National Character Area profile:

123. Romney Marshes

Supporting documents

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Introduction

As part of Natural England's responsibilities as set out in the Natural Environment White Paper,[1] Biodiversity 2020[2] and the European Landscape Convention,[3] we are revising profiles for England's 159 National Character Areas (NCAs). These are areas that share similar landscape characteristics, and which follow natural lines in the landscape rather than administrative boundaries, making them a good decision-making framework for the natural environment.

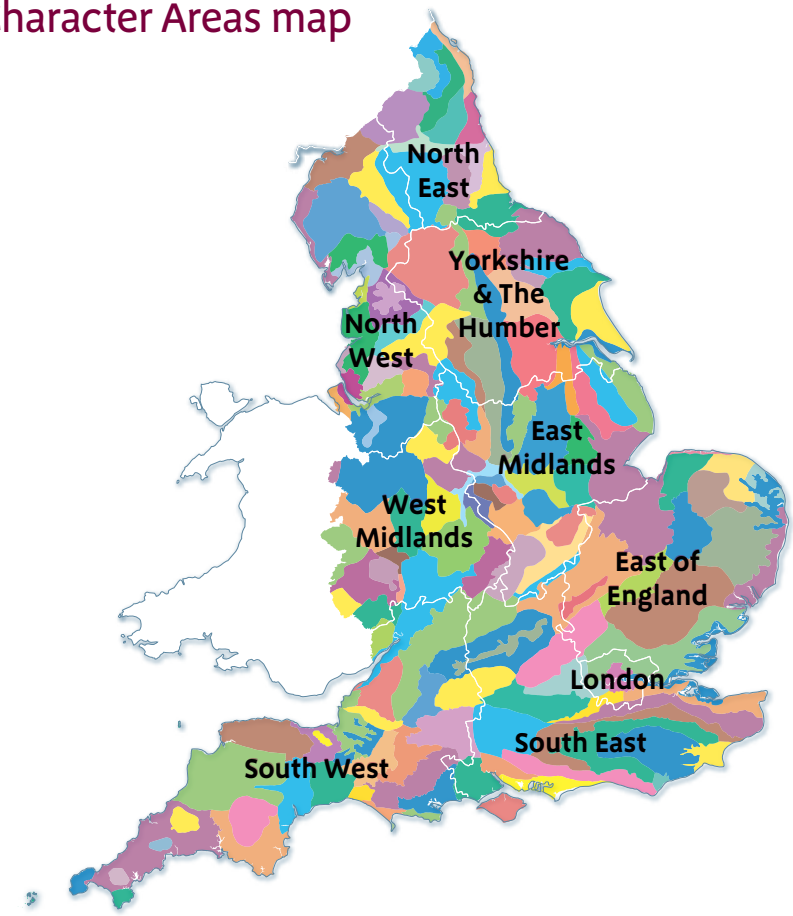
NCA profiles are guidance documents which can help communities to inform their decision-making about the places that they live in and care for. The information they contain will support the planning of conservation initiatives at a landscape scale, inform the delivery of Nature Improvement Areas and encourage broader partnership working through Local Nature Partnerships. The profiles will also help to inform choices about how land is managed and can change.

Each profile includes a description of the natural and cultural features that shape our landscapes, how the landscape has changed over time, the current key drivers for ongoing change, and a broad analysis of each area's characteristics and ecosystem services. Statements of Environmental Opportunity (SEOs) are suggested, which draw on this integrated information. The SEOs offer guidance on the critical issues, which could help to achieve sustainable growth and a more secure environmental future.

NCA profiles are working documents which draw on current evidence and knowledge. We will aim to refresh and update them periodically as new information becomes available to us.

We would like to hear how useful the NCA profiles are to you. You can contact the NCA team by emailing**ncaprofiles@naturalengland.org.uk**.

National Character Areas map



[1] The Natural Choice: Securing the Value of Nature, Defra (2011; URL: **www.official-documents.gov.uk/document/cm80/8082/8082.pdf**)

[2] Biodiversity 2020: A Strategy for England's Wildlife and Ecosystem Services, Defra (2011; URL: **www.defra.gov.uk/publications/files/pb13583-biodiversity-strategy-2020-111111.pdf**)

[3] European Landscape Convention, Council of Europe (2000; **URL: http://conventions.coe.int/Treaty/en/Treaties/Html/176.htm**)

Summary

The Romney Marshes is an open landscape of reclaimed, low-lying marshland. The area is bounded to the south and east by the English Channel and to the north and west by the clearly recognisable ancient cliff-line, which now forms the backdrop to the marshes. It includes the vast sand and shingle beaches and flat marshland between Hythe in Kent and Pett in Sussex. This unique and sometimes forbidding area has a character all of its own and contains a wealth of wildlife and geomorphological features. Dungeness is an area of international importance for its geomorphology, plants, invertebrates and birds. Home to some of the UK's rarest species it is designated as a National Nature Reserve, Special Area of Conservation, Special Protection Area and Site of Special Scientific Interest, as well as being a proposed Ramsar site. Dungeness and Rye Harbour comprise the largest cuspate shingle foreland in Europe, one of the few such large examples in the world.

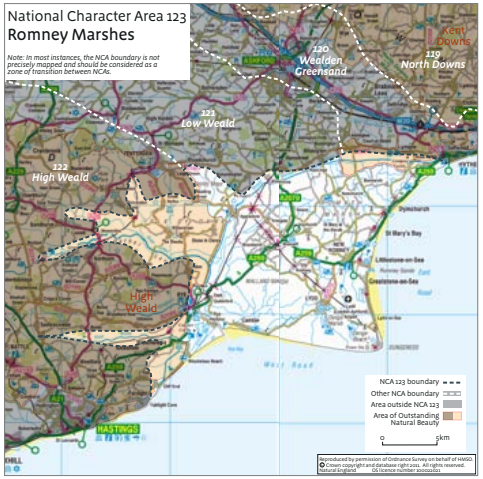
Scattered settlements are linked by long, straight, open roads and have a distinctive architectural character, including weatherboarding and hung tiles; many have medieval churches at their core. The ancient towns of Rye and Winchelsea are popular tourist attractions, abound with heritage features. However, overall, urban areas account for a small proportion of this rural National Character Area (NCA). The transport links are sparse, and this, coupled with the nature of the landscape, rural isolation and lack of employment, means that the area suffers from issues of social and economic deprivation.

The extensive marshes of the hinterland, now a mixture of arable and grazing land dissected by an extensive network of ditches and watercourses, support a rich flora and fauna and form a striking contrast to the coastal habitats of sandy and shingle beaches, freshwater pits, sand dunes, saline lagoons and flooded gravel pits. The open water network is a vital component of the marshes' irrigation and drainage network.

Approximately a quarter of the NCA is designated as an Area of Outstanding Natural Beauty and includes the valleys of the Rother and Brede. These form distinct areas within the NCA which, radiating from the core of the marsh, act as corridors out into the adjoining High Weald NCA and have a unique character. They have a key role to play in connectivity of habitats and linkages to the wider marshland landscape.

The coast continues to evolve; pressures of sea level rise and climate change will result in coastal change, and informed decision making will be critical in helping coastal communities and habitats to adapt to change. Much of the area is well below the high tide level and, as such, is at risk of flooding.

Human land use has had a major role in fashioning the present landscape, through the drainage of marshes, military activity, gravel digging and the construction of sea walls, housing, tourist amenities, roads, a wind



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farm, an airport and Dungeness Power Station. The character of the Romney Marshes can be conserved for the future only if the demands on agriculture, commerce, recreation and conservation can be reconciled. A continual balance needs to be struck in an area that is internationally important for geomorphology and wildlife but where local communities strive to make a living and enjoy the natural assets on their doorstep and where industries seek to exploit the natural assets of the NCA for their economic value.

The NCA enjoys wide views across the Brede Valley to the neighbouring High Weald NCA.

Statements of Environmental Opportunities:

- **SEO 1:** Maintain and enhance the distinctive character of the remote, open, low-lying Romney Marshes landscape, including the wealth of heritage assets and the settlement character; recognise the value they provide in contributing to the understanding of the landscape and its history, local distinctiveness and sense of place; and promote knowledge and understanding of these important resources for their recreation, health and socio-economic benefits.

- **SEO 2:** Maintain and enhance the coastal environment, including the internationally important shingle foreland at Dungeness, taking account of the dynamic nature of the coastal systems and future impacts of climate change, including flood risk management, while providing access, recreation and tourism opportunities that are sensitive to the character, habitats and species of the coastal zone.

- **SEO 3:** Manage and enhance the distinctive agricultural landscape to secure viable and sustainable farming, while protecting heritage assets, managing soils and water resources and supporting the diversity of species that are dependent on this area. Enhance biodiversity through improved connectivity of semi-natural habitats and by creating ecological networks that are resilient to environmental change.

- **SEO 4:** Protect the important water resources, including the Denge gravel aquifer, the River Rother, Brede Valley and the extensive ditch network with its associated wetlands; and manage the resources to bring about benefits for biodiversity, water quality and regulation of flooding, while safeguarding the quality and quantity of water supplies and utilising the open water network for appropriate access and recreational opportunities.

Description

Physical and functional links to other National Character Areas

The flat topography of the Romney Marshes National Character Area (NCA) allows for long views across to neighbouring, higher NCAs. To the north-west, the rising wooded landscape of the High Weald Area of Outstanding Natural Beauty (AONB) is visible, forming a distinctive backdrop to the NCA. Along the coast to the south and east there are wide views towards the neighbouring High Weald and Wealden Greensand NCAs.

The catchments of the rivers Rother, Brede and Tillingham drain into the NCA from the elevated High Weald NCA to the west, flowing into the English Channel. In the High Weald NCA where the rivers originate, the impermeable clay and silt layers of the Hastings Beds Group give rise to rapid run-off and quickly responding watercourses following rainfall events. Maintaining flows in the Rother catchment is important due to the dependency of Walland Marsh on water transferred into the Royal Military Canal from the Rother, hence the High Weald and Romney Marshes NCAs are inextricably linked in terms of water resources. The Royal Military Canal is predominantly within this NCA but passes through into Wealden Greensand before it terminates at Seabrook. It provides a continuous corridor linking the two NCAs.

Coastal processes are complex. The area forms part of a wider sediment cell where there is generally eastward transport of sand and shingle driven by the predominant south-westerly winds. This area is a particularly good example of the dynamic nature of natural sediment transport processes however the use of shingle beaches as part of coastal risk management activities needs to be carefully managed in a strategic and reactive way and monitored to understand and avoid any potential negative effects on the environment both here and throughout the coastal cell.

Dungeness Power Station forms a prominent landmark on the coastline. Widely visible from other NCAs, the power station and its transmission lines that extend out from the NCA provide energy for the National Grid. Little Cheyne Court Wind Farm is also a prominent landmark on the skyline across the area and can be seen from adjoining NCAs.

The A259 links settlements along the eastern coast and then across the centre of the NCA to Rye. The other major road is the A2070, which provides an easy access route into the Low Weald and Wealden Greensand NCAs, including the urban area of Ashford. The Romney, Hythe and Dymchurch Railway (claimed to be the world's smallest railway) extends from Hythe in the Wealden Greensand NCA down to Dungeness and is popular with tourists and day visitors, as it links the coastal towns.

Distinct areas

- Dungeness
- Rother and Brede valleys

Key characteristics

- Romney Marshes is a flat, open and agricultural landscape, with distinctive drainage dykes, marshes and open skies. The treeless, low-lying, reclaimed marshland is now maintained by manmade sea walls, drainage and river flood plain improvements.
- The majority of the land area is below high tide level, with the beach ridge, concrete sea walls and tidal embankments forming the main barriers to flooding by the sea.
- Internationally important for its geological and geomorphological features, the geology is dominated by coastal deposits of shingle. Dungeness and Rye Harbour comprise the largest cuspate foreland in Europe.
- Wind-blown sand has formed sand dunes and, behind the shingle beach, alluvial deposits have developed, giving rise to highly productive loamy and clayey soils with high groundwater.
- The diverse coastal landscape and hinterland host a number of habitats, including sand and shingle beaches, sand dunes, intertidal mud and sand, saline lagoons, natural freshwater pits and ditches, salt marsh, grazing marsh and reedbeds.
- Former sea cliffs, mainly of sandstone, mark the post-glacial shoreline and form a notable feature overlooking Romney Marshes at Lympne, Rye, Winchelsea, Hythe and Pett.
- The river valleys of the Rother and Brede are notable in the west, separated by sandstone ridges. The rivers Tillingham and Brede join the Rother Estuary at Rye.
- The irregular small- and medium-sized fields are almost entirely bounded by a complex ditch network, which is critical for providing drainage and irrigation for the marsh as well as supporting a range of species.
- Low woodland cover features throughout, with clumps of trees and patches of woodland found on the higher ground and around settlements. The agricultural land of arable fields and the pasture land, predominantly grazed by sheep, are of high quality. Although much reduced in extent, some traditional wet grazing marsh is still present.
- The area is home to several nationally scarce and rare species such as water voles, the medicinal leech, the hairy dragonfly and England's only remaining population of the Sussex emerald moth.

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- Narrow, straight roads and winding lanes link the widely dispersed settlements, with their distinctive churches. The overall open character provides a sense of remoteness.

- Heritage assets include defensive structures such as the Royal Military Canal, Martello towers and more recent Second World War structures. Other historic features include old sea walls, medieval settlement sites and churches, including a high number of lost church sites. The ancient towns of Lydd, New Romney, Rye and Winchelsea have a rich heritage.

- Settlement predominantly consists of dispersed farmsteads, with a few small villages and hamlets. Larger settlements are present at Rye, New Romney and Lydd. There is some nucleated settlement on higher ground, including the Isle of Oxney and the raised area around Appledore.

- Brick is the predominant walling material across the area, and roofs are commonly plain clay tile. There are also some timber-framed buildings, with the framing clad in white-painted weatherboarding or hung tile.

- The 20th and 21st-century coastal developments include Dungeness Power Station, Little Cheyne Court Wind Farm and associated recreation amenities such as caravan sites, holiday parks and golf courses.

An extensive network of ditches irrigates the Marshes.

Romney Marshes today

The Romney Marshes NCA has a distinctive windswept feel, with flat, open marshland divided by an irregular network of drainage ditches. The name is used collectively for several areas of marsh, including Romney and Walland marshes, Denge Marsh and the East Guldeford and Pett levels. The landscape has been heavily influenced by the natural process of sediment deposition behind large shingle promontories and many years of reclamation for agricultural use. In this extremely flat and open landscape, the only real diversity in land cover is provided by the raised ground and clumps of trees of the marshland hamlets such as Old Romney and Newchurch.

Dungeness, at the southerly tip of the Romney Marshes, is the largest shingle cuspate foreland in Europe, and the extensive low-lying shingle and sand beaches, ridges and salt marsh provide a real sense of isolation and remoteness, especially along the coast. Sand dunes are found at Camber Sands, Greatstone and Romney Warren and support rare and scarce plant species. The predominant soilscape is one of loamy and clayey soils, which have high agricultural potential.

The western half of the NCA is crossed by the rivers Rother and Brede, which flow from the higher ground of the High Weald NCA and provide potable water and irrigation. Irrigation is managed through an extensive network of drainage ditches. A freshwater shingle aquifer underlying the region also provides a local water supply. The Royal Military Canal, a heritage feature in its own right, built in defence against Napoleon, also has distinctive vegetation and invertebrate life. It forms an important component of the open water network and, along with the wider ditch system, plays a critical role in regulating drainage and irrigation of the marshes, helping to sustain agriculture and acting as a reservoir of water. Extensive areas of open water exist around Rye Harbour and Denge Marsh, the result of flooding of past gravel pits in the area. In addition, a unique habitat of freshwater pits occurs at Dungeness, which are a further source of potable water.

The coastal landscape is diverse with several sand dune systems such as the one at Camber Sands.

Woodland tree cover is very sparse across the NCA and is generally limited to clumps and belts around settlements on the slightly higher ground and to the random lines, groups and individual trees set within the wider landscape. The wet, waterlogged conditions typically support tree species such as willow and ash. Holmstone Beach, near Lydd, has a holly wood internationally recognised as the only holly wood to be found on anywhere on shingle.

Much of the reclaimed marshland is of high agricultural quality due to the productive loams formed from the alluvial deposits; hence the area is farmed intensively. Although this is an area of mixed farming, it is the extensive swathes of arable that dominate the landscape, indicative of the drained, rich, productive soils suited to cropping. These areas are important for farmland birds, supporting what is possibly Kent's only breeding population of tree sparrows,[4] alongside other species such as corn bunting and yellowhammer. In contrast, the areas of grazing marsh, much reduced from their former extent due to drainage, support wintering and breeding waterfowl where water level management allows for wetter pastures, most notably on Walland Marsh.

The unique geomorphology of the shingle hosts wildlife of international importance, with numerous rare and scarce plant and insect species such as stinking hawk's beard and Sussex emerald moth; sea kale and yellow horned poppy bring a splash of summer colour to the shingle beaches. The level of designations afforded to this coastal landscape and its hinterland (Special Protection Area (SPA), Special Area of Conservation (SAC), Site of Special Scientific Interest (SSSI), proposed Ramsar site and National Nature Reserve) is a testament to the great diversity of the habitats and species within this NCA and their importance to international biodiversity and geodiversity. These include sand dune systems, salt marshes, grazing marsh, reedbeds and extensive mudflats and sand flats. In addition, low-lying hollows in the shingle provide nationally important saline lagoons, and natural freshwater pits. These habitats have an important role in providing nesting, feeding and roost sites for a variety of breeding, wintering and passage birds and support a diversity of vascular plants, bryophytes and invertebrates. The irrigation ditches support a number of rare wetland plants and animals; these include the medicinal leech, found at only a few sites in the UK, important populations of water vole, and plants such as sharp leaved pondweed and greater water parsnip.

