National Character Area profile:

124. Pevensey Levels

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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.

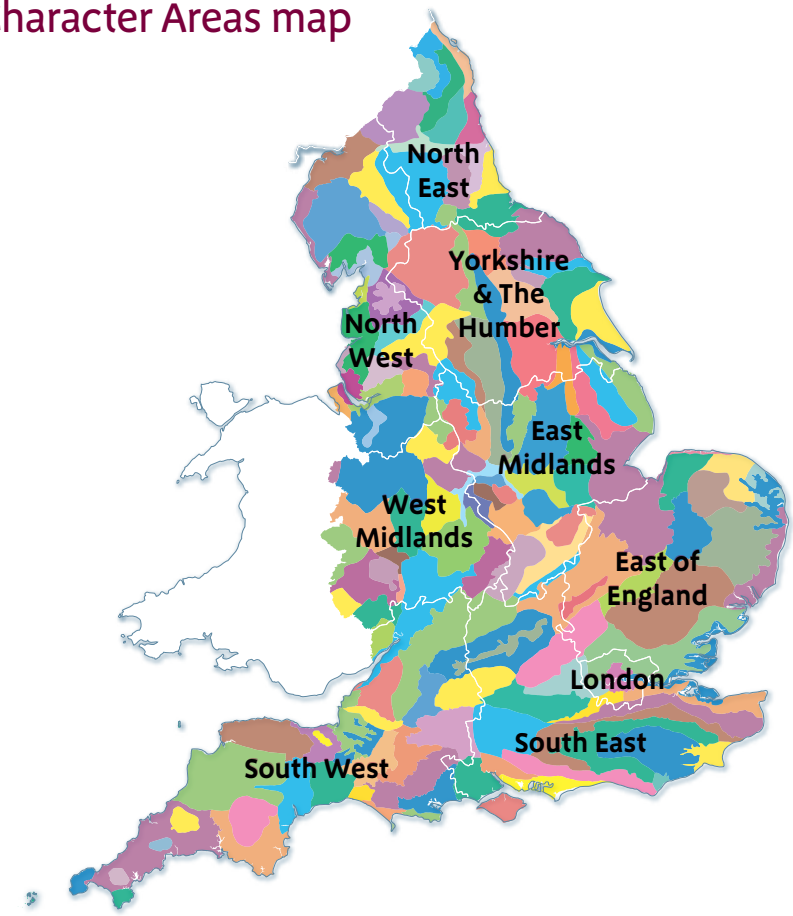
NCA profiles are guidance documents which can help communities to inform their decision-making about the places that they live in and care for. The information they contain will support the planning of conservation initiatives at a landscape scale, inform the delivery of Nature Improvement Areas and 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**)

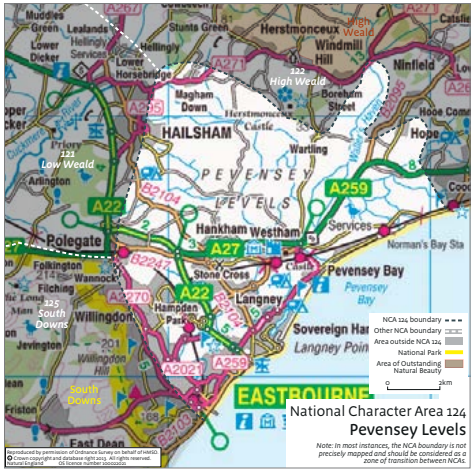
Summary

The term 'Pevensey Levels' refers to the low-lying area between Eastbourne and Bexhill in East Sussex. It is a wetland of national and international conservation importance and 37 per cent of the National Character Area (NCA) is a Site of Special Scientific Interest and Ramsar site. The Levels are predominantly rural and mostly grazed pasture, and consist of extensive drainage networks and flood plain. The NCA also includes the urban centre of Eastbourne which is a busy seaside town with a population of nearly 100,000[4] and up to 5 million visitors each year. A coastline of shingle beach stretches along the length of the area, punctuated by settlements, historic military buildings and sea defence structures.

The area is framed by the steep scarp of the South Downs in the west and the higher ground of the High Weald in the north, with views of the English Channel to the south. Much of the Pevensey Levels was under water until the medieval period and the whole area is low lying and vulnerable to the effects of climate change, particularly coastal flooding. Sea defences consist mainly of open beach managed by periodic shingle replenishments, maintenance of groynes, recycling of material around the beach and re-profiling during and after storms. In the long term, these measures may need reviewing as sea levels rise. Managing the environmentally important Pevensey Levels is dependent on careful and continuous water management through a system of sluices and pumps.

Eastbourne is the main settlement within this small NCA with its essentially Victorian seafront and later settlement further inland and along the coast to the east, including the Sovereign Harbour complex constructed in the 1990s. Eastbourne Park is a grazed wetland surrounded by the urban development of Eastbourne and providing a green corridor linking to the Low Weald. Its primary role is flood storage, and it has an essential role in mitigating the effects of flooding on the surrounding built environment, but it is also important for recreational opportunities, archaeological interest and biodiversity.

The coast forms the southern boundary of the NCA. A shingle bank extends along the length of the coastal strip and acts as a sea defence, protecting homes and businesses, roads, railway links and the tranquil grazing marsh.



Click map to enlarge; click again to reduce

[4] 99,412 was the 2011 census figure

Statements of Environmental Opportunities:

- **SEO 1:** Manage and plan for change in the function of the network of watercourses, water management infrastructure and wetland habitats across the Levels to provide benefits in improved flood management, water and soil quality, viable agricultural futures and protection of sub-soil archaeology, and to increase the range and extent of habitats and species and their resilience to climate change.

- **SEO 2:** Manage and enhance the distinctive character of the open, low-lying Pevensey Levels landscape and its heritage features such as medieval farmstead sites, boundaries and relics of the salt making industry, benefiting landscape character, tranquillity, and sense of place and history.

- **SEO 3:** Safeguard and manage the shingle beaches and coastline features that maintain the existence of the NCA and its associated habitats and species, benefiting protection against coastal erosion and flooding, biodiversity, sense of place and history, and geodiversity.

- **SEO 4:** Plan for the creation of a strong landscape framework associated with the identified future growth of Eastbourne, Hailsham and Bexhill and along the A22 corridor. Manage and enhance access to green space within the area, balancing recreational provision with nature conservation, and ensure that Eastbourne's surviving population of mature elms is protected.

The ditches of Pevensey Levels SSSI feature 70 per cent native aquatic plants.

Description

Physical and functional links to other National Character Areas

The Pevensey Levels National Character Area (NCA) forms the transition between the Low Weald NCA to the north-west and the English Channel. It is bounded on the north and east by the higher ground of the High Weald NCA, while to the south-west the steep scarp slope of the South Downs NCA dominates the backdrop. This area of alluvial marshland drains the elevated landscapes of both the High and Low Weald, its main river (Waller's Haven) draining into the sea. Part of the South Downs chalk aquifer lies under the western edge of the NCA but most of the water supply for the town of Eastbourne comes from the Cuckmere catchment via Arlington Reservoir in the Low Weald, although Waller's Haven supplies some water to Bexhill in the High Weald NCA. There are few actual farmsteads on the Levels, with most livestock belonging to farms on surrounding higher land outside the NCA.

The coast runs the length of the NCA, from Cooden in the west to Eastbourne, where the seafront is bisected by the boundary with the South Downs NCA in the east. The East Coastway rail line runs between Ashford International and Hastings, through Eastbourne and north to London. The A22 links Eastbourne to the M25 and South London and the A259 forms vital connections between settlements along the coast such as Eastbourne, Bexhill and Hastings. National Cycle Route 21 runs from Pevensey, through the Weald of Kent and Sussex to Greenwich in South London.

Distinct area

- Willingdon Levels

Water levels on Pevensey Levels are controlled by a series of pumps, sluices and other structures.

Key characteristics

- Low-lying tract of largely reclaimed wetland, actively maintained by purpose-built drainage systems and river flood plain improvements, with long views to the dramatic and distinctive backdrop of the South Downs and out over the sea. A predominantly open landscape with extensive grazed wet meadows and some arable fields with characteristic dykes, wetlands and wide skies. The open, windswept feel is further enhanced by the scarcity of trees and hedges in the landscape.
- Low density of dispersed settlement, mostly farmsteads on medieval sites, away from main centres of population.
- Local landscape diversity is added by 'eyes' – islands of higher ground, many with farmsteads – and also by reed-fringed ditches, scattered willows and patches of standing water with adjacent rushy pasture. Ditches of high biodiversity value, particularly for invertebrates and aquatic plants, typically fringed with reeds, and with patches of standing water and rushy pasture reinforcing the wetland character.
- Pevensey Castle overlooks the Levels near the coast, dominating the landscape and adding to the historic interest of the area along with Martello towers and Eastbourne Pier.
- Numerous salt works where seawater was evaporated to form salt crystals, resulting in distinctive low mounds.
- Shingle beaches with views along the coast dominated in the west by the Victorian seafront at Eastbourne and the Sovereign Harbour complex.
- Widely spaced roads and isolated settlements combine with the overall open character to provide a sense of remoteness. Roads tend to be slightly raised above the surrounding land, forming visual divisions in the landscape.
- Electricity transmission lines and pylons form vertical features in the flat and open landscape.

Martello towers on the shingle beach at the entrance to Sovereign Harbour. The High Weald is in the far distance.

Pevensey Levels today

Pevensey Levels is a low-lying, open landscape with few trees and wide views to surrounding high ground and the sea, giving the impression of remoteness. The area is largely reclaimed land with extensive grazed wet meadows actively maintained by purpose-built drainage systems and characteristic dykes. The present-day appearance of the Pevensey Levels is a product of centuries of measures to keep the sea at bay plus a combination of natural sediment, scrub clearance, depositional processes and extensive reclamation of the wetland for agricultural use.

The geology of the Pevensey Levels consists of sandstones and clays overlain by fairly impermeable marine silts and clay. The combination of the flat and low-lying nature of the topography and poor drainage of the soils can result in long periods of standing water on the surface, particularly in winter, encouraging associated flocks of birds to the wet fields. Extensive drainage and improvement for agriculture in the past has left a network of channels which provide botanical interest, public water supplies and wet fences for stock control, and act as flood storage reservoirs.

The wetland is internationally important for wildlife, with Ramsar and Site of Special Scientific Interest (SSSI) designations covering 3,500 ha, 37 per cent of the NCA. The ditches support a wide variety of species, many of which are rare in the UK, including the fen raft spider. Some of Britain's most spectacular waders and wildfowl winter here, making the most of the wet pasture.

A coastal shingle bank extends along the length of the southern boundary and acts as a sea defence, protecting homes and businesses, roads, railway links and the tranquil grazing marsh.

A windswept feel characterises this open, large-scale landscape of grazing marsh. Cattle and sheep graze the wet fields below the wide, open skies. Shelter on the marsh is sparse, as ditches mark out the irregular field boundaries. Hedges and fences are mainly found along roadsides and tracks but some small fields are also bounded by hedges, giving them a surprisingly enclosed and intimate feel within the open landscape. The area is devoid of significant tree cover.

Looking southwards towards the sea, the flat grazing marsh with its intersecting ditches tells a story of past reclamation which has been continuous since the 13th century. Fields reflect the piecemeal reclamation (or 'inning') of the area. It is known that some monastic institutions such as Battle Abbey were involved in this reclamation. The most irregular, mostly medieval, fields are concentrated to the north-east of the area. The relative permanence of the ditches and the continued pastoral use of much of the area mean that this landscape is a remarkable survival of a medieval field system in a lowland context.

As a flat, accessible area between lengths of cliff, the area has always been strategically important. Defences protecting the coast from invasion include Napoleonic structures such as the Martello towers, which remain prominent features along the coastline. More subtle are the relics of the salt making industry. Recorded in Domesday Book, these low mounds can be seen dotted around the marsh.

In the east, Willingdon Levels (also known as Eastbourne Levels and including smaller parcels of land historically known by local names such as Langney Levels), although similar in geology and landform, are heavily urbanised, which provides a contrast to the overall relative remoteness of the Pevensey Levels.

