



## Introduction

As part of Natural England's responsibilities as set out in the Natural Environment White Paper<sup>1</sup>, Biodiversity 2020<sup>2</sup> and the European Landscape Convention<sup>3</sup>, 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.

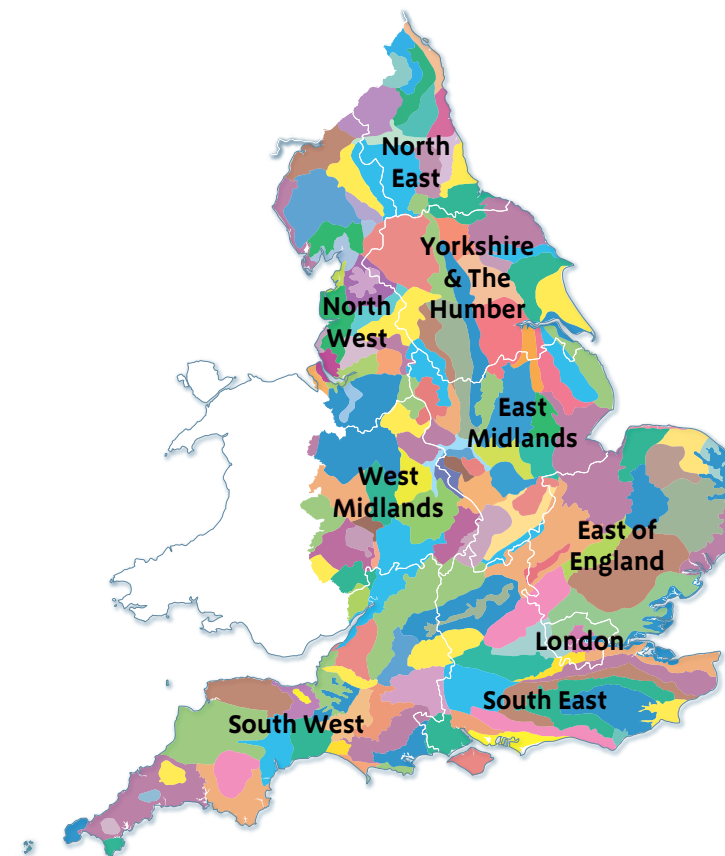
NCA profiles are guidance documents which can help communities to inform their decision-making about the places that they live in and care for. The information they contain will support the planning of conservation initiatives at a landscape scale, inform the delivery of Nature Improvement Areas and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

## National Character Areas map



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

<sup>2</sup> 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](http://www.defra.gov.uk/publications/files/pb13583-biodiversity-strategy-2020-111111.pdf))

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

## Summary

The Lancashire and Amounderness Plain is an area of high-grade agricultural land, bounded by Morecambe Bay in the north and Liverpool in the south. The eastern boundary is contained by the Bowland Fringe. The plain is made up of a series of low-lying landscape types: in the east, undulating lowland farmland on the highly productive coastal plain, and in the west, the former mosslands and their remnant sites, and the coastal marshes and dunes.

The northern Fylde (or Amounderness) coastal plain contains the estuary and lower reaches of the River Wyre, as well as its tributaries, the rivers Calder and Brock. It is predominantly improved pasture, with isolated arable fields. It is an ordered landscape of medium-sized fields with field ponds, clipped hedgerows and drainage ditches. This is a medium- to large-scale landscape, where blocks of wind-sculpted mixed woodland punctuate the relatively flat to gently rolling plain.

South of the Ribble Estuary the plain has a different physiographical history to that to the north, and this is reflected in the land use of the area. It is predominantly highly productive arable land with large fields. Agricultural drainage systems, including steep-sided ditches with localised reedbeds and steep embankments, are a dominant feature, and are responsible for the area's dramatic transformation from marshland to a rich and ordered landscape of rectilinear fields. This is mainly an area of open, high-quality farmland.

Large flocks of migratory wildfowl and wading birds take up residence on the coast during the winter months. These birds feed and roost not only on the mudflats and salt marshes of the estuaries, but also on the farmland along the coastal plain, using wet pastures, areas of open water, improved pasture and arable fields. These wintering flocks include internationally important numbers of Bewick's swan, whooper swan, lapwing, wigeon and pink-footed goose, as well as nationally

significant numbers of golden plover. The presence of these birds has led to large areas of the National Character Area (NCA) being designated as Ramsar sites and Special Protection Areas.

There is a concentration of urban areas along the Fylde coast, characterised by large Victorian and Edwardian residences and landmark features including the nationally famous pleasure beach and tower at Blackpool. Other notable large population centres within the NCA include Preston in the centre, and Ormskirk and Skelmersdale in the south. However, the plain remains largely rural in character, with isolated brick farmsteads, small villages and numerous large detached houses located along the network of country lanes. Views to the coast from the southern plain are highly influenced by urban fringe development in the Sefton Coast NCA at Formby, Ainsdale, Southport and other settlements, and by offshore hydrocarbon and wind energy installations.

The area offers many opportunities for informal recreation – particularly along the Fylde coast – and contains a number of country parks. The Ribble Link, Lancaster Canal, and Leeds and Liverpool Canal all cross the NCA and offer extensive recreational opportunities. There are several long-distance paths, the Lancashire Cycleway crosses the NCA both above and below the Ribble Estuary, and there are also long stretches of cycle paths around the coast. Other activities include birdwatching at the many marsh sites.

Click map to enlarge; click again to reduce.

## Statements of Environmental Opportunity

- **SEO 1:** Conserve, manage and enhance the river systems and wetlands – including the Ribble Estuary and the rivers Wyre and Douglas – with their many associated drains, dykes and streams. This will improve water quality and supply, sustainably address flood risk management, and enhance biodiversity and the historic environment through a strategic, landscape-scale approach.
- **SEO 2:** Work with landowners and land managers to protect, enhance and strengthen the network of farmland features in this agricultural plain landscape. Create and expand farmland habitats to enhance biodiversity, improve soil and water quality, strengthen the resilience of habitats to climate change and enhance landscape character.
- **SEO 3:** Promote the sense of place of the coastal and inland settlements, and protect the remaining rural character of the wider landscape from further loss and change from development pressures. Manage urban fringe development to ensure that it does not negatively impact the rural character of the area, and ensure that all development is of an appropriate type and scale. Provide good green infrastructure links to enhance people's enjoyment of and access to the varied landscapes and valuable recreational assets that the area provides.
- **SEO 4:** Promote and manage recreational and access opportunities, at the same time as conserving the natural and cultural heritage. Conserve and enhance the historic environment, geodiversity, areas of tranquillity, nature conservation sites, long, open views and landscape character. In recognition of the importance of tourism to the local economy, provide interpretation and educational facilities, which will bring health and wellbeing benefits for both residents and visitors.



Ribble Estuary, Lytham can be seen in the background.

## Description

### Physical and functional links to other National Character Areas

This is an area of high-grade agricultural land extending southwards from Morecambe Bay in the north to the outskirts of Liverpool in the south. The eastern boundary of the plain is contained by the Bowland Fringe. It is divided from the industrial landscape of the Lancashire Coal Measures in the south-east by the Upholland Ridge, a Millstone Grit outcrop that punctuates the plain. The southern boundary is formed partly by the city of Liverpool, which extends from the Mersey Estuary beyond the hills of Anfield and Walton.

The area is relatively well populated, and an extensive network of road and rail routes links the area with the surrounding National Character Areas (NCAs). The area also contains the Ribble Link, the Lancaster Canal, the Leeds and Liverpool Canal, and several long-distance footpaths. The NCA is bounded on its eastern and western edges by the M6 and Irish Sea respectively, although in the south the NCA is separated from the coast by the Sefton Coast NCA.

The northern half of the NCA contains the estuary and lower reaches of the River Wyre and its tributaries, the rivers Calder and Brock. The headwaters of these rivers drain the western and south-western slopes of the Bowland Fells NCA. At the centre of the Lancashire and Amounderness Plain NCA lie the estuary and lower reaches of the River Ribble (which has its source in the Yorkshire Dales NCA), and its tributary, the River Darwen (which drains the Southern Pennines NCA). The River Douglas and its tributaries, the rivers Yarrow and Lostock, drain much of the southern half of the NCA, with the River Douglas flowing into the southern side of the Ribble Estuary. These rivers' headwaters rise on Rivington Moor, in the Southern Pennines NCA.

Views into the plain can be seen from adjacent raised ground, including the Bowland Fells and Southern Pennines. Conversely, views from within the NCA are set against the dramatic backdrop of the Southern Pennines to the south-east, the Bowland Fells to the north-east and the Cumbrian Fells to the north. Blackpool Tower is visible from many parts of the area and from further afield. There are extensive views across the Irish Sea and along the coastline, including distant views of mountain ranges in North Wales and Cumbria.

### Distinct areas

- The Fylde coast, including significant urban areas such as Blackpool and Fleetwood.

## Key characteristics



Agriculture near Rufford.

- A rich patchwork of pasture, arable fields and drainage ditches, on a relatively flat to gently undulating coastal landscape.
- Extensive views across the plain, within which small to medium-sized blocks of mixed woodland (wind-sculpted near the coast) provide punctuation and vertical accents.
- Thickly blanketed by glacial till, with poorly-drained peat-filled hollows that give rise to mosses and meres (now mainly remnants).
- Medium-sized to large fields form an open, large-scale agricultural landscape. Pasture is more dominant north of the Ribble Estuary, with arable to the south. There is a high density of relict pastoral field ponds on the eastern side of the NCA.
- Localised areas of intensive market gardening provide seasonally varied colours and textures.
- A complex network of wide meandering rivers, raised drainage ditches and dykes divide and drain the landscape. Along with fragmented relicts of reedbeds and mosses, and historic place names, these provide a reminder of the area's heritage of wetland reclamation.

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## Key characteristics continued...

- Coastal habitats and large areas of open water are of international importance for their migratory and wintering wildfowl and wading bird populations.
- Mixed arable and pastoral farmland habitats support a nationally important assemblage of breeding farmland bird species.
- A complex network of channelised rivers, canals, drainage ditches and dykes supports a nationally important population of water vole.
- The Fylde coast, which extends from Fleetwood in the north to the mouth of the Ribble Estuary, includes significant urban areas along the coastal strip (such as Blackpool and Fleetwood).
- Urban settlement is concentrated in the planned Victorian coastal resorts (including Blackpool) and inland towns (the largest of which is Preston).
- The Ribble Link, Lancaster Canal, and Leeds and Liverpool Canal all cross the NCA.
- Designed landscapes associated with large houses are locally common in the south, where they provide enclosure in an otherwise open landscape.
- A rectilinear network of lanes and tracks – usually without fences or hedges – subdivides the landscape, and isolated brick farmsteads occur in rural areas.
- Tourism is an important contributor to the local economy, with many opportunities for informal recreation – particularly along the Fylde coast.
- Several long-distance paths cross the NCA, including the Lancashire Coastal Way, the Ribble Way and the Wyre Way, as well as canal towpaths.

## Lancashire and Amounderness Plain today

The Lancashire and Amounderness Plain supports an open, large-scale landscape of farmland on a relatively flat to gently undulating coastal landscape. Pasture is more dominant north of the Ribble Estuary, with arable to the south. This rural landscape is dissected by wide rivers and a complex network of drainage channels, which together reinforce the angular form of the field pattern and are a reminder of the area's heritage of mosses and meres.

Large flocks of migratory wildfowl and wading birds take up residence on the coast during the winter months. These birds feed and roost not only on the mudflats and salt marshes of the estuaries, but also on the farmland along the coastal plain, using wet pastures, areas of open water, improved pasture and arable fields. The presence of these birds has led to large areas of the NCA being designated as Ramsar sites and Special Protection Areas (SPA).

The northern plain is predominantly improved pasture, supporting a high density of livestock, with isolated arable fields. It is a medium- to large-scale landscape, with medium-sized fields, field ponds, clipped hedgerows and drainage ditches. Blocks of wind-sculpted, mixed woodland punctuate the relatively flat to gently rolling plain. Views to the east are seen against the dramatic backdrop of the Bowland Fells and Southern Pennines. To the north, bordering Morecambe Bay, areas of stubble and grass leys contribute to significant feeding grounds for internationally important flocks of pink-footed goose and whooper swan.

To the south of the Ribble Estuary, the plain has a different physiographical history. This is reflected in the land use of the area: it is predominantly highly productive arable land much of it Grade 1, with some Grade 2 – with large, rectilinear fields bounded by ditches. Arable fields provide a habitat for farmland



View from Parbold Hill across the Lancashire Plain.



birds such as the lapwing, grey partridge, corn bunting and skylark; during the winter months, large areas of stubble provide important feeding grounds for internationally important flocks of pink-footed goose and whooper swan. Many field boundaries are simply ditches in areas where there is no need for stock proofing. The lack of hedgerows and hedgerow trees, combined with the essentially flat topography and large arable fields, creates a large-scale and sweeping landscape. Woodland is sparse outside historic estates such as Knowsley Park. The woodland that does exist tends to be made up of large, angular blocks of mixed species, which accentuate the regular field pattern. The

plain to the east is predominantly formed by clay soils, and contains some ancient wood pasture, with a high density of field ponds formed by the extraction of lime and marl for agricultural use.

An area of low-lying, open, intertidal land and coastal grazing marsh extends along the Ribble Estuary from Fulwood to the coast, separating the two areas of agricultural plain to the north and south. The intertidal landscape of the estuary varies in character, with narrow, bounded riverine channels inland, and wider, open and flat channels at the river mouth. The low-lying marine levels are an open and pastoral landscape of fields enclosed by ditches and hedgerows, with minimal woodland cover or settlement. Dynamic salt marsh intersected by dendritic creeks running out to sea creates a remote-feeling landscape. The intertidal flats of the Ribble Estuary support thousands of birds including the knot, oystercatcher, redshank, dunlin, curlew and godwit, while the extensive areas of grazed salt marsh are of considerable importance for feeding flocks of wigeon, pink-footed goose, whooper swan and Bewick's swan. The River Douglas flows into the southern side of the Ribble Estuary: along with its tributaries, the rivers Yarrow and Lostock, it drains much of the southern half of the NCA.

The northern half of the NCA contains the estuary and lower reaches of the River Wyre and its tributaries, the rivers Calder and Brock. The ungrazed salt marshes on the Wyre Estuary are of importance for their plant communities, including large areas of sea lavender, sea purslane, thrift and sea aster.

The NCA supports a range of important habitats and species, including two plant species endemic to the British Isles: purple ramping-fumitory and Isle of Man cabbage. The coastal habitats, – along with the large areas of open water and linear canals such as at Martin Mere, Mere Sands Wood and Marton Mere – are of international importance for their populations of migratory and wintering wildfowl and wading birds.



Oystercatchers.

There is a concentration of urban areas along the Fylde coast, characterised by large Victorian and Edwardian residences, as well as landmark features such as Lytham Windmill, Royal Lytham and St Anne's Golf Club, St Anne's Pier, and the many notable features of Blackpool such as the tram-lined promenade, the tower, the pier and the nationally famous pleasure beach, which all contribute to the overall sense of place. Other notable large population centres within the NCA include Preston in the centre, and Ormskirk and Skelmersdale in the south. However the plain remains rural in character, with isolated brick farmsteads, small villages and numerous manor houses located along the network of country lanes.

The area offers many opportunities for informal recreation, particularly along the Fylde coast. A number of country parks lie either wholly or partly within the NCA (including Beacon Park, Cuerden Valley and Wyre Estuary). Further recreational opportunities are provided by the urban parks of towns such as Blackpool, Lytham St Anne's and Preston. In the south, part of the NCA falls within the Mersey Forest. The Ribble Link, Lancaster Canal, and Leeds and Liverpool Canal all cross the NCA, and offer extensive recreational opportunities including walking, fishing and boating. Several long-distance paths cross the NCA, including the Lancashire Coastal Way, the Ribble Way and the Wyre Way, as well as canal towpaths. The Trans Pennine Trail National Cycle Route crosses the lower part of the NCA, linking the area as far away as Hornsea on the east coast, while the Preston Guild Wheel National Cycle Route loops around the city.

The Lancashire Cycleway crosses the NCA both above and below the Ribble Estuary, and there are long stretches of cycle paths around the coast. Other activities include birdwatching at the many marsh sites (including the Ribble Estuary National Nature Reserve, Hesketh Out Marsh, Fairhaven Lake and Granny's Bay, Pilling Marsh, Marton Mere, Rossall Point and Fleetwood Marsh), while the series of Local Nature Reserves (LNR) provide further opportunities for observing wildlife and enjoying contact with the natural environment.



View across Harrock Hill towards Preston.

