National Character Area profile:

115. Thames Valley

Supporting documents

NATURAL ENGLAND

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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.

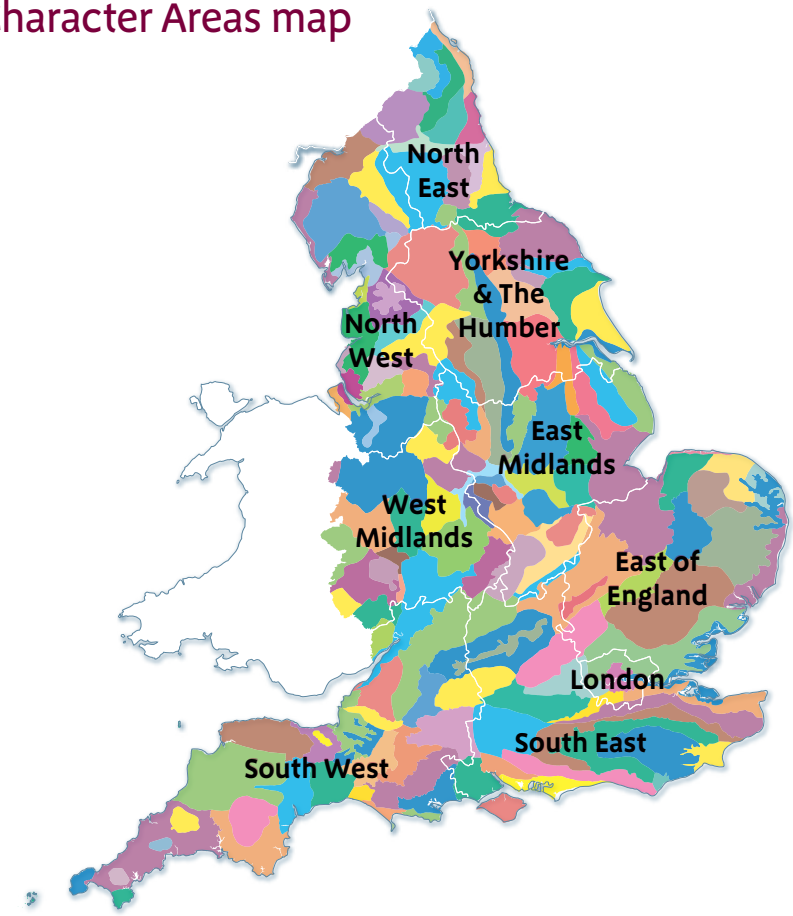
NCA profiles are guidance documents which can help communities to inform their decision-making about the places that they live in and care for. The information they contain will support the planning of conservation initiatives at a landscape scale, inform the delivery of Nature Improvement Areas and 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 Thames Valley is a mainly low-lying, wedge-shaped area, widening from Reading, which includes Slough, Windsor, the Colne Valley and the south-west London fringes. The River Thames provides a unifying feature through a very diverse landscape of urban and suburban settlements, infrastructure networks, fragmented agricultural land, historic parks, commons, woodland, reservoirs and extensive minerals workings.

Hydrological features dominate the Thames Valley, and include the Thames and its tributaries, part of the Grand Union Canal and the reservoirs which form the South-West London Waterbodies Special Protection Area (SPA) and Ramsar site. These features provide essential water supply services for London and the surrounds, as well as being important areas for wildlife and recreation in an essentially urban landscape. Flows and water levels in the River Thames are managed by a series of locks and structures upstream of Teddington. Flood defence and water quality improvement measures, such as the restoration of wetlands for flood management, provide opportunities for biodiversity and recreation.

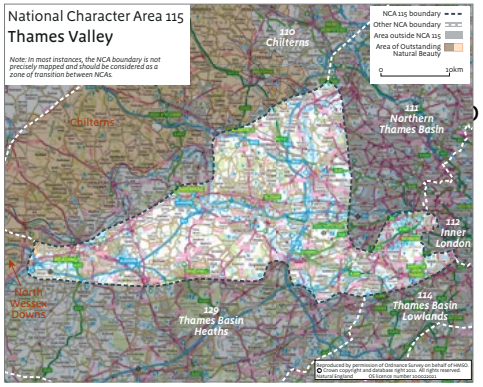
Despite its urban character, the area is environmentally important and 6 per cent per cent of it is covered by its 38 Sites of Special Scientific Interest (SSSI). It has significant amounts of broadleaved woodland, much of it ancient, including Burnham Beeches, Windsor Forest and Great Park, and the Richmond Park Special Area of Conservation (SAC).

There has been much development in this area in recent history, and continued pressures within the next 20 years provide scope for creating new landscapes with good green infrastructure links and increased broadleaved woodland. This will help to reduce noise and air pollution, and reduce the impact of urban fringe development. The closure and restoration of landfill sites and mineral workings provide additional opportunities.

Centuries of wealthy and influential residents have left a legacy of historic houses and palaces in the Thames Valley, such as Windsor Castle and Hampton Court Palace, all of which are now valued for their heritage interest and attract thousands of visitors. Many are set within historic parkland, which is a particular feature of the NCA. Opportunities exist to improve the management of the 6,950 ha of registered parkland and to protect the veteran trees surviving within it. There are also opportunities for the improvement of small but valuable areas of heathland like Wimbledon Common SAC.

The Royal Botanic Gardens at Kew (a UNESCO World Heritage Site) fall within the Thames Valley NCA and provide engagement opportunities, as well as being a centre for biodiversity. There are a number of nationally important geological sites within the NCA, as well as Heathrow, the UK's busiest airport.

Although there is virtually no undisturbed land in the NCA, parts are valued for their relative tranquillity. The area's natural beauty and royal history have created a haven on the doorstep of central London, a place escape, relax, exercise, explore and have fun. Its 1,000 km of rights of way – including the Thames Path National Trail – three National Nature Reserves (NNRs), waterbodies and green space, all provide recreation opportunities and access to nature for a population of around 1.4 million, as well as to visitors from inner London and beyond.



Click map to enlarge; click again to reduce

Statements of Environmental Opportunities:

- **SEO 1:** Plan for the enhancement of the area's rivers, and the expansion of their operational flood plains and associated wetland habitats, aiding the regulation of water flow, improving water quality, benefiting biodiversity, and reinforcing cultural heritage and landscape.

- **SEO 2:** Plan for the landscape-scale enhancement of the area's extensive gravel workings and other open waterbodies (including reservoirs) forming part of the South-West London Waterbodies Special Protection Area, for their contribution to water supply and storage, for their important habitats and recreation facilities, and for their geological interest.

- **SEO 3:** Maintain existing greenspace and plan for the creation of green infrastructure associated with the significant projected growth of urban areas, to reduce the impact of development, to help reduce flooding issues, and to strengthen access and recreation opportunities. Seek links from urban areas to wider recreation assets such as the Thames Path National Trail, National Cycle Routes, and the river and canal network, and promote the incorporation of best practice environmental measures into any new development.

- **SEO 4:** Protect and manage the area's historic parklands, wood pastures, ancient woodland, commons, orchards and distinctive ancient pollards, and restore and increase woodland for carbon sequestration, noise and pollution reduction, woodfuel and protection from soil erosion, while also enhancing biodiversity, sense of place and history.

- **SEO 5:** Develop the recreational, educational and commercial tourism opportunities offered by public access to – and engagement with – the historic buildings and landscapes in the area, such as Hampton Court Palace, Windsor Castle and the Royal Botanic Gardens at Kew, for their contribution to a sense of place and to people's enjoyment and understanding of the area.

Teddington Weir.

Description

Physical and functional links to other National Character Areas

The catchment of the River Thames and its tributaries drain from the surrounding areas and provide strong links with many of the neighbouring NCAs. Rivers feed in from the Chilterns NCA (including the Chilterns chalk aquifer) to the north, the Thames Basin Heaths NCA and Thames Basin Lowlands NCA to the south, and the Northern Thames Basin NCA to the north-east (and also the Thames headwaters in the Cotswolds). The Thames then runs out through the Inner London NCA and into the Greater Thames Estuary NCA.

The Thames Valley NCA is dissected by major transport links that connect London to the west, including the M4, M40, the London orbital (M25), and the Paddington main line to the west, as well as a plethora of A-roads linking the main urban areas. It also includes nearly 35 km of the Grand Union Canal, linking London to the Midlands. These links, and the area's geographical proximity to London, make the Thames Valley vital to the capital in terms of recreation and provision of resources. The area plays a key part in the flood defence strategy for central London, and the river and its reservoirs supply most of the city's water needs.

There are views of the Chilterns and North Wessex Downs to the west, while, further east, the view of St Paul's cathedral from Richmond Park is protected – an example of the important connections between this area and the capital.

Red deer stag in Richmond Park.

Key characteristics

- Flat and low-lying land, rising to low, river-terraced hills, which include the prominent local outcrop of chalk on which Windsor Castle sits.
- The underlying geology is dominated by the London Clay which, over much of the area, is overlain by river-lain sands and gravels.
- The numerous hydrological features provide unity to an area which otherwise lacks homogeny; these features include the River Thames and its tributaries, streams, lakes, canals and open waterbodies (the result of restored gravel workings).
- Woodlands characterise the north-western area, with the wooded character extending up to the southern edge of the Chiltern Hills.
- Farming is limited. Where it survives, grazed pasture is the major land use within a generally open, flat and featureless landscape. The field pattern is medium-scale and irregular, with smaller fields to the west. Localised areas of species-rich hay meadows provide a splash of colour in summer.
- Although densely populated and developed, pockets of woodland, open grassland, parkland, wetlands and intimate meadows provide escape and tranquillity, and include a variety of habitats supporting important populations of many species, notably stag beetle, shoveler, gadwall and other invertebrates and wildfowl.
- Towards London in the east, the natural character of the area is overtaken by urban influences: a dense network of roads (including the M25 corridor), Heathrow Airport, railway lines, golf courses, pylon lines, reservoirs, extensive mineral extraction and numerous flooded gravel pits.
- There are small but biologically important areas of lowland heathland – especially on higher sandy ground in the north – and a small area to the south falls within the Thames Basin Heaths Special Protection Area (SPA) buffer zone.
- To the south, the open Thames flood plain dominates, with its associated flat grazing land, becoming characterised by a number of formal historic landscapes on higher ground. Between Hampton and Kew, the River Thames forms the focus of a series of designed landscapes.
- The area has an urban character, and there are very few villages of more traditional character, although almost half of the area is greenbelt land and development has been restricted in areas like Crown Estate land and Eton College grounds.
- The river is closely associated with numerous historic places and cultural events, such as the signing of Magna Carta at Runnymede. Tourists from all over the world are drawn to the rich heritage of the area, flocking to attractions like Hampton Court Palace and Windsor Castle.
- The area is important for recreation, both for residents and visitors. Historic parkland and commons provide access to green space, the Thames Path National Trail runs the length of the NCA, and a variety of activities are enjoyed on the river and other waterbodies.

Thames Valley today

The Thames Valley is the principal western approach to London. The area is steeped in history and bound by the sweeping meanders of the main rivers and major arterial transport routes.

The underlying geology is dominated by the London Clay, giving rise to the heavy (and in places waterlogged) soils typical of much of the central part of the area. This is overlain by a complex sequence of sands and gravels that form the Thames flood plain, and a more complex record of river terraces that are important in understanding both the archaeological and more recent geological history of the area.

In the south-west, the gently rolling valley sides give way to a flatter plain east of Reading, which widens to include the Slough and Windsor areas. Much of this area is near flood level, although Slough lies on slightly terraced land above the flood plain and Windsor Castle sits on a prominent local outcrop of chalk.

Further north, the land is underlain by the edge of the Chilterns chalk aquifer and reflects the rolling hills of the nearby Chilterns. As the Thames approaches London in north Surrey, the flood plain is bounded in the distance to the south and west by low, wooded hills in the adjoining Thames Basin Heaths NCA.