Eastbourne is the main settlement within this small NCA with its essentially Victorian seafront and later settlement further inland and along the coast to the east, including the Sovereign Harbour complex, constructed in the 1990s. There are a handful of villages scattered on pockets of higher ground but no nucleated settlements on the flat marsh, adding to the remoteness of the area. Where farmsteads are located, it is the flint or brick walls, weatherboarding or hung tiles which hint at the traditional buildings found here. Essentially, the marsh itself provides an area of tranquillity between the two bustling urban areas of Bexhill and Eastbourne.

Eastbourne Park is an urban park of grazed wetland in the centre of Eastbourne. Its primary role is flood storage, created as part of a flood compensation scheme in response to recent extensive, and ongoing, development. It has an essential role in mitigating the effects of flooding on the surrounding built environment but is also designed to provide high-quality accessible greenspace for residents and visitors and important habitats to benefit biodiversity.

There are around 10,000 elm trees in the area, many of them line the streets of Eastbourne.

The landscape through time

The bedrock underlying the Pevensey Levels was deposited during the Cretaceous, when the sands of the Hastings Group were laid down in a freshwater–brackish flood plain environment of braided rivers and channels and the Weald Clay was laid down in lagoons and tidal deltas. At the west of the NCA, overlaying these, younger marine Lower Greensand, Gault Clay and Upper Greensand deposits mark a deepening of the sea, and a phase of land subsidence led to the Chalk being deposited. All of these were faulted and folded when the Weald was formed during the Alpine mountain-building episode.

At the end of the last glaciations, about 10,000 years ago, rising sea levels flooded the lower reaches of the coastal river valley, creating a tidal estuary. The present Pevensey Levels were submerged and consisted of a wide, shallow bay backed by the rising ground of the High Weald. By the 1st century the wide bay was partly sheltered by storm beach shingle spits which gradually developed to allow vast quantities of marine and estuarine alluvium to be deposited behind. Palaeo-environmental work has shown that the Willingdon Levels developed as rising sea levels deposited sediment upon which peat formed as the sea level regressed in the Bronze Age.

These sediments give rise to the present-day loamy soils which, when drained, produce high-quality agricultural land. The Pevensey Levels gradually changed from salt marsh to reedy meadows, although much of the area was still under water as recently as 700 years ago. The area is mentioned in Domesday Book as being important for salt making. Remains of this industry are of considerable interest with high survival of sites in the form of low mounds, some possibly Roman in origin.

The present-day landscape is relatively young in geological and historical terms, much of it having been reclaimed over the past thousand years or so by a combination of natural processes and human intervention. In Roman times the Pevensey Levels were a broad, shallow bay punctuated by small clay islands founded on underlying Wealden beds which provided suitable dry sites for Roman settlements such as the Saxon Shore Fort at Pevensey. These were later protected by the development of shingle along the coast, affording natural protection. The origins of many modern-day settlements within the Pevensey Levels such as Northeye (which is also the site of a deserted medieval village) are reflected in the use of the suffix 'eye', Old English for island.

Older evidence of human occupation is mostly restricted to higher ground. However, excavations for Eastbourne Park in 1995 revealed remains of wooden trackways and platforms, suggesting a causewayed settlement pattern comparable to that of Flag Fen in Cambridgeshire. A number of important bronze- and iron-age artefacts were recovered from this site.[5]

There is evidence of pre-medieval settlement in Eastbourne itself with a significant Roman villa near the site of the present pier and a large number of Anglo-Saxon burials.

At the time of the Norman conquest much of the present NCA was under water, the tide having full access for several kilometres inland. Traditionally, William the Conqueror's army landed at Pevensey, and St Mary's at Westham claims to be the first Norman church built in England. The Normans certainly used and extended the Roman fort.

[5] http://jcms-journal.com/index.php/jcms/article/view/12/12

Pevensey Levels was a tidal inlet until the eastward drift of coastal shingle in the Middle Ages isolated it and a salt marsh developed. Drainage of the marsh by 'innings' (digging drainage ditches), largely undertaken by local religious institutions, allowed the development of summer grazing and, by the 13th century, some arable farming. Reclamation involved the construction of meandering drainage channels such as Mark Dyke and a 14th-century sea defence known as Crooked Ditch. For centuries, a pattern of summer grazing and winter flooding was maintained and wildlife associated with wet fields and ditches flourished. Pevensey was traditionally known for cattle, suggesting that drainage may not have been as successful as at nearby Romney Marsh, where sheep predominated.

As the threat from Napoleon's France was realised, defensive measures were constructed between 1804 and 1810 along the coast in the form of Martello towers and a fortress at Eastbourne. The towers are now a distinctive feature of the coastal landscape.

Since the 1960s most of the marsh has been pump-drained and winter flooding is now restricted in area. The NCA remains important for wildlife, particularly invertebrates, but numbers of wildfowl have decreased owing, at least in part, to drying of the land.

Expansion of urban development on the fringes of the Levels has impinged on the open character of the landscape in some places, with associated pollution often damaging the fragile ecology of the area. New roads and improvement schemes form visual divisions in the landscape, along with new agricultural buildings and associated features. Power lines are particularly prominent.

Eastbourne was transformed from a small town and collection of farms and hamlets into a busy seaside resort during the 19th century, particularly after the coming of the railway in 1849. It was heavily bombed during the Second World War, but development continued apace during the late 20th century with settlement extending north and east. A series of lakes at Shinewater, West Langney and Southbourne were created from the 1990s onwards to provide flood mitigation.

Sovereign Harbour, a large marina with retail facilities and a residential complex, was constructed on the beach area known as The Crumbles in the 1990s, with the marina becoming operational in 1993. By 2009 there were 3,600 homes with a population of around 6,800.[6] There is pressure from expansion of the towns of Hailsham, Polegate, Eastbourne and Bexhill and large developments along the coastline, including further projects at Sovereign Harbour.

[6] Mid-year estimate 2010 – Sovereign Harbour Supplementary Planning Document 2013 (URL: www.eastbourne.gov.uk/about-the-council/council-policies-plans-and-strategies/planning-policy/local-development-documents/supplementary/?assetdet4046349=218187)

Sovereign Harbour.

Ecosystem services

The Pevensey Levels 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 Pevensey Levels NCA is contained in the 'Analysis' section of this document.

Provisioning services (food, fibre and water supply)

- **Food provision**: 83 per cent of the area is under pasture or is uncropped. This supports the principal food producing activity: livestock farming. Around half of farms are engaged in livestock farming including beef cattle, dairy and sheep. Significant amounts of arable land have been converted to pasture relatively recently under agri-environment schemes. Much of the produce is high quality and low intensity with many organic farms and low stock numbers. There are a few surviving orchards.

- **Water availability:** Part of the South Downs chalk aquifer lies under the eastern edge of the NCA. The main river is Waller's Haven which, with upstream abstraction, provides the water supply for Bexhill, but most of the water supply for the area's population comes from Arlington Reservoir and the Cuckmere catchment (outside the NCA).

  Summer water levels on the Pevensey Levels are maintained by the operation of 37 main feed sluices, which provides water to about 60 per cent of the area, and there are a number of other structures and pumping stations across the NCA.[7]

[7] Pevensey Levels SSSI Water Level Management Plan, Environment Agency (December 2006)

The eastern and western sides of the Pevensey Levels SSSI are hydrologically distinct. Substantial flows from wastewater treatment works at Hailsham maintain levels in the western river system in summer and much of the area remains wet throughout the year. Eastern areas can be fed from Waller's Haven. Summer flows into the eastern system are naturally lower and are complicated by the major south-east water abstraction at Hazards Green.

The present water level management plan aims to keep water levels constant (about half a metre below ditch shoulder) all year round.

Looking west along the shingle beach to Eastbourne, nestling at the foot of the South Downs.

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

- **Climate regulation:** The undisturbed soils of the coastal and flood plain grazing marsh (36 per cent of the NCA) and the wet loamy soils offer a significant carbon storage resource and future carbon storage capacity. High carbon levels may also be associated with the soils of the coastal flats where some variants may have organic-rich topsoils.

- **Regulating soil erosion:** Soil erosion is recognised as a problem within the Defra catchment sensitive farming priority catchment in the area. Parts suffer from damaged soil structure, notably compaction and impeded drainage in areas with clay soils, which accelerates run-off. This leads to increased erosion rates and sedimentation of watercourses.

- **Regulating soil quality:** Loamy and clayey soils (54 per cent of the NCA) are at risk from topsoil compaction and poaching. Careful management of weak topsoils will help to maintain a good soil structure. Minimum tillage such as direct drilling can work well in some of these soils. Where organic matter is low increasing inputs can help to improve soil structure.

- **Regulating water quality:** 34 per cent of the NCA is classed as a nitrate vulnerable zone and the area is a priority under the catchment sensitive farming scheme.[8] Three major river systems cross the Pevensey Levels. The main one, Waller's Haven, has a major public water supply abstraction within the SSSI although abstraction is meant to cease if it is having an adverse impact on the delivery of the water level management plan.

Seven sewage treatment works discharge into the Pevensey Levels. These are often associated with water quality problems despite recent and ongoing improvement measures.

Floating pennywort is an invasive plant species of concern on the Pevensey Levels as it clogs ditches and out-competes the designated flora. A co-ordinated programme of control and eradication is now under way.

- **Regulating water flow:** The hydrology of this low-lying, flat area is dominated by the dynamics of the relationship between stream inflow, rainfall, outflow to the sea and evapotranspiration. The significance of groundwater movement is lessened by a layer of clay which effectively isolates the Levels from the underlying chalk aquifer. Water flow on the Levels is regulated by the water level management plan[9] which aims to keep water levels constant (about half a metre below ditch shoulder) all year round. Levels are controlled by a series of sluices and pumping stations.

  Since the early 1990s, a mechanism has been in place whereby the effects of development on flood levels has been compensated for by the creation of additional flood storage (lakes) in Eastbourne Park.[10]

- **Regulating coastal flooding and erosion:** Regulating coastal flooding and erosion: Littoral processes along the coastline are extremely dynamic. Both erosion and accretion have been instrumental in the configuration of the coast. There is a large continuity of long-shore drift, with eastward transport of sand and shingle owing to the influence of wave diffraction patterns.

[8] http://archive.defra.gov.uk/foodfarm/landmanage/water/csf/documents/state-aid-ecsfdi2008.pdf

[9] Pevensey Levels SSSI Water Level Management Plan, Environment Agency (December 2006)

[10] www.eastbourne.gov.uk/about-the-council/council-policies-plans-and-strategies/planning-policy/local-development-documents/supplementary/?assetdet4046349=218184

Shoreline Management Plans[11] for the area promote a 'Hold the Line' policy for the entire coast in the face of predicted sea level rises. To achieve this, much of the unique shingle beach may be lost.

The ditches and grazing marshes of the Levels also provide an additional flood defence line for inland areas.

Cultural services (inspiration, education and wellbeing)

- **Sense of place/inspiration:** The open, windswept landscape inspires some of the most intense feelings of remoteness in south-east England, providing a retreat from the bustling urban centres of Eastbourne and Bexhill. The Pevensey Levels have a strong sense of a landscape reclaimed from and facing towards the sea.

  Eric Ravilious lived in Eastbourne and often used local scenes for inspiration. The Towner Art Gallery in Eastbourne has a large collection of his work. Debussy completed his masterpiece La Mer in Eastbourne in 1905 and the coastal views remain a source of inspiration for modern artists.

- **Sense of history:** Pevensey Castle dominates the landscape and there are many important sites on the Levels including deserted medieval villages and relics of the salt making industry.

  The area is rich in evidence of its strategic military importance, including Napoleonic Martello towers.

[11] Shoreline Management Plans – South Foreland to Beachy Head, South East Coastal Group (2006; URL: www.se-coastalgroup.org.uk/sf-to-bh-2006/)

More recent coastal development tends to reflect the increased popularity of the seaside. Eastbourne retains its essentially Victorian seafront including a fine Grade II* pier, while the style of Pevensey's 1950s weatherboarded seaside housing creates a jaunty resort atmosphere.

