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Seascape Character Assessment for the South East Inshore marine plan area



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MMO 1134: Seascape Character Assessment for the South East Inshore marine plan area

September 2018



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1.0	Kate Ahern	Updated draft final report following stakeholder consultation, August 2018
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2.0	Kate Ahern	Final report, September 2018
2.1	Chris Sweeting	Independent QA

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1 Introduction

The [Marine Policy Statement \(MPS, 2011\)](#) (2.6.5.2) states that, when developing marine plans, visual, cultural, historical and archaeological impacts should be considered for all coastal areas. The MPS adds that any wider social and economic impacts of a development or activity on coastal landscapes and seascapes should also be considered, taking into account existing character and quality (2.6.5.3). In addressing these requirements, this report presents a seascape assessment for the south east marine plan areas.

1.1 Context

The first strategic-scale seascape assessment commissioned by the Marine Management Organisation (MMO) was undertaken for the [south inshore and offshore marine plan areas](#) in 2014. This followed the seascape character assessment for the [east inshore and offshore marine plan areas](#) commissioned by Natural England in 2011, further [updated by the MMO in 2012](#) following a consultation exercise.

In 2015, the MMO commissioned desk-based seascape assessments for the south east, north east and north west marine plan areas. In the same year, Natural Resources Wales (NRW) and Welsh Government completed their own national study to identify and describe [Marine Character Areas \(MCAs\)](#) for the Welsh marine plan areas. In the following year, 2016, the MMO commissioned a desk-based seascape character assessment for the south west inshore and offshore marine plan area to complete coverage for England. Visual resource mapping (VRM) was undertaken for all marine plan areas in 2015 (see [section 2.3](#)).

This project developed MMO's desk-based seascape assessments for the south east, north east, north west and south west marine plan areas formulated in 2015/16 to undertake stakeholder verification through a series of workshops were held in 2018 to provide the opportunity for key stakeholders to input into the process. In addition to the workshops, further comments from stakeholders across the four regions were invited by email to supplement the information gathered at the workshops.

Following consultation, this study has produced a combined national seascape character map for all England's inshore and offshore areas, comprising a spatial framework of individual MCAs which 'flow across' marine plan area and administrative boundaries. The MCAs represent strategic patterns and variations in character across the national marine area.

This report for the south east comprises the baseline desk-based seascape assessments for the MCAs defined and described in 2016, further developed to account for comments received through the stakeholder verification process undertaken in 2018. The south east marine plan area covers the inshore area only. Separate complementary reports are available for the south west, north east and north west inshore and offshore marine plan areas. Existing studies are also available for the [east inshore and offshore marine plan areas](#) and [south inshore and offshore marine plan areas](#).

The MMO's seascape assessments have been broadly aligned with the guiding principles set out in Natural England's 2012 publication, [An approach to Seascape Character Assessment](#) (NECR105).

1.2 Objectives

The objectives of the overall study (for the south east, north east, north west and south west marine plan areas) were to:

- Undertake a desk-based seascape character assessment for the marine plan areas, comprising the spatial definition of strategic-scale MCAs and accompanying descriptions, with a focus on key characteristics.
- Create a single, unified Geographical Information System (GIS) data layer and a national map of seascape character for all marine plan areas in England.
- Hold stakeholder engagement workshops to refine and validate the combined seascape character assessment map and MCA descriptions

1.3 Structure of the report

This report for the south east has been structured as follows:

- [Section 2](#) describes the methodology developed and followed for this study
- [Section 3](#) includes the MCA profiles for the south east.
- [Section 4](#) has the References used in this report.
- [Annex 1](#) is the project's data list.
- [Annex 2](#) lists organisations consulted with for this study in the south east.

2 Methodology

This section summarises the methodology used for the production of the south east seascape assessment. This process followed six main steps:

1. Gathering and assimilating data and information
2. Undertaking a desk-based seascape character assessment
3. Using the national visual resource mapping to inform the seascape assessment.
4. Undertaking stakeholder verification
5. Updating the MCA names, boundaries and descriptive information.
6. Creating a combined national seascape character GIS shapefile and map for England's inshore and offshore marine plan areas

These steps are described below, with additional information described relevant to this study for the south east. This includes how the project considered spatial links with the adjacent east and south marine plan areas.

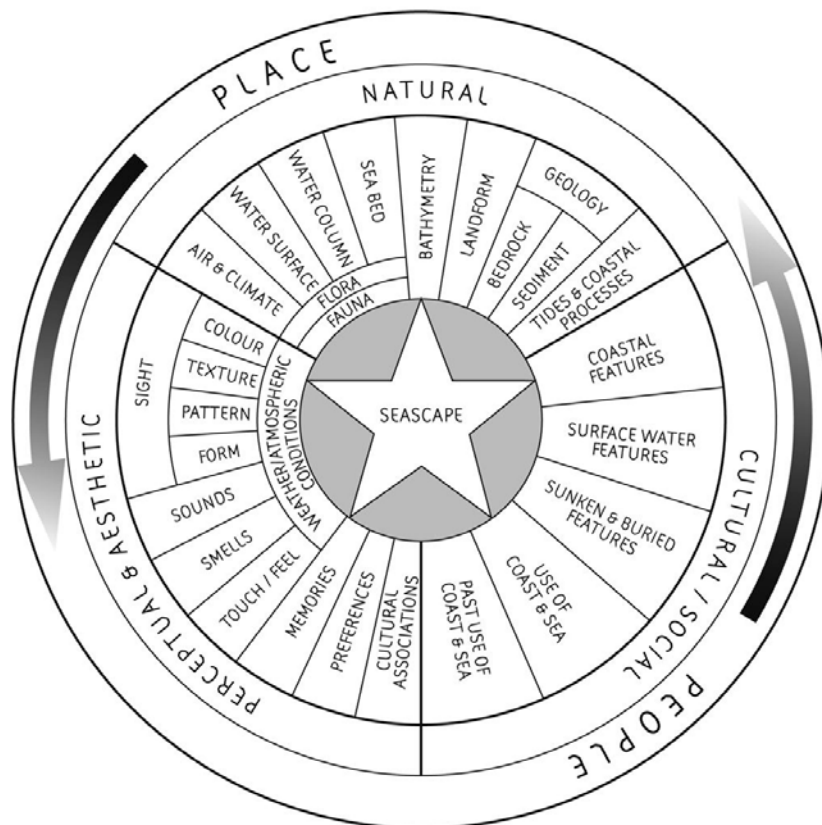
2.1 Gathering and assimilating data and information

The first stage involved gathering and assimilating the range of datasets, literature, plans and strategies available to inform the work. The majority of the required spatial data was provided by the MMO, organised in a GIS database structured according to the key themes of the 'seascape wheel', see Figure 1 ([An approach to Seascape Character Assessment](#) (NECR105)). The wheel illustrates the different aspects which combine to create 'seascape character', under the three general themes of natural, cultural/social and perceptual and aesthetic. General information layers such as base-mapping and administrative boundaries were also collated during this first stage.

Marine raster charts and marine themes vector data provided the backdrop onto which numerous other GIS layers (geology, bathymetry, designated sites, etc.) were overlaid. Particular attention was paid to aligning the coordinate systems of onshore and offshore datasets to ensure a seamless transition between the marine and terrestrial data, drawing on the experience of previous studies. A full data list for this work is provided in [Annex 1](#), including groupings under the three general themes of the seascape wheel to show the range of data used by this study to inform each theme.

The work undertaken for this study was primarily desk-based and aligned more with the 'natural' and 'cultural/social' themes of the seascape wheel, rather than the 'perceptual and aesthetic' (e.g. sight, sounds, smells) which could be gained in further detail from field/boat survey work. However, more information on perceptual and aesthetic qualities were gathered through the stakeholder engagement process undertaken in 2018.

Figure 1: The Seascape Wheel ([Natural England, 2012](#))



Relevant literature and other written references were also compiled to inform the project: a reference list is provided in [Section 4](#). Of particular use in understanding sea conditions (e.g. tides and currents) and interpreting information on marine navigation are the relevant Coast Pilots published by Imray. These were used to gain a further understanding of seascape character from the perspective of the sea and sea users.

2.2 Undertaking a desk-based seascape character assessment

2.2.1 Identifying Marine Character Areas (MCAs)

The collated data and information relating to the different aspects of the seascape wheel were interrogated in order to begin to identify dominant patterns relevant to character across the inshore and offshore marine plan areas. This process informed the identification of MCAs, defined in the box over the page. This definition is consistent with that provided for ‘seascape character areas’¹ in Natural England’s 2012 publication, [An approach to Seascape Character Assessment](#), and applies to all of the other strategic-scale studies undertaken in England and Wales.

¹ Marine Character Areas (MCAs) are more widely known as Seascape Character Areas (SCAs) outside of the marine planning process in England.

Marine Character Areas (adapted from Natural England, 2012)

Definition: An MCA is an area of marine space has its own individual character and identity

Application: Although MCAs can share the same generic characteristics as other areas, the use of marine character areas provides a good framework within which to draw out patterns of local distinctiveness and those factors influencing sense of place. They can be used to develop more tailored policies or strategies, reflecting the things that make a particular area different, distinctive or special.

The boundaries drawn for the MCAs represent broad transitions (rather than immediate or abrupt changes) in character from MCA to MCA, tending to reflect natural breaks or the clustering of characteristics and/or features deciphered from available data and information. The use of GIS is a key tool in the process of seascape character assessment, enabling different information layers to be interrogated in tandem and therefore allowing spatial patterns relevant to character to be investigated.

Professional judgement by a consultancy team of landscape and seascape specialists was fundamental in deciding which aspects have greatest influence on the character of each MCA, considering in particular how they shape individual distinctiveness and sense of place. Additional sources of written information, as well as LUC's own knowledge of the south east (gained through other landscape/seascape studies and fieldwork), were used alongside the GIS data to inform the boundary drawing process.

Draft MCA boundaries were digitised in GIS at a 1:250,000 scale with notes kept on the reasoning behind the boundaries drawn, including the use of GIS datasets. This draft classification was discussed with the MMO at this early stage, with comments made considered in a further detailed review of available information.

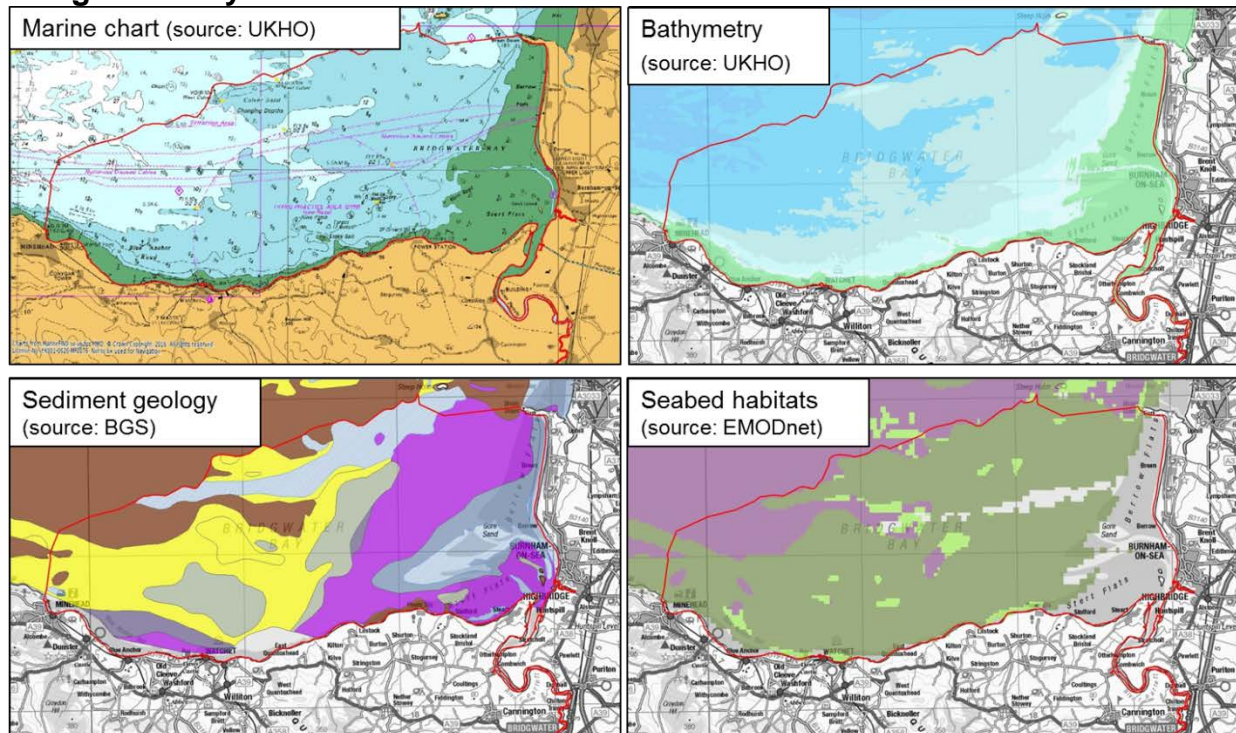
Figure 2 below illustrates how basemapping information detailed on the marine chart was used alongside other GIS datasets to help inform the MCA boundaries, using an example from the south west marine plan area (MCA 40 Bridgwater Bay). The character of this MCA, straddling between the Bristol Channel and Severn Estuary, is strongly influenced by natural and physical processes. Data representing the 'natural' theme of the Seascape Wheel therefore played a strong role in the boundary identification process for this MCA.

Further refinements to draft MCA boundaries resulted in the classification of seven MCAs for the south east, which were discussed at the stakeholder workshops undertaken in 2018 (see [section 2.4](#) below). The final classification of MCAs for the south east inshore marine plan area is illustrated at Figure 5 at the start of [Section 3](#). A summary of the main information used to inform the boundaries is included in the 'location and boundaries' section of each MCA profile in [Section 3](#).