In the centre, the open Thames flood plain dominates. This grazed pasture includes a number of designed parklands on higher ground. South of this are clay vales characterised by large, regular field patterns and small woods.

Further south, the Thames Valley is edged by wooded ridges and rolling farmland. The central and northern parts are dominated by medium-sized riverside towns such as Maidenhead, with many private rural houses.

Thames Path between Barge Farm and Bray Lock, looking towards the village of Bray.

The wealth of the area over a long period, and its natural scenic attractions, have left an overall atmosphere of sophistication that heightens along the Thames and especially at Windsor, with its Great Park characterised by rides, ancient woodland and ancient pollard trees. Windsor Forest and Great Park, as well as Richmond Park, are recognised internationally as being important for wildlife – particularly invertebrates, and notably violet click and stag beetle. Both have been designated as Special Areas of Conservation (SAC) and Richmond Park has also been designated as a National Nature Reserve (NNR).

Water is the unifying characteristic of the area and the Thames Path National Trail runs through its entire length. As well as the Thames and its tributaries, around Slough, the Colne Valley and areas further east, the overwhelming influences are from lakes left from mineral workings and vast raised reservoirs. This NCA provides most of the clean water for London and is important for wildlife. Over 800 ha of its waterbodies are internationally designated for their importance to breeding and wintering wildfowl; this area is known as the South-West London Waterbodies SPA.

Major roads (such as the M4, M40 and M25 motorways), Heathrow Airport and railways all contribute to the wealth of the area, but also give it a feeling of patchiness. The areas around these routes are surrounded by storage facilities and industrial units.

Rapid development has often left new structures and buildings unrelated to the landscape around them. Open spaces, many of them golf courses, are interspersed. The overall impression is of a lack of cohesiveness, although older villages and woodlands survive in surprising seclusion, and areas such as those owned by the Crown and Eton College have been preserved.

The area along the river between Hampton and Kew reflects its royal patronage. The Thames forms the focus within a series of formally designed landscapes and fine historic houses, including Hampton Court Palace and Marble Hill House.

Ancient Oak, Windsor Great Park.

The landscape through time

The NCA forms the western part of the London Basin, a syncline bounded to the north by the chalk hills of the Chilterns and to the south by the North Downs. Chalk, deposited in an extensive shallow sea during the Cretaceous, underlies the NCA today, forming an aquifer and, in the north, a series of low hills, including the hill on which Windsor Castle sits. The Chalk is overlain by Cenozoic clays and sands, most notably the marine London Clay, which has led to the heavy and waterlogged soils typical of much of the NCA and underlying areas such as Richmond Park.

Much of the area is overlain by a complex sequence of Quaternary river-lain sands and gravels. These were deposited by the Thames as its course altered in response to ice-age warming and cooling. Most notable was the Anglian ice age, when ice advanced to the immediate north of the area, pushing the River Thames into its present-day course. The complex sequence of river terraces associated with the evolution of the Thames since this period have left the hillside terraced landscape characteristic of much of the NCA. These free-draining sands, gravels and associated soils have been important for market gardening and fruit growing, for the development of heathland and for numerous gravel extraction sites.

The area is rich in archaeological remains, including the iron-age hill fort at Bulstrode Park, a Mesolithic site at Braywick near Maidenhead, bronze- and iron-age earthworks around Burnham Beeches, and many important Neolithic and bronze-age sites, particularly along the river.[4]

The strategic importance of the Thames made it an ideal route way and base for early invaders. In the first years of their campaign, the Romans built bridges, roads and camps around the Wimbledon and Staines areas. Windsor Castle was built by the Normans for defensive purposes soon after the Conquest. During the reign of Henry I it became a royal residence and the area began to flourish under royal patronage. Runnymede, considered to be neutral ground between Windsor and London, was selected for sealing Magna Carta in 1215.

As medieval London expanded, the surrounding countryside became tamed to support the growing population. In its natural state the River Thames would have been shallow and meandering, flowing through a wide bed of river gravels below Richmond Hill. This would easily have flooded across an extensive flood plain of marsh, reedbed, wet woodland and swamp extending inland for many miles. As settlement spread, wetlands were drained and the river corridor was modified to allow easier navigation, causing the tide to extend much further upstream than was natural. Before Teddington Lock was built (1810–12), the Thames was tidal as far as Staines. Agriculture thrived on the rich soils and, more recently, large areas of the flood plain were built on.

By the 15th century large tracts of woodland were managed to provide timber, charcoal and oak bark. Commercial activities on the Thames included fishing (particularly eel trapping), coppicing willows and osiers, and the operation of watermills for flour production, paper production and metal beating.

Following the construction of Richmond Palace and Hampton Court Palace during Tudor times, the landscape began to evolve as successive aristocratic families moved to the area or adapted their medieval estates in the modern style. Great houses were constructed along the river amid the water meadows and woodland.

Proximity to London ensured the prosperity of the area and provided a refuge

[4] Needham p (1985) Neolithic and Bronze Age Settlement on the Buried Floodplains of Runnymede. *Oxford Journal of Archaeology*

from the dirt, disease and noise of the city. In the 18th century especially, the area attracted the most influential thinkers, poets, artists and landscape designers of the day. Inspired by the Thames and, notably, by the view from Richmond Hill, a radical new way of perceiving beauty in the landscape was born. Alexander Pope's garden at Twickenham claims to be the origin of the English Landscape movement, and the landscape has provided continued inspiration for some of England's greatest artists and writers. J M W Turner painted some of his best-loved works here and Shakespeare shows familiarity with the locality in his The Merry Wives of Windsor. It also inspired poets such as Wordsworth. Meanwhile, Horace Walpole's house at Strawberry Hill was one of the most influential individual examples of Georgian 'gothick' architecture. It was also a time of science, and the Royal Botanic Gardens at Kew were created in 1759. From 1773, under Sir Joseph Banks, the gardens established their international reputation as a centre not only for botanical collections, but also for economic botany, exploring the practical relevance of newly discovered specimens from the new colonies. The river and other parts of the area became foci for development with villas, ornamental parks and residential development, from the mid 19th century especially.

The Thames was the principal means of transportation between London and the west until the 19th century. The Great Western Railway mainline, which ran through the area, and the completion of the M4 along a similar route in 1971, both ensured that the NCA continues to benefit from this role today.

The area's proximity to London has led to relentless development, particularly during the 20th century. There have been several attempts to curb the spread of London since the time of Elizabeth I, but the principle of greenbelt was not firmly established until 1947. Nearly half of the NCA is designated as greenbelt land, characterised by some remnants of agriculture or market gardening. Nevertheless, the east has been drastically altered by the spread of outer London. The first-edition Ordnance Survey maps of 1865 show an open, farmed landscape of regular fields, relatively treeless but with groups of trees and orchards around the small villages. The scale, speed and range of development have left little sense of continuity. Yet there remain 'lost villages' where the relationship between village and immediate landscape survive intact. In 1880 the Corporation of London bought Burnham Beeches to protect it from development and maintain it as a public space, reflecting the area's importance as an amenity for the population of London.

The farmed landscape has become extremely limited due to demands made on it by reservoirs, gravel pits, and recreational uses such as pony paddocks and golf courses. Once an important area for fruit production, being the birthplace of famous varieties such as the Cox's Orange Pippin, 40 per cent of the fruit-growing area was lost between 1990 and 1998, and orchards now lie derelict or await development. Reclamation of disused mineral extraction sites has resulted in large expanses of lake and wetland, which are valuable recreational resources as well as providing important habitats for wildlife. The area remains a popular leisure amenity area, used for a wide range of activities such as boating, angling, walking and horse-riding.

While much of the Thames Valley is now developed, influenced by transport infrastructure, or altered by the extraction of aggregates, it is still possible to appreciate the verdant and productive landscape that attracted royalty and nobility. The view from Windsor Castle described by William Camden in 1586, although fragmented, can still be found and experienced in the ancient woodlands, meadows, parklands and productive agriculture of the area:

"It gazes down over the prospect of a wide and far-reaching vale, patterned with ploughland, green with its meadows, clad here and there with woodlands, and watered by the softly flowing Thames. Behind it the hills rise all around, neither rough nor very high, but crowned with woods as though Nature herself had dedicated them to the chase."

Ecosystem services

The Thames Valley 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 Thames Valley NCA is contained in the 'Analysis' section of this document.

Provisioning services (food, fibre and water supply)

- **Food provision**: The gravel beds of the upper tideway are an important nursery ground for several species of North Sea fish, notably flounder. The spread of urban areas has reduced agricultural land within the NCA to under 25 per cent per cent. The NCA now produces a limited range of crops and livestock.

- **Biomass energy**: The potential yield for miscanthus is predominantly high throughout, while for short rotation coppice it is predominantly medium. The existing woodland cover (13 per cent per cent) offers potential for biomass through managing woodland, although woodland is concentrated in the north of the area and is missing from much of the NCA.

- **Water availability**: The north of the NCA is underlain by the edge of the Chilterns chalk aquifer and chalk streams feed into the water supply. Overall, the area is under considerable pressure to supply London and the surrounding area. Water sources have been assessed as either over-abstracted or having no availability for abstraction. Most of the area's demand for water is met by the Thames, with most licences being for public water supply. The largest single licence is used to supply the Lower Thames reservoirs, to meet the water needs of London. Of all the rivers in the NCA, only the Loddon (east of Reading) is classed as having water available for abstraction.

- **Genetic diversity:** The NCA contains the Royal Botanic Gardens at Kew, which were awarded UNESCO World Heritage Site status in 2003 – partly for their uninterrupted role as a centre of plant research, but also for their unique collections of living and stored material. The Great Vine at Hampton Court Palace is the oldest and largest known vine in the world. A few remnant orchards also contain the genetic material of local fruit varieties, such as Cox's Orange Pippin, first developed in this area.

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

- **Regulating water quality**: Where assessed (for compliance with the Water Framework Directive), groundwater quality is generally poor, as is river chemical quality – including for the River Colne in the east and the Thames. Almost all of this NCA's rivers are classed as achieving only moderate ecological status or potential, with one or two small stretches classed as either good or poor.

- **Regulating water flow:** Flood regulation is a key issue throughout, with flood risk affecting numerous settlements. Locks and weirs maintain water levels along the Thames, and can be fully opened when flows increase, to minimise impact. The Thames Catchment Flood Management Plan identifies that further action needs to be taken to reduce flood risk throughout the area, with policies that include measures to store water or manage run-off while also providing environmental benefits.

Cultural services (inspiration, education and wellbeing)

- **Sense of place/inspiration**: A sense of place is supported by the presence of water throughout the area, in the form of the River Thames and its tributaries, as well as numerous open waterbodies that are the result of gravel workings and reservoirs. The view of St Paul's cathedral from King Henry's Mound in Richmond Park, created in 1710, is a protected view, an example of the important connections between this area and the capital. The landscape is described in the works of some of the most famous writers in English literature, including Shakespeare, Jerome K Jerome and Sir Walter Scott. It has also inspired great artists such as J M W Turner and Joshua Reynolds, as well as poets including Alexander Pope. William Wordsworth described the nightingales (for which the area was famed) as 'the quire of Richmond Hill, chanting with indefatigable bill'. The 'Arcadian Thames' area around Richmond and Twickenham is the birthplace of the English Landscape movement. Walpole's house at Strawberry Hill is internationally recognised as the finest surviving example of Georgian 'gothick' and an inspiration for the Gothic Revival. The historic parkland, veteran trees and rich biodiversity reflect the NCA's long history as an area of recreation and escape on the edge of London.

