National Character Area profile:

79. North East Norfolk and Flegg

Supporting documents

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Introduction

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

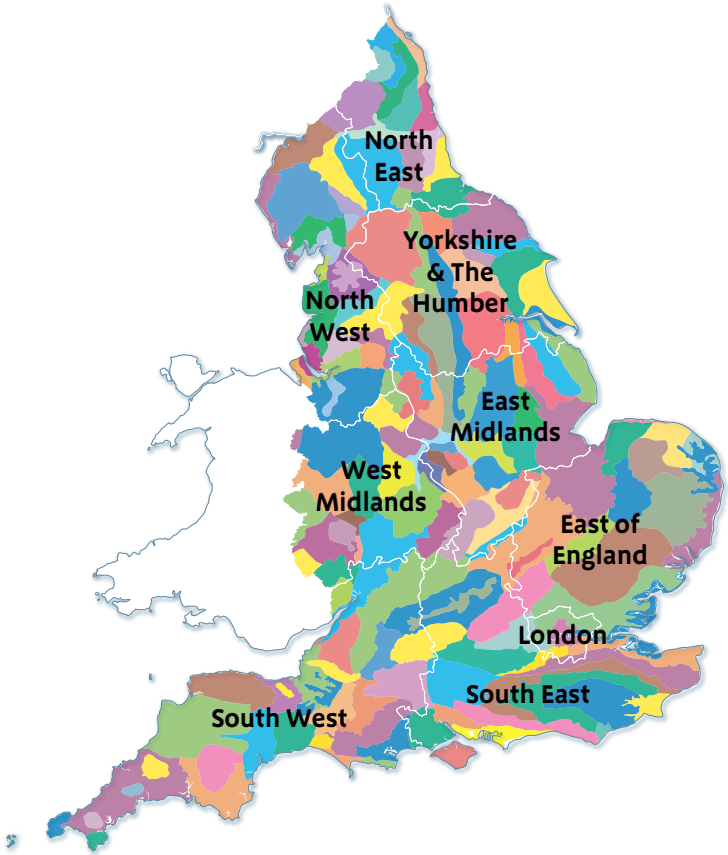
NCA profiles are guidance documents which can help communities to inform their decision-making about the places that they live in and care for. The information they contain will support the planning of conservation initiatives at a landscape scale, inform the delivery of Nature Improvement Areas and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

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

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

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

National Character Areas map



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

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

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

Summary

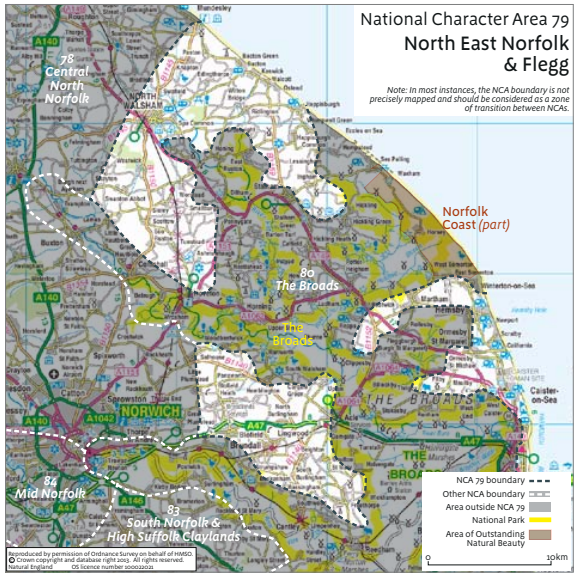
The North East Norfolk and Flegg National Character Area (NCA) slopes gently from west to east and is divided into three parts interspersed by The Broads National Character Area (NCA). Inland it is a rich agricultural area with small- to medium-scale fields, and is mainly unwooded. Isolated farmsteads and small nucleated villages with large medieval churches are linked by a dense network of lanes.

The coast is a prominent feature of the NCA. In the north, the coast is fringed with soft sediment cliffs that are naturally eroding inland, especially at Happisburgh. These soft cliffs have internationally important geological exposures and also a range of important soft cliff habitats. The oldest fossilised human footprints ever found in Europe and more than 800,000 years old, were discovered here in 2013. Maritime cliff grassland is present along this section of the coast, particularly at Mundesley. Dune habitats are also present further south, with associated dune grassland habitats and dune scrub. The Scroby Sands Wind Farm that lies off Great Yarmouth provides a backdrop to coastal views in the south, and in the north the Bacton Gas Terminal is a dominant feature on the coast. There are four international nature conservation designations, a National Nature Reserve and a Ramsar site.

The NCA extends from the seaside resorts of Gorleston-on-Sea in the south along to Winterton-on-Sea, and from Happisburgh along to Mundesley in the north. A small area south-east of Mundesley is part of the Norfolk Coast Area of Outstanding Natural Beauty. To the north-west lies the principal market town of North Walsham which, with its neighbouring village of Worstead, has a Flemish influence and is built with flint and red brick, with roofs of Norfolk reed thatch or pantiles. The 14th-century 'wool churches' are testament to the historic prosperity of the textile and weaving industry. To the south-west are the enlarged commuter villages of Brundall and Blofield close to the City of Norwich and the market town of Acle further east at the edge of the Broads.

In the east the area known as Flegg encompasses the urban coastal town and tourist resort of Great Yarmouth, England's energy port, and the tourist centres of Caistor-on-Sea and Hemsby and their associated extensive caravan and chalet holiday parks that align the coast. The three sections of the NCA are linked together by the rivers Yare, Bure, Ant and Thurne and strategic rail and road routes.

Allowing natural processes to occur along the coast, where appropriate, while providing protection from flooding, is an ongoing challenge.



Click map to enlarge; click again to reduce.

Conserving the historic environment and key features of 'settlements such as historic barns and enclosure patterns, together with sites of archaeological interest.

Statements of Environmental Opportunity

- **SEO 1:** Conserve, enhance and manage the nationally significant coastal landscape, including that within the Area of Outstanding Natural Beauty, by implementing strategies to adapt to coastal change and sea level rise that are consistent with the current Kelling Hard to Lowestoft Ness Shoreline Management Plan (2012). Work with coastal processes as far as possible, while enhancing people's enjoyment of the area, through improving its unique assemblage of coastal habitats with their geological and historical importance and through improving and increasing opportunities for sustainably managed access to support recreation and education.

- **SEO 2:** Seek opportunities to increase the quantity and quality of semi-natural habitat mosaics and geodiversity sites and to enhance historic landscape character and its resilience to climate change, while providing additional benefits for access and recreation for local communities and visitors – thereby enhancing their experience by increasing understanding and improving the local economy.

- **SEO 3:** Work with the local farming community to safeguard future food production, while maintaining and enhancing the historic landscape character with its patchwork field system and hedges; enhancing biodiversity (especially in arable margins and hedgerows), geodiversity, water quality and availability, pollination and soil quality; managing soil erosion; conserving heritage features and assets; and addressing the impacts of climate change.

- **SEO 4:** Encourage measures that enhance existing settlements and the design and location of new developments and infrastructure that can adapt to coastal change, limited water availability, and encompass green infrastructure, yet maintain traditional Norfolk character and conserve and enhance historic features and archaeology, geodiversity and biodiversity.

Description

Physical and functional links to other National Character Areas

The North East Norfolk and Flegg National Character Area (NCA) is intimately linked with The Broads NCA, which wraps around and between the three distinct parts of this NCA, occupying the flood plains of the five major rivers that form the core of the Broads. Two of the distinct areas of the NCA abut the coast; the other lies entirely inland. To the west, the NCA adjoins the Central North Norfolk NCA, the topography of which is more varied. Great Yarmouth forms its thin, southernmost extent, joining at this point with the northern extreme of the Suffolk Coast and Heaths NCA.

Railway lines physically connect the three distinct areas of the NCA together - view from Lingwood towards Great Yarmouth.

Views inland are extensive across remote and open areas. Large churches are very prominent in the open landscape, with blocks of woodland and copses seen along the Broads margin. Sea walls and coastal dune systems block views of the sea along much of the coast, but where it is visible views are expansive, and Scroby Sands Wind Farm can been seen along the southern coast. Several roads, the railway, the Weavers' Way long-distance footpath and National Cycle Network routes physically connect the three distinct areas of the NCA both to each other and to neighbouring areas.

The geology of the area is complex but has features in common with adjoining NCAs, which are similarly underpinned by Pleistocene Crag bedrock overlain by till, sands and gravel. The NCA is within the Kelling Hard to Lowestoft Ness sediment cell boundary (the Wash to the Thames). The natural erosion of the area's soft sea cliffs extends up to Sheringham in Central North Norfolk; this process supplies material that is vital to maintaining the sandy beaches from Winterton southwards as far as the Suffolk Coast and Heaths NCA.

Potable water supply for the NCA is abstracted from a bore hole near North Walsham; from Omesby Broads in the neighbouring Broads NCA and in the south-west of the NCA groundwater is pumped from the chalk aquifer and surface water is abstracted from the River Wensum also in the Broads NCA.

A small part of the Norfolk Coast Area of Outstanding Natural Beauty extends into the area south-east of Mundesley. The port of Great Yarmouth stands at the gateway of the tidal River Yare, which is a navigable route to Norwich. Former railway lines provide valuable wildlife corridors. The A47 road that runs from Great Yarmouth to Norwich is a strategic route both for trade from the port and for commuters.

Distinct area

- Great Yarmouth and the developed coastal strip

Key characteristics

- A generally flat, low-lying landscape, compared to adjacent areas, which has limited topographic variation and slopes gently from west to east, becoming flatter as it merges with the Broads.
- Soils that are deep, loamy and free draining. They are very fertile and support productive arable farming. Horticultural crops are grown on the lighter soils towards the coast.
- Naturally active coastline of geological and geomorphological importance, providing a main source of sediment to the south of the NCA, within the sediment sub-cell. Internationally important Pleistocene sediment and fossil deposits are exposed in eroding coastal cliffs.
- Distinctive coastal sand dune system and deposits of marine shingle, with sections of sandy cliffs and long, wide, sandy beaches.
- Copses and large woodland blocks around Blofield Heath, East Rushdon and North Walsham, such as Bacton Woods, are important features of inland areas. They lend an intricate, enclosed character to the mix of pastures and arable land on the Broads margin, contrasting with the scarcity of woodland elsewhere. High hedgerows with prominent hedgerow oaks are notable features.
- The River Yare, which provides a distinctive riverine landscape and flows out through the tidal lake of Breydon Water to the North Sea.
- Strong vernacular style of domestic and agricultural buildings, reinforced by use of flint and red brick. Roofs are commonly Norfolk reed thatch or pantiles. Isolated flint churches – either round-towered Saxo-Norman churches or medieval wool churches – are prominent in the open landscape.
- Nucleated villages and hamlets, linked by a dense network of small lanes. Chalet parks and large caravan sites dominate the settlement structure along parts of the coast.

Churches are very prominent in the open landscape with blocks of woodland and copses seen along the Broads margin.

North East Norfolk and Flegg today

North East Norfolk and Flegg NCA is shaped physically by its underlying geology and soils but also by the influence of the sea and coastal processes. Great Yarmouth is the most obvious evidence of this, as it sits on a sand bank across the mouth of the estuary in which the island of Flegg once stood. It is now surrounded by the Broads, giving it a flat and low-lying landscape character with great variety. The sea has a significant influence on the coastal area; the impact of storm surges, such as occurred in 2013, can lead to an increased risk of flooding. Inland the landscape is of a different scale and texture, with a small-scale intricate field system; small, isolated farms; and a dense network of narrow, winding lanes.

Views are panoramic and expansive along the coastline and out to sea, and offshore wind turbines at Scroby Sands dominate views from many points of the coast[4]. Bacton Gas Terminal, a site of national strategic importance, is another striking feature, dominating the cliff-top landscape for some distance around it. The security lighting impacts on the night sky.

The deep, loamy and very fertile soils (except along the edges of the Broads where grazing occurs) help to make the NCA one of the most productive food-producing areas in the country. There is a dominance of intensive arable cropping, particularly cereals, and the close proximity of the Cantley sugar beet factory means that sugar beet is still widely grown. Vining peas have recently been brought back into rotation, and other horticultural vegetable crops are grown in the lighter, warmer soils close to the coast. Pigs and poultry are the dominant livestock – particularly near the Flegg – and have become a feature of the landscape although generally, livestock is not significant in the NCA.

The NCA is geologically complex and consists of glacial deposits (mainly till) over the shelly sands and gravels of the Norwich Crag. The geomorphological effects of the North Sea are seen most strikingly along the northern coastal strip, where the soft cliffs are rapidly eroding inland, particularly at Happisburgh[5] where the oldest human footprints ever found in Europe were discovered in 2013 Strong long-shore drift moves this fallen material from the cliffs. Dunes at Winterton form a natural and stable flood defence and are an important wildlife habitat.

Although the predominant enclosure pattern is the result of medieval piecemeal enclosure, the fields often have relatively straight boundaries, which are often low thorn hedges or, nearer the coast, earthen banks. These hedges and banks give parts of the landscape an appearance of greater regularity and planning than is actually the case. This feeling is increased by the relatively high rate of post-1950 boundary removal due to post war agricultural rationalisation, especially along the coastal fringe. Tall hedgerows and hedgerow oaks survive in great numbers and remain characteristic, and blocks of woodland and copses lend an enclosed character to the mix of pasture and arable land on the Broads margins, contrasting with the scarcity of woodland elsewhere. It is much bleaker and more open towards the coast as a result of hedgerow removal, which has been extensive, with many oaks now stag-headed and soil banks forming the boundaries rather than hedgerows.