## The landscape through time

Although Permo-Triassic red mudstones, siltstones and sandstones constitute much of the floor of the Lancashire lowlands, the solid geology rarely emerges from beneath its thick covering of glacial and post-glacial deposits. The plain's lush green pasture and rich arable land are a creation of the last two centuries. Prior to this, the area was predominantly marshland formed by rising sea levels after the last glaciations. As the ice sheet retreated, it left behind a blanket of glacial till that now forms the coastal cliffs north of Blackpool. It also created many poorly-drained hollows, which soon became filled with post-glacial peat, giving rise to the mosses and meres that dominated the area until very recently. Place names incorporating 'moss' and 'mere' are numerous today, and are associated with an abundance of well-maintained ditches and drains.

The plain to the south of the Ribble Estuary has a similar post-glacial history to that of the northern plain. Again, glacial deposits, soils and contours combine to produce the gently sloping plain that flattens out to fenland at the coast. A low cliff-line in the till plain a few miles inland marks the old shoreline of the former lake of Martin Mere, and is still intermittently traceable from the River Ribble to the River Dee. It is best seen at Hesketh Bank, near Preston, and at Hill House, east of Formby. The superficial geology in this area is mainly wind-blown Shirdley Hill Sand, with small patches of underlying till and marine clay. In addition, there are major areas of basin peat in the east (around Simonswood Moss), and of coastal peats south-east of Hightown. Together with podsollic soils overlying the Shirdley Hill Sands, the basin and coastal peats produce high-quality Grade 1 and 2 soils over much of the area.

There is some limited evidence of the area first being settled in the Mesolithic period, and later by the Vikings and Angles, and there is also evidence of a Roman fort at Kirkham. However, the barren sand dunes of the present coast, the mosslands studded with meres, and the heavy, clay soils of the densely forested glacial drift plain combined to make this an inhospitable landscape not conducive to early settlement. Areas of ancient enclosure between the rivers Wyre and Ribble, and in the angle of the rivers Ribble and Douglas, retain indications of strip cultivation (fossil strips). These are rare in Lancashire.

The Lancashire Plain included vast areas of mossland, supplying important resources such as peat and rough grazing for small local communities. Between the 12th and 14th centuries, population pressures drove small-scale drainage works, which brought the drier edges of the mosslands into cultivation.

The western coastlands of the area remained sparsely populated until the end of the 18th century. From the late 17th century onwards, the area began to change. This started with the wind-powered drainage of mosslands and fenlands, which was greatly accelerated by new technology such as steam pumps and increased demand for arable and horticultural produce in the 19th century. This transformed the marshes into high-grade pasture and arable land and, as a consequence, the Fylde emerged as an important area for both grain production and small-scale dairying. By the late 19th century and early 20th century, the arable farms of this area were also providing market produce, chickens and eggs for the region's towns. A few isolated windmills, built to drain the water and grind the first crops of corn, have also survived on the plain.

Large numbers of ponds and small marl pits were excavated on the coastal plain in the 19th century. In some areas, there are more than 35 ponds per square kilometre. The marl pits are associated with a particular soil type, the Salop and Salwick Flint Associations, which contain deposits of lime. Prior to industrialisation and the development of the fertiliser industry, small pits were dug to extract lime for spreading on surrounding fields; these pits have since filled with water to form ponds.

The conurbation of Blackpool grew in the late 18th century from a collection of farmsteads, following the growth of the ports at Skippool and Hambleton. The practice of closing the Lancashire mills annually for repairs ensured a steady stream of tourists and visitors. The arrival of the railway joining Blackpool to the main Preston and Wyre Joint Railway line in 1846, and the later development of the motorways, opened up communication routes between Blackpool and the agricultural and industrial landscapes further east. This cemented the town's recreational role and its development into the premier UK seaside resort that it is today.

More recent developments include the expansion of towns, residential areas, light industry, and the road and motorway network. In some areas, the conversion of historic brick-built barns for use as residential dwellings or for intensive agricultural practices, with harshly-coloured imported bricks and other inappropriate materials has resulted in poorly integrated developments that compromise the historic buildings and the wider landscape setting of groups of farm buildings. In some areas, farming is now giving way to livery and keeping horses particularly around the fringes of towns and villages.



Croston.

## Ecosystem services

The Lancashire and Amounderness Plain 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 Lancashire and Amounderness Plain NCA is contained in the 'Analysis' section of this document.

### Provisioning services (food, fibre and water supply)

- **Food provision:** The northern plain of the Fylde is used predominantly for dairy farming, with isolated arable fields. The southern plain, to the south of the River Ribble, is dominated by arable and horticulture, mainly on agricultural land of the highest quality. The basin and coastal peats, together with podsollic soils overlying the Shirdley Hill Sands, produce high-quality Grade 1 and 2 soils over much of the area. The coastal peat soils are intensively farmed for horticulture, vegetables, potatoes and cereals. Further inland, the slightly higher ground is also farmed for cereals and vegetables.
- **Biomass:** The existing woodland cover offers small-scale opportunities for the provision of biomass, either through bringing unmanaged woodland under management or as a by-product of commercial timber production. There are also opportunities for new planting, particularly in the south, under the Mersey Forest. There are also opportunities for energy crop production.
- **Water availability:** The water used across the plain is sourced in the neighbouring uplands of the Bowland Fells. The wide, meandering rivers Lune, Ribble and Wyre cross the plain. In rivers such as the Wyre, historic water abstraction rights may cause artificially low flows, leading to detrimental effects on fauna and flora, and to the loss or deterioration of

wetland assets. Water abstraction within the area is dominated by public water supply, but is also used for industry, agriculture, fish farming and topping up the Lancaster Canal.

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

- **Climate regulation:** Peat soils have a particularly important role in storing carbon. The area was once extensive lowland raised bog, interspersed with various fen and wet woodland habitats (collectively known as mosslands in Lancashire). The area is now predominantly drained and used for arable agriculture. This linked network of pumped drainage assets requires considerable resources to support it, which releases a large amount of carbon dioxide into the atmosphere, exacerbating climate change. Underlying the peat are glacial clays; if the peat were to be lost, there could be a deterioration of the quality of agricultural land. There are major areas of basin peat in the east of the NCA, around Simonswood Moss, and coastal peats south-east of Hightown. Limited carbon storage will be offered by the NCA's woodland cover (making up 4 per cent of the area), especially where this woodland is brought under management. In areas of mineral soils, carbon sequestration and storage can be enhanced by the addition of organic matter and through a reduction in the frequency and extent of cultivation.
- **Regulating soil erosion:** Just under half (43 per cent) of the soils covering this NCA are susceptible to erosion. The freely draining, slightly acid, loamy soils (1 per cent) have an enhanced risk of soil erosion on moderately or steeply sloping land where cultivated or bare soil is exposed. This is exacerbated where organic matter levels are low after continuous arable cultivation, or where soils are compacted. Heavy traffic also increases erosion risk on the naturally wet, very acid, sandy and loamy soils (16 per cent). Both of these soil types are at risk of wind erosion – especially where freely draining, slightly acid, loamy soils are coarse-textured. The slightly acid, loamy and clayey

soils with impeded drainage (7 per cent) are easily compacted by machinery or livestock if accessed when wet, and are prone to capping or slaking, increasing the risks of soil erosion by surface water run-off (especially on steeper slopes). Salt marsh soils (3 per cent) may be lost to coastal erosion, including from sea level rises but this process will help to prevent the loss of inland soils. The raised bog peat soils (7 per cent) and fen peat soils (7 per cent) are permeable, and therefore have a generally low risk of water erosion – except where cultivated land is susceptible to flooding. There is a risk of wind erosion in these soils and also in the loamy and sandy soils with naturally high groundwater and a peaty surface (2 per cent), especially where surfaces are bare or spring crops are grown.

- **Regulating soil quality:** The slowly permeable, seasonally wet, slightly acid but base-rich loamy and clayey soils (39 per cent) may suffer compaction and/or capping, as they are easily damaged when wet. In turn, this may lead to increasingly poor water infiltration and diffuse pollution as a result of surface water run-off. Management measures that increase organic matter levels can help to reduce these problems. The naturally wet, very acid, sandy and loamy soils (16 per cent) can have a weak structure, but are easily worked. Topsoil compaction can occur, as well as cultivation pans.
- **Regulating water quality:** There are a number of pressures on water quality in the NCA. Slurry and silage liquor discharges from farms with inadequate containment facilities, spreading of slurry to land, and discharges from small private sewage treatment works and septic tanks all contribute to rising ammonia levels in rivers. There is a risk of leachate being discharged into watercourses from large chemical, industrial and landfill sites, particularly along the open coastal marsh near Fleetwood. The ecological quality of surface waters is moderate across much of the NCA, including its coastal waters. It is, however, good in the River Brock (a tributary of the Wyre), the Lancaster Canal, and the Leeds and Liverpool Canal, but poor in the River Darwen (a tributary

of the Ribble) and the River Lostock (a tributary of the Douglas). Other than the Ribble Estuary, the NCA's coastal waters fail to achieve good chemical status. The chemical status of groundwater, meanwhile, is generally good – but poor along the southern edge of the NCA.

- **Regulating water flow:** Areas within the flood plains of the main rivers and their tributaries informally provide flood storage, and therefore are already acting to protect nearby properties and businesses. The many ponds and areas of wetland perform a similar service. Flooding from the River Wyre has historically been an issue of concern, especially within the areas of Garstang, St Michael's on Wyre and Great Eccleston (within this NCA). Following severe flooding in 1980, flood basins were constructed at Garstang and Catterall; these have prevented major flooding to property, although flooding to a number of rural properties, roads and agricultural land has still occurred. The Environment Agency's preferred approach to managing this flood risk includes the restoration of moorland habitat by grip blocking in the Bowland Fells, as well as changes in land and soil management practices to reduce erosion rates and increase local water retention. The Ribble catchment has a history of flooding, with the flood risk concentrated in Preston (within this NCA) and upstream in Ribchester (in the Lancashire Valleys NCA). Opportunities exist within the Upper Ribble and Hodder sub-catchments to provide flood storage and to create habitats that could reduce the downstream flood risk. Reservoirs at Rivington Moor (in the Southern Pennines NCA) play an important role in regulating flow from the upper catchment, and in reducing flood peaks on the Yarrow and Douglas. The flood plain of the lower Douglas and Yarrow consists of high-grade agricultural land where drainage is modified by pumping within a complex network of artificial channels. The main locations of fluvial flood risk to people and property within the NCA are Croston and Eccleston (on the River Yarrow), Leyland and the Lostock area (on the River Lostock), and Longton and Hutton (to the south-west of Preston, on streams draining to the River Douglas).

- **Regulating coastal flooding and erosion:** Tidal flooding typically occurs along the coastline, where high tides combine with a storm surge, wind and wave action to raise the sea level over the top of coastal defences. The main urban areas influenced by direct tidal flooding are Lytham St Anne's, Penwortham near Preston, Hesketh Bank and Walton-le-Dale. Many rivers are tidally influenced, with the potential to increase flooding upstream by preventing inland fluvial rivers from draining freely. Liggard Brook, Dow Brook and Savick Brook in the Ribble catchment are affected in this way. High water levels within the Douglas Estuary may prevent pumped or flapped outfalls from drainage channels from working correctly, leading to flooding behind the tidal defences, mainly affecting agricultural land.

## Cultural services (inspiration, education and wellbeing)

- **Sense of place/inspiration:** A sense of place is provided by the generally flat, fertile and gently rolling coastal plain, interrupted by isolated hills. The plain is dissected by wide, meandering rivers and an extensive network of rectilinear raised drainage ditches and dykes, with wind pumps that form distinctive features in the landscape – a reminder of the area's heritage of wetland reclamation from mosses and meres. The Ribble Estuary and coastline provide a strong sense of place in the west, with the Victorian coastal resorts of Blackpool and Lytham St Anne's forming the focal points for settlement. Extensive intertidal sand and mudflats are backed by remnant dunes and some of the largest salt marshes in the country. Views are set against the dramatic backdrop of the Forest of Bowland in the north-east and the Lake District to the north. Blackpool Tower is visible from many parts of the area. There are extensive views across the Irish Sea and along the coastline, including distant views of mountain ranges in North Wales and the Lake District.
- **Sense of history:** The history of the landscape is evident in its transformation from an area of extensive lowland raised mires to productive reclaimed farmland, beginning in the 18th and 19th centuries and reflected in the regular drainage ditches and dykes, canals, windmills and isolated red-brick farm buildings. Little evidence remains of the area's former landscape, aside

from small areas of remnant mosses or fen carr that provide indications of strip cultivation on boundaries of ancient enclosure between the rivers Wyre and Ribble, and place names that refer to 'moss' or 'mere'. Aspects of history likely to be most evident to the general public are to be found in the Victorian seaside towns of Blackpool and Lytham St Anne's, as well as in the area's parklands; these are most notable to the south, and include Knowsley Park, Rufford Abbey, Lytham Hall and Stanley Park.

- **Recreation:** There are many opportunities for informal recreation, particularly along the Fylde coast. The area is surrounded by large population centres, including Liverpool to the south and Preston in the centre; urban areas are also concentrated along the Fylde and Sefton coasts. Wyre Estuary Country Park and Lostock Valley Country Park are the only statutory country parks within the NCA, although Cuerden Valley Park fulfils a similar function. All the major conurbations have municipal parks. A number of the nature reserves within the area are free and open to the public, and offer opportunities for quiet recreation and enjoyment of the natural world. These include Mere Sands Wood, Marshside, Hesketh Bank, Fleetwood Marsh, Marton Mere and Longton Brickcroft. Brockholes and Martin Mere require payment for access, and there is restricted public access to the Ribble Estuary National Nature Reserve.

Public footpaths also offer significant opportunities for birdwatching on private farmland and on the coast. The Ribble Link, Lancaster Canal, and Leeds and Liverpool Canal all cross the NCA, and offer extensive recreational opportunities, including walking, fishing and boating. Several long-distance paths cross the NCA, including the Lancashire Coastal Way, the Ribble Way and the Wyre Way, as well as canal towpaths. The Trans Pennine Trail National Cycle Route crosses the lower part of the NCA, linking the area as far away as Hornsea on the east coast, while the Preston Guild Wheel National Cycle Route loops around the city. The Lancashire Cycleway path crosses the NCA both above and below the Ribble Estuary, and there are long stretches of cycle paths around the coast. Horse riding on the beaches is characteristic

in some areas, for example at St Anne's. Tourism is an important contributor to the local economy; however, visitor numbers are much lower than they were in the heyday of these Victorian and Edwardian seaside resorts.

- **Biodiversity:** The NCA is an intensively farmed landscape, and agricultural changes over the past 200 years have seen the majority of habitats considerably reduced in size and quality. Despite this, the NCA supports a range of important habitats and species, and contains one Special Area of Conservation, three Special Protection Areas and three Ramsar sites, with over 2,700 ha nationally designated as Sites of Special Scientific Interest (SSSI). In addition, the area has seven Local Nature Reserves and 219 Local Wildlife Sites, which provide further habitats for wildlife and also opportunities for communities to engage with and enjoy nature close to where they live.

The principal priority habitats within the NCA are coastal and flood plain grazing marsh and salt marsh, with some arable margins, lowland raised bog, lowland meadows, fens and lowland heathland also represented. The large number of ponds and marl pits are a particularly important but vulnerable resource.

Most of the prime agricultural land within the NCA is former mossland – under 400 ha of lowland moss habitat remains. What is left exists as small, isolated, hydrologically damaged remnants of a once-extensive moss resource. Only one of these remnants, Winmarleigh Moss SSSI, now retains anything like the original raised mire conditions supporting *Sphagnum* mosses.

The NCA is home to two plant species endemic to the British Isles: purple ramping fumitory and Isle of Man cabbage. The coastal habitats, along with the large areas of open water and linear canals (such as at Martin Mere, Mere Sands Wood and Marton Mere), are of international importance for their populations of migratory and wintering wildfowl and wading birds. The intertidal flats of the Ribble Estuary support thousands of birds including the knot, oystercatcher, redshank, dunlin, curlew and godwit, while the extensive

areas of grazed salt marsh are of considerable importance for feeding flocks of wigeon, pink-footed goose, whooper swan and Bewick's swan. The ungrazed salt marshes on the Wyre Estuary are of importance for their plant communities, including large areas of sea lavender, sea purslane, thrift and sea aster.



Redshank.



