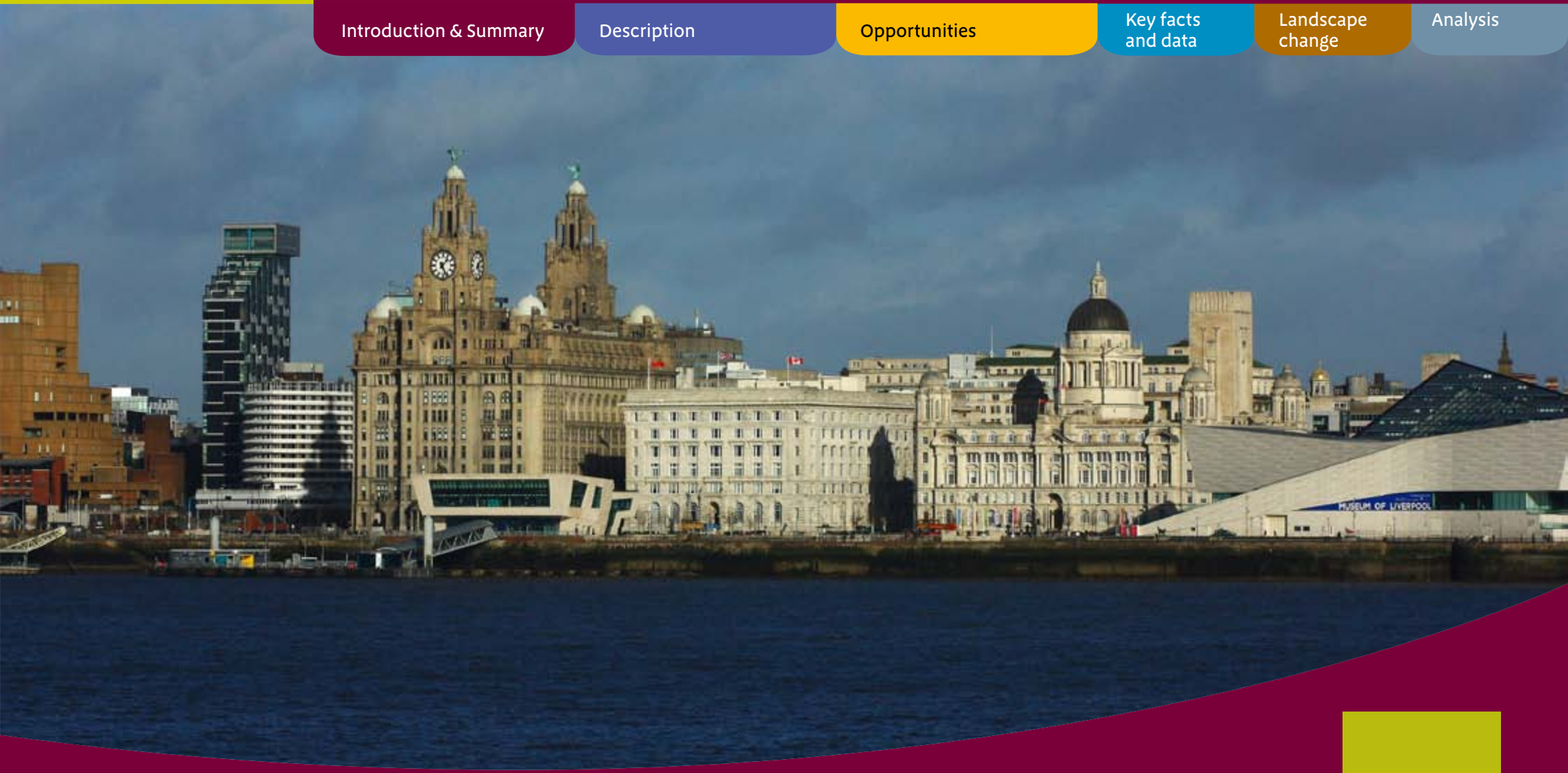
National Character Area profile:

58: Merseyside Conurbation

Supporting documents



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Introduction

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

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

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

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

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

National Character Areas map

[1] The Natural Choice: Securing the Value of Nature, Defra (2011; URL: www.official-documents.gov.uk/document/cm80/8082/8082.pdf)
[2] Biodiversity 2020: A Strategy for England's Wildlife and Ecosystem Services, Defra (2011; URL: www.defra.gov.uk/publications/files/pb13583-biodiversity-strategy-2020-111111.pdf)
[3] European Landscape Convention, Council of Europe (2000; URL: http://conventions.coe.int/Treaty/en/Treaties/Html/176.htm)

Summary

The Merseyside Conurbation National Character Area (NCA) is a predominantly urban and suburban landscape, based around the settlements of Liverpool, Birkenhead, Bootle, Kirkby, Maghull, Huyton, Bebington and Wallasey. The NCA sits on a low-lying but gently rolling platform punctuated by low sandstone ridges and bisected by the lower estuary of the River Mersey. There is a dense settlement pattern of housing and large-scale industry focusing on the city of Liverpool and Birkenhead/east Wirral, with their diverse historic and cultural centres. Many of the city edge settlements function as commuter settlements. There is a large proportion of industrial land use, with docks, warehouses and associated commercial land, interlinked by an extensive transport infrastructure.

The River Mersey flows north-west through the area, creating an estuary with deep channels, mudflats and sand banks. The extensive mudflats and sand flats are internationally important feeding and roosting grounds for waders and wildfowl, with large areas noteworthy as Ramsar sites and Special Protection Areas. At the mouth of the estuary and along the wide coastal frontages of the open coast there is a range of wildlife habitats and designated sites, including Special Areas of Conservation. Inland, a network of green infrastructure is interspersed among the urban fabric, with Local Wildlife and Geological Sites, some Local Nature Reserves, parks (including Sefton Park and Birkenhead Park), cemeteries, gardens, golf courses, allotments, landfill sites and former railway land all providing important habitats for wildlife, as well as places of relative tranquillity.

Renowned as a port with historic local, regional, national and global associations, the Merseyside Conurbation NCA's maritime heritage is clearly evident. Many heritage assets are accessible and, in urban areas, the waterfront is now seen as a positive focus for regeneration. The coastal habitats provide coastal protection as well as opportunities for people to enjoy the natural environment. The network of parks and green spaces scattered among the built environment provides highly valued pockets of local tranquillity and can increase the resilience of the urban environment to the changing climate, as well as contributing to providing a sense of place and opportunities for people to have contact with nature. Provision of vegetation can cool and shade urban areas and improve permeability/infiltration rates.

There is pressure for development and regeneration within the Merseyside Conurbation NCA. Challenges exist in ensuring the area's natural environment is resilient enough to meet these demands. Securing and enhancing green infrastructure provides an opportunity to deliver the benefits of a high-quality, healthy natural environment, including managing surface waters and reducing flood risk; adapting urban environments for climate change resilience; enabling healthy activity, recreation and social cohesion; and conserving the area's distinctive biodiversity, landscape and heritage.

Click map to enlarge; click again to reduce.

Statements of Environmental Opportunity

SEO 1: Conserve and enhance natural assets, including the River Mersey, managing the estuary and coast sustainably while celebrating the rich maritime heritage, improving the landscape, promoting sense of place, providing habitats for wildlife and bringing multiple benefits for people.

SEO 2: Provide a network of green infrastructure to create a high-quality urban environment that underpins economic and social wellbeing, improves resilience to climate change, supports biodiversity, and provides recreational and educational opportunities.

SEO 3: Plan to connect habitats across the urban fabric, creating corridors and stepping stones for wildlife, to enhance the landscape, create local routes for walking and cycling, and provide accessible natural green spaces for people close to where they live and work.

SEO 4: Provide opportunities for people to understand the natural and historic character of the Merseyside Conurbation NCA, conserving heritage, reinforcing sense of place, providing opportunities for recreation and interpretation and enabling people to access and enjoy the distinctive environment.

Mouth of the Mersey between New Brighton Beach and Seaforth Docks.

Description

Physical and functional links to other National Character Areas

The Merseyside Conurbation National Character Area (NCA), centred on Liverpool and Birkenhead, extends northwards towards the Sefton Coast NCA and southwards towards the Wirral NCA. The area is also abutted by the Lancashire and Amounderness Plain NCA to the north-east, the Lancashire Coal Measures NCA to the east and the Mersey Valley NCA to the east and south-east. Although the Merseyside Conurbation shares a peninsula with the Wirral NCA, it is physically separated from the pastoral landscape of the Wirral NCA by a dramatic sandstone ridge which extends from Bidston Hill in the north through to Storeton in the south. The escarpment provides a strongly contrasting setting for the two NCAs.

The area's significant wildlife habitats span the coast and estuary, interlinking with the surrounding NCAs and the marine environment. The Mersey Estuary Special Protection Area (SPA) and Ramsar site crosses into the Mersey Valley NCA. The Mersey Narrows and North Wirral Foreshore SPA and Ramsar site and the Dee Estuary Special Area of Conservation (SAC) extend into the Wirral NCA; while the Ribble and Alt Estuaries SPA and Ramsar site and the Sefton Coast SAC are ecologically continuous with the Sefton Coast NCA.

The Merseyside Conurbation NCA is bisected by the River Mersey. The River Mersey starts in the Manchester Conurbation NCA at the confluence of the River Tame and the River Goyt, and flows west, passing through the Mersey Valley NCA where the river becomes tidal. It continues through the Merseyside Conurbation NCA, flowing out into Liverpool Bay and the Irish Sea in the north-west. The River Alt rises in Huyton in the Merseyside Conurbation NCA, draining into the Irish Sea at Hightown in the Sefton Coast NCA. The Leeds and Liverpool Canal also crosses the Merseyside Conurbation NCA, connecting the cities of Liverpool and Leeds. The coastline experiences complex sediment movement and high tidal ranges, with extensive sandy/muddy beaches along the coast between the Wirral Peninsula and Sefton.

There is a diverse range of views out of the Merseyside Conurbation NCA, including views of wind turbines from the coast, Blackpool to the north and north Wales to the south. The stacks of the oil refineries at Ellesmere Port in the Mersey Valley NCA are also visible along the Mersey Estuary.

There are significant road and rail linkages connecting the area with the surrounding NCAs. This extensive transport infrastructure includes the M53, M57, M58 and M62 motorways, the West Coast Main Line railway and the Merseyrail local network. Liverpool city centre is a regional, national and international cultural and administrative centre. The ports at Seaforth (where a new post-Panamax terminal is under construction), Bootle, Garston, Birkenhead and Liverpool provide for significant international trade and cruise liners, as well as international and local passenger ferries connecting with Ireland, Northern Ireland and the Isle of Man.

Flock of oystercatchers flying up the Mersey Estuary.

Key characteristics

- A low-lying but gently rolling platform punctuated by low ridges; however, the extensive urban development generally dominates the topography.
- The underlying geology of Triassic sandstone overlain by glacial till forms part of an aquifer supporting groundwater abstractions.
- Extensive intertidal mudflats/sand flats relating to the Mersey Estuary, although the waterfront is generally built up; wide coastal frontages along the open coast.
- Flowing north-west, the River Mersey dissects the area entering the Irish Sea in Liverpool Bay.
- Woodland cover is significant in such a heavily urban area, with new community woodland being created, while urban parks, cemeteries and suburban street plans provide trees and, in some cases, wooded habitats.
- Pockets of mainly versatile and good-quality farmland remain on the fringes of urban areas, often arable or horticultural.
- Field boundaries are generally hedgerows, sometimes marked by drainage ditches with grassy banks.
- Green infrastructure is interspersed through the urban fabric, while pockets of 'encapsulated countryside' provide important wildlife refuges and opportunities to link local people to the natural world.
- Renowned for its strong maritime heritage, there is much industrial archaeology, along with Victorian public parks and designed gardens.
- The built environment is characterised by a mix of red brick and sandstone within the city and a diverse range of modern materials in the outlying suburbs.

The iconic and historic Liverpool Waterfront. Old and new mix as the former docks are redeveloped.

- Distinct urban centres have amalgamated to form the Merseyside conurbation, surrounding the larger dominant centre of the city of Liverpool, but split by the River Mersey.
- Dense settlement pattern with extensive areas of housing and industry.
- Extensive transport infrastructure of motorways and railway lines, while the ports provide for significant international trade and cruise liners, as well as international and local passenger ferries.

Merseyside Conurbation today

The Merseyside Conurbation NCA is a predominantly built-up landscape on the east and west sides of the River Mersey, with approximately 81 per cent of land being classified as urban. The area is significantly influenced by the urban and suburban development that is focused around the city of Liverpool and its environs, together with the urban and industrial areas of Birkenhead to the north-east of the mid-Wirral sandstone ridge. The main settlements in the area are Liverpool, Birkenhead, Bootle, Kirkby, Maghull, Huyton, Bebington and Wallasey.

The Merseyside Conurbation NCA sits on a low-lying, gently rolling platform punctuated by low sandstone ridges. The lower estuary of the River Mersey cuts through the area, pinched between sandstone hills. The underlying sandstone geology forms part of an aquifer which supports groundwater abstractions. The dominant influence of urban development, however, overrides much of the underlying geology and landform.

Views can be expansive from elevated land such as the crests of Everton Park and on the Wirral from Oxton and Bidston Hill. There are also views from the open coast, estuary and the River Mersey, including aspects of the Liverpool and Birkenhead waterfronts.

The principal rivers are the Mersey and Alt and their tributary streams. The tidal River Mersey flows north-west through the area and enters the Irish Sea at Liverpool Bay. Its strong tides have created an estuary with deep channels, mudflats and sand banks. The Mersey Estuary comprises an unusual configuration with a narrow mouth and a wide, shallow basin. A large proportion of the estuary's waterfront is contained by coastal

Fazakerley Woods, a green space nestling in between industry, housing, a prison and university hospital.

defences, with vertical walls, docks and industrial premises. Sand dunes and a wide sandy foreshore are distinctive features along the open coastline. The River Alt rises in the urban area of Huyton, crossing the conurbation and flowing into the Irish Sea at Hightown. The Leeds and Liverpool Canal cuts across the conurbation, into Liverpool docks.

Woodland cover is significant in such a heavily urban area (5 per cent and predominantly broadleaved). Dibbinsdale Site of Special Scientific Interest and Local Nature Reserve supports the largest stand of ancient semi-natural woodland in Merseyside. Urban parks, cemeteries and suburban street plans provide trees and, in some cases, wooded habitats. The Mersey Forest covers much of the area, encouraging the establishment of new community woodland and other green space, recognising the important quality of life benefits these features provide.