[4] Gorleston-on-Sea to Winterton http://www.youtube.com/watch?v=Ss1Ns29zDD8
[5] Happisburgh http://www.youtube.com/watch?v=HSlt8qsPGR4

The settlement pattern is of dense nucleated and often substantial villages such as Martham, Blofield and Brundall, which are growing commuter villages. North Walsham is a principal market town and acts partly as a dormitory town to Norwich. It has a mix of vernacular architecture and Flemish influence decorating its intricate street pattern. Flint and red brick are the dominant building materials; roofs are commonly Norfolk reed thatch or pantiles. Flint churches are visible over several miles of open countryside, especially towards the coast. Occasional large halls with associated great barns, as at Paston, are reminders of the former agricultural grandeur. Acle and Stalham are important market towns serving the surrounding villages, and the former RAF Coltishall site is a major economic and regeneration asset.

There is excellent boat access to the Broads, restricted canoe access to the Dilam and North Walsham Canal and designated Quiet Lanes near North Walsham, which provide a network of routes on minor roads for cyclists and horse riders. Permissive access routes across farmland have also been funded through Higher Level Stewardship. The Weavers' Way long-distance footpath runs through the NCA along disused railway lines. Winterton – Horsey Dunes Special Area of Conservation (SAC) and National Nature Reserve (NNR) and North Denes Special Protection Area (SPA) provide public access to acidic dunes and heaths, where rare plants can be seen and where little terns nest on the beach. Paston Great Barn SAC and NNR feature rare barbastelle bats, which are nationally significant.

The area known as Flegg, a former island, encompasses the urban tourist centres of Great Yarmouth, Gorleston-on-Sea, Caister-on-Sea and Hemsby. Although an urban centre, Great Yarmouth is located in a rural setting, isolated from other towns by its position on the coast with limited road and rail links; it is a major area for industry and commerce. The recently developed deep-water outer harbour and the long-established river port provide trading access to northern Europe. It is now the centre of expertise in England for oil and gas and renewable energy.

Great Yarmouth is also an important seaside resort, along with Gorleston-on-Sea, Caistor-on-Sea and Hembsy. Their attractive, wide, sandy beaches provide beach holidays and recreational access to millions of people each year. Large caravan, chalet and theme parks dominate the southern coastal strip.

North Denes Special Protection Area, Great Yarmouth, with its wide sandy beaches and vegetated sand dunes is popular with tourists as well as a rare colony of little terns that return to nest here every May.

The landscape through time

This NCA is underlain by Quaternary deposits: approximately 2 million years ago, at the end of the Palaeogene Period and the beginning of the Quaternary, the incoming of a shallow sea led to shelly sands, known as Norwich Crag, being deposited. Subsequent rapid climate changes – and therefore changes in sea level – led to the deposition of the complex estuarine Cromer Forest Bed sequences. Later, approximately 450,000 years ago, an ice sheet covered the whole of what is now Norfolk during the Anglian Glaciation. As it advanced, it eroded the sediments underneath; the eroded material was then deposited under the ice to form sheets of till. Sheets of gravel were formed at the edges of the ice sheets.

The area is defined by the sea, being partly dependent on it for its wealth for centuries. The coastline in the NCA is dynamic and constantly evolving; the coastal strip between Mundesley and Happisburgh is part of the most physically active length of coast within the area, providing sediment for the formation of coastal habitats further south as it erodes over time. It has allowed footprints from a family dating back 850,000–950,000 years to be discovered in Happisburgh, in 2013. They are the oldest human footprints found in Europe and are some of the oldest in the world.

Thick woodland was present during the Iron Age and was easily cleared due to the light soils; the area was then used for cultivation. During the Roman period, the northern part of the NCA was dry land; the central part was an island, later known as Flegg; and the low-lying land in the south was part of a 'Great Estuary'. A Roman 'Saxon Shore' fort was established at Caister-on-Sea as a defence against sea raids, and also guarded the river route to the regional capital, Norwich. Since the last ice age, a southbound current has laid a spit of sand across the mouth of the estuary into which the rivers Yare and Waveney flow. This led to the formation of the peat that was then cut to form the Broads; it has since dwindled to become Breydon Water. Great Yarmouth now stands at the mouth of the 'Great Estuary'. [6]

During the 11th century, the Flegg was more highly populated than elsewhere in Norfolk due to the very fertile sandy loam soils. People kept sheep on the marshes and made salt. They also began fishing from the sand spit on which Great Yarmouth now sits. Great Yarmouth's position between the sea and the River Yare enabled it to develop as a river port, supported by the huge quantity of herring that inhabited the water nearby and because of the inland river access to Norwich. Once the town obtained its charter in 1209, it became the wealthiest port in East Anglia as the route to the Low Countries. Caen stone for the construction of Norwich Cathedral came by sea from France during the 11th and 12th centuries and was carried up the River Yare, ensuring that Norwich and Great Yarmouth's fortunes were interlinked for many years. Great Yarmouth was in a key position to defend the eastern counties and was given permission by the Crown to wall the town in 1485. Other industries grew up to serve the fish trade, particularly herring curing, barrel making and basket weaving – trades that provided supplementary income for agricultural workers nearby.

Wool production was a major economic activity from the mid-14th century until the 18th century, and the production of textiles was central to the economic prosperity of many villages – particularly Worstead, where long-staple wool was made into 'worsted cloth'. Norfolk wool was traditionally exported to Flanders through Great Yarmouth and then imported as finished cloth.

[6] http://www.thecrownestate.co.uk/media/206983/geomorphic_evolution_of_great_yarmouth_coastline.pdf

This is not an area of large estates or parkland; the fertility of the soil ensured its early cultivation in small parcels and precluded amalgamation until the 20th century. From the 13th to the 18th centuries, this was the most agriculturally advanced part of the country, growing malting barley and wheat and raising fat cattle within small-scale units. The management of farms in this area was often closely linked to the marshland of the Broads. Even farms set away from the marshland edge often had access to the grazing of the marshlands, which were being drained from the medieval period. 'Norfolk husbandry' began on these small owner-occupied farms, possibly influenced by ideas from the Low Countries. Barns, stables and cattle housing reflect the mixed agriculture practised by farmsteads located on the edges of the marshes. The large numbers of substantial 17th- and 18th-century farmhouses, often with contemporary barns, are an indication of the importance and prosperity of owner-occupier farmers in the area.

North Walsham is the principal market town in the NCA and was a textile and weaving centre in the 14th century. It has a Flemish influence and is built with flint and red brick with roofs of Norfolk reed thatch or pantiles.

In villages such as Mundesley and Bacton, there was a lively and profitable maritime trade, which included smuggling. Nelson – who was educated in North Walsham – landed at Great Yarmouth after victory in the Battle of the Nile. In 1825 work begun on building a canal (the only one in Norfolk), to extend the River Ant and provide an alternative transport system for goods between North Walsham and Great Yarmouth using Norfolk wherries. The canal extends into the NCA for 5.6 km with three locks. Part of canal closed in 1893 and in 1934 the section above Bacton Woods became dry. Since 1950 the remainder of the canal has fallen into disrepair. In 2008 the North Walsham and the Dilham Canal Trust was formed and work has begun on renovating it for recreational use.

Herring and holidays were the two industries that underpinned the area's prosperity in the 19th and early 20th centuries. The construction of the railway gave people from inland cities easy access to the coast, and Britain's first holiday camp was established at Caister in 1906.

Discovery in the 1960s of reservoirs of natural gas and oil in the southern North Sea led to the construction of Bacton Gas Terminal in 1968. It is now the UK's main terminal and distribution centre for offshore gas. A large wind farm was built on Scroby Sands in the North Sea in 2004, and Great Yarmouth is now England's leading location for offshore energy.

Second World War defences are a prominent feature along the coast, particularly at Winterton-on-Sea, demonstrating the importance of the area to the country's defence at this time.

Ecosystem services

The North East Norfolk and Flegg 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 North East Norfolk and Flegg NCA is contained in the 'Analysis' section of this document.

Provisioning services (food, fibre and water supply)

- **Food provision:** There is major commercial agriculture in this NCA, with 70 per cent of the land area under some form of agricultural management. Significant quantities of arable crops, (including cereals , oilseed rape, potatoes and sugar beet, are sown in rotation, with more specialist crops such as field beans and peas and a range of horticultural vegetable crops (celery, sprouting broccoli and carrots) also being produced. Soft fruit production around Tunstead is signiicant. Meat production from lamb and beef is low by comparison with The Broads NCA; pig and poultry production dominates, although pig numbers have fallen since 2000.

- **Water availability**: The NCA is in the driest part of the country with an average annual rainfall of 600 mm. Droughts are a regular feature of the climate here. The holiday resorts of the coast undergo significant population expansions in the summer months, which co-incides with greater water demand from the agricultural sector, creating a seasonally high summer demand on water resources. In the east of the NCA a small section of the River Yare, which is tidal, runs from the Breydon Water through Gorleston-on-Sea and Great Yarmouth to the North Sea. Near North Walsham 7.25 km of the disused canal section of the River Ant, runs north to south through the NCA but is dry for 6 km so water availability is very limited. Further north at Mundesley the River Mun is distinct in being little more than a stream and runs for 2.5 km through the NCA. Water availability for licensing is only during high flows. Omesby Broad in the The Broads NCA is an important water source for this NCA's farmland and settlements. There are potable water boreholes at Trunch and Mundesley which draw water from the chalk aquifer below. Abstraction from these sources is strictly limited due to concerns about the impact of abstraction on aquifer-fed fen communities, low river flows and saltwater ingress from the North Sea. In the south-west of the NCA groundwater is pumped from the chalk aquifer and surface water which is abstracted from the River Wensum [7].

- **Genetic diversity**: Many villages and farmsteads retain small traditional orchards, preserving a number of locally important apple varieties including Happisburgh, Green Roland, Vicar of Beighton and Winter Broaden.

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

- **Regulating soil erosion:** Over half of the NCA land area is under arable cultivation, and soils are at risk of erosion on moderately or steeply sloping land around North Walsham and when high risk crops such as sugar beet and potatoes are grown on sloping sandy soils.

  Erosion is exacerbated where organic matter levels are low after continuous arable cultivation, or where soils are compacted. There is potential for wind erosion, particularly near the coast.

- **Regulating water quality:** The rivers in the NCA drain largely rural catchments, with little industrial activity apart from in Great Yarmouth; however, they are heavily influenced by farming practices. Issues include associated phosphate

[7] www.anglianwater.co.uk/_assets/media/WRMP_091213.pdf

run-off from agricultural fields, and excess nitrates and phosphates from farmyard manure and slurry applications associated with high concentrations of livestock, poultry and pigs. The groundwater resource of the NCA is predicted to be under pressure (that is, of poor quantitative status) by 2015, and the qualitative (chemical) status is predicted to be poor, with the exception of the extreme north-east of the NCA. The potential ecological status of the River Ant is moderate. The groundwater chemical status in the NCA is poor. The bathing water quality of the main beaches in the NCA is generally excellent.

- **Regulating water flow:** The NCA has limited storage capacity; the agricultural enhancement of the past few hundred years has tended towards rapid drainage of the land rather than water retention. Fluvial flooding of the River Yare, combined with high groundwater levels, poses a significant risk to Great Yarmouth and Gorleston, while the River Mun poses a significant flood risk to Mundesley. Other settlements at high risk of flooding in the NCA includes North Walsham, Caistor-on-Sea, Stalham, and Hembsy.

- **Regulating coastal flooding and erosion:** The coastline in the NCA is dynamic and constantly evolving. The coastal strip between Mundesley and Happisburgh is part of the most physically active length of coast within Britain and is the main source of sediment for beaches along the southern part of the coast. The natural process of erosion and accretion which takes place unimpeded along this section of coast is necessary to feed beaches, enabling them to build up, helping to provide a natural defence against flooding in towns and villages, and satisfying statutory nature conservation requirements[8]. Extensive natural dune systems fringe parts of the low-lying stretches of coastline, acting as a natural defence by absorbing wave energy and/or providing extra flood storage needs.

[8] *Kelling to Lowestoft Ness Shoreline Management Plan – First Review*: Non Technical Summary (May 2010)

Cultural services (inspiration, education and wellbeing)

- **Sense of place/inspiration:** The sense of place in the NCA is created by the dual influences of the coast and the North Sea and the farmland of the hinterland, which is much valued for agriculture. The coastal environment is of exceptional importance for its historical, biological, geological and geomorphological interest. Long, wind-swept, sandy beaches create a striking landscape, with a sense of wilderness enjoyed by millions of people. Next to the coast, large agricultural areas have resulted from extensive hedgerow removal. This contrasts with the high hedgerows, small blocks of woodland and small- to medium-scale irregular fields that produce a more intimate character further inland.

  The strength of vernacular built character in settlement cores such as Winterton-on-Sea and North Walsham is notable and creates a strong sense of identity. Skyline features in Great Yarmouth result from resort development and the industrial activities associated with the port and deepwater outer harbour. Flegg is dominated along its coastline by extensive tourist developments. Authors such as Daniel Defoe, Charles Dickens and Anna Sewell have strong connections with the area, and the Nelson monument in Great Yarmouth is a reminder of his many maritime achievements locally and his cultural importance to the NCA.

- **Sense of history**: The history of the landscape is evident in the area's archaeology, herring fishing heritage, rich agricultural associations, and historic buildings and landmarks. Coastal erosion in places such as Happisburgh has been a constant theme throughout its history and extends back into the geological timescale. Footprints from a family dating back 850,000–950,000 years were discovered in Happisburgh in 2013. They are the oldest human footprints found in Europe and are some of the oldest in the world. Herring fishing and work in associated industries such as salt production, sail and net making and basket weaving have been part of local life for the last 900 years.

Early enclosure of land is reflected in the dense pattern of nucleated villages and lanes, with many isolated pre-19th-century farms. Arable cultivation historically gave way to sheep husbandry on the lighter lands in the west of the NCA, as evidenced by the major wool centres of Worstead. The 1953 flooding was a trigger for the building of defences from sea flooding, and the evocative anti-invasion defences of 1940 are dotted around the coastline and inland.