## Statements of Environmental Opportunity

**SEO 1: Conserve, manage and enhance the river systems and wetlands – including the Ribble Estuary and the rivers Wyre and Douglas – with their many associated drains, dykes and streams. This will improve water quality and supply, sustainably address flood risk management, and enhance biodiversity and the historic environment through a strategic, landscape-scale approach.**

### For example, by:

- Maintaining and improving water quality and provision by working with landowners, farmers and riparian owners to encourage sustainable farming practices. These will improve filtration into the ground and reduce nutrient run-off by creating a network of meadow grasslands, including grass field margins and grass buffers to both watercourses and areas of open water.
- Encouraging the growth of crops that require less irrigation, thus increasing on-farm water storage.
- Managing the network of drains, ditches and dykes on rotation so that they continue to function, while retaining vegetation to form effective habitats for species such as water voles. This will build links between wetland and other semi-natural habitats, improving water quality and preserving key landscape features.
- Managing and restoring any remnant landscape and habitat mosaics that are important to landscape structure and diversity, focusing on river, watercourse and wetland landscape features.
- Seeking opportunities to increase and link wetland habitats, including open water, reedbed, fen, wet woodland and wet grassland.
- Seeking opportunities to maintain and increase flood plain grazing marsh, based on its role in storing carbon, ensuring that sites are managed to enhance their biodiversity value.
- Encouraging agricultural practices such as planting winter cover crops, and creating in-field grass areas to prevent run-off, permanent grassland with low inputs, and buffer strips on cultivated land adjacent to watercourses, thus improving the infiltration of rainwater.
- Where feasible, through partnership, seeking opportunities to support habitat enhancement and wildlife opportunities, managing flood risk in relevant areas by creating permanent grassland, wet grassland and wet woodlands, and expanding or creating flood storage areas.
- Seeking opportunities to create woodland to reduce flood flows.
- Seeking opportunities to develop joint strategies in relation to the delivery of the Shoreline Management Plan and Catchment Flood Management Plan, ensuring that flood risk from both the coast and inland waterways is managed effectively, and protecting settlements.
- Responding to rising sea levels, storm events and flooding by promoting coastal adaptation measures and supporting planning policies that avoid development in flood-prone areas.
- On undefended coastlines, allowing natural processes to occur so that sediment can provide natural sea defences. This also creates important habitats such as salt marsh, mud and sand flats.
- Protecting and restoring features of historic interest associated with drainage history, and providing access and interpretation where possible.
- Where new development will generate surface water run-off, ensuring that it incorporates sustainable urban drainage systems. The amount of surface water that enters the combined sewer network should be minimised. Also, seeking opportunities for the retrofitting of sustainable urban drainage systems in locations that generate surface water run-off.

**SEO 2: Work with landowners and land managers to protect, enhance and strengthen the network of farmland features in this agricultural plain landscape. Create and expand farmland habitats to enhance biodiversity, improve soil and water quality, strengthen the resilience of habitats to climate change and enhance landscape character.**

**For example, by:**

- Encouraging sustainable food production to contribute to the economy, while protecting and managing high-quality soils.
- Conserving and managing field ponds, and lowland mosses and meres, which are of great landscape, historical and wildlife interest.
- Maintaining distinctive (often historic) brick-built barns, which are a prominent landscape feature.
- Conserving and restoring hedgerows and hedgerow trees – especially in the mosslands – in order to preserve the dominant ancient and post-medieval enclosed landscape.
- Encouraging cultivation practices that will benefit wildlife (such as farmland bird species and pollinating insects) by adopting land management interventions including the incorporation of fallow periods within rotations, overwintering stubbles, uncropped field margins, pollen and nectar strips, and the planting of birdseed mixtures.
- Taking opportunities to reduce habitat fragmentation by creating networks, corridors and stepping stones of semi-natural habitats. This can increase the resilience of species and habitats to climate change, notably by creating more hedgerows on higher ground and pasture land, managing flood plain grazing marsh, and creating buffer strips of permanent grassland alongside watercourses – as well as pollen and nectar strips.
- Working with landowners and farmers to create marginal habitats around designated sites such as reedbed, fen and carr woodland.
- Working with landowners and farmers to solve the problem of surface water flooding and poor drainage of agricultural land.
- Ensuring that all existing woodlands are brought under sound management, and that those with links to ancient woodlands are managed to improve their biodiversity and heritage interest.
- Improving soil and crop management by encouraging the practice of increasing green cover crops (such as grasslands) on cultivated or bare soil and field margins, and adopting appropriate grazing regimes on soils that are vulnerable to compaction.
- Seeking opportunities to extend unimproved species-rich grassland and other riparian habitats around key waterways and designated sites, thereby improving water quality and providing wildlife corridors for water voles and bird species (including wading birds).

**SEO 3: Promote the sense of place of the coastal and inland settlements, and protect the remaining rural character of the wider landscape from further loss and change from development pressures. Manage urban fringe development to ensure that it does not negatively impact the rural character of the area, and ensure that all development is of an appropriate type and scale. Provide good green infrastructure links to enhance people's enjoyment of and access to the varied landscapes and valuable recreational assets that the area provides.**

**For example, by:**

- Protecting important views to the coast and along the urban coastline frontage of the Fylde.
- Ensuring that development respects local settlement patterns and uses traditional building materials where possible.
- Incorporating green spaces into new developments, in particular around the urban fringe. Connecting green spaces with semi-natural habitats where possible, providing communities with recreational green space and wildlife corridors.
- Managing development around the urban fringe and within rural settlements to enhance the distinctive character and countryside setting of the rural landscape.
- Encouraging landscaped buffers for any development that impacts on land outside settlement boundaries, in order to limit the effect on the landscape.
- Seeking opportunities to enable both locals and visitors to enjoy access to the coast and its associated recreation opportunities, providing good facilities at coastal resorts and opening up access to the area's geological heritage, eroding coastline and wildlife. The England Coast Path, a brand new National Trail, will – for the first time – allow people the right of access around England's entire open coast. Where appropriate, this will include 'spreading room' along the way, where visitors can rest, relax or admire the view.
- Managing the key approach routes to the main urban centres as gateways, so as not to detract from the resort experience with generic urban expansion.
- Enhancing landscapes associated with major infrastructure developments such as the M6 and M55 corridors.
- Improving drainage arrangements to limit pollution and floodwater retention through tree planting in areas where this can integrate new development or infrastructure.
- Protecting the landscape character of rural areas through the management of developments and activities such as golf courses, motorbike scrambling, caravan parks and equestrian centres.
- Developing initiatives to encourage local communities, particularly in deprived areas, to enjoy their local greenspace, to take action to improve it, and to benefit from the recreation and health benefits that it offers. This might include action to develop wildlife corridors to improve the resilience of species to climate change.
- Incorporating greenspaces into new developments, ensuring a connection between these and semi-natural habitats. This will benefit wildlife while providing communities with recreational outdoor space.

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**SEO 3: Promote the sense of place of the coastal and inland settlements, and protect the remaining rural character of the wider landscape from further loss and change from development pressures. Manage urban fringe development to ensure that it does not negatively impact the rural character of the area, and ensure that all development is of an appropriate type and scale. Provide good green infrastructure links to enhance people's enjoyment of and access to the varied landscapes and valuable recreational assets that the area provides.**

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- Seeking opportunities to engage communities in the expansion of woodland cover in appropriate areas, and increasing public access to existing woodlands.
- Ensuring that significant built developments do not adversely impact the open character of the area. Through grant schemes, seeking opportunities to enhance and conserve traditional farm buildings, and encouraging the use of traditional building materials where appropriate.
- Ensuring that woodland planting schemes and biomass crops are carefully located, with consideration for archaeological potential, the impact on long, open views, and the effect on the functionality of grassland, wetland, woodland, coastal and other ecological networks. Also, ensuring consistency with the Lancashire Woodland Vision strategy.
- Seeking opportunities to work with the farming community by encouraging the creation and maintenance of semi-natural habitats that contribute natural features to the rural landscape. This will help to maintain the high levels of tranquillity found in rural areas associated with farmed landscapes, away from larger settlements.
- Using an understanding of the area's traditional and historic architecture, and its distinct patterns of settlement, to inform the appropriate conservation and use of historic buildings, and to plan for and inspire any environmentally beneficial new development that makes a positive contribution to local character and retains key views.
- Carefully ensuring that light spill is minimised through lighting design in new developments, to minimise the impact on dark skies and on wildlife, particularly bats and birds.

**SEO 4: Promote and manage recreational and access opportunities, at the same time as conserving the natural and cultural heritage. Conserve and enhance the historic environment, geodiversity, areas of tranquillity, nature conservation sites, long, open views and landscape character. In recognition of the importance of tourism to the local economy, provide interpretation and educational facilities, which will bring health and wellbeing benefits for both residents and visitors.**

**For example, by:**

- Identifying opportunities to create new permissive routes, especially around larger settlements, linking with existing rights of way within settlements and into the surrounding countryside. Extending coastal access with roll-back provision and by working in partnership with others.
- Seeking opportunities to increase public access to existing woodlands, and identifying new community woodland creation schemes.
- Where appropriate, seeking opportunities to provide surfaced paths for use by all levels of ability, opening up access to the area's many historic, natural and cultural assets.
- Increasing awareness of geodiversity, and of its role in developing the character of the NCA – including both dynamic and static geology.
- Seeking opportunities to restore peatlands, to re-establish their geomorphological function and as a record of palaeo-environmental evidence.
- Restoring the structure and character of designed landscapes, ensuring in particular that landmark woodlands are retained.
- Working with local communities and schools to interpret the area's historic landscape.
- Appropriately managing the historic environment for its contribution to local character and sense of identity, and as a framework for habitat restoration and sustainable development.
- Seeking opportunities to enable both locals and visitors to enjoy access to the coast and its associated recreation opportunities: providing good facilities at coastal resorts and opening up access to the area's geological heritage, eroding coastline and wildlife.
- Managing the demand for recreational facilities, particularly in the coastal resorts on the fringes of Blackpool, including the development of golf courses, static caravan sites and marinas, and the leisure complexes close to the M6 corridor.
- Ensuring that sensitive ecosystems such as sand dunes and salt marshes are not negatively impacted by increased recreation and access. Employing careful design and management of new and existing access routes, and using education boards to publicise the threat to these habitats. This is especially relevant in the confined area of dunes, where trampling is causing erosion that may lead to the degradation of natural grass swards and the destabilisation of the dunes. Natural England's Coastal Access Scheme sets out the methodology for the implementation of the England Coast Path and associated coastal margin – and includes details of how it will ensure that there will be no impact on sensitive features found on and along the coast.

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**SEO 4: Promote and manage recreational and access opportunities, at the same time as conserving the natural and cultural heritage. Conserve and enhance the historic environment, geodiversity, areas of tranquillity, nature conservation sites, long, open views and landscape character. In recognition of the importance of tourism to the local economy, provide interpretation and educational facilities, which will bring health and wellbeing benefits for both residents and visitors.**

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- Protecting the long, expansive, open views along the coastline (valued for their sense of inspiration and place) from intrusive developments such as car parks and leisure facilities, which can be visually invasive in distinctive landscapes.
- Protecting and managing the area's long, characteristic views – including those over the plain and coastline, and towards the dramatic backdrop of the Forest of Bowland and Lake District – by ensuring that any new development is well designed to be integrated into the landscape.
- Promoting opportunities for access and enjoyment, while managing visitor pressure, in the NCA's country parks such as Beacon Park, Cuerden Valley and Wyre Estuary, and in the urban parks of towns such as Blackpool, Lytham St Anne's and Preston.
- Promoting the valuable recreational opportunities offered by the National Trails and National Cycle Routes (including the Trans Pennine Trail, Preston Guild Wheel, Lancashire Coastal Way, Ribble Way and Wyre Way), together with the Ribble Link, Lancaster Canal, and Leeds and Liverpool Canal. These provide a chance to explore the countryside, coastal and estuary landscapes, and to engage in a range of activities including walking, fishing and boating.
- Developing opportunities for visitors to enjoy the NCA's many historic locations, including Blackpool – the tower, the promenade and the pleasure beach – with its legacy of fine Victorian buildings from its heyday as one of the most prominent coastal resorts in England.
- Developing good-quality interpretation and education about habitats, wildlife, geology and history at key sites, including working with schools and other educational institutions.
- Improving access to the coast for walking and cycling, and also for disabled people, through the sustainable use of old railway lines, tracks and paths, and through encouraging reduced car use. Securing opportunities for the public to enjoy the natural environment through the implementation of the England Coast Path, while ensuring its appropriate protection.
- Ensuring that the promotion of access opportunities educates people about the vulnerability of the NCA's coastal habitats, and encourages low-impact visits. These will avoid any adverse impacts on agricultural management, landscape, habitats and wildlife.

## Supporting document 1: Key facts and data

Area of Lancashire and Amounderness Plain National Character Area (NCA): 95,593 ha

### 1. Landscape and nature conservation designations

Less than 1 per cent of the NCA (9 ha) is within the Forest of Bowland Area of Outstanding Natural Beauty. Please see NCA 33 Bowland Fringe and Pendle Hill or 34 Bowland Fells for further details.

Source: Natural England (2011)

#### 1.1 Designated nature conservation sites

Tier	Designation	Name	Area (ha)	% of NCA
International	Ramsar	Ribble and Alt Estuaries; Morecambe Bay; Martin Mere	2,421	2
European	Special Protection Area (SPA)	Ribble and Alt Estuaries SPA; Morecambe Bay SPA; Martin Mere SPA;	2,421	2
	Special Area of Conservation (SAC)	Morecambe Bay SAC	10	<1

Tier	Designation	Name	Area (ha)	% of NCA
National	National Nature Reserve (NNR)	Ribble Marshes NNR	1,630	2
	Site of Special Scientific Interest (SSSI)	A total of 12 sites wholly or partly within the NCA	2,744	3

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.

This NCA includes the Wyre Estuary (effectively the Wyre Estuary SSSI area) and thus takes in a small amount of Morecambe Bay Ramsar and SPA. However the Morecambe Bay SAC does not include the Wyre Estuary so the area included in this NCA is much smaller. Ribble and Alt Estuaries, Morecambe Bay and Martin Mere Ramsar sites all comprise the same areas as their equivalent SPAs. The Ribble Marshes NNR forms part of the Ribble and Alt Estuaries Ramsar, and SPA and the Ribble Estuary SSSI.

There are 219 local sites in Lancashire and Amounderness Plain covering 11,239 ha, which is 11 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](http://www.lnr.naturalengland.org.uk/Special/lnr/lnr_search.asp)
- Maps showing locations of Statutory sites can be found at: <http://magic.defra.gov.uk/website/magic/> – select 'Rural Designations Statutory'

### 1.1.1 Condition of designated sites

SSSI condition category	Area (ha)	Percentage of NCA SSSI resource
Unfavourable declining	29	1
Favourable	2,477	90
Unfavourable no change	139	5
Unfavourable recovering	95	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

Elevation within the NCA ranges from -0.2 m to 166 m above sea level.

Source: Natural England 2010

### 2.2 Landform and process

The area is a relatively flat and gently rolling plain broken by isolated hills such as Ashurst Hill (166 m). Glacial deposits, soils and contours combine to produce the gently sloping plain flattening out to fenland at the coast. A low cliff line in the till plain a few miles inland marks the old shoreline of the former lake of Martin Mere and is still traceable intermittently from the River Ribble to the River Dee.

Source: Lancashire and Amounderness Plain Countryside Character Area description

### 2.3 Bedrock geology

Although Permo-Triassic red mudstones, siltstones and sandstones (New Red Sandstones) constitute much of the floor of the Lancashire lowlands, the solid rock geology rarely emerges from beneath its thick covering of glacial and post-glacial deposits.

Source: Lancashire and Amounderness Plain Countryside Character Area description

### 2.4 Designated geological sites

The plain's lush green pasture and rich arable land are a creation of the last two centuries. Prior to this the area was predominantly marshland formed by rising sea levels after the last glaciation. As the ice sheets retracted they left behind a blanket of glacial till which now forms the coastal cliffs north of Blackpool. It also created post-glacial peat giving rise to the mosses and meres which dominated the area until only recently. The superficial geology in this area is mainly windblown Shirdley Hill Sand with small patches of underlying till and marine clay. In addition there are major areas of basin peat in the east around Simonswood Moss and coastal peats south-east of Hightown.

Source: Lancashire and Amounderness Plain Countryside Character Area description



### 2.5 Designated geological sites

Tier	Designation	Number
National	Geological Site of Special Scientific Interest (SSSI)	2
National	Mixed Interest SSSI	1
Local	Local Geological Sites	21

There are 21 Local Geological Sites within the NCA covering a wide range of site types, but the majority are finite mineral or fossil deposits, road sections and geomorphology sites.

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 basin and coastal peats together with podzolic soils overlying the Shirdley Hill Sands produce high quality soils over much of the area. Grade 1 soils occur south of the River Ribble and Grade 2 occurs in the north. There are 10 main soilscape types in this area: slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils (39 per cent); naturally wet very acid sandy and loamy soils (16 per cent); loamy and clayey soils of coastal flats with naturally high groundwater (8 per cent); raised bog peat soils (7 per cent); slightly acid loamy and clayey soils with impeded drainage (7 per cent); fen peat soils (7 per cent); loamy and clayey flood plain soils with naturally high groundwater (5 per cent); salt marsh soils (3 per cent); loamy and sandy soils with naturally high groundwater and a peaty surface (2 per cent); and, freely draining slightly acid loamy soils (1 per cent).