The entire landscape of the Levels maps the reclamation work started by local religious houses in the Middle Ages and there are rare examples of lowland medieval field patterns.

- **Tranquillity:** The quiet, simple landscape of the Levels provides a tranquil and relatively undisturbed buffer between the busy urban centres of Eastbourne and Bexhill. The close association with waterbodies and watercourses further accentuates the sense of tranquillity and there are also peaceful areas along the coast, away from popular tourist hotspots such as Eastbourne and Pevensey Bay.

- **Recreation:** Tourism is an important industry along the entire coastline of the NCA with the seaside resort of Eastbourne and caravan parks around the edges of the Levels.

  Walking and horse riding occur on the many footpaths and bridleways. The start of the South Downs Way National Trail is just outside the NCA on the edge of Eastbourne. The flat, scenic landscape also makes it popular with cyclists and National Cycle Route 21 starts and ends in Pevensey.

  The large main drainage channels on the Pevensey Levels support an important coarse fishery and all the havens are used for angling. There is also a golf course within the SSSI. The National Nature Reserve has limited public access owing to the fragile ecology but guided tours are offered.

The Eastbourne Health Improvement Partnership identified 'Promotion of Healthy Lifestyles' as one of three local priorities in 2005. More than half of Eastbourne residents say that they visit natural areas such as beaches, parks and downland at least once a month, mostly for recreation such as a 'gentle walk', 'active leisure' and 'informal sport'.[12]

- **Biodiversity:** Pevensey Levels is one of the most important wetland sites in south-east England. The 3,500 ha SSSI, Ramsar and former Important Bird Area[13] supports a variety of wetland flora and fauna, including rarities such as the fen raft spider. Numbers of wading birds severely declined after the introduction of pump drainage systems in the 1960s, although these are starting to return owing to recent improvements such as the water level management plan and agri-environment schemes on the land.

  The ditches in the SSSI feature 70 per cent of native aquatic plants.

  Pevensey Levels was found to be one of the most important sites in Sussex for yellow wagtails, with 19 pairs recorded in 2008.[14]

  Eastbourne Park attracts a diverse fauna of freshwater snails, water beetles, dragonflies and damselflies. Breeding birds include lapwing, reed bunting and reed and sedge warbler.

The Dutch Elm Disease Control Zone extends from Westham to Hove. Bounded by the sea to the south and the largely treeless South Downs to the west, the Eastbourne area has maintained much of its mature elm population and the geography and vigilance of authorities may also help with the control of new pests and diseases.

- **Geodiversity:** Soils and soil formation and coastal and river geomorphological processes are key elements of this NCA.

Fen raft spider.

[12] Health Improvement & Modernisation Programme 2003 to 2005, Eastbourne Health Improvement Partnership (URL: www.eastbourne.gov.uk/health)

[13] www.birdlife.org/datazone/site

[14] Breeding Waders of Wet Meadows Survey

Statements of Environmental Opportunity

SEO 1: Manage and plan for change in the function of the network of watercourses, water management infrastructure and wetland habitats across the Levels to provide benefits in improved flood management, water and soil quality, viable agricultural futures and protection of sub-soil archaeology, and to increase the range and extent of habitats and species and their resilience to climate change.

For example, by:

- Planning for the effects of climate change, such as changing water levels, sea level rise and drought, by working to maintain links and re-connect the Levels via ecological networks with surrounding areas, particularly Eastbourne Park, creating a permeable landscape in order to build biodiversity resilience and reduce risk from flooding.
- Encouraging the rotational management of drainage ditches which support important wetland birds and many rare species, enhancing the adaptation of this priority habitat to climate change, while also benefiting flood control and water quality.
- Identifying potential areas inland where additional habitats can be created to replace areas which may be lost owing to the impacts of sea level rise or coastal defence management.
- Protecting the pattern and function of drains, ditches, wetland habitats and wet grassland supporting characteristic populations of rare invertebrates and other biodiversity.
- Ensuring that water level management measures in Pevensey Levels Site of Special Scientific Interest (SSSI) do not lead to increased flood risk to Eastbourne and Willingdon, parts of which drain along the Langney Haven discharging to the Salt Haven, just downstream of Pevensey Bridge.
- Supporting farmers and landowners to build on recent improvements and work towards restoring the Pevensey Levels Important Bird Area status through use of incentives such as agri-environment schemes, which include pest control options.
- Co-ordinating the control of invasive non-native species such as floating pennywort which clogs ditches and out-competes the designated flora for the benefit of biodiversity and regulating water quality and flow.
- Working with farmers, land managers, the Internal Drainage Boards and others to ensure that groundwater levels are maintained in order to prevent drying out and subsequent oxidisation. Such measures may include the use of shallow cultivation techniques; maintenance of ditches and associated control structures; reinstatement of permanent pasture; and introduction of grassland margins to arable fields.
- Considering the restoration of traditional practices that further enhance the wetland environment, where appropriate, such as seasonal inundation of pasture which benefits biodiversity and also alleviates flooding, while retaining dry grassland areas throughout winter, in mosaic with flooded areas, as refuges for invertebrates.
- Identifying areas for the creation of additional wetland habitats using the ecosystem services approach to develop wider understanding of the operation of natural processes, for example reedbeds which assist nutrient filtration to improve water quality, thereby contributing to outcomes required by the Water Framework Directive while creating priority habitat.
- Ensuring that new development includes water-saving measures and incorporates sustainable urban drainage systems to manage surface water drainage and provide wetland creation opportunities to benefit biodiversity.

SEO 2: Manage and enhance the distinctive character of the open, low-lying Pevensey Levels landscape and its heritage features such as medieval farmstead sites, boundaries and relics of the salt making industry, benefiting landscape character, tranquillity, and sense of place and history.

For example, by:

- Conserving the distinctive irregular field boundary network of drainage ditches and banks to enhance cultural heritage and sense of place.
- Maintaining the strong sense of tranquillity, wildness and remoteness, traditional grazing and distinctive views to the English Channel and South Downs – an undeveloped, pastoral landscape underpinned by a viable agricultural community and economy.
- Preserving for future interpretation the area's archaeological resources, historic features and geological interests from damage and loss, directly and by maintaining high groundwater levels, reducing soil desiccation and further benefiting wetland ecology.
- Increasing and disseminating the understanding of the relationship between past human activities in this much modified landscape and the response by wild native species that has produced the rich diversity of flora, fauna and habitats found today, and using this understanding to work in partnership to plan for a more robust future for the natural environment.
- Encouraging localised tree planting using appropriate species to screen development such as caravan parks and modern farm buildings in order to maintain the remote, exposed character of the Levels.
- Conserving and promoting historic features, including the Martello towers along the coast, Pevensey Castle, buried features such as the medieval village at Northeye and the distinctive mounds of old salt works.
- Encouraging the repair of traditional buildings in suitable materials, and using an understanding of local architecture, its forms and materials (predominantly brick and flint, with occasional weatherboarding or hung tiles) to inspire sustainable new development in order to help to maintain a sense of local distinctiveness.
- Working with partners and the planning system to discourage excessive or inappropriate development within and on the edges of the SSSI.
- Improving sustainable transport links between main settlements and places of interest, encouraging people to visit sites beyond environmentally sensitive areas.

Typical Levels landscape with low-lying wet grazing marsh and farm buildings, and arable fields on higher ground.

SEO 3: Safeguard and manage the shingle beaches and coastline features that maintain the existence of the NCA and its associated habitats and species, benefiting protection against coastal erosion and flooding, biodiversity, sense of place and history, and geodiversity.

For example, by:

- Maintaining the flood defences along the coast in accordance with the Shoreline Management Plan.[15]
- Identifying and communicating effectively flood risk scenarios resulting from different coastal change models to inform risk and asset management strategies and planning.
- Working in partnership to study and better understand the sediment dynamics and geomorphology of the coastline in order to continue to plan for the most effective and beneficial development of natural coastal defences.
- Supporting the creation of a coastal conservation and improvement plan to enhance the visual quality of the coastline.
- Seeking to maintain and extend protected areas of vegetated shingle and exploring the potential for creating compensation habitats in other areas where stretches of shingle beach (including The Crumbles at Eastbourne) are lost to coastal squeeze by protecting areas of shingle for vegetation to flourish.
- Discouraging aggregate extraction which would affect sensitive geomorphological and coastal sediment processes that help to preserve the shingle beaches which form the major flood defences for the NCA.
- Developing beach management strategies that adequately address flood risk while recognising the leisure and amenity uses of the coast.
- Realising benefits for habitat expansion and species resulting from coastal management initiatives in line with management objectives for the Special Area of Conservation and Ramsar designations, including the creation of saline lagoons.

The shingle beach at Eastbourne.

[15] www.se-coastalgroup.org.uk/wp-content/uploads/2012/02/C_Baseline_Processes.pdf

SEO 4: Plan for the creation of a strong landscape framework associated with the identified future growth of Eastbourne, Hailsham and Bexhill and along the A22 corridor. Manage and enhance access to green space within the area, balancing recreational provision with nature conservation, and ensure that Eastbourne's surviving population of mature elms is protected.

For example, by:

- Creating and maintaining areas of quality, multifunctional natural green space that link into the heart of urban areas as part of a comprehensive network of planned multifunctional green infrastructure, providing a local recreational resource for the wellbeing of local communities and alleviating pressure on the wider landscape, as well as benefiting biodiversity, landscape and water regulation, and climate change adaptation.
- Ensuring that development proposals in Eastbourne include appropriate schemes linking into the green infrastructure network, to enhance existing landscape features and deliver environmental improvements in order to maintain the town's attractive green environment for the wellbeing of residents and to attract visitors and new growth.
- Creating significant areas of attractive wetlands that form part of Sustainable Urban Drainage Systems within Eastbourne and new development at Polegate.
- Ensuring that development seeks to enhance biodiversity through the inclusion of wildlife needs in design, and ensuring that any unavoidable impacts are appropriately mitigated.
- Considering the undertaking of a detailed landscape assessment agreed by partners and stakeholders to identify significant landscape elements as a framework for exploring future options.
- Ensuring that the effects of development and its associated infrastructure (including light, noise and air pollution) have minimal impact on the remote rural landscape of Pevensey Levels or the special qualities of the adjacent South Downs National Park and High Weald Area of Outstanding Natural Beauty.
- Supporting the development of Eastbourne Park as an ecological, archaeological and leisure resource to benefit residents and visitors, including interpretation of the wetlands to increase awareness and enhance enjoyment; and ensuring that future plans do not compromise the area's importance for flood mitigation, biodiversity and heritage value.
- Working to create a cohesive network of sustainable access for a wide range of users by maintaining and enhancing existing rights of way, creating new permissive access that connects the area's major settlements to the wider landscape, including the South Downs, and attracting people away from environmentally sensitive areas.
- Supporting a 'Green Network Plan' for Eastbourne, creating environmental interpretive focal points in parks and gardens and natural areas, taking into account links with neighbouring green space in the South Downs National Park, Pevensey Levels and south Wealden.
- Supporting and promoting measures outlined in the Dutch Elm Disease Control Zone strategy and encouraging research initiatives to prevent infection and breed resistant strains of elm.

Supporting document 1: Key facts and data

Pevensey Levels National Character Area (NCA): 9,638 ha

1. Landscape and nature conservation designations

The Northern most tip of the Pevensey Levels touches the southern boundary of the High Weald AONB. The South Downs National Park lies to the west of the area, however, the NCA itself does not fall within these national landscape designations.

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	Ramsar	Pevensey Levels	3,547	37
European	Special Protection Area (SPA)	None	0	0
	Special Area of Conservation (SAC)	n/a	n/a	n/a
National	National Nature Reserve (NNR)	Pevensey NNR	183	2
National	Site of Special Scientific Interest (SSSI)	A total of 1 sites wholly or partly within the NCA	3,553	37

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.

There are 14 Local sites in Pevensey Levels NCA covering 67 ha which is <1 per cent 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	9	<1
Favourable	0	0
Unfavourable no change	0	0
Unfavourable recovering	3,544	100

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 Pevensey Levels NCA is a low-lying landscape. The maximum elevation is 62 m. The mean elevation is 7 m.