- **Sense of history**: Historic buildings include large houses set within their own grounds, along with traditional black timber-framed farm buildings. Windsor Castle sits atop its chalk outcrop by the Thames, while other internationally renowned buildings along the river include Hampton Court Palace and the Palm House at Kew. The river is closely associated with important historic and cultural events, including the attachment of the Great Seal to Magna Carta at Runnymede in 1215, and the death of Elizabeth I at Richmond. Historic parklands, such as Dropmore, Langley and Richmond, are highly distinctive features, as are characteristic veteran pollards – important elements in fields, hedgerows and parkland.

- **Recreation**: Recreation is supported by over 1,000 km of rights of way (a density of 1.19 km per km2), including the Thames Path National Trail, as well as by the area's parklands, greens, commons, woodlands and waterbodies (with private recreation evident in numerous golf courses throughout the area). Sailing, watersports and angling are all popular pursuits on the River Thames, and on many reservoirs and other waterbodies. Commons and other open access land provide recreational opportunities in places such as Chertsey Meads and Staines Moor, along with three of London's National Nature Reserves: Ruislip Woods, Burnham Beeches and Richmond Park. There are also several accessible historic parks in the north, including Denham and Black Park Country Parks. Most of the 108-kilometre Thames Valley National Cycle Route between London and Oxford runs through the NCA, and National Cycle Route 61 runs along the length of the Jubilee River. All of the above contribute to the health and wellbeing of the large population of this predominantly urban NCA.

- **Biodiversity**: The diversity of geology has resulted in a variety of habitats and land uses across the area, including heathland over acidic sands north of Slough, large areas of woodland over the clays (notably Windsor Forest in the south and Burnham Beeches in the north), extensive gravel workings along the flood plain and an outcrop of chalk at Windsor. The meadows and pastures of the river valleys are important for wading birds: lapwing, snipe, curlew and redshank breed in the area, and in winter large numbers of lapwing and golden plover are attracted to the

flood plain. Scrub and woodland near water is important for songbirds, notably nightingale. Biodiversity Action Plan (BAP) priority habitat covers around 6 per cent per cent of the NCA: this includes over 2,500 ha of woodland and around 2,000 ha of other wetland habitat, as well as small but important areas of lowland heathland. Over 800 ha of waterbodies within the area are internationally designated as SPA and Ramsar sites for their importance for various wildfowl, for example Northern shoveler, gadwall and 7.8 per cent of the British population of overwintering smew. There are four SAC covering over 3,000 ha and noted particularly for invertebrate interest. Around 7,000 ha of historic parkland across the NCA provide a rich variety of habitats. Windsor Great Park is widely regarded as the foremost site in the United Kingdom for invertebrates and fungi associated with wood pasture and parkland. A small part of the Thames Basin Heaths SPA buffer zone lies within the NCA, south of Windsor.

- **Geodiversity**: Geodiversity strongly influences the character of the area, including its topography, habitat distribution and land use. Most notable are the influence on water supply of underlying sediments and structures, and the numerous examples of sand and gravel extraction across the area. The area is particularly important for understanding landscape evolution over the last 400,000 years: this period saw the maximum advance of the Anglian ice sheet, forcing the River Thames southwards into its current course. The subsequent evolution of the Thames is documented in the complex sequence of river terraces, which are also intimately linked to understanding the archaeological history of the area.

View from Richmond Hill across Petersham Meadows and the Thames.

Statements of Environmental Opportunity

SEO 1: Plan for the enhancement of the area's rivers, and the expansion of their operational flood plains and associated wetland habitats, aiding the regulation of water flow, improving water quality, benefiting biodiversity, and reinforcing cultural heritage and landscape.

For example, by:

- Restoring natural river geomorphology where it brings benefits for biodiversity, and regulating the flow of water – where necessary maintaining modifications that allow for recreational activities.
- Improving the maintenance of rivers and ordinary watercourses feeding into the Thames, and supporting river improvement initiatives within and beyond the NCA, such as the Chilterns Chalk Streams Project.
- Bringing rivers back into continuity with their flood plains, and allowing the seasonal inundation of land where it will contribute to flood alleviation and benefit biodiversity.
- Providing compensatory flood plain areas where the natural flood plain has been lost to development or ground-raising.
- Protecting, restoring and expanding meadows and other wetland habitats on flood plains, to create robust networks that enhance biodiversity and landscape, while helping to alleviate downstream flooding and improving water quality.
- Restoring and managing wet woodlands, including riverside willows and belts of poplar along the Thames flood plain, improving biodiversity and the regulation of water flows, and providing a local source of woodfuel.
- Ensuring that scrub and woodland is maintained to provide a habitat for songbirds – particularly nightingale, which was once a key species in this area.
- Forming corridors using restored rivers to link sites that benefit wildlife, enabling greater movement of species. Also incorporating access provision to allow for the movement of people.
- Working with farmers, landowners and interest groups within and beyond the NCA to promote the use of soil and nutrient management plans, and to raise awareness of codes of best practice.

The Thames at Reading.

SEO 2: Plan for the landscape-scale enhancement of the area's extensive gravel workings and other open waterbodies (including reservoirs) forming part of the South-West London Waterbodies Special Protection Area, for their contribution to water supply and storage, for their important habitats and recreation facilities, and for their geological interest.

For example, by:

- Focusing biodiversity improvements on areas such as Loddon Valley Gravel Pits, Bray to Eton Pits and Meadows, Colne Valley Gravel Pits and Reservoirs, Thorpe and Shepperton, and Molesey and Hersham.
- Creating attractive new wetlands linking with wider wetland habitats on flood plains, to aid flood management in areas such as the Lower Thames and Kennet Valley. Creating a robust network of wildlife habitats, benefiting biodiversity, reinforcing landscape character and helping to regulate water quality.
- Managing the risk of spreading non-native invasive species to new sites through human activity, for example by promoting the 'Check, Clean, Dry' campaign.[5]
- Where appropriate, incorporating features to support recreational pursuits such as bird-watching, sailing, fishing and walking, to encourage engagement with nature, to contribute to the health and wellbeing of the population, and to boost the local economy.
- Encouraging imaginative solutions to conflicts between various activities, should these arise.
- Protecting the surviving geological heritage of the area by conserving important geological exposures, improving the condition of existing sites, and maintaining features and exposures. Improving access where appropriate, to promote an understanding and enjoyment of geodiversity and of its importance in forming the landscape.
- Developing restorative management of Local Geological Sites, offering opportunities for volunteering and community engagement while encouraging an appreciation of the palaeontological resource.

London Wetland Centre.

[5] https://secure.fera.defra.gov.uk/nonnativespecies/checkcleandry/index.cfm

SEO 3: Maintain existing greenspace and plan for the creation of green infrastructure associated with the significant projected growth of urban areas, to reduce the impact of development, to help reduce flooding issues, and to strengthen access and recreation opportunities. Seek links from urban areas to wider recreation assets such as the Thames Path National Trail, National Cycle Routes, and the river and canal network, and promote the incorporation of best practice environmental measures into any new development.

For example, by:

- Creating multi-functional natural green space surrounding new development, linking into the heart of urban areas as part of comprehensive green infrastructure planning. This provides the wider benefits of enhancing the landscape and reducing the 'heat island' effect, as well as aiding water regulation, carbon sequestration, and habitat adaptation to climate change through the creation of robust habitat networks, and also supporting the local provision of woodfuel.
- Protecting and maintaining semi-urban green spaces such as commons, village greens and churchyards as areas for community engagement with nature, exercise and biodiversity.
- Encouraging the introduction of measures to encourage biodiversity, such as enhanced habitat provision within urban developments (for example bat roosts and swift nest boxes).
- Incorporating recreational green space for the health and wellbeing of residents and visitors.
- Creating sustainably-managed broadleaved woodlands along transport corridors, improving noise reduction, air quality and assimilation into the landscape, while benefiting biodiversity and climate regulation.
- Ensuring that development and its associated infrastructure (including light and noise) do not intrude on the wider landscape – particularly on heritage assets, surviving small-scale villages and the special qualities of the Chilterns Area of Outstanding Natural Beauty.
- Promoting the incorporation of sustainable urban drainage systems to reduce flood risk, and water conservation measures to support water resources and to manage demand.
- Encouraging initiatives that support rural businesses and the viability of farming in the area, and that provide opportunities for local populations to engage with the natural environment.
- Using green space creation and tree planting to buffer noise, reduce air and noise pollution, reduce soil erosion, improve water quality and enhance perceptions of tranquillity.
- Extending and improving existing rights of way and cycle networks to provide better links between – and access to – green space and heritage assets.
- Ensuring that spatial planning and design for urban development and infrastructure aim to reduce surface water run-off, protect and restore habitats, improve the quality of rivers and groundwater, and so protect drinking water supplies.
- Creating new wetlands as part of sustainable urban drainage systems, particularly in the Lower Thames area. Linking with wider wetlands within flood plains to aid flood management, create a robust wildlife habitat, regulate water quality and benefit biodiversity.

SEO 4: Protect and manage the area's historic parklands, wood pastures, ancient woodland, commons, orchards and distinctive ancient pollards, and restore and increase woodland for carbon sequestration, noise and pollution reduction, woodfuel and protection from soil erosion, while also enhancing biodiversity, sense of place and history.

For example by:

- Restoring and sustainably managing the area's historic parkland and wood pasture.
- Identifying and creating a new generation of pollards. Reintroducing pollard management where appropriate, to aid adaptation to the more extreme weather conditions resulting from climate change, benefiting the landscape, the cultural heritage and biodiversity.
- Restoring and sustainably managing traditional orchards where economically viable, using local fruit tree varieties.
- Conserving characteristic ancient trees in hedgerows, fields, historic parklands and areas of wood pasture.
- Restoring hedgerow field boundaries, especially to impede cross-land water flows within river catchments, prevent nutrient leaching and soil erosion, and form bridging gaps in the wildlife network. Also maintaining and restoring historic field patterns.
- Exploiting the growing popularity of 'green' and woodland burials to create broadleaved habitat and links between sites in areas where this would otherwise be very difficult.
- Maintaining and enhancing core strategic assets such as the Thames Path, Windsor Great Park, Langley Park, Denham Country Park, Richmond Park and Burnham Beeches within the wider network of local sites, rights of way and promoted routes.
- Advertising the benefits offered by the area's accessible parkland and extending the range of activities such as orienteering, bushcraft, cycling and nature trails – but only where these do not intrude on the character of the park, or damage nature or heritage assets.
- Restoring, expanding and sustainably managing woodlands, including ancient woodland, for the prevention of soil erosion, carbon sequestration and storage, recreation, enhancing biodiversity and landscape, and providing a local source of woodfuel.
- Ensuring that access to the ancient woodland, veteran trees and other environmentally sensitive sites provides equality of opportunity and a connection with nature and history, without causing damage or degradation to these unique assets.

Hornbeam Pollards, Mad Bess Woods, Ruislip Woods.

SEO 5: Develop the recreational, educational and commercial tourism opportunities offered by public access to – and engagement with – the historic buildings and landscapes in the area, such as Hampton Court Palace, Windsor Castle and the Royal Botanic Gardens at Kew, for their contribution to a sense of place and to people's enjoyment and understanding of the area.

For example by:

- Including extensions to public right-of-way networks and cycle routes where this provides strategic links between assets, and creating short-amenity routes or improved access to green spaces.
- Maintaining and restoring traditional buildings, including weather boarded timber-framed farm buildings in the western clay vale.
- Protecting heritage assets (particularly those at risk) through sensitive incorporation into new development, to encourage engagement with local populations and to reinforce a sense of place.
- Encouraging the dispersal of visitor pressures through investment in high-quality infrastructure designed to meet the different needs and levels of use of all visitors, including local communities, recreational day-trippers and tourists.
- Encouraging sensitivity in development, particularly along the river, to avoid causing any detriment to the character of the historic features and landscape.
- Working with farmers, landowners and local authorities to encourage educational initiatives (such as open farms, improved access and interpretation) that promote engagement with the local environment and develop cultural identity and awareness.