The valleys of the Rother and Brede extend from the adjacent High Weald NCA. These valleys have a rich natural and historic environment, totalling about 9,149 ha, or nearly 25 per cent of the NCA. They fall within the High Weald AONB. In the east, a small section of the NCA (about 1,017 ha, or nearly 3 per cent of the NCA) falls within the Kent Downs AONB, an area locally known as the Lympne Escarpment.

The piecemeal nature of the scattered settlements and the long, straight, open roads linking them together reflect the influence of the reclamation process. Impoundment of the marshes was a gradual process, with each landowner reclaiming small areas at a time ('inning'). Roads tend to be raised above the surrounding land, forming visual divisions in the landscape. The distinctive architectural character of the settlements revolves around the widespread use of brick, weatherboarding and hung tiles, with some splendid churches set among the buildings. There are some fine medieval churches across the marsh, and a high number of isolated and lost church

[4] Kent Bird Report, Kent Ornithological Society (2010)

sites. Structures of particular note are the defensive Martello towers along the coast and the Royal Military Canal at the base of the former sea cliffs, both relict features of the Napoleonic Wars. Urban areas constitute only a small area of the NCA. Mainly restricted to the coast, they include the ancient towns and Cinque Ports of Lydd, New Romney, Rye and Winchelsea. These were awarded their special status during the Middle Ages and had an obligation to provide the Crown with men and ships for the defence of the realm in times of war.

Dungeness Point is dominated by the imposing nuclear power station sites and their associated transmission lines that extend inland from the coast, forming the backdrop to many a view both within and outside the NCA boundaries. The military has historically been an important presence in the area, and today the Military of Defence is a major landowner on the shingle foreland at Lydd and Hythe ranges. In addition, commercial fishing fleets at Rye and on Dungeness Point, Lydd Airport, military firing ranges at Lydd and Hythe, ongoing gravel extraction from the shingle, and the Little Cheyne Court Wind Farm all make their mark on the landscape.

Tourism is an important industry for the NCA, with people visiting the ancient towns of Rye and New Romney. The coast, with its sandy beaches such as those at Camber Sands, Dymchurch and Greatstone, is also a magnet for holidaymakers and day-trippers. There are many large caravan parks along the coast. Good cycle tracks and footpath networks take visitors from the coast into the marshes. The Royal Military Canal also attracts tourists and has the potential for further recreational development to benefit the local community economically and relieve visitor pressure on coastal areas. Sea angling and beach fishing are very important at Dungeness, and watersports such as kiteboarding and other water-based activities are popular, particularly at Broomhill on the south coast and along the east coast. The area also attracts large numbers of birdwatchers at the Royal Society for the Protection of Birds' (RSPB's) Dungeness Nature Reserve, along the coast and at Rye Harbour Nature Reserve.

The remote, almost semi-wilderness character of the marshes has been drawn upon by many notable writers, including Russell Thorndike, H.G. Wells, Henry James, Joseph Conrad and Rudyard Kipling, all of whom either worked in the Romney Marshes or used the area as a setting for their novels. Paul Nash is particularly well known for his paintings of the coast at Dymchurch, and similarly John Piper for his work at Dungeness.

Sheep have played an important role in shaping the landscape of the Romney Marshes.

The landscape through time

The Romney Marshes NCA is underlain by Cretaceous deposits of sandstone, siltstone and mudstone. This bedrock was laid down around 140 million years ago in a local environment dominated by swamps, estuaries and deltas deposited on the edge of a shallow, sub-tropical sea. This NCA owes its present-day appearance to the natural process of sediment deposition behind large shingle promontories and to the reclamation of the area – in stages – for agricultural use. The strong sea level rise at the end of the last glaciation drowned the lower reaches of rivers extending into the present English Channel area and created tidally influenced estuaries that drained into shallow marine bays. The area of the Romney Marshes was one such bay, where rivers drained (and still drain) from the High Weald NCA. As the sea level stabilised about 5,000 years ago, a series of shingle and sand spits and islands grew slowly out into this bay from the west, progressively enclosing the area. A westward-progressing 'silting up' of partially enclosed brackish and marine lagoons ensued, creating areas of salt marsh, forest and peat accumulation marginal to the remaining extensive open water. By 700–800 years ago, the marshes were changing from salt marsh to reed and sedge meadows and large, enclosed lagoons as 'silting up' progressed.

To the west of the NCA, in the Isle of Oxney, the superficial geology consists of Quaternary river deposits (alluvium and flood plain deposits), as well as some peat deposits. The peat deposits are also bisected in places by salt marsh creeks. The northernmost extent of this NCA around the Hythe area (the boundary with Wealden Greensand NCA) is also characterised by a strip of mass movement 'landslip' deposits. Occasional Palaeolithic and Mesolithic stone tool finds bear testament to the presence of early humans in the landscape – one that would have been very different from todays.

The landscape of the marshes is young in geological and historical terms; between 43 and 100 ad, when the Romans first landed on the Kent and Sussex coast, the extensive area of Romney Marshes had not yet been fully formed by natural processes. The Romans would have been faced with a broad, open and shallow bay, studded by some upraised islands. These higher and drier sites provided suitable locations for the first human settlement of the area. Lydd and New Romney, for example, have provided evidence of early occupation in the form of pottery fragments dating from the 1st century.

By the early 9th century, the gradual fall of the sea level meant that what is now Romney Marshes began to develop. Impoundment was a piecemeal process, with each landowner reclaiming small areas at a time (known as 'inning'). The irregular pattern of drainage ditches is an indication that no single large-scale reclamation was attempted. The Cinque Ports, which included Romney, Rye and Winchelsea, were important ports in the 12th century, but movement of the Rother mouth from Romney to Rye subsequently caused closure of Romney Port. The ports were used as fishing ports, to transport goods across the Channel and for naval operations.

By the middle of the 13th century, most of the marshland had come into the hands of the local abbeys, which played a key role in much of the medieval reclamation, such as the construction of the Rhee Wall, built in 1258. As in the Roman period, medieval settlement was concentrated on the small areas of higher ground and alongside the roads that cut across the marsh, consisting of isolated farmsteads with a few small villages and hamlets. These retained their dispersed plans – or paddocks in which animals were confined and buildings later developed – into the 19th century.

Flooding in the 13th and 14th centuries resulted in the shrinkage and abandonment of some settlements in the marshes, leaving some abandoned moated sites and churches. A medieval new town was created at Winchelsea in 1281 to replace Old Winchelsea, which had been swept away by the sea – its characteristic regular grid of streets reflecting its planned origins. New Winchelsea did not succeed: the silting of the inlet to the harbour and French attacks in the 14th century contributed to its relative failure.

The geographical location of the area meant that it was an obvious target for unwelcome invasions from abroad. From the 16th century, concern over the threat of invasion resulted in the construction of defensive structures including Camber Castle, a Henrician fort; during the Napoleonic Wars, Martello towers and the Royal Military Canal were built. A defence line utilising the Royal Military Canal plus pill boxes and minefields was constructed in this area during the Second World War. The area also provided ideal locations for the establishment of concrete sound mirrors, precursors to radar, the most spectacular of which survive at Denge.

In the 17th century, the high taxes imposed on the export of wool fuelled a highly lucrative smuggling trade, and the area developed a strong association with smugglers and their haunts. With its remote, desolate beaches, highways and byways it has long been regarded as the birthplace of smuggling in southern England.

The flat, open areas of the marsh provided rich grazing land, particularly for sheep, and it is considered that at one time there were more sheep per hectare on Romney Marshes than anywhere else in England. The marshes supported many sheep-based industries, including wool and other products. Evidence of the once thriving sheep industry is supported by the remaining looker's huts, which are features unique to the marshes and provide important links to the area's cultural heritage. With the slump in wool prices during the 1930s, the economic viability of such intensive sheep farming was reduced. The shift from pastoral to arable which ensued was also driven by more efficient drainage and changing agricultural economics, especially from the 1950s, when widespread conversion to arable occurred.

In the 19th century, the Lydd barracks were established, and ranges have been in existence ever since at both Lydd and Hythe. Around 1900, gravel extraction and water abstraction from the shingle beach aquifer started, and a few decades later holiday bungalow development began along the coast. Industries started to use the area with the construction of Lydd Airport in 1953, followed by the construction of Dungeness Power Station in 1959. These developments, in addition to an increase in the scale and range of recreation and tourism activities, have without doubt resulted in increasing pressures on the NCA over the last two centuries. Despite the growth of industry and some housing, agriculture remains the principal land use, albeit with a shift in balance between pasture and arable. More recent developments include Little Cheyne Court Wind Farm, constructed in 2008, which adds a vertical element in what is otherwise a flat horizontal landscape.

The coastal zone continues to evolve today as it responds to a variety of influences including a reduction in sediment supply, coastal defence works, shingle recycling for beach management, harbour walls at Rye and a sea level rise. These influences have all had an impact on the natural coastal processes and continue to affect how the coast evolves now and into the future.

Ecosystem services

The Romney Marshes NCA provides a wide range of benefits to society. Each is derived from the attributes and processes (both natural and cultural features) within the area. These benefits are known collectively as 'ecosystem services'. The predominant services are summarised below. Further information on ecosystem services provided in the Romney Marshes NCA is contained in the 'Analysis' section of this document.

Provisioning services (food, fibre and water supply)

- **Food provision**: Of the total area, 74 per cent is under agriculture. The largely arable landscape is characterised by general cropping, producing a significant amount of cereals and other crops due to the high quality of the soils found in the NCA. There is also some permanent grassland producing lamb (with a re-emerging specialist product – salt marsh lamb) and limited amounts of beef.

- **Water availability:** The NCA contains a shingle aquifer along the coastal edge at Dungeness (Denge gravel aquifer), which supports an important local public water supply source. The groundwater levels influence the vegetation of the shingle and the water levels of the open water, which are important for wintering birds. A balance between abstractions and recharge is particularly important to safeguard groundwater levels and prevent saline intrusion of the aquifer, which could affect water quality and the viability of the aquifer for public water supply. The aquifer is therefore closely monitored and has specific drought restrictions. The main rivers that fall within the NCA are the Rother and Brede, as well as a small section of the Tillingham. The rivers Rother and Brede are both classed as being 'over licensed' (in contrast with the Tillingham, which has a status of 'water available' because this is not a catchment that is heavily drawn on for abstraction).[5] In addition, the area is dissected by drainage ditches, and water levels are managed to protect the marshes from flooding and to assist in sustaining arable farming, turf growing and wet fencing. The marshes are bounded by the Royal Military Canal, which is key in the operation of the marsh summer feed system and for drainage and flood defence purposes.

Regulating services (water purification, air quality maintenance and climate regulation)

- **Regulating soil quality:** The majority of soils are loamy and clayey soils of coastal flats, with naturally high groundwater (around 70 per cent). These soils have high agricultural potential, but this depends on the continued ability to pump, drain and protect the soils from sea flooding/saline intrusion, as these soils are increasingly under threat of loss from sea level rise. Where there is a high silt/fine sand content, these soils may also suffer from compaction and/or capping, an issue that can affect the slowly permeable, seasonally wet, slightly acid but base-rich loamy and clayey soils. In turn, this may lead to increasingly poor water infiltration and diffuse pollution as a result of surface water run-off. Management measures that increase organic matter levels can help to reduce these problems.

[5] The Rother Catchment Abstraction Management Strategy, Environment Agency (2013) (accessed October 2013; URL: http://publications.environment-agency.gov.uk/pdf/GESO0406BKQR-E-E.pdf)

- **Regulating water quality:** The River Rother and Walland Marsh form part of a Department for Environment, Food and Rural Affairs (Defra) catchment sensitive farming priority catchment, with issues of excessive levels of nutrients (phosphorous, nitrates) and sediment. The Water Framework Directive's first river basin management plan classification indicates that the ecological quality of the River Rother is moderate, while the Tillingham is good and the Brede is variable along its length from moderate to good (with the chemical status of the Rother and Brede both classed as good). The chemical quality of groundwater throughout the area is classed as poor.[6]

- **Regulating water flow:** The flood risk is complex, as the area is at risk from both river and coastal flooding. A complex network of drains and management of water levels in the Royal Military Canal control water movement within the marshes, where the current level of flood risk from river flooding is relatively low. There is a high risk of flooding in Rye, largely caused by confluence of the rivers Rother, Brede and Tillingham. Tidal locking effects can be significant and will increase with rising sea levels. Hythe (which lies just outside the northern boundary of the NCA) is also at high risk. Within the wider Rother catchment there is an aspiration to take action with others to store water or manage run-off in locations that provide overall flood risk reduction or environmental benefits.[7]

- **Pollination:** The NCA has a variety of crop types, such as vegetables, which rely on pollination. The semi-natural areas of the NCA, for example reedbeds, provide good habitat for pollinators, but a decline in semi-natural habitats and changes in agricultural practices have had an impact on them. The Romney Marshes area has since been the focus of a project to re-introduce the short-haired bumblebee to the UK and to establish a corridor of suitable bumblebee habitat. Where efforts have been made to provide good habitat for the short-haired bumblebee, this has also yielded additional benefits, with other bumblebee species returning or increasing in number. Bumblebees are critical for crop pollination, so if the re-introduction is successful then it will have much wider implications for pollination services outside the NCA.

- **Regulating coastal flooding and erosion:** Natural and artificial coastal defences are crucial in managing flood risk in the NCA. The policy along the coastline is to 'Hold the Line' using a combination of soft and engineered measures to provide a suitable standard of defence. The main exception to this is along the River Rother, where local realignment is planned on the eastern bank in order to provide continued flood risk management to protect the adjacent low-lying areas.[8] The implementation of flood defence schemes will, however, have an impact

6 River Basin Management Plan: South East River Basin District, Environment Agency (2009) (accessed October 2013; URL: www.environment-agency.gov.uk/research/planning/124978.aspx)

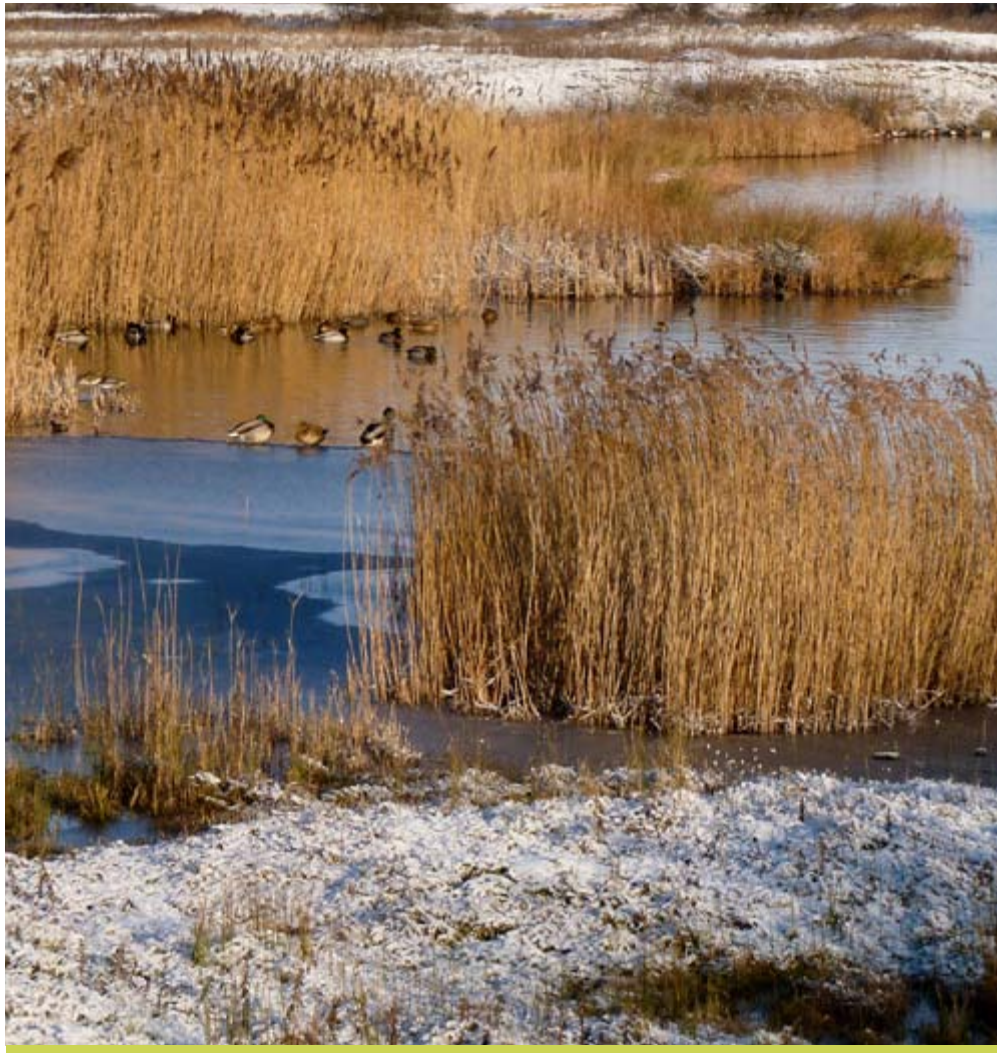
7 Rother and Romney Catchment Flood Management Plan, Environment Agency (2009) (accessed October 2013; URL: http://publications.environment-agency.gov.uk/pdf/GESO1008BOWI-e-e.pdf)

8 Folkestone to Cliff End Flood and Erosion Management Strategy, Environment Agency (2011) (accessed October 2013; URL: www.environment-agency.gov.uk/static/documents/Leisure/Approved_Strategy_Summary.pdf)

on the shingle system along the coast, which will require mitigation and some form of compensation. As part of this, a coastal habitat creation scheme has been implemented at Rye Harbour Farm, which has expanded the nature reserve and positively contributed to the natural landscape character of the site. Habitats created include (but are not limited to) salt marsh and intertidal mud. The habitats were created by the Environment Agency but are managed by a partnership.