As outlined above, **it is important to note that the MCA boundaries represent broad zones of transition (i.e. not immediate breaks in character)**, and that natural, visual, cultural and socio-economic relationships between adjacent MCAs

play a key role in shaping overall character. Individual MCAs should not be considered in isolation.

Figure 2: Example of GIS data used to help inform the boundaries of MCA 40: Bridgwater Bay



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2.2.2 Making spatial links to adjacent Marine Character Areas (MCAs)

This study forms part of a full national classification of MCAs across England, displaying seamless boundaries that are not constrained by the location of the different marine plan areas or administrative jurisdictions.

For the south east, this required consideration of the neighbouring classifications already published for the east (2012) and south marine plan areas (2014). Where seascape character was deemed to continue (or ‘flow’) across these administrative boundaries, the definition of English MCA boundaries was extended across the boarder into other MCAs. As a result two of the MCAs (MCA 11 Goodwin Sands and North Dover Strait and MCA 15 Eastern English Channel Approaches) include smaller areas extending into the classification for the [south inshore and offshore marine plan areas](#). MCAs including England in parentheses do so to clarify that the definition only refers to the part of that area which is within the English marine plan area.

The seascape character assessment for the east, commissioned by Natural England in 2012, had boundaries co-incident with the marine plan area boundary. As part of this study to develop a national seascape classification the MMO have, with the approval of Natural England, been able to consider the cross boundary linkages with seascape character areas (SCAs) defined in that report. Minor boundary adjustments have been made including the extension of MCA 19 Essex and South Suffolk Estuaries and Coastal Waters and MCA 20 Thames Approaches into the

east marine plan area. MCA 17 Thanet Shipping Waters has been retained as a small character area in the south east adjoining the much larger SCA 04 in the east.

Where relevant, these connections are illustrated on the map and described in the 'location and boundaries' box at the beginning of each MCA profile in [Section 3](#).

The MCA numbering in this report follows on from the south, starting with MCA 11 Goodwin Sands and North Dover Strait which straddles the marine plan areas for the south and south east. It should be noted that MCAs 12, 13 and 14 are all within the south offshore marine plan and the MCAs in the south east continue with MCA 15, 16, 17, 18, 19 and 20. More information on the national seascape character map is provided at [section 2.6](#).

2.2.3 Describing the seascape character of the Marine Character Areas (MCAs)

Each MCA has its own descriptive profile, which is included in [Section 3](#) of this report. The profiles are structured as follows:

- Map of the MCA, showing its position within the wider marine plan area(s)
- Overview of the MCA, with information against the following headings:
 - **Location and boundaries:** this includes information on how the MCA was defined with reference to key sources of data/information – noting that boundaries represent zones of transition, not immediate breaks in character.
 - **Overall character:** a summary snapshot of the overall seascape character of the MCA.
 - **Adjacent National Character Areas:** For those MCAs with an adjacent coastline, reference is made to the adjoining [National Character Areas](#) defined by Natural England which form the equivalent spatial and descriptive units for landscape as the MCAs are for seascape.
 - **Adjacent and inter-visible nationally designated and defined landscapes:** This section outlines which nationally designated or defined landscapes (National Parks, Areas of Outstanding Natural Beauty, Heritage Coasts, World Heritage Sites) are found along the adjacent coast or are visible to/from the MCA.
- **Key characteristics:** Seascape character is described using a set of bullet-pointed key characteristics which consider the main themes of the 'Seascape Wheel' (Figure 1). The key characteristics are designed to capture the main features, elements and attributes of the MCA which combine to produce its overall seascape character. The key characteristics are not intended to be an exhaustive list of every site or feature present within the MCA. More fine-grained information on character can be captured in local-scale Seascape Character Assessments (see [section 2.2.4](#) below).

The MCA profiles draw on a range of available literature (see References at the end of [Section 3](#)) and data ([Annex 1](#)) in order to compile the key characteristics.

2.2.4 Making links to local-scale seascape character assessments

Seascape character assessments prepared at a local scale provide more detailed evidence, and have been referred to where available. In the south east, reference was made to the [Seascape Character Assessment for the Dover Strait](#) (2015).

Nationally, it is envisaged that future local-scale assessments will consider the output of this assessment by seeking to nest smaller seascape units within the spatial framework of MCAs, where it is appropriate to do so.

2.3 Using the national visual resource mapping to inform the seascape assessment

An approach to visual resource mapping (VRM) was developed and methodology documented as part of the [seascape assessment for the South marine plan areas](#) (2014). This has subsequently been applied nationally by the MMO. All of the MMO's subsequent studies have referred to the VRM to help inform the 'perceptual and aesthetic' theme of the seascape wheel as relevant to visual character. Figure 3 presents the national VRM for England and Wales (showing both sea surface visibility from land and land with views of the sea). The south east section, showing the MCA framework, is included at Figure 6 in [Section 3](#).

2.4 Undertaking stakeholder verification

2.4.1 Stakeholder workshops

LUC was commissioned in 2018 to undertake stakeholder verification on the draft seascape character assessments for the south east, north east, north west and south west. This included workshops held in each region. For the south east, one workshop was held in London, on Friday 11 May 2018.

A range of different stakeholders attended the workshop. A list of organisations represented by participants at the south east event is included at [Annex 2](#). Those attending the workshops received an introductory presentation from the MMO on how seascape evidence is feeding into the marine planning process. This was followed by an overview of seascape work prepared to-date by LUC. Discussions were facilitated to verify the MCA names, boundaries and key characteristics for consideration in the updated information provided in this report.

2.4.2 Comments submitted by email

Participants and invitees to the workshop were given a further opportunity to submit comments to the MMO via email. This consultation period ran until 25 May 2018. Those who submitted comments are also listed in [Annex 2](#).

2.5 Updating the MCA names, boundaries and descriptive information

Responses made at the workshops and submitted by email were considered as part of an update to the MCA profiles (included in [Section 3](#)). Comments on MCA names

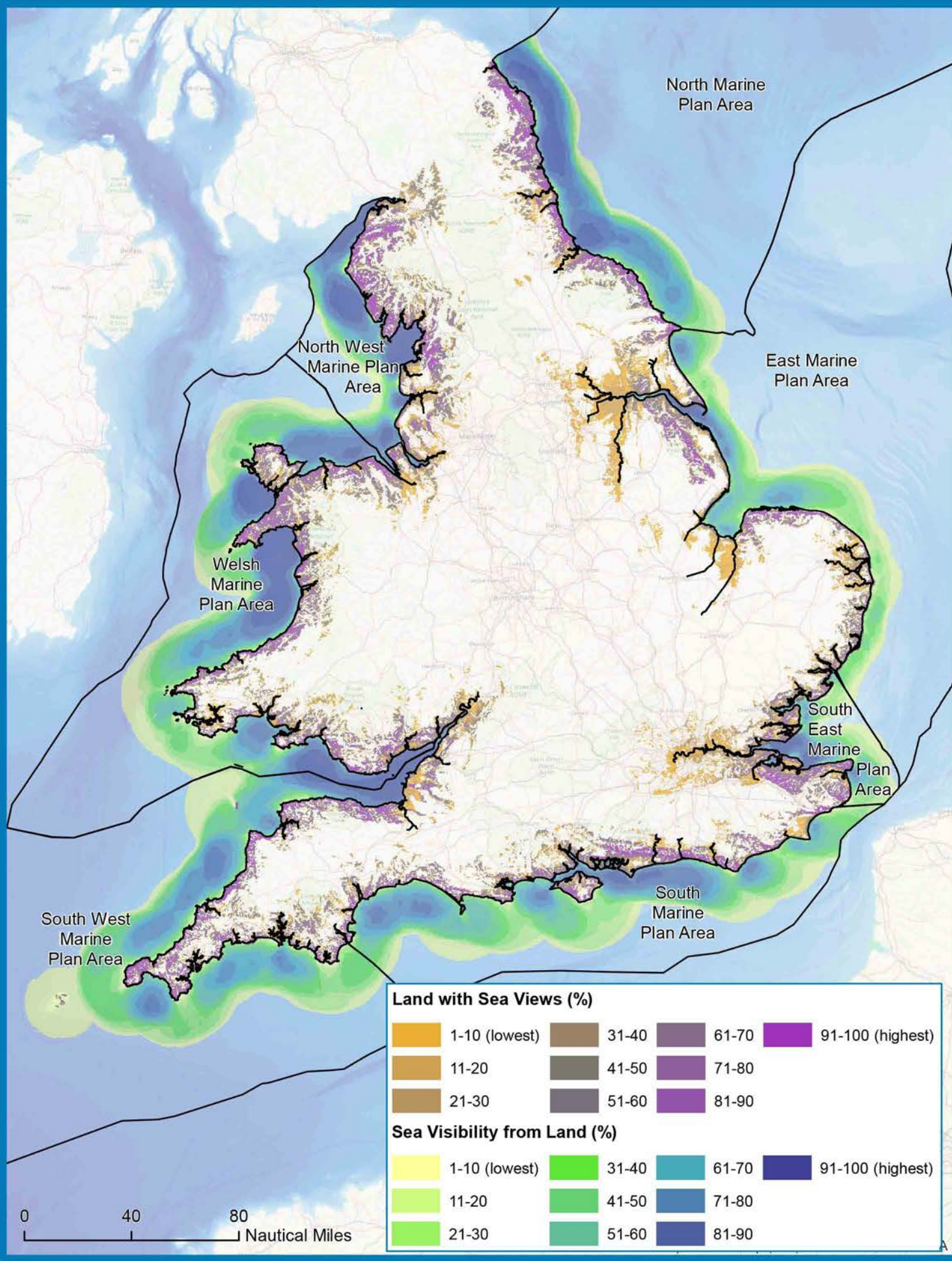
and boundaries fed into the process of creating the national seascape character map and combined GIS layer, as described in [Section 2.6](#).



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Figure 3: Visual Resource Mapping For England and Wales

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2.6 Creating a combined national seascape character GIS shapefile and map for England's inshore and offshore marine plan areas

An essential aim of this assessment was the creation of a single combined GIS layer and map of MCAs covering all of England's inshore and offshore waters, replacing previously available separate datasets for individual marine plan areas.

This required an understanding of how character 'flows' between marine plan areas – a consideration already part of the MMO's existing studies (see [section 2.2.2](#)). Relationships between Wales and the south west and or north west marine plan areas were also considered during the preparation of the National Seascape Assessment for Wales (LUC, 2015).

This is the first time character has been mapped across all marine plan areas. It was essential to gain permission for the outputs from the north east and south east studies to supersede the seascape characterisation published for the east marine plan area by Natural England in 2012. The national seascape layer for England has, however, retained the numbering and naming of the SCAs identified by Natural England as separate to the MCAs for the remaining five marine plan areas. Otherwise the numbering is continuous, starting from the south marine plan area and running anti-clockwise around the coast to the south west marine plan area.

Using GIS, the National Marine Character Area layer for England was created by merging the individual datasets produced for the south east, south, south west, north west, north east and east marine plan areas. Areas which overlap at either end of these individual datasets were merged or amended to reflect stakeholder comments on names and boundaries and desk-based interpretation of characteristics and features from available data and information.

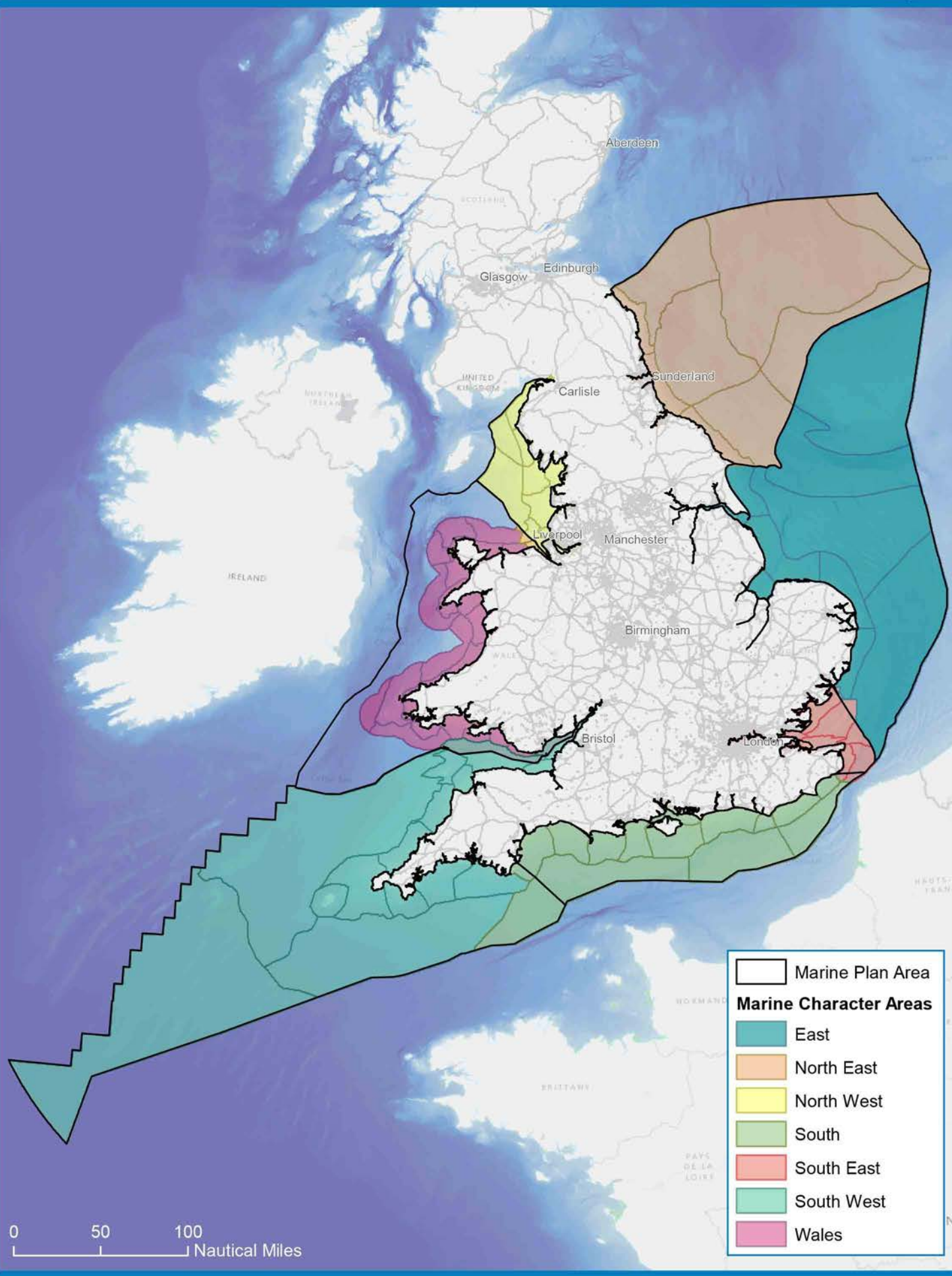
The resultant national seascape character map for England is presented at Figure 4, showing how the MCAs relate to those defined for Wales. The combined GIS layer will be included on the MMO's online [Marine Information System \(MIS\)](#) to inform the marine planning process, as well as downloadable from <https://data.gov.uk/>.