Source: Natural England 2010

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

Grade	Area (ha)	% of NCA
Grade 1	23,669	24
Grade 2	23,321	24
Grade 3	31,873	32
Grade 4	2,858	3
Grade 5	528	<1
Non-agricultural	1,720	2
Urban	13,850	14

Source: Natural England (2010)

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

### 3. Key water bodies and catchments

#### 3.1 Major rivers/canals

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

■ Lancaster Canal	36 km	■ River Darwen	3 km
■ Leeds Liverpool Canal	31 km	■ River Douglas	15 km
■ Ribble Link	4 km	■ River Ribble	4 km
■ River Alt	5 km	■ River Wyre	22 km
■ River Brock	5 km	■ River Yarrow	9 km
■ River Calde	2 km		

Source: Natural England (2010)

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

Eleven rivers and canals flow through the NCA totalling 137 km.

The northern half of the NCA contains the estuary and lower reaches of the River Wyre and its tributaries the rivers Calder and Brock. The headwaters of these rivers drain the western and south-western slopes of the Bowland Fells NCA.

At the centre of this NCA lie the estuary and lower reaches of the River Ribble, which has its source in the Yorkshire Dales NCA, and its tributary the River Darwen which drains the Southern Pennines NCA.

The River Douglas and its tributaries the rivers Yarrow and Linstock drain much of the southern half of the NCA, the River Douglas flowing into the southern side of the Ribble Estuary. Their headwaters rise on Rivington Moor in Southern Pennines NCA.

#### 3.2 Water quality

The total area of Nitrate Vulnerable Zone is 56,563 ha (57 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=maptopic&lang=\\_e](http://maps.environment-agency.gov.uk/wiyby/wiybyController?ep=maptopic&lang=_e)

### 4. Trees and woodlands

#### 4.1 Total woodland cover

The NCA 3,604 ha of woodland (4 per cent of the total area), of which 156 ha is ancient woodland. The Mersey Community Forest, one of twelve Community Forests established to demonstrate the contribution of environmental improvement to economic and social regeneration, covers 5,016 ha of this NCA, which is 5 per cent of the area.

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

#### 4.2 Distribution and size of woodland and trees in the landscape

The northern plain is a medium- to large-scale landscape with blocks of wind sculptured mixed woodland punctuating the relatively flat to gently rolling plain. The combination of woodland blocks and isolated individual trees creates a well composed, almost parkland character.

Source: Lancashire and Amounderness Plain Countryside Character Area description

### 4.3 Woodland types

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

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

Woodland type	Area (ha)	% of NCA
Broadleaved	2,994	3
Coniferous	201	<1
Mixed	186	<1
Other	223	<1

Source: Forestry Commission (2011)

Area and proportion of ancient woodland and planted ancient woodland within the NCA.

Type	Area (ha)	% of NCA
Ancient semi-natural woodland	129	<1
Planted Ancient Woodland (PAWS)	27	<1

Source: Natural England (2004)

## 5. Boundary features and patterns

### 5.1 Boundary features

The landscape is dissected by a complex network of drainage channels which serve as a reminder of the area's heritage of mosses and meres. South of the Ribble is predominantly highly productive arable land. There has been widespread loss of hedgerows and many field boundaries are simply ditches in areas where there is no need for stock proofing.

Source: Lancashire and Amounderness Plain Countryside Character Area description; Countryside Quality Counts (2003)

### 5.2 Field patterns

North of the Ribble is predominantly improved pasture with isolated arable fields. It is a neat, ordered landscape of medium sized fields with hedgerows and drainage ditches. To the south there is predominantly highly productive arable land with large fields.

Source: Lancashire and Amounderness Plain 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, out of 1,396 commercial holdings, there were 555 livestock holdings (40 per cent) consisting of 313 grazing livestock, 168 dairy, 48 specialist poultry and 26 specialist pig holdings. There were also 496 arable and horticultural holdings (36 per cent) consisting of 226 general cropping, 164 horticulture and 106 cereals holdings.

Source: Agricultural Census, Defra (2010)

## 6.2 Farm size

There is a fairly even distribution in farm size with, in 2009, 258 (18 per cent) <5 ha, 384 (28 per cent) 5 to 20 ha, 302 (22 per cent) 20 to 50 ha, 281 (20 per cent) 50 to 100 ha and 171 (12 per cent) >100 ha. Between 2000 and 2009 the number of commercial holdings decreased overall by 19 per cent from 1,731 to 1,396. This decrease was across all size bands with the exception of holdings >100 ha which showed a 24 per cent increase.

Source: Agricultural Census, Defra (2010)

## 6.3 Farm ownership

2009: Total farm area = 65,724 ha; owned land = 35,447 ha

2000: Total farm area = 62,145 ha; owned land = 39,218 ha

In 2009 54 per cent of the total farmed area was owner occupied. Between 2000 and 2009 there was an increase in the total farmed area of 3,579 ha (6 per cent) although there was a decrease in the number of holders of 21 per cent (2,774 to 2,179).

Source: Agricultural Census, Defra (2010)

## 6.4 Land use

The predominant land use is grass and uncropped land (56 per cent) mainly for sheep and cattle and some pig rearing. There is also a large area of cereal production (25 per cent) with the remainder mainly being used for production of other arable crops.

Source: Agricultural Census, Defra (2010)

## 6.5 Livestock numbers

Sheep are the most numerous livestock type in the landscape, a total of 79,400 in 2009 in comparison with 70,400 cattle and 41,200 pigs. Between 2000 and 2009 sheep numbers decreased by 18 per cent, cattle numbers decreased by 16 per cent and pig numbers decreased by 56 per cent.

Source: Agricultural Census, Defra (2010)

## 6.6 Farm labour

In 2009 the majority of holdings were run by principal farmers (2,179) with only 194 salaried managers being employed. Between 2000 and 2009 the total farm labour decreased by 22 per cent. Principal farmers decreased from 2,774 to 2,179, salaried managers increased from 150 to 194, full time workers decreased from 1,588 to 1,208, part time workers decreased from 726 to 472 and casual/gang workers decreased from 1,225 to 975.

Source: Agricultural Census, Defra (2010)

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

## 7. Key habitats and species

### 7.1 Habitat distribution/coverage

A large scale agricultural landscape with a patchwork of pasture and arable fields dominates the area. Arable fields provide a habitat for farmland birds such as the lapwing, grey partridge, corn bunting and skylark. High densities of field ponds are characteristic of the north of the area providing an important habitat for aquatic plants, invertebrates and amphibians. During the winter months, large areas of stubble provide important feeding grounds for internationally important flocks of pink footed geese and whooper swans.

Remnant mosslands such as the Martin Mere / Haisall Moss and Cockerham / Pilling Moss complexes are of considerable nature conservation interest. These support bog plant communities dominated by sphagnum mosses, cotton grass and purple moor grass with heather, cross leaved heath, sundew, cranberry and the nationally scarce bog rosemary. Invertebrate populations are diverse and on some sites include the rare bog bush cricket, the uncommon large heath butterfly and black darter dragonfly.

The Ribble Estuary and coastline include intertidal sand flats and mudflats, backed by remnant dunes and some of the largest salt marshes in the county. These coastal habitats are of international importance for their migratory and wintering wildfowl and wading bird populations. The intertidal flats of the Ribble Estuary support thousands of knot, oystercatcher, redshank, dunlin, curlew, and godwits, while the extensive areas of grazed salt marsh are of considerable importance for feeding flocks of wigeon, pink footed geese, whooper and Bewick's swans. The ungrazed salt marshes on the Wyre Estuary are of importance for their plant communities including large areas of sea lavender, sea purslane, thrift and sea aster.

Blocks of mixed woodland occur throughout the landscape. Wood anemone and false brome are characteristic of the ground flora. Red squirrels are especially important in woodlands dominated by conifers, where the introduced grey is not as competitive. Wet woodlands with alder are common in wet hollows or areas of impeded drainage and provide a habitat for willow tit, lesser spotted woodpecker and turtle dove.

Large areas of open water and linear canals such as at Martin Mere, Mere Sands Wood and Marton Mere are important as habitats for breeding and wintering wildfowl. These habitats support internationally important populations of wintering pink footed goose, teal and pintail, as well as nationally important numbers of Bewick's swan, gadwall, whooper swan and shoveler. The Lancaster Canal supports rare aquatic plants such as flowering rush, greater spearwort and various pond weeds.

**Source: Countryside Agency Summary Statements;  
Lancashire Plains and Valleys Natural Area Profile**

## 7.2 Priority habitats

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

More information about *Biodiversity 2020* can be found at; <http://www.naturalengland.org.uk/ourwork/conservation/biodiversity/protectandmanage/englandsbiodiversitystrategy2011.aspx>

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

Priority habitat	Area (ha)	% of NCA
Coastal flood plain and grazing marsh	8,920	9
Broadleaved mixed and yew woodland (broad habitat)	1,193	1
Lowland raised bog	388	<1
Lowland meadows	343	<1
Mudflats	139	<1
Purple moor grass and rush pasture	125	<1
Coastal sand dunes	50	<1
Maritime cliff and slope	10	<1
Lowland dry acid grassland	9	<1
Lowland calcareous grassland	3	<1
Lowland heathland	1	<1

**Source: Natural England (2011)**

Arable margins are also an important habitat in this NCA, although there are no area figures currently available.

Maps showing locations of priority habitats are available at

- <http://magic.Defra.gov.uk/website/magic/select> 'Habitat Inventories'

### 7.3 Key species and assemblages of species

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

## 8. Settlement and development patterns

### 8.1 Settlement pattern

The development of settlements on the plain is a relatively recent occurrence and coincides largely with the drainage of the marshes in the 19th century and expansion during the industrial revolution. However the plain still remains rural in character with isolated brick farmsteads, small villages and numerous manor houses. The main areas of settlement which influence the plain are located at the planned Victorian coastal resorts such as Blackpool and Lytham St Anne's, and the large inland towns including Preston, Ormskirk and Leyland.

**Source:** Lancashire and Amounderness Plain Countryside Character Area description; Countryside Quality Counts (2003)

### 8.2 Main settlements

The largest settlements within the NCA are; Blackpool, Preston, Lytham St Anne's, Thornton-Cleveleys, Leyland, Fleetwood, Ormskirk, and Poulton-le-Fylde. The total estimated population for this NCA (derived from ONS 2001 census data) is: 671,807.

**Source:** Lancashire and Amounderness Plain Countryside Character Area description; Countryside Quality Counts (2003)

### 8.3 Local vernacular and building materials

Isolated brick farms are common. Older buildings and loose knit linear villages along embanked roads on low ridges are found at the edge of the mosses. Brick, cobble, stone and slate replaced clay and thatch from the late 17th century. There is some survival of timber framed buildings in the central and southern parts of the area dating from 15th to 17th century.

**Source:** English Heritage Historic Profiles; Countryside Character Area description; Countryside Quality Counts (2003)

## 9. Key historic sites and features

### 9.1 Origin of historic features

The history of the landscape is evident in its transformation from an area of extensive lowland raised mires to productive reclaimed farmland, beginning in the 18th and 19th centuries and reflected in the regular drainage ditches and dykes, canals, windmills and isolated red brick farm buildings.

Little evidence remains of the area's former landscape aside from small areas of remnant mosses or fen carr that provide indication of strip cultivation on boundaries of ancient enclosure between the rivers Wyre and Ribble, and place names which refer to 'moss' or 'mere'.

Aspects of history likely to be most evident to the general public include the Victorian seaside towns of Blackpool and Lytham St Anne's, as well as the area's parklands which are most notable to the south and include Knowsley Park, Rufford, Lytham Hall and Stanley Park.

**Source:** Countryside Quality Counts Draft Historic Profile, Lancashire and Amounderness Plain Countryside Character Area description

## 9.2 Designated historic assets

This NCA has the following historic designations:

- 16 Registered Parks and Gardens covering 1,496 ha
- 0 Registered Battlefields
- 25 Scheduled Monuments
- 1,477 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

- Two per cent of the NCA, 2,212 ha, is classified as being publically accessible.
- There are 1,236 km of public rights of way at a density of 1.2 per km<sup>2</sup>.
- There are no National Trails within the NCA.

Sources: Natural England (2010)

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

Access designation	Area (ha)	% of NCA
National Trust (Accessible all year)	0	0
Common Land	90	<1
Country Parks	50	<1
CROW Access Land (Section 4 and 16)	125	<1
CROW Section 15	4	<1
Village Greens	3	<1
Doorstep Greens	3	<1
Forestry Commission Walkers Welcome Grants	93	<1
Local Nature Reserves (LNRs)	115	<1
Millennium Greens	7	<1
Accessible National Nature Reserves (NNRs)	1,630	2
Agri-environment Scheme Access	0	0
Woods for People	270	<1

Sources: Natural England (2011)

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

## 11. Experiential qualities

### 11.1 Tranquillity

Based on the CPRE map of tranquillity (2006) the lowest scores are around the main settlements and road routes.

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

Category of tranquillity	Score
Highest value within NCA	34
Lowest value within NCA	-104
Mean value within NCA	-17

Sources: CPRE (2006)

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

### 11.2 Intrusion

The 2007 Intrusion Map (CPRE) shows the extent to which rural landscapes are 'intruded on' from urban development, noise (primarily traffic noise), and other sources of visual and auditory intrusion. This shows that urban areas and transport corridors are intruding on the majority of this NCA. The main undisturbed areas are; the area north of the M55 and east of the Wyre Estuary, and south of the Ribble to the west of the A59.

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

Category of intrusion	1960s (%)	1990s (%)	2007 (%)	% change (1960s-2007)
Disturbed	37	57	66	30
Undisturbed	50	28	18	-32
Urban	11	13	15	4

Sources: CPRE (2007)

Notable trends from the 1960s to 2007 are a general increase in intrusion across the NCA.

- 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

#### Trees and woodlands

- About 4 per cent of the existing woodland is ancient woodland (156 ha), of this 17 per cent (27 ha) is plantation on ancient woodland sites.
- Existing woodlands, which are important landscape features, often lack management. In 2003 there was limited evidence of any active management under the Woodland Grant Scheme.
- Some new woodlands have been planted particularly in the south, through the Mersey Community Forest.

#### Boundary features

- The estimated boundary length for the NCA is about 6,538 km. The total length of Environmental Stewardship agreements for linear features as at March 2011 is approximately 1,229 km.
- The most frequent Environmental Stewardship agreements for linear features as at March 2011 were for hedgerows (886 km) and ditches (259 km).

#### Agriculture

- Changes in agricultural practices have resulted in field expansion and a decline in the biodiversity of the landscape.
- Between 2000 and 2009 there has been a decrease in the number of holders of 21 per cent (2,774 to 2,179).

- Between 2000 and 2009 sheep numbers decreased by 18 per cent, cattle numbers decreased by 16 per cent and pig numbers decreased by 56 per cent.

#### Settlement and development

- Large scale residential development and introduction of urbanising elements into the rural landscape such as golf courses and static caravan sites, as well as substantial leisure complexes. Particularly on the fringes of the major coastal urban areas and in the vicinity of the M6 motorway corridor.
- The conversion of historic brick-built barns for use as residential dwellings or for intensive agricultural practices, with harshly coloured imported bricks and other inappropriate materials have, in some areas, resulted in poorly integrated developments which compromise the historic buildings and the wider landscape setting of groups of farm buildings.
- Waste management developments including treatment works and land raising have already had a significant influence on local landscape character, particularly on the Ribble and Wyre estuaries.
- Tranquillity and intrusion levels have declined significantly in the past fifty years, with the total 'undisturbed' area of the NCA having decreased from 50 per cent in the 1960s to 18 per cent in 2007.

## Semi-natural habitat

- A decline in landscape diversity has been caused by the expansion of commercial scale agriculture. Ongoing loss of permanent grassland and use of herbicides and fertilisers have caused the loss of wild flowers within fields and eutrophication of watercourses and wetlands.
- Drainage and flood control have affected important ditches, mosses and areas of fen carr. Lowering of water tables (due to agriculture or abstraction for development) has caused loss of characteristic wetland vegetation and encroachment by scrub; it also threatens damage to archaeological remains.
- Many ponds are now in the late stages of natural succession and are starting to fill with silt and vegetation. Others have been infilled for agricultural purposes or have been lost to road construction and building developments, especially in urban fringe areas. Drainage, pollution and agricultural runoff are also an issue.