Cultural services (inspiration, education and wellbeing)

- **Sense of place/inspiration:** Sense of place is provided by the distinctive, open and windswept low-lying, reclaimed marshland landscape, bounded to the south by the English Channel and to the north by upstanding old sea cliffs. The largest shingle beaches in Europe at Dungeness and the sand dunes at Camber Sands contribute significantly to the sense of place. Wide skies and open, uninterrupted panoramas characterise the area, with limited tree or hedgerow cover adding to the strong sense of exposure and openness. A widely dispersed settlement pattern of farmsteads and hamlets connected by straight, narrow roads adds a strong sense of remoteness. These qualities have inspired writers such as H.G. Wells, Henry James, Rudyard Kipling and Joseph Conrad, who have either worked on the marshes or used them as the setting for their novels, as well as artists such as Paul Nash. John Piper also depicted the coast and its sand and shingle beaches in his artworks, while the photographer Fay Godwin and film director Derek Jarman have likewise made the area the subject of their work.



Reed beds at Castle Water, Rye Harbour Nature Reserve.

- **Sense of history:** The history of the landscape is most evident in the area's history of piecemeal reclamation, or 'inning', from coastal marshes. Historic features include old sea walls, ancient ditches, looker's huts, medieval settlement sites and many medieval churches set among dispersed settlements. In some places the ruined remains of churches lost through tidal inundation or abandonment during the Black Death survive. Relicts from the Napoleonic Wars include the defensive Martello towers and the Royal Military Canal, and there is evidence of more recent conflicts too, with defences constructed during the Second World War. Rye, which is a well-known and well-visited landlocked harbour town, has strong historical associations.

- **Tranquillity:** There are high levels of tranquillity associated with the marshland landscape, and 55 per cent of the NCA is judged as 'undisturbed'. The largest areas of tranquillity lie away from the main transport corridors and coastal settlements. A sense of tranquillity is likely to be particularly associated with the remote areas of grazing marsh and the expansive open skylines that are a distinctive feature of the area.

- **Recreation:** Recreation is supported by the area's 567-kilometre rights of way network (with a density of 1.5 km per km^2), including the Saxon Shore Way, Sussex Border Path, Royal Military Canal Path and, in time, the England Coast Path. Rye is a popular tourist destination, and there are several caravan parks and camp sites along the coast. The Romney, Hythe and Dymchurch Railway runs from Hythe to Dungeness and is popular with tourists.

- **Biodiversity:** The NCA features 12,000 ha of priority habitats, covering 35 per cent of the area. They include reedbeds, coastal and flood plain grazing marsh, coastal vegetated shingle, and sand dunes. The area contains Dungeness SAC, which covers around 2,500 ha, as well as Dungeness to Pett Level SPA (1,280 ha). More than 8,000 ha (22 per cent of the NCA) is designated as SSSI. An extension to the existing SPA (more than 4,000 ha) and a Ramsar site (more than 6,000 ha) have been proposed. The diverse range of habitats supports numerous species, including nationally rare and scarce plants and invertebrates. The NCA is particularly important for wintering, breeding and passage birds, and is a key migration route.

- **Geodiversity:** The NCA is home to Dungeness, the largest cuspate shingle foreland in Europe and one of the few such large examples in the world. The geomorphology of Dungeness is of international importance, and today the shingle foreland is composed of several hundred storm beaches, in several groups, which record the location and shape of the foreland at each stage of its formation; it is a key site for education and research. The geodiversity of the NCA determines and influences the soils, drainage, habitats and human activities. Within the NCA there are four geological and mixed-interest SSSI, including the geomorphological Dungeness SSSI. The other three sites are of national and international importance for their Cretaceous deposits and fossils. Exposures of geological interest include the sands and clays of the Wealden Hastings Beds and Lower Greensand.

Statements of Environmental Opportunity

SEO 1: Maintain and enhance the distinctive character of the remote, open, low-lying Romney Marshes landscape, including the wealth of heritage assets and the settlement character; recognise the value they provide in contributing to the understanding of the landscape and its history, local distinctiveness and sense of place; and promote knowledge and understanding of these important resources for their recreation, health and socio-economic benefits.

For example, by:

- Maintaining landscape character, tranquillity, sense of remoteness and connection to the maritime environment by sensitive planning of future land use, to maintain the open views and expansive skies, with trees kept predominantly to the higher ground and around existing settlements, ensuring that any new development and its associated infrastructure (including light, noise and air pollution) does not undermine or have a detrimental impact on the tranquillity of the marshes and landscape character.
- Conserving the widely dispersed settlement pattern of farmsteads and hamlets on pockets of higher ground, connected by straight, narrow roads, maintaining a sense of remoteness.
- Using understanding of the area's traditional and historic architecture and its distinct patterns of settlement to inform appropriate conservation and use of historic buildings, and to plan for and inspire any environmentally beneficial new development that makes a positive contribution to local character.
- Carefully managing the introduction of any new vertical elements into the landscape, especially any proposals for renewable energy technologies, to maintain character and setting of the marshes.
- Protecting, promoting and celebrating the churches found on the marsh, benefiting sense of place and history and for their important contribution to cultural heritage.
- Protecting and appropriately managing the area's distinctive historic environment, for its contribution to local character and sense of identity and as a framework for habitat restoration and sustainable development.
- Conserving the tranquillity and dark night skies of the National Character Area (NCA), especially areas classified as 'undisturbed' in the Campaign to Protect Rural England's (CPRE's) intrusion maps.
- Protecting, conserving and enhancing the important archaeological and historic features (both scheduled and non-scheduled) within the landscape, including the Napoleonic Royal Military Canal, defensive coastline features, looker's huts – which provide important links to the past sheep industry – and abandoned medieval settlements (including a high number of lost church sites). The heritage assets provide important links to the NCA's past and need to be protected from inappropriate management activities to maintain their longevity, their significance and the integrity of sites.
- Encouraging sustainable access to, interpretation of and understanding of heritage assets by all sections of the community, including where this can bring inward investment into the NCA and where it fosters understanding of the evolution of the landscape.

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- Delivering the purposes of the Kent Downs and High Weald Areas of Outstanding Natural Beauty (AONB) to conserve and enhance the natural beauty of the protected landscapes. Promote the use of planning and design guidelines to enhance the quality and appropriateness of approved new development, ensuring that it does not intrude on the wider landscape or the special qualities of both the High Weald and the Kent Downs AONB.
- Maintaining and enhancing the geological exposures of the Hastings Beds Group and the old cliff-line (in addition to coastal geological interest – see SEO 2), utilising the geodiversity of the NCA for education and research and managing sites appropriately to enhance their geological interests, in particular through control and management of encroaching vegetation.
- Ensuring that any new development respects the setting and distinctive character of the NCA's historic towns, particularly the vernacular architecture of the Cinque Ports of Lydd, New Romney, Rye and Winchelsea and the unique architecture of the Dungeness Estate Conservation Area.

The Royal Military Canal acts as a reservoir of water for the Marshes.

SEO 2: Maintain and enhance the coastal environment, including the internationally important shingle foreland at Dungeness, taking account of the dynamic nature of the coastal systems and future impacts of climate change, including flood risk management, while providing access, recreation and tourism opportunities that are sensitive to the character, habitats and species of the coastal zone.

For example, by:

- Maintaining and enhancing the diverse coastal habitats and interest features associated with Dungeness Special Area of Conservation and Dungeness, Romney Marsh and Rye Bay Site of Special Scientific Interest, Special Protection Area and proposed Ramsar site, including the shingle beaches, sand dunes (Camber Sands, Greatstone and Romney Warren), salt marsh, saline lagoons, freshwater pits, grazing marsh, flooded gravel pits and intertidal mudflats and sand flats. Take a holistic approach which ensures that management is in line with the actions needed to achieve favourable condition of the designated sites, supporting adaptability to sea level rise and maintaining opportunities for natural regeneration to aid the long-term alleviation of coastal flooding while preserving geomorphological and wildlife interest.
- Supporting ongoing geomorphological research that furthers understanding of the ongoing evolution of the coast, including comparison with historical changes and taking account of the ongoing influence of human activities and climate change. In particular, protect, celebrate and further the understanding of the largest and most diverse shingle beach in the UK through sensitive and appropriate geo-conservation and research, maintaining the NCA's importance in relation to coastal evolution and environmental change and strengthening links between geodiversity and the cultural environment of the NCA.
- Supporting ongoing research to establish the feasibility of restoring vegetated shingle habitat, building on the lessons learnt from existing and new experimental plots. This would inform consideration of managing pressures such as visitors causing damage through trampling, 4x4 vehicles disturbing surface geomorphology and shingle vegetation through offroading, and grazing by rabbits on the shingle vegetation.
- Protecting the diverse range of species associated with the coastal habitats, particularly the unique and rare, furthering understanding of species distributions and requirements, and encouraging longer-term monitoring and surveillance programmes.
- Supporting the role of the coastal habitats in managing risk of coastal flooding and erosion, in particular by allowing accretion of the shingle and seeking opportunities for freely functioning coastal processes. Create compensation habitats to replace those that will be lost as a result of coastal defence schemes, including intertidal mudflats and coastal salt marsh that could be lost to coastal squeeze.
- Enhancing the character of the coastal zone by ensuring that, where permitted, any new development makes a positive contribution to the landscape and that standards for flood risk management are considered, with the sense of isolation maintained on areas of undeveloped coastline.

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- Exploring the feasibility of implementing physical control structures where these may help to manage visitor pressure, using best practice to inform decisions.
- Conserving the rich heritage assets of the NCA found at the coast, maximising their potential for education and enjoyment.
- Improving access to the coast for walkers, cyclists and disabled people, and encouraging reduced car use. Secure opportunities for the public to enjoy the natural environment through the implementation of the England Coast Path, while ensuring appropriate protection of it.
- Ensuring that promotion of access opportunities educates people about the vulnerability of the coastal habitats in the NCA and encourages visits of a low-impact nature that avoid any adverse effects on landscape, habitats and wildlife.
- Working in partnership to devise an access strategy that addresses the issues of recreational pressures on the vulnerable coastal habitats, particularly where vandalism, inappropriate vehicular access, boat mooring and trampling can have a major impact on the colonisation and stabilisation of habitats, while seeking to offer a range of sustainable tourism and access opportunities, utilising the assets of the wider NCA to relieve pressure along the coast.
- Taking steps to ensure that the planned changes in the coastal zone are considered holistically so that they provide sustainable use of the coastal environment, benefiting wildlife, tourism, access and recreation. For example, a tidal exchange system is being constructed at Rye Harbour Farm to create new salt marsh and mudflat habitat through a partnership project led by the Environment Agency.
- Working in partnership to ensure that gravel extraction does not impact on the shingle habitats and geomorphological structures and that extraction is sensitive to the needs of biodiversity and landscape in addition to geological interests. Where extraction is permitted, ensure sensitive restoration of pits that seeks to incorporate new habitats into the landscape, including open water gravel pits and fringing reedbeds.
- Maximising the potential socio-economic benefits from the coastal environments and promoting the value of a well-managed, healthy, functioning and locally distinct coastal environment as an economic opportunity.
- Increasing awareness of the coastal environment and its importance in the overall landscape evolution of the Romney Marshes and its role in protecting land within the wider NCA, supporting cultural and heritage programmes that provide greater understanding of the interdependencies of the coast and its hinterland, ensuring that key assets are protected, valued, celebrated and understood, helping residents and visitors to appreciate the features of interest.
- Considering the impacts of nuclear power station decommissioning. Decommissioning of nuclear power station installations is a long-term operation stretching over decades. Dungeness A Station started decommissioning in 2007, and Dungeness B station may start to decommission in the next decade. The eventual end use of the vacated site at Dungeness in the context of the NCA would need careful consideration in terms of landscape, dynamic coastline, future climate change impacts and sensitivities of habitat and species on the coast.

SEO 3: Manage and enhance the distinctive agricultural landscape to secure viable and sustainable farming, while protecting heritage assets, managing soils and water resources and supporting the diversity of species that are dependent on this area. Enhance biodiversity through improved connectivity of semi-natural habitats and by creating ecological networks that are resilient to environmental change.

For example, by:

- Maintaining and enhancing the extensive and distinctive irregular network of the ditch system (including reed-fringed ditches). As well as hosting a rich bankside flora and fauna, these ditches are important for cultural heritage and support food provision through the network's critical role in irrigation and drainage of the marsh.
- Seeking to maximise opportunities for the integration of a range of environmentally beneficial options within the arable landscape to benefit biodiversity, including farmland birds and bumblebees, particularly where this will have added benefits for water quality, pollination and pest regulation services.
- Restoring and improving the management of coastal and flood plain grazing marsh, important for breeding and wintering waterfowl (notably at Walland Marsh). This should be provided in a mosaic with restored and expanded areas of reedbeds and fen, comprising a landscape-scale complex, for the significant biodiversity, geodiversity, landscape and cultural heritage benefits, as well as improved water quality and flood alleviation (especially within the Rother and Romney catchment) and improved adaptation to climate change.
- Maintaining the mosaic of a mixed farmed landscape, recognising the value of the productive agricultural soils for cropping while maintaining the cultural associations of the sheep pastures, recognising that agricultural practices on the marsh may need to change due to climatic pressures and changes in markets, working to integrate any changes into the landscape.
- Seeking to build on the advice programmes to date that have achieved benefits for farmland birds, bumblebees and other species. In particular, recognise the significance of Romney Marshes as a key migration route and ensure that a network of corridors is provided for the movement of species across the farmland, benefiting pollination services alongside biodiversity.
- Encouraging production and marketing of locally reared meat and other products such as local wool, especially where it strengthens links between food provision and the cultural landscapes. Support the continued presence of the distinctive native breed of Romney sheep, for its links with the NCA's cultural heritage, its contribution to sense of place and its benefit to genetic diversity.
- Encouraging best practice farming techniques to help maintain soil structure and organic matter within the productive agricultural landscape for the range of benefits this can provide, which include food provision, reduced run-off and water pollution, reduced soil erosion and increased carbon storage. Where possible, advocate and encourage the principles of catchment sensitive farming, providing and building on the advice programme that has run in the Eastern Rother and Walland Marsh catchment since 2006.

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- Working in partnership and across sectors to support local volunteering opportunities, linking people with their natural environment and providing opportunities for people to increase their knowledge of the biodiversity and geodiversity of the area while also contributing to longer-term species and habitat monitoring and surveillance.
- Working with existing partnerships and projects and emerging initiatives to deliver enhanced land management and habitat linkage, as well as engaging with local communities, land managers and user groups.
- Using evidence to plan and implement the creation of new reedbed habitats, not only as an important habitat in their own right but also where they can act as nutrient and sediment traps and enhance landscape character.

Reed beds at Castle Water, Rye Harbour Nature Reserve.

SEO 4: Protect the important water resources, including the Denge gravel aquifer, the River Rother, Brede Valley and the extensive ditch network with its associated wetlands; and manage the resources to bring about benefits for biodiversity, water quality and regulation of flooding, while safeguarding the quality and quantity of water supplies and utilising the open water network for appropriate access and recreational opportunities.

For example, by:

- Protecting the Denge gravel aquifer, highly valued for its water supply. Maintain a balance between abstractions and recharge to safeguard stable groundwater levels and reduce the risk of saline intrusion as a result of over-abstraction, benefiting biodiversity of the shingle and safeguarding the quality of the water supply and its viability as a source of drinking water.
- Adopting a landscape-scale approach and working at the catchment scale to safeguard the surface water resources of the NCA, especially those failing to meet Water Framework Directive objectives for good ecological status. Work in partnership across sectors and NCA boundaries to tackle the challenges associated with flood risk, pollution and low flows.
- Identifying opportunities for research that improves the understanding of how to respond and plan for climate change impacts, future consumer demands and the interrelationships between water resources and pressures in adjoining NCAs, including the impacts of water availability on key biodiversity sites and sustaining agriculture.
- Drawing on best practice principles, such as those established under catchment sensitive farming, and building on and supporting existing stakeholder groups to help deliver a good water environment across the Romney Marshes, implementing land management practices and capital works to minimise soil erosion and diffuse pollution, benefiting biodiversity, agriculture and local communities.
- Implementing plans and strategies that consider water level requirements for a range of activities, including agriculture, flood risk management and conservation objectives, working across sectors and in partnership to identify how these sometimes conflicting requirements can be effectively integrated to bring about multiple benefits.
- Conserving and enhancing the designated sites and promoting opportunities to create freshwater habitats when managing flood risk, strengthening the wider habitat network.
- Providing guidance, support and advice to enable landowners to manage their ditches to maximise the biodiversity interest and support the diverse range of species that rely on the ditch network for their survival, while retaining the ditches' water management function, which is critical for supporting agriculture.
- Creating areas of broad grassland buffer strips next to watercourses, especially the River Rother and Walland Marsh (a Department for Environment, Food and Rural Affairs (Defra) priority catchment), to help impede nutrient run-off and improve water quality throughout the area. Further enhancement of strips to create added diversity in the sward will be beneficial to pollinating insects.

