributes to the three-yearly reporting to parliament, which in turn provides a mechanism for reviewing and amending the plan or individual policies.

The SA topics and sub-topics for which residual significant negative or uncertain effects have been identified in the assessment of the final policies will be presented in the SA Adoption Statement alongside suggested monitoring indicators. During the development of the Annex of Indicators, these suggestions will, if practicable, be integrated into the monitoring programme or new indicators will be created to assess these impacts. The Annex of Indicators will be developed following the publication of the North East, North West, South East and South West Approach to Monitoring and once completed will be available on request from the Marine Management Organisation.