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Figure 4: Marine Character Areas in England and Wales

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2.7 Limitations

The main limitations of this seascape assessment for the south east, and suggestions for further improvements, are summarised as follows:

- The time and resources available for this study enabled the production and verification of desk-based character descriptions only, with a focus on key characteristics.
- The MCA descriptions provide information on the current (baseline) character of the seascape. The majority of this information is from the 2015 desk-top study which preceded stakeholder consultation in 2018. The MCA profiles were updated in 2018 to account for stakeholder comments where available evidence allowed.
- The key characteristics are designed to capture elements of importance to seascape character at a strategic (marine plan area) level. They are not designed to be a comprehensive list of all sites and features present – designated or otherwise.
- An evaluation of quality, condition, sensitivity and capacity to accommodate change could be considered at a future date, which in turn could inform the production of tailored management and planning guidelines.

3 Marine Character Area profiles for the south east inshore marine plan area

3.1 Introduction

This section provides descriptive profiles for each MCA identified for the south east inshore marine plan areas. There is no south east offshore area. Figure 5 presents the spatial classification of all south east MCAs and Figure 6 shows the national Visual Resource Mapping results, overlain by the south east MCA framework.

Each stand-alone profile contains the following information:

A location map of the MCA (forming the front cover of each MCA profile)

Overview of the MCA

- Location and boundaries
- Overall character (summary)
- Adjacent National Character Areas (for those MCAs abutting the coast)
- Adjacent nationally designated and defined landscapes (National Parks, Areas of Outstanding Natural Beauty (AONBs), Heritage Coasts and World Heritage Sites).

Key characteristics

Comprising summary bullet points considering natural, cultural/social and perceptual/aesthetic influences on the MCA's character.

3.2 List of Abbreviations

The following abbreviations are used throughout the MCA profiles:

AONB	Area of Outstanding Natural Beauty
MCA	Marine Character Area
MCZ	Marine Conservation Zone
NCA	National Character Area
SAC	Special Area of Conservation
cSAC	candidate Special Area of Conservation
SCA	Seascape Character Area
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
WHS	World Heritage Site
WWI / WWII	World War I / World War II



Figure 5: South East Marine Character Areas

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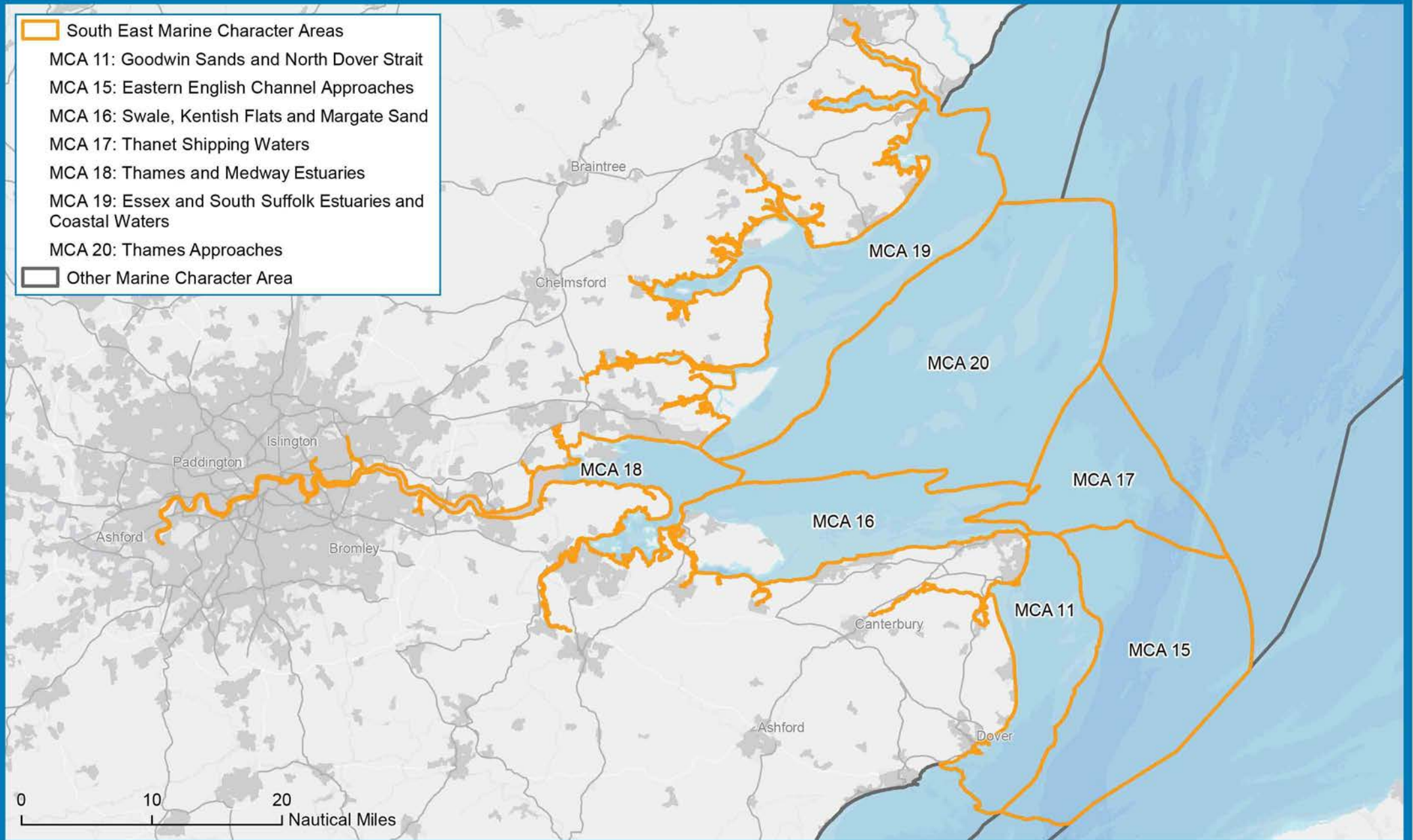


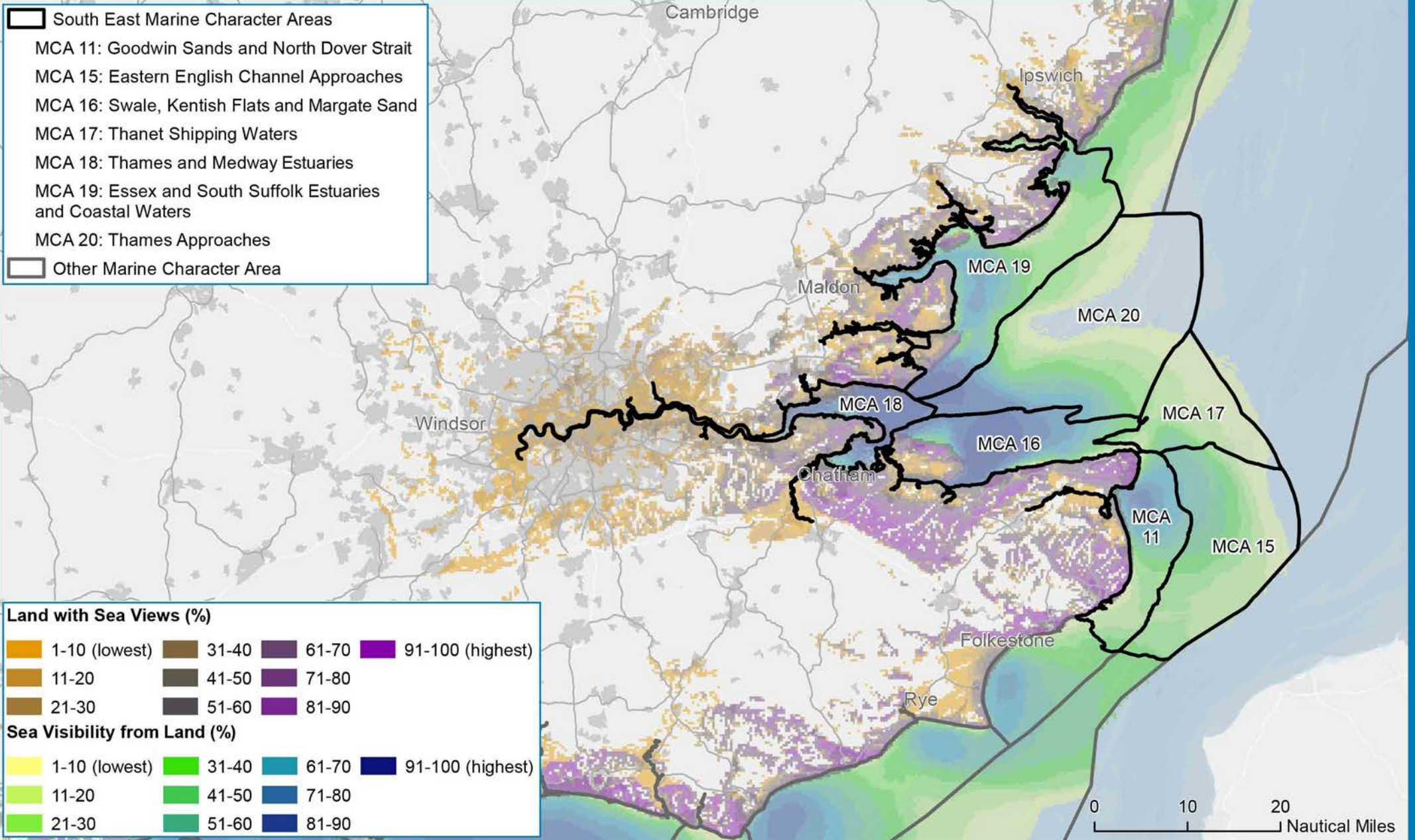


Figure 6: Visual Resource Mapping for the South East

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- South East Marine Character Areas
- MCA 11: Goodwin Sands and North Dover Strait
- MCA 15: Eastern English Channel Approaches
- MCA 16: Swale, Kentish Flats and Margate Sand
- MCA 17: Thanet Shipping Waters
- MCA 18: Thames and Medway Estuaries
- MCA 19: Essex and South Suffolk Estuaries and Coastal Waters
- MCA 20: Thames Approaches
- Other Marine Character Area

- Land with Sea Views (%)**
- | | | | | | | | | | |
|---------------|-------|-------|-------|-------|-------|-------|-------|-------|------------------|
| 1-10 (lowest) | 11-20 | 21-30 | 31-40 | 41-50 | 51-60 | 61-70 | 71-80 | 81-90 | 91-100 (highest) |
|---------------|-------|-------|-------|-------|-------|-------|-------|-------|------------------|
- Sea Visibility from Land (%)**
- | | | | | | | | | | |
|---------------|-------|-------|-------|-------|-------|-------|-------|-------|------------------|
| 1-10 (lowest) | 11-20 | 21-30 | 31-40 | 41-50 | 51-60 | 61-70 | 71-80 | 81-90 | 91-100 (highest) |
|---------------|-------|-------|-------|-------|-------|-------|-------|-------|------------------|