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- Appropriately managing the network of ditches to maintain species diversity, particularly those that are endangered, such as the marsh mallow moth, water voles and medicinal leeches. Regular monitoring will help track the health of these populations.
- Further increasing the understanding, awareness and knowledge of invasive species within the complex of ditches, particularly New Zealand pygmyweed, taking action to eradicate or reduce the impacts of invasive species that can shade out native ditch flora and fauna and cause oxygen depletion. Seek to monitor the situation so that any spreads can be managed effectively. The problem can only be treated if its extent is well understood, and hence monitoring programmes should be encouraged.
- Managing the river corridors of the Brede and Rother, protecting and enhancing the ability of the waterbodies to provide wildlife corridors and realising the other benefits that these river valleys provide.
- Supporting existing and new initiatives that consider the complex hydrological processes across the NCA in a holistic way and where they foster joint working between the Internal Drainage Board, Environment Agency and private landowners to prioritise and deliver projects that improve the water environment of the marshes.
- Improving linear access along river corridors where appropriate, increasing opportunities for enhanced access, recreation and community engagement across the marshes, helping to alleviate pressure on the more sensitive habitats at the coast.
- Promoting water efficiency among local communities of the marsh, raising awareness of future impacts on society of unsustainable use of water resources.
- Supporting further research that improves the understanding of the coastal and river interactions and how these will affect future flood risk within the NCA.

Additional opportunity

1. Appropriately manage opportunities for access, outdoor recreation, education and tourism that are compatible with the special wildlife and geomorphological interests of the NCA and improve the health, wellbeing and enjoyment of the Romney Marshes for locals and visitors, raising awareness of the important contribution that the landscape and its services can bring to the local economy.

For example, by:

- Maintaining and improving access throughout the wider NCA, linking towns and villages with a cohesive network of rights of way, including the Saxon Shore Way, the Sussex Border Path and the Royal Military Canal Path. Manage and promote local paths and trails in order to enhance opportunities for local people and visitors and to ensure a high-quality experience for all users, building on and utilising existing publications such as the Magic of Romney Marsh walks pack and the Romney Marsh Meanders cycle pack.
- Promoting sustainable tourism initiatives that reduce car dependency, enabling the NCA to accommodate high visitor numbers while conserving the natural and built environment and the area's remoteness and tranquillity.
- Creating localised areas of quality natural greenspace within and around settlements, including Lydd, New Romney, Rye and Wittersham, which provide local recreational opportunities and meet the Accessible Natural Greenspace Standard (ANGSt), helping to reduce pressures on the vulnerable coastal habitats by provision of high-quality alternatives away from the coast. Restoration of quarry sites could help to achieve this aim.
- Working in partnership with tourist providers to facilitate a co-ordinated approach to providing a visitor experience that encourages sustainable management of recreation across the NCA, by offering additional experiences in the wider marsh that will help to spread the interest and potentially encourage visitors to stay in the NCA for longer.
- Supporting local partnership work that helps local businesses to maximise the opportunities and benefit from the inspiration that the area provides for artists, writers, film crews, actors, and photographers who are drawn to its uniqueness.
- Supporting education and apprenticeship programmes that provide new opportunities to local communities to develop skills in agriculture, conservation and heritage.
- Maximising the existing resources on the marsh, including the nature reserves and visitor centres, to deliver a package of comprehensive outdoor learning opportunities to engage schoolchildren and adults in the special character of the marshes.

Supporting document 1: Key facts and data

Romney Marshes National Character Area (NCA): 36,681 ha

1. Landscape and nature conservation designations

Two Areas of Outstanding Natural Beauty (AONB) fall partially within the Romney Marshes NCA; the High Weald AONB (9,149 ha) and the Kent Downs AONB (1,017 ha). In total AONB designation covers 22 per cent of the NCA.

Management plans for the protected landscapes can be found at:

- www.highweald.org/
- www.kentdowns.org.uk/

Source: Natural England (2011)

1.1 Designated nature conservation sites

The NCA includes the following statutory nature conservation designations:

Tier	Designation	Designated site(s)	Area (ha)	% of NCA
International	pRamsar (see note iii below)	Dungeness, Romney Marsh and Rye Bay	6,416	17
European	Special Protection Area (SPA)	Dungeness to Pett Level SPA (see note iii below)	1,276 (see note iii below)	3
	Special Area of Conservation (SAC)	Dungeness SAC	2,487	7
National	National Nature Reserve (NNR)	Dungeness NNR	1,016	3
National	Site of Special Scientific Interest (SSSI)	A total of 6 sites wholly or partly within the NCA	8,130	22

Source: Natural England (2011)

Please note: (i) Designated areas may overlap (ii) all figures are cut to Mean High Water Line, designations that span coastal areas/views below this line will not be included.(iii) The pRAMSAR and pSPA are proposed designations. The Dungeness, Romney Marsh and Rye Bay pSPA is not reflected in the above table. The pSPA if approved will replace the existing SPA shown in the table and will cover an area of 4,048ha. For more information and details of these proposed designations see the Natural England website.

There are 19 local sites in Romney Marshes NCA covering 1,848 ha, which is 5 per cent of the area of the NCA.

Source: Natural England (2011)

- Details of individual Sites of Special Scientific Interest can be searched at: http://www.sssi.naturalengland.org.uk/Special/sssi/search.cfm
- Details of Local Nature Reserves (LNR) can be searched at: http://www.lnr.naturalengland.org.uk/Special/lnr/lnr_search.asp
- Maps showing locations of Statutory sites can be found at: http://magic.defra.gov.uk/website/magic/ – select 'Rural Designations Statutory'

1.1.1 Condition of designated sites

Condition category	Area (ha)	% of SSSI land in category condition
Unfavourable declining	0	0
Favourable	5,082	63
Unfavourable no change	15	<1
Unfavourable recovering	3,032	27

Source: Natural England (March 2011)

- Details of SSSI condition can be searched at: http://www.sssi.naturalengland.org.uk/Special/sssi/reportIndex.cfm

2. Landform, geology and soils

2.1 Elevation

The Romney Marshes NCA is a broad expanse of low-lying flat land. The highest point within the NCA is 94 m above sea level. The lowest point is 0.2 m below sea level.

Source: Natural England 2010, Romney Marshes Countryside Character Area Description

2.2 Landform and process

The geology of the NCA is dominated by coastal deposits and, most importantly, the cuspate shingle foreland of Dungeness. The NCA owes its existence to the growth of this feature, first in its role as a barrier beach and later as a cuspate foreland, leading to the siltation and subsequent drainage of the shallow bay between Dungeness and the ancient shoreline. Over the centuries the foreland has gradually changed shape under the forces of wind and tide becoming progressively sharper. Today the shingle foreland is composed of several hundred storm beaches, in several groups, which record the location and shape of the foreland at each stage of its formation. Behind the shingle beach alluvial deposits filled the shallow bay, and with subsequent drainage, these have formed the Romney and Walland Marshes, Denge Marsh and East Guldeford and Pett Levels.

Source: Romney Marshes Countryside Character Area description, Romney Marshes Natural Area Profile, Folkestone to Selsey Bill Natural Area Profile

2.3 Bedrock geology

The bedrock of the Romney Marshes is made up of mudstone, sandstone and siltstones of the Early Cretaceous Hastings Beds which were raised and exposed in the Alpine Orogeny (mountain-building episode) during the Palaeogene (Tertiary). The inland boundary of the area is the old shoreline of Early Cretaceous Wealden and Lower Greensand rocks. These rise sharply in contrast with the flat coastal plain.

Source: Countryside Character Area description, Romney Marshes Natural Area Profile, Folkestone to Selsey Bill Natural Area Profile, British Geological Survey maps

2.4 Superficial deposits

Dungeness is the largest shingle foreland in Europe. Wind-blown sand has formed dunes at Camber and Romney Warren. Behind the shingle beach alluvial deposits have filled what was the shallow bay.

Source: Romney Marshes Countryside Character Area description, Romney Marshes Natural Area Profile, Folkestone to Selsey Bill Natural Area Profile, British Geological Survey maps

2.5 Designated geological sites

Designation	Number
Geological Site of Special Scientific Interest (SSSI)	2
Mixed interest SSSI	2

There are 10 Local Geological Sites within the NCA.

Source: Natural England (2011)

- Details of individual Sites of Special Scientific Interest can be searched at: http://www.sssi.naturalengland.org.uk/Special/sssi/search.cfm

2.6 Soils and Agricultural Land Classification

There are loamy and clayey soils of coastal flats with naturally high groundwater, covering 68 per cent of the NCA, with lesser amounts of sand dune soils, slightly acid but base-rich loamy and clayey soils, slightly acid loamy and clayey soils with impeded drainage and loamy and clayey flood plain soils. The loamy and clayey soils of coastal flats have a high agricultural potential. The sand dune soils are very droughty and unstable.

Source: Natural England 2010

The main grades of agricultural land in the NCA are broken down as follows (as a proportion of total land area):

Agricultural Land Classification	Area (ha)	% of NCA
Grade 1	6,304	17
Grade 2	13,665	37
Grade 3	8,713	24
Grade 4	3,484	9
Grade 5	0	0
Non-agricultural	3,360	9
Urban	601	2

Source: Natural England (2010)

- Maps showing locations of statutory sites can be found at: http://magic.defra.gov.uk/website/magic/ - Select 'Landscape' (shows ALC classification and 27 types of soils)

3. Key water bodies and catchments

3.1 Major rivers/canals

The following major rivers/canals (by length) have been identified in this NCA.

Name	Length in NCA (km)
River Brede	16
River Rother	20
River Tillingham	<1
Royal Military Canal	31

Source: Natural England (2010)

Please note: other significant rivers (by volume) may also occur. These are not listed where the length within the NCA is short.

The marshes are crossed by irregular networks of drainage ditches. This network of ditches and management of water levels in the Royal Military Canal control water movement within the marshes. The Brede, Rother and Tillingham all rise in the adjacent High Weald. Extensive areas of open water exist around Rye Harbour and Denge Marshes formed by flooded gravel pits.

3.2 Water quality

The total area of Nitrate Vulnerable Zone is 19,842 ha, or 54 per cent of NCA.

Source: Natural England (2010)

3.3 Water Framework Directive

Maps are available from the Environment Agency showing current and projected future status of water bodies at: http://maps.environment-agency.gov.uk/wiyby/wiybyController?ep=maptopics&lang=_e

4. Trees and woodlands

4.1 Total woodland cover

The NCA contains 509 ha of woodland (1 per cent of the total area), of which 239 ha is ancient woodland.

Source: Natural England (2010), Forestry Commission (2011)

4.2 Distribution and size of woodland and trees in the landscape

The area is distinctive for its open character and general absence of woodland. There are generally few trees and woodlands in this character area other than small clumps and belts around settlements on slightly higher ground such as north of Wittersham.

Source: Romney Marshes Countryside Character Area Description

4.3 Woodland types

A statistical breakdown of the area and type of woodland found across the NCA is detailed below.

Area and proportion of different woodland types in the NCA (over 2 ha).

Woodland type	Area (ha)	% of NCA
Broadleaved	462	1
Coniferous	16	<1
Mixed	4	<1
Other	27	<1

Source: Forestry Commission (2011)

Area and proportion of Ancient Woodland and Planted Ancient Woodland within the NCA:

Type	Area (ha)	% of NCA
Ancient semi-natural woodland	206	<1
Ancient re-planted woodland (PAWS)	29	<1

Source: Natural England (2004)

5. Boundary features and patterns

5.1 Boundary features

The marshes have a distinctive windswept feel with flat, open marshland of either pasture or arable fields divided by an irregular network of drainage ditches and banks. Hedgerows are found on the higher ground but drainage ditches are the predominant boundary type.

Source: Romney Marshes Countryside Character Area description; Countryside Quality Counts (2003)

5.2 Field patterns

The field patterns created by ditches vary from mainly small and medium sized irregular fields that are probably the result of gradual reclamation by individual farmers ('inning') to some limited areas where the ditches are regularly laid out creating rectangular fields, indicating more organised reclamation or the re-organisation of drainage. Irregular fields are the predominant form across the marshes.

Source: Romney Marshes Countryside Character Area description; Countryside Quality Counts (2003)

6. Agriculture

The following data has been taken from the Agricultural Census linked to this NCA.

6.1 Farm type

In 2009 all livestock farms accounted for 38 per cent, all arable and horticulture 34 per cent (of which horticulture accounted for 7 per cent) and mixed farming 6 per cent. Other farm types equated to 6 per cent.

Source: Agricultural Census, Defra (2010)

6.2 Farm size

Small farms of under 5 ha decreased between 2000 and 2009 by 38 per cent from 40 to 25, whereas those between 5 and 20 ha increased from 46 to 52. There were also decreases in the number of farms of between 20 and 100 ha but the number of farms over 100 ha remained the same.

Source: Agricultural Census, Defra (2010)

6.3 Farm ownership

2009: Total farm area = 28,629 ha; owned land = 15,049 ha

2000: Total farm area = 27,397 ha; owned land = 14,447 ha

Source: Agricultural Census, Defra (2010)

6.4 Land use

Forty per cent of the farmed area is grass and uncropped land (11,397 ha in 2009). Cereals cover 33 per cent of the area (9,409 ha in 2009); the second most prevalent land use. The amount of farmed land increased by over 1,000 ha between 2000 and 2009 and generally most types of farms have increased in number apart from vegetables and cash root crops.

Source: Agricultural Census, Defra (2010)

6.5 Livestock numbers

Despite a fall in numbers of 33 per cent between 2000 and 2009, sheep remain by far the most numerous animal at 95 per cent of total livestock.

Source: Agricultural Census, Defra (2010)

6.6 Farm labour

Numbers remained fairly stable between 2000 and 2009, apart from full time workers which decreased by around a third. The number of salaried managers increased during the same period.

Source: Agricultural Census, Defra (2010)

Please note: (i) Some of the Census data is estimated by Defra so will not be accurate for every holding (ii) Data refers to Commercial Holdings only (iii) Data includes land outside of the NCA belonging to holdings whose centre point is within the NCA listed.

7. Key habitats and species

7.1 Habitat distribution/coverage

The NCA is internationally important with a diverse coastal landscape and a number of habitats including the largest and most diverse area of shingle beach in Britain, saline lagoons, natural freshwater pits, sand dunes and intertidal mud and sand flats. In addition areas of salt marsh (found along the River Rother estuary) and pockets of reedbeds are also notable. Extensive areas of open water exist as a result of gravel extraction. Inland an extensive network of ditches and watercourses drain areas of pasture and arable farmland. Although much reduced from its former extent, areas of traditional grazing marsh are still found. Many of the ditches on the marsh support a rich diversity of species, particularly those within the SAC, SSSI and pRamsar designated sites. The river valleys of the Rother, Brede and Tillingham drain from the adjacent High Weald and provide additional interest.

Source: Romney Marshes Natural Area Profile

7.2 Priority habitats

The Government's new strategy for biodiversity in England, Biodiversity 2020, replaces the previous Biodiversity Action Plan (BAP) led approach. Priority habitats and species are identified in Biodiversity 2020, but references to BAP priority habitats and species, and previous national targets have been removed. Biodiversity Action Plans remain a useful source of guidance and information. More information about Biodiversity 2020 can be found at; **http://www.naturalengland.org.uk/ourwork/conservation/biodiversity/protectandmanage/englandsbiodiversitystrategy2011.aspx**

The NCA contains the following areas of mapped priority habitats (as mapped by National Inventories). Footnotes denote local/expert interpretation. This will be used to inform future national inventory updates.

Priority habitat	Area (ha)	% of NCA
Coastal and flood plain grazing marsh	4,732	13
Reedbeds	4,435*	12
Coastal vegetated shingle	1,961	5
Coastal sand dunes	243	1
Lowland calcareous grassland	97	<1
Lowland heathland	32	<1
Lowland dry acid grassland	11	<1
Lowland meadows	8	<1
Maritime cliff and slope	6	<1
Saline lagoons	6	<1
Mudflats	5	<1
Fen	3	<1

Source: Natural England (2011)

*Local knowledge indicates that the area of reedbed appears to be too high and is probably derived from counting the total area of open waterbodies with reedbed only occurring at their fringes.

Maps showing locations of priority habitats are available at

- **http://magic.defra.gov.uk/website/magic/** select 'Habitat Inventories'

7.3 Key species and assemblages of species

- Maps showing locations of priority habitats are available at: **http://magic.defra.gov.uk/website/magic/**
- Maps showing locations of S41 species are available at: **http://data.nbn.org.uk/**

8. Settlement and development patterns

8.1 Settlement pattern

Settlement predominantly consists of dispersed farmsteads with a few small villages and hamlets. The nature of the scattered settlements and the long, straight open roads linking them together reflects the piecemeal influence of the reclamation process. The pockets of higher ground provided dry sites for small settlements to develop, while the immediate marsh land was 'inned' by local inhabitants. Rye developed as a port serving the Weald where local produce could be exported to London.