Anthony Gormley's 'Another Place', Crosby foreshore.

There is a restricted rural hinterland with versatile, good-quality agricultural land. Small pockets of Grade 1 agricultural land can be found to the north, associated with the villages of Sefton and Lunt, between Maghull and Netherton. Clusters of Grade 2 and 3 land are found on the urban fringe to the east along the M57 to the north of Huyton and in Wirral along the M53 west of Bebington. The agricultural land provides supporting habitat for internationally important populations of overwintering birds.

The small areas of farmland are often arable or horticultural, although subject to the pressures of the urban fringe. Field boundaries are generally hedgerows and, in the farmland across north Merseyside, boundaries are sometimes marked by drainage ditches with grassy banks.

The Mersey Estuary, an area of transition from marine to freshwater habitats, supports marine, subtidal and maritime species. The estuary's extensive mudflats/sand flats and areas of salt marsh are important feeding and roosting grounds for waders and wildfowl, and large areas are designated as SPA and Ramsar sites. At the mouth of the estuary and along the open coast, the Mersey Narrows and North Wirral Foreshore SPA and Ramsar site contains a range of wildlife habitats, including manmade lagoons generated during the development of Royal Seaforth Docks, which have since become an important, unique habitat. The wide coastal frontages found along the open coast, straddling the borders with the Wirral and Sefton NCA's, form parts of the Dee Estuary and Sefton Coast SAC and Ribble and Alt Estuaries SPA and Ramsar site.

An extensive network of green infrastructure is interspersed throughout this largely urban area. Local Wildlife Sites, Local Nature Reserves, parks, canals, cemeteries, gardens, golf courses and allotments are all important refuges for wildlife, while providing places of relative tranquillity for people to enjoy. Private domestic gardens also represent a significant asset for the area. A number of conspicuous species have colonised the urban areas, with fox and peregrine falcon being among the most-publicised examples. The mosaic of built environment and open space provides opportunities for other urban specialist species, including house sparrow and starling.

There are parklands associated with country houses such as Croxteth and Bowring. The conurbation contains several Victorian public parks, including Sefton Park and Birkenhead Park. The latter was one of the first Victorian public parks, designed by Sir Joseph Paxton and an influence on Frederick Law Olmsted's design for Central Park in New York. Both these parks and St James Cemetery are now Grade 1 listed on the Register of Historic Parks and Gardens.

There is a dense settlement pattern of housing and large-scale industry. This is primarily an urban landscape reflecting major industrial, commercial and residential expansion from the 18th century onwards. The built environment is characterised by a mix of red brick and sandstone within the city and a diverse range of modern materials in the outlying suburbs. Traditional building materials are timber frame.

The city of Liverpool is a diverse historic and cultural centre with a strong identity, many iconic buildings, including the two famous cathedrals, the Royal Liver Building and the Liverpool Pier Head, and various waterfront regeneration developments. The 19th- and early 20th-century architecture reflects the wealth of Liverpool at this time. The historic centre and docklands of Liverpool Maritime Mercantile City are a World Heritage Site.

The ring road marks the general extent of Victorian Liverpool. Outside the ring road, the majority of development is post-war housing with some areas of farmland, golf courses and parkland associated with country houses. Many of the city edge settlements function as commuter settlements for the immediate proximity of Liverpool and the wider Liverpool and Manchester region.

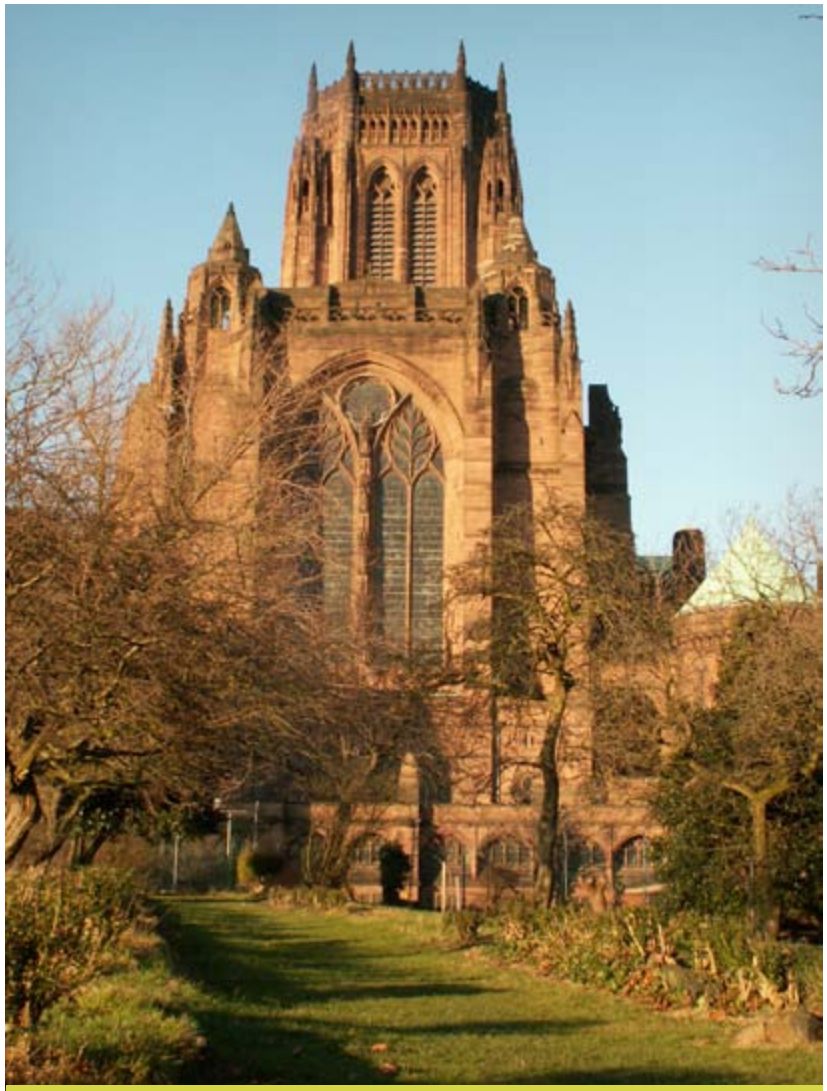
The high densities of population and busy transport network result in urban areas having low tranquillity, with the open spaces and canals offering areas of relative tranquillity locally. A sense of tranquillity may still be associated with the area's significant parkland heritage. A sense of tranquillity, space and light is

Redevelopment at the Albert Dock.

also provided by the coast and estuary, together with more local green spaces, Local Wildlife Sites and Local Nature Reserves.

There is a large proportion of industrial land use, with docks, warehouses and associated commercial land. These are interlinked by an extensive transport infrastructure. Motorways include the M53, M57, M58 and M62. The West Coast Main Line connects the area with London and major cities in the West Midlands and Scotland, while the Merseyrail local network is well used, with underground stations in Liverpool and Birkenhead. The ports provide transport of bulk goods in and out of the north-west, as well as international and local passenger ferries. The Mersey Estuary is also becoming an important site for offshore wind farms. Wirral, as part of the city region, has been designated as a Centre for Offshore Renewable Energy and is becoming a hub for business location. The area has seen new development with facilities and temporary storage space for offshore wind turbines. Crew transfer stations are also located along this frontage.

Recreation is supported by the area's rights of way network and the Trans Pennine Trail. The large population has access to Local Nature Reserves and country parks, as well as more formal facilities such as golf courses. There are also public parks and green spaces. However, accessible green space is not equally distributed across the area, with some locations deficient in quality and quantity of accessible green space. Riverside access is provided by promenades such as at Otterspool and New Brighton, while part of the North Wirral Coastal Park falls within the NCA, providing birdwatching opportunities over the foreshore and access to nearby beaches. The NCA's wide sandy frontage provides opportunities for recreation and is well used. Crosby Beach is home to the internationally acclaimed artist Antony Gormley's sculpture and popular visitor attraction 'Another Place', while the beach also marks the southern starting point of the Sefton Coastal Path.



Green space at Liverpool Cathedral.

The landscape through time

The Merseyside Conurbation NCA is underlain by Triassic (248–205 million years old) red mudstones and sandstones. The Lower Triassic sandstones of the Sherwood Sandstone Group form low ridges at Wallasey and Birkenhead on the Wirral Peninsula and Crosby on the north side of the Mersey Estuary. Pebbles are scattered through much of the sequence and include the well-known Chester Pebble Bed.

The main deposit of Quaternary age is till, which formed in and beneath glaciers and ice sheets. During the last glacial advance some 20,000 years ago, ice invaded from the Irish Sea area and deposited till, sands and gravels over much of the Merseyside area. Also associated with the glacial advance are deposits of fine, wind-transported silt known as loess. Mud and sand accreting in the Mersey are supplied largely by long-shore drift with some river-borne material. The resulting sand dunes and salt marshes act as natural barriers against marine flooding.

The 12th to the 16th centuries saw the development of towns and villages in Merseyside. Liverpool was an agricultural village up until the 16th century. Its role remained that of a market town, although its maritime dimension grew, especially in the 17th century. By the later 17th century, there was a notable shift towards a maritime, mercantile economy.

The development of Liverpool was influenced by the physical characteristics of the Mersey shoreline. The construction of the Old Dock in 1715 in a natural tidal pool off the River Mersey prompted a massive expansion of docks along the shoreline. These were all built on reclaimed land, either extending out into the Mersey or into the pool.

Historic centre and docklands in the City of Liverpool.

In response to the Industrial Revolution in Lancashire, Yorkshire and the Midlands, the docks expanded rapidly, with increasing demand for Cheshire salt and Lancashire textiles, coal, pottery and metal goods. The port became a focus of trade with the Caribbean, North America, South America, Africa and the Far East. The ever-increasing volume of cross-Atlantic shipping and demand for berthing space led to the development of docks and associated warehouses.

In the 18th century, the expansion of trade demanded the rapid building of warehouses around the docks at the expense of housing. The working population tended to live in the cellars of the warehouses. It was not until the 19th century that there was any significant expansion in the housing stock. Industrial expansion during the late Victorian to Edwardian period led to the large-scale construction of workers' housing in the form of grid-iron terracing.

Agriculture developed in this period to provide meat, dairy, arable and horticultural products for the urban populations. Milk was very important, the expansion of the transport system seeing the decline of urban cowhouses in the 19th century. A shant (local vernacular) was a rural agricultural dwelling designed for the use of migrant workers who mainly conducted seasonal labour in the north-west of England in the 19th century.

The development of extensive settlements on the east of the Wirral Peninsula commenced with the introduction of the steam ferry in the early 19th century. In 1886, the Mersey Railway Tunnel was opened, linking the Wirral and Liverpool. This led to further rapid growth. The formerly small communities of Wallasey, Birkenhead, Bebington and Bromborough expanded significantly and amalgamated into a single urbanised area. The mid 19th century saw the establishment of docks at Birkenhead and in the Wallasey Pool, and continuing development for a wide range of industry along the banks of the Mersey. The improved communications also allowed Liverpool merchants to buy up and develop large estates in Wirral. The steel and ship-building industry transformed Birkenhead into a major 19th-century industrial town with associated residential housing. Villages were constructed by wealthy industrialists, such as at Bromborough Pool and Port Sunlight, to provide homes for their factory workers.

Until the early years of the 20th century, Merseyside did not have its present wide fringe of suburban development. From the 1920s onwards, the combination of council houses built to house families displaced by slum clearance in Liverpool and Bootle, and speculative private building, led to rapid urban growth into the surrounding small towns and villages. In 1934 the Mersey Railway Tunnel was supplemented by a vehicle tunnel, the Queensway Tunnel. A third tunnel opened in 1971, the Kingsway Tunnel, connecting with the M53 motorway. These communication links contributed to the growth of commuting between Liverpool and Wirral.

Historically, field systems were more visible in the landscape, even as late as 1939. Liverpool was heavily bombed during the Second World War, and a large part of the city destroyed or severely damaged. This contributed to severe post-war housing shortages. The built-up area of Merseyside increased considerably with many new housing estates associated with post-war redevelopment, as well as slum clearance. In the north-east of Merseyside, the large-scale development of Kirkby is wholly a product of the period since 1952. In the 1960s a new and vibrant pop culture spawned in Merseyside, foremost of which was the role played by the Beatles.

This period of growth came to a sudden halt in the 1970s. Housing policy switched from the huge slum clearances towards the improvement of older houses. In the 1970s the ports, not able to adapt to the introduction of containerisation, lost much trade and, as a consequence, became redundant, leaving large areas of derelict land and many of the docks abandoned.

In the late 20th and early 21st century, the Merseyside conurbation experienced new growth through leisure and tourism developments. Some docks are still involved in shipping. The working docks have significantly increased

the amount of freight and cargo landed. Those that closed are still culturally important, with some used for socialising, museums and art galleries such as Tate Liverpool, shopping and sports. In 1984, Liverpool hosted the country's first International Garden Festival, regenerating a former household waste site on land adjacent to the River Mersey. The Maritime Mercantile City in Liverpool was awarded World Heritage Site status in 2004 and in 2008 Liverpool was nominated the European Capital of Culture. Many of the area's parks have undergone regeneration and offer a wide range of facilities and opportunities for residents and visitors alike.

Liverpool ONE development, including the Chevasse Park and new public realm in the original "Pool" of Liverpool.

Ecosystem services

The Merseyside Conurbation 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 Merseyside Conurbation NCA is contained in the 'Analysis' section of this document.

Provisioning services (food, fibre and water supply)

- **Water availability:** The high urban demand for water and development pressures mean that the sustainable use of water is important in this area. Much of the Merseyside conurbation's water comes from the 'integrated resource zone' which includes sources outside this NCA (for example, Lake Vyrnwy and the River Dee in Wales). The Merseyside Conurbation NCA overlays major sandstone aquifers, with groundwater abstractions for public water supply in the Mersey area. Surface water abstraction within the Lower Mersey area is heavily dominated by industrial abstraction. There are no surface water abstractions for public water supply within the Lower Mersey area, primarily due to water quality issues. Water is abstracted in the Alt catchment from both surface and groundwater sources, for a variety of purposes including public and private water supply.