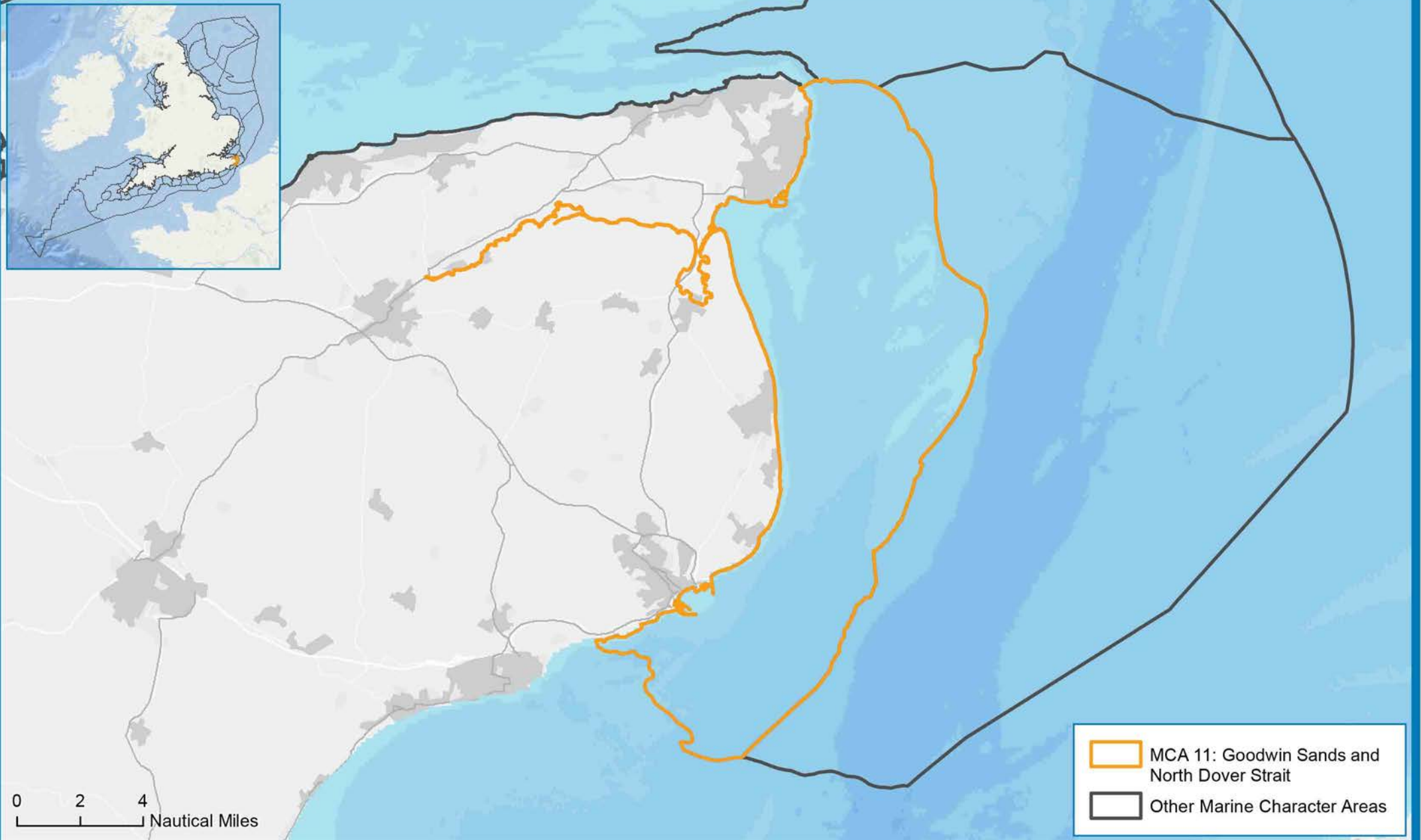




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Figure 7 - MCA 11, Goodwin Sands and North Dover Strait

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3.3.1 Profile for MCA 11: Goodwin Sands and North Dover Strait

Location and boundaries

This MCA covers the northern part of the Dover Strait and the east Kent coast from North Foreland in the north to the edge of the chalk near Folkestone in the south. Its eastern boundary with MCA 15 Eastern English Channel Approaches extends to a maximum distance of approximately 14km offshore, and includes all of the Goodwin Sands. To the south MCA 11 continues within the south marine plan area, extending to the end of the chalk bedrock geology. Its northern boundary with MCA 16 Swale, Kentish Flats and Margate Sand and MCA17 Thanet Shipping Waters is created by the change in direction of the coastline in north Kent and the sea conditions from the Channel to the Thames estuary. The tidal River Stour extends inland from Sandwich on Pegwell Bay as far as Fordwich, and is described in adjacent landscape character assessments.

Overall character

Goodwin Sands and North Dover Strait MCA contains a wealth of nationally valued natural and cultural heritage. The chalk cliffs at Dover are a symbol of national identity, and the strategic location of this area of seascape close to Europe means it is characterised by maritime trade and traffic, plus evidence of historic military activity and great biodiversity interest related to the chalk bedrock. The Goodwin Sands form distinctive and large-scale dynamic shifting sandbanks and shoals valuable for marine biodiversity. Numerous wrecks are testament to the dangerous sea conditions induced by the mobile sand banks, including five nationally protected wrecks at Goodwin Sands forming an important cultural resource.

Adjacent National Character Areas (NCAs)

The adjacent coastline includes the following NCAs as defined by Natural England:

- 113: North Kent Plain
- 119: North Downs

Adjacent and inter-visible nationally designated and defined landscapes

The southern section of the coastline lies adjacent to the Kent Downs AONB. The South Foreland Heritage Coast and part of the Dover-Folkestone Heritage Coast lies within the MCA.

3.3.2 Key characteristics of MCA 11: Goodwin Sands and North Dover Strait

- North easterly and south easterly facing coastline of Kent characterised by chalk cliffs separated by a shore of mud, sand and shingle.
- The famous sheer white chalk cliffs of Dover, a deeply held symbol of national identity. Low chalk cliffs at the Isle of Thanet.
- Chalk geology exposed in the chalk cliffs extend as chalk reefs on the seabed - part of the longest continual stretch of chalk in the UK (designated as SAC and part of Thanet Coast MCZ) as well as the MCZ along the chalk cliffs (Dover to Deal).
- Sea character noticeably changes where the estuary meets the English Channel, with strong tidal currents prevalent. North Foreland lighthouse is a prominent landmark and guide to mariners.
- The River Stour flows into Pegwell Bay forming a wide sweeping bay of intertidal mud, sand flats and shallow waters rich in invertebrate life and supporting waterfowl.
- Sand dunes at Sandwich Bay grade to shingle south of Deal, supporting a wealth of plant and animal life. Extensive freshwater marshes at Sandwich Bay and Hacklinge Marshes provide further contrast and habitat diversity.
- Cliffs topped by open coastal downland including nationally important chalk grassland and scrub - valued habitats for breeding sea bird colonies.
- Rich coastal and marine biodiversity of national significance. The chalk rocks forming reefs, ledges and gullies, shoals, flinty 'knolls' and reefs are valuable marine habitats.
- The submerged rocks and reefs also create areas of shallow, rough water, forming hazards to navigation.
- Goodwin Sands form distinctive and large-scale dynamic sandbanks and shoals. These are valuable for marine biodiversity (proposed MCZ) and habitats for a range of fish, seals and sea birds.
- The Royal Harbour at Ramsgate provides safe anchorage in these hazardous waters. Sandy bay and cultural associations with Dickens at the historic town of Broadstairs.
- The South Foreland and North Foreland lighthouses are prominent features visible from the waters within the Dover Strait, as is the Dover Patrol Monument.
- Numerous wrecks testament to the dangerous sea conditions at Goodwin Sands, including five nationally protected wrecks. In the south the seascape is exposed to gales funnelling up the Strait. The East Goodwin lightship guards the end of the Sands.
- Shallow coastal waters used for seasonal fishing (often recreational), set netting, potting and recreational anchoring.
- The 59km (37 miles) stretch of the England Coast Path from Folkestone to Ramsgate is approved and open to the

public providing recreation opportunities along the coast and views across this seascape.

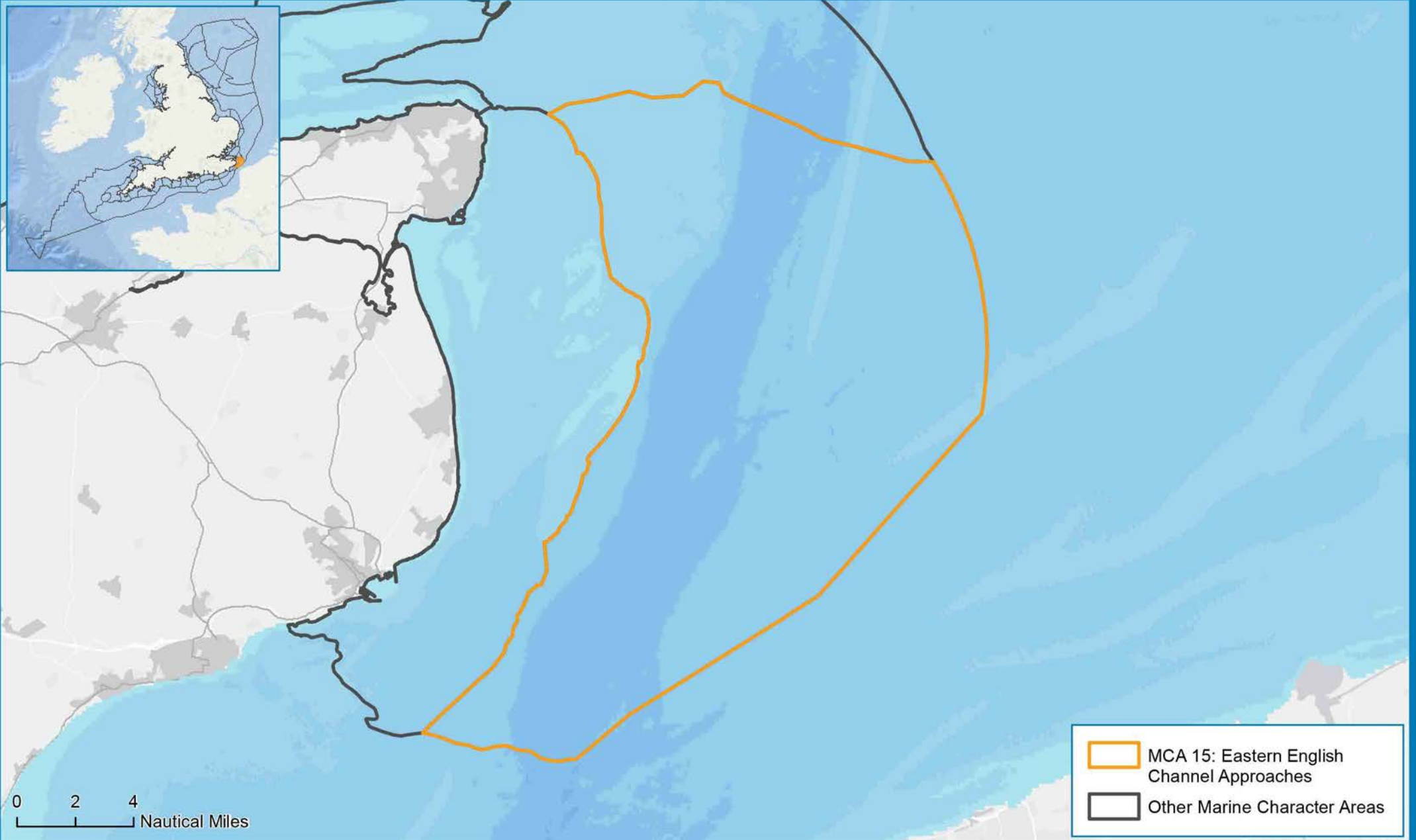
- The Dover Strait has played a key strategic role in the defence of Britain and formed the location for successive invasions and defence including its role in the Dunkirk evacuations of WWII.
- A defended coastline with distinctive fortifications including Dover Castle, and Western Heights which dominate the skyline at Dover.
- Long-standing importance for trade, reflecting its location in proximity to mainland Europe, with long history of seafaring activity.
- Constant movement of ferries and the offloading of cars and freight around the Port of Dover, Europe's busiest ferry port. The main shipping lanes are dominant visible and audible features.
- Built-up coastal hinterland of Ramsgate and Broadstairs, on Thanet to the north. The coast becomes more open and undeveloped within Pegwell Bay and on the nationally designated chalk cliffs where there is a strong sense of remoteness.
- Iconic views across the Dover Strait from the white cliffs, to a clear silhouette of the French coast, plus views to Thanet offshore wind farm. Rich artistic, literary and cultural associations.



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Figure 8 - MCA 15, Eastern English Channel Approaches

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3.4.1 Profile for MCA 15: Eastern English Channel Approaches

Location and boundaries

This MCA covers the eastern part of the outer English Channel extending to the edge of the inshore plan area. Its western (inshore) boundary with MCA 11 Goodwin Sands and North Dover Strait is defined by the Goodwin Sands, and broadly lines up with the Traffic Separation Zone of the shipping channel in the Dover Strait. To the north MCA 17 Thanet Shipping Waters follows the line of the North Foreland headland, representing the end of the Dover Strait as the channel begins to widen into the North Sea. To the south MCA 12 English Channel (East) / Dover Strait in the south marine plan area represents a broad continuation of this area to the edge of the chalk bedrock.

Overall character

This MCA has a rich natural and cultural heritage. It contains the deeper water shipping funnelling the main through traffic of the Dover Strait, and is characterised by constant movement of marine traffic being one of the busiest maritime routes in the world. The Dover Strait as a whole has played a key strategic role, the location for successive invasions and defence – from the Romans, Norman Conquest, Napoleonic France and the two World Wars. Wrecks and other debris on the sea bed are a testament to past maritime uses including international trade dating back many centuries.

Adjacent National Character Areas (NCAs)

N/A – this MCA does not include an adjacent coastline.

Adjacent and inter-visible nationally designated and defined landscapes

This MCA does not include an adjacent coastline. However it is likely to be inter-visible with The Kent Downs AONB, as well as the South Foreland Heritage Coast and part of the Dover-Folkestone Heritage Coast.