Source: Natural England 2010

2.2 Landform and process

This NCA is an open, flat and low lying landscape with pockets of raised land often described as 'eyes'. At the end of the last glaciation, rising sea-levels flooded the lower reaches of the coastal river valleys resulting in the creation of a tidal estuary. The present day levels were under water and consisted of a wide shallow bay backed by the rising ground of the High Weald. By the 1st century the wide bay was partly sheltered by a storm beach shingle spit which gradually developed across the bay and resulted in the deposition of vast quantities of marine and estuarine alluvium.

Source: Pevensey Levels Countryside Character Area Description, Low Weald and Pevensey Natural Area

2.3 Bedrock geology

The Levels are dominated by the siltstone, mudstone and sandstone of the Early Cretaceous Hastings Beds, and of Weald Clay, which were raised and exposed in the Tertiary Alpine Orogeny (mountain-building-episode). Small areas of Greensand, Gault, and Chalk can be found in the west of the NCA at the boundary with the South Downs.

Source: Pevensey Levels Countryside Character Area Description, Low Weald and Pevensey Natural Area

2.4 Superficial deposits

Marine and freshwater deposits of clays, silts, sands and gravels, laid down behind storm beach shingle spits. Some raised marine deposits were laid down at the western end of the NCA.

Source: Pevensey Levels Countryside Character Area Description, Low Weald and Pevensey Natural Area

2.5 Designated geological sites

Designation	Number
Geological Site of Special Scientific Interest (SSSI)	0
Mixed interest SSSI	0

There are no Local Geological Sites within the NCA.

- 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

The marine and estuarine alluvium sediments have given rise to the present day loamy and clayey soils. Loamy and clayey soils of coastal flats with naturally high groundwater cover 54 per cent of the NCA; with smaller areas of slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils, slightly acid loamy and clayey soils with impeded drainage and freely draining lime-rich loamy soils.

Source: Pevensey Levels Countryside Character Area Description, 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	0	0
Grade 2	0	0
Grade 3	7,024	72
Grade 4	740	8
Grade 5	n/a	n/a
Non-agricultural	207	2
Urban	1,570	16

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)
Waller's Haven	8

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.

3.2 Water quality

The total area of Nitrate Vulnerable Zone is 3,286 ha, 34 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 only contains 148 ha of woodland (1.5 per cent of the total area), of which <1 per cent is ancient woodland.

Source: Natural England (2010)

4.2 Distribution and size of woodland and trees in the landscape

As per the figures above, the landscape is devoid of significant tree cover. Woodland is restricted to areas of higher ground associated with settlements. Scrub lined ditches occur in areas of the marsh and isolated, windswept trees can also be seen marking the lines of ditches or roads.

Source: Pevensey Levels 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	131	1
Coniferous	0	0
Mixed	0	0
Other	17	<1

Source: Natural England (2010), 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	18	<1
Ancient re-planted woodland (PAWS)	<1	<1

Source: Natural England (2004)

5. Boundary features and patterns

5.1 Boundary features

Drainage ditches and banks divide fields, with channels forming barriers to grazing stock, creating a chequer - board pattern. Infrequent hedges and fences line roadways. The estimated boundary length is 412 km. As of 2011, 22 km of ditches were under an Environmental Stewardship ditch boundary option.

Source: Natural England 2010, Pevensey Levels Countryside Character Area description; Countryside Quality Counts (2003)

5.2 Field patterns

The fields of the area are predominantly small and many are highly irregular. This irregular pattern of fields may reflect the piecemeal reclamation (or 'inning') of the area. The medieval origin of the field pattern is reflected in the way the 14th century Crooked Ditch follows the irregular boundaries of fields.

Source: Pevensey Levels 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

The vast majority of farms are lowland grazing, and these remained stable in number between 2000 and 2009. There was a very slight decline in numbers of other farms.

Source: Agricultural Census, Defra (2010)

6.2 Farm size

The number of farm holdings reduced from 112 in 2000 to 103 in 2009. In 2009 the majority of farms fell within the <5 &<20 ha bracket (31 per cent of the total) but these only accounted for 7 per cent of the farmed area. The 14 holdings 100 > ha accounting for 54 per cent of farmed area. Numbers of small (under 5ha) farms and those between 50 ha and 100 ha fell between 2000 and 2009 but others remained stable, with a slight increase in those between 5 ha and 20 ha.

Source: Agricultural Census, Defra (2010)

6.3 Farm ownership

2009: Total farm area = 5,104 ha; owned land = 3,639 ha
2000: Total farm area = 5,443 ha; owned land = 4,107 ha

Source: Agricultural Census, Defra (2010)

6.4 Land use

The predominant land use is grass. There has been an increase in grass and uncropped land between 2000 and 2009 from 73 per cent to 83 per cent.

Source: Agricultural Census, Defra (2010)

6.5 Livestock numbers

There was a marked fall in the numbers of grazing livestock between 2000 and 2009. Despite a drop of 26 per cent, sheep remain the most abundant form of livestock at 74 per cent of the total number in 2009.

Source: Agricultural Census, Defra (2010)

6.6 Farm labour

The majority of holdings are run by principal farmers (139 in 2009 - 61 per cent). There was a fall in numbers between 2000 and 2009 in gang/casual workers which halved from 41 to 19. Salaried managers nearly doubled from 7 to 13 with part time and full time numbers remained relatively stable.

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

Pevensey Levels represents the largest tract of wetland in east Sussex and is one of the largest and least fragmented lowland wet grassland systems in south-east England. The extensive area of coastal and floodplain grazing marsh covers nearly 40 per cent of the NCA. The low-lying grazing meadows are intersected by a complex system of ditches, often reed fringed which support a variety of important wetland communities, including nationally rare and scarce plants and invertebrates. The wet grassland also supports wintering and breeding bird species. In addition the NCA contains important arable habitats. These support nationally important assemblages of arable birds.

Source: JNCC Ramsar Information Sheet: UK11053 2008, Natural England 2010, Low Weald and Pevensey Natural Area Profile (Natural England 2012)

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 & floodplain grazing marsh	3,493	36
Coastal vegetated shingle	36	<1
Reedbeds	13	<1
Fens	4	<1
Maritime cliff and slope	4	<1

Source: Natural England (2011)

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

This area was a shallow bay in the Roman period and within the bay were small islands where the earliest settlements were founded. Occupation and reclamation continued in the Saxon period - the location of settlement being reflected in the use of the place-name 'eye' an old English word meaning 'island'. There is only a thin scattering of farmsteads and no nucleated settlement in the flat marsh area, although there is a greater density of settlement on the slightly higher ground surrounding the levels, such as around Hooe. Eastbourne is the largest settlement within the NCA and there has been significant extension of urban and fringe into peri-urban around Eastbourne.

Source: Countryside Quality Counts Draft Historic Profile Pevensey Levels Countryside Character Area description; Countryside Quality Counts (2003)

8.2 Main settlements

The main settlements within Pevensey Levels NCA are: Eastbourne; Westham; Hailsham; Hankham; Pevensey Bay. The total estimated population for this NCA (derived from ONS 2001 census data) is: 100,770.

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

8.3 Local vernacular and building materials

Traditional buildings have flint or brick walls, with weatherboarding or hung tiles. Plain tiles are commonly used as a roofing material.

Source: Pevensey Levels Countryside Character Area description; Countryside Quality Counts (2003)

9. Key historic sites and features

9.1 Origin of historic features

Military coastal defences including Pevensey castle, Napoleonic Redoubt Fortress at Eastbourne and Martello Towers along the coast are prominent historic features. Flood defences and drainage also form a prominent part of the landscape including the 14th century Crooked Ditch and its embankment. Despite these defences the area was frequently inundation by the sea causing extensive flooding and leading to deserted villages and moated farmsteads. Salt making was an important industry in the area from the 11th century at least, and the presence of these salt works is recorded in Domesday book. The east of the NCA includes the start of the South Downs and the area around Willingdon Hill is scattered with evidence of human activity from the Neolithic period onwards. The railway encouraged a flourishing tourist industry along the coast during the Victorian period. This is particularly evident at Eastbourne, which still retains many features and its character as a Victorian/Edwardian seafront despite remaining a popular seaside resort today.

Source: Draft Historic Profile, Pevensey Levels Countryside Character Area description

9.2 Designated historic assets

This NCA has the following historic designations:

- 1 Registered Parks and Gardens covering <1 ha
- 0 Registered Battlefield/s covering 0 ha
- 13 Scheduled Monuments
- 175 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

- 3 per cent of the NCA 288 ha is classified as being publically accessible.
- There are 113 km of public rights of way at a density of 1.2 km per km2.
- There are no National Trails within the NCA.

Sources: Natural England (2010)

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)	0	0
Common Land	<1	<1
Country Parks	70	<1
CROW Access Land (Section 4 and 16)	0	0
CROW Section 15	<1	<1
Village Greens	0	0
Doorstep Greens	0	0
Forestry Commission Walkers Welcome Grants	12	<1
Local Nature Reserves (LNR)	0	0
Millennium Greens	0	0
Accessible National Nature Reserves (NNR)	184	2
Agri-environment Scheme Access	22	<1
Woods for People	12	<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.

Eastbourne Park. Created as flood storage for recent new development.

11. Experiential qualities

11.1 Tranquillity

Based on the CPRE map of Tranquillity (2006) tranquillity is associated with the large area of grazing marsh away from the urban areas of the NCA, in particular around Eastbourne and on the higher areas of ground.

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

Category of tranquillity	Score
Highest	36
Lowest	-75
Mean	-10

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 there has been a decrease in areas considered undisturbed and an increase in urban intrusion. This is likely to reflect the growth of Eastbourne to the West of the area and the expansion of the A27. A breakdown of intrusion values for this NCA is detailed in the table below.

Intrusion category	1960s (%)	1990s (%)	2007 (%)	Percentage change (1960s-2007)
Disturbed	35	63	59	24
Undisturbed	54	23	22	-32
Urban	11	14	19	8

Sources: CPRE (2007)

Notable trends from the 1960s to 2007 are the increase in land considered as disturbed between the 1960s and 1990s and the steady increase in urban land.

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

Pevensey Castle dominates the landscape of the Levels.

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

The introduction of incentives such as agri-environment schemes since the 1990s has led to wide scale improvements in water and soil quality and biodiversity on Pevensey Levels.

Eastbourne Park is designed as a flood storage area comprised of a series of lakes on former marshland grazing pasture. Since the late 1990s, local planning permission has been contingent upon satisfactorily demonstrating appropriate compensatory flood waterway and flood storage measures or a commuted sum will be paid to the Eastbourne Park scheme in lieu. The Park has two main hydrological functions. It allows the passage of water from streams off the South Downs and Low Weald to the sea via outfalls at Pevensey Bay and Princes Park. It also allows the storage of flood water at peak surface water flows and during high tide locked conditions. The first sections of the park opened in 2002. Public access is currently limited to particular areas.

Sovereign Harbour, a marina, retail and residential complex was constructed on the beach area known as The Crumbles. Construction started in 1991 and the marina became operational in 1993. It is now the largest man-made marina in northern Europe and, by 2009, had around 3,600 homes.

Trees and woodlands

- The Pevensey Levels is largely a treeless landscape, with tree planting restricted to areas of higher ground, and Countryside Quality Counts data suggests that the treeless character has been maintained due to regular scrub clearance.

- East Sussex contains the largest population of mature English elm trees in the world and control measures are ongoing. There is an estimated population of 10,000 elms in Eastbourne, a quarter of which are located on town streets and are subject to regular inspection with infected trees removed. The Dutch Elm Disease Control Area extends from Westham to Hove and north to the A27.

- There are plans to plant appropriate native tree and shrub species around the perimeter of Eastbourne Park for biodiversity and landscape and to protect tranquillity within the park.

Boundary features

- Drainage ditches and banks divide fields, with channels forming barriers to grazing stock. Infrequent hedges and fences line roadways. The estimated boundary length is 412 km. As of 2011, 22 km of ditches were under an Environmental Stewardship ditch boundary option with many more covered by wet grassland options which includes a ditch option.