- **Tranquillity**: A sense of tranquillity is likely to be particularly associated with the undeveloped stretches of the northern coastline, as well as the more remote inland areas with views over the Broads, where patches of woodland and semi-natural grassland occur. Longer term, the tranquillity of the NCA may be compromised by increases in road traffic (traffic levels are projected to increase by 30 per cent by 2015) and new development.

- **Recreation**: The Weavers' Way long-distance footpath runs between North Walsham and Stalham, and the National Cycle Network (Regional Route 30) runs through the area, from Mundesley to Great Yarmouth. Tourism is very much centred on the coastal resorts of Great Yarmouth, Gorleston-on-Sea and Hemsby. There are smaller, associated tourist hotspots at Scratby-California, Walcott and Mundesley, although most of the settlements along this coast offer tourist accommodation on some level. The 25 km stretch of golden sand along the coast attracts hundreds of thousands of visitors each year to Great Yarmouth and neighbouring resorts. These quintessential British seaside resorts provide pier-based pavilion theatres and many traditional holiday activities and amusement arcades.

- **Biodiversity**: There are more than 392 ha (less than 2 per cent of the NCA) of priority habitat within the NCA. This includes 145 ha of coastal sand dunes, maritime cliff and slope, undetermined grassland, coastal and flood plain grazing marsh, reedbeds and rush pasture, lowland mixed deciduous woodland, wet woodland, and lowland heathland. The NCA contains two SPAs, three SAC and a Ramsar site, and 149 ha (around 1 per cent of the NCA) is designated as SSSI.

- **Geodiversity**: The area is geologically complex, with glacial deposits of boulder clay, sands and gravel over Crag (shelly sands and pebbly gravels frequently with embedded fossils). The cliffs between Overstrand and Mundesley include some of the finest soft cliff habitat in Britain. The coastal strip between Mundesley and Happisburgh is part of the most physically active coastline in Britain and is the main provider of sediment for the area's beaches and coastal sand dunes. Natural offshore banks along this stretch help to protect the coastline between Winterton-on-Sea and Great Yarmouth by affecting both the waves and the currents at the shore.

Designated Quiet Lanes near North Walsham provide a network of routes around minor roads for cyclists and horse riders.

Statements of Environmental Opportunity

SEO 1: Manage the coastal and estuarine landscape with its diversity of cliffs, geology, geomorphology, palaeontology, historic features, habitats and associated wildlife, contributing to livelihoods, enjoyment and education of people.

For example, by:

- Providing space for natural coastal processes where identified by the Shoreline Management Plan and the Estuary Strategy, compensating for loss of habitats by creating new areas of coastal habitat.
- Working with local communities and stakeholders to raise awareness of the issues surrounding coastal erosion and flooding and assist them in planning for the future.
- Protecting and managing natural habitats (including nationally important reedbeds and salt and grazing marshes) backing the coast and estuaries, expanding and re-linking (including through managed realignment) to build resilience to future sea level rise and increased storminess, enhancing biodiversity, and maintaining the unsettled and unenclosed character.
- Managing the nationally and internationally important sea cliff and undercliff habitats within the National Character Area.
- Maintaining and improving the quality of recreational assets, including the South West Coast Path National Trail, and other recreational routes by supporting opportunities to connect and link with new multi-user routes, urban greenspaces extending from built-up areas and sustainable transport schemes, particularly in areas close to where people live.
- Considering water-based recreation and access to natural assets, both biodiversity and geodiversity, reducing the need for land-based infrastructure and vehicle movements, while balancing any increase in water-based leisure with any potential disturbance.
- Ensuring that coastal access opportunities remain while adapting to a dynamic coastline through the provision of roll-back land and information and advice to users.
- Working with the local fishing community to consider how to safeguard and sustainably manage the rivers and estuary.

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SEO 1: Manage the coastal and estuarine landscape with its diversity of cliffs, geology, geomorphology, palaeontology, historic features, habitats and associated wildlife, contributing to livelihoods, enjoyment and education of people.

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- Increasing awareness and knowledge of coastal heritage sites, including bronze-age barrows, hill forts and Second World War artefacts, to enhance public enjoyment, understanding and appropriate management.

- Conserving and enhancing the open and largely undeveloped character of the cliffs, avoiding the siting of new development and vertical structures on prominent skylines immediately above or along the coastline which is otherwise pristine.

- Sensitively interpreting the coastline's outstanding geological, palaeontological and geomorphic features and raising awareness of the dynamic nature of the coast.

North East Norfolk and Flegg is shaped physically by its underlying geology and also by the influence of the sea and coastal processes.

SEO 2: Protect and manage the tranquil, enclosed valleys and the network of streams, springs and associated semi-natural habitats set within a farmed landscape, for the maintenance and enhancement of livelihoods, public enjoyment and ecosystem services.

For example, by:

- Promoting management at catchment scale, encouraging good environmental management and the extension of semi-natural habitats to improve connectivity and benefit biodiversity, aid water retention, and increase water storage capacity.
- Managing and extending species-rich meadows, mires and rushy pastures to enhance biodiversity richness and connectivity, supporting the sense of tranquillity and assisting water and soil regulation.
- Encouraging the protection and traditional management of the medieval field pattern of small, irregular fields enclosed by species-rich hedgerows and the network of winding narrow lanes.
- Working with the local farming community to consider how to safeguard food provision while enhancing a range of key ecosystem services, regulating soil erosion and soil and water quality, conserving the historic environment, and benefitting biodiversity.
- Working with farmers and local communities to ensure that the necessary skills and knowledge are maintained, shared and enhanced to secure a future for farming and land management practices.
- Supporting and encouraging initiatives that add value to local food products and foster a strong brand, securing more viable farm businesses.
- Supporting community-based schemes that provide affordable food for local communities.
- Supporting initiatives that promote awareness and understanding of soil structure and management, including the consequences of mechanised activity and soil compaction, particularly in wet weather; and increasing the amount of farmland managed under principles established through the Catchment Sensitive Farming initiative.
- Following the principles described in the Catchment Flood Management Plans for the area: increase flood plain storage and create wetlands; ensure that development (particularly at Chard) does not increase run-off; reconnect estuaries with flood plains; and create habitat and wildlife corridors.
- Seeking opportunities to maximise the availability of water by reducing the rate at which water flows through the area by the reinstatement of natural, meandering drainage patterns and channels and restoring functional flood meadows adjacent to main watercourses.
- Providing wide grass buffer strips and reedbeds adjacent to river banks to act as silt traps, and preventing livestock access to the water's edge.

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SEO 2: Protect and manage the tranquil, enclosed valleys and the network of streams, springs and associated semi-natural habitats set within a farmed landscape, for the maintenance and enhancement of livelihoods, public enjoyment and ecosystem services.

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- Planting areas of wet woodland and expanding and connecting existing valley woodlands to further minimise soil erosion.
- Supporting and promoting sustainable management and planting of traditional orchards, including the use of local varieties.
- Raising public awareness of the consequences of erosion caused by recreational pressure and encouraging sustainable use of the access areas.
- Managing and promoting access opportunities for quiet enjoyment of the area and encouraging sustainable transport options to reduce traffic levels.

SEO 3: Protect and manage the open, exposed character of the ridgetop plateaux and the associated rich cultural heritage. Plan for the restoration and extension of semi-natural habitats and promote and create opportunities to enhance public understanding and enjoyment.

For example, by:

- Protecting the distinctive, unspoilt and exposed skylines and open plateaux from development of an inappropriate scale and character, including vertical structures and intrusion of light affecting the dark night skies.
- Encouraging management and re-creation of the heathland commons and restoration of more prominent conifer plantations to semi-natural habitats, particularly plantations on ancient woodland sites.
- Strengthening the strong, square Parliamentary enclosure field pattern and long, straight ridge roads, including the distinctive beech hedgerows and avenues.
- Protecting and appropriately managing the rich cultural heritage of the area, including bronze- age barrows, hill forts and earthwork castles, through clearance of scrub, maintaining livestock grazing at appropriate levels and recreation management.
- Considering the historic setting and associations, notably with the Second World War airfields, when planning new development.
- Protecting the high scenic value of the NCA, the tranquillity and outstanding views by giving careful consideration to the scale and siting of new development and infrastructure.
- Supporting opportunities to enhance understanding of the historic environment resource through research and conservation, and its rich potential for new discoveries.
- Promoting and supporting initiatives that provide educational and awareness opportunities for visitors and local communities.
- Managing and promoting access opportunities and supporting initiatives that link open access areas.

SEO 4: Protect the relatively unsettled, rural character of this nationally important landscape, maintaining open skylines and historic settlement form. Reflect the local vernacular and geodiversity in new development and encourage provision of high-quality green infrastructure.

For example, by:

- Promoting the use of landscape character guidance and other landscape tools to ensure that the key characteristics are protected and reinforced through land management and development.
- Promoting and supporting the significance of historic landscape character in development management. Encourage the management and sustainable development of the dispersed historic settlement pattern of farmsteads, hamlets and larger village settlements.
- Protecting the network of enclosed, narrow winding lanes and long, straight ridge roads by resisting unsympathetic highway improvements or signage, and supporting audits of roadside signage, encouraging 'decluttering' where possible.
- Conserving and enhancing the open and largely undeveloped character of the cliffs, avoiding the siting of new development and vertical structures on prominent skylines immediately above or along the coastline which is otherwise pristine.
- Protecting locally distinctive building styles and the use of local materials, where appropriate and sustainable, and encouraging their integration into new development as well as sustainable technologies.
- Encouraging and supporting initiatives that develop and enhance the traditional skills and understanding required to maintain and manage historic features and building styles.
- Softening the edges of urban areas to incorporate development into the landscape setting and minimising the impact of lighting and noise to maintain and enhance tranquillity and dark skies.
- Supporting and encouraging the integration of high-quality green infrastructure into development, ensuring provision of accessible greenspace and sustainable access to existing areas.
- Developing and improving the network of public rights of way and promoting open access land that provides more opportunities for informal recreation, access to nature and public enjoyment while ensuring that experiential qualities are maintained.
- Protecting the distinctive, unspoilt and exposed skylines and open plateaux from development of an inappropriate scale and character, including vertical structures and intrusion of light affecting the dark night skies.
- Supporting opportunities to put cables underground where this will not cause damage to the historic environment.

Additional opportunity

1: Maintain and strengthen the wooded character of the area; manage the network of species-rich hedgerows; manage and extend semi-natural woodland, particularly on steep scarp slopes; and promote multifunctional coniferous plantations where appropriate.

For example, by:

- Encouraging and supporting the maintenance of and an increase in semi-natural broadleaved woodland through natural regeneration along river valleys.
- Encouraging initiatives that promote the use of local timber and wood products and facilitate communication/greater understanding and co-operation between wood producers (large and small), processors and users.
- Working with the local forestry industry and timber processors to ensure that the necessary skills and knowledge are maintained, shared and enhanced to enable sustainable woodland management.
- Encouraging management practices that ensure well-structured woodland with quality timber and where appropriate achieve multipurpose objectives. Balance the need for timber production and replanting against the opportunity for regeneration of semi-natural habitats.
- Supporting community schemes that promote positive woodland management and the use of wood products.
- Supporting and encouraging local initiatives that promote the sustainable management of woodlands and hedgerows for wood fuel production.
- Encouraging contact between landowners and local communities including skills sharing and knowledge transfer.
- Identifying and considering opportunities for planting of short rotation coppice and miscanthus, appropriately sited within the existing pattern of woodland, hedgebanks and semi-natural habitats.
- Expanding areas of semi-natural woodland on steep slopes and extending the network of hedgerows to reduce overland flows and enhance the wooded character of the area.
- Managing and enhancing the network of hedgerows and hedgerow trees, strengthening field patterns and the sense of tranquillity and isolation. Promote traditional management techniques, such as hedge laying, coppicing of grown-out trees and styles of construction including stone facing on banks.
- Supporting and promoting sustainable management and planting of traditional orchards, including the use of local varieties.
- Promoting traditional management techniques including coppicing of semi-natural woodlands, multifunctional management of conifer plantations and restoration of traditional orchards.

Supporting document 1: Key facts and data

Total area: 24,651 ha

1. Landscape and nature conservation designations

The North East Norfolk and Flegg NCA contains 237 ha of the Broads National Park and 652 ha of the Norfolk Coast Area of Outstanding Natural Beauty (AONB).

Management plans for the protected landscapes can be found at:

- www.broads-authority.gov.uk/
- www.norfolkcoastaonb.org.uk/

Source: Natural England (2011)

1.1 Designated nature conservation sites

The NCA includes the following statutory nature conservation designations:

Tier	Designation	Name	Area (ha)	Percentage of NCA
International	Ramsar	Broadland	4	<1
European	Special Protection Area (SPA)	Great Yarmouth North Denes SPA, Broadland SPA	75	<1
	Special Area of Conservation (SAC)	Winterton-Horsey Dunes SAC, The Broads SAC, Paston Great Barn SAC	31	<1
National	National Nature Reserve (NNR)	Paston Great Barn NNR	1	<1
	Site of Special Scientific Interest (SSSI)	A total of 11 sites wholly or partly within the NCA	148	<1

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.

In summary, land covered by international nature conservation designations totals 94 ha (0.4 per cent of the total land area). There is some overlap between these different international designations. In total, 148 ha of the NCA are nationally designated. Paston Great Barn NNR is not designated as a SSSI.

There are 26 local sites in the North East Norfolk and Flegg NCA covering 329 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 sites can be found at: http://magic.Defra.gov.uk – select 'Designations/Land-Based Designations/Statutory'

1.2 Condition of designated sites

SSSI condition category	Area (ha)	Percentage of SSSI in category condition
Unfavourable declining	8	5
Favourable	136	92
Unfavourable no change	0	0
Unfavourable recovering	4	3

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 North East Norfolk and Flegg NCA rises from sea level to a maximum elevation of 46 m. The NCA overall is very low lying with a mean elevation of just 16 m. This NCA is flatter than the surrounding Central North Norfolk NCA and becomes flatter as it merges into the adjacent Broads.