3.4.2 Key characteristics of MCA 15: Eastern English Channel Approaches

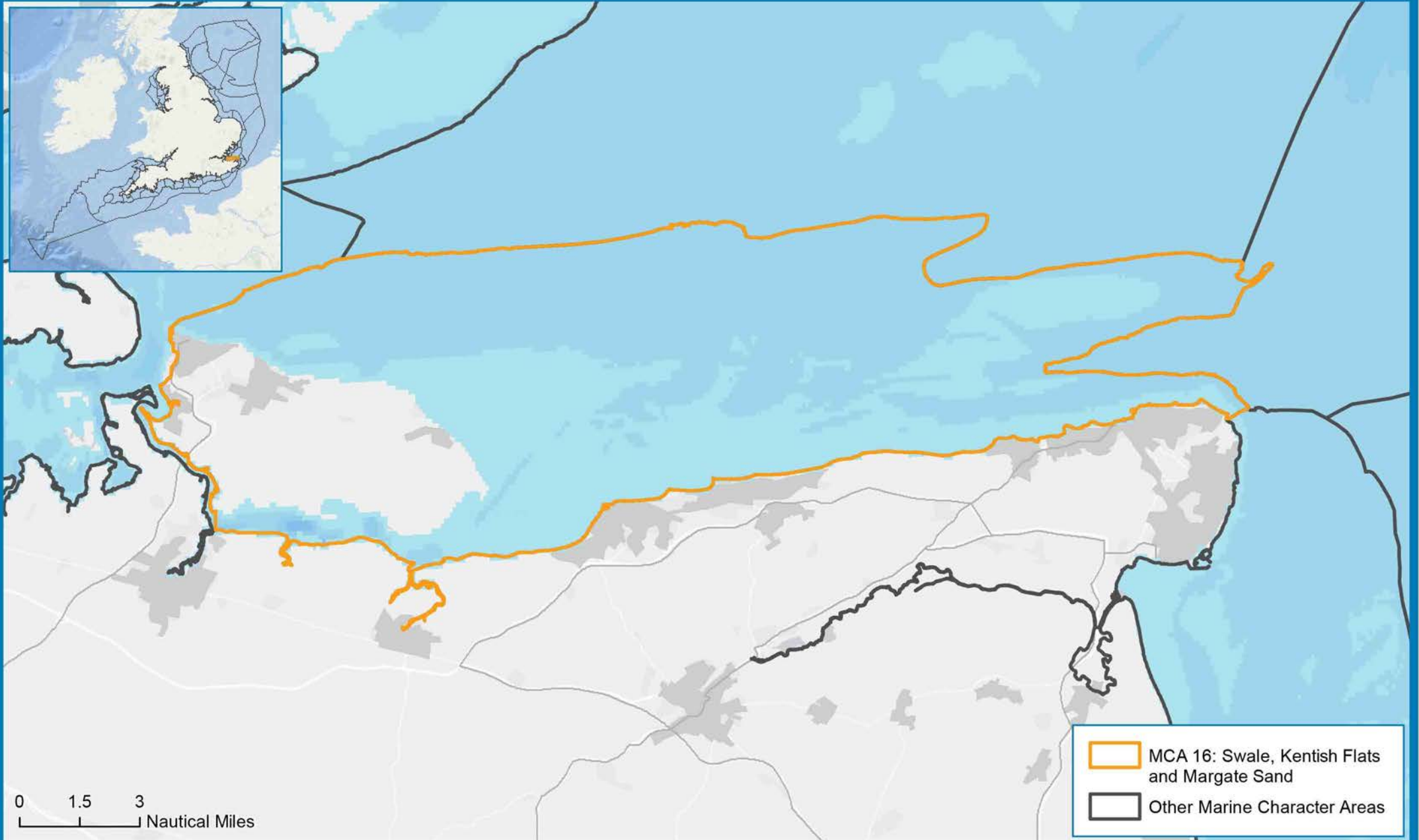
- Broad north-west to south-east deep channel forming the eastern section of the offshore part English Channel and Dover Strait. It reaches a maximum depth of approximately 50m.
- Chalk bedrock, extending from the distinctive headland of North Foreland and the White Cliffs of Dover and outcropping at the corresponding chalk coast of France.
- Forms part of the deep water shipping channel, maintained by dredging forming the link between the English Channel and the North Sea.
- Contains part of the English Channel Outburst Mega Flood Feature providing evidence of the flood which created the channel separating England from mainland Europe.
- Mixed sub-tidal sediment overlying the sea bed, with high benthic species diversity.
- Part of the Sandettie Bank offshore sand bank with dynamic sand waves; valued feeding grounds for porpoises and seals.
- Ecologically valued, reflected by the presence of two proposed MCZs within the MCA: Goodwin Sands and Offshore Foreland.
- Complex tidal currents meeting from the western English Channel/ Atlantic and the North Sea sometimes creating turbulent conditions depending on wind direction.
- Iconic role of the Dover Strait as a whole in the defence of Britain, forming the location for successive invasions and defence spanning the Romans, Norman Conquest, Napoleonic war and the two World Wars.
- Wrecks and other debris on the sea bed testament to past maritime uses including international trade dating back many centuries.
- Heavily occupied by marine traffic using the Dover Strait, managed by a central traffic separation zone, plus cross channel ferries between Dover and Calais.
- Internationally important telecommunications cables passing through the sea bed.
- A busy, dynamic area defined by transport movement, regularly used by up to 500 commercial vessels per day.
- Fishing is limited by the marine traffic, but the area is likely to contain important fish spawning and nursery grounds.
- Rapidly changing weather conditions and strong tides can give rise to rough seas with steep breaking waves.
- Visibility is often poor, changing quickly to dense fog, plus smog associated with shipping.
- At night, the lights of shipping and flashing maritime navigation devices within the Strait and along the adjacent coastlines are key visual influences within the area and from the shore.
- Sea views from and views to the nationally designated AONB landscape/Heritage Coast of the chalk cliffs.



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Figure 9 - MCA 16, Swale, Kentish Flats and Margate Sand

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3.5.1 Profile for MCA 16: The Swale, Kentish Flats and Margate Sand

Location and boundaries

This MCA extends along the north Kent Coast to take in the shallow coastal waters off the North Kent Coast, from MCA 18 Thames and Medway Estuaries in the west to the more open MCA 17 Thanet Shipping Waters to the east which opens to the North Sea. The area encompasses the shallow coastal waters, with the 5m bathymetry line to the north broadly defining the boundary and separating it from the deeper waters running along the edge of Princes Channel, used by shipping traffic of MCA 20 Thames Approaches. The MCA also includes the tidal channel of the Swale separating the Isle of Sheppey from mainland Kent which creates a link through to the Medway (MCA 18).

Overall character

A distinct area of shallow waters forming the coastal edge of the Thames Estuary, extending along the North Kent Coast. The extensive areas of mud flats uncovered at low tide are a key distinguishing feature creating a vast open expanse, contrasting with the developed coastal towns. For many, these areas on the Thames Estuary are the first seaside towns from the capital and the area has long been a popular destination for Londoners. Between areas of settlement, marshlands create a surprisingly strong sense of remoteness and isolation and are of high biodiversity interest. The low slumped clay cliffs of Sheppey and the chalk cliffs and reefs at Thanet create further contrast and diversity. The Swale is a distinctive tidal channel separating Sheppey from mainland Kent. The shallow coastal waters provide opportunities for water based recreation including - water skiing, sailing, kayaking, kite surfing, power boating, sea angling and wind surfing. The Kentish Flats wind farm adds to the dynamic character adding to the sense of movement and contributing to the 'busy' character of these coastal waters.

Adjacent National Character Areas (NCAs)

The adjacent coastline includes the following NCAs as defined by Natural England:

- 81: Greater Thames Estuary
- 113: North Kent Plain

Adjacent and inter-visible nationally designated and defined landscapes

The coastline adjacent to this MCA does not fall within any nationally protected landscapes, although there may be distant sea views from the Kent Downs AONB.

3.5.2 Key characteristics of MCA 16: The Swale, Kentish Flats and Margate Sand

- Extensive area of shallow coastal waters, estuarine shores and tidal flats joining the North Kent Coast.
- Sea conditions are often choppy reflecting the exposed aspect and influence of northerly and easterly winds, as well as tidal surges funnelling in from the North Sea.
- Gently shelving seabed rarely exceeding five metres in depth with an extensive tidal range leaving vast areas of mud exposed at low tide.
- Extensive soft sedimentary deposits with a mix of sands, gravels and mudstone with distinctive low chalk cliffs outcropping in the east at Thanet. The north Sheppey coastline is rich in fossils (SSSI).
- A generally low-lying coastline, with the exception of London Clay cliffs of up to 50m high between Herne Bay and Reculver and the contrasting chalk cliffs of Thanet.
- Soft cliffs are subject to wave erosion and significant long-term coastal change, with areas now protected by coastal defences. The beaches are divided by distinctive parallel groynes, with regular replenishment of shingle and beach-raising to protect the low lying coastline from flooding.
- Distinctive chalk sea stacks and arches along the coast, including at Botany Bay. Distinctive bays and sandy beaches occur at Minnis Bay, Westgate Bay and Joss Bay.

Very high biodiversity interest reflected in extensive biodiversity designations over almost the entire area. Among others: Outer Thames Estuary SPA, important for

its population of red throated divers; Margate and Long Sands cSAC, which has sandbank and mudflat habitats; and the Swale Estuary and Thanet Coast MCZs.

- Designated saltmarsh and coastal wet grasslands associated with the Swale important for breeding waterfowl and waders.
- Grey and common seals can frequently be seen hauled out on the extensive offshore mudflats at Margate Sand and other sand banks.
- Exceptional maritime history recognising the importance of the Thames Estuary as gateway between England and northern Europe and the role of the Thames in cross channel trade.
- Defensive coastline, notably associations with WWII, including anti-tank structures on the low lying marshes.
- Creeks are important in the settlement history of the area, and remain central to communities such as Sittingbourne, Faversham, Conyer and Oare.
- Important for sea bed species including renowned Whitstable oysters, plus shrimp and cockle - all exploited commercially.
- Other commercial fishing activity includes trawling and potting for species including Dover sole, plaice, whiting and cod and eels. A small fishing fleet is based at Whitstable.

- Sea angling takes place from most of the beaches of the North Kent Coast. Bait digging on the mud flats is a common sight.
- Traditional Thames Barges are still frequently seen in these coastal waters, now providing recreational boat trips. Recreational sailing takes place from a large number of clubs along the coast, although there are few berthing facilities.
- Other activities on the water include water skiing, kayaking, kite surfing, power boating and wind surfing. Access to the coast along the Saxon Shore Way, a long distance path from Gravesend to Hastings.
- Views to shipping activity in the Thames Estuary, notably cargo and container vessels using the Princes Channel to

and from the Ports of Medway and Thames Estuaries. The Maunsell Forts are a key horizon feature offshore.

- The Kentish Flats wind farm adds to the dynamic character, creating a further sense of movement and contributing to the 'busy' character, with views to numerous other wind farms within the wider estuary.
- Despite the presence of the coastal towns and development, the marshes of the North Kent Coast provide areas of isolation and remoteness.
- From the sea, views of this low lying coast are marked by tall buildings in the coastal towns, the towers and chimneys of Sheppey and the distinctive twin towers at Reculver.





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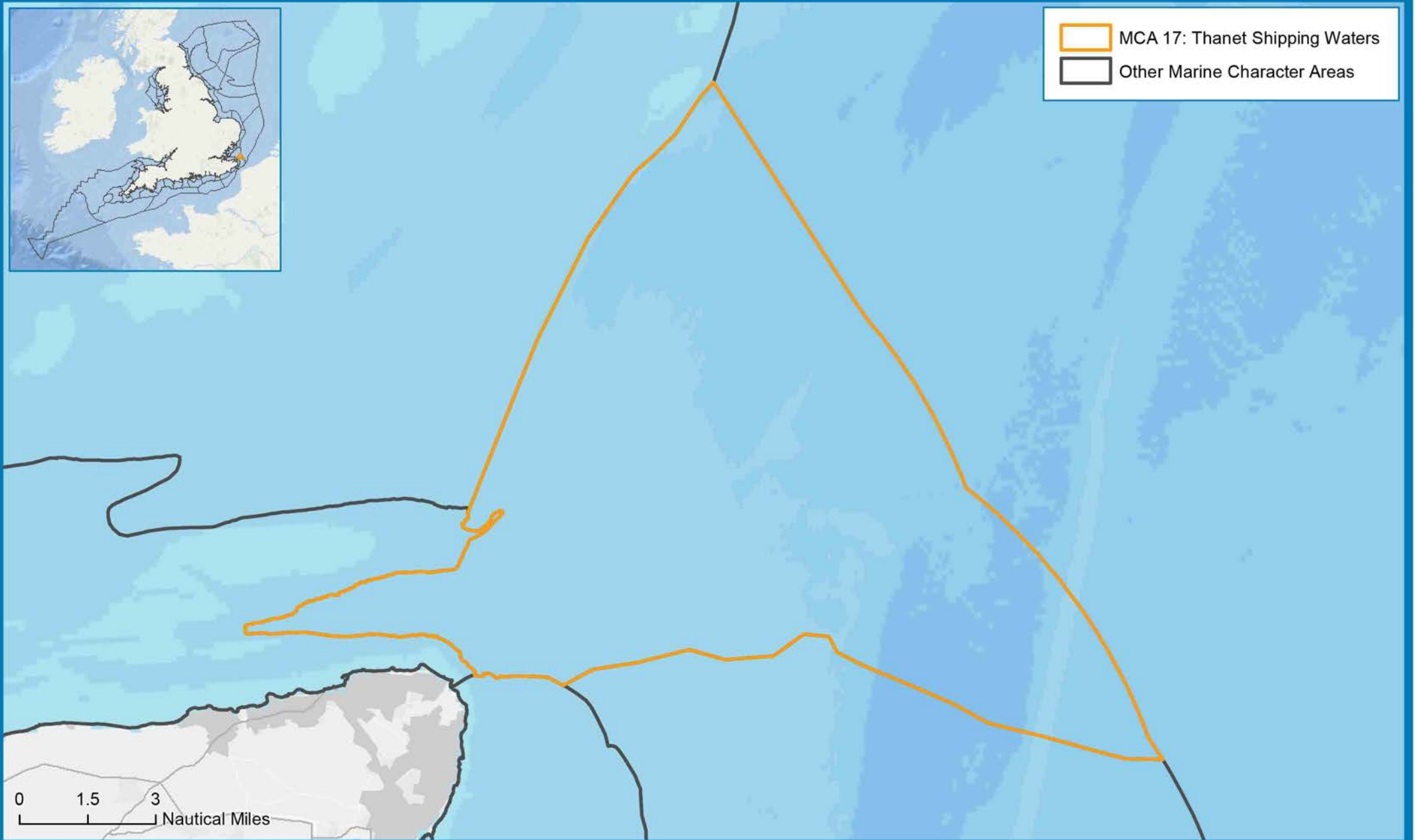
Figure 10 - MCA 17, Thanet Shipping Waters