- Water level issues have caused some ditches to dry out encouraging the growth of scrub, or scrub has caused ditches to dry out. Agri-environment has paid for scrub removal and de-silting and re-profiling of ditches.

Agriculture

- Since the early 1990s, the introduction of incentives for environmentally sensitive practices through agri-environment schemes, including water level and ditch management, reduced stocking rates and restrictions on agrochemical use have resulted in major changes in water level and land management on the Levels on the SSSI.

- Land use on the Pevensey Levels SSSI is presently dominated by grazing of cattle in the summer and sheep in the winter. Livestock numbers have fallen since 2000 but the most notable change has been the loss of dairy farms, some switching to beef.

- The Countryside Quality Counts data reveals that the overall character of the NCA was maintained between 1990 and 1998. This trend continued between 1998 and 2003, with the character of agricultural land maintained as a result of an increase in grassland due to increased uptake of agri-environment agreements.

Settlement and development

- The area around Eastbourne, Polegate and Hailsham is an identified growth area. There has been considerable new development in the last 10 years. Over 5,000 new homes are planned for Eastbourne Borough alone between 2006 and 2027.

- Major new urban parkland has been created. Eastbourne Park is approximately 400 ha and includes Shinewater, West Langney and Southbourne lakes. These are flood compensation areas for the extensive urban development around Eastbourne.

- In the 1990s, settlement extended along the coast with the development of Sovereign Harbour on the beach known as The Crumbles and there are plans for further development within this complex. Sovereign Harbour now includes approximately 3,600 dwellings and berths for up over 800 vessels. It is the largest man-made marina in northern Europe.

Semi-natural habitat

- Coastal and floodplain grazing marsh represents by far the greatest proportion of habitats, with some vegetated shingle and reedbeds. There are over 400 km of field ditches across the Pevensey Levels which represent the main habitat of interest and are the primary focus of the ecological designations. The introduction of pumped drainage (as opposed to traditional gravity drainage) in the 1960s greatly affected the Pevensey grazing marshes, reducing populations of breeding and wintering wetland birds and leading to increased arable crops and use of fertilisers. Agri-environment schemes, more sympathetic land management by local farmers and control of water levels are attempting to reverse these trends. The numbers of waders such as lapwing and redshank increased markedly between 2002 and 2008[16] and there have also been additional improvements such as water level monitoring stations.

- There have been dramatic increases in the populations of alien water plants, including Crassula helmsii and, most recently, Hydrocotyle ranunculoides.

- The first sections of Eastbourne Park were opened in 2002. Its underlying hydrology is linked to the Pevensey Levels and incorporates important and locally scarce habitats including approximately 380 ha of grazed wetlands which already attract a diverse fauna of freshwater snails, water beetles, dragonflies and damselflies. Breeding birds include lapwing, reed bunting and reed and sedge warbler.

[16] www.rspb.org.uk/news/details.aspx?id=tcm:9-209608

Historic features

- During excavation work for Eastbourne Park in 1995, an important bronze-age settlement was unearthed. The site was designated a scheduled ancient monument in 2012 but research continues and much of the area is still to be excavated.

- Stone Cross Windmill Trust was awarded a Heritage Lottery Fund grant in 1998 for restoration of the grade II* building which is back in working condition and open to the public. The restoration work received an award from the Society for the Protection of Historic Buildings in 2005.

- The Martello towers 64 and 66 are both currently in poor condition and are on English Heritage's Buildings at Risk Register.

Coast and rivers

- The Coastal Flooding Management Plan and Shoreline Management Plan policies for Pevensey Bay through to Eastbourne with respect to tidal flooding is that of 'hold the line' for the next 100 years.

- The shingle is managed and frequently moved as part of beach nourishment schemes to build up sea defences. The scale of this work increased during the 1990s. The current scheme started in 2000 and will form the major defence strategy for much of the region's coastline until 2025. It offers a considerably improved level of protection, though the area may still be susceptible to temporary flooding caused by overtopping of the defences.

- Eastbourne's ageing coastal protection was replaced in a major scheme in the mid to late 1990s. The new groyne field consists of 94 timber groynes that run from Holywell to Langney Point. A concrete seawall, providing secondary protection, runs along the landward side of the beach from Holywell to the Fishing Station. In some areas additional rock revetments have been installed to protect vulnerable sections.

- Since the 1990s, a mechanism has been in place by which the effect of new developments on flood levels is compensated for through the construction of additional flood storage (lakes) in Eastbourne Park.

- A survey in 2006 showed that year round target water levels of 30 cm below field level were needed to address areas of the SSSI in poor condition. Improved water level control on Pevensey Levels has been made possible largely by recent modification of existing sluices and construction new ones, together with better management of abstraction for public water supply.[17]

Minerals

- Before the construction of Sovereign Harbour, sand and gravel was sourced from the beach area known as The Crumbles.

[17] Pevensey Levels SSSI Water Level Management Plan, Environment Agency (December 2006)

Drivers of change

Climate change

- Pevensey Levels NCA is particularly susceptible to the effects of climate change due to its geographical location and hydrology

- The area is predominantly protected from coastal flooding by shingle barriers and it is anticipated that these will roll back across the low-lying hinterland in response to long-term sea level rise and a lack of contemporary sediment entering the system. With time, breaching of the barrier and inundation of the low-lying hinterland may become more frequent and expand the area of transitional saline-influenced habitat.

- Climate change is likely to impact upon the area's hydrology, which is dominated by the dynamics between river inflow and rainfall, and outflow to the sea and evapo-transpiration (groundwater levels are not so important, since a layer of clay isolates the area from the underlying aquifer).

- Local projections for the decrease in daily summer precipitation by the 2080s for Eastbourne, are significantly different between the regional and local scale. The regional central estimate is for a 23 per cent reduction but the local projection is a 38 per cent reduction.[18]

- Drier, hotter summers, exacerbated by increased demand for water, could lead to a lowering of water levels and result in a reduction of wet pastures and drainage ditches, ultimately resulting in the loss of wetland habitats of international importance. Above average daily sunshine hours, high mean annual temperatures and the strong winds that sweep across the marsh already result in high rates of evapotranspiration. On the Pevensey Levels evapotranspiration losses between May and August exceed rainfall, leading to high soil water deficits in late summer. Analysis of long term mean monthly rainfall indicates a trend of decreasing rainfall over the Levels from 840 mm (in the west) to 720 mm (in the east) due to a rain shadow effect created by the South Downs to the west of the site.[19]

- Higher water temperatures may lead to changes in composition of species in the ditches.

- There is a risk that in some years target water levels may not be met due to dry periods and in particular the inability to feed from the Waller's Haven, leading to drying of the grazing marsh.

- Land management is important in maintaining the hydrological dynamic and drier conditions may lead to pressure for conversion of pasture to arable use. Also, warmer conditions may extend the grazing season.

- As water supplies decline due to decreased seasonal rainfall and over-abstraction, low flows may become a regular feature and of increasing concern, resulting in reduced flushing of the system and associated problems such as increased and longer occurrence of toxic algal blooms.

[18] Adapting to Climate Change: Future climates, Eastbourne Borough Council (July 2011; URL: www.eastbourne.gov.uk/EasysiteWeb/getresource.axd?AssetID=183124&type=full&servicetype=Inline)

[19] 1961–1990; Douglas, S. (1993) Water Resource Balance for the Pevensey Levels Catchment. Unpublished Report. Worthing, NRA.

- This coastline is susceptible to storm surges, which tend to be caused by two main mechanisms; easterly surges generated in the North Sea and westerly surges generated by depressions in the Atlantic. These are likely to become more common.
- Fiercer and more frequent storms may lead to unpredictable flooding leading to loss of seaward habitat in flood protection services and exposure of defences to sea level rise and storm surges.
- High winds associated with more frequent storms also threaten mature trees in parks and on streets.
- Increased autumn/winter rainfall and more frequent storms may increase the potential for more frequent and severe flooding events (predominantly as a result of surface water flooding), potentially affecting significant areas of settlement at Eastbourne, Willingdon and Pevensey. This may also impact on water quality throughout the NCA.
- The majority of the NCA is low-lying with the mean elevation only 7 m above sea level. Climate change is likely to increase tidal flood risk; this will be exacerbated in areas where increased sea levels inhibit pumped land drainage. Tidal inundation within coastal areas could result in saline intrusion into freshwater bodies, many of which are designated for their nature conservation interest and depend on fresh water. Coastal processes along the coast are dynamic and of considerable importance for flood protection with shingle beaches being constantly managed to prevent inundation.
- Sea-level rise is likely to result in the further loss of coastal habitats, predominantly shingle beach, with 'coastal squeeze' around areas of flood defences (which run along the majority of the NCA's coastline). The Shoreline Management Plans state that development along the coast should take into account the future potential rises in sea level and the effect on the coastline of less intensive sea defences. Opportunities for rolling back habitats and systems are limited in most areas by factors such as existing development and transport infrastructure.
- Beaches along this section of the coast are expected to denude substantially and additional maintenance will be necessary to sustain an amenity driven frontage. If this becomes technically challenging then alternative (hard engineering) options may need to be sought.
- It may not be possible to provide sea defences that will survive in the longer term and costs will increase with rising sea levels and in the face of more frequent and fiercer storms or a change in their directions.
- As is common across the south coast, the area will be more susceptible to colonisation by migratory species currently not native to England, particularly flying invertebrates. Northward migration in response to a changing climate may be first recorded throughout this and other coastal areas. Recruitment of introduced species such as carp is also possible.

Other key drivers

- Eastbourne is the main settlement within this small NCA and 5,022 new homes are planned between 2006 and 2027. There are also plans to optimise the area's potential to provide employment space and associated housing in sustainable and strategically accessible locations along the A22 corridor (potentially affecting the NCA's western edge). Significant development is also planned for Hailsham and Bexhill, just beyond the NCA.

- The improvement of road links between Bexhill and Hastings may increase traffic through the NCA.

- Illegal activities such as fly-tipping, hare coursing and the taking of eels are particular problems on the Levels, while motorbike incursion, taking of sea kale and litter from both beach users and the sea are issues on the shingle.

- The hydrology of the Pevensey Levels is complex; a relic of centuries of development of the drainage system. There is a risk that, in some areas, target water levels may not be met due to drainage through structures not visible at the field surface which have not been previously mapped. Adoption of an option to restore favourable status should be accompanied by subsequent monitoring to enable troubleshooting and to gauge the success of any management change.

Sensitive restoration utilising traditional local building materials.

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.

Characteristic low mounds on the Levels are often legacies of the salt-making industry.