Source: Natural England 2010, North East Norfolk and Flegg JCA Description

2.2 Landform and process

The large flat expanse of the North East Norfolk and Flegg NCA is distinguished from its neighbours by its soils, topography, landuse and land cover, and by the extent of coastal influence from the North Sea. It has a low plateau with limited topographical variety that slopes gently from west to east towards the sea and becomes even flatter as it merges with the Broads which sit within the area. The northern length of coastline is generally fringed with soft sediment cliffs, that are rapidly eroding inland. The cliffs east of Mundsley are more stable, sandier and with less seepage and lower but more vertical than those further west in Central North Norfolk although at Happisburgh the cliffs are more prone to erosion. Just south-east of Happisburgh the cliffs merge with the dune coast fronting Broadland. Strong long-shore drift moves the fallen material from the cliffs southwards to the beaches towards Great Yarmouth. Along this section of coast the sea is hidden from inland behind sea walls.

Source: North East Norfolk and Flegg JCA Description

2.3 Bedrock geology

The NCA is geologically complex and consists of drift deposits of the Anglian glaciation (North Sea drift) – either till or sands and gravel – over iron-rich Pleistocene crag deposits, which is made up of sands, locally shelly, and gravels. This in turn sits on chalk which is at or below sea level.

Source: North Norfolk Natural Area Profile

2.4 Superficial deposits

Superficial deposits of gravels, sand and mixed soft clayey sediments resulting from glaciations are found throughout the NCA.

Source: North Norfolk Natural Area Profile

2.5 Designated geological sites

Tier	Designation	Number
National	Geological Site of Special Scientific Interest (SSSI)	1
National	Mixed Interest SSSIs	1
Local	Local Geological Sites	0

Source: Natural England (2011)

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

2.6 Soils and Agricultural Land Classification

The soils in North East Norfolk and Flegg NCA are distinguished by deep loams which are among the most fertile in the country. Dune sands fringe some of the coast.

Source: North East Norfolk and Flegg JCA Description

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)	Percentage of NCA
Grade 1	9,018	37
Grade 2	7,639	31
Grade 3	5,659	23
Grade 4	0	0
Grade 5	0	0
Non-agricultural	762	3
Urban	1,573	6

Source: Natural England (2010)

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

3. Key waterbodies and catchments

3.1 Major rivers/canals

There are no significant stretches of river or canal in this NCA.

3.2 Water quality

The total area of Nitrate Vulnerable Zone is 20,990 ha, 85 per cent of the 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 total woodland cover in North East Norfolk and Flegg NCA is 1,327 ha (5 per cent of the NCA), of which 33 ha (<1 per cent) is ancient woodland.

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

4.2 Distribution and size of woodland and trees in the landscape

In general, there is little in the way of woodland, though Bacton Wood, now planted with conifers was probably once a pasture woodland with some heath. Copses and large woodland blocks remain an important feature of inland areas on the Broads margins and the south-western part of the area is considered to be well-wooded where it abuts the Broads.

Source: Natural England (2012)

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)	Percentage of NCA
Broadleaved	879	4
Coniferous	367	1
Mixed	29	<1
Other	52	<1

Source: Forestry Commission (2011)

Area and proportion of ancient woodland and planted ancient woodland sites (PAWS) within the NCA.

Woodland type	Area (ha)	Percentage of NCA
Ancient semi-natural woodland	33	<1
Planted ancient woodland sites(PAWS)	43	<1

Source: Natural England (2004)

5. Boundary features and patterns

5.1 Boundary features

Soil banks define boundaries near to the coast, while high hedges and prominent hedgerow trees occur inland and reflect patterns of early enclosure. Hedgerow removal, especially along the coastal fringe, has been extensive, adding to an already windswept appearance. Further inland small scale fields with tall and woody hedgerows survive in greater numbers and remain characteristic.

Source: North East Norfolk Countryside Character Area Description; Countryside Quality Counts (2003)

5.2 Field patterns

Small to medium scale fields, becoming bleaker and more open towards the coast (defined by soil banks) and more intricate and irregular inland due to early enclosure (defined by high hedges and prominent hedgerow trees). Although fields are now large and generally rectangular as a result of field amalgamation, they are still smaller than in other parts of Norfolk. wet grassland and scrub on the steep valley sides. Mixed farming takes place in the wider southern valleys. Within the valleys, floodplains are enclosed within large fields. They are mainly used as pasture but some are arable.

Source: North East Norfolk and Flegg Countryside Character Area Description; Countryside Quality Counts (2003)

6. Agriculture

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

6.1 Farm type

In 2009 there were 191 registered commercial holdings within the North East Norfolk and Flegg NCA, down from 229 in 2000. Farms were predominantly arable, which accounted for 71 per cent of farm types in this area, with almost half being general cropping (93 farms). Only 9 per cent of farms (18) mainly grazed livestock. There had been a substantial increase in cereal farms between 2000 and 2009, (from 20 to 36 farms) and the number of farms in general cropping decreased by 45 in that period.

Source: Agricultural Census, Defra (2010)

6.2 Farm size

In 2009, 73 per cent of the agricultural land area was in farms greater than 100 ha, and a further 17 per cent in farms between 50 and 100 ha. In terms of numbers, there were almost as many farms smaller than 50 ha as there were farms greater than 50 ha. This pattern remained relatively unchanged between 2000 and 2009, although overall farm numbers had decreased by 38 (17 per cent) and the agricultural area had decreased by 770 ha (4 per cent).

Source: Agricultural Census, Defra (2010)

6.3 Farm ownership

2009: Total farm area = 17,202 ha; owned land = 10,425 ha
2000: Total farm area = 17,971 ha; owned land = 12,493 ha

Over the decade between 2000 and 2009, there was a significant decrease in total farm area and a shift from owned to tenanted land.

Source: Agricultural Census, Defra (2010)

6.4 Land use

In 2009, half the agricultural area (51 per cent) was used for cereals, 20 per cent for cash roots and 15 per cent was grass or uncropped land. Land use remained relatively stable between 2000 and 2009, with some exceptions, such as the amount of oilseeds increasing fivefold to 207 ha in 2009, and the decline in fruit by 70 per cent to 27 ha.

Source: Agricultural Census, Defra (2010)

6.5 Livestock numbers

Pigs represented the dominant livestock type within the NCA, with 11,300 pigs farmed in 2009, with 5,000 cattle and only 1,000 sheep recorded in the same year. Over the decade between 2000 and 2009, census data suggested a significant shift from sheep to cattle, with cattle numbers almost doubling whilst sheep numbers had reduced from 3,500 in 2000. Pig farming had also declined between 2000 and 2009, reducing from an estimated 17,000 pigs farmed in 2000.

Source: Agricultural Census, Defra (2010)

6.6 Farm labour

Half the agricultural workforce (508 in total) were principal farmers (253) in 2009. There were 31 salaried farm managers, 92 full-time workers, 64 part-time workers and 68 casual or gang workers. The total amount of agricultural labour had decreased by 30 per cent over the decade between 2000 and 2009, primarily among full-time workers, casual and gang workers and principal farmers.

Source: Agricultural Census, Defra (2010)

Please note: (i) Some of the Census data are estimated by Defra so may not present a precise assessment of agriculture within this area (ii) Data refers to commercial holdings only (iii) Data includes land outside of the NCA where it belongs to holdings whose centre point is recorded as being within the NCA.

7. Key habitats and species

7.1 Habitat distribution/coverage

Nature conservation interest tends to be limited and focused on disused railways and other derelict land. The coast is generally fringed with cliffs which are at their highest between Mundesley and Happisburgh. These soft cliffs have internationally important geological exposures and also a range of important soft cliff habitats, ranging from un-colonised mud flows through to relatively mature unimproved grassland and scrub communities. Maritime cliff grassland is present along this section of the coast particularly at Mundsley. Dune habitats are also present further south with associated dune grassland habitats and dune scrub. The NCA also contains important arable habitats. These support nationally important assemblages of arable birds.

Source: North Norfolk Natural Area Profile

7.2 Priority habitats

The Government's new strategy for biodiversity in England, *Biodiversity 2020*, replaces the previous Biodiversity Action Plan (BAP) led approach. Priority habitats and species are identified in *Biodiversity 2020*, but references to BAP priority habitats and species, and previous national targets have been removed. Biodiversity Action Plans remain a useful source of guidance and information.

More information about *Biodiversity 2020* can be found at;

http://www.naturalengland.org.uk/ourwork/conservation/biodiversity/protectandmanage/englandsbiodiversitystrategy2011.aspx

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

Priority habitat	Area (ha)	Percentage of NCA
Coastal and floodplain grazing marsh	26	<1
Coastal sand dunes	145	<1
Fen	131	1
Lowland dry acid grassland	109	<1
Lowland meadows	4	<1
Purple moor grass and rush pasture	5	<1
Reedbeds	169	1
Maritime cliff and slope	61	<1

Source: Natural England (2011)

Maps showing locations of priority habitats are available at:

- **http://magic.defra.gov.uk** – Select 'Habitats and Species/Habitats'

7.3 Key species and assemblages of species

- Maps showing locations of some key species are available at: **http://magic.defra.gov.uk** – Select 'Habitats and Species/Habitats'
- Maps showing locations of S41 species are available at: **http://data.nbn.org.uk/**

8. Settlement and development patterns

8.1 Settlement pattern

North East Norfolk and Flegg is a settled landscape. Villages are substantial in size, often with significant 20th century bungalow fringes lying within an intricate network of sunken, twisting lanes. Near the coast this changes and all is open and revealed. Settlements are generally large clusters, although there are numerous isolated farmsteads scattered across the area. The villages remain largely traditional in their centres. The area known as Flegg encompasses the tourist sea-side resorts of Caistor, Hemsby and the largest settlement of Great Yarmouth. The town of North Walsham forms the only substantial settlement inland. To the south-west the commuter villages around Norwich, such as Blofield and Brundall, are an influence.

Source: North East Norfolk and Flegg, Countryside Character Area Description; Countryside Quality Counts (2003)

8.2 Main settlements

The main settlements within North East Norfolk and Flegg are Great Yarmouth and North Walsham. The total estimated population for this NCA (derived from ONS 2001 census data) is 89,905.

Source: North East Norfolk and Flegg Countryside Character Area Description; Countryside Quality Counts (2003)

8.3 Local vernacular and building materials

Strong vernacular style of domestic and agricultural buildings reinforced by use of flint and red brick; roofs are commonly Norfolk reed thatch or pantiles other than for late 19th and 20th century red-brick bungalow housing which incorporate concessions to the local vernacular architecture by the inclusion of pre-fab flint panels. A Flemish influence can be discerned only in larger settlements while the isolated farmhouses are similar to those of central Norfolk. Flint churches are the dominant structures within this landscape. Gaunt brick hotels are a reminder of the area's Edwardian popularity. Along the southern coastal strip, especially around Great Yarmouth, 20th century leisure and tourism related facilities such as caravan parks, holiday chalets and theme parks exert a great influence.

Source: North East Norfolk and Flegg Countryside Character Area Description; Countryside Quality Counts (2003)

9. Key historic sites and features

9.1 Origin of historic features

Settlement is long established across the Flegg, where the sandy loams are amongst the most fertile soils in England. The landscape was enclosed early and from the 13th to the 18th centuries supported some of the most advanced agricultural practises in England. Settlement was organised into durable and dense nucleated pattern of substantial villages and hamlets, as well as isolated farmsteads dating from the medieval period. The dominance of profitable small-scale holdings from an early date precluded the development of large estates or parkland. Wool production was also a major economic activity, and from the mid-14th century until the 18th century the production of textiles was central to many villages. The wealth of the 16th and 17th century industry is evidenced in the magnificence of the parish churches. A high concentration of pre-1750 farmstead buildings still remain. Extensive remains of Second World War anti-invasion defences, particularly at Winterton-on-Sea (pill boxes, coastal batteries and search light emplacements, anti-tank cubes) and Acle (a 'Category A' nodal defence point on the River Bure). There is also a Roman fort and Saxon settlement at Caister-on-Sea.

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

9.2 Designated historic assets

This NCA contains the following numbers of designated heritage assets:

- 3 Registered Parks and Gardens covering 16 ha.
- 0 Registered Battlefields.
- 18 Scheduled Monuments.
- 594 Listed Buildings.

Source: Natural England (2010)

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

10. Recreation and access

10.1 Public access

- 0.2 per cent of the NCA (46 ha) is classified as being publically accessible.
- There are 186 km of public rights of way at a density of 0.8 km per km2.
- There are no National Trails within the NCA.

Source: Natural England (2010)

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

Access designation	Area (ha)	Percentage of NCA
National Trust (Accessible all year)	0	0
Common Land	35	<1
Country Parks	0	0
CROW Access Land (Section 4 and 16)	46	<1
CROW Section 15	2	<1
Village Greens	3	<1
Doorstep Greens	0	0
Forestry Commission Walkers Welcome Grants	25	<1
Local Nature Reserves (LNRs)	2	<1
Millennium Greens	0	0
Accessible National Nature Reserves (NNRs)	1	<1
Agri-environment Scheme Access	3	0
Woods for People	152	<1

Source: Natural England (2011)

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

11. Experiential qualities

11.1 Tranquillity

Based on the CPRE map of tranquillity (2006) it appears that the lowest scores for tranquillity are associated with the coastal resorts of Great Yarmouth and Caister-on-Sea. Disturbance can also be seen to be associated with the commuter villages around Norwich, such as Blofield and Brundall as well as the town of North Walsham. The highest scores for tranquillity are along the fringes of the Broads area as well as along the northern coastal stretch between Mundsley and Happisburgh.

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

Tranquillity	Score
Highest value within NCA	34
Lowest value within NCA	-84
Mean value within NCA	3

Source: CPRE (2006)

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

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 disturbance is associated with the coastal resorts of Great Yarmouth and Caister-on-Sea. Disturbance can also be seen to be associated with the commuter villages around Norwich, such as Blofield and Brundall as well as the town of North Walsham together with the main 'A' roads the A47 and A149.