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

- **Climate regulation:** High-density urban areas such as those found in the Merseyside Conurbation NCA are potentially vulnerable to heat island and warming effects. The coastal location of the NCA provides it with the benefits of 'cooling sea breezes' in managing heat island effects. Adaptation can increase the resilience of the urban environment to the changing climate – for example, the provision of vegetation can cool and shade urban environments as well as providing green space and green routes close to where people live. The Mersey Estuary contains rich silts and muds which may act as a carbon sink.

- **Regulating water quality:** Significant water quality improvements have occurred and, as a result, both salmon and sea trout have returned to the Mersey. In urban areas, the waterside is now seen as a positive focus for regeneration. Urbanisation can change land cover to more impervious surfaces causing water to run off land more quickly, taking with it any contaminants. These problems are particularly found in highly populated areas where traffic densities and road networks are concentrated and where there is a legacy of industrial activity.

- **Regulating water flow:** The extensive built-up areas of the towns, roads and industrial areas create impervious surfaces that cause water to run off land more quickly. Improving permeability in urban and industrial areas through providing green spaces can improve infiltration rates. There is tidal flood risk at several locations along the Mersey Estuary and around the Wirral Peninsula, which can arise from high water levels and wave action, together with the funnelling of water into the estuary from onshore winds. There are tidal defences for many of the areas at risk.

- **Regulating coastal flooding and erosion:** Coastal habitats have a key role to play in providing for coastal protection as well as a recreation and leisure resource that may come under increasing visitor pressure as the climate changes. The retention of habitats – including mudflats/sand flats, salt marshes and sand dunes – can provide a cost-effective defence against erosion/flooding. The northern Wirral coastline is significantly influenced by the Dee and Mersey estuaries at either end of the frontage. Sand dunes

and the environmentally designated wide sandy foreshore have formed along the length of the frontage, providing natural protection to coastal settlements, including Wallasey and New Brighton.

Cultural services (inspiration, education and wellbeing)

- **Sense of place/inspiration:** Sense of place is dominated by the River Mersey and its historic waterfront. The conurbation has experienced new growth through leisure and tourism developments with Liverpool nominated as the European Capital of Culture in 2008. While most of the area is urban, there are isolated pockets of green infrastructure. The natural heritage, Mersey Estuary, coastline, woodlands, parks and urban green spaces are important as recreational areas being close to where people live, as well as providing valuable wildlife corridors, contributing to providing a sense of place and providing opportunities for people to have contact with the natural world. Wildlife-rich areas can help to reconnect urban populations with the natural environment close to where they live, and allow them to enjoy the health and social rewards it affords them.

- **Sense of history:** Renowned for its strong maritime history, the Merseyside Conurbation NCA's history is integral to its importance as an international visitor destination. Many heritage assets are accessible. Liverpool Maritime Mercantile City was given World Heritage Site status by UNESCO in 2004. Wirral's heritage includes the industrial landscape, based around steelworks and ship-building, and the villages built to provide housing for factory workers. There are a number of parklands associated with country houses such as Croxteth and Bowring, and the Grade 1 listed Victorian parks of Sefton and Birkenhead.

- **Tranquillity:** Tranquillity is not a feature typically identified with this largely urban NCA. A sense of tranquillity may nevertheless still be associated with some of the area's parks, green spaces and in some locations along the waterfronts and coastline. These open spaces provide important, highly valued pockets of tranquillity locally. In among the urban areas, pockets of tranquillity can provide sensory environments which have a calming and restorative effect on people's health and wellbeing.

The heart of the Liverpool Waterfront and World Heritage Site.

- **Recreation:** In extensive urban areas, local green spaces provide opportunities for people to engage with nature close to where they live and work. The NCA's wide sandy frontage, with its associated paths and

promenades, provides opportunities for recreation and is well used, as do the area's public parks and green spaces. Local woodlands and the Mersey Forest have generated local interest to increase woodland and other habitats, and have created wildlife corridors and access for people. Local Nature Reserves and country parks also provide opportunities for people to enjoy the natural environment. The Liverpool City Region Green Infrastructure Framework noted that, in some areas, there is a lack of green infrastructure open to the public.

- **Biodiversity:** There are internationally important sites around the Mersey Estuary, with extensive intertidal mud/sand flats and wide coastal frontages found along the open coast. Inland, a network of green infrastructure is interspersed around and through this largely urban area. Local Wildlife Sites, Local Nature Reserves, parks, cemeteries, gardens, golf courses, allotments and previously used land, such as landfill sites and former railway land, are all important refuges for wildlife. Merseyside is an area of high habitat fragmentation, although a number of notable species have colonised the urban environment.

Chavasse Park, open space in the city centre of Liverpool.

Statements of Environmental Opportunity

SEO 1: Conserve and enhance natural assets, including the River Mersey, managing the estuary and coast sustainably while celebrating the rich maritime heritage, improving the landscape, promoting sense of place, providing habitats for wildlife and bringing multiple benefits for people.

For example by:

- Capitalising on the strengths of the River Mersey and the unique character of the area, ensuring that the legacy of maritime heritage and internationally important remains of the transport industry are legible within the landscape.
- Seeking ways to protect, conserve, manage and interpret the area's historic and cultural identity to ensure a better understanding of past land use, and raising awareness and increasing public engagement, enjoyment and understanding of the historic environment, particularly linking to the ports, trade and industry.
- Supporting the management of the World Heritage Site, recognising its outstanding universal value.
- Promoting the benefits of a clean and healthy waterside environment in the Merseyside Conurbation NCA, particularly through projects that integrate multiple objectives.
- Maintaining and enhancing the coastal and estuarine habitats, allowing the natural evolution of the Mersey Estuary, as well as the dynamic process of erosion and accretion on mudflats/sand flats and salt marshes, to continue where possible.
- Seeking opportunities to enhance coastal and estuarine habitats alongside coastal adaptation programmes and, where possible, ensuring the retention of mudflats/sand flats, salt marshes and sand dunes, to provide a cost-effective defence against erosion/flooding.
- Identifying suitable locations for river restoration, reconnecting rivers to their flood plains and taking opportunities to de-culvert and re-naturalise rivers to provide space for water, enabling natural geomorphological processes and dissipating the energy of the flows, while also creating habitats for wildlife.
- Contributing to wider, whole catchment approaches to flood and water management, through delivering catchment restoration projects.
- Enabling better public access to the coast, while being sensitive to any important features.

Waders waiting for the turn of high tide at Perch Rock, New Brighton Lighthouse.

Provide a network of green infrastructure to create a high-quality urban environment that underpins economic and social wellbeing, improves resilience to climate change, supports biodiversity, and provides recreational and educational opportunities.

For example by:

- Safeguarding and enhancing green infrastructure – including open spaces (parks, woodlands, informal open spaces, nature reserves, accessible countryside, the natural elements of historic sites, built conservation areas and civic spaces); linkages (river corridors, promenades and canals, pathways, cycle routes and greenways); and networks of 'urban green' (the collective resource of private gardens, allotments, pocket parks, street trees, verges and green roofs) – so that they provide multifunctional spaces.
- Planning for significant new green infrastructure provision and linking existing natural assets.
- Managing future developments so that green infrastructure incorporates accessible greenspace, sustainable drainage systems, new habitats and corridors linking urban areas with more open countryside.
- Retrofitting green infrastructure to adapt to urban heat, providing shade and passive cooling.
- Conserving woodlands, including ancient woodlands; conserving trees in urban parks, cemeteries and suburban streets; and increasing tree canopy cover, street trees and areas of green open space – to enhance the urban and historic landscape, to provide wildlife habitat and urban cooling, and to improve quality of life.
- Establishing new woodlands and other habitats as part of the Mersey Forest in appropriate urban areas, settlements and employment sites (such as school playing fields, open spaces, streets, highway verges, institutional grounds, derelict land and development sites), for their many benefits, including greener walking routes linking to the strategic green links and greenway network, and providing access and recreational opportunities where appropriate.
- Managing and enhancing habitats in the conurbation, including the internationally, nationally and locally important wildlife sites and semi-natural habitats, such as wetland and grassland, and creating buffers to benefit habitats.
- Managing the small pockets of farmland for a range of benefits – providing local food and habitats for wildlife, and enabling people, including those in urban and urban fringe locations, to learn about farming and the environment; and managing agricultural land in suitable locations to provide supporting habitats for wildlife such as the internationally important populations of overwintering birds.
- Developing sustainable urban drainage systems in new and existing development to improve infiltration and manage surface water as well as increasing green space within urban and industrial areas to provide multiple benefits for access, recreation and biodiversity.

SEO 3: Plan to connect habitats across the urban fabric, creating corridors and stepping stones for wildlife, to enhance the landscape, create local routes for walking and cycling, and provide accessible natural greenspaces for people close to where they live and work.

For example by:

- Planning to manage, expand and connect fragmented pockets of habitats in urban areas into a more cohesive whole, enabling the movement of species and conserving their wildlife and historical interest as well as providing opportunities for people to learn about and enjoy the natural environment.
- Conserving and managing the banks of linear features – such as hedgerows, rivers, promenades, ditches, roads and railways – for their biodiversity interest, reconnecting habitats and providing a network of semi-natural habitat within the urban fabric.
- Protecting, restoring and creating high-quality recreation areas; managing the existing network of local walking and cycling routes (including existing and future coastal access provision); and ensuring that people have access to green space and green routes close to where they live – to enable people to increase exercise and promote mental wellbeing.
- Improving the opportunities for walking and cycling as part of everyday life in the Merseyside conurbation; ensuring that paths are maintained and well signposted, and that some surfaced paths are provided for use by all levels of ability.
- Promoting sustainable recreation and education opportunities linked to biodiversity (for example, at Local Wildlife Sites, Local Nature Reserves and country parks) and providing links between urban areas and the surrounding coast and countryside. Providing interpretation for people to understand and enjoy wildlife and the benefits of a healthy natural environment.

Green infrastructure in Liverpool's Knowledge Quarter.

SEO 4: Provide opportunities for people to understand the natural and historic character of the Merseyside Conurbation NCA, conserving heritage, reinforcing sense of place, providing opportunities for recreation and interpretation, and enabling people to access and enjoy the distinctive environment.

For example by:

- Encouraging improved management to bring and maintain nationally and locally designated habitats into favourable condition; and protecting and enhancing the extent and quality of semi-natural habitats. Creating buffers to benefit habitats such as woodland, wetland, grassland and parkland.
- Reconnecting people to nature by enhancing urban environments, including wildlife-friendly management of green spaces, and by embedding biodiversity considerations and the need to adapt to climate change, as a means of involving people in the conservation of the wider environment.
- Improving the provision of accessible green space – particularly in those areas that are currently deficient – by creating new habitats such as woodlands and wetlands to benefit people and wildlife.
- Working with local communities to seek opportunities for sustainably managing food production in urban areas; and enabling urban communities to grow food locally through providing allotments, amenity space and roofs within housing areas, and community gardens.
- Creating new woodlands in suitable locations, such as on the fringes of urban and industrial areas, for multi-purpose use as part of the Community Forest initiative including innovative wood fuel, timber and forest industries; and ensuring that new woodland strengthens the local landscape, enhances biodiversity, and provides opportunities for recreation and benefits for water quality, soil quality and flood risk management, where possible.
- Protecting the sense of place by conserving and enhancing the parks and urban green spaces; increasing the provision of green spaces, as well as enabling people to access and enjoy them, and other natural environments, including the coast and countryside.
- Encouraging urban populations to engage with and help to manage the natural environment through access provision and volunteering activities within local green spaces.
- Improving tranquillity and creating more tranquil spaces within existing and new development – through planning and urban design and through the management of green infrastructure – to provide quiet enjoyment and to improve wellbeing through increased contact with the natural environment.
- Interpreting the geodiversity and landform, such as natural erosion and coastal processes.

Birkenhead Park, thought to be the inspiration for Central Park New York.

Supporting document 1: Key facts and data

Total area: 28,679 ha

1. Landscape and nature conservation designations

There are no protected landscapes within the Merseyside Conurbation.

Source: Natural England (2011)

1.1 Designated nature conservation sites

The NCA includes the following statutory nature conservation de1signations:

Tier	Designation	Name	Area (ha)	% of NCA
International	Ramsar	Mersey Estuary; Ribble and Alt Estuaries; Mersey Narrows and North Wirral Foreshore	36	<1
European	Special Protection Area (SPA)	Mersey Estuary SPA ; Ribble and Alt Estuaries SPA; Mersey Narrows and North Wirral Foreshore	36	<1
	Special Area of Conser-vation (SAC)	Sefton Coast SAC; Dee Estuary SAC	8	<1
National	National Nature Re-serve (NNR)	n/a	0	0
National	Site of Special Scientific Interest (SSSI)	A total of 6 sites wholly or partly within the NCA	110	<1

Source: Natural England (2011)

Please note: (i) Designated areas may overlap (ii) all figures are cut to Mean High Water Line, designations that span coastal areas/views below this line will not be included.

It should be noted that substantial areas of the SPA, SAC and Ramsar sites associated with this area cover intertidal areas, below Mean High Water Line, and the figures above do not reflect the full extent of the resource.

There are 73 local sites in the Merseyside Conurbation NCA covering 962 ha which is 3 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: 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)	% of SSSI land in category condition
Unfavourable declining	0	0
Favourable	61	56
Unfavourable no change	4	4
Unfavourable recovering	43	40

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 ranges from 1 to 85 m above sea level. The mean elevation is 27 m.

Source: Natural England (2010)

2.2 Landform and process

The area is underlain by Triassic sandstone overlain by glacial boulder clay. These combine to create a low-lying but gently rolling platform punctuated by numerous low sandstone ridges. Accretion of mud and sand from the River Mersey formed from material brought down the rivers of the region, the present salt marshes and sand dunes today provide a natural barrier against marine flooding of the low-lying agricultural land of Merseyside.

Source: Urban Mersey Basin Natural Area Profile

2.3 Bedrock geology

The NCA is underlain by Triassic sandstones and siltstones. The sandstones were formed in a variety of circumstances; the Sherwood Sandstone series being deposited in riverine conditions; and the Mercia Mudstone Group probably in a tidal, brackish environment, not unlike the Dee Estuary today. The harder coarse red Triassic sandstones outcrop along the Mersey Valley between Lymm and Runcorn and underlie Edge Hill and Everton in Liverpool.