## Historic features

- Degradation and loss of the area's distinctive field ponds has occurred as a result of drainage, pollution by agricultural runoff, natural succession and infilling. These ponds are important cultural remnants of historic marl and brick pits and have valuable relic landscape features.
- Lowering of water tables (due to agriculture or abstraction for development) threatens damage to archaeological remains.
- There have been a significant number of barn conversions throughout the area.
- In 1918 about 2 per cent of the NCA was historic parkland. By 1995 it was estimated that 50 per cent of that area had been lost. By 2003 about 62 per cent of the remaining parkland was covered by a Historic Parkland Grant, and 2 per cent included in an agri-environmental scheme.

## Coasts and rivers

- In the River Wyre area in the north of the NCA, the Pilling and Garstang-Woodplumpton aquifers are 'over-licensed', whilst streams forming part of the River Wyre catchment within this NCA have 'water available'.
- The River Ribble catchment in the centre of the NCA generally has 'water available'. In the Douglas area, groundwater units of the Rufford Aquifer in the north and east have 'water available' whilst units in the west and south are 'over licensed' or 'over abstracted'. Surface water resources generally have 'water available' with the exception of Eller Brook, a tributary of the River Douglas that drains an area to the north east and east of Ornskirk; this is 'over abstracted' owing to summer irrigation abstractions for agriculture.
- The Ribble Estuary and its associated banks and channels exert a significant control on the evolution of both the important tourist areas of Southport frontage (Sefton Coast NCA) and the Fylde Peninsula. It contains internationally important areas of environmental designation and is naturally accreting, which has allowed widespread land reclamation in the past.
- The Fylde Peninsula, including Lytham, Blackpool and Cleveleys, has potential to be affected by changes within these systems. There is a sand dune system to the south at Lytham, which is fronted by a wide sandy beach, although the majority of dunes have been significantly modified and built upon.
- From central Blackpool to Anchorsholme, high protected cliffs back the sand beach, while north of Anchorsholme the frontage is low-lying and potentially at flood risk from both the open coast and the Wyre estuary. The frontage is heavily urbanised, with the town of Blackpool spreading into Thornton and Cleveleys and much of the shoreline now held seaward of its natural position.

## Minerals

- Marl pits excavated in the 19 century are associated with a particular soil type, the Salop and Salwick Flint Associations, which contain deposits of lime. These pits have since filled with water to form ponds.
- Continued sand and gravel extraction which may result in significant landscape change, including the substitution of managed pasture and arable farmland with water bodies and other new habitats of nature conservation and recreational potential.

## Drivers of change

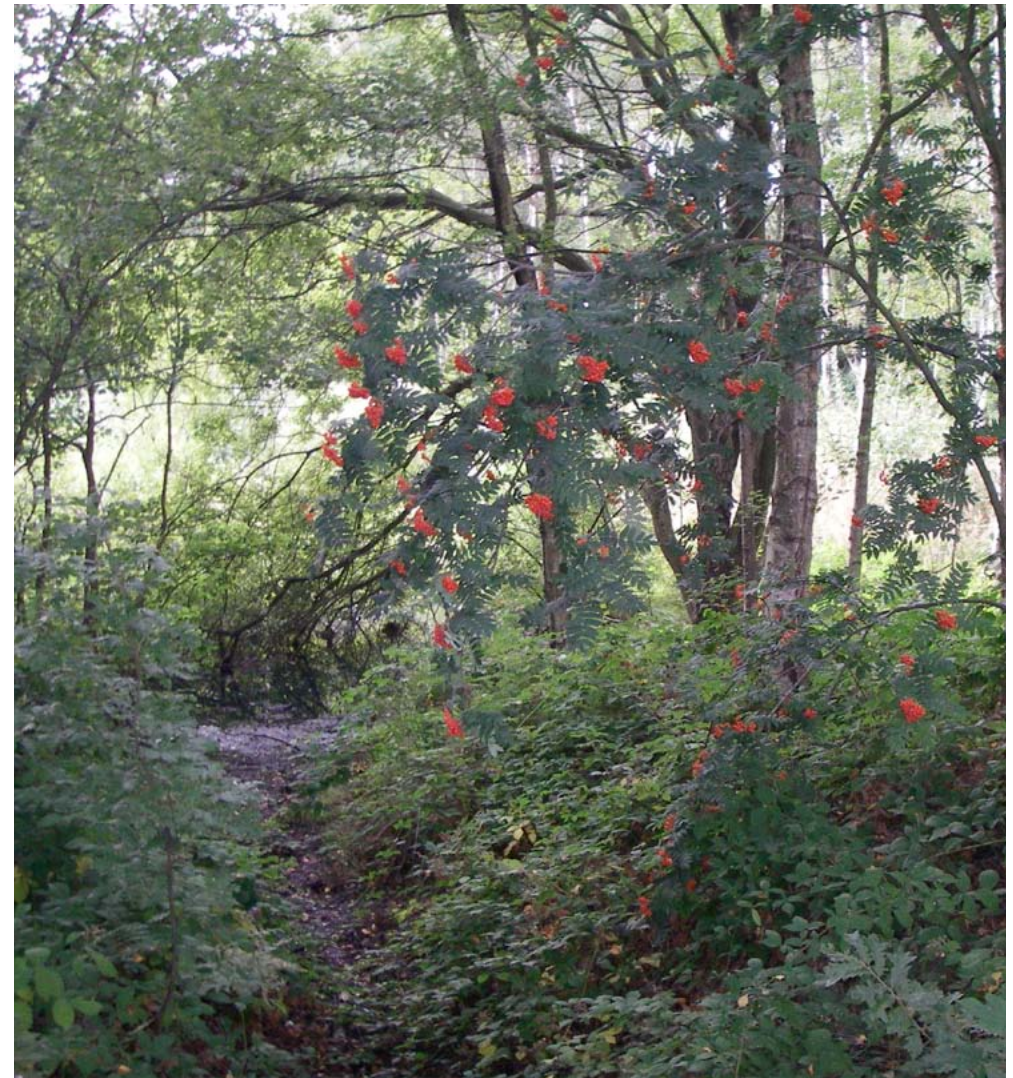
### Climate change

- Evidence from the UK Climate Impacts Programme (UKCIP09) shows that over the coming century the area's climate is expected to become warmer and wetter in winter and hotter and drier in summer. Under the medium emissions scenario by 2080: mean winter temperatures will increase by 2.6 °C, mean summer temperatures will increase by 3.7 °C, winter precipitation will increase by 16 per cent, summer precipitation will decrease by 22 per cent and there will be an increased frequency of extreme events (floods/drought).
  - The North West Landscape Framework Climate Change Assessment 2010/11 identifies urban areas as having a higher vulnerability to climate change due to their lack of habitats and for generally being located on the flattest areas of land. These two factors restrict species movement and ecosystem functionality.
  - The predicted rising sea levels are likely result in an increased risk of flooding, high tides and tidal surges. While the existing flood defences would provide much protection, there is a risk that the extensive mudflats and saltmarshes would be lost. This would have a major impact on the internationally significant bird feeding grounds in these areas.
- The increase in sea levels and storm surges might change the rate of sediment input to dunes and even the location of sand dunes along the coast. Pressures for hard sea defence works to combat this risk may themselves alter the dynamics of sand movement.
  - Prolonged periods of drought, could lead to reduced ground water and drying out of peat habitats making them more prone to soil erosion and wildfire events.
  - Smaller, fragmented patches of habitat are vulnerable to loss of biodiversity arising from changes in rainfall and temperature.
  - More intense and more frequent rainfall may lead to an increase in flooding and an increased risk of soil erosion or weakened soil structure due to flash flooding. There is also an associated greater likelihood of pollution of watercourses downstream, and a potential increased risk of landslides, during times of increased rainfall.
  - Potential for more favourable conditions for crops and other farming practices not presently possible within this area may also lead to an alteration in the character of the landscape as a result of changing cropping patterns.
  - Threat to trees and woodland from changing pests and diseases and extreme weather events.
  - Possible expansion of arable or energy crops into areas currently under permanent grassland.

## Other key drivers

- There is continued pressure for the construction of large scale residential development at the edges to local villages and introduction of urbanising elements into the rural landscape.
  - There is continued pressure for development including pylons, communication masts, sewage works and other infrastructure including wind turbines and solar farms.
  - The increased development is likely to result in continued pressure for the construction of services such as sewers and pipelines, which may destroy small relict areas of valuable dune habitat, and further fragment the small remaining tracts of dune.
  - Development has potential to lower the water table due to increased water abstraction, which may affect dune slack and pools. Pressure for development is particularly intense on the fringes of the major coastal urban areas and along strategic transport corridors are also attractive locations for large out-of-town retail, industrial and leisure complexes.
  - The area has a large number of historic brick-built barns, which are under pressure for conversion for use as residential dwellings or for intensive agricultural practices.
  - Recreational pressures are an ongoing force for change. In addition to pressures for recreational facilities particularly on the fringes of Blackpool, including the development of golf courses and static caravan sites, as well as substantial leisure complexes close to the M6 corridor. These pressures may also impact on sensitive ecosystems such as sand dunes and saltmarshes. In the confined area of dunes, trampling can cause erosion which may lead to the degradation of natural grass swards and the destabilisation of the dunes.
- On the fringes of the marsh increased recreation can lead to problems such as erosion and fly-tipping. Car parks are often visually intrusive in these fragile, open landscapes and may lead to erosion.
- The England Coast Path, a new National Trail around all of England's open coast, will for the first time give people the right of access around all of England's open coast, including –where appropriate, –'spreading room' along the way where they can rest, relax or admire the view. The Coastal Access scheme sets out the methodology for implementation of the England Coast path and associated coastal margin, and includes details on how it will ensure there will be no impact on sensitive features found on and along the coast. It supports future work to protect or increase existing, access to and from the coast that may provide links to circular walks with the England Coast Path., It ensures that any landscape enhancement schemes take account of, and where possible incorporate, better public access provision, and in the future the introduction of coastal access delivery.
  - The pressure to market Blackpool as a "leisure destination" brings with it an increase in developments such as caravan parks, golf courses and other outdoor pursuits. This will have a large impact on the rural landscape, particularly of the Fylde plain, as well as encroachment into the surrounding historic landscape. This tourism-led expansion requires careful management to ensure any adverse impacts of development are minimised.
  - The degradation of valuable wetland habitats due to polluted run-off from adjacent farmland and intensive agricultural practices such as drainage, intensive sheep grazing and hedgerow removal is continuing. The drainage and the lowering of local water tables may lead to drying out on the fringes of mosses and marshes so that these habitats are vulnerable to the invasion of birch and willow scrub.

- There is pressure for continued sand and gravel extraction which may result in significant landscape change. This may include the substitution of managed pasture and arable farmland with water bodies and other new habitats of nature conservation and recreational potential.
- The threat of water-borne pollutants from some of the major industrial premises is ongoing. Such contamination could have a severe impact on vulnerable ecosystems such as the open coastal marsh.
- The future expansion and restoration of waste management developments including treatment works and land raising.
- Economic pressures causing changes in land ownership and development are resulting in the fragmentation of historic estates and their associated designed parklands, trees, shelterbelts and coverts. This may lead to the loss or degradation of historic landmark woodlands which are key features in this relatively large scale open agricultural landscape.
- Development pressure from new sources of fossil fuels, such as shale gas.



Mere Sands Wood.

## 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.



Harrock Hill across fields and villages towards Burscough.

Statement of Environmental Opportunity	Ecosystem Service																		
	Food provision	Timber provision	Water availability	Genetic diversity	Biomass provision	Climate regulation	Regulating water quality	Regulating water flow	Regulating soil quality	Regulating soil erosion	Pollination	Pest regulation	Regulating coastal erosion	Sense of place/inspiration	Sense of history	Tranquility	Recreation	Biodiversity	Geodiversity
SEO 1: Conserve, manage and enhance the river systems and wetlands – including the Ribble Estuary and the rivers Wyre and Douglas – with their many associated drains, dykes and streams. This will improve water quality and supply, sustainably address flood risk management, and enhance biodiversity and the historic environment through a strategic, landscape-scale approach.	↗ *	↗ **	↗ **	○	↗ **	↑ ***	↑ **	↑ **	↑ **	↑ **	↗ **	↗ **	↗ *	↑ **	↔ **	↑ **	↗ **	↑ ***	↑ *
SEO 2: Work with landowners and land managers to protect, enhance and strengthen the network of farmland features in this agricultural plain landscape. Create and expand farmland habitats to enhance biodiversity, improve soil and water quality, strengthen the resilience of habitats to climate change and enhance landscape character.	↗ ***	↗ **	↗ **	○	↗ *	↑ ***	↑ ***	↗ **	↗ ***	↗ ***	↗ ***	↗ **	↔ **	↗ **	↗ *	↗ ***	↗ **	↑ ***	↗ **

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

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 provision	Climate regulation	Regulating water quality	Regulating water flow	Regulating soil quality	Regulating soil erosion	Pollination	Pest regulation	Regulating coastal erosion	Sense of place/inspiration	Sense of history	Tranquility	Recreation	Biodiversity	Geodiversity
SEO 3: Promote the sense of place of the coastal and inland settlements, and protect the remaining rural character of the wider landscape from further loss and change from development pressures. Manage urban fringe development to ensure that it does not negatively impact the rural character of the area, and ensure that all development is of an appropriate type and scale. Provide good green infrastructure links to enhance people's enjoyment of and access to the varied landscapes and valuable recreational assets that the area provides.	↗ **	↗ **	↗ **	○	↗ **	↗ ***	↗ ***	↗ ***	↗ **	↗ **	↗ ***	↗ ***	↗ ***	↑ ***	↑ ***	↑ ***	↑ ***	↗ ***	↗ ***
SEO 4: Promote and manage recreational and access opportunities, at the same time as conserving the natural and cultural heritage. Conserve and enhance the historic environment, geodiversity, areas of tranquillity, nature conservation sites, long open views and landscape character. In recognition of the importance of tourism to the local economy, provide interpretation and education facilities, which will bring health and wellbeing benefits for both residents and visitors.	↗ **	↗ **	↗ **	○	↗ **	↗ **	↗ **	↗ **	↗ **	↗ **	↗ **	↗ **	↗ **	↑ ***	↑ ***	↑ ***	↑ ***	↑ ***	↑ ***

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Dark plum = National Importance; Mid plum = Regional Importance; Light plum = Local Importance

Landscape attribute	Justification for selection
Relatively flat and gently rolling plain, broken by isolated hills.	<ul style="list-style-type: none"> <li>■ The solid rock geology rarely emerges from beneath its thick covering of glacial and post-glacial deposits.</li> <li>■ Glacial deposits, soils and contours combine to produce the gently sloping plain flattening out to fenland at the coast.</li> </ul>
Thick blanket of glacial till, with poorly-drained peat-filled hollows that give rise to mosses and meres, now mainly remnants.	<ul style="list-style-type: none"> <li>■ As the ice-sheet retreated it left behind a blanket of glacial till which now forms the coastal cliffs north of Blackpool. It also created many badly drained hollows which soon became filled with post-glacial peat, giving rise to the mosses and meres which dominated the area until only recently.</li> <li>■ The most extensive areas of lowland raised mire, known as mosses in Lancashire, and associated peat soils were around Cockerham and Pilling, as well as inland from Southport between Tarleton and Altcar; and also between Skelmersdale and Simonswood on the northern fringes of Merseyside. Smaller, but still extensive mosses were scattered elsewhere on the plain. These have been drained and converted to arable cropping so that today only a few small remnants remain.</li> <li>■ Winmarleigh Moss SSSI is the only substantial area of lowland peat mossland which remains today, although there are other small isolated examples across the plain including Pilling Moss, Altcar Moss, Carr Wood, White Moss and Holland Moss.</li> <li>■ Place names incorporating 'moss' and 'mere' are numerous today and are associated with an abundance of well-maintained ditches and drains.</li> <li>■ Mossland habitats also provide good conditions for the preservation of buried archaeology.</li> </ul>
Extensive views across the plain.	<ul style="list-style-type: none"> <li>■ Views into the plain can be seen from adjacent raised ground including the Forest of Bowland.</li> <li>■ Views from within the NCA are set against the dramatic back drop of the Forest of Bowland in the north-east and the Lake District to the north.</li> <li>■ Blackpool Tower is visible from many parts of the area as well as further afield.</li> <li>■ There are extensive views across the Irish Sea and along the coastline including distant views of mountain ranges in north Wales and the Lake District.</li> </ul>
Small to medium blocks of mixed woodland, wind sculpted near the coast.	<ul style="list-style-type: none"> <li>■ Trees and woodland tend to be large angular blocks of mixed species which accentuate the regular field pattern.</li> <li>■ The low-lying coastal plain supports very little semi-natural woodland of ancient origin other than Holme Wood, a few woods in the Penwortham/Hutton area and also a small number of woods in drumlin country north-west of Galgate. There are however a number of semi-natural woods that have developed on remnant lowland mosses south of Skelmersdale and west of Ormskirk, as well as small areas of alder and willow woodland that have developed in some of the marl pits and ponds of the Fylde.</li> </ul>