A breakdown of intrusion values for this NCA is detailed in the following table.

Intrusion category	1960s (%)	1990s (%)	2007 (%)	Percentage change (1960s-2007)
Disturbed	4	23	39	35
Undisturbed	92	72	n/a	n/a
Urban	3	3	n/a	n/a

Sources: CPRE (2007)

Notable trends from the 1960s to 2007 are an increase in notably disturbed or intruded land by nearly 35 per cent.

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

12. Data sources

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

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

Supporting document 2: Landscape change

Recent changes and trends

Trees and woodlands

- New planting through Woodland Grant Schemes has been significant, having risen by 32 per cent between 1998 and 2003, in an area which has limited woodland cover and woodland potential, enhancing its character.

- Grubbing up of orchards, particularly in the Stalham area, has reduced the landscape quality although one new orchard has been planted through Environmental Stewardship.

Boundary features

- Boundary loss was locally severe in the late 20th century, but this trend seems to have stabilised. Hedgerow removal, especially along the coastal fringe, has been extensive adding to an already wind-swept appearance. Further inland small scale fields with tall and woody hedgerows survive in greater numbers and remain characteristic.

- There have been post-war increases in field size due to agricultural rationalisation, with loss of field banks at the coast and hedgerows inland. The hedgerows inland are also in a poor state of management. There have been major losses in hedgerow oaks, often due to disease, salt spray and close cultivation.

- Stewardship agreements have made a positive change with an additional 111 km of hedgerow and gaps being planted and 254 km of hedgerows being restored or receiving further hedgerow management.

Agriculture

- Agriculture remains the key contributor to the local economy. There has been a loss of mixed farming due to the expansion of arable cultivation and rough and permanent grass area has fallen since 1999 and a substantial increase in number of cereal holdings, from 20 to 36 farms.

- Pigs represent the dominant livestock type with 11,300 pigs farmed in 2009 down from 17,000 in 2000. In this same time period there has been significant shift from sheep to cattle with sheep numbers reduced from 3,500 in 2,000 to 1,000 in 2009 compared with 5,000 cattle.

- The pressures on the landscape have increased due to agricultural intensification coupled with continued rising surface water levels and attendant field boundary loss.

- Farm enlargement has led to some dereliction of buildings and the construction of visually poorly located agricultural sheds in the inland farming areas.

- Changes to the agricultural economy and particularly the introduction of agri-environment grants, have led to positive changes in landscape character – reinstatement or conservation of hedgerows and woodlands and arable reversion to pasture.

- Development pressures on the edges of settlements and as infill within them, often eroding the small pastures which are characteristic of the landscape and which help to integrate the villages within the wider countryside.

Settlement and development

- There has been urban development and expansion and associated resort development and recreational sprawl along the coastal strip north of Great Yarmouth and on the fringe of settlements, resulting in coalescence of villages notably Hemsby and Scratby. There has been significant additional private housing development in Caistor following the building of a new bypass.

- The character of North Walsham market town and former textile villages north and east of Norwich has changed as a result of commuting which has increased housing development and traffic considerably. Other inland areas have seen little in the way of development and remain essentially rural in character.

- Since 1999, 98 coastal bungalows have been lost to the sea at Hemsby Marrams due to the encroaching sea with six additional bungalows being lost during the storm surge of 2013. The village of Happisburgh is threatened by rapid cliff erosion with a retreat of 125 m since 1992. A deep embayment has been created, and a road and houses have fallen into the sea.

- Traffic generation, accessibility and movement particularly during the summer, pose key problems for Great Yarmouth. The seafront, the town centre and much of the port lie on a peninsula, separated from the rest of the town by the River Yare. The two existing river crossings, Breydon Bridge and Haven Bridge are subject to high traffic flows and become congested during peak hours.

Semi-natural habitat

- In 1985 a substantial little tern colony became established at Great Yarmouth North Denes close to a large caravan park. Fifty-five pairs nested in 1986 with 276 nests in 2007. Human pressures have taken their toll and the site was virtually destroyed in 2003.

- There has been an increase in field margins but the loss of set aside has had a negative impact on the biodiversity. There is less regular cutting of verges and more awareness of leaving flowers to assist bees which is helping to maintain the existing diversity of the local flora.

Historic features

- The historic landscape has suffered on account of its fertility and the farming policies of the mid-20th century. Hedgerow removal, especially along the coastal fringe, has been extensive adding to an already wind-swept appearance.

- Countryside Quality Counts notes that a substantial percentage of parkland in the area has been lost and a small percentage is being managed through historic environment schemes. 69 per cent of historic farm buildings remain unconverted suggesting evidence of neglect.

- The dynamic nature of the coast means that archaeological features are constantly being revealed. Footprints from a family dating back 850,000–950,000 years were discovered in Happisburgh in 2013. They are the oldest human footprints found in Europe and are some of the oldest in the world.

- Lack of conservation work threatens the Second World War anti-invasion features, particularly at Winterton-on-Sea.

Coast and rivers

- The first commercial offshore wind farm on Scroby Sands, which is 3 km off the coast of Yarmouth, was commissioned in 2004.
- A deepwater outer harbour Great Yarmouth became operational in 2007.
- Dredging of the coast of Great Yarmouth began in the 1970s and has increased significantly throughout the 1990s and 2000s.
- Over the last 20 years there have significant areas of erosion at Happisburgh and Caister-on-Sea; with the highest rate of erosion being 3.3 m/yr at the dune frontage of Winterton-on-Sea. To balance with this there has been significant accretion of sediment in areas at the Winterton Ness frontage, Great Yarmouth North Denes, Gorleston and North Gap. The highest accretion rate was 7.3 m/yr at Caister-on-Sea where the frontage has shore parallel reefs.
- The river water quality is predominately good and the chemical water quality is predominately very good and has been maintained.

Minerals

- There is currently no mineral extraction within the NCA.

Coastal erosion at Happisburgh in summer 2013. Work is being carried out with communities to help adapt to coastal change and sea level rise, while also enhancing people's education and enjoyment of the area.

Drivers of change

Climate change

- Coastal change can be dramatic and the pace of change in this NCA in the future is likely to be rapid due to sea level rise and increased severity and frequency of storms and storm surges that will shape the coastline, its habitats and associated species.
- The potential risk of a greater frequency of storm surges and extreme rainfall events is likely to lead to an increased instance of flooding. This may lead communities to call for the erection of taller and/or more extensive sea walls.
- Periods of droughts will impact on wetlands such as fresh water reed beds (on the Broads hinterland), leading to increased nutrient concentration and eutrophication, which on a regular basis will result in the loss of key habitats for a range of species.
- Warmer temperatures are already leading to a shift in species range northwards in more mobile species and the NCA can expect to see a change in community composition with new species colonising from elsewhere including continental Europe. There may also be a rise in the incidences of pests and diseases, particularly impacting woodland.
- There are already observed changes in the timing of seasonal events such as the appearance of new leaves, the hatching of birds and insects; increasingly there is a risk of mis-match between dependent species in the food chain which may have impacts on overall species composition.
- Warmer temperatures and reduced rainfall will have an impact on agriculture, with changes in crop varieties, growing patterns and seasons, and farming techniques with a likely increase in the use of irrigation and water storage. Norfolk's fertile soils may lead to an intensification of agricultural production, as a response to a potential decline in productivity elsewhere.
- Demand for renewable energy generated by wind turbines will continue to impact on the character of the landscape.
- Planners recognise that the built environment will need to be planned and designed for to reduce carbon emissions. Development opportunities should also be limited on the coast due to risks of flooding, erosion, land instability and nature conservation policies.
- There is an increased requirement for irrigation reservoirs to store winter rainfall and for the use of irrigation equipment in summer.

Other key drivers

- As part of the Government's move to increasing gas imports, additional storage infrastructure is likely to be needed. Consequently, significant investment in new gas storage and transmission infrastructure will be required. Bacton Gas Terminal may need to expand.

Views are panoramic and expansive along the coastline and out to sea. Bacton Gas Terminal, a site of national strategic importance, is a striking feature, dominating the cliff-top landscape for some distance around.

- The UK's offshore area including Great Yarmouth is considered to be one of the most promising locations anywhere in the world to store carbon. The East marine plan areas[9] afford a significant opportunity for the industry due to the large number of saline aquifers within the Bunter Sandstone Formation. This is likely to have a knock-on effect for the onshore economy.

- The East marine plan areas account for over half of the total extraction of marine aggregates (by weight) at a national level occurring in the Great Yarmouth area. Offshore dredging of aggregates and offshore developments have the potential to affect the coastline through complex interaction with sediment supply and transport systems, as well as potential effects on marine ecosystems and species.

- Hotter, drier summers and the ongoing trend to take more holidays at home is likely to increase the number of visitors to the coast and adjoining Broads, putting pressure on the landscape through increased traffic, reduced tranquillity and potential damage to habitats and species.

- Major housing and regeneration development and associated infrastructure around Norwich, near Blofield, North Walsham, Martham, and the development of Cottishall Airfield are likely to have considerable impact on the NCA, potentially changing its rural character, increasing traffic and demands for resources such as water and minerals.

[9] http://www.marinemanagement.org.uk/marineplanning/areas/east.htm

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.

Arable margins have been created in intensively managed agricultural fields as a result of Environmental Stewardship. They also offer opportunities for educational visits.

Statement of Environmental Opportunity	Ecosystem service																		
	Food provision	Timber provision	Water availability	Genetic diversity	Biomass energy	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: Conserve, enhance and manage the nationally significant coastal landscape, including that within the Area of Outstanding Natural Beauty, by implementing strategies to adapt to coastal change and sea level rise that are consistent with the current Kelling Hard to Lowestoft Ness Shoreline Management Plan (2012). Work with coastal processes as far as possible, while enhancing people's enjoyment of the area, through improving its unique assemblage of coastal habitats with their geological and historical importance and through improving and increasing opportunities for sustainably managed access to support recreation and education.	↔ **	↔ ***	↔ **	↔ **	↔ **	o **	↔ **	↔ **	↔ **	↔ **	↗ **	↗ **	↑ ***	↑ ***	↗ **	↔ **	↗ **	↑ ***	↑ ***
SEO 2: Seek opportunities to increase the quantity and quality of semi-natural habitat mosaics and geodiversity sites and to enhance historic landscape character and its resilience to climate change, while providing additional benefits for access and recreation for local communities and visitors – thereby enhancing their experience by increasing understanding and improving the local economy.	↔ **	↗ **	↗ **	↗ **	↔ **	↗ **	↗ **	↗ **	↔ **	↔ **	↗ **	↗ **	↔ **	↗ **	↔ **	↔ **	↗ **	↑ ***	↗ **

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

Dark plum = national importance; mid plum = regional importance; light plum = local importance

Statement of Environmental Opportunity	Ecosystem service: Food provision	Timber provision	Water availability	Genetic diversity	Biomass energy	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 3: Work with the local farming community to safeguard future food production, while maintaining and enhancing the historic landscape character with its patchwork field system and hedges; enhancing biodiversity (especially in arable margins and hedgerows), geodiversity, water quality and availability, pollination and soil quality; managing soil erosion; conserving heritage features and assets; and addressing the impacts of climate change.	↗ **	↗ **	↗ **	↗ **	↔ **	↗ **	↗ **	↗ **	↔ **	↗ **	↗ **	↗ **	↔ **	↗ **	↔ **	↔ **	↗ **	↑ ***	↔ **
SEO 4: Encourage measures that enhance existing settlements and the design and location of new developments and infrastructure that can adapt to coastal change, limited water availability, and encompass green infrastructure, yet maintain traditional Norfolk character and conserve and enhance historic features and archaeology, geodiversity and biodiversity.	↔ ***	↗ ***	↔ ***	↗ ***	↔ ***	↔ ***	↔ ***	↔ ***	↔ ***	↔ ***	↔ ***	↔ ***	↔ ***	↑ ***	↑ ***	↔ ***	↗ ***	↗ ***	↗ ***

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

Dark plum = national importance; mid plum = regional importance; light plum = local importance

Landscape attributes

Landscape attribute	Justification for selection
A dynamic coastline including eroding soft cliffs, coastal sand dune systems, maritime cliff and slope, coastal and flood plain grazing marsh and shingle beaches.	■ The characteristic sandstone cliffs between Cromer and Mundesley are part of the most physically active length of the Norfolk coastline in terms of sea erosion, and are the main provider of sediment for beaches further along the coast. ■ Coastal landform shaped by coastal processes and influenced by the geological make-up. The cliffs at Mundesley are nationally important for their geomorphological interest demonstrating landslides and other aspects of mass movement. The type locality, marine and rarer freshwater deposits of Pastonian age are particularly well-developed. Further south the cliffs are more stable, sandier with less seepage. ■ The cliffs at Happisburgh are lower and more prone to erosion by wave action. These processes provide an important sediment supply for down-drift beaches, facilitating flood alleviation. ■ The littoral strip of sand along the east Norfolk Coast is highly mobile and long shore drift, coupled with the action of the waves, results in the constant movement of material along the coast. ■ The dune system between Caister and Great Yarmouth is an important example of an actively accreting 'ness' or promontory, which supports a full successional sequence of vegetation from pioneer to mature types forming part of the internationally designated Great Yarmouth North Denes SPA. ■ Cliffs display internationally important geological exposures of Pliocene-Pleistocene Crag formations. ■ Coastal protection works have affected sediment transport along the coast, preventing the natural erosion of some stretches and the replenishment of beaches, and any further defence schemes would further interrupt sediment processes. ■ Parts of the coast are within the Norfolk Coast Area of Natural Beauty (AONB), at Mundesley and Paston.
Small to medium-scale field patterns, parcels of woodlands, copses and high hedgerows, with stunted tree growth and sparse vegetation towards the coast. **Continued on next page...**	■ This is generally an unwooded area, where early clearance for cultivation occurred, encouraged by the highly fertile soils. ■ In the south-west of the NCA the hedgerow structure has been substantially fragmented due to agricultural intensification resulting in large arable fields. The south-western part of the area is considered to be well-wooded where it abuts the Broads and woodland along the slopes obscures views. ■ In the north-east of the NCA the lack of woodland combined with the rolling topography and limited occurrence of hedges makes the landscape very open. ■ Blocks of woodland and copses lend an intricate, enclosed character on the Broads margin and field patterns are defined by high hedges and prominent oaks contrasting with a scarcity of woodland elsewhere.