Source: Urban Mersey Basin Natural Area Profile

2.4 Superficial deposits

The Merseyside Conurbation contains deposits of blown sand, glacial till, glacial sand and gravel, silt and small amounts of peat.

Source: Natural England (2010)

2.5 Designated geological sites

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

There are 9 Local Geological Sites within the NCA.

Source: Natural England (2011)

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

2.6 Soils and Agricultural Land Classification

The vast majority (81 per cent) is classified as urban. Small pockets of Grade 1 land can be found to the south-west of the NCA, with Grade 2 and 3 land found on the urban fringe to the north. Areas of Grade 4 and 5 land are associated with the estuary and adjacent sand dunes.

Source: Natural England (2010)

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

Agricultural Land Classification	Area (ha)	% of NCA
Grade 1	1,635	6
Grade 2	1,844	6
Grade 3	1,118	4
Grade 4	46	<1
Grade 5	94	<1
Non-agricultural	604	2
Urban	23,128	81

Source: Natural England (2010)

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

3. Key water bodies and catchments

3.1 Major rivers/canals

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

Name	Length (km)
River Mersey	n/a
Leeds and Liverpool Canal	23
Manchester Ship Canal	1
River Alt	7

Source: Natural England (2010)

The River Mersey is a significant feature associated with the area; however, it is tidal throughout the area therefore not included in this data.

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

3.2 Water quality

The total area of Nitrate Vulnerable Zone is 6,039 ha, or 21 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 http://maps.environment-agency.gov.uk/wiyby/wiybyController?ep=maptopics&lang=_e

4. Trees and woodlands

4.1 Total woodland cover

The total area of woodlands over 2 ha within the Merseyside Conurbation NCA is 1,439 ha and covers 5 per cent of the NCA area. It also includes the Mersey Forest Community Forest.

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

4.2 Distribution and size of woodland and trees in the landscape

Urban parks (and cemeteries) and suburban street plans provide trees and in some cases wooded habitats.

Source: Merseyside Conurbation Draft Historic Profile

4.3 Woodland types

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

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

Woodland type	Area (ha)	% of NCA
Broadleaved	1,362	5
Coniferous	14	<1
Mixed	19	<1
Other	44	<1

Source: Forestry Commission (2011)

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

Woodland type	Area (ha)	% of NCA
Ancient semi-natural woodland	0	0
Ancient re-planted woodland (PAWS)	0	0

Source: Natural England (2004)

5. Boundary features and patterns

5.1 Boundary features

Due to the ostensibly urban nature of the NCA boundary features are limited and not a major feature of the landscape. To a lesser extent, the Leeds and Liverpool Canal and the railway network form important landscape corridors.

Source: Merseyside Conurbation Countryside Character Area description; Countryside Quality Counts (2003)

5.2 Field patterns

The amount of open countryside within the urban fabric of the Merseyside conurbation is extremely limited and generally is restricted to isolated pockets of versatile, high quality Grade 2 land.

Source: Merseyside Conurbation Countryside Character Area description; Countryside Quality Counts (2003)

6. Agriculture

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

6.1 Farm type

In 2009 there were 59 farms registered in Merseyside Conurbation. The majority of these farms are either arable or horticultural.

Source: Agricultural Census, Defra (2010)

6.2 Farm size

The majority of holdings within the NCA are between 5 and 50 ha accounting for 53 per cent of the holdings and 20 per cent of the total farmed area. Larger holdings (over 50 ha) cover 79 per cent of the area.

Source: Agricultural Census, Defra (2010)

6.3 Farm ownership

2009: Total farm area = 2,716 ha; owned land = 1,590 ha

2000: Total farm area = 2,589 ha; owned land = 1,665 ha

Source: Agricultural Census, Defra (2010)

6.4 Land use

In 2009 44 per cent of the farmed land was used for cereal production with a further 29 per cent recorded as grass/uncropped land. The remaining farmed land was recorded as oilseeds (6 per cent), cashroots (4 per cent) and vegetables (3 per cent).

Source: Agricultural Census, Defra (2010)

6.5 Livestock numbers

Due to the low numbers of holdings in this NCA no reliable estimates livestock data is available from agricultural census data.

Source: Agricultural Census, Defra (2010)

6.6 Farm labour

Due to the low numbers of holdings in this NCA no reliable estimates livestock data is available from agricultural census data.

Source: Agricultural Census, Defra (2010)

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

7. Key habitats and species

7.1 Habitat distribution/coverage

The Mersey estuary provides extensive intertidal flats and fringing salt marshes. These act as important feeding and roosting grounds for wintering waders and wildfowl and sustain internationally significant populations of several species. Coastal sand dunes are found in the far north-west of the NCA and straddle the border with Wirral. Lowland heathland is mapped to the west and reedbeds to the south of Birkenhead.

Source: Urban Mersey Basin Natural Area Profile, Natural England (2010)

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; 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
Broadleaved mixed and yew woodland (broad habitat)	515	2
Coastal sand dunes	95	<1
Coastal and flood plain grazing marsh	90	<1
Reedbeds	33	<1
Lowland heathland	8	<1
Mudflats	6	<1
Lowland dry acid grassland	3	<1
Lowland meadows	2	<1

Source: Natural England (2011)

- Maps showing locations of Priority Habitats are available at: http://magic.defra.gov.uk/website/magic/ – select 'Habitat Inventories'

7.3 Key species and assemblages of species

- Maps showing locations of Priority Habitats are available at: http://magic.defra.gov.uk/website/magic/ – select 'Habitat Inventories'
- Maps showing locations of S41 species are available at: http://data.nbn.org.uk/

8. Settlement and development patterns

8.1 Settlement pattern

The area is significantly influenced by the urban and suburban development that is focused around Liverpool and Birkenhead.

Source: Merseyside Conurbation Countryside Character Area description; Countryside Quality Counts (2003)

8.2 Main settlements

The main settlements in the NCA are; Liverpool, Birkenhead, Bootle, Kirkby, Maghull, and Wallasey. The total estimated population for this NCA (derived from ONS 2001 census data) is: 912,868.

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

8.3 Local vernacular and building materials

Traditional building materials are timber frame, brick from 18th century with Welsh slate and tile roofs.

Source: Merseyside Conurbation Countryside Character Area description

9. Key historic sites and features

9.1 Origin of historic features

Primarily an urban landscape reflecting major industrial, commercial and residential expansion from the 18th century onwards, but with mainly 19th and 20th century development visible. Internationally important remains of the transport industry from river and coastal trade, to cross-Atlantic shipping, early development of rail industry and inter-war development of aviation.

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

9.2 Designated historic assets

This NCA has the following historic designations:

- 15 Registered Parks and Gardens covering 736 ha
- 1 World Heritage Site; Maritime Mercantile City
- No Registered Battlefields
- 18 Scheduled Monuments
- 2,360 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

- Fifteen per cent of the NCA, 736 ha, is classified as being publically accessible.
- There are 75 km of public rights of way at a density of 0.3 km per km2.
- 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	0	0
Country Parks	424	1
CROW Access Land (Section 4 and 16)	122	<1
CROW Section 15	<1	<1
Village Greens	<1	<1
Doorstep Greens	19	<1
Forestry Commission Walkers Welcome Grants	366	1
Local Nature Reserves (LNR)	199	1
Millennium Greens	0	0
Accessible National Nature Reserves (NNR)	0	0
Agri-environment Scheme Access	781	3
Woods for People	n/a	n/a

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 highest tranquillity is found at the far north of the NCA on the Sefton border. The lowest values are associated with urban areas. Due to the pronounced urban nature of the NCA the majority experiences low levels of tranquillity.

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

Tranquillity	Tranquillity Score
Highest value within NCA	14
Lowest value within NCA	-112
Mean value within NCA	-59

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 the whole area is disturbed or urban, with less disturbed areas located towards the edge of the NCA. A breakdown of intrusion values for this NCA is detailed in the table below.

Intrusion category	1960s (%)	1990s (%)	2007 (%)	Percentage change (1960s-2007)
Disturbed	29	29	26	-3
Undisturbed	n/a	n/a	n/a	n/a
Urban	69	70	74	5

Sources: CPRE (2007)

Notable trends from the 1960s to 2007 are the slow but steady urbanisation of 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 Inventory of Woodland & Trees, Forestry Commission (2003)
- 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)Detailed River Network, Environment Agency (2008)

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

Supporting document 2: Landscape change

Recent changes and trends

Trees and woodlands

- Woodland cover is approximately 5 per cent of the NCA and the majority of this falls within the Mersey Forest. It provides a network of green spaces, woodlands, street trees and creates high quality environments. There has been a significant block of new planting east of Maghull and Lydiate along the River Alt.

- Recent large-scale community woodland planting includes Mab Lane, a derelict area/old school playing field covering 23 ha in the West Derby/ Croxteth area of Liverpool, which was planted in 2010. Other large-scale community woodland schemes include Northwood Forest Hills in Kirkby, where woodland/habitat management (including large area of wetland) has taken place on a previously derelict area, linked into the community through a significant programme of street tree planting (200 street trees planted). Bidston Moss landfill has been transformed with planting and access routes.

- There has been considerable attention to managing the existing woodland assets within the Merseyside Conurbation. The number of woods brought into management has increased.

- Many new trees are maturing, while the Mersey Forest has raised local awareness of the value of green spaces.

Boundary features

- The extent of active boundary management or restoration is limited. The estimated boundary length for the area is about 315 km.

- Total length of Countryside Stewardship agreements for boundary features between 1999 and 2003 is equivalent to about 2 per cent of this total. This included fencing (1 km), hedge management (2 km), hedge planting and restoration (1 km), and restored boundary protection (1 km). The extent of active boundary management or restoration is limited.

Agriculture

- Progressive loss of overall farmed area; decline in major farmed units has stabilised, but there is marked expansion in numbers of 'other' and 'small' farm holdings. Total farm area increased from 2,589 ha in 2000 to 2,716 ha in 2009.

- Most extensive annual agreements in 2003 were for overwintered stubble followed by a spring crop (18 ha) and wild bird seed mixture (9 ha).

- There has been some uptake of Entry and Higher Level Stewardship Schemes on the fringes of urban areas.

Settlement and development

- There is evidence of significant urban development along the Mersey waterfront for leisure and tourism and city centre rejuvenation in Liverpool. Albert Dock was revitalised in the 1980s as a leisure and tourist venue and

includes the Liverpool Tate Art Gallery. There has been an improvement in water quality in the docks.[4]

- In 2007, a new cruise terminal was opened in Liverpool, located alongside the Pier Head in the city centre. At Seaforth Dock a new post-Panamax terminal is under construction. The Liverpool Canal Link was completed in 2009 re-connecting the Leeds and Liverpool Canal to Liverpool's South Docks via Stanley Dock. Wirral's waterfront has also had regeneration, such as at New Brighton.

- Several major regeneration projects have taken place, with investment in shopping, transport, office developments, parks, leisure, culture and education. In the housing sector, new typologies have emerged, such as loft living and luxury apartment blocks in the former dock areas.

Semi-natural habitat

- Local evidence suggests that much green space is now protected and undergoing positive management.

- In 2010, 56 per cent of Sites of Special Scientific Interest (SSSI) were in favourable condition, 40 per cent were in unfavourable recovering condition and 4 per cent were in unfavourable condition.

- Monitoring of Local Wildlife Sites (LWS) within North Merseyside has found that they continue to be a valuable asset to wildlife and local populations. For three years between 2008 and 2010, the most popular activity within LWSs has been walking and dog walking. The main impact on LWS within Merseyside is development. Losses of habitat are still taking place although the rate of loss has slowed. Tipping and burning continue to be the negative activities recorded most often. Some positive management is in place but all sites require some form of management for conservation purposes, especially invasive species control and scrub control.[5]

Albert Dock complex of docks, buildings and warehouses.

[4]Water quality improvements in Liverpool Docks: The role of filter feeders in algal and nutrient dynamics. *Marine Ecology* 17(1–3): 197–211, SB Wilkinson, W Zheng, JR Allen et al. (1996)

[5]*The Status of Local Sites in Merseyside Annual Monitoring Report 2010, Merseyside Local Sites Partnership, Final Draft Report*, Tom King, Merseyside Environmental Advisory Service (November 2011; URL: www.merseysidebiodiversity.org.uk/v2GenPDF.asp?doc=pdfs/Local Sites Annual Monitoring Report 2010.pdf&title=Local Wildlife Sites Monitoring Report 2010&text=Results of the monitoring of Merseyside Local Wildlife Sites carried out during 2010)

Historic features

- In 1918 about 5 per cent of the area was historic parkland. By 1995 it is estimated that 25 per cent of the 1918 area had been lost. About 55 per cent of the remaining parkland is covered by a Historic Parkland Grant, and 3 per cent is included in an agri-environmental scheme. About 82 per cent of historic farm buildings remain unconverted. Most are intact structurally.

- There are two Grade 1 listed parks on the English Heritage Register of Parks and Gardens, namely Birkenhead Park and Sefton Park.

Coast and rivers

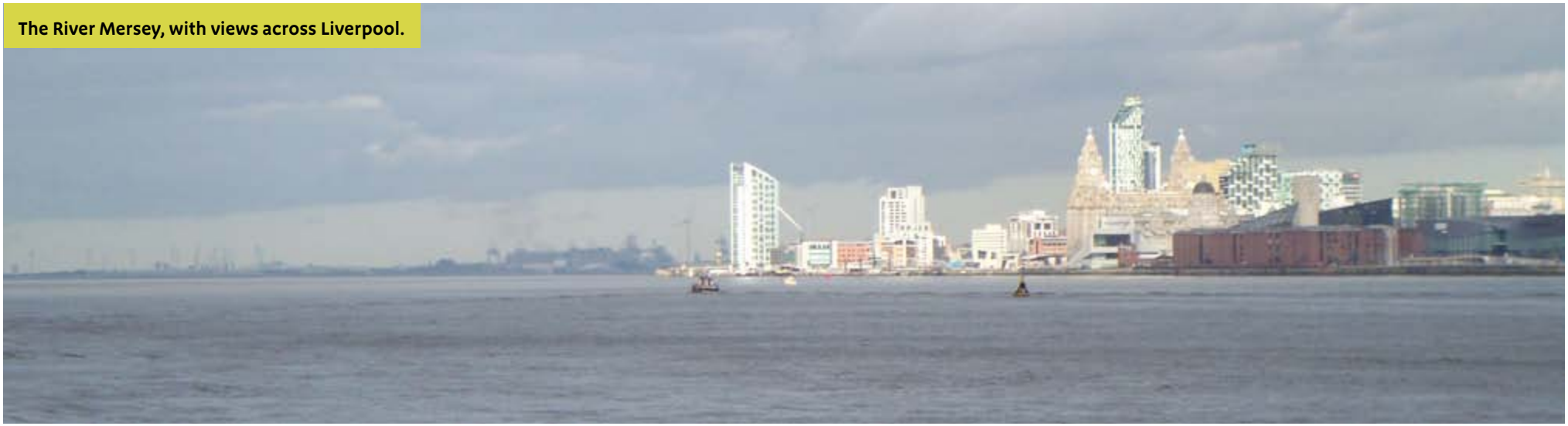
- Historically, the Mersey Estuary catchment has been associated with industries such as shipping, manufacturing, the chemical industry, mining and agriculture. These left a legacy of environmental pollution. Accumulated pollution in the sediment of the estuary remains a problem. However, through successful campaigns and investment, the River Mersey's water quality has greatly improved as shown by the return of salmon and trout to the river.[6]

- The River Alt has been reconnected to its flood plain in Lunt Meadows by Lunt village. This scheme is designed for the control of water levels and to facilitate water storage in times of flood; and the reduction of pollution in the River Alt. The scheme will also create and restore habitats including reed beds, flood plain grazing marsh and grassland along the River Alt.