Landscape attribute	Justification for selection
Designed landscapes associated with large houses in the south.	<ul style="list-style-type: none"> <li>■ Large houses and ornamental parkland are notable features of the landscape, especially to the south, reflecting industrial wealth of landowning society.</li> <li>■ Historic estates such as Knowsley Park, Lytham Hall and Scarisbrick Hall.</li> </ul>
Rectilinear network of lanes and tracks, usually without fences or hedges.	<ul style="list-style-type: none"> <li>■ Many field boundaries are simply ditches, particularly in the south, in areas where there is no need for stock proofing.</li> <li>■ In the remnant mossland areas, many of the lanes now rise significantly above the surrounding countryside due to the shrinkage of the peat soils.</li> <li>■ The lack of hedgerows and hedgerow trees, combined with the essentially flat topography and large arable fields, creates a large-scale sweeping landscape.</li> </ul>
Medium to large fields form an open, large-scale agricultural landscape with a rich patchwork of lush pasture and arable land.	<ul style="list-style-type: none"> <li>■ The northern Fylde coastal plain is predominantly improved pasture with isolated arable fields. It is a neat, ordered landscape of medium-sized fields with field ponds, clipped hedgerows and drainage ditches. This is a medium to large-scale landscape with blocks of wind sculpted mixed woodland that punctuate the relatively flat to gently rolling plain.</li> <li>■ The southern plain has a different physiographical history to that of the plain north of the Ribble and this is reflected in the land use of the area. It is predominantly highly productive arable land with large fields. Agricultural drainage systems of steep-sided ditches with localised reed beds and steep embankments are a dominant feature of the Lancashire and Amounderness Plain and are responsible for the dramatic transformation from marshes to a rich and ordered landscape of neat fields. This is mainly an area of open, high-quality farmland.</li> </ul>
Localised areas of intensive market gardening.	<ul style="list-style-type: none"> <li>■ The southern plain to the south of the River Ribble is dominated by arable and horticulture, mainly on agricultural land of the highest quality.</li> <li>■ The basin and coastal peats, together with podsollic soils overlying the Shirdley Hill Sands, produce high quality Grade 1 and 2 soils over much of the area.</li> <li>■ The coastal peat soils are intensively farmed for horticulture, vegetables, potatoes and cereals. Further inland the slightly higher ground is also farmed for cereals and vegetables.</li> </ul>

Landscape attribute	Justification for selection
<p>The complex network of raised drainage ditches and dykes with localised reedbeds is a reminder of the area's heritage of wetland reclamation.</p>	<ul style="list-style-type: none"> <li>■ Shallow lakes exist at Martin Mere, Mere Sands Wood and Barrow Sands.</li> <li>■ There are numerous historic structures associated with land drainage including former wind and steam driven pump houses and windmills.</li> <li>■ A few isolated windmills built to drain the water and grind the first crops of corn have also survived on the Plain, for example at Lytham and on the outskirts of Blackpool.</li> </ul>
<p>There is a high density of field ponds, salt marshes are prominent at the heads of estuaries and sand dunes occur along some sections of the coast.</p>	<ul style="list-style-type: none"> <li>■ The plain to the east is predominantly formed by clay soils and contains a high density of field ponds formed by the extraction of clay for brick making.</li> <li>■ The coastal marshes on the plain include valuable salt marsh habitats, for example the remaining ungrazed marshes on the Wyre Estuary which still provide relatively undisturbed habitats for wetland flora and fauna.</li> <li>■ Coastal grazing marshes are often associated with drained mosslands. Across the coastal marshes the maze of creeks, channels, gutters, ditches and brackish pools etch a distinctive pattern in the surface which provide valuable semi-natural habitats, for example at Cockerham and Pilling.</li> <li>■ Inland from the open marshes are the enclosed grazing marshes, with large open field patterns, geometric drainage ditches and sea dykes which preserve the historic sequence of coastal reclamation and corresponding changes in drainage technology.</li> <li>■ Sand dunes systems are found along the coast at Starr Hills Dunes, St Anne's Dunes, Fairhaven Dunes and Lytham Dunes. There are also inland dunes at Clifton Hospital, Arnold KEQM School and Lytham St Anne's Golf Course.</li> </ul>
<p>Isolated brick farmsteads in rural areas.</p>	<ul style="list-style-type: none"> <li>■ There are extensive long-distance views across the plain which are punctuated by woodland blocks and brick-built farmsteads.</li> <li>■ These provide vertical accents in an otherwise flat, horizontal landscape. The surface texture of the plain is a continually changing patchwork of colour and texture related to the various crops and changing seasons.</li> <li>■ The plain still remains rural in character with isolated brick farmsteads, small villages and numerous manor houses located along the network of country lanes.</li> </ul>

Landscape attribute	Justification for selection
<p>Concentrated urban settlement in the planned Victorian coastal resorts and inland towns.</p>	<ul style="list-style-type: none"> <li>■ Large towns such as Blackpool, Preston and Lytham St Anne are wholly contained within the NCA.</li> <li>■ Views to the coast from the southern plain are highly influenced by urban fringe development in the Sefton Coast at Formby, Ainsdale, Southport and other settlements.</li> <li>■ The main areas of settlement which influence the plain are located at the planned Victorian coastal resorts such as Blackpool, Lytham St Anne's and the large inland towns of Ormskirk, Kirkby and the new town of Skelmersdale.</li> <li>■ The city of Liverpool forms part of the southern boundary to the Lancashire and Amounderness Plain as it rises beyond the hills of Anfield and Walton from the Mersey Estuary.</li> </ul>
<p>The area supports a range of important habitats and species.</p>	<ul style="list-style-type: none"> <li>■ The coastal habitats along with the large areas of open water and linear canals such as at Martin Mere, Mere Sands Wood and Marton Mere, are of international importance for their migratory and wintering wildfowl and wading bird populations.</li> <li>■ The intertidal flats of the Ribble Estuary support thousands of knot, oystercatcher, redshank, dunlin, curlew, and godwit, while the extensive areas of grazed saltmarsh are of considerable importance for feeding flocks of wigeon, pink footed goose, whooper and Bewick's swans.</li> <li>■ The ungrazed saltmarshes on the Wyre estuary are of importance for their plant communities including large areas of sea lavender, sea purslane, thrift and sea aster.</li> <li>■ The area supports two plant species endemic to the British Isles, purple ramping fumitory and Isle of Man cabbage</li> </ul>
<p>Numerous opportunities for recreation.</p>	<ul style="list-style-type: none"> <li>■ A number of country parks lie wholly or partially within the NCA, including Beacon Park, Cuerden Valley, and Wyre Estuary, whilst further opportunities are provided in the urban parks of places such as Blackpool, Lytham St Anne's, and Preston.</li> <li>■ The Ribble Link, Lancaster and Leeds and Liverpool canals cross the NCA and all offer extensive recreational opportunities, including walking, fishing and boating.</li> <li>■ There are several long distance paths crossing the NCA, including the Lancashire Coastal Path, the Ribble Way and the Wyre Way, as well as canal tow paths. Part of the Trans Pennine Trail and the Preston Guild Wheel National Trail Cycle Routes are found within the area and the Lancashire Cycleway crosses the NCA both above and below the Ribble Estuary. There are long stretches of cycle paths around the coast.</li> <li>■ Other activities include bird watching at the many marsh sites, including the Ribble Marshes National Nature Reserve, Hesketh Outmarsh, Fairhaven Lake and Granny's Bay, Pilling Marsh, Marton Mere, Rossall Point and Fleetwood Marsh Nature Park whilst the series of Local Nature Reserves provide further opportunities for observing wildlife and enjoying contact with the natural environment.</li> </ul>

## Landscape opportunities

- The retention of contrasting landscape types within the character area should respect the difference between the Fylde and West Lancashire Plain.
- Manage and restore remaining uncultivated peat mosslands (dry heaths, mires, fen, birch scrub and woodland) for example Winmarleigh and Heysham Mosses, and Martin Mere.
- Raise local water tables and seal the margins of remaining relic mosslands by blocking existing drainage channels and maintaining raised water levels. Reintroduce riparian buffer zones, reedbeds and open water.
- Protect important views to the coast and along the urban coastline frontage. The views of the coast from within urban areas contribute a distinctive influence on the urban sense of place and the relationship with its setting.
- Encourage natural regeneration and planting in the riparian zone where not in conflict with ecological interest. Manage grazing levels and introduce fencing to allow successful tree growth and establishment.
- Restore broadleaved woodlands, particularly in the vicinity of watercourses through tree planting along riparian buffer zones where appropriate the management of grazing intensities and conserving ancient and semi-natural woodland. Restore the structure and character of designed landscapes, ensuring that landmark woodlands in particular are retained.
- Retain and enhance the network of field boundaries for their visual, historic and wildlife qualities, and their distinctive field patterns.
- Restore, manage and replant hedgerows and hedgerow trees, particularly where they provide habitat linkages and contribute to landscape character.
- Protect and conserve wet and other semi-natural grasslands; encourage conservation and restoration of flower-rich arable field margins and arable mosaics.
- Manage and restore remnant landscape and habitat mosaics, which are very important to landscape structure and diversity.
- Manage agricultural practices which are leading to the loss of traditional field structures, reed beds, field ponds, hedgerows, hedgerow trees and woodland cover.
- Control and reduce run-off pollution from agricultural land and landfill site, especially where it may result in a loss of coastal grazing marsh habitats.
- Enhance river, watercourse and wetland landscape features, which are characteristic of this area, with its history of wetland reclamation.
- Manage ditches, create buffer zones along rivers, ditches and drains and control erosion and runoff.
- Protect river corridor landscapes from agricultural pollution and enhance their wildlife and visual amenity value through enhancement by habitat creation.
- Restore completed sand and gravel workings to provide a mosaic of wetland habitats including appropriate informal recreation.
- Conserve remaining field ponds which are of great landscape, historic and wildlife interest. Restrict infilling and loss of ponds and buffer and manage margins to create visual interest. Where possible, create new ponds to increase habitat diversity and link fragmented ponds in order to aid species conservation and assist migration resulting from climate change.

Continued on next page...

## Landscape opportunities continued...

- Protect the saltmarsh habitats from loss or degradation due to the impacts of water-borne pollutants, drainage and potential rises in sea level.
- Manage the dune systems to prevent further fragmentation due to development, erosion from recreational pressures and habitat change due to invasion by species such as gorse, birch, sea buckthorn and pine.
- There are opportunities within the area for the possible creation of coastal habitats for example in the north of the area around Cleveleys, here there are still a few agricultural fields and a large golf course where coastal habitats could be encouraged with in the 'rough' areas or on the less improved pastures.
- Retain barns in agricultural use, maintain these using traditional local red brick and ensure that any alternations respect their traditional character.
- Maintain distinctive, often historic, brick-built barns, which are a prominent landscape feature.
- Maintain the expansive landscape and tranquillity of the NCA through the control of built development and avoiding vertical structures such as communication masts or telegraph poles.
- Manage development around the urban fringe and within rural settlements to enhance the distinctive character and landscape setting of the rural landscape.
- Manage the key approach routes to the main urban centres as gateways so as not to detract from the resort experience with generic urban expansion.
- Enhance landscapes associated with major infrastructure developments such as the M6 and M55 corridors through additional tree planting whilst maintaining the open landscape and key views.
- Protect the landscape character of rural areas through the management of developments and activities such as golf courses, motorbike scrambling, caravan parks and equestrian centres.
- Green infrastructure approaches to the integration of built and undeveloped land use provides an opportunity to link the diverse mosaic of residential, commercial and recreational uses into a more cohesive whole and to provide a framework for larger scale housing expansion and business park type developments.
- Encourage the use of 'soft' engineering options for coastal defences in order to maximise benefits to wildlife habitats.
- Maintain the coastal systems to maintain the role of natural coastal processes in coastal defence whilst monitoring the area of sand dunes and rates of accretion/erosion of sand especially in relation to storms, sand extraction and the impact of constructed defence schemes elsewhere on the coast.
- Retain the character of historic tourist development associations such as the seafront properties and promenades to preserve the scale and appearance which defines the resort aspect of the urban settlement.

## 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
<b>Food provision</b>	Dairy and arable farming Horticulture Soils Water	The northern plain on the Fylde is used predominantly for dairy farming, with isolated arable fields. The southern plain to the south of the River Ribble is dominated by arable and horticulture, mainly on agricultural land of the highest quality. The basin and coastal peats, together with podsolic soils overlying the Shirdley Hill Sands, produce high quality Grade 1 and 2 soils over much of the area. The coastal peat soils are intensively farmed for horticulture, vegetables, potatoes and cereals. Further inland the slightly higher ground is also farmed for cereals and vegetables.	Regional	<p>This is an important area for farming and the provision of food, contributing to employment, economy and maintenance of farmland habitats.</p> <p>Food provision is an important service but commercial scale arable cultivation and dairy production may be making a contribution to a loss of water quality due to diffuse pollution.</p> <p>Although there may be scope for increasing food provision, issues around water quality, soil erosion and flooding provide limitations.</p> <p>Extensive arable land and lack of or fragmented semi-natural habitats, reduce the range of nectar sources for pollinating insects.</p>	<p>Encourage sustainable farming practices to continue the production of food and contribute to the economy while also seeking to reduce the impact on water and soil quality and providing opportunities for biodiversity and pollination.</p> <p>Ensure waste is managed to avoid impacting on water quality.</p> <p>Support the creation and restoration of habitats that provide a network of nectar sources such as hedgerows, species-rich grassland, carr and wet woodland. This will benefit soil and water quality and in turn benefit agricultural production</p> <p>Promote links between the distinctive plain landscape, sensitive land and soil management practices and high quality food production.</p>	<p><b>Food provision</b></p> <p><b>Regulating water quality</b></p> <p><b>Water availability</b></p> <p><b>Biodiversity</b></p> <p><b>Climate regulation</b></p> <p><b>Regulating soil erosion</b></p> <p><b>Regulating soil quality</b></p> <p><b>Sense of place / inspiration</b></p>



Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
<b>Timber provision</b>	Existing woodland	<p>There is very limited scope for commercial timber production. Woodland only covers 4 per cent of the NCA.</p> <p>Some scattered woodland blocks occur, as do shelterbelts around farmsteads.</p> <p>There are few areas of ancient woodland totalling 156 ha (4 per cent of the woodland resource).</p>	Local	<p>New woodland planting should occur where this does not restrict long and open views.</p> <p>There may be potential for woodland planting to reduce flood flows downstream.</p>	<p>Seek opportunities to bring appropriate woodlands into management to produce small amounts of timber.</p> <p>Explore opportunities to plant woodlands alongside watercourses and in flood plains, to increase surface roughness and slow flood flows where this does not affect areas where there are long and open views.</p>	<p><b>Timber provision</b></p> <p><b>Climate regulation</b></p> <p><b>Regulating soil erosion</b></p> <p><b>Regulating water flow</b></p> <p><b>Regulating water quality</b></p> <p><b>Regulating water flow</b></p> <p><b>Biodiversity</b></p>

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
<b>Water availability</b>	Aquifers  Network of watercourses  Semi-natural habitats	The water used across the plain is sourced in the neighbouring uplands of the Bowland Fells. The wide meandering rivers Lune, Ribble and Wyre cross the Plain. In rivers such as the Wyre, historic water abstraction rights may cause artificially low flows, leading to detrimental effects to fauna and flora and the loss or deterioration of wetland assets. Water abstraction within the area is dominated by public water supply but is also used for industry, agriculture, fish farming and topping up the Lancaster Canal.	Regional	<p>In the River Wyre area in the north of the NCA, the Pilling and Garstang-Woodplumpton aquifers are 'over-licensed', whilst streams forming part of the River Wyre catchment within this NCA have 'water available'.</p> <p>The River Ribble catchment in the centre of the NCA generally has 'water available'. In the Douglas area, groundwater units of the Rufford Aquifer in the north and east have 'water available' whilst units in the west and south are 'over licensed' or 'over abstracted'. Surface water resources generally have 'water available' with the exception of Eller Brook, a tributary of the River Douglas that drains an area to the north east and east of Ornskirk; this is 'over abstracted' owing to summer irrigation abstractions for agriculture.</p>	Work with farmers, landowners and businesses to use and manage water sustainably and encourage adoption of land management practices. This could include creating water storage areas, increasing semi-natural habitats for infiltration such as grassland strips along water courses and recreation of flood plain grazing marsh.	<b>Water availability</b>  <b>Food provision</b>  <b>Regulating water flow</b>  <b>Regulating water quality</b>  <b>Regulating soil quality</b>  <b>Biodiversity</b>
<b>Genetic diversity</b>	N/A	N/A	N/A	N/A	N/A	N/A