Source: Romney Marshes historic characterisation, Romney Marsh Countryside Character Area description; Countryside Quality Counts (2003)

8.2 Main settlements

The main settlements in the Romney Marshes NCA are; Rye, New Romney, Lydd and Winchelsea. The total estimated population for this NCA (derived from ONS 2001 census data) is: 34,375.

Source: Romney Marshes Countryside Character Area description; Countryside Quality Counts (2003), Natural England (2012)

8.3 Local vernacular and building materials

There are some timber-framed buildings of medieval date with exposed framing but typically the framing is either clad in white painted weatherboarding or is tile hung. Brick is the predominant walling material across the area. Roofs are commonly plain clay tile.

Source: Romney Marshes historic characterisation Countryside Character Area description; Countryside Quality Counts (2003)

9. Key historic sites and features

9.1 Origin of historic features

Much of the NCA is reclaimed land and the main features are drainage ditches, many of which have their origins in medieval times. Defensive military structures are found along the coast including Camber Castle, Napoleonic Martello Towers and the Royal Military Canal at the base of the former sea cliffs. There is a defensive line making use of the Royal Military Canal, plus pill boxes and minefields constructed in the area during the Second World War. This area has a high number of isolated churches and deserted medieval village sites.

Source: Draft Historic Profile, Countryside Quality Counts, Romney Marshes Countryside Character Area Description

9.2 Designated historic assets

This NCA has the following historic designations:

- 1 Registered Park and Garden covering 5 ha
- No Registered Battlefields
- 62 Scheduled Monuments
- 928 Listed Buildings

Source: Natural England (2010)

- More information is available at the following address: www.english-heritage.org.uk/caring/heritage-at-risk/
- www.english-heritage.org.uk/professional/protection/process/national-heritage-list-for-england/

10. Recreation and access

10.1 Public access

- Four per cent of the NCA, 1,438 ha, is classified as being publically accessible.
- There are 567 km of public rights of way at a density of 1.5 km per km2.
- There are no National Trails within the Romney Marshes NCA.

Source: Natural England (2010)

The NCA has a wealth of historic buildings and structures including New Gate, at one time part of Winchelsea town walls.

The following table shows the breakdown of land which is publically accessible in perpetuity:

Access designation	Area (ha)	% of NCA
National Trust (Accessible all year)	29	<1
Common land	0	0
Country Parks	0	0
CROW Access Land (OC and RCL)	<1	<1
CROW Section 15	<1	<1
CROW Access Land (Section 16 Dedicated)	0	0
Village Greens	7	<1
Doorstep Greens	0	0
Forestry Commission Walkers Welcome Grants	26	<1
Local Nature Reserves (LNR)	332	<1
Millennium Greens	0	<1
Accessible National Nature Reserves (NNR)	1,020	3
Agri-environment Scheme Access	23	<1
Woods for People	36	<1

Sources: Natural England (2011)

Please note: Common Land refers to land included in the 1965 commons register; CROW = Countryside and Rights of Way Act 2000; OC and RCL = Open Country and Registered Common Land.

11. Experiential qualities

11.1 Tranquillity

Based on the CPRE map of tranquillity (2006) a large proportion of the NCA has high scores for tranquillity. Lowest scores for tranquillity are found along the main roads and around settlements.

Short haired bumble bee queen at Dungeness SSSI.

A breakdown of tranquillity values for this NCA are detailed in the table below:

Category of tranquillity	Score
Highest	100
Lowest	-47
Mean	17

Sources: CPRE (2006)

More information is available at the following address: **www.cpre.org.uk/what-we-do/countryside/tranquil-places/in-depth/item/1688-how-we-mapped-tranquillity**

11.2 Intrusion

The 2007 Intrusion Map (CPRE) shows the extent to which rural landscapes are 'intruded on' from urban development, noise (primarily traffic noise), and other sources of visual and auditory intrusion. This shows that disturbed land is concentrated around the coast, specifically around Dungeness and along roads. The area east of the A259 remains undisturbed. A breakdown of intrusion values for this NCA is detailed in the table below.

Intrusion category	1960s (%)	1990s (%)	2007 (%)	Percentage change (1960s-2007)
Disturbed	6	28	43	27
Undisturbed	93	70	55	-38
Urban	0	0	2	2

Sources: CPRE (2007)

Notable trends from the 1960s to 2007 are undisturbed land was reduced from almost all of the NCA in the 1960s to just over half in 2007.

- More information is available at the following address: **www.cpre.org.uk/resources/countryside/tranquil-places**

12. Data sources

- British Geological Survey (2006)
- Natural Area Profiles, Natural England (published by English Nature 1993-1998)
- Countryside Character Descriptions, Natural England (regional volumes published by Countryside Commission/Countryside Agency 1998/1999)
- Joint Character Area GIS boundaries, Natural England (data created 2001)
- National Parks and AONBs GIS boundaries, Natural England (2006)
- Heritage Coast Boundaries, Natural England (2006)
- Agricultural Census June Survey, Defra (2000,2009)
- National Forest Inventory, Forestry Commission (2011)
- Countryside Quality Counts Draft Historic Profiles, English Heritage (2004)*
- Ancient Woodland Inventory, Natural England (2003)
- Priority Habitats GIS data, Natural England (March 2011)
- Special Areas of Conservation data, Natural England (data accessed in March 2011)
- Special Protection Areas data, Natural England (data accessed in March 2011)
- Ramsar sites data, Natural England (data accessed in March 2011)
- Sites of Special Scientific Interest, Natural England (data accessed in March 2011)
- Detailed River Network, Environment Agency (2008)
- Source protection zones, Environment Agency (2005)
- Registered Common Land GIS data, Natural England (2004)
- Open Country GIS data, Natural England (2004)
- Public Rights of Way Density, Defra (2011)
- National Trails, Natural England (2006)
- National Tranquillity Mapping data, CPRE (2007)
- Intrusion map data, CPRE (2007)
- Registered Battlefields, English Heritage (2005)
- Record of Scheduled Monuments, English Heritage (2006)
- Registered Parks and Gardens, English Heritage (2006)
- World Heritage Sites, English Heritage (2006)
- Incorporates Historic Landscape Characterisation and work for preliminary Historic Farmstead Character Statements (English Heritage/Countryside Agency 2006)

Please note all figures contained within the report have been rounded to the nearest unit. For this reason proportion figures will not (in all) cases add up to 100 per cent. The convention <1 has been used to denote values less than a whole unit.

Supporting document 2: Landscape change

Recent changes and trends

Trees and woodlands

- Woodland is not a major feature of the NCA (less than 1 per cent of the total area). There is limited evidence of any recent change to the trees or woodland cover.

Boundary features

- Data suggests that the length of boundaries under agri-environment scheme management has increased from around 3 per cent in the period 1999 to 2003, to 20 per cent in 2011, the majority of which now represent ditch options and is likely to reflect the introduction of Environmental Stewardship in 2005.

Agriculture

- Between 1999 and 2003 data suggested that agricultural cover types and holdings had been more or less stable.[9]

- More recent statistics from the Agricultural Census between 2000 and 2009 indicate perhaps more change in the agricultural landscape; however these statistics need to be treated with caution due to the number of variables involved in interpreting the data. However, they indicate that there has been a small decrease in the area of grassland and uncropped land and a change in the balance of cropping with a decrease in cereals but increase in oilseeds and other arable crops. There has been a reduction in pig numbers and cattle numbers have also seen a slight increase with a small decrease in sheep numbers, although these remain the dominant grazing animal.

- In the last decade there has been a concerted effort to incorporate options throughout the farmed landscape to benefit farmland birds and other species such as bumblebees as well as to protect the extensive ditch network and its associated flora and fauna. While this has resulted in the creation of some beneficial habitats and protection of others, the productive agricultural soils mean that agri-environment scheme options do not always stack up economically for the land manager and as such the coverage of Higher Level Stewardship is not extensive.

Settlement and development

- Development proposals have continued in the last decade, the most recent is the planned extension to Lydd Airport.[10]

- While new development pressures arise, the last decade has also witnessed the start of decommissioning of Dungeness A Power Station in 2007. Dungeness B remains operational.

- The wind farm at Little Cheyne Court was constructed in 2008 consisting of 26 turbines.

- There has been no large scale residential building within the NCA in recent years, however there has been some small scale incremental development, particularly along the coast (including caravan parks, golf courses and holiday related developments).

[9] Countryside Quality Counts project, Natural England

[10] Secretary of State permission was granted in April 2013 for the extension of the runway and terminal at Lydd Airport following a public inquiry.

Semi-natural habitat

- Natural England proposed to Defra in 2012 to extend the Dungeness to Pett Level Special Protection Area (SPA) and designate a new Ramsar site. In addition to supporting internationally important populations of birds, the proposed Ramsar site also qualifies for its representative, rare or unique examples of natural or near natural wetland types and the vulnerable, endangered, or critically endangered species of threatened ecological communities associated with wetland habitats.

- The shingle habitat is particularly vulnerable to disturbance and some damage has occurred due to non consented activities.

- The focus of Higher Level Stewardship activity has occurred around Rye, Winchelsea, Pett levels and the Rother and Brede valleys and Walland Marsh, these areas tend to lend themselves to a greater diversity of scheme options as opposed to the intensively farmed core of the marsh, where margin agreements are more prevalent under Entry Level Stewardship and where the more productive agricultural soils persist.

- A project has been running to re-introduce the short-haired bumblebee to the UK and Dungeness and Romney Marshes was chosen as the initial release site. As a result of this project and the need to create suitable forage habitat, the project has been successful in creating, advising and assisting in the management of over 500 ha of flower-rich habitat within the release site.

- A comparison between the 2003 and 2012 habitat data for Kent does show changes in habitat types within the NCA but further analysis is required to determine whether these represent true changes. The outputs from

Dungeness power station.

the Assessing Regional Habitat Change (ARCH) project should be used for a review of the most recent habitat data and trends. Please note this information is only available for Kent and does not include areas of the NCA that fall into Sussex.[11]

Historic features

- 61 per cent of the farmsteads in this area retain some farmstead character but only 34 per cent retain more than 50 per cent of their historic form based on the 1900 OS mapping, making this one of the areas with the highest level of change recorded in the south-east of England.

- Within the NCA a there is a high proportion (62 per cent) of listed working farm buildings which have been converted to non-agricultural use. (The national average is 3 per cent.) It also has one of the highest percentages of listed farm buildings with visible structure failure (above 20 per cent, the national average being 8.9 per cent) in England, contrasting with the majority of south-eastern England where the rates are low.[12]

- Some of the NCA's heritage assets have benefited from investment and promotion in recent years including the Royal Military Canal where a Heritage Lottery grant enabled improved access and interpretation plus additional capital works which allowed for dredging.

Coast and rivers

- There is continued evolution of the shingle foreland as the site responds to a variety of influences including a reduction in sediment supply, coastal defence works, recycling for beach management and sea level rise.

- The ecological status of waterbodies is now monitored under the Water Framework Directive. River basin management plans cover the rivers and coast of the NCA setting out the main issues and what actions need to be taken to deal with them. This change in approach is driving actions within catchments, including the establishment of catchment partnerships and the move towards a catchment based approach.

- The Eastern Rother catchment was defined as a catchment sensitive farming (CSF) priority catchment in 2006 due to the poor quality of some surface river stretches. The aim of CSF is to provide practical solutions and targeted support to enable farmers and land managers to reduce diffuse water pollution from agriculture. Recent change, as a result of the initiative, is difficult to quantify due to the time lag before observable improvements and the need for several years' data before any change can be considered statistically significant. However, water quality is monitored across a range of representative catchments and the results confirm reductions in pollutant loads and concentrations resulting from the CSF initiative.[13]

Minerals

- Gravel extraction from the shingle has been carried out over many decades. The current extractions are those covered by long standing planning permissions. No new permissions have been granted. Restoration plans are used as an opportunity for biodiversity, geodiversity and providing accessible natural greenspace to the area.

[11] For more information on the ARCH project, visit www.archnature.eu/

[12] Romney Marshes Farmstead Character Statement, English Heritage

[13] URL: www.naturalengland.org.uk/ourwork/farming/csf/evaluation.aspx

Drivers of change

Climate change

Potential impacts include:

- Increased evaporation from the open water habitats, due to higher temperatures particularly the gravel pits, which could lower the level of the shingle aquifer, impacting on water resources and fauna and flora, particularly the rare shingle vegetation. In addition, pressure upon the water supply due to summer drought could be exacerbated by increased demand for abstraction.
- The shingle habitat still retains areas of intact parallel ridges with characteristic zonation of vegetation. Changes to flood frequency could have an effect on the vegetated shingle habitat and geomorphological structures.
- Changing rainfall patterns combined with sea level rise could result in increased flood risk due to increased peak river flows and duration of tide locking.
- Salt marsh and mudflats will be forced landwards as sea levels rise but their migration will be inhibited by the presence of development immediately behind the sea wall, resulting in coastal squeeze and fragmentation of inter-tidal habitats.
- Flood risk is likely to increase as climate change increases the magnitude and frequency of flood events.
- Changes in the climate and location of the NCA may see new species colonising from Europe and some northward migration of indigenous species.
- There may be deterioration in habitats due to summer drought, affecting reedbeds, shingle, open water habitats and grazing marsh with increased risk of saline intrusion into freshwater habitats.
- Some species may be particularly vulnerable to changes in climate or sea level rise, including the Sussex emerald moth which is at is most northern extreme of its range in Europe.
- Marsh and shingle habitats are vulnerable to invasion by non-native species, posing a risk to native fauna and flora. This is exacerbated by the good connectivity of the extensive ditch network where invasive species may find it easy to spread. Shingle habitats are globally scarce.

Other key drivers

- Development pressure is a likely driver and where development is permitted it will be important to maximise opportunities for green infrastructure and habitat enhancements as part of the proposal. Well planned green infrastructure areas can help mitigate climate change and provide other environmental, economic and societal benefits.

- Development pressures from industry could be greater than those from housing but with residential small-scale changes adding up along the coast.

- Increased development may increase recreational activities on sensitive and vulnerable sites and habitats. An integrated approach to recreation management will be required especially to mitigate threats to key biodiversity and geodiversity sites including European sites. In addition, increased pressure for recreational facilities such as golf courses and watersports may impact on the rural character and tranquillity of the landscape.

- There is likely to be continued demand for gravel extraction. Appropriate restoration of gravel pits is essential to maximise their geological, environmental and amenity potential.

- New markets, changing climate and increased pressure for food production in the future, as a result of a national drive for greater self-sufficiency in food may have an effect on existing agricultural practices and land use.

- The Natural Environment White Paper 2011 promotes working at a landscape scale to establish a coherent and resilient ecological network, capable of adapting to environmental change and halting losses in biodiversity. Increasing focus on connectivity and resilience is likely to inform landscape-scale projects throughout the NCA and could be used to drive improvements in quality and extent of semi-natural habitats.

- There is likely to be sustained pressure from tourism and recreation. There will need to be a balance between maximising income from tourism and protecting the natural assets of the NCA, ensuring maintenance of the ecology of the shingle ridges, sand dunes and other sensitive habitats, prone to erosion.

- Future water resource issues are likely to have an impact on the NCA, particularly water availability. It will be important to work in partnership and across sectors to help safeguard the water resources. Implementation of the Water Framework Directive should improve the ecological status or potential of the NCA's rivers and quality of groundwater. It is a key driver in delivery of an improved water environment.

- The Ministry of Defence are key landowners within the NCA with large areas of the shingle beach system occupied by ranges at Lydd and Hythe. The risk from invasive species is particularly high within this NCA on account of the openness of the shingle habitat and the extensive ditch network. The spread of non–native garden species from properties on the shingle is a particular threat.

- Energy security may have significant impacts on the NCA. Currently Dungeness Power Station and its associated infrastructure including power lines are significant features of the NCA's landscape and economy. A requirement for increasing renewable energy generation could result in pressure for wind farm proposals (extensions and new) and solar farms. There may also be increased pressure for biomass crops.

Supporting document 3: Analysis supporting Statements of Environmental Opportunity

The following analysis section focuses on a selection of the key provisioning, regulating and cultural ecosystem goods and services for this NCA. These are underpinned by supporting services such as photosynthesis, nutrient cycling, soil formation and evapo-transpiration. Supporting services perform an essential role in ensuring the availability of all ecosystem services.

Biodiversity and geodiversity are crucial in supporting the full range of ecosystem services provided by this landscape. Wildlife and geologically-rich landscapes are also of cultural value and are included in this section of the analysis. This analysis shows the projected impact of Statements of Environmental Opportunity on the value of nominated ecosystem services within this landscape.

Camber Castle, a Henrician fort, is one of many fortifications built over the centuries to protect the coast.