Minerals

- There is very limited extraction of sand and gravel in Merseyside. Most is marine-dredged material landed principally in the Port of Liverpool, but also at Bromborough on the Mersey.

The River Mersey, with views across Liverpool.



[6] *North West River Basin District: Challenges and choices*, Environment Agency (June 2013)

Drivers of change

Climate change

The North West Landscape Framework Climate Change Assessment 2010/11[7] assessed the exposure of the wider area and its natural assets to the impacts of climate change and its capacity to adapt.

- Urban areas including historic town cores and more recent residential and commercial development, punctuated by areas of amenity open space are vulnerable to climate change. The lack of habitats and generally flat topography can restrict species movement. Urban suburbs with extensive gardens containing many flowering plants can act as a substitute habitat in some areas. Possible climate change adaptation actions include providing a green infrastructure network of green roofs and walls, green space, street trees, and suburban gardens. Urban parks are generally a highly modified and managed resource, so adaptation to climate change could be built in to management. There may be an increase in management requirements. For example grass is sensitive to drying out and to flooding. Waterlogged surfaced could become muddy in wet winters. An increased growing season could lead to an increased demand for management. Warm weather may encourage more people to visit urban green spaces increasing the exposure to recreational pressure and fire risk.

- Drought and flooding could cause a loss of characteristic vegetation, while a longer growing season could lead to increased vegetation growth, making it easier to recreate 'exotic' Victorian gardens. Warmer temperatures could cause an increase in pests and diseases. High winds could cause damage/loss of veteran trees and fewer frost events could cause an increase in pests and diseases, making traditional planting schemes in historic parks and gardens increasingly difficult to maintain.

- Mudflats/sand flats and salt marshes are vulnerable to climate change. Sea level rise due to storm events will affect this landscape type, particularly where they lie in front of flood defences and consequently have no means of retreat. This could result in loss of base of estuarine food webs and the loss of loafing and roosting sites for key bird species. There may be changes in sediment movement as river systems change in summer and winter. Changing marine acidity as CO_2 is absorbed by sea water, may affect coastal species such as sea urchins that need calcareous substrate as a source to build shells.

- An assessment tool (STAR Tools[8]) has been used to calculate temperature values for the Liverpool City Region, based on UK Climate Change projections, to show the impact of increasing or decreasing green cover on maximum surface temperature.[9] Decreasing green cover by 10 per cent increases maximum surface temperature across all areas, but the increase is particularly significant in urban areas. Birkenhead and Liverpool's coastal location reduces the impact, but only on days where there is a breeze. Other areas such as Kirkby also see significant temperature rise. In contrast increasing green cover by 10 per cent keeps temperatures close to the current levels.

- The built environment stores heat during the day and re-radiates it at night (causing the urban heat island effect), thus enhancing night-time temperatures. In summer this can present a risk to human health, particularly for vulnerable groups, when exacerbated by high day-time temperatures.

[7] North West Landscape Framework Climate Change Assessment 2010/11, Natural England (accessed 25 November 2013; URL: www.naturalengland.org.uk/regions/north_west/ourwork/climatechangeassessment.aspx)

[8] http://maps.merseyforest.org.uk/grabs/

[9] Liverpool City Region and Warrington Green Infrastructure Framework Action Plan December 2013

- Adaptation is needed to increase the resilience of the urban environment to the changing climate. Adaptation interventions may reduce the exposure to impacts such as flooding or heat stress. Planning, providing and enhancing green infrastructure can provide multiple benefits including helping attenuate storm water run-off and reducing the 'urban heat island' effect.

- Impacts of climate change on the small areas of agriculture may be direct (such as drought stress, soil erosion) and indirect, as a result of the way the farming community responds to climate change (such as new crops and livestock varieties).

Other key drivers

- Key business drivers in the economy are advanced manufacturing, life sciences, financial and professional services, maritime and logistics, the visitor economy and renewables.

- Major new projects are being developed in the area such as Liverpool 2 (Port of Liverpool deep water container terminal), the Liverpool Bio Campus, Wirral Waters and International Trade Centre and Liverpool Waters. Tourism is a contributory component of the economy, with recent development of Liverpool One, the Echo Arena and BT Convention Centre, the cruise terminal, Pier Head Canal Link, Museum of Liverpool, exhibitions at Tate Liverpool and the Beatles Story. Birkenhead is acknowledged as a destination with emerging potential for heritage-related tourism development.

- The ports enable transport of bulk goods, raw materials and finished products in and out of the area and provide the necessary infrastructure to support offshore renewable energy development. Two wind farms have been built in recent years off the northern coast of the Wirral. There is a growing hub for offshore renewables along the frontage which includes an area of lay-down space with transfer stations for associated crew. Support renewable development is likely to continue.

- There may be further energy development growth, such as tidal power or shale gas.

- Related to major development is the infrastructure required to support growth, including the need to supply associated services, water supply, electricity supply and waste challenges, as well as transport connections. Managing water quality and quantity, including flood risk mitigation will become increasingly important.

- There are challenges in ensuring the Merseyside Conurbation's natural environment is sufficiently resilient to meet the demands of economic and population growth while providing sustainable, healthy places for communities to live.

- Work has started on the England Coast Path, a new national trail around England's open coast. This will enable right of access along the coast and – where appropriate – 'spreading room.' The trail will have an important future role for local recreation and tourism opportunities.

- The Liverpool City Region Green Infrastructure Framework is being developed to maximise the benefits that the city region can gain from the sustainable management of its natural environment. The framework covers the whole of Merseyside plus Warrington and Halton.[9] In addition, Liverpool City Region Ecological Framework aims to reduce the loss of and / or fragmentation of important habitats.[10] Green infrastructure approaches to the integration of built and undeveloped land uses provide an opportunity to link potentially fragmented elements of historic land use into a more cohesive whole.

[10] http://seftonmaps.sefton.gov.uk/EcoFramework/

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.

New public realm over the original Liverpool Docks - the Pool of Liverpool.

Statement of Environmental Opportunity	Ecosystem service: Food provision	Timber provision	Water availability	Genetic diversity	Biomass provision	Climate regulation	Regulating water quality	Regulating water flow	Regulating soil quality	Regulating soil erosion	Pollination	Pest regulation	Regulating coastal erosion	Sense of place / Inspiration	Sense of history	Tranquillity	Recreation	Biodiversity	Geodiversity
SEO 1: Conserve and enhance natural assets, including the River Mersey, managing the estuary and coast sustainably while celebrating the rich maritime heritage, improving the landscape, promoting sense of place, providing habitats for wildlife and bringing multiple benefits for people.	↔ **	↔ **	○	n/a	↔ **	○	↑ **	↑ **	↔ **	↔ **	○	n/a	↑ *	↑ ***	↑ ***	↗ **	↑ ***	↑ **	↗ **
SEO 2: Provide a network of green infrastructure to create a high-quality urban environment that underpins economic and social wellbeing, improves resilience to climate change, supports biodiversity, and provides recreational and educational opportunities.	↗ **	↗ **	↗ **	n/a	↗ **	↑ **	↗ **	↗ **	↗ **	↗ **	↗ **	n/a	↗ *	↑ ***	↗ **	↗ **	↑ ***	↑ **	↔ **
SEO 3: Plan to connect habitats across the urban fabric, creating corridors and stepping stones for wildlife, to enhance the landscape, create local routes for walking and cycling, and provide accessible natural greenspaces for people close to where they live and work.	↔ **	○	○	n/a	○	↑ **	↗ **	↗ **	↗ **	↗ **	↗ **	n/a	↔ **	↗ **	↗ **	↗ **	↑ ***	↑ ***	↔ **
SEO 4: Provide opportunities for people to understand the natural and historic character of the Merseyside Conurbation NCA, conserving heritage, reinforcing sense of place, providing opportunities for recreation and interpretation, and enabling people to access and enjoy the distinctive environment.	↔ **	↔ **	↔ ***	n/a	↔ **	↔ **	↔ **	↔ **	↔ **	↔ **	↔ **	n/a	↔ **	↑ ***	↑ ***	↗ *	↗ **	↗ **	↗ **

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

Landscape attributes

Landscape attribute	Justification for selection
A low-lying but gently rolling platform punctuated by low ridges; however, extensive urban development generally dominates the topography.	■ The Merseyside Conurbation is a predominantly built-up landscape, comprising Liverpool and Birkenhead on the east and west sides of the River Mersey respectively. ■ The dominant influence of urban development overrides much of the underlying geology and physiography. ■ Triassic sandstones form low, but prominent ridges at Wallasey and Birkenhead on the Wirral Peninsula and Crosby on the north side of the Mersey Estuary.
Triassic sandstone which is overlain by glacial till. The underlying geology forms part of an aquifer supporting groundwater abstractions.	■ The underlying sandstone geology forms part of an aquifer which supports groundwater abstractions. ■ Surface outcrops of the underlying geology are rare and the majority of the area is mantled by thick deposits of till and pockets of sand and gravel deposited by glaciers at the end of the last ice age, some 15,000 years ago.
Extensive intertidal mudflats/sand flats relating to the Mersey Estuary, although the waterfront is generally built up; wide coastal frontages along the open coast.	■ The extensive intertidal mud and sand flats of the Mersey Estuary are important feeding and roosting grounds for waders and wildfowl. ■ At the mouth of the estuary and along the open coast there are a range of wildlife habitats. ■ Wide coastal frontages found along the open coast straddling the borders with Wirral and Sefton, with access opportunities, especially through future development of the England Coastal Path National Trail. ■ A large proportion of the waterfront is confined by coastal defences, with vertical walls or docks and industrial premises.
Flowing north-west, the River Mersey cuts through the area entering the Irish Sea in Liverpool Bay.	■ The tidal River Mersey flows west through the area, pinched between sandstone hills and enters the Irish Sea at Liverpool Bay. ■ Strong tides in the Mersey have created an estuary with deep channels, mudflats and sand banks. ■ The Mersey Estuary is considerably narrower at its mouth than upstream. ■ The River Mersey has contributed to the historic development of ports at Liverpool, Birkenhead, Garston and Eastham. ■ Riverside access is provided to local communities and visitors through promenades such as at Otterspool and New Brighton.

Landscape attribute	Justification for selection
Woodland cover is significant in such a heavily urban area, with new community woodland being created, while urban parks, cemeteries and suburban streets provide trees and in some cases wooded habitats.	■ Woodland cover is 1,439 ha (5 per cent of the NCA). ■ Dibbinsdale Site of Special Scientific Interest (SSSI) and Local Nature Reserve (LNR) supports the largest stand of ancient semi-natural woodland in Merseyside. ■ Urban parks, cemeteries and suburban street plans provide trees and in some cases wooded habitats. ■ The Mersey Forest and other planting initiatives encourage the establishment of new woodland and other green space within the Merseyside Conurbation, recognising the important quality of life benefits these features provide.
Pockets of mainly versatile and good quality farmland remain on the fringes of urban areas, often arable or horticultural.	■ Small pockets of Grade 1 agricultural land can be found to the north associated with the villages of Sefton and Lunt, between Maghull and Netherton. ■ Clusters of Grade 2 and 3 land are found on the urban fringe to the east along the M57 to the north of Huyton, and to the south along the M53 west of Bebington. ■ In 2009 there were 59 farms registered in the Merseyside Conurbation. The majority of these farms were either arable or horticultural.
Field boundaries are generally hedgerows, but sometimes marked by drainage ditches with grassy banks.	■ In much of North Merseyside field boundaries are marked by drainage ditches with grassy banks. These ditches and banks have largely remained intact and continue to provide significant wildlife habitats. ■ Few local hedgerows provide important feeding and breeding sites for a variety of birds.
Green infrastructure is interspersed through the urban fabric; while pockets of 'encapsulated countryside' provide important wildlife refuges and opportunities to link local people to the natural world.	■ A network of green infrastructure is interspersed throughout this largely urban area. ■ Local Wildlife Sites, Local Nature Reserves, parks, cemeteries, gardens, golf courses and allotments are all important refuges for wildlife, while providing places of relative tranquillity for people to enjoy. ■ Private domestic gardens also represent a significant asset for the area. ■ A number of conspicuous species have colonised the urban areas, with the mosaic of built environment and open space also providing opportunities for other urban specialist species.