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
<b>Biomass energy</b>	Existing woodland  Miscanthus	There is limited scope for biomass production from existing woodlands as coverage is sparse (only 4 per cent of the NCA).	Local	The existing woodland cover offers limited potential for the provision of biomass, either through bringing unmanaged woodland under management or as a by-product of commercial timber production. The NCA has medium potential short rotation coppice yield across most of its area, although low in the areas around Blackpool, Poulton-le-Fylde and Thornton. Potential miscanthus yield is high.	Ensure existing woodlands are managed to produce surplus timber as wood fuel for local use.  Explore opportunities to increase the growing of miscanthus and short rotation coppice in appropriate areas respecting areas with long and open views.	<b>Biomass energy</b>
<b>Climate regulation</b>	Flood plain grazing  Marsh  Woodland  Peaty topsoils and loamy, clay soils  Marine environment	Soil carbon levels are generally 0-10 per cent, with significant areas of higher carbon content (20-50 per cent) occurring throughout the NCA, though predominantly in the west. This reflects that at least 38 per cent of the soils of the NCA are likely to have organic-rich/ peaty topsoils which are very important to conserve reflecting the role that they play in climate regulation.  <b>Continued on next page...</b>	National	Peat soils have a particularly important role in storing carbon. The area was once extensive lowland raised bog interspersed with various fen and wet woodland habitats (collectively known as Mosslands in Lancashire). It is now predominantly drained and used for arable agriculture. This linked network of pumped drainage assets requires considerable resources to support it. This is releasing a large amount of carbon dioxide into the atmosphere, so exacerbating climate change.	Increase opportunities to manage and protect the soil resource by building up organic matter by establishing areas of permanent grassland and other uncultivated land such as semi-natural habitats.  Maintain, restore and create flood plain grazing marsh, increase areas of permanent grassland and allow inundation of grassland in flood plains where this is feasible. Introduce fallow in rotation and plant green cover crops to reduce nitrate leaching.	<b>Climate regulation</b>  <b>Regulating soil quality</b>  <b>Regulating soil erosion</b>  <b>Regulating water quality</b>  <b>Water availability</b>  <b>Biodiversity</b>  <b>Timber provision</b>

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Climate regulation cont.		<p><b>... continued from previous page</b></p> <p>These soils relate to the areas of naturally wet, very acid sandy and loamy soils (16 per cent of NCA), raised bog peat soils (7 per cent of NCA), fen peat soils (7 per cent of NCA) and loamy and clayey floodplain soils. These have naturally high groundwater which may be peaty at depth or include small areas of peaty soils (5 per cent).</p> <p>These soils also relate to the smaller areas of loamy and sandy soils with naturally high groundwater and a peaty surface and also the saltmarsh soils that will have elevated organic matter levels. Together these soils are likely to be associated with the extensive areas of coastal and floodplain grazing marsh with some lowland raised bog, fens and lowland heathland.</p>		<p>Underlying this peat are glacial clays, which, if the peat were to be lost, could result in deterioration in the quality of agricultural land. There are major areas of basin peat in the east of the NCA around Simonswood Moss and coastal peats south-east of Hightown.</p> <p>Limited carbon storage will also be offered by the woodland cover of the NCA (4per cent of its area), especially where it is brought under management. In areas of mineral soils, carbon sequestration and storage can be enhanced by the addition of organic matter and through a reduction in the frequency and extent of cultivation.</p>	<p>Adopt cultivation practices that reduce reliance on high levels of fertiliser application.</p> <p>Encourage woodland creation but ensure woodland planting is sensitive to the potential impacts on areas where there are long, open views.</p>	

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
<b>Regulating water quality</b>	<p>Aquifers</p> <p>Network of watercourses</p> <p>Semi natural habitats</p>	<p>Ecological quality of surface waters is moderate across much of the NCA, including its coastal waters. It is, however, good in the River Brock (a tributary of the Wyre), the Lancaster Canal and the Leeds and Liverpool Canal but poor in the River Darwen (a tributary of the Ribble) and the River Lostock (a tributary of the Douglas).</p> <p>Other than the Ribble Estuary, the NCA's coastal waters fail to achieve good chemical status. The chemical status of groundwater meanwhile is generally good but poor along the southern edge of the NCA.</p>	Regional	<p>There are a number of pressures on water quality in the NCA. Slurry and silage liquor discharges from farms with inadequate containment facilities, spreading of slurry to land, and discharges from small private sewage treatment works and septic tanks all contribute to rising ammonia levels in rivers. There is a risk of leachate being discharged into water courses from large chemical, industrial and landfill sites, particularly along the open coastal marsh near Fleetwood.</p>	<p>Encourage land managers to develop good agricultural practices by working with them on nutrient management planning, precision farming and providing one-to-one training.</p> <p>Plant winter cover crops, in-field grass areas to reduce soil run-off, permanent grassland with low inputs and grass buffer strips on land adjacent to watercourses to reduce nutrient run-off and aid water infiltration.</p> <p>Bathing water quality should be improved through partnership work involving the Environment Agency, United Utilities, and local authorities aiming to investigate sources of pollution to afford effective solutions.</p> <p>Support measures to improve small private discharges where private sewage disposal contributes to poor water quality.</p> <p>Through landscape-scale partnerships, undertaking joint initiatives working with landowners, farmers and other businesses to protect the water quality and supply of groundwater.</p>	<p><b>Food provision</b></p> <p><b>Climate regulation</b></p> <p><b>Regulating soil erosion</b></p> <p><b>Regulating soil quality</b></p> <p><b>Regulating water quality</b></p> <p><b>Biodiversity</b></p>

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Regulating water flow	<p>Aquifers</p> <p>Network of watercourses</p> <p>Semi-natural habitats</p> <p>Coastal processes</p> <p>Flood defence structures</p>	<p>Groundwater flooding can last for several months once levels have risen.</p> <p>River flooding from the River Wyre has historically been an issue of concern, especially within the areas of Garstang, St. Michaels-on-Wyre and Great Eccleston within this NCA. Following severe flooding in 1980, flood basins at Garstang and Catterall were constructed which have prevented major flooding to property, although flooding to a number of rural properties, roads and agricultural land have still occurred.</p> <p>The Ribble catchment has a history of flooding, with flood risk concentrated in Preston and upstream in Ribchester within the Lancashire Valleys NCA.</p> <p>Reservoirs at Rivington Moor within the Southern Pennines NCA play an important role in regulating flow from the upper catchment and reducing flood peaks on the Yarrow and Douglas. The floodplain of the lower Douglas and Yarrow consists of high grade agricultural land where drainage is modified by pumping within a complex network of artificial channels.</p> <p><b>Continued on next page...</b></p>	Regional	<p>There are areas within the flood plains of the main rivers and their tributaries which informally provide flood storage, and therefore are already acting to protect nearby properties and businesses. The many ponds and areas of wetland perform similar services.</p> <p>The Environment Agency's preferred approach to managing this flood risk includes restoration of moorland habitat by grip blocking in the Bowland Fells, as well as changes in land and soil management practices to reduce erosion rates and increase local water retention.</p>	<p>Identify areas where there is an opportunity for attenuation to reduce water levels during flood events.</p> <p>Protect undeveloped flood plains from inappropriate development to manage future flood risk adequately.</p> <p>Adopt farming practices that are adaptable to conditions where flooding is unavoidable and/or managed as part of an agreed flood management strategy, for example grazing with suitable livestock and the creation of more permanent grassland.</p> <p>Manage the network of ditches and drains to ensure that while operating effectively to drain the land, they also make a positive contribution to biodiversity and landscape character and act as links between other semi-natural habitats.</p> <p>Support the alignment of the flood risk management strategy and shoreline management plan taking a long-term approach to flood risk management.</p>	<p><b>Regulating water flow</b></p> <p><b>Regulating coastal erosion</b></p> <p><b>Biodiversity</b></p> <p><b>Regulating water quality</b></p> <p><b>Food production</b></p>

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
<b>Regulating water flow cont.</b>		<p><b>... continued from previous page</b></p> <p>The main locations of fluvial flood risk to people and property within the NCA are Croston and Eccleston (on the River Yarrow), Leyland and the Lostock area (on the River Lostock) and Longton and Hutton to the south west of Preston (on streams draining to the River Douglas).</p>			<p>Explore opportunities to plant woodlands alongside watercourses and in flood plains, to reduce flood flows downstream, where this does not affect areas where there are long and open views.</p> <p>Explore opportunities to expand or create flood storage areas where appropriate.</p>	
<b>Regulating soil quality</b>	<p>Soils</p> <p>Semi-natural habitats</p> <p>Sustainable farming practices</p>	<p>The slowly permeable, seasonally wet, slightly acid, but base-rich loamy and clayey soils (39 per cent) may suffer compaction and/or capping as they are easily damaged when wet. In turn this may lead to increasingly poor water infiltration and diffuse pollution as a result of surface water run-off. Management measures that increase organic matter levels can help reduce these problems. The naturally wet, very acid sandy and loamy soils (16 per cent) can have a weak structure but are easily worked. Topsoil compaction can occur as well as cultivation pans.</p>	Regional	<p>Management measures on cultivated land that increase organic matter content can help reduce compaction and capping by improving soil structure and water infiltration.</p> <p>To avoid damage of weak topsoil structures from machinery and poaching by livestock, use of machinery for land management activities should be carefully timed and extensive grazing regimes considered.</p>	<p>Increase organic content of soils by introducing fallow into rotations, conversion to grassland and avoiding overstocking or using machinery when it would lead to the compaction of vulnerable soils.</p> <p>Encourage carefully timed activities such as avoiding use of farm machinery, during very wet periods. Take up of extensive grazing regimes will reduce soil compaction.</p>	<p><b>Regulating soil quality</b></p> <p><b>Food provision</b></p> <p><b>Regulating soil erosion</b></p> <p><b>Climate regulation</b></p> <p><b>Regulating water flow</b></p> <p><b>Regulating water quality</b></p> <p><b>Biodiversity</b></p>

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
<b>Regulating soil erosion</b>	<p>Loamy and clayey soils</p> <p>Loamy and sandy soils with peaty surface</p> <p>Semi-natural habitats</p>	Just under half (43 per cent) of the soils covering this NCA are susceptible to erosion.	Regional	<p>The freely draining slightly acid loamy soils (1 per cent) have an enhanced risk of soil erosion on moderately or steeply sloping land where cultivated or bare soil is exposed, exacerbated where organic matter levels are low after continuous arable cultivation or where soils are compacted. Heavy traffic also increases erosion risk on the naturally wet, very acid sandy and loamy soils (16 per cent). Both of these soil types are at risk of wind erosion, especially where soils are coarse textured in the case of freely draining slightly acid loamy soils.</p> <p>The slightly acid loamy and clayey soils with impeded drainage (7 per cent) are easily compacted by machinery or livestock if accessed when wet and are prone to capping or slaking, increasing the risks of soil erosion by surface water run-off, especially on steeper slopes.</p> <p>Saltmarsh soils (3 per cent) may be lost to coastal erosion, including from sea level rise, but in the process will help to prevent the loss of inland soils.</p> <p>The raised bog peat soils (7 per cent) and fen peat soils (7 per cent) are permeable and therefore have a generally low risk of water erosion, except where cultivated land is susceptible to flooding. There is also a risk of wind erosion in these soils and the loamy and sandy soils with naturally high groundwater and a peaty surface (2 per cent of NCA), especially where surfaces are bare or spring crops are grown.</p>	<p>Increase organic matter content to improve soil structure by growing green cover crops or converting to grassland.</p> <p>Create buffer strips of permanent grassland alongside watercourses to reduce sediment run-off.</p> <p>Ensure well-timed cultivations (early autumn) and access onto land by machinery and stock to prevent compaction and poaching. Employ minimum tillage methods such as direct drilling to avoid damage to soil structure.</p> <p>Encourage extensive grazing regimes to reduce poaching, ensure animal feeding areas are carefully placed to avoid pollution of watercourses.</p>	<p><b>Food provision</b></p> <p><b>Regulating soil erosion</b></p> <p><b>Regulating soil quality</b></p> <p><b>Climate regulation</b></p> <p><b>Regulating water flow</b></p> <p><b>Regulating water quality</b></p> <p><b>Biodiversity</b></p>



Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
<b>Pollination</b>	Flood plain grazing marsh  Hedgerows  Riparian grassland  Ancient woodland  Roadside verges  Pollinating insects	The intensive agricultural land and coastal grazing marsh of this NCA on the whole offer relatively poor habitat for pollinating insects, although the areas of meadows and lowland heathland support wildflowers that provide an important source of nectar. Nectar sources may also be provided by the many gardens of the built up areas.	Local	Pollinating insects are supported by a range of semi-natural habitats, in particular species-rich grassland which are few in the NCA, however, flood plain grazing marsh is the most extensive semi-natural habitat and should be restored and maintained.  Sensitive management of hedges and verges to allow plants to flower and improve availability to pollinators.  There are potential nectar sources from the marginal riparian habitats along the canals, rivers and other waterways.	Create, restore and maintain semi-natural habitats such as flood plain grazing marsh, coastal grassland and hedgerows. Encourage sustainable farming practices such as uncropped field margins and planting of pollen and nectar mixes that will also enhance landscape character and increase landscape connectivity.  Carefully time the management of boundary features and roadside verges to extend flowering time.  Encourage partnership working with a range of organisations to manage road side verges so that they produce a range of flowering species and form a network of nectar sources.	<b>Pollination</b>  <b>Food production</b>  <b>Pest regulation</b>  <b>Biodiversity</b>  <b>Sense of place / inspiration</b>
<b>Pest regulation</b>	Flood plain grazing marsh  Hedgerows  Ancient woodland  Riparian grassland  Roadside verges	A variety of semi-natural habitats support populations of pest-regulating species (invertebrates, birds and mammals). In the NCA these are fragmented due to land drainage and the predominance of arable farming with its large field patterns bounded largely by drainage ditches.	Local	Semi-natural habitats within the NCA are fragmented. The existing field boundary hedgerows are sparse and increasing diversity in species and structure of field margins will increase the ability for these areas to support populations of pest-regulating species.	Encourage sustainable farming practices to manage existing semi-natural habitats and create new areas of habitat; mainly hedgerows, woodlands, flood plain grazing marsh and riparian grassland along waterways.  Opportunities to improve the network of semi-natural habitats across the NCA should be sought.	<b>Pest regulation</b>  <b>Food production</b>  <b>Pollination</b>  <b>Biodiversity</b>

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
<b>Regulating coastal erosion and flooding</b>	Coastal processes (sediment transfer)	<p>Tidal flooding typically occurs along the coastline where high tides combine with a storm surge, wind and wave action to raise the sea level over the top of coastal defences. The main urban areas influenced by direct tidal flooding are Lytham St Anne's, Pwortham at Preston, Hesketh Bank and Walton-le-Dale.</p> <p>Many rivers are tidally influenced with potential to increase flooding upstream by preventing inland fluvial rivers from draining freely. Liggard Brook, Dow Brook and Savick Brook in the Ribble catchment are affected in this way. High water levels within the Douglas Estuary may prevent pumped or flapped outfalls from drainage channels working correctly, leading to flooding behind the tidal defences, affecting mainly agricultural land.</p>	National	<p>The Ribble Estuary and its associated banks and channels exert a significant control on the evolution of both the important tourist areas of Southport frontage (Sefton Coast NCA) and the Fylde Peninsula. It is naturally accreting, which has allowed widespread land reclamation in the past. The low-lying land around the estuary is mostly agricultural, interspersed with settlements, tourism and recreational facilities and the urban area of Preston in the upper estuary.</p> <p>The Fylde Peninsula, including Lytham, Blackpool and Cleveleys has potential at a large scale to be affected by changes within these systems. There is a sand dune system at Lytham, which is fronted by a wide sandy beach, although the majority of dunes have been significantly modified and built upon.</p> <p><b>Continued on next page...</b></p>	<p>Allow natural processes to continue along the frontage as far as possible, maintaining sediment supplies to the coastline further south.</p> <p>Allow beaches/intertidal habitats to build up in front of coastal defences to provide natural flood defences supporting man-made structures.</p> <p>Support planning policies that include coastal adaptation measures and avoidance of development in flood-prone areas.</p> <p>Seek opportunities for managed realignment to help reduce flood risk and manage the impact of defences in the longer term.</p> <p>Encourage natural dune systems to evolve where possible as a natural form of defence.</p> <p>Support the development of a successful England Coastal Path that encourages better public access and is sensitive to the features that are found on or along the coast.</p>	<p><b>Regulating coastal erosion and flooding</b></p> <p><b>Sense of place / inspiration</b></p> <p><b>Biodiversity</b></p> <p><b>Geodiversity</b></p>