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: Manage and plan for change in the function of the network of watercourses, water management infrastructure and wetland habitats across the Levels to provide benefits in improved flood management, water and soil quality, viable agricultural futures and protection of sub-soil archaeology, and to increase the range and extent of habitats and species and their resilience to climate change.	↔ *	↔ *	↗ ***	↗ *	↔ ***	↑ ***	↑ ***	↑ ***	↗ ***	↗ ***	↗ *	↗ *	↗ **	↑ ***	↑ ***	↑ ***	↑ **	↑ ***	↔ *
SEO 2: Manage and enhance the distinctive character of the open, low-lying Pevensey Levels landscape and its heritage features such as medieval farmstead sites, boundaries and relics of the salt making industry, benefiting landscape character, tranquillity, and sense of place and history.	↗ *	↗ *	↔ **	↗ *	↔ ***	↗ **	↗ ***	↗ ***	↗ ***	↗ ***	↔ **	↔ **	↗ ***	↑ ***	↑ ***	↑ ***	↑ **	↗ ***	↔ *
SEO 3: Safeguard and manage the shingle beaches and coastline features that maintain the existence of the NCA and its associated habitats and species, benefiting protection against coastal erosion and flooding, biodiversity, sense of place and history, and geodiversity.	↔ *	↔ *	↔ **	↔ *	↔ ***	↗ *	↗ ***	↑ ***	↗ ***	↗ ***	↔ ***	↔ **	↑ ***	↑ ***	↑ ***	↑ *	↑ *	↗ **	↑ **
SEO 4: Plan for the creation of a strong landscape framework associated with the identified future growth of Eastbourne, Hailsham and Bexhill and along the A22 corridor. Manage and enhance access to green space within the area, balancing recreational provision with nature conservation, and ensure that Eastbourne's surviving population of mature elms is protected.	↔ **	↗ *	↔ ***	↗ ***	↔ ***	↗ ***	↗ **	↑ ***	↗ **	↗ **	↗ ***	↗ ***	↔ ***	↑ ***	↑ ***	↑ ***	↑ ***	↑ ***	↗ *

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
Open, low-lying reclaimed wetland, largely treeless and mainly under pasture with some arable on drier land.	■ The open, largely treeless but productive landscape of today's open marshland is a product of medieval and later drainage. This landscape is historically important as it reveals the story of the relatively recent land reclamation from marsh ■ Habitats can occur in a dynamic mosaic and are heavily influenced by both land management and the hydrological regime. ■ The open wetland is a defining characteristic of the whole area. ■ Occasional willows or thorns are often dramatically wind-sculpted. ■ This quiet simple landscape, with wide skies, the cries of wetland birds and the sighing of the wind in the reeds can provide some of the most intense feelings of remoteness in south-east England.
Parks and gardens.	■ Eastbourne has many parks including the 34 ha green and leafy Edwardian Hampden Park, the 13 ha Princes Park on the seafront and many smaller publically accessible parks, gardens and squares. ■ Eastbourne Park has created a renewed landscape of quiet pasture and large open stretches of water for the community to enjoy in the heart of town.
Water-filled ditches and dykes, forming a distinctive coastal floodplain landscape.	■ Extensive networks of ditches and dykes form important connecting links between wetland habitats and in summer are vibrant with dragonflies and damselflies. ■ Large main drainage channels support an important coarse fishery. ■ Drainage ditches and banks divide fields, with channels forming barriers to grazing stock, creating a chequer-board pattern.
The coastline with its long sweeping stretches of shingle beach peppered with historic defensive features such as Martello towers.	■ The beach forms a natural defence that helps protect the area from coastal flooding during storm events. ■ Views extend several kilometres, interrupted in many places only by the historic Martello tower network. ■ There is pressure from large developments along the coastline. ■ Beyond the coastal towns, the beach provides a peaceful refuge, popular with recreational walkers.
Mature elm trees.	■ East Sussex is one of the few places where large numbers of mature English elm trees can still be seen. ■ Eastbourne has around 10,000 elms, about a quarter of which are on streets, creating, along with mature examples of other species, a surprisingly leafy feel to the urban landscape.

Landscape opportunities

- Ditches and watercourses are seen as features in the landscape and need careful management to maintain their fragile ecology. Management of the field boundary ditch system will reinforce the wetland character of the area.
- There are opportunities to promote utilisation and appreciation of the rich variety of historical features, including buried assets, for recreation and research.
- Proposed development and the flood mitigation role of Eastbourne Park provides opportunities to further extend the scope and quantity of important habitat, while providing high quality, accessible greenspace for the local community.
- Long views and open expansive un-wooded wetland is characteristic of the Levels and these need preserving by measures such as visually mitigating the impact of large structures, modern buildings and energy infrastructure which are highly visible in this flat landscape.
- Ensure ongoing access to and space for recreation and leisure activities, both along the coast and inland.
- Allow for natural processes to maintain a dynamic coastal landscape and maintain flood defences in line with the Shoreline Management Plan which ensures the existence of the NCA.

From the air, the pattern of irregular pasture hedges, mainly following the course of ancient ditches, can be contrasted against the more uniform arable field boundaries on higher ground.