Landscape attribute	Justification for selection
Renowned for its strong maritime heritage, there is much industrial archaeology, along with Victorian public parks and designed gardens.	■ The 19th and early 20th century architecture reflects the wealth of Liverpool and Birkenhead at this time. ■ This is typified by the Three Graces on the Pier Head, of which the largest is the Royal Liver Building, and also buildings such as the White Star Building, the Town Hall, the India Buildings, Hamilton Square in Birkenhead (which is the largest Grade 1 Victorian square outside London) and Port Sunlight. ■ Wirral's heritage includes the industrial landscape, based around steelworks and shipbuilding, and the villages built to provide housing for factory workers. ■ The historic centre and docklands of Liverpool Maritime Mercantile City are a World Heritage Site. ■ There are parklands associated with country houses such as Croxteth and Bowring. The conurbation contains several Victorian public parks, including Sefton Park and Birkenhead Park.
The built environment is characterised by a mix of red brick and sandstone within the city and a diverse range of modern materials in the outlying suburbs.	■ Traditional building materials are timber frame, brick from the 18th century, Welsh slate and tile roofs. ■ Prestigious civic buildings, constructed with a variety of building stones, including 'exotic' stone imported from other parts of the UK and abroad. ■ Waterfront structures include docks and warehousing. ■ Georgian, Victorian and later suburbs. ■ The built-up area has increased considerably around the fringes of the conurbation, with the development of commuter belt housing. ■ 21st-century high-rise buildings and luxury apartment blocks. Some former industrial and commercial buildings have been converted into luxury apartments and mixed-use buildings.
Distinct urban centres have come together to form the Merseyside Conurbation, surrounding the larger dominant centre of the City of Liverpool, but split by the River Mersey.	■ Extensive settlements of Liverpool, Birkenhead, Bootle, Kirkby, Maghull, Huyton, Bebington and Wallasey come together to form the Conurbation. ■ Many of the city edge settlements function as commuter settlements for the immediate proximity of Liverpool and wider Liverpool and Manchester region.
Dense settlement pattern with extensive areas of housing and industry.	■ There is a large proportion of industrial land use, with docks, warehouses and associated commercial land. ■ 81 per cent of the Merseyside Conurbation is classed as urban.

Landscape attribute	Justification for selection
Extensive transport infrastructure of motorways and rail lines, while the ports provide for significant international trade, cruise liners, as well as international and local passenger ferries.	■ The extensive transport infrastructure includes the M53, M57, M58 and M62 motorways. ■ The West Coast Main Line connects the area with London and major cities in the West Midlands and Scotland. The Merseyrail local rail service has a large network of stations with underground stations in Liverpool and Birkenhead. ■ The ports of Birkenhead, Liverpool, Garston and Eastham provide transport of bulk goods, raw materials and finished products in and out of the north-west, as well as international and local passenger ferries connecting with Ireland, Northern Ireland and the Isle of Man.

Shipping seen from the Crosby foreshore. Docks form a link into and out of the north-west of England, such as Seaforth Dock on the River Mersey to the north of Liverpool.

Landscape opportunities

- Safeguard and enhance existing green infrastructure including: open spaces (parks, woodlands, informal open spaces, nature reserves, accessible coast and countryside, the natural elements of historic sites, built conservation areas and civic spaces); linkages (river corridors and canals, pathways, cycle routes, greenways and coastal paths); and networks of 'urban green' (the collective resource of private gardens, allotments, pocket parks, street trees, verges and green roofs) so that they provide multifunctional spaces.

- Plan for significant new green infrastructure provision in association with areas of new development to expand and link the existing ecological networks. Manage future developments to incorporate accessible green space, sustainable urban drainage systems and new habitats, forming corridors linking urban areas with the coast and more open areas of countryside and for their many benefits, including providing places for recreation, to improve quality of life and to create places of relative tranquillity locally.

- Plan to restore, manage and expand habitats on former industrial sites to enhance biodiversity and the landscape. These developing habitats form an important component of the landscape character and are of wildlife and recreational value.

- Capitalise on the strengths of the riverside location and the unique character of the area while ensuring that the legacy of the maritime heritage remains legible within the landscape.

- Conserve views of the landscape and views to the Liverpool and Birkenhead waterfronts, the cathedrals and the River Mersey.

Redeveloped old warehouses across East Float dock. Wirral Waters Enterprise Zone will see major development in the next few decades.

- Conserve trees in urban parks, cemeteries and suburban streets, and increase canopy cover and street trees, areas of green open space to help moderate urban heat, filter pollution from the air, enhance the urban and historic landscape and provide wildlife habitat.

- Conserve woodlands, including ancient woodlands, and promote the creation of community woodland, particularly around urban fringe areas and where opportunities exist to expand or link existing woodland areas. Establish woodlands and other habitats to assimilate new and existing

industrial and residential development into the landscape and provide access and recreational opportunities where appropriate.

- Manage, expand and connect fragmented pockets of habitats in urban areas into a more cohesive whole, enabling movement of species, conserving their wildlife and historical interest as well as providing opportunities for people to learn about and enjoy the natural environment. Conserve and manage the banks of the linear features such as roads and railways, for their biodiversity interest.

- Maintain and enhance the coastal and estuarine habitats. Allow for continuing dynamic coastal and estuarine processes. Plan for and proactively seek opportunities to enhance coastal and estuarine habitats alongside coastal adaptation programmes, and support the England Coast Path to ensure that sensitive features are not negatively impacted. Where possible incorporate better public access provision in the future.

- Promote links between a healthy environment and economic growth, for example by promoting the benefits of a clean and healthy waterside environment as a positive focus for regeneration.

- Protect, restore and create high quality recreation areas and manage the existing access network of local walking and cycling routes, ensuring that people have access to green space and to green routes, close to where they live.

The Palm House, Sefton Park.

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 analysis and opportunities may change upon publication of further evidence and better understanding of the inter-relationship between services at a local level.

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Food provision	Farmed land, often either arable or horticultural Local food grown in allotments and private gardens	A limited percentage of land is given to agriculture and food production. 81 per cent of the NCA is urban; Grade 1 agricultural land, 6 per cent; Grade 2 land, 6 per cent; Grade 3 land, 4 per cent. Allotments, including community allotments, urban gardens and green roofs provide small-scale opportunities for people to grow food locally.	Local	Although only a small proportion of the Merseyside Conurbation is agricultural, the actual percentage of this that is highly productive is substantial. With the high proportion of urban land use, the potential for expanding farming and food production is limited. Agricultural land can also provide supporting habitat for overwintering birds. Local allotments and food production improves the environment by increasing the area of green space, creating wildlife havens and reducing urban emissions in relation to transporting food. They also provide opportunities for people to take 'green exercise' and help to foster social cohesion. There is an increasing demand from communities for access to land to grow food. In Liverpool an active campaign around urban agriculture is gaining momentum. There is potential for Incredible Edible movements, allotments and community gardens to be supported and increased to encourage urban food growing and healthy eating. The Liverpool City Region Green Infrastructure Framework identifies a need for increasing local food production within the city region.[11] The urban location enables a large number of people to experience farming and to learn about farming, food and the environment.	Work with the farming community to provide food alongside delivering other services such as regulating water and soil quality and providing habitats for wildlife. Work with the local communities to seek opportunities for managing food production in the urban areas sustainably. Seek opportunities to provide allotments, amenity space and roofs within housing areas and community gardens to enable urban communities to grow food locally. Opportunities for people to learn about farming, food and the environment.	**Food provision** **Water availability** **Regulating water quality** **Regulating soil quality** **Regulating soil erosion** **Pollination** **Recreation** **Biodiversity**

[11] Liverpool City Region and Warrington Green Infrastructure Framework Action Plan December 2013

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Timber provision	Woodland Community forest	There is limited woodland cover at 5 per cent of the NCA and includes: broadleaved woodland 1,362 ha, conifer woodland 14 ha and mixed woodland 19 ha. The Mersey Forest is a community forest where a network of woodlands and green spaces has been created across Cheshire and Merseyside.	Local	The majority of the NCA is urban so there are limited opportunities for large-scale woodland creation. Increasing woodland cover in appropriate locations such as on the fringes of urban and industrial areas and improving management of existing woodlands would provide opportunities to create innovative wood fuel and timber industries locally. This has multiple benefits including mitigating climate change as well as providing improved sense of place and an increase of habitats for wildlife and recreational use, and can also assist with assimilating new development into the landscape. The Liverpool City Region Green Infrastructure Framework identifies a need for increasing local food and timber products within the city region.[11]	Encourage the sustainable management of woodland to provide timber in appropriate locations. Explore opportunities for creating new woodland where appropriate. Create new woodlands in suitable locations such as on the fringes of urban and industrial areas for multi-purpose use as part of the Community Forest initiative including innovative wood fuel, timber and forest industries. Seek to ensure that new woodland strengthens the local landscape and enhances biodiversity, providing opportunities for recreation and, benefits for water quality, soil quality and flood risk management where possible.	**Timber provision** **Water availability** **Biomass provision** **Climate regulation** **Regulating water quality** **Regulating water flow** **Regulating soil quality** **Regulating soil erosion** **Sense of place / inspiration** **Recreation** **Biodiversity**

[11]Liverpool City Region and Warrington Green Infrastructure Framework Action Plan December 2013

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Water availability	Rivers and streams Aquifers Precipitation	The NCA overlays a variety of groundwater management units (GWMU) consisting of major sandstone aquifers, with groundwater abstractions for public water supply in the Mersey area. Surface water abstraction within the Lower Mersey area is heavily dominated by industrial abstraction, and to a lesser extent, agriculture. There are no surface water abstractions for public water supply within the Lower Mersey area primarily due to water quality issues.[12] Water is abstracted in the Alt catchment from both surface and groundwater sources, for a variety of purposes including public and private water supply, spray irrigation, industry and golf courses. The largest quantities are abstracted for public water supply from the sandstone aquifer.	Regional	Much of the area's water comes from the 'integrated resource zone' which includes sources outside this NCA (for example from Lake Vyrnwy and the River Dee in Wales). The water travels via aqueducts. This is topped up by local sources. The Lower Mersey catchment has had a long history of heavy groundwater abstraction mainly for public water supply and industry. This over abstraction, which continued into the 1980s, has lowered groundwater levels below surface and sea level. This has occurred in places such as the coastal strip around Liverpool, resulting in saline intrusion from the Mersey Estuary, which is now a major issue. It is important that drainage ditches within the Alt catchment are not over-abstracted in the summer to maintain suitable conditions for its population of water vole.	Plan to manage over-abstraction from groundwater and rivers through careful and efficient use of water. There are opportunities to develop sustainable urban drainage systems (SuDS) in new and existing development to improve infiltration and manage surface water as well as increase green space. Increasing the area of green space within urban and industrial areas would also provide benefits for health and wellbeing, access, recreation and biodiversity.	**Water availability** **Regulating water quality** **Regulating water flow** **Biodiversity** **Recreation**
Genetic diversity	n/a	n/a	n/a	n/a	n/a	**Genetic diversity**

[12] *Lower Mersey and Alt abstraction licensing strategy*, Environment Agency (February 2013; URL: http://a0768b4a8a31e106d8b0-50dc802554eb38a24458b98ff72d550b.r19.cf3.rackcdn.com/LIT_7881_35d3ed.pdf)

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Biomass energy	Woodland Mersey Forest 41 wood fuel boilers 2 wood fuel suppliers	This heavily urbanised NCA offers low potential for the provision of biomass. For information on the potential landscape impacts of biomass plantings within the NCA, refer to the tables on the Natural England website.[13]	Local	In this heavily urbanised NCA the existing woodland cover offers low potential for the provision of biomass, either through bringing unmanaged woodland under management or as a by-product of commercial timber production. However, schemes such as wood allotments in the Mersey Forest enable woodland owners to engage with local communities and manage their woods at the same time. There is some potential for biomass production on large reclaimed landfills already planted with fast-growing trees at Bidston, Bromborough and Otterspool. There is very limited space or potential for biomass crops in this densely built up character area other than on pockets of urban fringe farmland, or perhaps as a temporary measure on unused development land (short rotation coppice only).	Seek opportunities to encourage sustainable management of woodlands where appropriate, to produce surplus timber, local wood fuel and biomass for local use, such as wood-fired boilers. Explore the potential for developing local, small scale markets for products (such as charcoal, local wood fuel and sustainable/local branded products), with associated infrastructure, skills training and education. Increase the extent of woodland where this would not impinge on sites of nature conservation value or obstruct long views and where new woodland can enhance the habitat mosaic.	**Biomass energy** **Timber provision** **Climate regulation**

[13] www.naturalengland.org.uk/ourwork/farming/funding/ecs/sitings/areas/default.aspx

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Climate regulation	Estuary muds and silts Woodland Green infrastructure	The Mersey Estuary contains rich silts and muds which may act as a carbon sink. Trees, woodlands, and some vegetated greenspaces (particularly canopy cover) can regulate air temperature. Trees in streets and public open spaces throughout the NCA provide shade for buildings and people. Green infrastructure including open spaces (parks, woodlands, informal open spaces, allotments, nature reserves, accessible countryside, the natural elements of historic sites, built conservation areas and civic spaces); linkages (canals, pathways, cycle routes and greenways); and networks of 'urban green' (the collective resource of private gardens, allotments, parks, street trees, verges and green roofs).	Local	In this NCA soil carbon levels are generally low (0–5 per cent), reflected by the 62 per cent of the NCA covered by mineral soils which can be low in organic content. The area's remaining soils, namely the naturally wet very acid sandy and loamy soils, sand dune soils and loamy and clayey flood plain soils with naturally high groundwater, can all contain organic layers and may provide an important store of carbon. These soils are likely to be associated with the areas of grazing marsh with the Mersey Estuary's mud and silts, further increasing the extent of carbon storage within this NCA. All soils that sequester and store carbon are important to conserve. High-density residential areas are potentially most vulnerable to heat island and warming effects. The coastal location of the Merseyside Conurbation provides the benefits of 'cooling sea breezes' in managing heat island effects. Provision of vegetation can cool and shade urban environments as well as provide greenspace and green routes, close to where people live. Space for vegetation is limited, particularly in the urban centres, but there can be opportunities to 'retrofit' green infrastructure into the urban environment, such as green roofs or street trees. Benefits include attenuation of storm water run-off; absorption of air pollutants and dust; reduction in the 'urban heat island' effect and provision of wildlife habitat. The lack of habitats and connectivity between them can restrict species movement. Buffering, linking and expanding fragmented habitats can address this and increase resilience to climate change.	Conserve soils that sequester and store carbon. Conserve and enhance green infrastructure to manage urban heat island effect, particularly as it affects vulnerable communities. Retrofit green infrastructure to adapt to high temperatures in the urban areas, providing shade and evaporative cooling. Seek opportunities for buffering, linking and expanding fragmented habitats, and plan to provide corridors for species movement as climate changes, giving multiple benefits such as walking or cycling routes, improved tranquillity and improved quality of environment as well as habitats for wildlife.	**Climate regulation** **Timber provision** **Regulating soil erosion** **Biodiversity**