Landscape attribute	Justification for selection
... continued from previous page Small to medium-scale field patterns, parcels of woodlands, copses and high hedgerows, with stunted tree growth and sparse vegetation towards the coast.	■ The influence of the sea can be seen in the sparse vegetation of the northern coastal strip and is a reminder of its exposed nature. The harsh easterly winds stunt and prevent tree growth and give rise to an open landscape. ■ Small to medium-scale fields occur in the Flegg, cultivated after tree removal during the Iron Age and not amalgamated until the 20th century. ■ It becomes bleaker and more open towards the coast (defined by soil banks) and more intricate and irregular inland. ■ Bacton woodland, now planted with conifers, was probably once pasture woodland with some heath but is now commercial woodland with over 30 tree species including two types of sessile oaks. It is also an important area for recreation. ■ Orchards have been removed around Stalham reducing biodiversity and landscape interest.
Long historic timeline visible in the landscape and historical significance of access to Great Yarmouth through the Yare and its ports.	■ Flegg has a significant legacy of historic buildings linked to its maritime heritage including Roman sites at Caister-on-Sea. ■ The herring fishing industry developed rapidly after the Norman Conquest in 1066 due to the position of the sand spit at the mouth of the Great Estuary. It soon became the mainstay of industry in Great Yarmouth as the fish became a favourite food for both rich and poor people and this lasted for 900 years. ■ Great Yarmouth town centre is surrounded by 14th-century medieval town walls, which are some of the most complete in England. Within the walls were the Rows - a unique collection of narrow courts and alleys but many were destroyed during bombing during the Second World War. Great Yarmouth is also home to the largest parish church in the country, St Nicholas's. The Tollhouse is the oldest known municipal building in Britain. ■ There is an important assemblage of pillboxes and other Second World War remains along the coast. Great Yarmouth was an important naval base during this time and was bombed more than any other coastal town in the country. ■ The Breydon Bridge was the second bridge built across the River Yare to connect Gorleston and Great Yarmouth. It was built in 1985 and is the longest single leaf Bascule (moveable) bridge in Europe.
A strong contrast between the developed coastal strip from Gorleston-on-Sea northwards and the predominately rural and arable farming landscape elsewhere. **Continued on next page...**	■ The rural landscape comprises mainly arable with some pastoral land. Due to good soil fertility, the area has been subject to extensive post-war agricultural rationalisation. ■ Occasionally a large hall and associated great barn, as at Paston, remind the visitor of former agricultural grandeur but the dominant character of the area is of a utilitarian, fertile agricultural region fringed by the sea and with a potential for inundation by water.

Landscape attribute	Justification for selection
... continued from previous page A strong contrast between the developed coastal strip from Gorleston-on-Sea northwards and the predominately rural and arable farming landscape elsewhere.	■ The rural area is tranquil by comparison with the hinterland around Norwich and around Great Yarmouth and the developed coastal strip. There are quiet areas away from the towns and major roads, and by the undeveloped coast it can be bleak and isolated particularly in the winter. ■ Different parts of the NCA have strongly urban and rural identities, developed from the area's trading and visitor economies superimposed on what would otherwise be a rural lowland landscape. This gives a distinctive contrast to the structure of the cultural landscape in different parts of the NCA. ■ This is not an area of big estates or parkland: the fertility of the soil ensured its early cultivation in small parcels and precluded amalgamation until the 20th century.
Valuable but fragmented semi-natural habitats.	■ Shrub and woodland with a mosaic of grassland communities provide an important buffer chain to Winterton Dunes National Nature Reserve (NNR), which like Great Yarmouth North Denes SSSI is one of a number of 'ness' features that are characteristic of the East Anglian Plain. ■ Behind a wide shingle beach, the North Denes SPA dune system is actively accreting. These low dunes are stabilised by marram grass and there are extensive areas of grey hair-grass which support important numbers of breeding little tern that feed outside the SPA in nearby waters. ■ The coastal sand dunes and the cliff top habitats at California are an area of dense bracken and scrub with patches of shorter more species-rich, fixed dune grassland. ■ The coast is actively accreting and supports fore-dune, mobile dune, semi-fixed dune and dry acid grassland. ■ Great Barn NNR in Paston is an SSSI and SAC on account of its national and internationally important bat populations. ■ Hemsby SSSI comprises fen and remnant areas of wetland and heathland. There is priority habitat parkland at Ormesby.
Local building vernacular.	■ Villages such as Mundesley are constructed almost entirely of flint and pantiles except for the gaunt brick hotels which are a reminder of the area's Edwardian popularity. ■ Larger villages have extensive fringes of red-brick 20th-century bungalows, with concessions made to vernacular architecture in the use of pre-fab flint panels. ■ The 'sea-side' influence provides the coastal strip with caravan parks, holiday chalets and associated facilities, especially around Great Yarmouth on the Flegg. ■ Many of the rural villages have large medieval churches built of local materials such as flint, often surrounded by traditional thatched houses and with a village green. ■ Flint is the dominant building material, other than for late 19th- and 20th-century housing, with reed thatch or pantile roofs. A Flemish influence can be discerned only in larger settlements while the isolated farmhouses are similar in style to those of central Norfolk.

Landscape opportunities

- Encourage mixed farming to help retain pasture and associated hedgerows and boundary oaks.
- Expand existing grasslands where possible, for example, on commons, verges, churchyards, pasture and enhance connectivity through creating new grassland linkages.
- Develop greater connectivity between the Broads wetlands and valley-side habitats.
- Protect the historic enclosed field pattern, with its characteristic winding lanes and boundary hedges, from agricultural rationalisation.
- Manage and enhance existing arable farmland for wildlife by reinstating hedgerows, increasing areas of set aside and adopting wildlife-friendly land management practices.
- Create new areas of accessible green space on the urban fringe and enhance access to existing assets such as the unprotected sites on the coast, rivers, walkways and disused railway lines, and improve links between green corridors to form a strategic green network and increase biodiversity.
- Promote sustainable tourism which builds on the unique natural assets of the countryside and coast and encourages visitors to use the long distance paths, quiet lanes and disused railway lines to improve recreational opportunities. Strengthen understanding of the special features and dynamic nature of the coast and mitigate for increased visitor pressure.
- Create better integrated public transport links including boat transport across the Yare and Breydon Water and improve services between the settlements and the countryside making it easier for sustainable transport choices to be made and help reduce carbon emissions and pollution.
- Ensure the sympathetic design and location of planned growth to protect and enhance vulnerable habitats and reduce pressure on protected sites.
- Undertake an integrated landscape strategy to ensure redundant airfield sites and other Second World War features are restored.
- Encourage measures which enhance existing settlements and the design and location of new developments and infrastructure, which can adapt to coastal change and encompass green infrastructure, maintain traditional Norfolk character and conserve and enhance historic features and archaeology.

Ecosystem service analysis

The following section shows the analysis used to determine key ecosystem service opportunities within the area. These opportunities have been combined with the analysis of landscape opportunities to create Statements of Environmental Opportunity.

Please note that the following analysis is based upon available data and current understanding of ecosystem services. It does not represent a comprehensive local assessment. Quality and quantity of data for each service is variable locally and many of the services listed are not yet fully researched or understood. Therefore the analysis and opportunities may change upon publication of further evidence and better understanding of the inter-relationship between services at a local level.

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Food provision	Fertile and productive soils Pig and poultry farming Some farms have grazing livestock Traditional orchards Fishing grounds off shore Soft fruit production and processing	86 per cent of soils are deep loams, which are among the most fertile in the country. 71 per cent of farms are predominately arable growing cereals, sugar beet and potatoes. 9 per cent of farms graze livestock around the Broads margins. Pig and poultry farming is widespread. Horticultural vegetable crops are grown in the lighter warmer soils. Fruit farms are found near Tunstead and in the south-west of the area. Herring, lemon sole and sole spawn close to the coast.	Regional	The soil quality, water availability and land drainage support high levels of agricultural production, but there are increasing pressures on these resources. Problems with soil erosion are likely to affect production in future. Market conditions and loss of farm subsidies are likely to determine future changes in agricultural practices. Higher intensity cropping leads to greater use of chemical fertilisers, herbicides, pesticides and water, increasing levels of pollution in the Broads. Climate change could substantially reduce the yield of winter wheat in some years and drive a change towards spring crops. Finding suitable livestock to graze pastures is becoming more difficult which is reducing soil organic matter and affecting landscape character. **Continued on next page...**	Work with the farming community to safeguard future food production by encouraging more mixed farming and sustainable land management practices which enhance soil and water quality and increase biodiversity values on farmland. Raise awareness of nutrient and pesticide pollution, which has an effect on protected areas and the marine environment and promote opportunities to embrace low input production. Support farm diversification through production and marketing of high-value local and specialist food items and promote local produce to locals and visitors.	**Food provision** **Regulating soil quality** **Regulating soil erosion** **Biodiversity**

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Food provision cont.				**... continued from previous page** One of the UK's leading growers and processors of high quality soft fruits for major British supermarkets is located in Tunstead and there is a large inflow of migrant workers during the fruit picking season. There is a network of local producer outlets in market towns and villages which have strong linkages with the tourist industry. Herring fishing in the area collapsed in the 1960s. Eighteen fishing boats which catch herring for craft sales are now based in Suffolk.		

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Timber provision	Existing woodland Commercial timber production at Bacton Woods	The existing woodland cover (5 per cent of area) consists of broadleaved, coniferous and mixed woodland which is mostly located in the western part of the NCA. Less than 1 per cent is ancient woodland. There is minimal commercial timber production apart from Bacton Woods which has over 30 species of tree including sessile oaks. Oak is the dominant hedgerow tree but many are in a state of advanced decay. Since 1998 Countryside Stewardship has funded hedge management (3 km), hedge planting and restoration (12 km).	Local	The agricultural landscape generally has a poor hedgerow network and limited woodland cover. The woodland/ hedgerow resource is poorly managed. Since 1998, as a result of funding through the Woodland Grant Scheme, tree planting rose 32 per cent by 2003, and increased still further through Environmental Stewardship. Grubbing-up of orchards has occurred, particularly in the Stalham area.	Renew and replant old hedgerow lines to reinforce the historic field boundary pattern. Manage and conserve areas of woodland in the inland farming area, particularly where they occur on the fringes of the Broads. Retain existing orchards and fruit varieties and plant new orchards to enhance landscape and biodiversity interests. Promote the value of woodlands for biodiversity, local community recreation and education.	**Timber provision** **Biodiversity** **Sense of place/ inspiration** **Recreation**

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Water availability	Rivers Ant and Mun Surface water (reservoirs) Farm reservoirs	The NCA is in the driest part of the country and droughts are a regular feature of the climate. The groundwater resource of the NCA is predicted to be under pressure and of poor quantitative status by 2015. There are a number of both agricultural and potable water boreholes around the flood plain periphery drawing water from the chalk aquifer below; the largest is in Ormesby St Michael. Both the surface water and ground water abstraction licences are currently fully utilised.	Regional	Climate change may increase the frequency of drought periods resulting in more use of abstracted water to support agricultural practices. Great Yarmouth's dependency on surface water for public water supply puts it at increased risk during dry periods. Abstraction is strictly regulated due to concerns about aquifer-fed fen communities, low river flows, and saltwater ingress from the sea. The Rural Development Programme for England (RDPE) has funded two new farm reservoirs near Stalham. Limited work has been undertaken to improve domestic water storage or increase water use efficiencies.	Promote the sustainable use of water by encouraging sympathetic land management practices which reduce the demand for ground water for crop irrigation. Expand farm water storage capacity and ensure that new irrigation reservoirs safeguard the distinctive quality of the local landscape and benefit wildlife. Promote water efficiency measures for example, agricultural and domestic harvesting of rainwater. Encourage planting of drought tolerant crops.	**Water availability** **Biodiversity**

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Genetic diversity	Gardens and orchards	Many villages and farmsteads retain small traditional orchards preserving a number of locally important apple varieties, including Happisburgh, Green Roland, Vicar of Beighton and Winter Broaden apples.	National	It is important to maintain the genetic diversity of orchard fruit varieties in order to safeguard future food and drink provision, and afford increased resilience to climate change and disease.	Raise awareness of local varieties and link owners of orchards with local fruit producers and suppliers. Encourage regeneration of existing orchards and new planting with local varieties.	**Genetic diversity** **Sense of place/ inspiration** **Sense of history** **Biodiversity**
Biomass energy	Hedgerows and woodland	Only 5 per cent of the NCA area is wooded, located mainly in the western part of the NCA. There is minimal commercial timber production apart from at Bacton Woods.	Local	The NCA offers some limited potential for the provision of biomass by bringing unmanaged woodland under management. There is potential to introduce rotational coppice. There and is also potential for miscanthus planting, both along the coast and also further inland, with the opportunity to use the planting to help screen some of the larger settlements. The potential short rotation coppice yield is generally medium and the potential miscanthus yield is high. Care should be taken in selecting sites to ensure that significant hedgerows and historic field bank patterns are not obscured.	Work with the farming community to identify suitable areas for the planting of miscanthus where it would create additional enclosure in the inland area and improve woodland linkages. Support the reinstatement of woodland management regimes including rotational coppice, which will also benefit biodiversity.	**Biomass energy** **Biodiversity**