Hampton Court Palace.

Additional opportunity

1. Manage and enhance the area's heathland and dry unimproved grassland habitats by restoring and expanding existing areas and linking sites.

For example by:

- Restoring and re-linking areas of lowland heathland to restore the extent and condition of this important resource and enhance adaptation to climate change, while also improving groundwater quality within the area and assisting in climate regulation through the storage of soil carbon.
- Restoring and expanding lowland dry acid grassland and (dry) lowland meadows, and connect with wide grassland buffer strips running across slopes and adjacent to watercourses, to help impede cross-land flows and improve water quality.
- Restoring and re-linking areas of lowland heathland on higher sandy ground in the north, especially within the South Bucks Heaths and Parklands Biodiversity Opportunity Area, to restore the extent and condition of this important resource.
- Working with the Thames Basin Heaths Joint Strategic Partnership to co-ordinate heathland restoration and encourage measures to avoid any adverse impact on the SPA.

Meadows between Thames and Magna Carta Memorial, Runnymede.

Supporting document 1: Key facts and data

Total area: 86,062 ha

1. Landscape and nature conservation designations

The Thames Valley, covering parts of Berkshire, Buckinghamshire, Surrey and Hertfordshire as well as part of Greater London, includes part of the North Wessex Downs and the Chilterns Areas of Outstanding Natural Beauty (AONBs) - covering 158 ha and 114 ha respectively.

Management Plans for the protected landscape(s) can be found at:

- www.chilternsaonb.org/
- www.northwessexdowns.org.uk/

Source: Natural England (2011)

1.1 Designated nature conservation sites

The NCA includes the following statutory nature conservation designations:

Tier	Designation	Name	Area (ha)	Percentage of NCA
International	Ramsar	South West London Waterbodies	820	1
European	Special Protection Area (SPA)	South West London Waterbodies SPA	820	1
	Special Area of Conservation (SAC)	Windsor Forest & Great Park SAC; Richmond Park SAC; Burnham Beeches SAC; Wimbledon Common SAC	3,148	4
National	National Nature Reserve (NNR)	Richmond Park NNR; Ruislip Woods NNR; Burnham Beeches NNR	1,184	1
National	Site of Special Scientific Interest (SSSI)	A total of 38 sites wholly or partly within the NCA	5,036	6

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.

South West London Waterbodies Ramsar and SPA are coterminous. Richmond Park and part of Burnham Breeches are also NNRs and all of these are also designated SSSIs.

There are 469 local sites within The Thames Valley covering 11,221 ha, or 13 per cent of the NCA.

Source: Natural England (2011)

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

1.1.1 Condition of designated sites

SSSI condition category	Area (ha)	Percentage of SSSI land in category condition
Unfavourable declining	115	2
Favourable	2,427	48
Unfavourable no change	7	<1
Unfavourable recovering	2,474	49

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

There is a difference of 125m between the lowest point of 1m and the maximum height of 126 m.

Source: London Basin Natural Area Profile, Thames Valley Countryside Character Area description

2.2 Landform and process

In its northern parts, the landform reflects the rolling hills characteristic of the nearby Chilterns. Here, the Chalk is overlain by clay and gravel, giving rise to a plateau and a series of knolls. The central part of the Thames Valley is dominated by the Thames flood plain, giving way to clay vales further south. There are lakes in the east resulting from mineral workings.

Source: London Basin Natural Area Profile, Thames Valley Countryside Character Area description

2.3 Bedrock geology

The Thames Valley is geologically part of the London basin which is a syncline – a concave fold with the oldest sediments at its periphery – formed 20 to 40 Ma as a result of the Alpine Orogeny (mountain-building). The region became dry land during this time. The oldest rock here is the chalk, which was laid down in warm shallow seas during the Cretaceous period. It is overlain by Palaeogene and Neogene sands and mudstones. Following a marine transgression some 55 Ma, the London Clay was laid down. Overlying this are the Bagshot, Barton and Bracklesham Beds. These sands and clays were deposited on a large coastal plain. There are very small areas of sediments of other formations.

Source: London Basin Natural Area Profile, Thames Valley Countryside Character Area description

2.4 Superficial deposits

Important Quaternary sediments are present, recording the changing temperatures during this period and the presence and absences of ice sheets. The Anglian ice sheet advanced as far south as the northern rim of the London Basin and forced the young River Thames to change its course to its current one. Fluvial sediments deposited by the Thames river system before the Anglian Ice Age, occur predominantly along the northern edge of the London Basin, parallel with the axis of the syncline. Sediments deposited after the Anglian Ice Age are found along the flood plains of the current rivers. The youngest sediments are sands and gravels deposited by the Thames in its current location since the last ice age.

Source: London Basin Natural Area Profile, Thames Valley Countryside Character Area description

2.5 Designated geological sites

Tier	Designation	Number
National	Geological Site of Special Scientific Interest (SSSI)	3
National	Mixed interest SSSIs	0
Local	Local Geological Site	4

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

Heavy clayey soils resulting from the underlying geology

Source: London Basin Natural Area Profile, Thames Valley Countryside Character Area description

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

Agricultural Land Classification	Area (ha)	Percentage of NCA
Grade 1	2,919	3
Grade 2	2,334	4
Grade 3	2,8047	33
Grade 4	3,666	4
Grade 5	0	0
Non-agricultural	20,173	23
Urban	28,023	33

Source: Natural England (2010)

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

3. Key waterbodies and catchments

3.1 Major rivers/canals

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

Name	Length in NCA (km)
River Thames	57
Grand Union Canal	35
River Colne	28
Colne Brook	15
River Loddon	12
River Misbourne	11
River Kennet	11

Source: London Basin Natural Area Profile, Countryside Character Area description, main rivers identified from OS Strategic data

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

The Thames Valley is drained by the River Thames and its many tributaries.

3.2 Water quality

The total area of Nitrate Vulnerable Zone is 41, 393 ha, 48 per cent of the NCA.

Source: Natural England (2010)

3.3 Water Framework Directive

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

4. Trees and woodlands

4.1 Total woodland cover

The NCA contains 11,537 ha of woodland, 13 per cent of the total area, of which 2,644 ha, or 3 per cent is ancient woodland

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

4.2 Distribution and size of woodland and trees in the landscape

Woodland within the Thames Valley is generally confined to a matrix of small farm woods. However, the north-western edge is characteristically wooded, extending up to the southern edge of the Chiltern Hills.

Source: London Basin Natural Area Profile, Thames Valley Countryside Character Area description

4.3 Woodland types

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

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

Woodland type	Area (ha)	Percentage of NCA
Broadleaved	9,899	12
Coniferous	982	1
Mixed	395	<1
Other	261	<1

Source: Forestry Commission (2011)

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

Woodland type	Area (ha)	Percentage of NCA
Ancient semi-natural woodland	1,875	2
Ancient re-planted woodland (PAWS)	770	<1

Source: Ancient Woodland Inventory, Natural England 2007

5. Boundary features and patterns

5.1 Boundary features

The estimated total length of resource is 3,614 km. In 2011 165 km of boundary features were under Environmental Stewardship agreements including ditches (9km), hedgerows (124km) and woodland (31km). Mature oaks are a characteristic feature of hedgerows in the NCA.

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

5.2 Field patterns

Regular field patterns on the flood plain suggest late enclosure, while smaller field patterns on the higher ground suggests earlier enclosure of drier land.

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

6. Agriculture

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

6.1 Farm type

The number of commercial holdings dropped from 411 in 2000 to 339 in 2009. The number of livestock farms fell from 138 to 90 (-35 per cent) during this time and the number of mixed farms fell from 30 to 14 (-53 per cent). The number of arable and horticultural holdings decreased by 17 per cent, from 100 to 83.

Source: Agricultural Census, DEFRA (2010)

6.2 Farm size

From 2000 to 2009 there was a change in the size profile of farm holdings across the NCA from small and large to more medium sized holdings. The number of holdings < 5 ha decreased from 64 (totalling 119 ha) to 42 (56 ha); holdings of 5 – 20 ha decreased by 30 per cent from 161 (1720 ha) to 113 (1,298 ha); holdings of 20 – 50 ha increased by 14 per cent from 86 (2,690 ha) to 88 (2,867 ha); holdings of 50 – 100 ha increased by 2 per cent from 56 (3,916 ha) to 57 holdings (4,012 ha); holdings > 100 ha in size decreased from 44 (10,547) to 39 (9,784 ha).

Source: Agricultural Census, DEFRA (2010)

6.3 Farm ownership

In 2009 the total area of farmland was 18,027 ha of which owned land accounted for 10,796 ha. In 2000 the total area of farms was 18,992 ha, with 12,266 ha owned land.

Source: Agricultural Census, DEFRA (2010)

6.4 Land use

From 2000 to 2009, the area of land used for cereal cultivation decreased from 4,702 to 4,064 ha. Oilseeds cultivation decreased from 951 to 854 ha. Overall, the area given over to arable crops increased from 805 to 889 ha.

Source: Agricultural Census, DEFRA (2010)

6.5 Livestock numbers

In 2009 there were 7,000 cattle, down from 10,000 in 2000; 11,000 sheep, down from 19,000 in 2000; and 6,000 pigs, down from 14,000 in 2000.

Source: Agricultural Census, DEFRA (2010)

6.6 Farm labour

The number of principal farmers within the NCA fell from 484 in 2000 to 359 in 2009, and there were 10 fewer salaried managers; 64 down from 74. The number of full time workers fell from 252 to 173 in the same period, as did casual/gang workers, from 202 to 146. The number of part time workers rose from 106 to 121.

Source: Agricultural Census, DEFRA (2010)

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

7. Key habitats and species

7.1 Habitat distribution/coverage

A range of BAP habitats exists at several discrete locations, for example Burnham Beeches. There are areas of wet woodland throughout the NCA, and an expanse of mixed deciduous lowland woodland at Windsor Forest.

Source: London Basin Natural Area Profile

7.2 Priority habitats

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

Burnham Beeches.

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

Priority habitat	Area (ha)	Percentage of NCA
Broadleaved mixed & yew woodland (Broad habitat)	5,460	6
Lowland meadows	294	<1
Fens	20	<1
Lowland dry acid grassland	1,133	1
Purple moor grass	5	<1
Reedbed	531	1
Coastal flood plain & grazing marsh	236	<1
Lowland heathland	68	<1
Lowland calcareous grassland	17	<1
Mudflats	1	<1

Source: Natural England (2011)

- Maps showing locations of priority habitats are available at: **http://magic.defra.gov.uk** – select 'Habitats and Species/Habitats'

7.3 Key species and assemblages of species

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

8. Settlement and development patterns

8.1 Settlement pattern

About 45 per cent of land is within greenbelt. The area has a high rate of change to urban with expansion of urban into peri-urban evident at Slough, Rickmansworth, Bracknell, Reading and Wokingham. In the more rural parts there is also evidence of continued development on previously undeveloped land.

Source: Office for National Statistics census data 2001

8.2 Main settlements

Main settlements include Slough, Rickmansworth, Bracknell, Reading and Wokingham. The total estimated population for this NCA (derived from ONS 2001 census data) is: 1,420,439.

Source: Office for National Statistics census data 2001

8.3 Local vernacular and building materials

Large houses set within 18th or early 19th century ornamental parkland, concentrated to the north of Bracknell, provide a stark contrast with sporadic modern development. There are very few villages remaining of traditional character.

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

9. Key historic sites and features

9.1 Origin of historic features

Royal estates and palaces include Hampton Court; large houses set within 18th or early 19th century ornamental parkland, concentrated to the north of Bracknell; and Eton College.