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Regulating water quality	Rivers and streams Wetlands Green infrastructure Precipitation Nitrate Vulnerable Zone	Significant water quality improvements have meant that salmon and sea trout have returned to the River Mersey. The Mersey Estuary catchment includes the Mersey Estuary and tributaries to the tidal limit at Howley Weir (in the Mersey Valley NCA). There are 32 water bodies within the Mersey Estuary Catchment, of which 21 are at moderate quality (66 per cent); 8 are poor (25 per cent); 3 are bad (9 per cent). There are 3 designated bathing waters in the Mersey Estuary catchment. All are predicted to achieve the standards required for bathing. There are 2 designated shellfish waters. Both fail the bacteriological standards. Pollution from waste water affects 94 per cent of the water bodies in the Mersey Estuary catchment. Pollution from towns, cities and transport affects 72 per cent of the water bodies and pollution from rural areas affects 34 per cent of the water bodies. 88 per cent of the catchment has physical modifications including culverts, flood defences and weirs.[14] The Alt Crossens catchment drains low-lying land between the Ribble and Mersey estuaries. In the Alt Crossens there are 14 water bodies; 1 is at good quality (7 per cent); 12 are moderate (86 per cent); 1 is poor (7 per cent). There are 3 designated bathing waters in this catchment; 2 are predicted to fail the minimum standards required for bathing. **Continued over...**	Regional	The mixed picture reflects pollution from the industrial heritage of the NCA and discharges from major sewage treatment plants such as Huyton and Liverpool. The Mersey Basin Campaign (1985–2010) was set up to improve water quality in the Mersey Basin, thereby stimulating the regeneration of derelict land beside the river and its tributaries. In urban areas, the waterside is now seen as a positive focus for regeneration. Most houses and businesses in the catchment are connected to the sewer network, but sometimes the sewerage systems do not discharge as they should or household waste water is wrongly connected. Ageing sewage treatment infrastructure can also cause problems. The Merseyside Diffuse Pollution Project has focused on tackling pollution from towns, cities and transport in the area. It is increasingly important that developments include sustainable urban drainage systems (SUDS) to control both run-off and pollutants washed into watercourses. Climate change could lead to more frequent and extreme rainfall. Without SUDS, or similar, this could increase the risk of pollution to local waters and localised flooding. Many of the streams have been modified through channelisation, culverting and flood protection schemes; these modifications may pose barriers to fish migration and impact on the overall condition of the watercourse. **Continued over...**	Providing green infrastructure can improve water quality by reducing the amounts of pollution and sediment reaching water courses. Creating riparian buffers, SUDS, shading of water courses and deculvert and renaturalise water courses can also help to address this. Promote urban greening measures in new and existing development, designed to slow and filter run-off, for example rain gardens, green roofs. The main catchment sensitive farming priorities in the catchment are to reduce pesticide losses to watercourses and reduce sediment losses.	**Regulating water quality** **Climate regulation** **Water availability** **Regulating water flow** **Regulating soil quality** **Regulating soil erosion**

[14] *North West River Basin District: Challenges and choices*, Environment Agency (June 2013; URL: www.environment-agency.gov.uk/research/planning/140084.aspx)

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Regulating water quality contiinued		**...continued from previous.** Pollution from waste water affects 71 per cent of the water bodies. Pollution from rural areas affects 64 per cent of the water bodies in the Alt and Crossens catchment. Pollution from towns, cities and transport affects 57 per cent of water bodies. 100 per cent of the water bodies in the Alt and Crosses catchment are affected by physical modifications.[15] The Alt and Crossens catchment has been designated as a Nitrate Vulnerable Zone since 2002. The Alt and Crossens Catchment Sensitive Farming (CSF) catchment was designated in 2012; delivery is solely by contractors without catchment officer input.12		**...continued from previous.** Urban development has led to increased run-off into the Alt catchment, which may impact drainage systems and agriculture, particularly in times of flood. Historical contamination with heavy metals and chemicals from past industry and contaminated land still affects water quality in the Alt. The source and upper part of the River Alt is within a culvert under a major 1960s housing development on the outskirts of Liverpool. Historically, many of the houses within these estates have had their waste water wrongly connected into the surface water drainage. This means waste water flows directly into the river. United Utilities, Knowsley Council and the Forestry Commission, have identified sewerage wrong connections, failing septic tanks and landfill leachate, to be resolved in the future. The Alt and Crossens catchment has moderate to high levels of phosphate, although these are not linked to agriculture but rather septic tanks and the sewage treatment works. Some river restoration projects are being delivered to provide multiple benefits, including improving water quality, for example at Mab Lane and at Sefton and Lunt Meadows.		

[15] Alt Crossens Catchment Summary (CSF027) (URL: http://publications.naturalengland.org.uk/publication/10379005)

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Regulating water flow	Intertidal mudflats and sand flats Rivers and streams Wetlands Green infrastructure	This NCA straddles the mouth of the estuary of the River Mersey which enters the Irish Sea at Liverpool Bay. Major tributaries are the River Birket, Dibbinsdale Brook and Rivacre Brook. The NCA also contains sections of the River Alt and the Leeds and Liverpool Canal and Manchester Ship Canal. There is tidal flood risk at several locations along the Mersey Estuary and around the Wirral Peninsula, which can arise from high water levels and from wave action, together with the funnelling of water into the estuary from onshore winds. Some of the urban areas of Liverpool have high surface water flood risk, as do some areas on the Wirral. In Liverpool, fluvial flooding is from watercourses, which are largely culverted and flow through urban areas of Liverpool into the Mersey Estuary. In the north of the Wirral, fluvial flooding is mainly due to the River Birket. There are areas where tidal flood risk combines with fluvial flood risk on the lower reaches of the Mersey's tributaries. Groundwater levels are rising in Liverpool and the Wirral and have caused problems for the underground rail network, but in general, there is no known documented evidence of surface flooding from groundwater. **Continued over...**	Regional	The response of the mostly low-lying Mersey catchment to rainfall is generally slow, but it is much faster for some of the smaller tributaries running through urban areas. The growth of towns and cities during the industrial revolution led to the modifying of rivers; for example Liverpool's rivers were culverted as the city grew. With the obvious exception of the Mersey, there is a general paucity of watercourses within Liverpool due to previous culverting. Changes in flow often trigger the migration of fish, and reduced flows in some rivers can exaggerate the impacts of barriers such as weirs. A number of projects have either removed obstructions or constructed fish passes to allow fish to move more freely. For example, a fish pass at Woolston Weir, upstream of the Mersey Conurbation NCA, encourages the migration of salmon along the River Mersey. Some of the fish in the estuary's tributaries are isolated due to structures such as tidal flaps. The extensive built-up areas of the towns, roads and industrial areas create impervious surfaces that cause water to run-off land more quickly. Improving permeability in urban and industrial areas through providing green spaces can improve infiltration rates. **Continued over...**	Encourage the use of sustainable urban drainage systems (SUDS) as a means of alleviating the speed of run-off, reducing overall flood risk and controlling pollution from urban run-off. Identify river stretches for restoration by reconnecting rivers to their flood plains and take opportunities to de-culvert and re-naturalise rivers to provide space for water, enabling natural geomorphological processes and dissipating flow energy, while also creating habitats for wildlife.	**Regulating water flow** **Water availability** **Biodiversity** **Geodiversity**

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Regulating water flow continued		**...continued from previous.** The Alt Crossens catchment has a history of flooding with Liverpool and Maghull most affected by past flood events. There is a potential risk of flooding where stretches of the Leeds and Liverpool canal are above ground level and pass through the urban area of Maghull.[16] Tidal ingress to the River Alt is prevented by the Altmouth pumping station.		**...continued from previous.** The Environment Agency's preferred approach to managing flood risk in the upper catchment of the Mersey and its tributaries include investigating the use of upstream flood storage and beneficial land management changes. Appropriately designed SUDS will also be encouraged. The upper catchment of the River Alt within this NCA has a history of river flooding, with properties at risk concentrated in Liverpool and Maghull. The Middle Urban Alt catchment covers the transition between the naturally draining upper Alt through Liverpool and the lowland areas of the Lower Alt. Flood risk is currently managed through routine maintenance of the river corridors, raised defences which provide protection to Lunt and surrounding agricultural land and by operations at the Altmouth Pumping Station. Some river restoration projects are being delivered to provide multiple benefits, including managing flooding, as has happened at Mab Lane and Sefton and Lunt Meadows.		

[16] Catchment Flood Management Plans – North West Region, Environment Agency (accessed 25 November 2013; URL: www.environment-agency.gov.uk/research/planning/114513.aspx)

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Regulating soil quality	Soils Geology Farmed land	81 per cent of the NCA is urban and consequently much of the soilscape is covered over by grey infrastructure. This NCA has six main soilscape types: ■ Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils (53 per cent). ■ Naturally wet very acid sandy and loamy soils (28 per cent). ■ Freely draining slightly acid sandy soils (7 per cent). ■ Sand dune soils (5 per cent). ■ Loamy and clayey flood plain soils with naturally high groundwater (4 per cent). ■ Freely draining slightly acid loamy soils (2 per cent).	Local	The slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils 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 can have a weak structure but are easily worked. Topsoil compaction can occur as well as cultivation pans. Soil quality is important for gardeners, allotment holders and green space managers. Soil compaction as a result of high visitor numbers can be a problem for some popular sites. The small pockets of farmed land are mostly of Grades 1, 2 and 3, enabling food production.	Promote awareness among gardeners, allotment holders and green space managers about the importance of soil management. Use recreational management techniques to manage public access in sensitive areas to avoid compaction, poaching or puddling soils. Maintain soil structure in agricultural land, avoiding compaction of soils.	**Regulating soil quality** **Food provision** **Recreation** **Biodiversity** **Geodiversity**

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Regulating soil erosion	Soils Geology Sand dunes	81 per cent of the NCA is urban and consequently much of the soilscape is covered over by grey infrastructure. The soils covering 57 per cent of this NCA are not susceptible to erosion. The remaining soils are: ■ Freely draining slightly acid loamy soils (2 per cent). ■ Freely draining slightly acid sandy soils (7 per cent). ■ Naturally wet very acid sandy and loamy soils (28 per cent). ■ Sand dune soils (5 per cent).	Local	Of the soils susceptible to erosion, the freely draining slightly acid loamy soils and the freely draining slightly acid sandy soils can erode easily on steep slopes, especially where vegetation is removed or where organic matter levels are low after continuous cultivation. These soil types are light and also at risk of wind erosion, especially where coarse textured (freely draining slightly acid loamy soils), cultivated or left bare. The naturally wet very acid sandy and loamy soils are also susceptible to wind erosion with some of them easily eroded by water if heavily trafficked or after heavy rain. The sand dune soils are characteristically very droughty and unstable. The risk of wind erosion is increased by disturbance along paths and tracks, but decreased where vegetation has stabilised the dune system or when the land surface approaches ground water level.	Promote awareness among developers of the Defra code of best practice set out in the Construction Code of Practice for the Sustainable Use of Soils on Construction Sites.[17] In the small pockets of agricultural production and in areas of urban green space, manage and enhance riparian habitats to reduce soil erosion rates, creating permanent grassland strips to trap sediment run-off before it enters the streams. Encourage restoration and management of 'gappy' hedgerows to act as a wind break and bind/ filter out the soil in times of flood. Reduce sediment entering watercourses from agricultural operations, using for example watercourse fencing, sediment ponds and traps, swales with check dams.	**Regulating soil erosion** **Food provision** **Regulating water quality** **Recreation** **Biodiversity** **Geodiversity**

[17] *Construction Code of Practice for the Sustainable Use of Soils on Construction Sites*, Defra (March 2011; URL: https://www.gov.uk/government/publications/code-of-practice-for-the-sustainable-use-of-soils-on-construction-sites)

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Pollination	Gardens and allotments Biodiversity habitats Green infrastructure	Private gardens, allotments and areas of national green space supporting pollinating insects and contributing to local food production.	Local	The NCA contains limited habitat to support pollinating insects although the gardens and urban greenspace of Liverpool can be a rich source of nectar. Over-management can leave no room for shelter for invertebrates. The sheltered, milder climates of urban habitats can provide havens for pollinators.	Seek opportunities to introduce species-rich grassland, pollen and nectar strips and margins along motorway and road verges, railways, on brownfield sites (that are not already of high environmental value) and alongside watercourses, to encourage and support pollinating insects and local food production. Support educational opportunities on how to provide habitats for pollinators and predators.	**Pollination** **Food provision** **Biodiversity**
Pest regulation	N/A	N/A	N/A	N/A	N/A	**Pest regulation**

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Regulating coastal erosion and flooding	Irish Sea River Mersey Coastal habitats	The northern Wirral coastline is significantly influenced by the Dee and Mersey estuaries at either end of the frontage. Sand dunes and the environmentally designated wide sandy foreshore have formed along the length of the frontage, providing natural protection to coastal settlements, including Wallasey and New Brighton. Much of the frontage is currently defended, including the Wallasey embankment which provides a flood risk management function for the large flood risk area that potentially links through to the Mersey. The shoreline in the Merseyside Conurbation NCA is almost entirely industrialised. There are also substantial urban areas.	Regional	The coastal habitats have a key role to play in providing for coastal protection as well as a recreation and leisure resource that may come under increasing visitor pressure as the climate changes. The long-term plan15 in the Narrows and Inner Mersey estuary, subject to more detailed investigations, is to maintain the status quo by continuing to provide the same extent of protection currently afforded to property and infrastructure, while allowing natural evolution of the shoreline where there are currently no defences present. In the Upper Mersey (in the Mersey Valley NCA) however, managed realignment was assessed as an alternative policy to offset the potential loss of internationally designated habitat elsewhere (due to hold the line policies and predicted sea level rise resulting in coastal squeeze) and to help manage flood risk. A number of areas have been identified in the Upper estuary where the long term plan is to look at opportunities to potentially reduce flood risks upstream and create additional habitat.	Manage existing coastal and estuarine habitat appropriately to ensure their continued functionality as a flood defence mechanism. Where possible, ensure the retention of mudflats, sand flats, salt marshes and sand dunes, to provide a cost effective defence against erosion/flooding. Carry out research to better understand changes that will take place in event of sea water rise/ flooding and subsequent impact on estuarine habitats and land use. Understand and address sustainability and environmental priorities. Possible climate change adaptation actions include intertidal habitat roll back, and managed realignment. Work with the Environment Agency and landowners and other stakeholders to identify scope for pulling back flood defences, and for managed realignment schemes in accordance with the Shoreline Management Plan.[18] Ensure that these sites are managed to create high-quality habitats for biodiversity, recreation and sense of place. Support the development of a successful England Coast Path that encourages better public access and is sensitive to the features that are found on or along the coast.	**Regulating coastal erosion and flooding** **Climate regulation** **Sense of place / inspiration** **Recreation** **Biodiversity** **Geodiversity**