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-  MCA 17: Thanet Shipping Waters
-  Other Marine Character Areas

0 1.5 3
Nautical Miles



3.6.1 Profile for MCA 17: Thanet Shipping Waters

Location and boundaries

The small MCA covers the offshore area east of the North Foreland headland at the southern tip of the North Sea; it is essentially part of the much larger East Anglian Shipping Waters (SCA 04) in the East Offshore Marine Plan Area, which continues into the North Sea, and MCA 17 boundaries should be considered in conjunction with SCA 04 and the adjacent MCA 20 Thames Approaches. The area is dominated by the Thanet offshore wind farm. Its western boundary with MCA 16 Swale, Kentish Flats and Margate Sand takes in the deeper waters around Margate Roads and Queen Channel that form anchorages, and its southern boundary follows the line of the North Foreland headland, representing the end of the Dover Strait as the channel begins to widen into the North Sea. The northern boundary of the MCA follows a line between two shallower sea bed features to the north – the Kentish Knock to the north east (within MCA 20 Thames Approaches) and Margate Sand to the south west (within MCA 16 Swale, Kentish Flats and Margate Sand).

Overall character

This MCA is characterised by the deeper water of the south North Sea, containing frequent movement of marine traffic. It is an open seascape, with the Thanet Wind Farm forming a key focal feature and covering an extensive part of the MCA. Ships waiting in the Margate Roads before entering the inshore area or anchoring here before entering into the North Sea and Channel are a key visual feature in views from the coast.

Adjacent National Character Areas (NCAs)

N/A – this MCA does not include an adjacent coastline.

Adjacent and inter-visible nationally designated and defined landscapes

N/A – this MCA does not include an adjacent coastline and there is unlikely to be any inter visibility with designated and defined landscapes.

3.6.2 Key characteristics of MCA 17: Thanet Shipping Waters

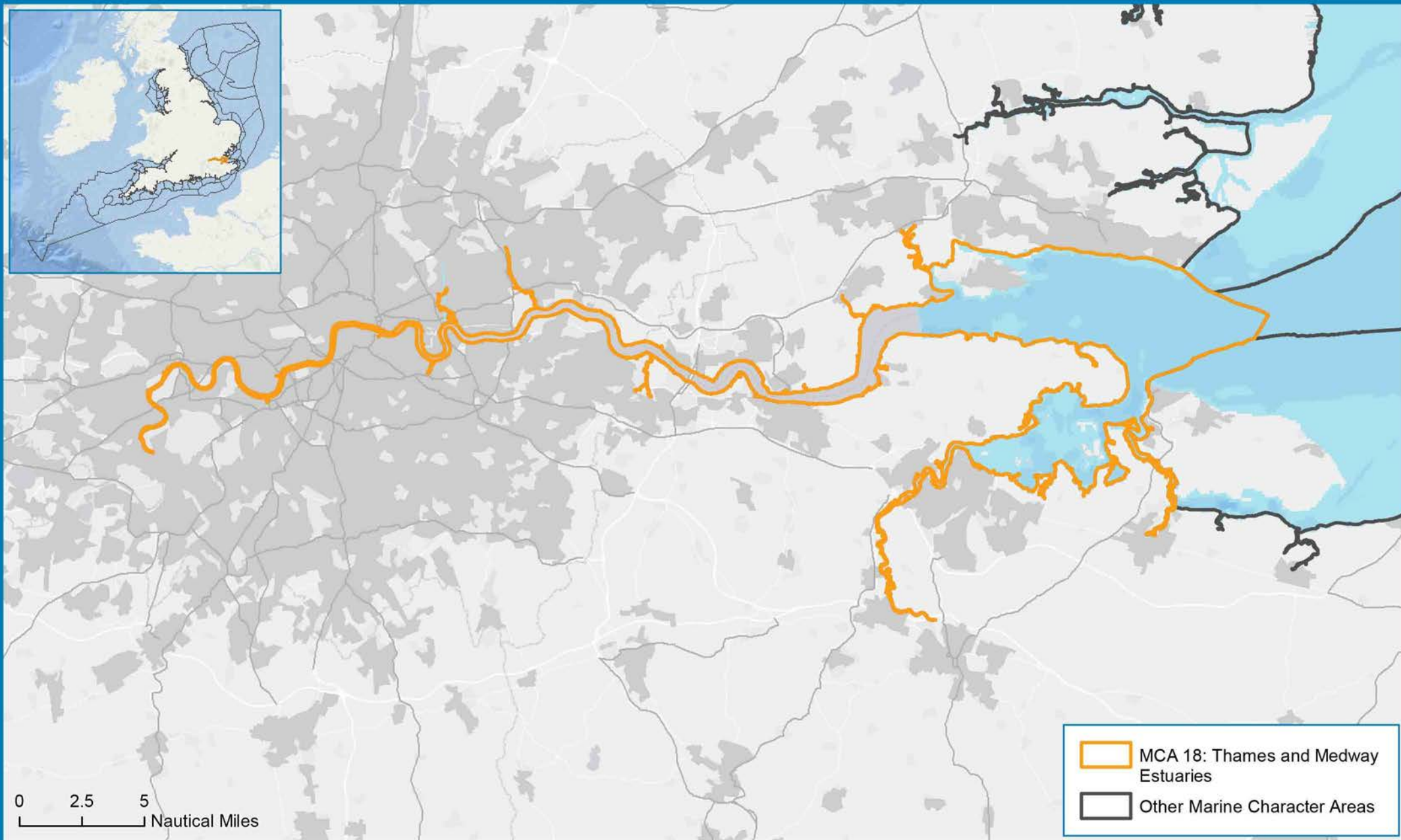
- Offshore area of deep water up to 50ms, extending to approximately 22km from the coast.
- Mixed sand and gravel sediments on the seafloor. The southern part of the MCA is characterised by chalk, which continues southwards to form the Thanet cliffs and further south into the Dover Strait.
- Moderately strong and turbid tidal currents carry material from the west, including the Thames Estuary, transporting it into the North Sea.
- Water temperatures higher than the more northern parts of the North Sea, owing to the influence of the warm waters extending up from the English Channel.
- Wide variety of marine habitats resulting from the mosaic of different sediment types and lower levels of disturbance than the deeper offshore areas.
- Small part of the Outer Thames Estuary SPA extends into this area, and Thanet Coast MCZ.
- Busy fishing and shipping area forming part of the East Anglian shipping waters.
- Commercial fishing by Thanet-based boats exploiting stocks of cod, sole, herring, plaice and sprat.
- Part of the South Falls Aggregate Option Area is located in the east of the MCA.
- Thanet offshore wind farm is a key visual feature dominating the surrounding open seascape adding to the sense of movement and dynamic character of the MCA.
- Ships waiting in deeper waters at Margate Roads are a feature in views from the adjacent coast.
- Open seascape with consistent horizons across extensive and unchanging tracts of open water.



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Figure 11 - MCA 18, Thames and Medway Estuaries

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3.7.1 Profile for MCA 18: Thames and Medway Estuaries

Location and boundaries

The MCA covers the Thames and Medway Estuaries and adjacent coastlines to Southend-on-Sea in the north and Sheerness in the south, including the River Thames and the River Medway. Its eastern boundary with MCAs 16, 19 and 20 is at the point where the estuary narrows and becomes a distinct channel. The boundary is brought out to the Medway buoy to mark the shipping entering and exiting the estuary. Its western extent follows the River Thames inshore as far as Teddington, the extent of the tidal river, and the Medway extends into Kent to Allington Lock at Maidstone. West of Gravesend the tidal Thames is covered by terrestrial landscape character assessments, including National Character Area 81 Greater Thames Estuary and a number of more detailed assessments of the river. The Medway River in Kent is also covered by relevant local landscape character assessments.

Overall character

The Thames and Medway Estuaries are the gateway to the busy shipping and transport routes of the Thames, into London and the Medway. Extensive industry and large container ports along the Thames and Medway at Sheerness, Chatham, Thamesport on the Isle of Grain and London Gateway. The dredged channel along the River Thames is bordered by low lying mudflats including the Southend Flats and Chapman Sands, shallow muddy creeks and broad tracts of tidal salt marsh. The area is of international importance for bird species and large swathes of its semi-natural habitat are designated. The river with its estuaries holds many cultural and historic associations both as a historic transport route and for its military importance, with distinctive landmarks of coastal military heritage along the coast including forts in the lower Thames marshes. The Thames provides a deep and navigable river through London providing the basis for the development of a trading port and foundations of the capital. It is a major maritime route and centre of many events in British history. It is a principal axis through the cities of Westminster and London lined by many great buildings of the state and royalty including the Palace of Westminster and the Tower of London. The Thames is embedded in our national culture and widely celebrated in art and literature. The River Thames is an integral part, or setting, of World Heritage Sites at Maritime Greenwich, Tower of London, Palace of Westminster and Westminster Abbey.

Adjacent National Character Areas (NCAs)

The adjacent coastline includes the following NCAs as defined by Natural England:

- 81: Greater Thames Estuary
- 113: North Kent Plain (only for 1.5km of coastline)

Adjacent and inter-visible nationally designated and defined landscapes

A small section of the River Medway inshore south of Rochester lies adjacent to the Kent Downs AONB. World Heritage Sites at Maritime Greenwich, Tower of London, Palace of Westminster and Westminster Abbey.

3.7.2 Key characteristics of MCA 18: Thames and Medway Estuaries

- Estuary bordered by low lying mudflats including the Southend Flats and Chapman Sands, shallow muddy creeks and broad tracts of tidal salt marsh.
 - Narrows towards the west where it forms the tidal River Thames into London (covered by relevant landscape character assessments).
 - Represents the eastern edge of the Thames Basin, underlain by clay deposits, a major complex of soft sedimentary habitats. Relatively shallow seabed as the estuary opens (less than 30m), with a deeper dredged channel for shipping.
 - Generally sheltered from strong winds, although strong easterlies can create choppy and hazardous sea conditions. Wide and complex tidal range as a result of the funnelling effect of the North Sea resulting in strong tidal streams.
 - The tides fill and empty the meandering creeks across the fringing marshes and mudflats, providing interesting temporal variation. Shingle and shell banks occur in the intertidal zone.
 - Includes Canvey Island on the south Essex coast, the Hoo Peninsula and a complex of marshes and creeks in the Medway Estuary on the north Kent coast.
 - The area is of international importance for bird species, and large swathes of its semi-natural habitat are designated as SPA. It provides some of the best breeding sites for rare wetland birds in southern England. Includes
- MCZs along the Medway Estuary and Swale Estuary, and several inter-tidal SSSIs.
- Periods of past rising and falling sea level, without glaciation, indicates potential archaeological remains on the sea bed.
 - Numerous wrecks and floating debris in the upper reaches. The masts of the SS *Richard Montgomery*, wrecked in WWII off the Nore Sandbank, are visible above water and explosives on board continue to be a hazard.
 - Distinctive landmarks of coastal military heritage including forts at Cliffe, Coalhouse, East Tilbury and Allhallows and at Hoo and Darnet islands.
 - Rich history of human occupation of the coastal zone, with evidence of prehistoric occupation and medieval patterns of small villages and hamlets on higher ground and the marsh edges.
 - Historic naval use of the Medway, with dockyard bases at Sheerness and Chatham and older river forts at Folly Point and Darnet Ness.
 - The Battle of the Medway, a successful Dutch attack on the naval base at Chatham during the Second Anglo-Dutch War, considered to be the worst defeat in the Royal Navy's history.
 - Entrance to the River Thames heavily used by commercial shipping traffic with oil tankers, container ships, bulk carriers and roll-on/roll-off (ro-ro) ferries, as well as cruise ships, frequently in view.

- Sea defences including the Thames Barrier protect London from rising sea levels and storm conditions.
- A more industrial focus in the east of the Thames, with wharves protected for commercial use, while further west towards Teddington the river has a more recreational character, including residential moorings.
- Fishing for eels, Dover sole, plaice and whiting, and a large cockle fishery.
- Popular waters for recreation with sailing, power boating, angling, canoeing and water skiing. Numerous marinas and mooring facilities supporting extensive recreational boating along the Thames and Medway.
- Southend Pier is a major coastal landmark extending into the Thames Estuary, built in the late 19th century to allow large boats to stop at low tide and attract the tourist trade to the growing seaside resort.
- The Thames Path National Trail follows the river from its source in the Cotswolds to the Thames Barrier in Greenwich. Thames Estuary Path runs between Tilbury to Leigh on Sea on the north and Saxon Shore Way long distance path along the south from Gravesend.
- Strong cultural, literary and artistic associations of the River Thames. Particular Associations with Dickens

including the setting for *Great Expectations* embedded as part of national culture and heritage. Described in Joseph Conrad's *Heart of Darkness* (1899) as both the launching place of England's great ships and, in ancient times, the site of colonisation by the Roman Empire.