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

9.2 Designated historic assets

This NCA has the following historic designations:

- 58 Registered Parks and Gardens covering 6,950 ha
- 2 World Heritage Sites
- 79 Scheduled Monuments
- 5,009 Listed Buildings

Source: Natural England (2010)

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

Horace Walpole's "Gothick" mansion, Strawberry Hill.

10. Recreation and access

10.1 Public access

- 7 per cent of the NCA (5,805 ha) is classified as being publicly accessible.
- There are 1,027 km of public rights of way at a density of 1.2 km per km$^{2.}$ The Thames Path National Trail accounts for 89 km of this.

Sources: Natural England (2010)

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

Access designation	Area (ha)	Percentage of NCA
National Trust (Accessible all year)	363	<1
Common Land	1,133	1
Country Parks	521	1
CROW Access Land (Section 4 and 16)	1,318	2
CROW Section 15	1,953	2
Village Greens	62	<1
Doorstep Greens	0	0
Forestry Commission Walkers Welcome Grants	1,830	2
Local Nature Reserves (LNR)	853	1
Millennium Greens	<1	<1
Accessible National Nature Reserves (NNR)	1,335	2
Agri-environment Scheme Access	0	0
Woods for People	3,330	4

Sources: Natural England compiled data 2011/Woodland Trust/National Trust/Forestry Commission

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) none of this NCA can be officially considered as tranquil. The lowest scores for tranquillity are around the urban areas and Heathrow Airport. Expanses of parkland such as Windsor Great Park score medium tranquillity.

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

Tranquillity	Score
Highest value within NCA	<1
Lowest value within NCA	-131
Mean value within NCA	-59

Sources: CPRE (2006)

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

11.2 Intrusion

The 2007 Intrusion Map (CPRE) shows the extent to which rural landscapes are 'intruded on' from urban development, noise (primarily traffic noise), and other sources of visual and auditory intrusion. This shows that almost the entire NCA is disturbed by visual and auditory intrusion. A breakdown of intrusion values for this NCA are detailed in the table below.

Intrusion category	1960s (%)	1990s (%)	2007 (%)	Percentage change (1960s-2007)
Disturbed	63	75	57	-6
Undisturbed	14	1	<1	-14
Urban	23	23	43	20

Sources: CPRE (2007)

Notable trends from the 1960s to 2007 are a steady growth in urban areas.

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

Windsor Castle.

12. Data sources

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

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

Supporting document 2: Landscape change

Recent changes and trends

Trees and woodlands

- Over the last 10 years, following uptake of the Woodland Grant Scheme, woodland in the area has been enhanced, and in some places increased. Broadleaf woodland SSSI are predominantly in favourable condition, suggesting the wooded character is strengthening. The area is also of international importance for its parklands, which include Windsor Great Park and Richmond Park Special Areas for Conservation (SAC) and has a high priority for the restoration of coppice management.

- The potential for the creation of new woodlands is identified as being low.

Boundary features

- Field boundaries in the area are predominantly hedgerows. The introduction of Environmental Stewardship (ES) in 2005 has led to an increase in the length of boundary features managed under schemes. As of March 2011, 124 km of hedgerow was managed under ES.

- The estimated total length of boundary features is about 3,614 km in this NCA. As the total length of these in agricultural environment agreements is very low at barely 165 km, the resource has probably been neglected.

Agriculture

- Farming is generally limited in this area because of the urban character, expansion of settlements, demand for reservoirs, gravel pits and recreation facilities such as golf courses.

- Countryside Stewardship uptake for annual area features followed the national average since 1999. The most extensive annual Countryside Stewardship agreements in 2003 were for lowland hay meadows (249 ha), regeneration of grassland/semi-natural vegetation (239 ha) and lowland pastures on neutral/acid soils (187 ha). The extent of Countryside Stewardship agreements is important but limited. Agricultural character has been weakened and continues to erode slowly.

- Agriculture has largely been expelled from the area within the M25 other than for some remnants. Elsewhere there is a mixture of arable and pasture. The cultivated parts of the Thames floodplain are dominated by grazing land with arable increasing to the west.

- Between 2000 and 2009, the total area devoted to farming dropped by 5 per cent. The number of livestock fell, with pigs showing the sharpest drop of 60 per cent. Cattle and sheep numbers fell by 32 per cent and 42 per cent respectively but the area of land classed as uncropped or grazing fell by only 4 per cent. In many areas this grazing is now exclusively for horses. During this period, all land used for crop growing also reduced apart from small increases in that used for hardy nursery stock and "other" arable crops.

Settlement and development

- Towards London, the natural character of the area is overtaken by urban influences; a dense network of roads including the M25 corridor, Heathrow Airport, railway lines, golf courses, pylon lines, reservoirs and extensive mineral workings. Villages are now engulfed by development.

- The fringe zone to Greater London has seen rapid and often haphazard development giving the overall impression of a lack of co-ordination.

- Further west, towns expanded continually since the late 19th century. The area has a high rate of change to urban, particularly evident at Slough, Rickmansworth, Bracknell, Reading and Wokingham. Development pressure continues to transform the natural character.

Semi-natural habitat

- Many designated Sites of Special Scientific Interest (SSSI) are broadleaved woodlands, which are generally in favourable condition. Acid grasslands are also frequent but their condition is mostly unfavourable (no change). Uptake of Countryside Stewardship for semi-natural grassland management is limited given size of the area.

- Recent conservation efforts have began to reverse the decline in natural reedbeds. New reedbeds have been planted at Hampton, Marble Hill, Richmond and Molesey and nearby the Wildlife and Wetland Centre at Barnes is now classified as a SSSI.

- Although the area of lowland heathland is relatively small at around 70 ha, most is SSSI and its proximity to the adjacent Thames Basin Heaths SPA makes it highly significant. Much is being restored and extended under High Level Stewardship agreements.

Historic features

- The Royal Botanic Gardens at Kew were designated a UNESCO World Heritage Site in 2003, covering not just the gardens themselves but a surrounding buffer zone of nearly 300 ha.

- There are limited Countryside Stewardship agreements for management of historic landscapes. The character of the resource probably remains weakened. About 67 per cent of parkland is covered by Historic Parkland Grants and about 9 per cent in agri-environmental schemes.

- There is a medium-high concentration of pre-1750 farmstead buildings, typically of loose courtyard plan with timber-framed barns (including aisled barns) and cattle housing (often a later addition). There are many mainly 19th century farmsteads built in brick with Welsh slate or tile or pantile roofs, often arranged in regular courtyard complexes. About 55 per cent of historic farm buildings remain unconverted. About 83 per cent are intact structurally.

Coast and rivers

- The presence of water is a key feature - in the form of rivers, streams, lakes, canals and open water bodies (the result of restored gravel workings).

- The NCA is under extreme pressure for water, being the main supplier for London. Further large-scale development is planned for this area. Almost all

rivers are heavily modified and suffer from pollution and low flows. There are concerns that low flows (in times of low rainfall and high demand for water) might be impacting on ecology, including the passage of migratory fish.

- Invasive non-native species are an increasing problem. Japanese knotweed has doubled its distribution in the last 20 years and non-native crayfish are increasing their range (Grand Union Canal being a hotspot for recent sightings). Freshwater shrimp species has recently been found in the Thames around Windsor and Eton.

- The population of Chinese mitten crabs in the Thames catchment has increased dramatically since the 1980s[6]. This population continues to expand westwards and reach Boveney Lock, just upstream of Windsor in 2007.

- The Jubilee River was constructed by the Environment Agency in the early 2000s to take overflow from the River Thames and alleviate flooding to areas in the Maidenhead, Windsor, and Eton areas. A footpath combined with National Cycle Route 61 runs along virtually its entire length.

Minerals

- Extraction of gravel has shaped the landscape and remains an important industry in the NCA. Reclamation of disused mineral extraction sites has resulted in large expanses of lake and wetland which provide important habitats for wildlife and are also valuable recreational resources.

[6] www.nhm.ac.uk/resources-rx/files/mitten-crab-environment-agency-report-58345.pdf

Drivers of change

Climate change

- The Thames Barrier protects London and the Thames Valley from flooding caused by tidal surges. However, the Environment Agency predicts that this is unsustainable in the future. Milder, wetter winters may result in increases of peak river flows of 20 per cent.

- More frequent, short duration, intense storms in summer are likely to cause more widespread and regular "flash" flooding from overwhelmed drainage systems and some rivers. It is estimated for example, that fluvial flows entering the tidal river at Teddington will increase by up to 40 per cent by 2080.

- The Environment Agency estimates that where properties have 1 per cent risk of flooding from rivers in the Thames catchment area, this may increase by approximately 20 per cent as a result of climate change. In areas with wide, flat floodplains such as Thames Valley itself, this may be higher.

- The area's woodlands, particularly its highly characteristic and ecologically important veteran trees may be affected by increased storminess, periods of drought and the prevalence of pests and diseases, with the loss of shallow-rooting beech and previously-pollarded ancient trees to wind-throw and drought-stress.

- Drier summers and increasing temperatures could lead to deterioration in the area's semi-natural wetland habitats, including ancient wet meadows and could also lead to lower river flows and increased demand for water resources.

Other key drivers

- Development pressures include major roads, lighting and signage, expansion of urban areas and airport development, much unrelated to the surrounding area and contributing to the overall fragmentation of the landscape.
- Incipient pressure from non-farming use of small-sized holdings, notably horse grazing and land held for 'hope value'. Also pressure from recreational uses, particularly golf course development, often at the expense of commons and heathland.
- Designed parkland features at risk from changing agricultural activities, development pressure and lack of management for individual trees.
- Fly-tipping, casual illegal use such as motorbike scrambling and incursion by travellers are common.
- Recent growth in popularity of "green" and woodland burials and interest in woodfuel may present opportunities for creation of new woodland.
- The Environment Agency and Thames Water plan to address the key pressures in the catchment, and those waters in poor condition will be prioritised.
- Measures to ease the passage of fish will increase their population in the freshwater Thames upstream.
- The Thames Rivers Restoration Trust Action Plan (2009) aims to find areas where floodwater can be safely stored, restore natural shape and function and form corridors between SSSI and reserves for wildlife to move around.
- Development may provide opportunities for co-ordinated provision of quality green infrastructure. This will have benefits for the health and well-being of those living in the NCA as well as visitors.
- There is likely to be continued demand for recreation opportunities from those living in the more urban parts of the NCA and Inner London.

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.

The Thames Path at Richmond.