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Climate regulation	Hedgerows, trees, woodlands and orchards Soils Coastal habitats including sand dunes and beaches	The woodlands, hedgerows and orchards in the NCA offer a carbon storage resource, and further planting will create additional carbon storage capacity. Soils over much of the NCA are generally light, less water-retentive soils with a low carbon content, which have less potential to sequester carbon, are at greater risk from erosion, resulting in lower carbon storage. 4 per cent of the NCA is covered by remnants of peaty soils. Other areas have soils with a loamy and sandy nature which have a higher carbon content. Sand dunes found along the coast have significant carbon storage potential.	Regional	As woodland cover is very low (5 per cent of the area) the carbon storage potential from them is commensurately low. As soils are very fertile and cultivated, frequently carbon sequestration and storage can only be increased by measures that increase organic matter content and by reducing the frequency and area of cultivation. Agricultural intensification, drainage of the land and the decline in mixed farming systems, has increased rates of decomposition of soil organic matter and erosion of topsoils. This has reduced the carbon sequestration potential of the farmed environment. Small areas of orchards have both a significant biodiversity and carbon storage importance. Dunes and beaches have significant carbon storage potential as a result of soil organic matter accumulated due to the production of litter and dead roots.	In the longer term more tree and hedge planting offers the potential to significantly increase the overall sequestration of carbon of the NCA. Increase the level of mixed farming and increase grazing livestock numbers to increase the amount of manure being spread on fields and so return carbon to the agricultural soils. Adopting land management options which reduce the soil disturbance, erosion and oxidation is likely to result in increased carbon stores.	**Climate regulation** **Regulating soil quality** **Regulating soil erosion**

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Regulating water quality	Woodland Rivers Coastal habitats	The rivers in the NCA drain largely rural catchments with little industrial activity, apart from Great Yarmouth. Their water quality is heavily influenced by farming practices, sediment and associated phosphate run-off from agricultural fields having been identified as an issue. The qualitative (chemical) status of river water is predicted to be poor, with the exception of the extreme north-east of the NCA. The groundwater chemical status in the NCA is poor. The upper reaches of the Broadland river catchments in this NCA have been substantially modified as part of agricultural improvements and are generally slightly over-enriched as a result of fertiliser use. The biological and chemical water quality in 2008 ranged from good (B) to fairly good (C) and very good (A) to good (B) respectively. The ecological status of the River Ant is moderate.	Regional	The dominance of arable farming in the area with high nitrate and phosphate levels and the high proportion of pig and poultry farms have a negative effect on water quality. Excess farmyard manure and slurry applications, nutrient leaching and inefficient crop nutrient management are also contributory factors. There is some localised pollution from pesticides, soil erosion and sedimentation and transport pollutants to watercourses. There is limited evidence of management agreements for riverine or coastal habitats, suggesting overall neglect. Rural land management practices and road surfaces cause high phosphate levels and increased levels of sediment in watercourses. The contribution of phosphate from households in areas without mains drainage is potentially significant and affects water quality. Land uses within the coastal strip have a major impact on the quality of the wetland habitats of the Broads and industrial and commercial activity in Great Yarmouth is a potential threat to Breydon Water. It is important that actions undertaken here help to secure the integrity of both areas.	Encourage targeted fertiliser and pesticide application supported by good in-field analysis to help reduce contamination of the water resource. Work in partnership with farmers to encourage take up of agri-environment options to protect watercourses and to prevent water quality deterioration caused by diffuse pollution and rapid run-off. For example, by maintaining wide field margins and grassland strips along field drains and water courses to capture sediment and nutrients. Promote soil management techniques that help prevent deterioration of water quality caused by soil erosion and leaching. Encourage good soil management practices such as retaining overwintering stubbles and increasing soil organic matter content to reduce soil erosion and run-off rates.	**Regulating water quality** **Regulating soil quality** **Regulating soil erosion**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Regulating water flow	Rivers Agricultural land	The NCA is in the driest part of the country and droughts are a regular feature of the climate. Yet the NCA has limited water storage capacity. The River Yare is tidal and is the main watercourse in the area and runs through the urban area of Great Yarmouth and Gorleston before entering the North Sea. The NCA is at high risk of fluvial flooding from the River Yare and River Mun, particularly in Great Yarmouth, Gorleston and Mundesley. Other settlements at high risk of flooding include North Waltham, Caistor-on-Sea, Stalham and Hemsby. Fluvial flooding does not pose an issue for the River Ant.	Regional	Low flows in rivers are becoming a regular feature and this limits the availability of water that can be abstracted for irrigation of food crops. Climate change may increase the frequency of drought periods resulting in more use of abstracted groundwater to support agricultural practices. Groundwater levels around Great Yarmouth are very high, putting it at risk of flooding during periods of heavy rainfall. For the River Mun, flood volumes are expected to increase in the future and therefore a flood risk management strategy will need to address this[10]. Rain falling on impermeable surfaces such as roads, not only washes pollutants into the water drainage system but also increases flooding in areas at risk, so consideration needs to be given to how rapid run-off and pollution can be reduced, including river bank and channel maintenance.	Promote opportunities to re-naturalise watercourses and reinstate upper catchment grassland to increase storage capacity (of both water and carbon), and help protect riverside communities further downstream on the rivers Ant and Bure (in The Broads NCA) from flooding. Encourage land management practices that capture water and reduce run-off rates. For example, planting appropriate woodland, shelter belts and hedgerows; re-establishing farm ponds; constructing wetlands or sustainable urban drainage system, which can trap and treat pollutants and provide a wetland habitat. Work in partnership to take an integrated approach to managing river, tidal and surface water resources.	**Regulating water flow** **Water availability** **Regulating soil quality** **Regulating soil erosion** **Biodiversity** **Geodiversity** **Sense of place/ inspiration**

[10] *North Norfolk Catchment Flood Management Plan*, Environment Agency (December 2009; URL: http://a0768b4a8a31e106d8b0-50dc802554eb38a24458b98ff72d550b.r19.cf3.rackcdn.com/geana0909bpce-e-e.pdf)

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Regulating coastal flooding and erosion	Tidal river Coastal sand dune, maritime cliff and slope, coastal shingle and coastal and flood plain grazing marsh Wide sandy beaches River embankments Geomorphological processes	The coastline in the NCA is dynamic and constantly evolving. The coastal strip between Mundesley and Happisburgh is part of the most physically active length of coast in Great Britain and is the main provider of sediment for beaches. Extensive natural dune systems fringe the low lying stretches of coastline in parts of this NCA such as at Winterton-on-Sea and engineered defences are also in place offering protection from coastal flooding and erosion in some settlements. An extremely wide and healthy beach system at Great Yarmouth, which has been fed by sediment derived from cliff erosion in northeast Norfolk, provides a natural sea defence helping to protect land and property from flooding.	Regional	The issues and opportunities facing this physically active and evolving coastline are complex. Cross-sectoral partnerships are actively working to consider, evaluate and respond appropriately to the many issues and opportunities erosion and flood risk management presents on this section of coast. The Shoreline Management Plan (SMP) Kelling Heath to Lowestoft Ness[11] takes a holistic approach to management of the Norfolk coast and its geomorphological processes. The policy options identified for this coastline are hold the existing defence line, managed realignment and no active intervention. **Continued on next page...**	Take a partnership approach to realise opportunities which allow natural coastal processes and habitats (including soft cliffs, and sand dunes) to function unimpeded within the context of the policies identified by the relevant shoreline management plan. Work in partnership to protect and enhance the naturalness of the coast and seek opportunities to enable natural development of coastal systems. Further identify opportunities to create compensation habitats for those lost to coastal squeeze, aiming to ensure no further net loss of habitat. Ensure coastal management is embedded into local planning policies.	**Regulating coastal flooding and erosion** **Regulating water flow** **Climate regulation** **Biodiversity** **Recreation** **Geodiversity** **Sense of place/ inspiration**

[11] *Kelling to Lowestoft Ness Shoreline Management Plan – First Review: NonTechnical Summary* (May 2010)

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Regulating coastal flooding and erosion cont.				**... continued from previous page** The policy options that are set out within the SMP will need to be confirmed by more detailed coastal strategies. The SMP identifies a need to allow for managed change, continuing to provide defences where justifiable for the immediate future, but with a long term plan, where appropriate, to gradually retreat and relocate, thus enabling a naturally functioning sustainable system to re-establish. A vast majority of the length of this coastline is reliant upon sediment eroded from the cliffs of North Norfolk for beaches to provide natural defences, in some areas this has been supplemented through beach recharge. For a number of sections of the coast it is identified that continuing to maintain adequate defences cannot be sustained in the medium or long term[12].	Undertake studies to ensure coastal behaviour is fully understood in the light of changing defence policies. Monitor changes on the coast, particularly related to the internationally important habitats that could be affected by policy options. Identify appropriate social adaptation measures and work in partnership to implement these well in advance, to mitigate the impacts of coastal change, particularly on coastal communities.	

[12] The Seascape character area assessment for the East Inshore and East Offshore marine plan area can be seen here: www.gov.uk/government/publications/east-marine-plan-areas-seascapecharacter-assessment

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Regulating soil quality	Soils	There are four main soilscape types in this NCA: ■ Freely draining slightly acid loamy soils, covering 86 per cent of the NCA. ■ Slowly permeable seasonally wet acid loamy and clayey soils (5 per cent). ■ Loamy and sandy soils with naturally high groundwater and a peaty surface (4 per cent). ■ Sand dune soils (2 per cent). The freely draining slightly acid loamy soils (86 per cent of the NCA) may be valuable for aquifer recharge.	Local	Rainfall is readily absorbed in the most fertile soils and drains away easily with little profile surface run-off. The remaining soils in the NCA, if poorly managed, can lead to increased run-off rates, which strips away productive topsoil. Some component soils are at risk from topsoil compaction and poaching. Careful management of weak topsoil 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 organic matter inputs can help improve soil structure.	Incorporate organic manures and beneficial wastes to improve soil structure and prevent compaction. Encourage sustainable land management practices and mixed farming to help address soil erosion and increase biodiversity whilst maintaining food production. Maintain good structure, avoiding compaction, to aid water infiltration but also adopt soil moisture conservation techniques to retain moisture within the soils.	**Regulating soil quality** **Climate regulation** **Regulating coastal flooding and erosion** **Biodiversity** **Geodiversity**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Regulating soil erosion	Soils Semi-natural vegetation cover	The freely draining, slightly acid loamy soils covering 86 per cent of the NCA have enhanced risk of soil erosion on moderately sloping land or where cultivated or bare soil is exposed. Erosion is exacerbated where organic matter levels are low after continuous arable cultivation or where soils are compacted.	Local	There is a high risk of erosion in soils where the timing of agricultural operations results in land being left bare during periods of high rainfall e.g. spring sown cereals, field vegetables, sugar beet, maize and potatoes, and when cultivations take place on sloping land north of North Walsham. Soil erosion from wind scour is high especially in arable areas near the exposed North Sea coast. Wind erosion of soils can be reduced by planting hedgerows in areas at high risk. Soils susceptible to capping and slaking need to be managed carefully to reduce erosion risks. Timing of cultivations and vegetation cover is important.	Encourage farming practices that increase the organic matter content of soils such as the use of grass leys, introducing fallow into rotations and over-winter stubbles. Reduce soil compaction by encouraging the careful timing of land management activities, including reducing unnecessary machinery use in wet conditions. Plant hedgerow boundaries where appropriate to protect soils against wind erosion. Seek opportunities to create semi natural habitats and ecological networks within the farmed landscape which will protect soils and water and enhance biodiversity.	**Regulating soil erosion** **Regulating water quality** **Food provision** **Biodiversity** **Geodiversity** **Regulating water quality**
Pollination	Heathland, grassland and meadow habitats Field margins Hedgerow banks	The NCA contains grassland and meadow habitats which support a variety of nectar sources. Field margins and hedgerow banks in agricultural land provide important foraging sources for pollinator species.	Local	Pollen and nectar margins on arable farms (through agri-environment schemes) can provide important foraging habitat for pollinators. These should be increased where possible. Hedgerow banks can be managed to provide important nectar sources and may act as wildlife corridors between semi-natural habitats. Existing lowland heaths and grasslands provide suitable habitat for a range of pollinating insects.	Maintain and enhance the floristic diversity of lowland meadow and lowland heathland, and other semi-natural habitats, to increase the area of habitat suitable for pollinators. Work with the farming community to encourage sympathetic management for pollinator species and to increase the areas of pollen and nectar-rich field margins on arable farms.	**Pollination** **Biodiversity** **Food provision**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Pest regulation	Semi-natural habitats Field margins Hedgerows	Semi-natural habitats, field margins and hedgerows adjacent to arable farmland support populations of pest regulating invertebrate, bird and mammal species.	Local	Increasing diversity in species and structure of field margins will increase the ability for these areas to support populations of pest regulating species. There may be opportunities to improve the network of semi-natural habitats across the NCA through appropriate management of existing habitats and creation of new habitat.	Seek opportunities to increase field margins, species-rich hedgerows and beetle banks to encourage a network of habitats for pest regulating species close to areas of agricultural production and manage semi-natural habitats to increase their diversity of structure and composition.	**Pest regulation** **Pollination** **Biodiversity** **Food provision**
Sense of place/ inspiration	Nucleated villages and market towns Traditional farming settlements Coastal landscape and seascape Wind-swept coastal area Wind farms, on shore and off shore	The sense of place in the NCA is created by the dual influences of the coast and the North Sea (with its associated coastal and marine habitats and species, historic trade and fishing industries and more recent tourism) and the farmland of the hinterland which is much valued for agriculture. Long and wind-swept sandy beaches represent an ephemeral landscape with a sense of wilderness. Offshore wind farms have a strong visual impact on views out to sea. **Continued on next page...**	Regional	The sense of place is threatened by development along the coastal strip, and on the fringes of existing villages, with the proliferation of holiday chalets and pressure for new development within the commuter villages to the north and east of Norwich. A second major new wind farm development close to Martham and Scoby Sands has further altered the visual character of the coast and seascape. The overriding character of the landscape is provided by its traditional agricultural landscape and settlement pattern. Intensification of farming activities and increasing pressures from development, including increases in traffic, may adversely affect the agricultural landscape.	Ensure development plans are sensitive to preserving the traditional character of the landscape particularly along the coastal strip. Promote the use of traditional vernacular and building materials that conserve and enhance historic associations such as the Edwardian tourism chalets in Winterton. Encourage the establishment and use of 'flying flocks' for grazing to ensure the Broads landscape maintained. Encourage the planting and restoration of hedgerows, particularly on coastal arable areas, to improve landscape character and to increase biodiversity.	**Sense of place/ inspiration** **Sense of history** **Recreation**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Sense of place/ inspiration cont.		**... continued from previous page** There are long views across The Broads NCA towards the coast. Daniel Defoe, Charles Dickens, Admiral Nelson and Anna Sewell all have strong connections with the area. The strength of vernacular built character in settlement cores such as Winterton is notable and creates a strong sense of identity. Skyline features in Great Yarmouth result from resort and port related developments.		A shortage of suitable livestock for grazing on the Broads fringe is likely to have an effect on the landscape of the area, leading to the decline in important cultural landscapes and wildlife habitats. The bleak and open coastline is dominated by large areas of arable land that has resulted from extensive hedgerow removal which has neglected landscape character. Recent hedgerow planting as a result of Environmental Stewardship has improved the situation but further hedgerow planting and restoration is required.		
Sense of history	Soft sediment cliffs Maritime heritage – links to port and fishing industry, naval and coastguard Farmed landscape Victorian seaside resorts Second World War military features	The NCA's actively eroding coastline results in a wealth of archaeological finds helping to build a picture of settlement and land use in the area through time. In 2013 the oldest human footprints ever found in Europe were exposed on the shore. Great Yarmouth is an historic centre for port related and maritime activity, and the River Yare has provided an important trading link with Norwich. **Continued on next page...**	National	The areas actively eroding soft sediment cliffs are constantly revealing new archaeological remains which are evidence of early human occupation. There is potential to interpret this asset and give more people the opportunity to engage with and understand the area's historic past. Apart from the Time and Tide Museum situated in the UK's best preserved Victorian Herring curing works in Great Yarmouth, there is little to remind visitors to the NCA about its important and varied maritime past.	Work with partners to better communicate the NCA's prehistoric past, the significance of the local geology and role of the sea in this. Use opportunities offered by the new Coastal Access Path in 2014 to provide interpretation and educational opportunities for the visitor to experience. Work with Maritime East and associated museums to provide opportunities for people to understand more about the maritime associations in the area.	**Sense of history** **Sense of place/ inspiration** **Geodiversity**