Statement of Environmental Opportunity	Ecosystem Service																		
	Food provision	Timber provision	Water availability	Genetic diversity	Biomass provision	Climate regulation	Regulating water quality	Regulating water flow	Regulating soil quality	Regulating soil erosion	Pollination	Pest regulation	Regulating coastal erosion	Sense of place/ Inspiration	Sense of history	Tranquillity	Recreation	Biodiversity	Geodiversity
SEO 1: Maintain and enhance the distinctive character of the remote, open, low-lying Romney Marshes landscape, including the wealth of heritage assets and the settlement character; recognise the value they provide in contributing to the understanding of the landscape and its history, local distinctiveness and sense of place; and promote knowledge and understanding of these important resources for their recreation, health and socio-economic benefits.	↔ *	↔ ***	↔ *	N/A	↔ ***	O	↗ *	↗ *	↔ *	↔ *	↔ *	O	↗ *	↑ ***	↑ ***	↑ ***	↑ ***	↑ ***	↑ ***
SEO 2: Maintain and enhance the coastal environment, including the internationally important shingle foreland at Dungeness, taking account of the dynamic nature of the coastal systems and future impacts of climate change, including flood risk management, while providing access, recreation and tourism opportunities that are sensitive to the character, habitats and species of the coastal zone.	↔ *	↔ ***	↗ *	N/A	↔ ***	↗ *	↗ *	↗ *	↗ *	↗ *	↗ *	O	↑ **	↑ **	↑ **	↗ ***	↗ *	↑ ***	↑ ***
SEO 3: Manage and enhance the distinctive agricultural landscape to secure viable and sustainable farming, while protecting heritage assets, managing soils and water resources and supporting the diversity of species that are dependent on this area. Enhance biodiversity through improved connectivity of semi-natural habitats and by creating ecological networks that are resilient to environmental change.	O	↔ ***	↗ *	N/A	↔ ***	↗ *	↑ *	↑ *	↗ **	↗ *	↔ *	↑ *	↔ *	↔ *	↑ *	↗ *	↗ *	↑ ***	↔ **
SEO 4: Protect the important water resources, including the Denge gravel aquifer, the River Rother, Brede Valley and the extensive ditch network with its associated wetlands; and manage the resources to bring about benefits for biodiversity, water quality and regulation of flooding, while safeguarding the quality and quantity of water supplies and utilising the open water network for appropriate access and recreational opportunities.	O	↔ **	↑ **	N/A	↔ ***	↗ *	↔ **	↔ **	↗ *	↗ *	↗ *	↗ *	↔ *	↑ *	↑ *	O *	↑ *	↑ ***	↔ **

Note: Arrows shown in the table above indicate anticipated impact on service delivery: ↑ = Increase ↗ = Slight Increase ↔ = No change ↘ = Slight Decrease ↓ = Decrease. Asterisks denote confidence in projection (*low **medium***high) ° symbol denotes where insufficient information on the likely impact is available.

National Importance; Regional Importance; Local Importance

Landscape attributes

Landscape attribute	Justification for selection
Lower Cretaceous Wealden and Lower Greensand rocks rise sharply to mark the line of the old sea cliffs and form a marked contrast with the flat coastal plain.	■ Physical influences have determined the structure and existence of the NCA, with the shingle beach development, the movement of the River Rother and siltation of the marsh hinterland creating the geography of the NCA that we see today. In geological terms the whole process has only taken around 5,000 years, a short amount of time when contrasted with the millions of years it took to lay down the sediments which form the adjoining Weald and Downs. ■ Eroding sea cliffs give the furthest south-easterly exposures of the Lower Hastings Beds Group as a classic type section. ■ This stretch of coast is of national and international importance for reference and has great potential for research.
Predominantly open landscape with big skies: a broad expanse of low-lying land with wide expanses of marshland.	■ The area generally has a scarcity of tree cover and is an open landscape. This openness can mean that changes in the landscape are more visually apparent.

Landscape attribute	Justification for selection
Shingle ridges and coastal habitats including Dungeness and Rye Harbour shingle cuspate foreland.	■ Dungeness and Rye Harbour comprise the largest cuspate shingle foreland in Europe and one of the few such large examples in the world. It is a unique site within a European and global context. ■ The NCA owes its existence to the growth of this feature, first as a simple beach barrier and later as a cuspate foreland leading to the siltation and subsequent drainage of the shallow bay between Dungeness and the ancient shoreline. ■ The shingle beaches offer opportunities for access and recreation which can be a source of conflict if not appropriately managed due to the sensitivity of the habitat. ■ The shingle foreland is composed of several hundred storm beaches, in several groups which record the location and shape of the foreland at each stage of its formation. Evolution of the shingle foreland has provided much research and education about coastal changes in southern England, contributing to our understanding of geomorphological processes. ■ The continuing evolution of the shingle cuspate foreland is of great geomorphological interest. The site is responding to a variety of influences including the reduction in sediment supply, coastal defence works, shingle recycling, training walls at Rye Harbour and sea level rise, however despite these influences the site continues to evolve, understanding this ongoing evolution, including comparison with historic changes and the influence of human activity, is of interest to many. ■ The geomorphology and wildlife of the shingle beaches are of international importance, with several unique types of vegetation patterns. Zonation of specialist shingle vegetation, including maritime communities, established lichen-rich grassland, scrub and wetland habitats. ■ Numerous rare and scarce plant species and invertebrates associated with the shingle, including stinking hawksbeard, least lettuce, sea heath, sea pea, red hemp nettle, Nottingham catchfly, lichens, Sussex emerald moth, scarce chocolate tip, jumping spider and leaf hopper. Some species such as the scarce chocolate tip, which are otherwise restricted to the continent, have managed to become established here. ■ Proximity of the shingle beaches to the continent is important. The area is famous as an observation point for migratory birds (including Bewick's swan, gadwalls and wintering smew). Dungeness is considered one of the most important sites in south- east England for breeding colonies of gulls and terns. ■ Shingle habitat is an extremely rare and finite habitat and at threat. Dungeness holds more than 50 per cent of the UK's resource.

Landscape attribute	Justification for selection
Sand dunes at Camber Sands, Romney Warren and Greatstone Dunes, plus areas of mud and sand flats.	■ The sand dune systems at Camber, Romney Warren and Greatstone represent varying structural types of sand dune and sand dune formation associated with the shingle structures of Dungeness and Rye Harbour and with a range of dune vegetation types, from mobile fore-dunes, through fixed dunes to dune grassland and some dune scrub. ■ Although Camber Sands and Romney Warren are 15 km apart, they have the same origin; they developed at the mouth of the River Rother before (Romney Warren) and after (Camber sands) it altered its course. ■ Rare and scarce plant species include lizard orchid, bulbous meadow grass and sand catchfly plus specialist sand dune invertebrates including rare click beetle. Also noteworthy is the range of bees, wasps and ants including the spider–hunting wasp. ■ Romney Warren is an example of a ness/foreland dune developed on shores with a sediment supply from two directions which is gradually developing seawards. Much of the outer dune zone has been converted to residential development and a golf course and sea defences in the shape of groynes are present to counteract the actively retreating coastal sector between Romney Warren and Hythe. ■ The extensive mud and sand flats at Romney Sands, Lade Sands and from Lydd Ranges to Cliff end support a range of benthic communities, which in turn are an important feeding resource for birds and fish.
Salt marsh along the intertidal stretch of the River Rother and Rye Harbour Nature Reserve.	■ Salt marsh habitat would have once been extensive but is now restricted to a small strip along the River Rother and its estuary. The salt marshes show a complete succession in vegetation. ■ The salt marshes support nationally rare and nationally scarce species including the vulnerable sea barley, sea heath, Borrer's salt marsh grass, stiff salt marsh grass, sea purslane and sea aster. ■ The salt marsh communities are an integral part of the functioning dynamic estuarine system, providing nutrients for mudflats and sand flats as well as roosting areas for water birds. Salt marsh is important for carbon sequestration and for its value in natural flood defence.

Landscape attribute	Justification for selection
Mosaic of pasture and arable land use with a dense network of intersecting ditches and remaining areas of traditional grazing marsh.	■ The area of grazing marsh habitat is much reduced from its former extent and remaining areas are important for the biodiversity they support and cultural links with past management of the marsh. The largest proportion of traditional grazing marsh is found on Walland Marsh. ■ Aquatic and bankside flora of the intersecting ditches and sewers and associated invertebrate fauna are very rich. Species include; sharp leaved pondweed, marsh mallow, greater water parsnip, divided sedge and rootless duckweed. Rare and scarce invertebrates include medicinal leech, marsh mallow moth, great silver diving beetle and hairy dragonfly. ■ Areas of grazing marsh are particularly important for birds, both in the breeding season and in winter including breeding waterfowl of redshank, lapwing and yellow wagtail and wintering waterfowl such as Bewick's Swan, lapwing, golden plover and birds of prey including hen harrier. ■ Some of the drainage channels on the marsh are very ancient and tell the story of past reclamation of the area, forming an important part of the area's cultural heritage. ■ Extensive networks of grazing marsh ditches provide habitat for water voles. ■ Ditches are an important component of the landscape - supporting many rare species, the ditch network does provide a high level of connectivity across the landscape – while good for species movements this also puts the ditches at risk from invasive species, which may spread relatively unimpeded. ■ There is a brackish influence on some ditches nearer the sea and some inland ditches where peat deposits which leach salt, lie close to the surface. This variation adds to the diversity in flora and fauna. ■ The fertile soils support food production with some high value Grade 1 agricultural land. ■ Reedbeds support highly specialised species including bearded tit and hen harrier and are particularly notable in the Pannel Valley. ■ Although the areas of arable farmland tend to be farmed intensively, there are pockets of arable habitats which are important for farmland birds; key bird species include turtle dove, corn bunting, tree sparrow, grey partridge and skylark. ■ Enhancement of the arable landscape has been fundamental in creating flower-rich habitats to support the re-introduction program to the UK of the short-haired bumblebee.

Landscape attribute	Justification for selection
Network of open water habitats including freshwater pits, Royal Military Canal, saline lagoons, ponds and flooded gravel pits.	■ Open water habitats in addition to the dense network of ditches form an important component of the landscape adding to the overall diversity of habitat types. ■ Freshwater pits among the shingle ridges are unique in the British Isles and probably also in Europe. The origin of the pits combined with undisturbed nature of the habitats gives these waterbodies considerable palaeolimnological (reconstructing the ancient environment of inland waters) and geological significance. The pits have undergone natural colonisation by vegetation and show succession from open water through marsh to fen or carr. The main wetland habitats present include sedge reedswamp and grey willow carr. ■ Extensive areas of open water have been created by gravel extraction and add to the open water and geodiversity interest. Larger open water features support wintering wildfowl including Bewick's swan, gadwall, shoveler and pochard, and breeding waterfowl including cormorant and sandwich tern. The variety of sizes, ages, depths, shallow margins and vegetation, provide important habitat for birdlife, plants and mammals. ■ Invertebrates including great crested newt populations and medicinal leeches, along with a diverse range of plant species thrive in open-water habitats. ■ Open water supports recreational activities, as seen at Lydd. ■ The Royal Military Canal, while an important heritage feature in its own right, also supports a wealth or flora and fauna and is a critical component of the irrigation and drainage network of the marsh.
Heritage assets including the defensive Martello towers along the coast, the Royal Military Canal and the Dymchurch Redoubt all relict features of the Napoleonic wars. Churches, prehistoric remains, Camber Castle and wealth of Roman, Saxon and Medieval finds.	■ The heritage assets of the NCA offer good opportunities for recreation and education. ■ The Dymchurch Redoubt and Martello towers were built in the early 19th century to defend the south coast against invasion during the Napoleonic wars. ■ Churches are important and well known features of the landscape, mainly of Norman and medieval origin built on the back of a thriving sheep and wool industry. ■ Surviving field barns, sheep folds and 'looker's huts' for shepherds are an important reminder of the importance of sheep in the history of the area and are a highly distinctive feature.[14] ■ The Royal Military Canal is an important part of England's defensive history - the third longest defensive monument in the British Isles.

[14] Romney Marsh Farmstead Character Statement, English Heritage

Landscape attribute	Justification for selection
A feeling of tranquillity and remoteness particularly around Walland Marsh and Dungeness.	■ According to CPRE data from 2007, 55 per cent of the NCA is considered undisturbed and is an important area for tranquillity in the south-east of England. ■ Actual and perceived tranquillity is an important part of the Romney Marshes, especially given the context of surrounding landscapes and development pressures. ■ Tranquillity may be threatened by future developments and urban expansion surrounding the NCA. ■ Ministry of Defence ranges are found near Lydd and near Hythe and are a prominent part of the landscape. Firing can often be heard across the marshes.
River valleys of the Rother and Brede.	■ The rivers and their valleys have a rich heritage and have played a critical role in evolution of the landscape we see today. ■ They support a range of wildlife and act as key corridors for the movement of species, out from the core of the Romney Marshes into the Weald. ■ The Eastern Rother catchment was designated a catchment sensitive farming priority catchment in 2006 due to the poor quality of some river stretches.
Coastal towns including New Romney, Lydd and Rye and Winchelsea Cinque Ports and dispersed settlement pattern of small villages and scattered farmsteads.	■ The coastal towns have a distinct sense of history and an important built heritage. ■ Rye is an important tourist destination within the NCA and has strong heritage associations being a bastion against invasion on the Channel coast. ■ These host a distinctive local vernacular with the use of weatherboarding and hung tiles. Brick is the predominant walling material across the area.

Landscape opportunities

- Maintain and enhance the coastal habitats of the NCA, including the shingle habitats, sand dunes, salt marsh, mud and sand flats, saline lagoons and freshwater pits, working with local communities to raise awareness of the links between a healthy functioning coastal ecosystem and the role of these habitats in flood risk management and the local economy.

- Enhance the landscape's local distinctiveness with its open grazing marsh, diverse coastline, mixed agriculture and coastal settlements, conserving the area's cultural heritage and distinct sense of place.

- Protect and manage the rich geodiversity of the NCA, particularly the distinctive coastline of international importance and inland exposures. Encourage increased opportunities for education and research and raising awareness of the importance of geomorphological processes and their role in the development of the landscape over time and the interrelationships between geomorphology, landscape, habitats and species.

- Conserve the open, tranquil and special character of the Romney Marshes, conserving the dispersed settlement pattern of small villages and scattered farmsteads. Integrate any development into its landscape setting, reinforcing local distinctiveness and sense of place through the use of traditional vernacular building and maintaining the big skies and open landscape.

- Manage recreational pressures on vulnerable habitats, particularly the shingle but also the sand dunes, especially where they threaten the ecological integrity of sites along the coast. Work with local communities to increase awareness and understanding of the vulnerability of habitats to inappropriate activities and seek to work in partnership to develop a shared vision and strategy for managing visitor pressures while allowing visitors to enjoy and appreciate the unique wildlife of the area.

- Protect, conserve and enhance the rich built heritage assets of the NCA, including historic churches, the Royal Military Canal and the built heritage of the coastal towns, promoting these assets and maximising their opportunities for linking locals and tourists to the heritage of the area, encouraging sustainable tourism which could result in socio-economic benefits for communities in and around the marsh.

- Managing and significantly enhancing the rivers of the Rother and Brede and their associated wetland habitats, including through the expansion of flood plain habitats to help manage river flooding and through restoration and significant re-linking of wetland valley habitats including lowland meadows, reedbeds and flood plain grazing marsh, providing benefits for biodiversity, geodiversity, regulation of river flooding and water quality.

- Manage and enhance the agricultural landscape, including the dense network of drainage ditches set among a mosaic of pasture and arable. While recognising the value of high grade agricultural soils for food production, seek to maximise opportunities where they arise for targeted habitat restoration to strengthen the overall habitat network and create links between core areas.

- Where arable land predominates, seek to continue to support the integration of a range of land management options which fit with the farming business but also deliver benefits for farmland birds, particularly tree sparrow and rare plants and species including rare bumblebees, benefiting biodiversity and pollination services.

- Protect and appropriately manage the remaining areas of traditional grazing marsh and associated relict features, reinforcing the links to past management of the marshes and maintaining core areas of habitat important for wildlife.

- Plan for a landscape-scale approach which uses evidence to identify the best opportunities for linking, expanding and restoring habitats to create a robust, interlinked wildlife network with enhanced adaptation to climate change.

- Seek opportunities for the enhanced restoration of gravel extraction sites to create areas of high biodiversity and geodiversity value that contribute and complement the existing mosaic of habitats and bring about a range of benefits for landscape, wildlife and recreation, promoting fringing habitats and greater habitat heterogeneity within the flooded gravel pits.

- Enhance and manage the range of open water features including the ditches, Royal Military Canal, pools and gravel pits to enhance their wildlife interest and their role in overall habitat connectivity for the rare plant and animal species that they support, ensuring appropriate management of water levels and in channel vegetation.

- Conserve the historic settlement character across the area, with its dispersed farmsteads and small villages. Protect the local vernacular and ensure any new development contributes to the character of the NCA.