Statement of Environmental Opportunity	Ecosystem Service: Food provision	Timber provision	Biomass energy	Water availability	Genetic diversity	Regulating climate change	Regulating soil erosion	Regulating soil quality	Regulating water quality	Regulating water flow	Pollination	Pest regulation	Regulating coastal erosion	Sense of place / Inspiration	Sense of history	Tranquillity	Recreation	Biodiversity	Geodiversity
SEO 1: Plan for the enhancement of the area's rivers, and the expansion of their operational flood plains and associated wetland habitats, aiding the regulation of water flow, improving water quality, benefiting biodiversity, and reinforcing cultural heritage and landscape.	↗ **	↗ *	↗ **	↑ ***	↔ *	↑ **	↗ **	↗ **	↑ ***	↑ ***	↔ *	↗ *	N/A	↑ ***	↑ **	↗ ***	↑ ***	↑ ***	↔ *
SEO 2: Plan for the landscape-scale enhancement of the area's extensive gravel workings and other open waterbodies (including reservoirs) forming part of the South-West London Waterbodies Special Protection Area, for their contribution to water supply and storage, for their important habitats and recreation facilities, and for their geological interest.	↘ *	↔ *	↔ *	↑ ***	↔ *	↑ ***	↔ **	↔ **	↑ ***	↑ ***	↔ *	↔ *	N/A	↗ **	↔ **	↗ ***	↑ ***	↑ ***	↔ *
SEO 3: Maintain existing greenspace and plan for the creation of green infrastructure associated with the significant projected growth of urban areas, to reduce the impact of development, to help reduce flooding issues, and to strengthen access and recreation opportunities. Seek links from urban areas to wider recreation assets such as the Thames Path National Trail, National Cycle Routes, and the river and canal network, and promote the incorporation of best practice environmental measures into any new development.	↘ **	↔ **	↔ ***	↘ **	↔ **	↔ **	↗ **	↔ **	↔ **	↗ ***	↗ **	↔ *	N/A	↑ ***	↑ ***	↑ **	↑ ***	↗ **	↔ *
SEO 4: Protect and manage the area's historic parklands, wood pastures, ancient woodland, commons, orchards and distinctive ancient pollards, and restore and increase woodland for carbon sequestration, noise and pollution reduction, woodfuel and protection from soil erosion, while also enhancing biodiversity, sense of place and history.	↔ **	↑ **	↑ **	↔ *	↗ ***	↑ ***	↑ ***	↑ ***	↑ ***	↗ **	↑ ***	↗ **	N/A	↑ ***	↑ ***	↑ ***	↑ ***	↑ ***	*
SEO 5: Develop the recreational, educational and commercial tourism opportunities offered by public access to – and engagement with – the historic buildings and landscapes in the area, such as Hampton Court Palace, Windsor Castle and the Royal Botanic Gardens at Kew, for their contribution to a sense of place and to people's enjoyment and understanding of the area.	↔ ***	↔ ***	↔ ***	↔ ***	↗ *	↔ ***	↔ ***	↔ ***	↔ ***	↔ ***	↔ ***	↔ ***	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.
National Importance; Regional Importance; Local Importance

Landscape attributes

Landscape attribute	Justification for selection
Rivers, streams, lakes, canals and open water bodies (the result of restored gravel workings) are a key feature.	■ South West London Waterbodies is a Ramsar site and Special Protection Area (SPA) providing breeding and overwintering habitat for wildfowl. ■ The area supplies most of London's fresh water needs. ■ Woodland and scrub near water is important habitat for songbirds, notably nightingale. ■ Rivers and waterbodies provide areas of high biodiversity, recreation and relative tranquillity in an essentially urban landscape. ■ None of the 14 river bodies or 12 lakes in the Thames catchment currently achieves good or better ecological status/potential. 45 per cent of rivers assessed for biology are at good or high biological status now, with 41 per cent at poor and none bad. ■ Because of its importance for water supply and flood management, the area will be subject to numerous water quality and flood management improvements during the coming years. ■ The River Thames is now relatively clean compared to many other metropolitan estuaries around the world. It supports over 120 different species of fish including eel, carp, perch and sea lamprey. However, the concentration of urbanisation and large local population means that pollution remains a problem. It is also host to some invasive plants, including Japanese knotweed as well as signal crayfish and Chinese mitten crab. ■ A good quality water environment has the potential to help economic regeneration, to enhance the economic and social amenity value of developments, and improve the quality of life. ■ The need to work with farmers, landowners and interest groups beyond the boundary of the NCA to promote the use of soil and nutrient management plans and raise awareness of Codes of Good Agricultural Practice and Best Farming Practice to protect and improve water quality.
The wealth of the area over the centuries has resulted in creation of many formally designed landscapes.	■ 58 Registered Parks and Gardens covering 6,950 ha. ■ Windsor Great Park and Richmond Park are SAC. ■ The area has been renowned for its views since at least the 17th century, is important in the history of landscape and provides continued inspiration for artists and writers. ■ There are limited Countryside Stewardship agreements for management of historic landscapes. The character of this resource probably remains weakened. In 1918 about 12 per cent of the NCA was historic parkland. By 1995 an estimated 30 per cent had been lost. About 67 per cent of the remaining parkland is covered by a Historic Parkland Grant, and about 9 per cent is included within an agri-environmental scheme. ■ The double line moth, normally associated with the South West and declining, has been found in the area around Richmond Park and Wimbledon Common. It is listed as priority species in the UK Biodiversity Action Plan.

Landscape attribute	Justification for selection
The natural character of the area is dominated by urban influences; a dense network of roads including the M4 and M25 corridors, London suburbs and other large towns including Reading and Slough, Heathrow Airport, railway lines, golf courses, pylon lines, reservoirs, extensive mineral extraction and numerous flooded gravel pits.	■ Pressures of development also present opportunities for inclusion of greenspace and creation of woodland around transport corridors to reduce pollution and noise. ■ There are possibilities offered by mitigation measures and conversion of extracted gravel and landfill sites, for example one of the largest landfill sites in the country, outside Gerrard's Cross, will reach capacity in the next few years. ■ Development pressures owing to proximity to London in particular, include both existing and proposed major road corridors including lighting and signage, expansion of urban areas, and airport development/associated activities. Much of this development is unrelated to the character of the surrounding area and has significantly contributed to the overall fragmentation of the landscape. ■ Development may provide opportunities for co-ordinated provision of quality green infrastructure. This will have benefits for the health and well-being of those living in the NCA and visitors. ■ There is likely to be continued demand for recreation opportunities from those living in the more urban parts of the NCA and Inner London. ■ In the vicinity of Slough and Windsor, land ownership by Eton College and the Crown Estate has restricted the spread of development. ■ Parkland, commons and greens are an important feature, providing areas of recreation and relative tranquillity in an essentially urban landscape.
Woodlands characterise the north-western area, the wooded character extending up to the southern edge of the Chiltern Hills. **Despite the general urban feel, pockets of ancient woodland survive and veteran trees survive in parkland, fields and hedgerows.**	■ There are opportunities to restore and increase woodland to reduce soil erosion, noise and air pollution and enhance recreation and biodiversity. ■ Burnham Beeches is a SAC. ■ Veteran trees need improved management to combat the effects of climate change. ■ Restoration of woodland on slopes, for example on the edge of the Chilterns, can help ease soil erosion. ■ The England Woodfuel Strategy sets a target of bringing 2,000,000 m3 of wood from England's currently undermanaged woods to woodfuel market by 2020. Targeted grants such as the Woodfuel Woodland Improvement Grant help address barriers to long term woodland management supported by the market. ■ Slough Heat and Power has been using a mixture of woody biomass (up to 300,000 m3 per year) for nearly 10 years sourced from waste, arboriculture and habitat restoration. A proportion is sourced from existing woods. ■ British Airport Authority woodfuelled CHP system at Heathrow Terminal 2 will use woodfuel supplied from sustainably managed local woods via LC Energy's Bedfont woodfuel hub supplying 25,000 m3 to T2.

Landscape attribute	Justification for selection
Relative little but highly valuable heathland.	■ Wimbledon Common is a SAC and is managed under a stewardship agreement to improve this habitat which is rare within the NCA. ■ Although there is less than 70 ha of heathland in Thames Valley, this forms an important link between adjacent NCAs with much larger patches, notably Thames Basin Heaths and Northern Thames Basin. ■ A small part of the Thames Basin Heaths Buffer Zone falls within the NCA south of Windsor. ■ There is a relatively low proportion of carbon stored in the top soil horizon, although there are small areas under remnant heathland with higher carbon content. ■ Some of the loamy and clayey floodplain soils with naturally high groundwater (7 per cent) are peaty at depth or include small areas of peaty soils, while the naturally wet very acid sandy and loamy soils (2 per cent) are mostly organic topsoils which are a store of carbon. The remaining soil types are mineral soils.
Farming is generally limited due to demands for reservoirs, gravel pits, recreation and development. Agricultural land is fragmented and poor overall and the cultivated parts of the Thames floodplain are dominated by grazing with arable increasing to the west.	■ Agricultural character has been weakened and continues to erode and farming has largely been expelled from the area within the M25 apart from some remnants. ■ Thames Valley was once a major fruit-growing area, supplying the London markets. Varieties developed in the region include the Cox's Orange Pippin. Some orchards survive representing a resource for biodiversity and cultural and genetic heritage potential. ■ There are a number of local initiatives to support rural business and viability of farming in the area, notably in the Colne Valley. ■ There has been a significant increase in land turned to horses as other livestock numbers have declined over the last 15 years.
An area steeped in history with important heritage assets, many of international significance.	■ There is evidence of continuous occupation since at least the Neolithic period and the area is known for its rich archaeological remains from all periods. ■ The proximity to and location downstream of London attracted nobility and royalty increasingly as London grew in importance from the medieval period. The result is, buildings renowned and recognised throughout the world including Windsor Castle and Hampton Court Palace. ■ There are 79 Scheduled Ancient Monuments and over 5,000 listed buildings. ■ The area includes the Royal Botanic Gardens at Kew, designated a UNESCO World Heritage Site in 2003. As well as being an internationally important centre for study of plant science since the 18th century, it is also the home of over 40 listed buildings, including Decimus Burton's Victorian Glasshouses and the 18th century pagoda. ■ The area is linked with key historical events such as the sealing of Magna Carta at Runnymede.

Landscape opportunities

- The restoration of natural river geomorphology and the continuity with floodplains and allowing seasonal inundation where this can bring positive benefits for biodiversity and flood alleviation. Recreating backwaters as a refuge for aquatic species in times of drought, thus reflecting the policies of the Thames Catchment Flood Management Plan, as well as being essential to sustaining wetland habitats. Restored rivers can be used as corridors linking sites in a generally fragmented landscape. Support measures to ease fish passage such as elver ladders to increase populations.

- Significant creation of new wetlands that form part of sustainable urban drainage systems, particularly within and surrounding Reading, linking with wider wetland habitats within floodplains to aid flood management, create a robust wildlife habitat that benefits biodiversity and landscape and helps to regulate water quality.

- Creation of multi-functional natural greenspace surrounding new development (including allotments and broadleaved woodland), linking into the heart of urban areas as part of comprehensive green infrastructure planning including the creation of attractive new wetlands that form part of Sustainable urban drainage systems, particularly within and surrounding Reading. Ensure that this development does not intrude into the wider landscape, particularly the historic, inspirational views, or damage heritage assets.

- Protection, expansion and sustainable management of wetland habitats including wet woodlands, riverside willows and belts of poplar along the Thames floodplain, lowland meadows, fens and reedbeds.

- Work to eradicate invasive non-native species such as Japanese knotweed and invasive crustaceans and work to prevent spread to new areas. Improve awareness of the importance of biosecurity through campaigns such as, “Check, Clean, Dry”.

- Support initiatives to restore historic features, encourage awareness and facilitate access to develop recreational, educational and commercial tourism opportunities as a means of protecting heritage assets, including historic houses, scheduled ancient monuments and traditional black timber-framed farm buildings in the western clay vale.

- Protect surviving geological heritage of the area by conserving important geological exposures.

- Protect and sustainably manage existing broadleaved and especially ancient woodlands, particularly those characteristic of the north-western plateau and on steeper slopes within river catchments. Expand the amount of this habitat by using opportunities provided by new development, the need to shield transport corridors for noise and light pollution and increased interest in commercial woodfuel and green burial industries.

- Restore and re-link areas of lowland heathland on higher sandy ground in the north, especially within the South Bucks Heaths and Parklands Area, to restore the extent and condition of this important resource.

- Restore, expand and re-link lowland dry acid grassland and (dry) lowland meadows and connect with wide grassland buffer strips running across slopes and adjacent to watercourses to help impede cross-land flows and further improve water quality whilst creating a robust and well-connected habitat network and enhancing adaptation to climate change.

- Protect, restore and sustainably manage historic parkland and wood pasture landscapes including those of international importance (e.g. Windsor Great Park SAC and Burnham Beeches SAC, a wood pasture landscape forming part of the South Bucks Heaths and Parklands) and less well known parkland/wood-pasture sites such as Haines Hill Park, accommodating high visitor numbers whilst protecting historic character and enhancing biodiversity

- Restoration and sustainable management of traditional orchards where economically viable, using local fruit tree varieties such as Cox's Orange Pippin first grown at Colnbrook in 1825, Feltham Pippin and Langley Pippin.