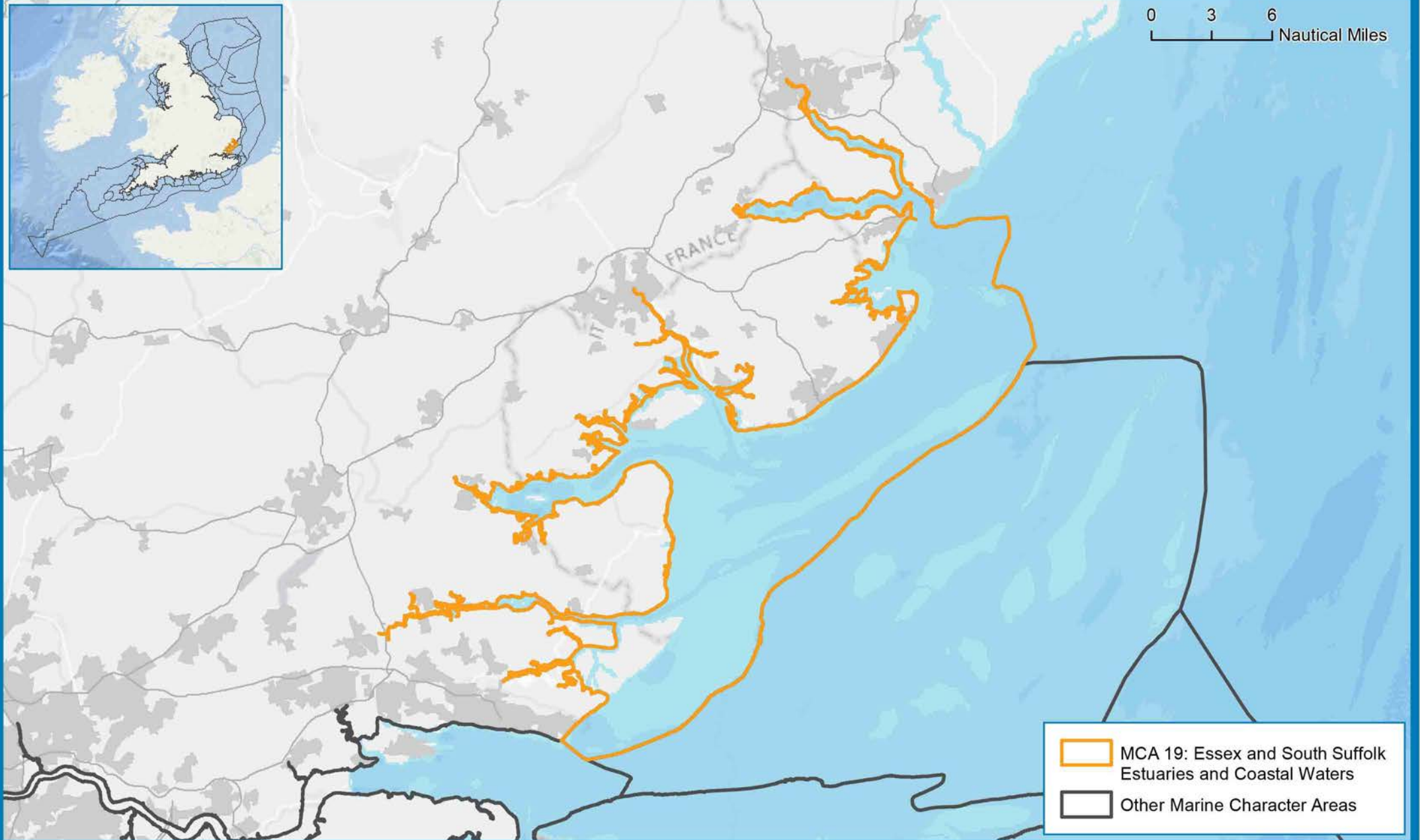
- A busy industrial environment with dense residential and large scale industrial developments including ports, oil refineries and power stations, with vertical cranes forming prominent features. Major ports at Sheerness, Chatham, Grain and Thurrock/Tilbury. Former landmark industrial features such as power station on the Isle of Grain recently demolished.
- The tidal River Thames is a major maritime route and centre of many events in British history. It is a principal axis through Westminster and London, lined by many great buildings of state and royalty including World Heritage Sites at Kew Gardens, the Palace of Westminster, the Tower of London and Maritime Greenwich.
- Marked contrast of industrial ports and urban area with the wild and remote isolated low-lying marshy coastal landscape and far-reaching views out across the estuary.



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Figure 12 - MCA 19, Essex and South Suffolk Estuaries and Coastal Waters

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3.8.1 Profile for MCA 19: Essex/South Suffolk Estuaries and Coastal Waters

Location and boundaries

This MCA covers the shallow coastal waters of the Essex Coast from Southend-on-Sea (MCA 18 Thames and Medway Estuaries) in the south to Felixstowe on the Suffolk coast, including the estuaries of the Rivers Orwell and Stour and extending into the east inshore area (joining SCA10). It includes the embayment of Hamford Water and the Essex estuaries of the Rivers Colne, Blackwater and Crouch. Its seaward boundary with MCA 20 Thames Approaches is marked by the edge of the shallow waters over the Maplin Sands following the 5m bathymetry contour line (although it deviates slightly to include the whole of the Gunfleet Sands Wind Farm).

Overall character

The MCA is characterised by an intricate pattern of estuaries, rivers, branching tributaries, shallow creeks, extensive mudflats, low-lying islands and tidal salt marshes. Coastal habitats support large numbers of wetland birds, rare plant and invertebrate species and diverse marine wildlife, evidenced by the majority of the area being internationally and nationally designated coastline. The shallow coastal waters are popular for recreation including boating and sailing. The area includes the busy port of Harwich, and coastal towns and villages, although much of the area is characterised by strong feelings of remoteness and wilderness on the extensive salt marshes, mudflats and reclaimed farmed marshland. Despite being on the Greater Thames estuary, it contains some of the least settled parts of the English coast, with small villages and hamlets on higher ground and marsh edges.

Adjacent National Character Areas (NCAs)

The adjacent coastline includes the following NCAs as defined by Natural England:

- 82: Suffolk Coast and Heaths
- 81: Greater Thames Estuary

Adjacent and inter-visible nationally designated and defined landscapes

The River Orwell and north bank of the Stour falls within the Suffolk Coasts and Heaths AONB, with the area to the west of the Stour within the Dedham Vale AONB.

3.8.2 Key characteristics of MCA 19: Essex/South Suffolk Estuaries and Coastal Waters

- East facing, deeply indented soft coastline of estuaries, rivers, shallow creeks, with extensive mud and sandflats, low-lying islands and tidal salt marshes.
- Sea bed characterised by sedimentary deposits of sands, gravels and mud, which meets London Clay along the coast.
- Mudflats and sandbanks of Maplin Sands, Foulness Sands, Dengie Flats – with vast areas revealed at low tide. Gently shelving sea bed, which remains relatively shallow (0.15m deep) with thick seabed sediments
- Wide and complex tidal range and sheltered seas as a result of the funnelling effect of the surrounding landform.
- The tides fill and empty the meandering creeks across the marshes and mudflats, providing interesting temporal variation. Shingle and shell banks occur in the intertidal zone.
- Maplin Sands are of marine biological interest for extensive eel-grass beds and unusual fern-like hydroids (whiteweed) – commercially exploited and dried for decorative use.
- Harwich, once important for shipbuilding, now a trade and ferry port.
- Gunfleet Sands Offshore Wind Farm is a prominent feature in views within the seascape and from land, with the Maunsell Forts a feature on the horizon. Onshore, Bradwell nuclear power station is a feature in views.
- Area supports large numbers of wetland birds and diverse marine wildlife. Intertidal area covered by extensive designations including Ramsar, the Essex Estuaries SAC, and Blackwater, Crouch, Roach and Colne estuaries MCZ.
- Exceptional maritime history, including evidence of Neolithic settlement in areas of submerged land in the Blackwater Estuary. Abundant Iron Age remains on the Essex Marshes are related to a local salt making industry.
- Historic shipwrecks concentrated around the shoal waters between Swin Spitway and Whitaker Beacon.
- Distinctive landmarks of coastal military heritage including Napoleonic military defences, forts and 20th century pillboxes.
- Numerous small villages and hamlets developed in the post-medieval period in relation to fishing (at Mersea) and boatbuilding, as well as the coastal cargo transport network of the 'Thames Barges'.
- Access restricted by military activity with firing practice areas at Shoeburyness and firing ranges extending over the flats.
- Fishing activity includes commercial trawling for cod, Dover sole, sprat, eels and brown shrimp as well as oyster cultivation, cockle beds, and traditional smaller-scale enterprises.
- Tourist development/settlement including Clacton and Walton on the Naze, and Frinton which developed due to proximity to London.

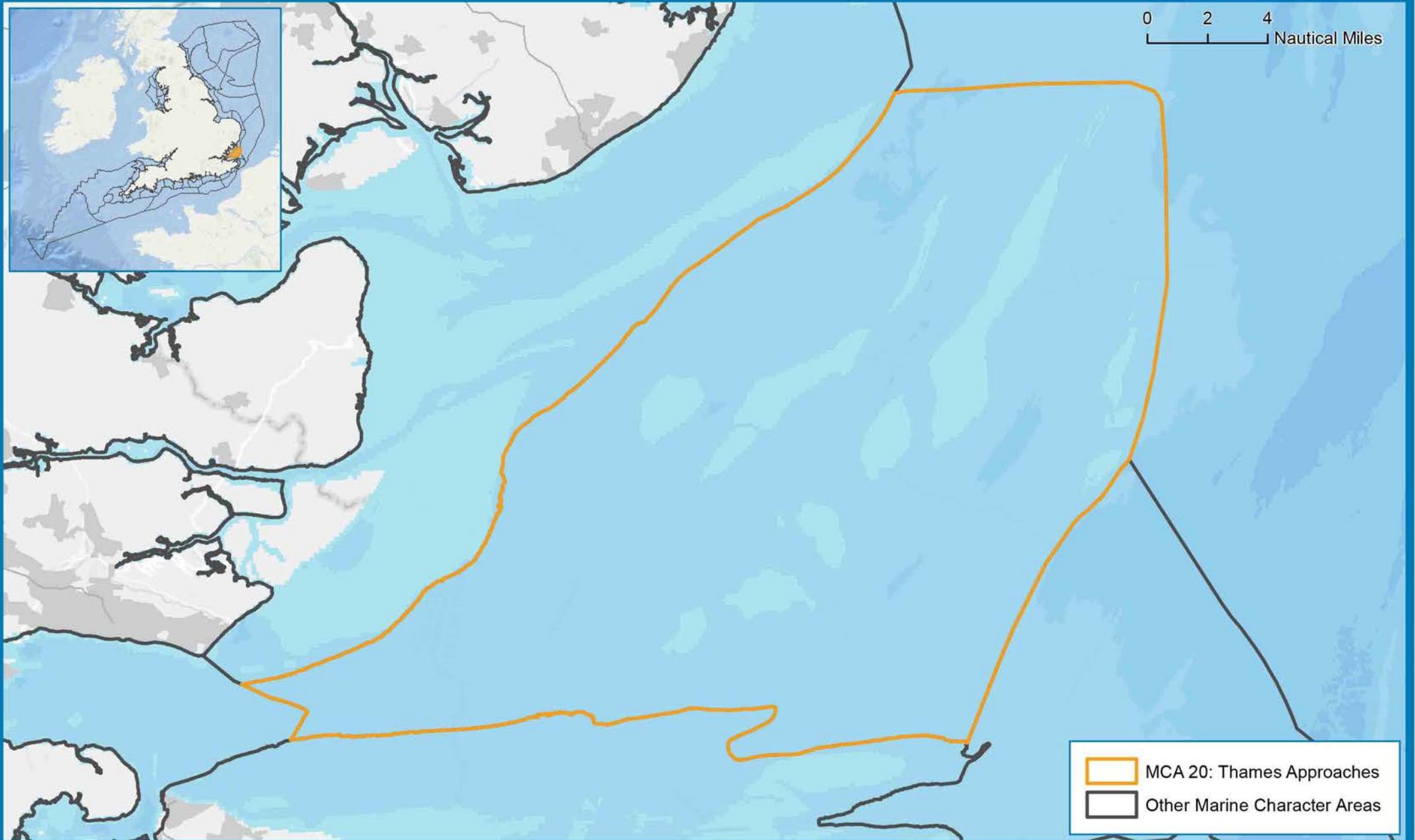
- Light engineering works and boat-building/ repair yard at Brightlingsea. Dredged channels along rivers such as the Orwell allow access by heavy commercial traffic. Sea walls and borrow dykes run along the majority of the Essex coast.
- Literary associations with Arthur Ransome, who based his novel *Secret Water*, part of the *Swallows and Amazons* series, on the area around the Walton Backwaters.
- Popular waters for recreation with sailing, power boating, angling, canoeing and water skiing. Numerous marinas and mooring facilities support recreational yachting.
- Strong feelings of remoteness and wilderness persist on extensive salt marshes, mudflats and reclaimed farmed marshland.
- The character becomes quieter and more rural further from London. Away from the ports at Harwich and Felixstowe, the rivers Orwell (part of the Suffolk Coast and Heath AONB), Stour and Colne have remained largely unchanged by development.



Marine
Management
Organisation

Figure 13 - MCA 20, Thames Approaches

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© OpenStreetMap (and) contributors, CC-BY-SA. ETRS89 UTM Zone 30N. Not to be used for navigation.