Ecosystem service analysis

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Food provision	Fertile grasslands Orchards Arable farming systems Most (72 per cent) land is classed as Grade 3 Fish	83 per cent of the area is under pasture or is uncropped. This supports the principal food producing activity; livestock farming. Around half of farms are engaged in livestock farming. Land use on the Pevensey Levels SSSI is presently dominated by grazing of cattle in the summer and sheep in the winter. Historically the site was managed by low intensity grazing, although in recent years silage production was introduced. The area supports an important coarse fishery.	Local	Permanent pasture supports beef, dairy and sheep farming. Much of the farming is low-intensity and/or organic and is often marketed towards the high-quality market. Some traditional orchards survive but horticulture accounts for only 6 per cent. Improved drainage has allowed some arable farming but this remains at less than 10 per cent and has reduced in the past 10 years as incentive measures and changes to water level management cause more land to revert to pasture.	Opportunities exist to support and extend existing "local brand" initiatives. A farm in the area was a recent finalist in 2013 Farmer's Weekly Dairy Farmer of the Year for the marketing of their organic produce and forging local identity. Another won RSPB's wildlife-friendly farming award so opportunities exist to build on success and extend this good practice.	**Food provision** **Regulating water quality**
Timber provision	Urban and parkland trees Elms in Eastbourne	Existing woodland coverage is very low at 1.5 per cent. Little or none of the timber in the area is managed for commercial timber production. Eastbourne has around 10,000 elm trees.	Local	The open, treeless landscape is a defining feature of this NCA. The situation of any new woodland planting would need to be carefully considered to maintain the landscape character. It should avoid the open marshland and wetland sites (except where new wet woodland is appropriate). The urban area is surprisingly woody with many parks and mature street trees but these are managed for recreation, biodiversity and aesthetic appeal and present few opportunities for commercial timber supply. East Sussex contains the largest substantial population of mature elms on UK mainland and the Dutch Elm Disease Control Area extends from Pevensey to Hove.	Urban parks may accommodate some tree planting and there are plans to surround Eastbourne Park with trees and shrubs. Generally, however, the landscape character of the Levels makes opportunities to extend woodland extremely limited so opportunities are minor.	**Timber provision** **Biodiversity** **Genetic diversity**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Water availability	Chalk aquifer River and ditches Water treatment works Natural springs	Most of the public water supply for the area comes from the Cuckmere catchment via Arlington Reservoir (outside the NCA). A small area of the NCA overlies the Eastbourne/Seaford chalk aquifer but there are no other significant aquifers. The main river is the Waller's Haven whose headwaters rise almost completely in the Ashdown Sands of the High Weald. A major public water supply abstraction on this river is located within the SSSI. In summer months the Haven acts as a reservoir for public water supply to Bexhill (outside the NCA). To the west networks of rivers join to form the Pevensey Haven which discharges at Pevensey Bay. A third smaller system called the East Stream, discharges to the sea to the east of Normans Bay. In addition to the natural input, seven sewage treatment works discharge into the Pevensey Levels.	Regional	The Seaford/Eastbourne chalk aquifer is classed as having no water available for further abstraction. High water levels are needed in the Waller's Haven to ensure outlying ditches and streams are kept topped up to support the resident wildlife. The Ramsar site is for the rare ditch ecology which is water dependent. The wet fields further provide havens for wintering wildfowl and waders, although numbers of wildfowl have previously declined due to the drying out of the land. The two main river systems enable summer feeding, such as the transfer of water around the ditch network, of about two-thirds of the SSSI. In general the eastern side of the Pevensey Levels is higher than the west and has lower water levels. As water supplies decline due to decreased rainfall or over abstraction, low flows may become a regular feature and of increasing concern, resulting in reduced flushing of the system and the occurrence of algal blooms. Water from the sewage treatment works can account for large proportions of water inputs to the wetland, particularly during dry summers. They are an import to the hydrological system, water having originated in the Arlington Reservoir, in the catchment of the Cuckmere River in Low Weald. An important water resource for the Pevensey Haven system is provided by the discharge from two waste water treatment works at Hailsham but these are associated with water quality problems, particularly during times of low flow in the receiving waters. The western side of the SSSI does not generally have water resource problems and contains the lowest and wettest land, though suffers from water quality problems.	Seek to reduce the demand for water abstraction through promoting public awareness of water conservation and creating more on-farm water storage. There is a need to promote water conservation measures in new and existing development to support existing water resources and help manage demand. Work to safeguard natural water supplies, such as springs.	**Water availability** **Biodiversity**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Genetic diversity	Elms Sussex cattle	Eastbourne has around 10,000 elm trees. There are several breeders of Sussex cattle in or around the NCA	National	East Sussex has the largest population of mature elms on UK mainland and specimens are therefore valuable genetic resources. Although more associated with the neighbouring Weald, Sussex cattle are also a traditional breed of the Pevensey Levels. Their docile nature, ability to thrive on poor and marshy land and general hardiness mean they are still grazed within the NCA.	Support control of Dutch elm disease and encourage research initiatives to prevent infection and breed resistant strains. Support promotion and use of traditional breeds such as Sussex cattle within the NCA.	**Genetic diversity** **Sense of place / inspiration** **Sense of history** **Biodiversity**
Biomass energy	Low lying wet fields Ditches	There is very limited woodland cover within the NCA (1.5 per cent), offering limited potential for the provision of biomass. Potential short rotation coppice (SRC) yield is medium in the north of the NCA and low in the south around Eastbourne. The potential yield for miscanthus is high apart from a very small area to the south-west (over Eastbourne) that has medium potential.	Local	Biomass crops (SRC and miscanthus) would introduce a vertical element to an otherwise relatively flat landscape. SRC would be more appropriately located near settlements on higher ground, with lowland agricultural sites most suitable for miscanthus. Eastbourne Park has also been assessed as being suitable for biomass crop growing because the soil type is suitable for willow and other biomass plants.	There may be limited opportunities for the creation of SRC in wetter, less fertile areas where it compliments existing habitat and helps regulate water flow and quality, but does not impact heavily on the characteristic open landscape, damage buried archaeological features or obscure heritage assets. Explore opportunities to plant biomass crops within Eastbourne Park where this does not impact on biodiversity or landscape character. There may be opportunities for renewable energy generation on the Sovereign Harbour development, particularly combined heat and power.	**Biomass energy**
Climate regulation	Soils Permanent pasture Grazing marsh and wet meadows Fen	Loamy and clayey soils of coastal flats with naturally high groundwater cover 54 per cent of the NCA; with smaller areas of slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils, slightly acid loamy and clayey soils with impeded drainage and freely draining lime-rich loamy soils. Wetland habitats, typical of the area, can provide valuable carbon stores. In accreting systems salt marshes have the potential for long-term storage of carbon.	Local	Across almost all of the NCA there is a relatively low proportion of carbon stored in the top soil horizon (under 10 per cent), although there is a small area with a slightly higher carbon content to the far south. The undisturbed soils of the coastal and flood plain grazing marsh, and the wet loamy soils offer a significant carbon storage resource and future carbon storage capacity. High carbon levels may also be associated with the soils of the coastal flats where some variants may have organic-rich topsoils or peaty layers.	Carbon sequestration can be increased by increasing organic matter inputs on cultivated land where this does not impact on the fragile ecology of the area and by reducing the frequency / area of cultivation. Encourage the creation of woodland as part of new housing and transport infrastructure development where appropriate.	**Climate regulation** **Sense of place / inspiration**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Regulating water quality	Rivers Ditches Fen Permanent pasture Water treatment works	This NCA falls within the Pevensey Priority Catchment that includes Waller's Haven. A small area to the south overlies the Eastbourne/Seaford chalk aquifer but there are no other significant aquifers. The main river is the Waller's Haven whose headwaters rise almost completely in the Ashdown Sands of the High Weald. A major public water supply abstraction on this river is located within the SSSI. To the west networks of rivers join to form the Pevensey Haven. There is also a third smaller system called the East Stream. Seven sewage treatment works discharge into the Pevensey Levels.	Regional	The area suffers from sedimentation due to runoff from the legacy of past intensification and the main land uses of maize, stockfeed, cereals and extensive beef and sheep / grassland. There are problems from metaldehyde from slug pellets on the arable land. Much pollution originates outside the NCA. Non-native invasive species, particularly floating pennywort, are a major problem. Supply to the Pevensey Havens is affected by water quality problems associated with two waste water treatment works at Hailsham, despite recent improvements. These treatment works presently have 200 houses headroom which has been met. A joint project between Environment Agency and Natural England has identified where Pennywort is on the SSSI, assessed how it can be treated with the minimum possible negative environmental impact on the site and put in place funded control programme to commence Autumn 2013.	Support incentives such as agri-environment schemes which provide significant opportunities to improve sites and deliver multiple benefits. Seek opportunities to create extensive wet grassland to contribute to resource protection under the Catchment Sensitive Farming initiative. Encourage reduced fertiliser inputs on cultivated soils by ensuring Government guidelines (Nitrate Vulnerable Zone regulations) are followed by farmers and land managers, not only in Pevensey Levels but also in adjacent NCAs which supply much of the area's fresh water. Work to eradicate non-native invasive species, particularly along riverbanks and promote awareness of the importance of biosecurity, particularly in areas of heavy public usage, to prevent their spread. Promote biosecurity awareness by publicising initiatives such as "Check, Clean, Dry". Support initiatives to reduce pollutants such as improvements to water treatment systems.	**Regulating water quality** **Biodiversity** **Regulating soil quality** **Recreation**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Regulating water flow	Ditches and drains Eastbourne Park Floodplains	The majority of the NCA is at high risk from flooding, including heavily-populated areas within Eastbourne. Water moves around the Pevensey Levels via network of ditches. Water levels are controlled by a series of pumping stations and sluices installed in the 1960s and 1970s for the benefit of agriculture and conservation. In many of the ditches water can flow in either direction. In addition to the natural input, seven sewage treatment works discharge into the Pevensey Levels. Pevensey Levels Ramsar site is for the rare ditch ecology which is water dependent. Eastbourne Park is a flat, low-lying landscape of approximately 400 ha of grazed wetland. Its primary role is flood storage, mitigating the effects on flooding on the surrounding built environment.	Regional	Since the early 1990s, a mechanism has been in place by which the effect of new developments on flood levels is compensated for through the construction of additional flood storage (lakes) in Eastbourne Park. Eastbourne Park has two main hydrological functions. It allows the passage of water from many streams off the nearby South Downs and Low Weald, to the outfalls at Pevensey Bay and Princes Park where it reaches the sea. It also allows the storage of flood water at peak surface water flows and during high tide locked conditionsThe Catchment Flood Management Plan and Shoreline Management Plan for Pevensey Bay to Eastbourne with respect to tidal flooding is that of 'hold the line' for the next 100 years. The low hydraulic conductivity of clay soils has resulted in the installation of under-drainage in parts of the Pevensey Levels where arable agriculture has taken place. Between 1976 and 1978, the area of the Pevensey Levels under-drained increased from 120 ha to more than 500 ha.The hydrology is dominated by the dynamics of the relationship between stream inflow, rainfall, outflow to the sea and evapotranspiration. Groundwater movement is less important, since a layer of clay effectively isolates the Levels from the underlying chalk aquifer. The water level management plan for Pevensey Levels SSSI aims to keep water levels constant (about half a metre below ditch shoulder) all year around. Water from the sewage treatment works can account for significant proportions of water inputs to the wetland, particularly during dry summers. Contributions from these sources are an import to the hydrological system, water having originated in the Arlington Reservoir, in the catchment of the Cuckmere River but are often associated with water quality problems, despite recent and ongoing improvements. Eastbourne Park Compensatory Flood Storage Scheme is likely to require expansion to attenuate the increase in runoff that is expected to arise as a result of climate change and planned development.	The Catchment Flood Management Plan notes that the Pevensey Levels floodplain is pumped into the local drainage network and as such the capacity of this flood storage area is not fully utilised. Ensure that proposals for Eastbourne Park do not reduce its effectiveness as a flood storage and mitigation area. Investigate flow restrictions and set up a programme to make sure the channel has sufficient capacity; encourage sustainable land use practices to reduce run-off rates from agricultural land. Work with partners to develop a strategy plan for river restoration and naturalisation, with the objectives of reducing run-off and contributing to wider catchment benefits. Manage water bodies, including ditches, to increase structural diversity which will help to retain winter floodwater for longer and provide refuges for species vulnerable to inundation events. Encourage agricultural practices that build up organic matter and reduce the risk of soil compaction and thus improving water infiltration. Find ways of assimilating new or reinforced flood defences into local landscapes with minimum visual impact and disruption to existing habitat or species movement. Ensure that sustainable urban drainage systems are incorporated into new and existing development.	**Regulating water flow** **Biodiversity** **Regulating water quality**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Regulating soil quality	Water management systems Rivers and ditches Clay soils Permanent pasture	Water on the Levels is artificially managed through a series of sluices and drainage systems. Loamy and clayey soils of coastal flats with naturally high groundwater cover 54 per cent of the NCA; with smaller areas of slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils, slightly acid loamy and clayey soils with impeded drainage and freely draining lime-rich loamy soils. Reflecting the vulnerability of the soils, Pevensey is one of Defra's Catchment Sensitive Farming initiatives.	Local	The marine and estuarine alluvium sediments have given rise to the present day loamy and clayey soils. Soil quality depends heavily on water management in this NCA. Locally some soils are saline and at risk of structural damage where drained. The loamy and clayey soils have a naturally high groundwater, are moderately fertile and a 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 Where there is a high silt/fine sand content compaction and / or capping may be an issue which may be reduced by increasing soil organic matter content. Slightly acid loamy and clayey soils with impeded drainage (10 per cent) are easily poached by livestock and compacted by machinery when the soil is wet. Weak topsoil structures can easily be damaged. Careful timing of activities is required to reduce the likelihood of soil compaction.	Maintenance of the integrity of the hydrological system in this NCA will contribute to maintaining and improving soil quality. Encourage creation of significant areas of attractive wetlands with restoration and further expansion of reed beds and wet grassland both on the Levels and as part of sustainable urban drainage systems within the Eastbourne area. Encourage the reinstatement of permanent pasture from arable to reduce erosion and need for artificial fertilizer. Encourage reduced fertiliser inputs on cultivated soils by ensuring Government guidelines (Nitrate Vulnerable Zone regulations) are followed by farmers and land managers. Encourage best practice farming methods to reduce agricultural run-off. Such measures may include; the use of shallow cultivation techniques; maintenance of ditches and associated control structures; reinstatement of permanent pasture and introduction of grassland margins to arable fields. Work with landowners, the Internal Drainage Board and others to maintain high water levels, particularly in areas with soils with high peat content, to avoid desiccation and oxidisation. Seek and realise opportunities to improve farm infrastructure, particularly the location of feeders and drinkers, and the use of droves and farm tracks, to minimise localised compaction and, or poaching.	**Regulating soil quality** **Regulating water quality** **Regulating water flow** **Recreation** **Sense of place / inspiration** **Biodiversity**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Regulating soil erosion	Clay soils Permanent pasture Sea defences	The loamy and clayey soils of the Levels are at low risk of soil erosion although they are increasingly under threat from flooding, including sea level rise.	Local	Consideration given to the regulation of soil erosion has historically been low, although it is now recognised as a problem within the Defra Catchment Sensitive Farming Priority Catchment in the area. Parts of the area suffer from damaged soil structure, notably compaction and impeded drainage, which accelerates run-off. This leads to increased erosion rates and sedimentation of watercourses. Exposed peat soils are also highly vulnerable to both wind and water erosion. The impact of predicted climate change (particularly increased rainfall intensity on bare arable soils and lengthy water-logging of grassland), increases the potential for soil damage. Livestock can cause significant soil erosion along the edges of ditches and dykes with a subsequent decline in water quality.	Encourage the reinstatement of permanent pasture from arable to help reduce erosion problems. Encourage agricultural practices that build up organic matter and reduce the risk of soil compaction and thus improving water infiltration. Work with farmers and horse owners to ensure that livestock numbers are appropriate to prevent problems associated with over-grazing. Seek and realise opportunities to improve farm infrastructure, particularly the location of feeders and drinkers, and the use of droves and farm tracks, to minimise localised compaction and, or poaching.	**Regulating soil erosion** **Regulating water quality** **Regulating water flow**
Pollination	Parks and gardens Allotments Meadows Verges	Pollinating insects are generally supported by a range of semi-natural habitats, in particular species rich grasslands. Interstitial habitats (such as the edges of farm tracks and ditches and dykes) that remain in the spaces between crops are also key sources of both pollen and nectar for insects that pollinate commercial arable crops.	Local	Increases in habitat for pollinators such as creation of areas of semi-natural habitat, hedgerow improvement and increases in field margins will increase the delivery of this service. These measures would create important corridors and habitat mosaics for pollinator species. A strong pollinator population supports production of a wider variety of food products and supports food production in the future.	Work with, local authorities and parishes to create multi-functional green spaces incorporating sympathetic management for pollination including appropriate management of road verges into cutting regimes, adding to the network of nectar sources close to pollinated food crops. Increase the area of semi-natural habitats, with particular emphasis on floodplain grazing marsh.	**Pollination**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Pest regulation	Sea South Downs	Bounded by sea to south and the Downs to the west, the west of the area is within the Dutch Elm Disease Control Zone.	National	The geographical position, protected from prevailing winds by the largely treeless Downs to the west and the sea to the south, plus early vigilance by authorities, has enabled the Eastbourne area to retain much of its mature elm population and may also help the fight against new tree pests and diseases.	Support the East Sussex Elm Protection Scheme and other measures to control tree diseases and pests.	**Pest regulation** **Biodiversity** **Sense of place /inspiration** **Sense of history**
Regulating coastal erosion and flooding	Shingle beaches Sea defence measures Ditches, drains and wetland	Much of the coastline consists of a shingle upper beach and a sandy lower foreshore. Coastal shingle is in a constant state of change from natural sediment processes. Eastbourne's main defence against the sea is the shingle bank. 94 timber groynes run along Eastbourne's coastline from Holywell to Langney Point. A concrete seawall, providing secondary protection, runs along the landward side of the beach from Holywell to the Fishing Station. Additional rock revetments have been installed to protect vulnerable sections. Pevensey Bay sea defences protect a 50 km2 area including Pevensey Bay, Normans Bay, Langney, Westham and parts of Pevensey itself. Within this area there are more than 10,000 properties, recreational and commercial sites, vital transport links and wetlands of international importance. The wetlands themselves provide an additional line of flood defence, both as a natural buffer and as a result of active management in the form of embankments and dykes.	Regional	'Hold the Line' is the long-term policy for this stretch of coast. This is likely eventually to result in almost complete loss of the area's beaches to coastal squeeze, although ongoing defences are essential to maintaining the existence of the NCA. Shingle is an excellent absorber of wave energy and is restrained from excessive movement along the beach (littoral drift) by the groynes. Eastbourne's ageing coastal protection was replaced in the 1990s. Future defences will be managed as open beach with periodic shingle replenishments, the maintenance of strategic groynes, recycling of material around the beach and re-profiling during and after storms. It may not be possible to provide sea defences that will survive in the longer term and costs will increase as sea levels continue to rise and in the face of more and fiercer storms or a change in their directions. The character of the area is a product of centuries of management of flood defences, both along the coast and within the Levels.	Reflect the priorities of the shoreline management plan and promote the natural adaptation and regeneration of coastal habitats as sea levels rise. Find ways of assimilating new or reinforced flood defences into local landscapes with minimum visual impact and disruption to existing habitat or species movement. Prevent aggregate extraction which would reduce the effectiveness of the sea defences. Discourage activities that may compromise the flood protection abilities of wetland behind the coastal defences.	**Regulating coastal erosion and flooding**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Sense of place / inspiration	Sea views Downland backdrop Historic buildings Remote wetland landscape Seaside resorts Shingle beaches	The geographical location; low-lying with sweeping views along the coast, framed within the hills of the South Downs and High Weald, make this NCA a source of historical and continued inspiration.	Regional	Artist Eric Ravilious lived in Eastbourne and often used local scenes for inspiration. The Towner Art Gallery in Eastbourne has a large collection of his work. Debussy completed his masterpiece, La Mer (The Sea) in Eastbourne in 1905 and the coastal views remain a source of inspiration for modern artists. Some farms on the Levels offer educational opportunities and some schools within the NCA have developed imaginative methods to inspire interest in the natural world such as creation of wildlife areas and Forest Schools.[20]	Protect the open, exposed character of the low-lying wetland landscape, with its strong sense of remoteness and wide open views to the coast, South Downs and High Weald. Conserve the distinctive irregular field boundary network of drainage ditches and banks to enhance cultural heritage and sense of place. Promote interpretation to ensure that visitors and local people are aware of the key interest features of the shingle areas. Encourage local schools to participate in environmental education opportunities and create wildlife habitat areas.	**Sense of place/ inspiration** **Recreation** **Sense of history** **Biodiversity**