- Support measures to encourage farming, particularly those which foster engagement between local communities and rural businesses as a way of checking the decline of local food production in the area and preserving the landscape.

- Spatial planning and design for urban development and infrastructure should aim to reduce surface water runoff; promote incorporation of water conservation measures; protect and restore habitats; improve the quality of rivers and groundwater and so protect drinking water supplies.

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	Mixed agriculture Available water Fertility of soils Rivers and gravel beds	Predominantly low grade agricultural land supporting a mixture of arable and grazing regimes, the latter producing sheep and some dairy and beef cattle. Many historic orchards now derelict and redundant. Fruits and vegetables are grown on the gravel terraces, and the area is a historic supplier to London. The Thames not only supplies fish for local consumption but is also vital for sea-fish stocks.	Regional	Agriculture is generally in decline and virtually expelled from the area within the M25, due to pressures of development and recreation. The value of land makes maintaining existing levels of agricultural activity a challenge. Livestock numbers have fallen sharply and much grazing land is now turned to horses resulting in a reduction of 38 per cent in other livestock numbers between 2000 and 2009. In contrast to other land uses, the growing of hardy nursery stock has increased by 23 per cent. The Thames traditionally provided fish, notable eels, though the number of most species fell to a level which could only support local markets. The gravel beds of the upper tideway are an important nursery ground for several species of North Sea fish notably flounder.	Growing interest in locally-grown produce presents opportunities for farmers to explore new outlets. Derelict orchards can be restored for the benefit of biodiversity, genetic diversity, landscape and for growing heritage varieties for select markets such as the Colne Valley Food initiative. Support the many measures that are underway to restore rivers and improve water quality, including measures to improve fish passage to increase fish stocks.	**Food provision** **Biodiversity** **Regulating water quality** **Sense of history** **Genetic diversity**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Timber provision	Woodland	Woodland is predominantly broadleaved (12 per cent of the NCA), with approximately 1,000 ha of coniferous woodland (1 per cent of the NCA). Woodland is mainly concentrated to the north of the area or as strands of wet woodland along the Thames. Windsor Forest represents a large surviving segment of the once more heavily wooded southern clay plains.	Local	Measures to increase plantation for timber needs to be balanced against loss of habitat, productive agricultural land and landscape character. The potential may therefore be limited. Timber from broadleaf woodland may be under-utilised. Reinstatement of traditional woodland management may release small volumes of hardwoods. The areas of long-standing ancient semi-natural woodland within the area are important for biodiversity, carbon storage and soil quality and structure. Deadwood provides important habitat, particularly for invertebrates and fungi which are important in this area.	Opportunities for increased timber production are limited, though there may be scope for some new plantations. The growing popularity of woodfuel in the area means that this is more likely to be the focus for woodland management in the near future and a return to more traditional management techniques	**Timber provision** **Biodiversity** **Sense of place** **Regulating water flow** **Regulating soil quality** **Regulating soil erosion**
Water availability	Reservoirs Rivers Chilterns chalk aquifer	Most of the area's water supply comes from the Thames. Overall, the area is under considerable pressure for water supply with only the River Lodden classed as having water available for abstraction.	National	Most of London's fresh water is supplied from the Thames Valley. The area is already under pressure for water and this is likely to worsen with effects of climate change and predicted increased demand. Population is likely to increase with significant new development planned for the area and recent years have already seen drought measures introduced.	Measures to find additional storage for flood waters within the Thames Valley may present opportunities for increasing water provision, by for example restoring and extending floodplains. Considerable investment in measures to improve rivers and enhance exhausted gravel workings to provide additional water storage to meet increasing demand and counteract effects of climate change. Many of these will also produce opportunities for biodiversity and recreation. There is a need to promote water conservation measures in new developments to support existing water resources and help manage demand.	**Water availability** **Regulating water flow** **Recreation** **Biodiversity** **Sense of place**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Genetic diversity	Royal Botanic Gardens at Kew Orchards Parkland Heathland	Royal Botanic Gardens at Kew World Heritage Site falls within the NCA. There are many derelict historic orchards containing some local varieties. There is much historic parkland, ancient woodland and some heathland.	National	The area was once a major fruit supplier of the London markets and many historic varieties of fruit, particularly apples and including the Cox's Orange Pippin, were developed in this area. Historic parkland has been preserved as "islands" within an essentially urban context so certain preserved species may offer genetic resources. For example the oldest living vine at Hampton Court, numerous rare species in Royal Botanic Gardens at Kew and descendants of Henry VIII's original herd of fallow deer. Kew houses the world's largest and most diverse botanical collections.	Preservation and restoration of surviving orchards provide opportunities for revival of historic varieties of fruit for genetic diversity and local markets. Preservation of ancient trees in historic parklands and ancient woodland provides a primary source of arboricultural genetic material. The Royal Botanic Gardens at Kew aim to deliver science-based conservation, using plant-based solutions to address global issues such as climate change.	**Genetic diversity** **Timber provision** **Biodiversity** **Food provision**
Biomass energy	Broadleaf woodland Short rotation coppice	The existing woodland cover (13 per cent of the NCA) offers potential for timber as biomass.	Regional	Much existing woodland is under-managed or unmanaged. There are numerous initiatives being explored locally within the NCA to increase potential for biomass, particularly woodfuel. The potential yield for miscanthus is predominantly high throughout, excluding the Maidenhead area, while that for short rotation coppice is predominantly medium. http://archive.defra.gov.uk/foodfarm/growing/crops/industrial/energy/opportunities/index.htm	Current local initiatives within the NCA offer opportunities to create and extend existing woodlands and improve management to produce timber as a local source of biomass. Opportunities for the creation of short rotation coppice in wetter, less fertile areas where it compliments existing biodiversity assets and helps regulate water flow and quality, but does not damage buried archaeological features or obscure heritage assets.	**Biomass energy** **Biodiversity** **Recreation** **Sense of place** **Timber provision** **Regulating water quality** **Climate regulation** **Regulating soil erosion**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Climate regulation	Heathland Wet and ancient semi-natural woodland Fens Water meadows Peaty soils and soils with high levels of organic matter	Some of the loamy and clayey floodplain soils with naturally high groundwater (7 per cent) are peaty at depth or include small areas of peaty soils, while the naturally wet very acid sandy and loamy soils (2 per cent) are mostly organic topsoils which are a store of carbon. The remaining soil types are mineral soils. 97 per cent of London's natural reedbeds have been lost.	Local	Mineral soils can be low in organic matter, sometimes where under continuous arable cultivation. Wetlands and areas of permanent pasture and woodland contribute to climate regulation through storage of carbon dioxide and increased levels of organic matter in soils. Recent conservation efforts have begun to reverse the decline in the area of reed beds. Fertiliser inputs into arable production.	Flood management plans can result in restoration of large amounts of floodplain, creating and extending wet woodland, water meadow and fens. Carbon sequestration can be increased by increasing organic matter inputs and by reducing the frequency / area of cultivation. The restoration of the area's heathland also provides opportunities. Heathland on Wimbledon Common SAC is managed under a countryside stewardship agreement so opportunities exist to improve and extend this important habitat elsewhere within the NCA. Considerable opportunities exist within the floodplain of the Thames within this area to create further, extensive areas of reed bed making a considerable contribution to carbon storage, water quality and regulation of water flow. Encourage the creation of woodland as part of new housing and transport infrastructure development. Encourage reduced fertiliser inputs on cultivated soils by ensuring Government guidelines (Nitrate Vulnerable Zone regulations) are followed by farmers and land managers.	**Climate regulation** **Regulating water flow** **Biodiversity** **Regulating water quality** **Recreation** **Sense of place**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Regulating water quality	Rivers Reservoirs Water meadows and flood plain grazing	Groundwater in the east and north of the NCA predominantly failed to achieve good chemical status, with a thin strip of good chemical condition to the north along the foot of the Chiltern Hills. Within the Thames catchment, around 41 percent of rivers are at poor biological status.	Regional	Pressure from abstraction for the large local population, industries and waste from sewage treatment works, plus the fact that almost all water bodies are heavily modified for navigation give rise to poor water quality and biological status. 48 per cent of the NCA is in a Nitrate Vulnerable Zone (NVZ) and the Colne Valley in particular is subject to agricultural run-off but also suffers from low flows due to abstraction, over-widening, interaction with the canal network and pollution incidents. The Lodden catchment also suffers from agricultural pollutants as well as sewage effluent. Further large-scale development is also planned for this catchment so demand for water will increase while climate change will almost certainly result in additional pressure, particularly on the chalk streams and rivers feeding the area. The importance of the area for water supply means that numerous initiatives, such as improvement to sewage treatment works affecting the Maidenhead-Sunbury catchment are underway to improve water quality across the NCA and the Environment Agency and water Companies are undertaking several monitoring projects to assess ecological priorities within the Thames catchment. Many initiatives, such as modifications at Arborfield, involve a wide range of partners including water companies, government agencies, wildlife groups and landowners. Significant improvements are expected to be delivered from current projects by 2015 which include addressing pollution issues by working with sewage treatment works, restoring river geomorphology and improvements for fish passage.	Support initiatives to reduce pollutants such as improvements to water treatment systems. Agricultural pollutants also come from adjacent NCAs so it is important to work with farmers and landowners beyond the Thames Valley itself. Work to eradicate non-native invasive species, particularly along riverbanks and promote awareness of the importance of biosecurity, particularly in areas of heavy public usage, to prevent their spread. Encourage woodland creation and better woodland management to reduce risks of soil erosion, particularly in the north-western area at the southern edge of the Chiltern Hills.	**Water availability** **Recreation** **Biodiversity** **Food provision** **Sense of Place** **Sense of History**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Regulating water flow	Rivers Reservoirs and other waterbodies Floodplains	Flood regulation is a key issue throughout the Thames and Colne floodplains, with the risk of flooding affecting significant numbers of settlements. Numerous locks and weirs are used to maintain water levels.	National	The Thames Catchment Flood Management Plan identifies that further action needs to be taken to reduce flood risk throughout the area, with policies that include taking action with others to store water or manage run-off in locations that provide overall flood risk reduction along with environmental benefits. Kennet Valley near Reading is recognised as a key area for water storage potential in this NCA as it is unproductive agricultural land which often floods. Climate change will increase flood risks in this area. Because major settlements, including London, are threatened, this is likely to be a key driver for action.	There are opportunities to restore wetlands, water meadows and reedbeds as part of large flood-management initiatives. The Thames Rivers Restoration Trust Action Plan (2009) aims to find areas where floodwater can be safely stored, restore natural shape and function and form corridors between SSSI and reserves for wildlife to move around. Optimise design and implementation of future flood storage areas to create new wetland habitats, such as floodplain grazing marsh, and creating links with existing semi-natural habitats. Manage water bodies, including ditches, to increase structural diversity which will help to retain winter floodwater for longer and provide refuges for species vulnerable to inundation events. Encourage agricultural practices that build up organic matter and reduce the risk of soil compaction and thus improve water infiltration. Restore and expand wetland habitats on floodplains, including wet pastures, reedbeds, traditionally graze alluvial flood meadows, to attenuate flood flows. Find ways of assimilating new or reinforced flood defences into local landscapes with minimum visual impact and disruption to existing habitat or species movement. Adopt strategic approaches to increasing the capacity of catchments to retain water, including addressing river management upstream to reduce impacts on landscapes downstream, notably the vulnerable floodplain of the Thames. Allow watercourses to revert to natural, dynamic courses where possible, thus allowing the energy of the water flow to dissipate.	**Regulating water flow** **Water availability** **Regulating water quality** **Biodiversity** **Sense of place** **Sense of history**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Regulating soil quality	Soil	Less than 25 per cent of the land is agricultural and, of this, the large majority is Grade 3 soil.	Local	Although the percentage of farmed land is small, the number of catchments makes the area vulnerable to nitrate pollution from surrounding areas, with the Colne Valley being particularly susceptible to agricultural run-off.	Work with farmers, land managers and landowners both within the NCA and beyond to encourage best practice to reduce agricultural pollutants. Encourage reduced fertiliser inputs on cultivated soils by ensuring Government guidelines (NVZ regulations) are followed by farmers and land managers.	**Regulating soil quality** **Regulating water quality** **Biodiversity**