3.9.1 Profile for MCA 20: Thames Approaches

Location and boundaries

The MCA comprises the area of sand banks and channels in the centre of the Thames Estuary, where the tide funnels in from the North Sea (SCA 04 East Anglian Shipping Waters in the East marine plan area) and the English Channel. It is bordered by the coastal waters of MCA 16 Swale, Kentish Flats and Margate Sand and MCA 19 Essex and South Suffolk Estuaries and Coastal Waters, which are marked by shallow waters less than 5m deep over the Kentish Flats and Maplin Sands, respectively.

Overall character

A distinct area of north-east to south-west orientated submerged sand banks, such as West Barrow and Long Sand aligned with the tidal flow, with parallel deeper water channels. A major shipping route - the Princes Channel and Barrow Deep are used by shipping navigating to and from the ports of the Thames and Medway estuaries, with oil tankers, container ships, bulk carriers and roll-on/roll-off (ro-ro) ferries frequently in view. The estuary was the launching place of England's great ships of exploration and colonisation and is still a major transport corridor. An active, busy estuary with vessels in transit, movement of wind turbines all contributing to a dynamic character.

Adjacent National Character Areas (NCAs)

N/A – this MCA does not have an adjacent coastline.

Adjacent and inter-visible nationally designated and defined landscapes

N/A – this MCA does not have an adjacent coastline and is unlikely to have limited inter visibility with designated landscapes.

3.9.2 Key characteristics of MCA 20: Thames Approaches

- Mudstone and sandstone bedrock covered by shifting sand and gravel sediments creating a complex seabed of channels and just submerged sand banks, some surfaces drying out at low tide.
- Strong tidal currents of the North Sea mould the mobile sea bed sediments into large sandbanks aligned parallel to the coast, in a north-east – south-west orientation with the intervening sea floor covered by winnowed ‘lag’ deposits.
- Varying depth, with areas of partially submerged sandbanks at low tide to deeper dredged channels, marked by buoys.
- Exposed to north easterly wind and waves, with the tide funnelling in from the North Sea often resulting in choppy sea conditions.
- The entire MCA falls within the Outer Thames Estuary SPA, important for its population of red throated divers.
- The eastern part of the area is part of the larger Margate and Long Sands cSAC. Long Sands itself is the largest of the partially submerged sand banks.
- Described in Joseph Conrad's *Heart of Darkness* (1899) as both the launching place of England's great ships and, in ancient times, the site of colonisation by the Roman Empire.
- Numerous wrecks including the protected wreck of the *South Edinburgh Channel* - a late 18th century cargo ship carrying Swedish copper plate money, iron bars and wine.
- Exceptional maritime history recognising the importance of the Thames Estuary as gateway between England and northern mainland Europe.
- The role of the Thames as the main route for cross channel trade evidenced by numerous wrecks originating from world-wide destinations.
- The Shivering Sands and Red Sands Forts, Maunsell army forts, were built in the Thames Approaches as anti-aircraft defences in WWII and now create distinctive built features of the seascape.
- The deeper waters of a major shipping route, the Princes Channel and Barrow Deep is heavily used by shipping navigating to and from the ports within MCA 16: Thames and Medway Estuaries.
- The London Array is a 175-turbine offshore windfarm with 630MW output capacity. It is one of the largest operational offshore windfarm in the world and dominates views over much of this seascape.
- Fishing activity includes trawling for Dover sole, plaice, whiting, cod and eels. Herring are exploited using drift netting.
- Some recreational use and cross-estuary navigation using the spitways, swins, and gulleets between the sandbanks but commercial traffic heading into the Thames and Medway or out to sea is by far the greatest use.

- The large bulk of oil tankers, container ships, bulk carriers and roll-on/roll-off (ro-ro) ferries, as well as cruise ships are frequent on the horizon in views to this MCA from the adjacent coasts.
- Forms a maritime backdrop to the North Kent and Essex coasts; perceived as an active area with vessels in transit plus movement of wind turbines contributing to a busy, dynamic character.

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Annex 1: Data list

These columns set out how the data layers were used. Some data provided context (i.e. background mapping), some has informed boundary choice/definition, and some has informed the descriptions and key characteristics.

Theme	Data Layers	Source (obtained from)	Basemap / Context	Boundaries	Descriptions
Baseline Information					
Maps and Charts	Admiralty Charted Raster - various scales	UKHO (MMO)	Y	Y	Y
	OS maps - 1:250,000	Ordnance Survey (MMO)	Y		
	OS maps – 1:25,000	Ordnance Survey (MMO)	Y	Y	Y
Boundaries/Extent of Jurisdictions	Mean High Water Mark	Ordnance Survey Open Data (MMO)	Y		
	12 nautical mile limit (UKHO)	UKHO (MMO)	Y	Y	
	UK Continental Shelf Limit (UKHO)	UKHO (MMO)	Y		
	UK Exclusive Economic Zone (2013)	UKHO (MMO)	Y		
	UK Territorial Sea limits	UKHO (MMO)	Y		
	S57 - UKHO Administrative and Regulations boundaries	UKHO (MMO)	Y		
	Local Authority boundaries	Ordnance Survey Open Data (MMO)	Y		
	Harbour limits	UKHO (MMO)	Y		
Marine Plan Areas	MMO	Y	Y		
Character					
Landscape/ Seascape Character	National Character Areas (England)	Natural England (Magic)			Y
	Terrestrial Natural Areas	Natural England (Magic)			Y
	Marine Character Areas - South Marine Plan area	MMO (LUC)		Y	

Theme	Data Layers	Source (obtained from)	Basemap / Context	Boundaries	Descriptions
	Historic Seascape Characterisation	Historic England	Y		
Natural					
Landscape Designations	National Parks	Natural England (Magic)			Y
	AONBs	Natural England (Magic)			Y
	Heritage Coasts	Natural England (Magic)			Y
Bathymetry and Elevation	S57 - UKHO Depth Areas (line/area)	UKHO (MMO)		Y	Y
	S57 - UKHO Bathymetry - dredged areas	UKHO (MMO)			Y
	S57 - UKHO Bathymetry lines	UKHO (MMO)		Y	Y
	DTM for the Ocean bed from EU and patched with GEBCO Bathymetry for missing areas	European Marine Observation and Data Network	Y		Y
Biodiversity Designations	Special Areas of Conservation (SAC)	Natural England (Magic)			Y
	Marine Candidate SAC	Natural England (Magic)			Y
	National Nature Reserves (NNR)	Natural England (Magic)			Y
	Ramsar sites	Natural England (Magic)			Y
	Site of Special Scientific Interest (SSSI)	Natural England (Magic)			Y
	Marine Conservation Zones	Natural England (Magic)			Y
	Recommended Marine Conservation Zones	Natural England (Magic)			Y

Theme	Data Layers	Source (obtained from)	Basemap / Context	Boundaries	Descriptions
	Important Bird Areas/RSPB Reserves	RSPB			Y
	UK SACs with marine components (Natura 2000)	JNCC			Y
	UK SPAs with marine components (Natura 2000)	JNCC			Y
	OSPAR MPAs Inshore + Offshore (see comment)	JNCC			Y
	Priority Habitat Inventory	Natural England (Magic)			Y
	Special Protection Area (SPA)	Natural England (Magic)			Y
	Potential Marine SPA	Natural England (Magic)			Y
	Fish Nursery Grounds (CEFAS)	CEFAS (MMO)			Y
	Fish Spawning Grounds (CEFAS)	CEFAS (MMO)			Y
	Harbour Seal density (lower/upper) (MS)	Marine Scotland (MMO)			Y
	LNR	Natural England (Magic)			Y
	UKSeaMap2010_predictive_habitat_model_v 8 (Broadscale habitat mapping)	JNCC		Y	Y
	EUSeaMap 2012	European Marine Observation and Data Network	Y		
	Biosphere reserves	Natural England (Magic)	Y		
	Seabird summer/winter density (WWT)	WWT (MMO)	Y		
Geology and Geomorphology	Bedrock and Superficial, Faults and Dykes	BGS free download 1:625,000		Y	Y

Theme	Data Layers	Source (obtained from)	Basemap / Context	Boundaries	Descriptions
	Offshore sediment geology	BGS (MMO)		Y	Y
	Offshore bedrock geology	BGS (MMO)		Y	Y
Landcover/ Vegetation	OSPAR Habitats	EMODnet -funded by DG MARE			Y
Cultural/Social					
Heritage	Historic Parks and Gardens	Historic England			Y
	Listed Buildings	Historic England	Y		
	Protected Wreck Sites/Other wrecks	Historic England /UKHO (EH/MMO)			Y
	Historic casualties (point and area) - England & Scotland	Historic England (MMO)			Y
	Historic shipwrecks (point and area) - England	Historic England (MMO)			Y
	Scheduled Monuments	Historic England			Y
Recreation	National Trails	Natural England (Magic)			Y
	Country Park	Natural England (Magic)			Y
	Blue Flag Beaches	EA, Blue Flag (MMO)			Y
	Marinas	RYA (MMO)			Y
	RYA clubs	RYA (MMO)			Y
	RYA cruising routes	RYA (MMO)			Y
	RYA racing area	RYA (MMO)			Y
	RYA sailing area	RYA (MMO)			Y
	RYA training centre	RYA (MMO)			Y
	Boat Launch and Slipways UK	www.boatlaunch.co.uk (MMO)			Y
Volleyball England (South England)	Volleyball England (MMO)			Y	

Theme	Data Layers	Source (obtained from)	Basemap / Context	Boundaries	Descriptions
	Bathing water compliance	Environment Agency (MMO)			Y
	Recreational Craft Slipway	www.boatlaunch.co.uk (MMO)			Y
	Recreational Craft Marinas	www.boatlaunch.co.uk (MMO)			Y
Shipping and Navigation	Ports	UKHO (MMO)		Y	Y
	S57 - UKHO Activity and Licence Installation (point/area)	UKHO (MMO)		Y	Y
	S57 - UKHO Navigational Aids (buoy, light, etc.)	UKHO (MMO)			Y
	S57 - UKHO Obstructions (point/area)	UKHO (MMO)		Y	Y
	S57 - UKHO Offshore installations (offshore platform/buoy) (point/line/area)	UKHO (MMO)		Y	Y
	S57 - UKHO Transportation and routes - installations (rescue station, anchorage area, caution area, small craft facility) (point/line/area)	UKHO (MMO)			Y
	S57 - UKHO Wrecks (point/area)	UKHO (MMO)			Y
	Shipping	AIS/Anatec (MMO)			Y
	Ferry routes and infrastructure	UKHO (MMO)			Y
	AIS Shipping density 2011 and 2012	AIS (MMO)			Y
	IMO Routing (line and buffer area)	International Maritime Organization (MMO)			Y
Industry, Energy and Infrastructure	Oil and Gas, aggregates	The Crown Estate (MMO)			Y
	The Crown Estate Aggregate Licence Area	The Crown Estate (MMO)			Y

Theme	Data Layers	Source (obtained from)	Basemap / Context	Boundaries	Descriptions
	The Crown Estate Aggregate Application Area	The Crown Estate (MMO)			Y
	The Crown Estate AggregateOptionArea_TCE	The Crown Estate (MMO)			Y
	CCO Buoy Sites	Channel Coastal Observatory (MMO)			Y
	Tidal power	REA			Y
	Tide	REA			Y
	Tidal flow	REA			Y
	Wave	REA			Y
Military Activity	MOD areas (within Activity and Licence areas)	UKHO (MMO)			Y
Fishing	UK Fishing Limit	UKHO (MMO)			Y
	Days Fished 2005-2007	IFCA (MMO)			Y
	Fish Nursery Grounds	IFCA (MMO)			Y
	National shoreline management plan (SMP)	MMO			Y
	Fishermap data (Dredges & Activity)	MMO	Y		
	Fish Spawning Grounds	IFCA (MMO)			Y
Perceptual/aesthetic					
Light Pollution	Night skies	CPRE			Y
Intrusion	Intrusion mapping	CPRE			Y
Tranquillity	Tranquil Areas	CPRE			Y
Visibility	Land with sea views	MMO			Y
	Sea visibility from land	MMO			Y

Annex 2: List of organisations contributing to consultation

List of organisations attending the Stakeholder Workshop, London, 11 May 2018:

- The Planning Inspectorate
- Thurrock Council
- Historic England
- Marine Management Organisation
- University of Liverpool

List of organisations who provided additional comments in relation to the south east marine plan area:

- University of St Andrews
- Historic England
- Marine Management Organisation
- Swale Borough Council
- Essex County Council
- Port of London Authority

Annex 3: Acknowledgement for use of EMODNet data in publications

The bathymetric metadata and Digital Terrain Model data products have been derived from the EMODnet Bathymetry portal - <http://www.emodnet-bathymetry.eu>.

This portal was initiated by the European Commission as part of developing the European Marine Observation and Data Network (EMODNet). The overall objective of EMODnet is to create pilots to migrate fragmented and inaccessible marine data into interoperable, continuous and publicly available data streams for complete maritime basins. The Bathymetry portal development started in June 2009 and now provides a range of options for freely browsing and downloading new Digital Terrain Models (DTM) for a large part of the European seas. The downloadable tiles are freely available in a number of formats. The EMODnet digital bathymetry has been produced from bathymetric survey data and aggregated bathymetry data sets collated from public and private organizations. These are processed and quality controlled. A further refinement and expansion is underway, by gathering additional survey data sets, expanding geographical coverage to all European sea regions and upgrading the DTM grid resolution, and will result in new releases in time. The portal also includes a metadata discovery service that gives clear information about the background survey data used for the DTMs, their access restrictions, originators and distributors.