Ecosystem service analysis

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Food provision	Pasture Arable Fertile productive soils supporting high-quality agricultural land	A mixture of livestock and arable farming. Intensive agriculture typifies a large part of this area. Sheep farming predominates over cattle (2009 – cattle 4,823 and sheep 93,161). Romney salt marsh lamb is branded and sold locally. The area is renowned for its associations with the Romney breed of sheep although these have declined in number.	Regional	The highly productive soils mean this area is likely to continue to be farmed intensively with changes driven by agricultural markets. Sheep grazing is closely linked to many of the cultural aspects of the area; sense of place, biodiversity, sense of history and heritage assets. Because of the high-quality soils, the NCA is likely to have a high proportion of Best Most Versatile Land, land most useful for agriculture. The loss of more than 20 ha of this type of land to new development should be avoided.	Work with the farming community to ensure good soil and nutrient management to secure a sustainable future for farming, protecting environmental features within the NCA, and supporting the supply of other ecosystem services. Promote local food initiatives and brands, especially where it provides links with biodiversity and landscape character, benefiting sense of place. There is a need to maintain and support the farming community to maintain a mixed farm landscape and balance of arable and permanent pasture grazed by sheep – helping to ensure that the cultural associations with grazing marsh continue and it remains a component of the landscape. Identify opportunities to for land management measures which positively influence water quality and reduce diffuse pollution, while maintaining viable levels of productivity. Encourage local planning authorities and developers to consider avoiding Best Most Versatile Land when considering any development.	**Food provision** **Sense of place / inspiration** **Sense of history** **Regulating soil quality** **Regulating water quality**
Timber provision	Small blocks of woodland on the higher ground	There is a very little existing woodland cover within the NCA (less than 1 per cent) offering limited potential for the provision of timber.	Local	The open and expansive marshes do not lend themselves to woodland expansion as this would contrast with the existing open landscape character, valued for long, wide views and big skies. Better management of the clusters of woodland on higher ground may be beneficial but is not of a scale which would yield any significant timber.	Retain the predominantly open and windswept marshes while appropriately managing existing small woodland blocks on the higher ground.	**Timber provision** **Sense of place / inspiration**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Water availability	Gravel aquifer Main rivers Complex drainage system of Internal Drainage Board sewers and private ditches	The NCA contains a shingle aquifer at Dungeness (Denge gravel aquifer) along the coastal edge, which supports an important local public water supply and is purely rain fed. The current quantitative quality is poor with no water available for abstraction. It is closely monitored for saline intrusion and has specific drought restrictions.[15] The main rivers that fall within the NCA are the Rother and further south the Brede, as well as a small section of the Tillingham. These occur in the west and rise in the adjacent High Weald NCA. The Rother has a status of water not available for licensing. Any new abstractions from the River Brede would need to be assessed to protect the ecological importance and existing rights. The Tillingham has a status of water available (sub catchment not heavily drawn on for abstraction). The area is dissected by drainage ditches and water levels are managed to protect the marshes from flooding and to assist in sustaining arable farming, and wet fencing. Major drains are managed by the Environment Agency. Less major ones are maintained by the Romney Marshes Area Internal Drainage Board, which operates across the Romney Marshes area and minor ditches by local farmers. The marshes are bounded by the Royal Military Canal, which is key in the operation of the marsh summer feed system and for drainage and flood defence purposes. Walland Marsh is dependent on direct rainfall and water from the Royal Military Canal and has a status of 'no water available for licensing'. Due to the dependency the Walland Marsh has on water transferred into the Royal Military Canal from the Rother, flows upstream in the Rother catchment (and outside of the NCA) need to be protected.[16]	Local	The south-east of England is under increasing pressures from climate change and population growth and as a result demand for water is likely to increase. It will therefore become increasingly important to manage the water resources of the NCA sustainably to meet the demands of agriculture, industry and public water supply. Although only a small portion of the NCA is considered to be urban (2 per cent according to data from the CPRE), urban areas have a significant impact on water usage. The importance and sensitivity of the area's habitats such as the Dungeness SAC together with the significance of the NCA for agriculture mean that water efficiency measures will be important for any new development. The marshes that cover most of the area are important for agriculture. The largest concentration of non-public water supply abstraction pressure is seen in the marshes for agricultural purposes. The marshes also consist of wetlands of international importance. The wetland habitats and species are sensitive to changes in water level and river flows and hence protection of water resources is fundamental for biodiversity.[17] The Denge gravel aquifer lies below the largest shingle system in Europe, the distinctive internationally designated flora and fauna is influenced by the groundwater levels. A balance between abstractions and recharge is important not only to safeguard groundwater levels but also to limit saline intrusion into the aquifer, which can affect the viability of the aquifer as a source of public water supply. In the past increased abstraction of water for public supply combined with other factors, such as evaporation from the new gravel pits, has lowered the shingle aquifer and damaged some of the rare vegetation types.[18]	Abstractions need to be carefully monitored to safeguard the water supply and protect the internationally designated sites. Implementation of plans and strategies which consider water level requirements holistically and for a range of activities (agriculture, flood risk and conservation) and how these can be reconciled and integrated, allowing for the continued flow of water and flood risk management while protecting, enhancing and managing the ditches in a way that is sensitive to the ditch flora and fauna. Promote water efficiency in any future building design and development and encourage the use of sustainable urban drainage systems to protect designated sites and agriculture.	**Water availability** **Biodiversity** **Sense of place / inspiration** **Regulating water quality**

[15, 16, 17 & 18] Rother Abstraction Licensing Strategy, Environment Agency (2013)

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Genetic diversity	N/A	N/A		N/A	N/A	**N/A**
Biomass energy	Small woodlands associated with the higher ground	There is a very little existing woodland cover within the NCA (0.85 per cent) offering very limited potential for the provision of wood fuel biomass. The potential yield for short rotation coppice is identified as medium throughout most of the NCA, although it is low along the coast. The potential yield for miscanthus is high throughout the area. However, despite this potential, biomass crops do not form part of the current landscape character and hence any growth of biomass crops would need to be carefully considered.[19]	Local	There is very limited scope for an increase in biomass energy given the low woodland coverage and the open and windswept landscape character which is a limiting factor in the location of new biomass or woodland plantings. Versatile fertile soils, a moderate climate and high water levels promote vigorous vegetative growth making the area suitable for biomass production in the form of either miscanthus or short rotation coppice. However, competing demands such as agriculture, nature conservation and archaeological deposits limit the potential for production.	Utilise any opportunities for improved woodland management on the higher ground which could provide a source of local biomass and benefit biodiversity.	**Biomass energy** **Sense of place / inspiration** **Biodiversity**
Climate regulation	Loamy/clayey soils of coastal flats Estuaries, wetlands, grazing marsh and permanent pasture	Variants of the loamy/clayey soils of coastal flats (the main soil type, covering around three quarters of the NCA) may have more organic-rich topsoils, while some of the flood plain soil types are peaty at depth or include small areas of peaty soils. Carbon stores will be locked in the wetlands (flood plain grazing marsh) and permanent pastures.	Local	Areas of semi-natural grassland and wetlands hold locally significant amounts of carbon in their soils and hence it is beneficial to maintain these areas of permanent grassland. Where arable farming is prevalent there may be potential for carbon storage by increasing organic matter inputs, employing minimum tillage techniques and retaining buffer strips as an example. Conversion to grazing marsh from arable could be of benefit for climate regulation as well as for sense of place and biodiversity but this is unlikely to be economical unless market drivers change in future and arable farming becomes less attractive.	Realise opportunities to further protect and expand areas of flood plain and coastal grazing marsh, reedbeds, salt marsh and mudflats. Encourage farmers and land managers to adopt good soil management practices including enhancing organic matter content to improve carbon storage, soil quality and long-term soil resilience to climate change. Restore, expand and relink the wetland habitats of the river valleys to provide potential carbon stores. Ensure that realignment initiatives are managed to their full potential to develop into habitats that sequester and store carbon, benefit biodiversity interest and enhance the landscape of the coast. Support management measures that result in the maintenance and accretion of tidal salt marsh with its high carbon sequestration rates and low methane emissions.	**Climate regulation** **Regulating water quality** **Regulating soil quality** **Biodiversity**

[19] For information on the potential landscape impacts of the biomass plantings within the NCA, refer to the tables on the Natural England website www.naturalengland.org.uk/ourwork/farming/funding/ecs/sitings/areas/123.aspx

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Regulating water quality	Gravel aquifer Rivers, sewers and ditches Semi-natural habitats	The chemical quality of groundwater throughout the area is currently classed as poor due to saline intrusions. As water is abstracted seawater can be drawn in.[20] The Eastern Rother and Walland Marsh form part of a Defra priority catchment which was identified in 2006. At this time it was identified that there were excessive levels of nutrients (phosphorous, nitrates and sheep-dip) and sediment within the catchment. Overall the majority of rivers and watercourses within the NCA are classed as having moderate ecological status or potential, although the small section of the Tillingham which falls within the NCA is of good status. The ecological potential for the estuarine waters of the River Rother is classed as being of moderate potential.[21]	Local	Water quality is important for sustaining the quality of habitats and their associated species related to the extensive network of ditches that intersect the NCA, the biodiversity of the main river corridors and also that of the vegetated shingle which can be affected by the water quality of the aquifer. Groundwater from the freshwater pits at Dungeness is abstracted for water supply. The wells are closed if saline intrusion is detected. Maintaining water quality is important for the public water supply and improved water quality will help reduce the costs of end of pipe solutions. River water quality of the Brede and Rother is influenced by other upper catchment NCAs, and hence important to work across NCA boundaries and at the catchment scale to improve water quality within the NCA. Measures are being promoted within the Eastern Rother and Walland Marsh priority catchment to reduce mobilisation and transportation of sediment and nutrients, improve management of water within farmyards and improve treatment of pesticide washings.[22] The extensive network of drainage ditches surrounding farmland means that diffuse pollution from agriculture can quickly enter the open water network, especially where soils have poor infiltration, increasing potential for water run-off.	Promote the principles of catchment sensitive farming across the NCA to reduce the impacts of diffuse pollution from agriculture and to protect and enhance the surface waters of the NCA, including through the promotion of options such as buffer strips to reduce sediment and nutrient run-off into adjacent watercourses. Explore opportunities for the expansion of semi-natural wetland habitats such as reedbeds to act as nutrient sinks. Seek opportunities to work in partnership and across sectors to deliver Water Framework Directive objectives and support catchment based initiatives. Promote good quality water environments, important for social, economic and quality of life benefits. Encourage awareness of water pathways and receptors especially for any planned development especially in respect of the Dungeness SAC and Dungeness to Pett Level SPA.	**Regulating water quality** **Biodiversity** **Regulating soil erosion** **Regulating soil quality**

[20 & 21] River Basin Management Plan: South East River Basin District, Environment Agency (2009) (accessed October 2013; URL: www.environment-agency.gov.uk/research/planning/124978.aspx)

[22] Capital Grant Scheme – Funding Priority Statement 2013/2014, Eastern Rother and Walland Marsh

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Regulating water flow	Semi-natural habitats Network of ditches Flood plain and coastal grazing marsh	The flood risk within the NCA is complex, with much of the low lying areas of the marshes (Romney and Walland Marshes policy unit) at risk from both river and coastal flooding. An extensive network of drains and management of water levels in the Royal Military Canal control water movement within the Marshes, where the current level of flood risk from river flooding is considered relatively low. Flood risk in Rye is high with the confluence of the rivers Rother, Brede and Tillingham. While flooding is mainly caused by rivers tide locking effects can be significant and will increase with rising sea levels.[23]	Regional	The effects of flooding are likely to be influenced in future by a whole range of issues including climate change. It is therefore important to understand and plan for potential changes to flood risk within the catchment and how these can best be managed. Actions which help to store water or manage run-off in locations that provide overall flood risk reduction or environmental benefits would be beneficial, also creating wetland habitats which can increase water storage within the flood plain. This may have added benefits for reconnecting and enhancing existing habitats for the benefit of biodiversity and landscape. The habitats and species of the NCA (including designated habitats and protected species) are influenced by changes in water flow; hence management of water flow is critical for not only managing flood risk but also maintaining the biodiversity interest of the watercourses. These differing requirements are not always compatible.	Work in partnership to implement the water Level management plans to help manage flood risk and biodiversity needs, conserving and enhancing the SSSI, pSPA, SAC and pRamsar sites and exploring opportunities to create freshwater habitat when managing flood risk. As per the Rother And Romney Catchment Flood Management Plan, explore the commissioning of further research which helps to further understanding of the interactions between coastal and river flooding. While most of the NCA is rural, any new or expansion to existing developments within and in the wider catchments should be appropriately designed to ensure no increase in run-off and hence flood risk.	**Regulating water flow** **Biodiversity**

[23] Rother and Romney Catchment Flood Management Plan, Summary Report, Environment Agency (December 2009) (accessed October 2013; URL: http://a0768b4a8a31e106d8b0-50dc802554eb38a24458b98ff72d550b.r19.cf3.rackcdn.com/geso1008bowi-e-e.pdf)

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Regulating soil quality	Soils – fertile soils formed from alluvial deposits Permanent grassland and semi-natural habitats	Five main soilscape types have been identified in this NCA: ■ Loamy and clayey soils of coastal flats with naturally high groundwater which cover nearly three-quarters of the NCA; ■ Smaller areas of sand dune soils; ■ Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils; ■ Slightly acid loamy and clayey soils with impeded drainage ■ Loamy and clayey flood plain soils with naturally high groundwater. There is a high proportion of Grade 1 and 2 agricultural land.	Regional	The loamy and clayey soils of coastal flats with naturally high groundwater have a high agricultural potential, but this is dependent on the continued ability to pump drain and protect the soils from sea flooding/saline intrusion. These soils are increasingly under threat of loss from sea level rise. Where there is a high silt/fine sand content, these soils may also suffer from compaction and/or capping, an issue that also affects the slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils. In turn this may lead to increasingly poor water infiltration. Sand dune soils are valuable for the control of sea flooding but under threat from sea level rise.	Work with land managers to protect and improve soil quality and management. Protect the sustainability of future yields, while benefiting other regulatory services such as water availability, water quality and avoidance of soil erosion through improving organic matter levels, soil structure and water infiltration. Encourage where appropriate the extension and linking of semi-natural habitats particularly grassland to capture run-off and reduce the problems of pollution. Ensure careful management of the sand dune soils to retain sediment supply. Where necessary consider changes in management which will aid the stabilisation of the soils.	**Regulating soil quality** **Food provision** **Biodiversity** **Regulating water quality** **Regulating water flow**
Regulating soil erosion	Loamy and clayey soils of coastal flats with naturally high groundwater Sand dune soils Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils Slightly acid loamy and clayey soils with impeded drainage	Soil erosion risk varies across the NCA although the majority of soil types (with the exception of sand dune soils) are considered to have a low risk of erosion and the predominantly low lying flat land also helps limit erosion risk. However, the slightly acid loamy/clayey soils can be prone to compaction and capping/ slaking, if accessed when wet, leading to an increased risk of soil erosion by surface water run-off. The River Rother and Walland Marsh form part of a Defra priority catchment due in part to sediment run-off from agricultural land affecting the area's rivers.	Regional	Where soils have clay sub-surface layers they tend to have poor water infiltration with potential for water run-off. The complex network of drains surrounding farmland means there is a risk of diffuse pollution from poor infiltration and run-off into the water network.	Work with land managers to minimise/ reduce negative impacts of soil structural deterioration by careful planning of cultivations/machinery use, sensitive grazing to avoid compaction, poaching or puddling soils.	**Regulating soil erosion** **Regulating soil quality** **Climate regulation** **Regulating water quality** **Regulating water flow**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Pollination	Semi-natural habitats Pastoral farmland Edge habitats particularly arable field margins and ditch corridors	There has been a decline in semi-natural habitats and the change in agricultural production systems has reduced the area of nectar sources for pollinating insects, with a significant decline in pollinator numbers over the last 30 years. Remaining areas of semi natural habitats within the NCA are important as nectar sources. The short-haired bumblebee re-introduction to the UK has taken place in Dungeness and Romney Marsh. The creation of flower-rich habitat has been an essential element of the re-introduction.	National	Pollinator services are important in this NCA given the mixed farmed landscape and production of insect dependent crops. Grazing marsh and other grassland, arable field margins and ditch edges can all provide valuable nectar sources for pollinating insects, especially where increased sward diversity is encouraged. The re-introduction program of the short-haired bumblebee is important for pollination not only within the NCA but across England, as the bumblebees pollinate many important agricultural crops which are critical to sustaining our farming economy in the longer term. The project has encouraged improvements to surrounding farmland including the creation of about 900 ha of nectar- and flower-rich margins to support the bumblebee reintroduction. A welcome result has been the return of other bumblebee species to the area.	Protect, expand and improve the condition of areas of flower-rich habitat in the pastoral and arable landscape, increasing the availability of nectar sources. In particular support ongoing initiatives such as the short-haired bumblebee re-introduction which encourage landowners in creating important corridors and habitat mosaics of flower-rich habitat for pollinator species. Seek opportunities to raise the profile of pollinators through public education and outreach.	**Pollination** **Food provision** **Biodiversity** **Sense of place / inspiration**
Pest regulation	Existing semi-natural habitats Agricultural field margins	The mixed farming nature of the area and semi-natural habitats will help to support species that will aid pest regulation.	Local	Increasing the diversity in species and structure of field margins will increase the ability of these areas to support populations of pest-regulating species such as invertebrates, birds and mammals. Improving the condition of, and expanding and linking areas of semi-natural habitat, will help to provide a network of habitats which support sustainable populations of pest-regulating species and enable them to move through the landscape. Achieving this may be limited by the high productivity of soils and economic losses of taking land out of production.	Explore opportunities to increase and appropriately manage semi-natural habitats to increase diversity of structure, including through the creation of field margins to encourage a network of habitats for pest-regulating species close to areas of agricultural production.	**Pest regulation** **Pollination** **Biodiversity** **Food production**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Regulating coastal erosion and flooding	Coast Coastal transitional habitats	This is a complex shoreline and the Folkestone to Cliff End flood and erosion management strategy should be consulted for more detailed information on the proposed policies and the context within which they sit. The policy for the vast majority of the coastline within the NCA is to 'Hold the Line' and improve the existing sea defences.[24] The improvements will provide protection to 16,500 homes, businesses, two MoD ranges and the nuclear power station across Romney Marsh.	National	Natural and artificial coastal defences are critical in maintaining the existence of the NCA and preserving its farmland, settlements and nationally and internationally designated habitats. The marshes backing the NCA's northern coastline are very low-lying, such that any inundation could potentially affect a great expanse of land. As such, the benefits of continuing to provide flood protection will include the protection of property, the conservation of internationally important wildlife sites, maintenance of amenity features (such as the light railway), maintenance of heritage features (such as Dymchurch Redoubt) and large areas of agricultural land. Dungeness Power Station is protected by a heavily managed shingle bund, crucial for health and safety reasons. A major impact of the policy of 'Hold the Line' where artificial defences are required such as at Dymchurch and Romney is the narrowing of the sandy intertidal area which will be highly susceptible to coastal squeeze under rising sea levels.	Coastal flooding should be regulated in accordance with the shoreline management plan, to reduce flood risk and protection of the environmental assets. Encourage the natural development, adaptation and regeneration of coastal habitats including sand dunes and shingle beaches, maintaining their flood risk management, environmental and recreational value, while allowing the shoreline to function dynamically. Encourage research which furthers our understanding of coastal processes and risk management to enable well-informed management decisions in the future.	**Regulating coastal erosion and flooding** **Regulating soil erosion** **Water availability** **Biodiversity** **Recreation** **Geodiversity**