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
<p><b>Regulating coastal erosion and flooding cont.</b></p>				<p><b>... continued from previous page</b></p> <p>From central Blackpool to Anchorsholme, high protected cliffs back the sand beach, while north of Anchorsholme the frontage is low-lying and potentially at flood risk from both the open coast and the Wyre Estuary. The frontage is heavily urbanised, with the town of Blackpool spreading into Thornton and Cleveleys and much of the shoreline now held seaward of its natural position.</p> <p>The Wyre Estuary is characterised by marshland, agricultural land, small villages and urban and industrial settlements in the Thornton area, including the Hillhouse Plant commercial power station. The low-lying area to the west provides a continuous potential flood route linking through to the coast.</p> <p>The very large developed areas subject to coastal flood risk at Fleetwood, Cleveleys and Knott End justify the policy of continued protection in the long term. There are some areas in the upper reaches of the estuary where managed realignment opportunities provide additional intertidal habitat that could offset future impacts of flood defences. Habitats such as salt marsh and mudflats perform an important role in protecting the coast by dissipating wave energy and thus reducing rates of erosion.</p> <p>The natural environment can perform an important function in supporting climate change adaptation.</p>		

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
<b>A sense of place/ inspiration</b>	<p>Flat topography and open views across the sea</p> <p>Network drainage ditches and streams leading to rivers, then out to the sea through estuaries</p> <p>Expansive coastline</p> <p>Coastal towns</p> <p>Dispersed villages and hamlets</p>	<p>Sense of place is provided by the generally flat, fertile and gently rolling coastal plain, interrupted by isolated hills.</p> <p>The plain is dissected by an extensive network of rectilinear raised drainage ditches and dykes with wind pumps that form distinctive features in the landscape, providing a reminder of the area's heritage of wetland reclamation from mosses and meres.</p> <p>The northern plain, predominately of rich pasture, is a neat ordered landscape of medium-sized fields, small ponds, flailed hedges with drainage ditches and wind sculpted mixed woodlands, overall creating a well-composed landscape. By contrast, the southern plain is characterised by large arable fields, without hedgerows or trees creating a large-scale sweeping landscape, with mixed woodland in large angular blocks.</p> <p><b>Continued on next page...</b></p>	Regional	<p>Large scale residential development and introduction of urbanising elements into the rural landscape such as golf courses, static caravan sites and substantial leisure complexes. This is particularly an issue on the fringes of the major coastal urban areas and in the vicinity of the M6 motorway corridor.</p> <p>The conversion of historic brick-built barns for use as residential dwellings or for intensive agricultural practices, with harshly coloured imported bricks and other inappropriate materials have, in some areas, resulted in poorly integrated developments which compromise the historic buildings and the wider landscape setting of groups of farm buildings.</p> <p>Waste management developments including treatment works and landraising have already had a significant influence on local landscape character, particularly on the Ribble and Wyre Estuaries.</p>	<p>Ensure that development respects local settlement patterns, using traditional building materials where possible.</p> <p>Maintain and restore village and field ponds as important features in the landscape.</p> <p>Protect important views to the coast and along the urban coastline frontage of the Fylde.</p> <p>Manage the key approach routes to the main urban centres as gateways so as not to detract from the resort experience with generic urban expansion.</p> <p>Enhance landscapes associated with major infrastructure developments such as the M6 and M55 corridors.</p> <p>Protect the landscape character of rural areas through the management of developments and activities such as golf courses, motorbike scrambling, caravan parks and equestrian centres.</p>	<p><b>Sense of place / inspiration</b></p> <p><b>Tranquillity</b></p> <p><b>Recreation</b></p> <p><b>Regulating coastal erosion and flooding</b></p> <p><b>Biodiversity</b></p> <p><b>Geodiversity</b></p> <p><b>Sense of history</b></p>

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
<b>A sense of place/ inspiration cont.</b>		<p><b>... continued from previous page</b></p> <p>The Ribble Estuary and coastline influence character in the west, with the Victorian coastal resorts of Blackpool and Lytham St. Annes forming focal points for settlement, while extensive intertidal sand and mud flats are backed by remnant dunes and some of the largest saltmarshes in the county.</p> <p>Further inland, distinctive isolated red brick farmsteads and barns, small villages, hamlets and manor houses (common to the south) are linked by a rectilinear network of lanes and tracks, commonly without fences or hedges. The farm buildings in conjunction with the blocks of woodland provide vertical elements in an otherwise flat, horizontal landscape.</p>			<p>Ensuring that significant built developments do not adversely impact on the open character of the area and seek opportunities through grant schemes to enhance and conserve traditional farm buildings and the use of traditional building materials where appropriate.</p> <p>Ensure that woodland planting schemes and biomass crops are carefully located, considering archaeological potential as well as impacts on long, open views.</p> <p>Seek opportunities to work with the farming community by encouraging the maintenance and creation of semi-natural habitats that contribute natural features to the rural landscape.</p>	

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
<b>Sense of history</b>	<p>Estate parkland</p> <p>Drainage ditches and wind pumps</p> <p>Canals</p> <p>Coastal resorts</p> <p>Victorian architecture</p> <p>Field ponds</p>	<p>The history of the landscape is evident in its transformation from an area of extensive lowland raised mires to productive reclaimed farmland, beginning in the 18th and 19th centuries and reflected in the regular drainage ditches and dykes, canals, windmills and isolated red brick farm buildings.</p> <p>Little evidence remains of the area's former landscape aside from small areas of remnant mosses or fen carr that provide indications of strip cultivation on boundaries of ancient enclosure between the rivers Wyre and Ribble, and place names which refer to "moss" or "mere".</p> <p>Aspects of history likely to be most evident to the general public include the Victorian seaside towns of Blackpool and Lytham St Annes, as well as the area's parklands which are most notable to the south and include Knowsley Park, Rufford, Lytham Hall and Stanley Park.</p>	Regional	<p>Degradation and loss of the area's distinctive field ponds has occurred as a result of drainage, pollution by agricultural runoff and infilling. These ponds are important cultural remnants of historic marl and brick pits and have valuable relic landscape features.</p> <p>Lowering of water tables (due to agriculture or abstraction for development) threatens damage to archaeological remains.</p> <p>There have been a significant number of barn conversions throughout the area.</p> <p>In 1918 about 2 per cent of the NCA was historic parkland. By 1995 it was estimated that 50 per cent of that area had been lost.</p>	<p>Develop visitor opportunities to historic places and towns in the NCA.</p> <p>Develop good quality interpretation/education about habitats, wildlife, geology and history at key sites including working with schools and other educational institutions.</p> <p>Seek opportunities through grant schemes to enhance and conserve traditional farm buildings, and the use of traditional building materials where appropriate.</p> <p>Using understanding of the area's traditional and historic architecture, and its distinct patterns of settlement, to inform appropriate conservation and use of historic buildings, and to plan for and inspire any environmentally beneficial new development which makes a positive contribution to local character and retains key views.</p>	<p><b>Sense of history</b></p> <p><b>Sense of place / inspiration</b></p> <p><b>Recreation</b></p> <p><b>Tranquillity</b></p> <p><b>Geodiversity</b></p>

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
<b>Tranquillity</b>	<p>Flat, low-lying topography providing extensive views</p> <p>Sparse settlement patterns</p> <p>Remote areas along some parts the coast and inland in rural areas</p> <p>Long, distant sea views towards and from the coastline</p>	<p>Tranquillity and intrusion levels have declined significantly in the past 50 years, with the total 'undisturbed' area of the NCA having decreased from 50 per cent in the 1960s to 18 per cent in 2007.</p> <p>A sense of tranquillity is likely to be particularly associated with the undeveloped areas of salt marshes at the heads of estuaries (notably the Ribble Estuary) and remnants of lowland mires and mosses, as well as the undeveloped stretches of canal and river and the quieter hamlets and villages.</p>	Local	<p>Tranquillity and intrusion levels have declined significantly in the past 50 years.</p> <p>The largest 'undisturbed' areas remain on either side of the A59 around Hesketh Bank, Rufford and Halsall, and to the east of the A59 around Mawdesley, as well as to the north of the NCA on either side of the River Wyre.</p>	<p>Encourage sensitive development respecting long and open viewpoints and strong rural character of the area.</p> <p>Carefully ensure that light spill is minimised through lighting design in new developments to minimise the impact on dark skies.</p>	<p><b>Tranquillity</b></p> <p><b>Sense of place / inspiration</b></p> <p><b>Recreation</b></p> <p><b>Sense of history</b></p>
<b>Recreation</b>	<p>Network of footpaths</p> <p>Open access land</p> <p>Community forest</p> <p>Country Parks</p> <p>Local Nature Reserves and local greenspace</p> <p>Canals</p> <p>Seaside resorts and coastline</p>	<p>Recreation is supported by the area's 1,236 km rights of way network (with a density of 1.3 km per km<sup>2</sup>), as well as 124 ha of open access land (covering just 0.13 per cent of the NCA).</p> <p>The Mersey Forest, a community forest, covers just over 5 per cent of the NCA and provides a range of recreational opportunities including walking, cycling and horse riding.</p> <p>The Leeds and Liverpool Canal in the southern half of the NCA and the Lancaster Canal in its northern half provide further important recreational resources.</p> <p><b>Continued on next page...</b></p>	National	<p>The area has many opportunities for informal recreation particularly along the Fylde coast. It is surrounded by large population centres including Liverpool to the south, Preston in the centre and a concentration of urban areas along the Fylde and Sefton coasts.</p> <p>There are a number of country parks in the NCA, including Marton Mere, Blackpool, Lytham St Anne's (Fylde), Cuerden Valley Park and urban parks in Preston.</p>	<p>Identify opportunities to create new permissive routes, especially around larger settlements linking with existing rights of way within settlements and into the surrounding countryside and extending coastal access with roll back provision and by working in partnership with others.</p> <p>Incorporate green spaces in new developments, in particular around the urban fringe. Connect green spaces with semi-natural habitats</p>	<p><b>Recreation</b></p> <p><b>Tranquillity</b></p> <p><b>Sense of place / inspiration</b></p> <p><b>Sense of history</b></p> <p><b>Biodiversity</b></p> <p><b>Geodiversity</b></p>

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Recreation cont.		<p><b>... continued from previous page</b></p> <p>Blackpool and Lytham St Annes are popular seaside resorts that continue to attract numerous visitors.</p> <p>The three country parks, seven Local Nature Reserves and many urban parks and greenspaces, provide opportunities for recreational activities including bird/wildlife watching, and walking venues for health improvement.</p>		<p>The Ribble Link, Lancaster and Leeds and Liverpool Canals cross the NCA and all offer extensive recreational opportunities, including walking, fishing and boating.</p> <p>There are several long distance paths crossing the NCA, including the Lancashire Coastal Path, the Ribble Way and the Wyre Way, as well as canal tow paths. The Lancashire Cycleway crosses the NCA both above and below the Ribble Estuary, and there are long stretches of cycle paths around the coast.</p> <p>Horse riding on the beaches is characteristic in some areas, for example on St Anne's beach. Other activities include bird watching at the many marsh sites, including the Ribble Marshes National Nature Reserve, Hesketh Outmarsh, Fairhaven Lake and Granny's Bay, Pilling Marsh, Marton Mere, Rossall Point and Fleetwood Marsh Nature Park.</p> <p>Tourism is an important contributor to the local economy; however, visitor numbers are much reduced from the heyday of Victorian sea side resorts.</p>	<p>where possible, providing communities with recreational green space and wildlife corridors.</p> <p>Seek opportunities to increase public accessibility to existing woodlands and identify new community woodland creation schemes.</p> <p>Seek opportunities to provide surfaced paths for use by all levels of ability.</p> <p>Develop initiatives to encourage local communities, particularly in deprived areas, to enjoy their local green space, to take action to improve it and to benefit from the recreation and health benefits that it affords them. This might include action to develop wildlife corridors to improve the resilience of species to climate change.</p>	



Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
<b>Biodiversity</b>	<p>SAC, SPAs and SSSI</p> <p>Country parks, Local Nature Reserves, urban parks and greenspace</p> <p>Flood plain grazing marsh</p> <p>Broadleaved mixed and yew woodland</p> <p>Maritime cliff and slope</p> <p>Lowland meadows</p> <p>Fen</p> <p>Ponds</p> <p>Farmland bird species</p> <p>Overwintering wildfowl</p> <p>Rivers</p> <p>Riparian grassland</p> <p>Coastal strip of grassland</p>	<p>The NCA supports a range of important habitats and species and contains one SAC, three SPAs and three Ramsar sites, with over 2,700 ha nationally designated as SSSI.</p>	<p>National</p>	<p>The principal priority habitats within the NCA are coastal and floodplain grazing marsh and saltmarsh with some lowland raised bog, lowland meadows, fens and lowland heathland also represented. The large number of ponds and marl pits are a particularly important resource.</p> <p>Most of the prime agricultural land within the NCA is former mossland, under 400 ha of lowland moss habitat remains. What is left exists as small, isolated, hydrologically damaged remnants of a once extensive moss resource. Only one of these remnants, Winmarleigh Moss, now retain anything like the original raised mire conditions supporting Sphagnum mosses.</p> <p>The NCA including two plant species endemic to the British Isles, purple rampion fumitory and Isle of Man cabbage. The coastal habitats along with the large areas of open water and linear canals such as at Martin Mere, Mere Sands Wood and Marton Mere are of international importance for their migratory and wintering wildfowl and wading bird populations.</p> <p><b>Continued on next page...</b></p>	<p>Work with farmers and landowners by encouraging maintenance, restoration and creation of flood plain grazing marsh, broadleaved and yew woodland, lowland grassland meadows and fen around key designated sites.</p> <p>Work with farmers and landowners to adopt management interventions that will protect or improve priority habitats as well as water and soil resources by creating buffer strips of meadow grassland to accommodate habitat change, creating more space for species-rich grassland. Also providing habitats for farmland bird species by creating in-field nesting habitats, planting bird seed mixtures for spring and winter food and creating a network of insect-rich habitats through arable plants and grassland.</p>	<p><b>Biodiversity</b></p> <p><b>Recreation</b></p> <p><b>Regulating soil erosion</b></p> <p><b>Regulating soil quality</b></p> <p><b>Regulating water quality</b></p> <p><b>Water availability</b></p> <p><b>Sense of place / inspiration</b></p> <p><b>Tranquillity</b></p> <p><b>Climate regulation</b></p>

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
<b>Biodiversity cont.</b>				<p><b>...continued from previous page</b></p> <p>The intertidal flats of the Ribble Estuary support thousands of knot, oystercatcher, redshank, dunlin, curlew, and godwit, whilst the extensive areas of grazed saltmarsh are of considerable importance for feeding flocks of wigeon, pink footed goose, whooper and Bewick's swans. The ungrazed saltmarshes on the Wyre Estuary are of importance for their plant communities including large areas of sea lavender, sea purslane, thrift and sea aster.</p>	<p>Seek opportunities to create, maintain and where necessary restore ponds for their contribution to biodiversity and as a key landscape feature that enhances landscape character.</p> <p>Support traditional farming practices in areas where there is species-rich grassland such as aftermath grazing for lowland hay meadows.</p>	
<b>Geodiversity</b>	<p>Designated geological sites</p> <p>Peat bogs</p>	<p>Although Permo-Triassic red mudstones, siltstones and sandstones (New Red Sandstones) constitute much of the floor of the Lancashire lowlands, the solid rock geology rarely emerges from beneath its thick covering of glacial and post glacial deposits.</p> <p>There are currently two nationally designated geological sites and one mixed interest, namely Downholland Moss, Lytham Coastal Changes and Meres Sands Wood. In addition there are 21 local geological sites including examples of river and stream sections, quarries or disused quarries and erratic boulders.</p>	National	<p>These sites provide opportunities to interpret the local geodiversity, helping to inform and educate visitors and increasing their understanding and enjoyment of the sites.</p>	<p>Increase awareness of geodiversity in the NCA and its role in developing its character including both dynamic and static geologies.</p> <p>Seek opportunities to restore peatlands to re-establish their geomorphological function and as records of palaeo-environmental evidence.</p> <p>Seek opportunities to protect, conserve, manage and interpret the geodiversity of the NCA, in order to raise awareness, and to increase public engagement, understanding and enjoyment of these features.</p>	<p><b>Geodiversity</b></p> <p><b>Biodiversity</b></p> <p><b>Sense of history</b></p> <p><b>Sense of place / inspiration</b></p> <p><b>Tranquillity</b></p>

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