[18] North West England and North Wales Shoreline Management Plan 2

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Sense of place/ inspiration	Green infrastructure Registered parks and gardens World Heritage Site Cathedrals Writers, artists and musicians Art galleries and museums Sport	Sense of place is dominated by the River Mersey and the historic waterfront. While most of the area is urban, there are isolated pockets of green infrastructure. The mudflats/sand flats and a wide sandy foreshore are distinctive features along the estuary and coastline. Woodland cover is limited, although there is a significant block of new planting east of Maghull and Lydiate along the River Alt. The Leeds and Liverpool Canal and the railway network also form important landscape corridors. There are important views of the Liverpool and Birkenhead waterfronts, the cathedrals and the River Mersey throughout the area. Inspiration may also be derived from the role of Merseyside in spawning a new and vibrant pop culture in the 1960s, foremost of which is the role played by the Beatles.	National	Senses of inspiration and escapism are constrained by urban development and industrialisation, but are provided by dramatic landmarks such as Liverpool's Cathedrals, the Royal Liver Building and Liverpool Pier Head. The distinctiveness of the conurbation's coastal location is an attractor of business opportunities and visitors. Tourism, culture and sport are contributory components of this area's economy. While some of the docks of Liverpool and Birkenhead have become redundant, the conurbation has experienced new growth through leisure and tourism developments with Liverpool nominated the European Capital of Culture in 2008. The natural heritage, Mersey Estuary, woodlands, parks and urban greenspaces are important as recreational areas being close to where people live, as well as providing valuable wildlife corridors, contributing to providing a sense of place and opportunities for people to have contact with the natural world. The potential for new multifunctional green spaces will help to maximise the benefits of the conurbation's distinctive assets.	Protect the sense of place by conserving and enhancing the Mersey Estuary, parks and urban green spaces. Increasing the provision of green spaces, as well as enabling people to access and enjoy them. Seek opportunities to encourage the urban populations to engage with the natural environment through better access provision, and volunteering activities within local green space, and encouraging their involvement in the future management of sites. Carefully design and integrate green infrastructure within housing and industrial development, linking new developments with the wider countryside.	**Sense of place / inspiration** **Sense of history** **Tranquillity** **Recreation** **Biodiversity**

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Sense of history	Maritime history Industrial heritage World Heritage Site Scheduled monuments Registered parks and gardens Allotments	The NCA contains internationally important remains of the transport industry, from river and coastal trade, to cross-Atlantic shipping, and early development of rail industry and inter-war development of aviation. Liverpool was a pioneer in the development of modern dock technology, transport systems, and port management. Liverpool Maritime Mercantile City was awarded World Heritage Site status by UNESCO in 2004. Urban development has occurred over many phases, however the ring road defines the extent of Victorian Liverpool, outside of which most land use is post-war housing. Wirral's heritage includes the industrial landscape, based around steelworks and shipbuilding, and the villages built to provide housing for factory workers. Birkenhead expanded over a similar period and has a dense settlement pattern of housing and large-scale industry. Liverpool is a key tourist destination with its two famous cathedrals, Albert Dock and Tate Liverpool. There are a number of parklands associated with country houses. Allotments are an important aspect of social history.	International	The history of the landscape is defined by Liverpool's past as a major port in response to demands of salt, textiles, coal, pottery and metal goods, as well as trade with the Americas, the Caribbean, Africa and the Far East. This was further enhanced by the early development of the rail industry and inter-war development of aviation. Aspects of history likely to be particularly evident to the public include Liverpool with its two famous cathedrals, Albert Dock and Tate Liverpool. In addition, there are a number of parklands associated with country houses such as Croxteth, Bowring, the village of Port Sunlight built by William Lever and the Grade 1 Victorian parks of Sefton and Birkenhead. The latter was one of the first Victorian public parks, designed by Sir Joseph Paxton and influencing Frederick Law Olmsted's design for Central Park in New York. Some of the area's parks have been restored, but still need maintaining. The Merseyside Conurbation's history is integral to its importance as an international visitor destination. Many heritage assets are accessible. Visitor pressures may need to be managed to avoid impacts on historic features.	Explore opportunities to conserve and promote the heritage of the Merseyside Conurbation, particularly though projects that integrate multiple objectives. Seek ways to protect, conserve, manage and interpret the area's historic and cultural identity to ensure a better understanding of past land use and retain evidence of the relationships between features for the future. Maintain, restore and improve parks for wildlife and people. Raise awareness and increase public engagement, enjoyment and understanding of the historic environment, linking to the ports, trade and industry.	**Sense of history** **Sense of place / inspiration** **Tranquillity** **Recreation**

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Tranquillity	Parks Foreshore Green infrastructure Local Nature Reserves Country parks Woodland and the Mersey Forest	Tranquillity is not a feature typically identified with this NCA, with none of it classed as being 'undisturbed according to CPRE data.	Local	As this NCA is predominantly urban, no part is considered to be 'undisturbed'. A sense of tranquillity may nevertheless still be associated with the area's significant heritage of Victorian parks, including Sefton Park, and in some locations along the waterfronts and coastline. A sense of tranquillity is also provided by local green spaces, Local Wildlife Sites and Local Nature Reserves. These open spaces provide important, highly valued, pockets of tranquillity locally. Providing increased opportunities and access to a tranquil environment through management, enhancement and expansion of habitats should ensure that these important places can remain tranquil and contribute to biodiversity, sense of place and recreation. The Mersey Community Forest provides opportunities to increase woodland and other habitats, to create quite tranquil areas for people to enjoy. Local green spaces are of recognised importance to human wellbeing for physical and psychological health. Pockets of tranquillity can provide sensory environments which have a calming and restorative effect on people's health and wellbeing.	Improve tranquillity and create more tranquil spaces within existing and new development through planning and urban design and through the management of green infrastructure. The Mersey Forest provides opportunities to increase woodland and other habitats, to create tranquil areas for people to enjoy. Seek opportunities through new housing, transport and industrial developments to create additional green infrastructure to provide quiet enjoyment and improve wellbeing through increased contact with the natural environment.	**Tranquillity** **Sense of place / inspiration** **Recreation** **Biodiversity**

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Recreation	Rights of Way Accessible green spaces Local Nature Reserves Country parks Strategic walking and cycling routes River Mersey Canals	Recreation is supported only to a limited extent by the area's 75 km rights of way network (a density of 0.26 km per km^2) and an extremely small area of open access land (0.08 ha). The wide sandy frontage, with its associated paths and promenades, provides opportunities for recreation. There are some multi-use recreational corridors, such as the Trans Pennine Trail. Local woodlands and the Mersey Forest provide recreation opportunities. The Mersey Forest covers 76 per cent of the NCA area. Local Nature Reserves and country parks provide opportunities for people to enjoy the natural environment. This is further supported by the area's parks, allotments and more formal facilities such as golf courses.	Regional	Recreation is supported only to a limited extent by the area's rights of way network. The NCA's wide sandy frontage provides greater opportunities for recreation and is well used, as does the area's public parks and green spaces. Communities value their local green spaces as places of local distinctiveness that provide opportunities to engage with nature close to where they live and work to improve physical and mental health and encourage a sense of community. Local woodlands and the Mersey Forest have generated local interest to increase woodland and other habitats, create wildlife corridors and access for people. Local Nature Reserves and country parks also provide opportunities for people to enjoy the natural environment. The England Coast Path, a new National Trail around England's entire open coast, will give people the right of access around all of England's open coast, including spreading room, where appropriate. The UK National Ecosystem Assessment highlighted the importance of local green spaces to human wellbeing for physical and psychological health, reducing the heart rate and stress, as well as providing encouragement to leading a healthy lifestyle. **Continued over...**	Improve the opportunities for walking and cycling as part of everyday life in the Merseyside Conurbation. Improve access by ensuring that paths are maintained and well signposted, and that some surfaced paths are provided for use by all levels of ability. There are opportunities to promote sustainable recreation and education opportunities linked to biodiversity, for example at Local Nature Reserves and country parks, and provide links between urban areas, the coast and the surrounding countryside. Provide interpretation for people to understand and enjoy wildlife and the benefits of the natural environment. Plan and manage for a potential increase in visitors to coastal areas, so that increased visitor numbers do not result in damage to coastal habitats important for managing coastal flooding and for biodiversity. **Continued over...**	**Recreation** **Sense of place / inspiration** **Tranquillity** **Biodiversity**

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Recreation continued				**...continued from previous** The Liverpool City Region Green Infrastructure Framework noted that in some areas there is a lack of green infrastructure open to the public. The areas of greater need based on current population projections are concentrated on the outer areas of Liverpool and mid Knowsley. Projected population changes will increase the need for additional accessible green space and high-quality sustainable places. There are opportunities for water-based recreation, based around the rivers, docks and canals. A potential increase in visitors to coastal areas could result in increased visitor pressure, resulting in damage to coastal habitats important for managing coastal flooding and for biodiversity.	**...continued from previous** Seek opportunities to create and provide access to green spaces especially within towns, new housing and industrial developments and areas that have been identified as lacking in accessible green space, with easy access enabling communities to reconnect with the natural environment close to where they live, and allowing them to enjoy the health and social rewards it affords them. Maintaining and improving water quality, such as in the rivers, docks and canals, for people and wildlife to enjoy the multiple benefits that clean water provides.	

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Biodiversity	Biodiversity habitats and spaces Two Special Areas of Conservation (SAC) Three Special Protection Areas (SPA) Three Ramsar sites 110 ha SSSI Local wildlife sites Gardens and allotments Green spaces Seven Local Nature Reserves and six country parks wholly or partially within the NCA	The NCA contains two SAC, three SPA and three Ramsar sites, but only 110 ha are nationally designated as SSSI (noting that all figures are cut to Mean High Water Line). The importance of coastal and estuarine habitats is reflected in the national and international designations. Urban green infrastructure can complete the links in our national ecological network. Urban green space allows species to move around within, and between, towns and the countryside.	International	The area is of ornithological significance, supporting large numbers of waders and wildfowl. There are a range of coastal and estuarine habitats including intertidal mudflats/sand flats and areas of salt marsh which are constantly eroding and accreting. Large urban parks can be important refuges for wildlife, especially in larger settlements where open land is limited. Most urban areas contain examples of isolated semi-natural habitats which have become surrounded by urban development. Where habitats of significance exist their value can be retained through maintaining, or re-establishing, habitat connections with other sites. Rivers and streams such as the Alt, Dibbin and Birket are havens for species such as water vole. A number of notable species have colonised the urban environment. Previously used land, such as landfill sites and former railway land, can form important refuges for wildlife. Green spaces can contribute to connecting and buffering wildlife sites. The Liverpool City Region Ecological Framework[19] has been put in place to provide the foundations to link remaining areas of wildlife habitat. Urban wildlife sites are a useful educational resource and contribute to a greener, environment for all. Pockets of agricultural land and field boundaries provide habitats for species such as grey partridge and corn bunting. The area is also especially important for wintering birds including overseas migrants and raptors.	Encourage improved management to bring nationally and locally designated habitats, into and maintain favourable condition. Protect and enhance the extent and quality of semi natural habitats, and create buffers to benefit habitats such as woodland, wetland, grassland and parkland. Novel urban landscape features such as roundabouts or green roofs may provide additional opportunities for habitat creation. Reduce the loss of and/or fragmentation of habitats; by reconnecting habitats, providing a network of semi-natural habitat within the urban fabric. For example, urban trees, small woodlands, hedgerows and railway lines can serve to connect sites. Take steps to reconnect people to nature by enhancing urban environments, including wildlife-friendly gardening and management of green spaces, and by embedding biodiversity considerations in the need to adapt to climate change, as a means of involving people in the conservation of the wider environment. Manage farmland including provision of conservation headlands and hedgerows and retention of winter stubble for a range of benefits. Manage farmland for wintering birds.	**Biodiversity** **Food provision** **Water availability** **Regulating water quality** **Regulating water flow** **Regulating soil quality** **Regulating soil erosion** **Pollination** **Sense of place / inspiration** **Tranquillity** **Recreation** **Geodiversity**

[19] http://seftonmaps.sefton.gov.uk/EcoFramework/

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Geodiversity	Geological exposures Local Geological Sites Geomorphological processes Aquifers	The area is underlain by Triassic (248–205 million years old) red mudstones and sandstones. The main deposit of Quaternary age is till, which formed in and beneath glaciers and ice sheets.	Local	Dynamic geomorphological processes of accretion and erosion along the coast and in the estuary. There are a range of coastal and estuarine habitats including intertidal mudflats/sand flats and areas of salt marsh which are constantly eroding and accreting. The underlying solid geology is dominated by rocks of Triassic Age. These are generally masked by overlying deposits of Quaternary age, laid down within the last 2 million years. The Lower Triassic sandstones of the Sherwood Sandstone Group form low ridges at Wallasey and Birkenhead on the Wirral Peninsula and Crosby on the north side of the Mersey Estuary. The underlying sandstone geology forms part of an aquifer which supports groundwater abstractions. Geological exposures of sandstone sequences contribute to understanding the origin and geological development of the NCA. There are regionally important features of geological interest associated with Bidston Hill where windblown sandstone deposition can be seen, while Childwall Woods and Fields Local Nature Reserve has important examples of exposed sandstone faces.	Allow natural evolution of the estuary, as well as the dynamic process of erosion and accretion on mudflats/sand flats and salt marshes to continue where possible. Conserve local geological sites; where possible providing opportunities to view them and to further research and understanding of the area's geology. Deepen appreciation among landowners, industry and the public, of the links between geology, landscape and wildlife habitat and their relevance to conserving biodiversity and to sustainable development. 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.	**Geodiversity** **Sense of history** **Regulating coastal erosion and flooding** **Water availability**

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Catalogue Code: NE505

ISBN: 978-1-78367-065-9

Should an alternative format of this publication be required, please contact our enquiries line for more information: 0845 600 3078 or email enquiries@naturalengland.org.uk

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