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Sense of history cont.		**... continued from previous page** There is a long maritime heritage associated with herring fishing and work in its associated industries. Distinctive small fishing villages that developed along the coast as a result of rich fishing opportunities are still evident today. The history of the landscape was shaped by the area's productive agricultural past, its small hamlets and isolated farmsteads with resultant small land holdings and field patterns some of which are still evident today. Wool production was a major economic activity from the mid-14th to 18th centuries and the production of textiles was central to many villages. This led to Flemish architectural influences and the building of medieval churches and houses in the north-west. The areas historical association with mass tourism began after the Victorians built railways to the coast, and in 1906 Britain's first holiday camp was established at Caister. Cottishall Airfield has blast walls and other Cold War defences of national importance.		Development is likely to occur close to existing centres of population, expanding market towns and resulting in the loss of some of their historic character. The use of traditional building materials in new developments may help to retain historic links. The areas important historic Second World War assets are largely neglected and much could be done to restore and interpret their interests for future generations.	Ensure the protection of heritage assets, including medieval churches and the historic features of towns and parishes. Promote the use of traditional vernacular and building materials. Ensure future development plans consider the conservation of r of the historic farmed landscape pattern. Work with partners to encourage innovative approaches to ensure that Cottishall Airfield can offer educational opportunities about its role in defending the nation during the Second World War.	

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Tranquillity	Undeveloped northern coastline Inland areas of the Broads	A sense of tranquillity is particularly associated with the undeveloped stretches of the northern coastline, as well as the more remote inland areas with views over the Broads where patches of woodland and semi-natural grassland occur. The sandy beaches and sand dune systems evoke a strong sense of tranquillity outside peak holiday periods.	Local	The tranquil areas of the NCA may be compromised in future by increased road traffic and new development. The area's concentrated urban settlements, commercial activities and both in and off shore wind farm developments are likely to increasingly detract from levels of tranquillity. Expanding the area and connectivity of woodland could have a beneficial effect on tranquillity, biodiversity and climate regulation, particularly in and around the fringes of the larger settlements. The NCA is a busy and popular holiday destination so increased car usage is an issue, especially during summer months. Improving sustainable transport opportunities and promoting their use, for example increasing the use and reach of the Coasthopper Bus, could reduce traffic movements and noise pollution. Promoting the 'Quiet Lanes' project and investigating opportunities to expand the network and improve its effectiveness could similarly contribute positively to noise reduction.	Incorporate green infrastructure links and woodland buffers to new developments and plan to minimise new development in the currently more tranquil areas. Work with partners to devise and implement a sustainable transport strategy for the area. For example, encouraging the use of and integrating rail and bus services, establishing and promoting enhanced cycle, walking and waterway routes to enhance the visitor experience and reduce car usage.	**Tranquillity** **Recreation** **Sense of place/ inspiration** **Sense of history** **Geodiversity**

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Recreation	Seaside resorts Long-distance footpaths and cycle ways Waterways Protected sites Forestry Commission woodland	Great Yarmouth is now the third largest seaside resort in the UK. The NCA has 24 km of 'golden sand' attracting hundreds of thousands of visitors each year. The Weavers' Way and Paston Way long-distance paths run through the NCA and along disused railway lines. The Norfolk Coast Cycleway (Sustrans Regional Route 30) runs through the area from Mundesley to Great Yarmouth and Route 1 runs from Acle to Great Yarmouth. Boating access to the Broads and Norfolk's only canal built specifically for Norfolk wherries, are popular for recreation. Winterton Dunes NNR and North Denes SPA provide public access to acidic dunes and heaths where rare plants can be seen and little terns nest. Bacton Woods, owned by the Forestry Commission, is an important area for recreation.	National	Due to the popularity of the NCA for tourism, many of the area's natural sites, especially along the coast, are under recreational pressure. Both Winterton Dunes NNR and North Denes SPA are heavily used at peak periods yet their habitats are fragile and breeding birds susceptible to disturbance from visitors. Careful management is needed to maintain their special ecological interests. Similarly there are recreational pressures on land within the Broads buffer zone. The Coast Path in Norfolk will provide new access around the coast. Promotion of the Coastal Path is likely to attract more visitors to the coast and this will require partners to develop a visitor management strategy. Environmental Stewardship has provided a number of new permissive access paths which give local communities access to land on their doorsteps. The creation of other new access routes, incorporation of green infrastructure links in to new developments and planting community woodlands could help to relive recreational pressures on the existing resource and offer opportunities to enhance local biodiversity.	Undertake research to understand the recreational usage of existing sites and the potential for creating further green spaces and access routes to reduce pressure on the existing resource, in line with Accessible Natural Greenspace Standard (ANGSt). Work with partners to produce a high quality tourism and recreational strategy, looking at the whole NCA and beyond, to help reduce car usage, take people away from more sensitive coastal sites and offer visitors new recreational opportunities. Enhance the area's existing public rights of way network and where possible establish new integrated permissive access between the coast and other areas of countryside to link people with places and help to make recreation more sustainable. Support the restoration and use by eco-friendly vessels of the North Walsham and Dilham Canal, providing a balance between the needs of navigation, recreation, heritage, and environmental enhancement, to improve access and education about the canal and encourage community involvement.	**Recreation** **Sense of place/ inspiration**

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Biodiversity	Coastal sand dunes Maritime cliff and slope Coastal and flood plain grazing marsh Lowland grasslands Other semi-natural habitats	There is over 392 ha (just under 2 per cent of the NCA area) of priority habitats within the NCA including 145 ha of coastal sand dunes. The Great Yarmouth North Denes dune and dune grassland communities are of national importance. They support populations of the nationally rare grey hair- grass and the nationally scarce rush-leaved fescue. It is the only site known in Britain for the rare capsid bug, Polmerus vulneratus. The NCA contains two SPAs, three SAC, one Ramsar site and 149 ha (just under 1 per cent of the NCA area) is nationally designated as SSSI. The NCA contains one third of Winterton Dunes which is within Norfolk Coast AONB. It has an extensive dune system which supports little tern on the foreshore. Natterjack toads also breed here. **Continued on next page...**	International	The coastline of the NCA is active and constantly evolving. In the future, as the land of the east coast continues to 'sink' and sea levels continue to rise, the character of the area's protected sites will change. Managing these sites and enabling them to adapt and evolve is the subject of current partnership research and strategy development. Paston Great Barn NNR bat site is of international importance. It is important that a large zone (6-kilometre radius), around this site is managed sympathetically to provide suitable feeding habitats. Throughout the NCA the sites of biodiversity interest are now fragmented and often isolated as a result of changed agricultural practices. Enhancing the quality, quantity and connectivity of these sites would benefit biodiversity and landscape character.	Support integrated cross sectoral partnerships that aim to work collectively to manage the challenges and take the opportunities presented for biodiversity by the active and evolving coastline. Build cross-sectoral partnerships to work towards enhancing the quality, quantity and connectivity of wildlife sites in the NCA to support implementation of the Norfolk Ecological Network Map. Work with landowners and farmers to ensure biodiversity features are incorporated into the farmed landscape and encourage the uptake of land management practices that benefit biodiversity and aid in the reduction of soil run-off rates, diffuse pollution and pest control such as use of winter stubbles, field margins and hedgerow and shelterbelt planting. Increase information availability about the area's biodiversity assets and closely involve local communities in their care.	**Biodiversity** **Geodiversity** **Recreation** **Sense of place/ inspiration** **Regulating coastal flooding and erosion**

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Biodiversity cont.		**... continued from previous page** The little tern colony at Great Yarmouth holds about 10 per cent of the UK breeding population of this species. Although only 1 ha in size, Paston Great Barn NNR is an SSSI and SAC on account of its internationally important bat populations. This includes the barbastelle bat, one of the UK's rarest mammals. There are 11 SSSI wholly or partly within the NCA, one is a Geological Site and one is of Mixed Interest. There are 26 Local sites (County Wildlife Sites and Local Nature Reserves) covering 329 ha which is 1 per cent of the NCA.		The farmed environment includes ditches, hedgerows, copses and field margins dispersed through the landscape providing important connections across it and biodiversity habitats. Nationally important populations of barn owl and grey partridge are supported by the arable areas. There is considerable scope to improve biodiversity by working with land managers through agri-environment schemes. Biodiversity in the NCA is a key tourism asset, important for encouraging recreation and creating a sense of place. It is therefore valued not only for its intrinsic value but also for its societal values. The use of green infrastructure links from residential areas out in to the rural hinterland is important to enable people to connect with and explore their rural environment.	Encourage the use of green infrastructure links in and around residential areas to improve the accessibility of Local Wildlife Sites and enable people to connect with and experience their rural environment and aim to take pressure away from sensitive protected sites. Work with landowners and the local bat group to monitor bat populations and ensure that a large zone (6-kilometre radius), around Paston Great Barn NNR is managed sympathetically to provide suitable semi-natural habitats suitable for feeding bats.	

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Geodiversity	Pleistocene bedrock Glacial deposits Soils Eroding cliffs and coastal geomorphological processes Offshore mobile sandbanks Sand dunes Fossil beds	North East Norfolk is geologically complex with glacial deposits of boulder clay, sands and gravel over Crag (shelly sands and pebbly gravels). It frequently contains embedded fossils and archaeological remains providing evidence of early human settlement; a valuable historical record and educational resource. The effects of the North Sea are strikingly seen along the northern coastal strip where the exposed soft cliffs are rapidly eroding inland. The coastal strip between Mundesley and Happisburgh is part of the most physically active coastline in Britain, and is the main provider of sediment for the area's beaches as strong long-shore drift moves this fallen material from the cliffs. Natural offshore banks along this stretch help to protect the coastline between Winterton-on-Sea and Yarmouth, affecting both the waves and currents at the shore. The accreting ness at Great Yarmouth North Denes, along with Winterton-on-Sea, are among the best examples of this type of geomorphological feature on the eastern coast of England.	International	Erosion of this section of coast provides sediment to build the area's beaches, helping avoid accelerated erosion of the shoreline, providing better protection to towns and villages and satisfying nature conservation requirements. Further planned development of Bacton Gas Terminal could result in damage to the area's geological interest at Mundesley and needs to be considered. The Great Yarmouth outer harbour is likely to have an impact on both marine andcoastal processes and dredging may affect the sediment supply to offshore banks. The geology of the area, and the physical influence of the North Sea upon it, means that it continues to provide evidence that builds an historical record of human activity in the area over time; of national and international significance and a valuable educational resource. For example, recent archaeological excavations on Happisburgh beach discovered more than 70 flint tools and flakes as well as human footprints providing evidence that humans lived in the Happisburgh area more than 900,000 years ago. This is the first known human settlement in Northern Europe and some of the oldest human footprints in the world.	Maintain the nationally important geological exposures and geomorphological sites exhibiting mass movement features, by allowing natural processes of cliff mobility to continue. Provide resourcing for the management of geodiversity for example, through environmental stewardship and encourage landowners to protect valuable sites. Provide opportunities to develop projects which inform, engage and empower local communities, allowing them to take an active part in preparing for the impact coastal change will have on their heritage. Maintain and enhance the geological resource by identifying and improving opportunities for enhanced access to sites and improving understanding of geodiversity through interpretation and education.	**Geodiversity** **Sense of place/ Inspiration** **Sense of history** **Regulating coastal flooding and erosion**

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