[20] www.westrisejunior.co.uk/

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Sense of history	Reclaimed land with historic drainage patterns and sea defences Salt-making mounds Historic defensive buildings 188 listed buildings and Scheduled Monuments Seaside resorts	Much of the area was under water until relatively recently. The area was important for salt-making. The area is strategically important and has evidence of continuous construction of defensive structures. Scheduled Monuments include Shinewater bronze-age site, designated in 2012. Traditional buildings are of brick and flint, sometimes weatherboarded, typically with plain clay tile roofs. There are few pre-1750 farmstead buildings. Seaside architecture ranges from Eastbourne's Victorian seafront to small-scale resorts along the coast.	National	The entire landscape of the Levels maps the reclamation work started by local religious houses in the Middle Ages. The relative permanence of the ditches and the continued pastoral use makes parts of this landscape a remarkable survival of a medieval field system in a lowland context. Some drainage channels and sea defences are relatively unchanged since medieval times. From at least Saxon times, the area was important for salt-making and low mounds on the otherwise flat landscape of the Levels are usually remnants of this industry. There are many important historic defensive structures, from the Roman "Saxon Shore Fort" of Pevensey Castle to Napoleonic structures such as the Redoubt Fortress in Eastbourne. Martello towers 64 and 66 are on English Heritage's At Risk Register. Tower 65 had collapsed into the sea by 1938. The views to and from Tower 66 and other towers in the chain demonstrate their role as a defensive chain and the intention to deny safe landing places to attackers. Their settings therefore are critical in understanding the historical context of these buildings. Scheduled Monuments include the deserted medieval village at Northeye and the bronze-age site discovered during creation of Shinewater Park in the 1990s. On the Levels, archaeological features are often within arable land on higher ground so these need to be protected from inappropriate practices such as deep ploughing. Traditional farm buildings tend to feature local bricks and flint with occasional weatherboarding or hung tiles and tiled roofs. The seafront at Eastbourne is essentially Victorian/ Edwardian, being protected for many years by clauses in the lease from the Duke of Devonshire preventing "inappropriate" development. Eastbourne's Grade II* Victorian pier was designed by Eugenius Birch and compliments the fine hotels which grace the promenade. Along the coast, smaller towns like Pevensey Bay have more jaunty small-scale seaside resort architecture.	Conserve the historic landscape features such as evidence of early reclamation, early sea defences such as the 14th century "Crooked Ditch" and mounds left by the salt-making industry. Ensure that development does not undermine the fragile structure of surviving Martello towers and preserves their settings. Ensure that land management activities such as ditch clearing and ploughing do not damage important historic features, for example by paying due regard to findings of the Northeye Report.[21] As much of the Shinewater bronze-age site remains unexcavated, there is much potential for research and discovery. Support continued research and promotion of the site through interpretation and education.	**Sense of history** **Recreation** **Sense of place / inspiration**

[21] Northeye, Pevensey Levels, East Sussex Geoarchaeological Assessment Report, C Champness (2009)

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Tranquillity	Wetland landscape Parks Coast	Tranquillity is associated with the large area of grazing marsh away from the urban areas of Eastbourne, Hailsham and Bexhill and the A259. The amount of land classed as "urban" has increased steadily since the 1960s to 19 per cent in 2007.	Regional	Longer term, the decline in tranquillity will continue. Traffic levels are likely to increase and expansive development around the main centres of population (Eastbourne, Hailsham and Bexhill) will have an impact. The amount of urban land is also likely to increase further in the future.	Incorporate measures into new development that integrates green and open space to enhance and extend the network of existing undisturbed and tranquil places. Realise opportunities to introduce greenspace, and particularly tree planting, into existing developments to buffer and minimise the effects of noise and light pollution. Support appropriate and sensitive native tree and shrub planting schemes along the perimeter of Eastbourne Park for the benefit of biodiversity and to preserve tranquillity within the Park.	**Tranquillity**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Recreation	Coastline Cycle routes Ditches and wetlands Parks Heritage assets Sports facilities	The NCA falls between large population centres of Bexhill-on-Sea to the east and Eastbourne to the west. 3 percent is classed as publically accessible and there are 113 km of public rights of way within the NCA. National Cycle Route 21 runs between Pevensey and south London. Large main drainage channels support an important coarse fishery. Around 4.8 million people visit Eastbourne each year. There are 64 ha of public sports pitches	Regional	Walking (including dog walking) and horse riding occur on the many public footpaths and bridleways. There is a golf course on the south-east corner of the NCA. As well as the National Cycle Route, the roads within the site are used for recreational cycling. Two fields are used for the flying of radio-controlled model aircraft under time-limited conditions. The Wallers Haven is occasionally used for rowing training by a local school. All the major havens are used for angling. Eastbourne's economy is strongly influenced by tourism, with over 10 per cent of local jobs in this sector. The strongest employment growth has been in the sports, arts and leisure activities sector. Tourism contributes an estimated £336 million to the local economy (2010). The importance of environment-enhancing features such as open greenspace for the local population and to attract businesses and tourists is recognised and initiatives include promotion of health benefits of outdoor activities such as walking. Pevensey Castle is a popular tourist destination. The Health Improvement Partnership identified 'Promotion of Healthy Lifestyles' as one of three local priorities. The objective is: "To increase the health of the people in Eastbourne through access to physical activity, healthy lifestyle awareness-raising, and encouragement of family friendly/work life balance policies within the workplace." More than half of Eastbourne residents say they visit natural areas such as beaches, parks, downland at least once a month mostly for recreational such as a 'gentle walk', 'active leisure' and 'informal sport'.[22]	Maximise the recreational benefits provided by the coastline, particularly the feelings of tranquillity provided by the shoreline. During the development of coastal access, ensure that the area is protected from damage resulting from excessive recreational pressure (for example by the development of a strategy for public access management). Support well planned green infrastructure to provide sustainable access routes that enhance community safety, foster community cohesion and contribute to physical and mental health. Support measures to strengthen sustainable travel networks to improve access from Eastbourne to adjacent natural resources such as the South Downs National Park. Link public footpaths, cycle paths, settlements and long distance paths, especially on higher ground to reduce impact of rising water levels. Public greenspace within the urban area is seen as critical to commitments to maintain and enhance Eastbourne's reputation as a thriving seaside resort and healthy place to live and work so there are opportunities to create new areas as part of ongoing development. Ensure that measures to improve access to Eastbourne Park are sensitive to the needs of agriculture and wildlife and minimize potential hazards created by the many water bodies.	**Recreation** **Tranquillity** **Sense of place / inspiration** **Sense of history**

[22] Health Improvement & Modernisation Programme 2003 to 2005, Eastbourne Health Improvement Partnership (URL: www.eastbourne.gov.uk/health)

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Biodiversity	Ramsar site SSSI Eastbourne Park Elms Coast Allotments	37 per cent of the NCA is designated SSSI and Ramsar site. The ditches on the SSSI feature 70 per cent of native aquatic plants. Eastbourne Park is a 400 ha newly-created grazed wetland area within Eastbourne. The Dutch Elm Disease Control Zone falls within the NCA. The shingle beach extends along the entire length of the NCA, punctuated by development and sea defences. There is over 15 ha of allotment land within Eastbourne.	International	Pevensey Levels was one of only two places where the fen raft spider was found until recent programmes to re-introduce it on other sites. It is also home to the lesser whirlpool ramshorn snail and many other rare invertebrates. It is particularly rich in damselflies and dragonflies and is one of the main local sites for the variable damselfly. Though breeding bird populations on the Levels declined since the land was drained in the 1960s, improved management has recently seen some positive results. It is still an important wintering site and supports small breeding populations of farmland birds such as lapwing. Eastbourne Park contains an ancient landscape that was formerly marshland interconnected with Pevensey Levels. Although newly-established, it has already attracted a number of rare species associated with the Pevensey Levels including shining ram's-horn snail, the nationally threatened valve snail Valvata macrostoma and nationally rare great silver diving beetle. It also supports species which are declining elsewhere in Sussex such as reed warbler, reed bunting and sedge warbler. There are breeding lapwing and large numbers of over-wintering snipe. It is the only known site in Sussex for fen pondweed. The white-letter hairstreak butterfly is relatively common in the area due to the presence of elms. The Crumbles area in Eastbourne formerly contained an extensive area of vegetated shingle, but this was developed for residential housing. Although fragments of the original resource remain, none of the Crumbles resource received any formal designation and all the best areas have been destroyed. Two areas are protected: Prince William Parade SNCI and Sovereign Harbour Beaches. The Eastbourne Biodiversity Assessment (2007) states that allotments provide important foraging areas and places to live for many protected species.	Encourage the reinstatement of permanent pasture from arable to help extend and link wetland habitats. Encourage best practice farming methods to reduce use of pesticides and fertilizers and reduce agricultural run-off. There are significant opportunities to improve sites and deliver multiple benefits through incentives such as agri-environment schemes, for example by raising water levels and creating new features for wading birds. Work to establish new areas of reed beds and wet meadows. The encouragement of seasonal inundation in appropriate areas should be considered. Maintain water levels in ditches and encourage appropriate dredging regimes to maintain optimum conditions. Support local farmers to build on recent improvements and work towards restoring the Pevensey Levels Important Bird Area status. Support measures to maintain and enhance hydrological links between Eastbourne Park and Pevensey Levels, encouraging movement of key species while promoting vigilance against spread of non-native invasives. Consider designation of the areas of Eastbourne Park that have the highest biodiversity value, particularly supporting Eastbourne Borough Council's aspiration to create a Local Nature Reserve within the West Langney sector. Support the creation of a management forum or group representing all interested parties (including landowners and other stakeholders) to promote and achieve the vision and objectives for Eastbourne Park. Support appropriate and sensitive native tree and shrub planting schemes along the perimeter of Eastbourne Park for the benefit of biodiversity and to preserve tranquillity within the Park. Support control of Dutch elm disease and encourage research initiatives to prevent infection and breed resistant strains. Support measures to maintain and extend protected areas of vegetated shingle, such as at the landfill site at the Sovereign Harbour site. Support increases in allotment provision and seek to ensure that allotment management provides long term benefits for biodiversity.	**Biodiversity** **Sense of place / inspiration** **Regulating water quality** **Regulating soil quality** **Regulating water flow** **Regulating soil erosion**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Geodiversity	Clay soils Shingle beach	A predominantly low-lying region, dominated by heavy clay soils, but with bedrock of thin bands of calcareous limestone (the Paludina beds) and beds of sandstone (Hastings beds) with periglacial sandy head deposits. Shingle beaches along the coast were formed by dynamic littoral processes and now form the major sea defence for the area.	Local	The formation of the levels is dominated by the changing relationship between land and sea. The Levels themselves are a complex inter-bedded sequence of alluvial clays and peat. The peat layer is of variable thickness and fragmented in nature. It is generally overlain by at least one and a half metres of clay. The soils developed upon these substrates are described as "deep stoneless, mainly calcareous clayey soils of the Newchurch Series of the Wallasea sub-group" (British Geological Survey, 1987). Erosion of shingle beaches is widespread and these are constantly managed to maintain the sea defences. . Climate change is likely to make this unsustainable in future and it may be necessary to resort to hard engineering solutions, resulting in associated loss of shingle beaches. Flints from the beach were, until recently, widely used as building materials, both as whole stones and knapped. Historically Eastbourne Greensand was quarried and used locally and can be seen in some of the older buildings and part of the original sea wall but there is no visible evidence of the medieval quarry remaining. There were also brickworks around the northern edge, notably in Hailsham but generally building materials were sourced from the Weald (clay and wood) or the South Downs (chalk).	Coastal defence plans should have regard for geological and geomorphological interests where possible. There should be no aggregate extraction which would affect sensitive geomorphological and coastal sediment processes.	**Geodiversity**

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