[24] Folkestone to Cliff End Flood and Erosion Management Strategy, Environment Agency (2011) (accessed October 2013; URL: http://www.environment-agency.gov.uk/homeandleisure/floods/129213.aspx

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Sense of place / inspiration	Open, windswept low-lying reclaimed marshland with extensive ditch network Dynamic and varied coastline Largest cuspate foreland in Europe Sand dunes Coastal towns and maritime associations River valleys of the Rother and Brede Open uninterrupted panoramas Romney Marsh sheep Wintering, breeding and passage birds	Sense of place is provided by the reclaimed marshland, bounded to the south by the English Channel and to the north by upstanding old sea cliffs which contrast strongly with the largest shingle beaches in Europe at Dungeness and Rye and sand dunes at Camber Sands. Centuries of drainage and improvement has led to this landscape remaining as an open area of predominantly large-scale arable fields with some smaller areas of wet pasture grazed by cattle and sheep. Traditional grazing marsh provides a vital link to the long tradition of sheep grazing on the marsh. An irregular network of linear drainage dykes, canals, channels and banks with some areas of open water and marshland reinforce the area's wetland character. Wide skies and open, uninterrupted panoramas characterise the area, with limited tree or hedgerow cover add to the strong sense of exposure and openness. In the west the High Weald AONB covers part of the NCA and includes the river valleys of the Rother and Brede and the Isle of Oxney – a testament to the natural beauty afforded to this area. A smaller area falls within the Kent Downs AONB in the east, associated with the Lympne escarpment. The nature of the landscape has inspired writers such as H.G. Wells, Henry James, Rudyard Kipling and Joseph Conrad, who have either worked on the marshes or used them as the setting for their novels, as well as artists such as Paul Nash, the photographer Fay Godwin and film director Derek Jarman.	National	The area has a strong sense of place and identity with dispersed settlements, many with churches at their heart and local vernacular adding to the distinctiveness of the area. The area continues to be a tourist and visitor destination and inspiration to artists, writers and photographers who are drawn to the unique character of the area. The last two centuries have seen significant changes in the landscape, with a shift from predominantly pasture to arable, the building of Dungeness Power Station, plus associated power lines, gravel extraction and expansion of holiday resorts along the coast. These activities have had an impact on the habitats of the NCA and continue to exert pressures on the landscape and its sense of place.	Maintain the farmed character of the landscape, especially the extensive ditch network, remaining areas of grazing marsh and the many traditions associated with a long history of sheep grazing. Protect and enhance the dynamic coastline, with the distinctive shingle beaches and sand dunes. Maintain the open landscape, dispersed historic settlement patterns and vernacular building styles and materials, protecting the rural character of the NCA from encroaching urban developments. Expanding and relinking the wetland habitats of the Rother and Brede. Explore opportunities to promote local products such as Romney sheep and Romney wool, especially where it strengthens the links between landscape character, sense of place and local produce. Conserve the heritage assets of the NCA, including those associated with maritime and military history and support heritage and education programmes which identify and promote their contribution to sense of place.	**Sense of place / inspiration** **Recreation** **Tranquillity** **Sense of history** **Biodiversity** **Geodiversity**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Sense of history	Historic environment features Historic drainage system Grazing marsh Romney Marsh breed of sheep Looker's huts Churches Ancient towns of Winchelsea and Rye	There is a wealth of heritage assets that reflects the evolution of the landscape, most evident in the area's history of piecemeal reclamation or 'inning' from coastal marshes. The present day shape of parish boundaries reflects the fact that parishes outside this area extended their boundaries to include the sheep fattening pastures of the marshes. Small isolated settlements are located on pockets of higher ground. Local vernacular creates a distinctive architectural character and includes the use of white painted weatherboard and hung tiles, while fine medieval churches are a feature of villages. Two features which are relicts from the Napoleonic wars are the defensive Martello towers and the Royal Military Canal, a prominent waterway forming an arc from Fairlight to Folkestone, as well as more recent defences constructed during the Second World War. Other historic features include old sea walls, medieval settlement sites and a high number of churches lost due to tidal inundation. Aspects of history likely to be most evident to the general public are the medieval churches, traditional vernacular and coastal defensive features, as well as Rye which is a well-known and well-visited landlocked harbour town and Winchelsea, both with strong historical associations. The Romney breed of sheep is an important part of the NCA's cultural heritage, although present day grazing by Romney Marsh sheep is much reduced in extent.	National	The NCA has a long established farming tradition and remaining areas of traditional grazing marsh, looker's huts and other relic features indicative of the past thriving sheep industry make an important contribution to sense of history. Changing agricultural markets and a move into more intensive arable from traditional grazing makes remaining pockets of historic landscape important for their contribution to sense of history and visible links to the past. Measures to secure the condition of historic features will help maintain a sense of history, in addition interpreting these assets in a context which links them with the surrounding historical landscape will have wider benefits for sense of place and support other services such as recreation. Some historical assets may be at risk from sea level rise and coastal change. The ancient towns of Winchelsea and Rye abound with heritage features and are popular visitor destinations. They help tell the story of the evolution of the NCA, from invasions and wars, silting up of ports, coastal flooding, trade, fishing and smuggling. These towns provide a wealth of information on the history of the area and the impacts of coastal change. The Romney Breed of sheep is less prevalent on the marsh than it once was with continental and cross breeds now chosen as the more commercially viable form of livestock. However, the Romney sheep breed is of genetic heritage value and has had a strong bearing on the development of the marsh.	Seek opportunities to protect, manage and enhance historic features and their settings, particularly in relation to land management and land use changes. There are opportunities to provide interpretation and educational information to develop wider public understanding of the heritage assets and what they represent, particularly their association with the development of the landscape; this will help enhance public engagement, enjoyment and understanding. Opportunities should be sought to interpret heritage features which are at risk from coastal change. Retain links with the NCA and the Romney Breed of sheep, exploring opportunities for promotion of the cultural and heritage links that the breed has with the NCA.	**Sense of history** **Sense of place / inspiration** **Recreation** **Geodiversity**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Tranquillity	Rural marsh landscape Dispersed, mainly small settlements Undeveloped coastline	According to the CPRE map of tranquillity the Romney Marshes is one of the most tranquil areas in Kent. The largest areas of tranquillity lie away from the main transport corridors (A 259, A2070, A268 and A28) and major settlements including Rye and settlements along the coastline such as St Mary's Bay, Littlestone-on-Sea, Greatstone-on-Sea and Lydd-on-Sea. A sense of tranquillity is likely to be particularly associated with the remote areas of grazing marsh and the expansive open skylines that are a distinctive feature of the area, as well as pockets along the undeveloped coastal zone. However tranquillity levels have declined significantly in recent years, with 'undisturbed' areas having decreased from 93 per cent in the 1960s to 55 per cent in 2007.	Regional	Although there has been a reduction in tranquillity levels, compared to surrounding NCAs, this area may be considered relatively tranquil, likely to reflect the predominantly rural character of the NCA and its location. Tranquillity of the area may be compromised in future by new developments, tourism, recreation commercial interests and new infrastructure.	Seek opportunities to conserve the sense of remoteness and areas of tranquillity within the NCA, maintaining the predominantly rural, distinctive open character and areas of undeveloped coastline, protecting the NCA from inappropriate development. Work in partnership to find solutions to issues arising from recreational activities which cause disturbance in tranquil areas, seeking to manage visitor pressures and encourage a reduction in car dependency to help maintain and enhance tranquillity and reduce traffic volumes, particularly on the small roads leading to Dungeness.	**Tranquillity** **Sense of place / inspiration** **Sense of history** **Recreation**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Recreation	Public rights of way network Promoted paths and routes Rye and other coastal towns, beaches and amenities	Recreation is supported by the area's 567 km rights of way network (with a density of 1.5 km per km^2), including the Saxon Shore Way, Sussex Border Path and Royal Military Canal Path, with virtually no areas of open access land (under 1 ha). Access provision will be further enhanced by the addition of the England Coast Path. Several caravan parks and camp sites occur along the coast and beside the marshes with extensive recreation and tourism developments at Camber Sands. Flooded gravel pits from gravel extraction have provided watersports opportunities. The coast offers a range of recreational opportunities including fishing, walking, water-based sports and bird watching. Nature reserves offer places for quiet enjoyment, wildlife watching and for education of the area's biodiversity, landscape and geodiversity. Rye is a major tourist attraction, with its strong maritime and military history and harbour. The Romney, Hythe and Dymchurch steam railway is claimed to be the world's smallest railway and runs from Hythe to Dungeness Point, an important recreational asset, popular among holidaymakers. Coastal towns and beaches provide recreational opportunities for locals and visitors.	Regional	There is a need to ensure that the distribution and management of visitors is sustainable, conserves and enhances the area, including the biodiversity assets while improving visitor experience, bringing about added benefits for health and wellbeing. Recreational disturbance is a significant issue on the vulnerable shingle habitats. These are highly susceptible to long-term damage from a range of activities, some linked to recreational activities such as boat mooring, trampling and inappropriate vehicular access. Promotion and enhancement of the recreational assets within the wider NCA may help to alleviate pressure on the sensitive coastal habitats by managing dispersal of activities across the area. Tourism is important in the area and opportunities could be developed to enhance people's connection with the landscape and its history, to encourage a valuing of their surroundings. Future provision of coastal access will need to be implemented sympathetically to avoid potential conflicts with the internationally designated nature conservation sites. Cycle and walking routes have been promoted across the marsh through a series of publications; there is scope to build on these existing resources. Recreational activities along the coast may have an impact on vulnerable habitats if not sustainable and undertaken in the right areas or with due concern for the vulnerable habitats.	Seek opportunities to improve sustainable access throughout the NCA, enhancing existing routes and developing multi-user paths. Sensitive interpretation may help to provide increased understanding and enjoyment for all. Ensure access balances recreational enjoyment with the protection of biodiversity, geodiversity and the historic environment. In particular increase awareness, understanding and education to inform both residents and visitors of the vulnerability of the coastal sites, particularly the shingle habitat to reduce the impacts of disturbance, particularly from inappropriate or unconsented recreational activities. Manage the natural and built assets of the NCA which draw people to the area, to ensure that they are protected and not over-exploited while still being accessible to the public. Develop opportunities to work in partnership and with local businesses in support of initiatives that help support sustainable tourism, recognising the value to the local economy that recreational visitors bring to the NCA.	**Recreation** **Sense of place / inspiration** **Sense of history** **Geodiversity**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Biodiversity	Internationally designated sites, nationally designated SSSI, National Nature Reserve, local sites and other nature reserves Semi-natural habitats Arable habitats supporting farmland birds	This NCA has over 12,800 ha of priority habitats, covering 35 per cent of the area. This includes significant areas of reedbeds, coastal and flood plain grazing marsh, coastal vegetated shingle, and sand dunes. The area contains Dungeness SAC covering 2,487 ha as well as Dungeness to Pett Level SPA (currently 1,276 ha but with a proposed SPA of 4,084 ha in progress), while around 8,000 ha (22 per cent of the NCA) is designated as SSSI. The NCA also has a proposed Ramsar covering 6,416 ha). The majority of SSSI are currently in favourable or unfavourable recovering condition. The NCA is significant for its diversity of species, many of principal importance. These include nationally rare and scarce vascular plant species, nationally important numbers of breeding, wintering and passage birds, lichens, bryophytes, invertebrates and mammals, including notably populations of water vole.	International	The combination of geology, climate and proximity to continental Europe has all had a bearing on the rich mosaic of habitats, which support many rare and internationally important wildlife species. Human influence, through changes in agriculture, commercial and recreational activities puts pressure on the biodiversity assets of the NCA, particularly the shingle habitat which is highly vulnerable to disturbance. The coastal habitats may be at risk due to the effect of climate change and associated changes in sea level rise, leading to coastal squeeze and also increased saline intrusion to freshwater systems. It will be important to implement measures which ensure the maintenance and enhancement of biodiversity and adaptation to change. Improving connectivity and permeability of the landscape for species movements will help to facilitate migration /adaptation. Invasive non-native species pose a particular threat in this NCA, given the nature of the interlinked and extensive ditch network where non –native species may easily spread relatively unimpeded.	Maintain and enhance the extent and quality of semi-natural habitats, including shingle beaches, sand dunes, salt marsh, grazing marsh and waterbodies. Designated sites should be managed and maintained in favourable condition, with buffering, extension and linking of core sites, in line with Biodiversity 2020 principles. Enhance connectivity of the habitats within the NCA extending outwards, particularly along the river corridors of the Rother and Brede valleys, the open water network and along the coastal zone. Seek opportunities to protect, enhance, buffer and connect surviving areas of flood plain grazing marsh and reedbeds, benefiting biodiversity, sense of place and history. Work with landowners to integrate sustainable land management options into the farmed landscape, particularly for the benefit of farmland birds, to protect the interest of the extensive ditch network, and to encourage pollinator habitats, benefiting biodiversity and pollination services.	**Biodiversity** **Food provision** **Regulating water quality** **Regulating water flow** **Regulating coastal erosion and flooding** **Pollination** **Climate regulation** **Geodiversity**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Geodiversity	Cuspate foreland (ness) development Exposed and buried shingle ridges Eroding and accreting coastline Natural freshwater pits among extensive shingle ridges Sand dune systems Geological SSSI Eroding cliffs	The geomorphology of the NCA is of international importance. Dungeness and Rye Harbour comprise the largest cuspate foreland in Europe. Coastal processes have formed and continue to shape a barrier of extensive shingle beaches and sand dunes across an area of intertidal mud and sand. The cuspate foreland represents around 5,000 years of coastal evolution and environmental change. The geomorphology of natural freshwater pits among extensive shingle ridges is unique in the British Isles and probably also in Europe. The area includes sand dune systems (Camber, Romney Warren and Greatstone) which represent different structural types of sand dune and sand dune formation. Within this NCA, there are four geological and mixed interest SSSI including the geomorphological SSSI of Dungeness. The other three sites are of national and international importance for their Cretaceous deposits and fossils.	International	The geodiversity of the NCA is of international importance for research and education. The geomorphology of the shingle beaches continues to be actively researched, the varied soils and shingle deposits help to explain the way in which Romney Marshes and Rye Bay were formed and how they may evolve in the future. The cultural significance of the geodiversity is particularly high, with the shingle habitats contributing towards sense of place and history and the shingle and alluvial deposits have created the landscape of the NCA. The continuing evolution of the shingle cuspate foreland is of great geomorphological interest. The site is responding to a variety of influences including the reduction in sediment supply, coastal defence works, shingle recycling, training walls at Rye Harbour and sea level rise, however despite these influences the site continues to evolve. Understanding this ongoing evolution, including comparison with historic changes and the influence of human activity, is of interest to many. The site is one of a suite of five south –west facing beach systems along the coast of the English Channel, which all show contrasting characteristics in relation to sediment supply, erosion and orientation to the dominant wave action. The presence of palaeo-environmental information from shingle deposits allows for detailed interpretation of the environmental conditions at the time of deposition and dating allows for chronology of coastal evolution to be developed. Eroding sea cliffs give the furthest south-easterly exposures of the Lower Hastings Beds Group as a classic type section. This stretch of coast is of national and international importance for reference and has great potential for research, falling within the Hastings Cliff to Pett Beach SSSI. Some of the geological sites are at risk from scrub encroachment and vegetation, which obscures exposures. These sites need to be effectively managed to maintain or achieve favourable condition.	Ensure the importance of the coast's geology and geomorphology are presented to residents and visitors, to further their understanding of the landscape and to limit damaging activities which may affect the geomorphology of the coastal habitats, particularly the shingle beaches and sand dunes. In particular seek opportunities for interpretive material which looks at the interactions of geology with soils, land use, biodiversity and the role of geodiversity in the development of landscape character. Maintain natural geomorphological processes, contributing to the regulation of coastal erosion and flooding. Manage commercial operations including gravel extraction and recreational activities, especially where they threaten the geodiversity interest of the NCA. Promote and celebrate the importance of this NCA in the development of geomorphological principles. Manage geological sites appropriately, implementing measures to ensure that vegetation does not encroach on and obscure exposures, maintaining the integrity of sites.	**Geodiversity** **Biodiversity** **Sense of place / inspiration**

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