Regulating soil erosion	Woodland Permanent pasture Hedgerows Loamy free draining soils .	The freely draining loamy soils (31 per cent) have enhanced risk of erosion. There is the potential for wind erosion on some coarse textured cultivated variants. A few of the component soils of the freely draining base-rich soils (8 per cent) may be susceptible to capping and slaking. The naturally wet very acid sandy and loamy soils (2 per cent) are light soils at some risk of wind erosion, The wet loamy and/or clayey soils (covering 55 per cent of the NCA) are generally at low risk of soil erosion,	Regional	Freely draining loamy soils are at higher risk of erosion on moderately or steeply sloping land where cultivated or where bare soil is exposed, exacerbated where organic matter levels are low after repeated and continuous arable cultivation or where soils are compacted. Where soils suffer capping or slaking there is an increased risk of soil erosion, and these soils need to be managed carefully to reduce this with careful timing of cultivations and maintenance of vegetation cover. Wet acid sandy and loamy soils are easily eroded if heavily trafficked or after heavy rain. Coarser textured variants of loamy soils with naturally high groundwater occurring on sloping or uneven ground are at increased risk of erosion.	Increase woodland where appropriate, and better woodland management to reduce risks of soil erosion, particularly in the north-western area at the southern edge of the Chiltern Hills. Encourage best practice in the timing and direction of cultivation to reduce erosion on sloping ground. Where possible encourage the reinstatement of cross-slope hedgerows and shelterbelts to minimise down-slope migration of soil and reduce wind erosion particularly in areas with lighter soils. Control of invasive non native species particularly along the riverbank to reduce soil exposure and erosion of the bank.	**Regulating soil erosion** **Regulating water quality** **Biodiversity** **Climate regulation**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Pollination	Heathland Woodland Parks and gardens Hedgerows Orchards Gardens	Sources of nectar for pollinating insects are provided by the remnants of lowland heathland (68 ha) found on higher sandy soils in the north, as well as areas of unimproved grassland found as part of wetland complexes or in wood pastures and commons, and in the hedgerow network. Historic parkland and domestic gardens also provide nectar sources. Heathland on Wimbledon Common SAC is managed under a countryside stewardship agreement.	Local	The area was once a major fruit-growing region, supplying much of the fruit for London markets. This has declined and, of the orchards that survive, many are derelict. However, remaining orchards provide reserves for pollinating insects. Existing heathland is rare in the NCA itself but provides vital links between sites and the area is adjacent to Thames Basin Heaths NCA.	Degraded orchards can be restored where practical. Opportunities exist to use Wimbledon Common as an exemplar to improve and extend heathland within the NCA, particularly on the sandy soils on higher ground to the north around the South Bucks Heaths and Parkland area. Work with, local authorities and parishes to create multi-functional green spaces incorporating sympathetic management for pollination including appropriate management of road verges into cutting regimes, adding to the network of nectar sources close to pollinated food crops. Increase the area of semi-natural habitats, with particular emphasis on unimproved flower-rich grasslands (lowland meadow) and floodplain grazing marsh.	**Pollination** **Biodiversity** **Food production** **Sense of history** **Sense of place** **Genetic diversity**
Pest regulation	Agricultural field margins Species-rich hedgerows Woodland Small-scale mixed farming Historic parkland and wood pasture	Agriculture accounts for no more than a quarter of the NCA, being virtually expelled from the area within the M25. The surviving farmed landscape is fragmented and hedgerows are often neglected. Other land use includes golf courses, playing fields and pony paddocks.	Local	Development and transport networks ensure that such agriculture that survives is relatively low-scale but fragmented.	Opportunities exist to re-link the fragmented landscape by restoring hedgerows and creating corridors using field margins, road verges, rivers and railway lines to allow predator species to move freely. Maintain and expand the area of semi-natural habitats, throughout the NCA to provide a range of niches to support pest regulating species including invertebrates, birds and mammals. Mechanisms such as agri-environment schemes, encourage the use of field margins, beetle banks and headlands in arable land, to encourage pest regulating species in close proximity to food crops requiring pollination.	**Pest regulation** **Food production** **Biodiversity** **Pollination**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
A sense of place/ inspiring places	Historic buildings set in parkland Famous views River Thames Ancient veteran trees Views of Chilterns AONB Waterbodies	The natural beauty and wealth of the area around the Thames has resulted in a landscape that has inspired people for centuries. A landscape crossed by major arterial routes including the M4, M40, M25, M3 and Great Western Mainline railway with associated development and infrastructure as well as Heathrow Airport but containing 58 registered parks and gardens covering nearly 7,000 ha of river meadows, woodland to the north, reservoirs, wetlands and rivers, internationally recognised historic buildings and views of the Chilterns in the west.	National	The area has attracted poets, artists, writers and thinkers and the landscape, particularly views of the Thames from various vantage points, has been immortalised in the work of greats such as J.M.W. Turner, Sir Walter Scott and Shakespeare. Despite the encroachment of urban development almost everywhere, there are still places where open landscape can be experienced. Though there are still beautiful areas, this landscape is now severely fragmented.	The area is heavily used by both residents and visitors. Opportunities exist to protect, restore and sustainably manage historic landscapes including those of international importance and less well known parkland/wood-pasture sites such as Haines Hill Park, accommodating high visitor numbers while protecting character and enhancing biodiversity. The importance of tourism to the area ensures that landscape is always a consideration and has resulted in continuing initiatives to restore historic features encourage awareness and facilitate access. These include "London's Arcadia", a £3.3 million HLF-funded project started in 2004 to enhance public spaces, link historic sites and improve river quality and biodiversity along the Thames between Teddington and Kew. The Thames Landscape Strategy was launched in 1994 with a 100 year plan to "conserve, enhance and promote for the future, one of the world's great urban landscapes.	**Sense of place** **Recreation** **Biodiversity** **Sense of history** **Climate regulation** **Regulating water quality** **Sense of inspiration**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
A sense of history	Historic buildings set in parkland Famous views River Thames Ancient veteran trees Towns and settlement More recent historic elements – model farms, aggregate extraction, airport	The area is steeped in history and sites include Windsor Castle, Hampton Court Palace and Eton College 5,009 listed buildings, over 40 of them within the Royal Botanic Gardens at Kew World Heritage Site. Historic links to London because of the Thames and subsequent transport routes. Important supplier of fresh produce (especially fruit) to London markets until 19th century. Major towns on main routes out of London, particularly the River Thames (Windsor, Reading, Staines) but also on main roads (Gerrard's Cross, Maidenhead). Particular density of fine buildings surrounding sites with strong royal associations such as Windsor, Richmond and Hampton. Places of recreation and retreat for Londoners including medieval hunting parties and 18th century sightseers.	National	A sense of history is provided by landscapes familiar through their depiction in art and literature, sites associated with Internationally famous historic events, such as the signing of Magna Carta at Runnymede and large houses of historical and architectural interest set within ornamental parkland. There are also timber-framed farm buildings in the western clay vale farmland and Victorian model farms. The towns themselves are overwhelmingly historic, including the suburbs, as are the lines of many of the routeways, those linking places within the NCA and those directed towards London. Development has been relentless, especially during the 20th century due to proximity of London and good transport links, particularly associated with new light industries around Bracknell and Wokingham. This is ongoing. The need to maintain Heathrow as a major international airport is widely recognised. The area benefits hugely from its historical assets in terms of tourism and associated heritage industries	Although heritage is generally valued in an NCA which is under increasing pressure from development, there are opportunities to address particular areas of concern such as preserving 6 conservation areas currently "at risk" in the area north of the M40 around Gerrard's Cross. Individual sites currently at risk, such as Reading Abbey may benefit by being incorporated into new development as areas of greenspace or to add heritage value and sense of place.	**Sense of history** **Sense of inspiration** **Sense of place** **Recreation**
A sense of tranquillity	Parkland Waterbodies and rivers	The NCA has less than 1 per cent of its area classified as undisturbed according to CPRE data, with 43 per cent of the area classed as urban and the rest as disturbed land.	Local	In an area dominated by development and crossed by major transport routes, perceptions of tranquillity within the NCA are particularly important. Large areas of parkland and woodland, as well as the water bodies such as reservoirs and stretches of canal and along the Thames offer some relief from light and noise pollution from roads and industry, though noise from aircraft using Heathrow is experienced throughout the NCA.	Protect and preserve existing areas of relative tranquillity. Incorporate measures into new development that integrates green and open space to enhance and extend the network of existing undisturbed and tranquil places. Realise opportunities to introduce greenspace, and particularly tree planting, into existing developments to buffer and minimise the effects of noise and light pollution.	**Tranquillity** **Recreation** **Sense of place** **Biodiversity**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Recreation	Rivers Parkland Commons National Trail and Cycleway Lakes and reservoirs Historic houses Village greens	Recreation is supported by over 1,000 km of rights of way, including the Thames Path National Trail, 3 NNRs and national cycleways. The historic parklands, commons, woodlands and waterbodies, including reservoirs, canal towpaths and the Thames itself are also important assets, many being publicly accessible.	National	Visitors from all over the world travel to this NCA to enjoy attractions such as Hampton Court, Windsor and the Royal Botanic Gardens at Kew. The non-tidal Thames is a prime recreation resource. The rivers, canal and other waterbodies provide the focus for numerous pursuits such as boating, bird-watching and angling, representing valuable amenities within the heavily urbanised context.	Initiatives such as the Thames Landscape Strategy Riverside Management Plan incorporate measures to encourage visitors such as improved access and cycle routes while also enhancing the quality of experience by clearing invasive non-native species, litter and planting hedges and trees to aid biodiversity. Measures to improve water quality and flood measures include opportunities for recreational activities.	**Recreation** **Sense of history** **Sense of place** **Biodiversity** **Tranquillity**
Biodiversity	Broadleaved woodland Wet woodland Wet meadows Heathland Dry acid grassland Ancient woodland Rivers Reservoirs Canals Parkland and wood pasture Commons	There are over 5,500 ha of BAP priority habitat covering around 6 per cent of the NCA. This includes over 2,500 ha of woodland and around 2,000 ha of wetland habitat plus around 70 ha of lowland heathland. Over 800 ha of water bodies within the area are internationally designated as SPA and Ramsar for their importance to wildfowl. The NCA also contains 4 SACs (Windsor Forest and Great Park, Burnham Beeches, Richmond Park and Wimbledon Common) covering over 3,000 ha and Royal Botanic Gardens at Kew World Heritage Site. The gravel beds of the upper tideway are an important nursery ground for several species of North Sea fish notably flounder. A small part of the buffer Zone for Thames Basin Heaths SPA falls within the NCA.	National	Despite its urban character, this NCA is important for biodiversity with Windsor Great Park being one of the most important sites in Britain for invertebrates and fungi. The water bodies in the area support large assemblages of and a range of wildfowl. The meadows and pastures of the river valleys are important for wading birds supporting breeding populations of lapwing, snipe, curlew and redshank. Large numbers also over-winter on the flood plain, particularly lapwing and golden plover The area's water bodies carry over 1 per cent of British wintering populations of tufted duck, pochard, goosander and numbers of shoveler are internationally significant Though heathland area is small, it provides vital links between larger areas in adjacent NCAs, particularly Thames Basin Heaths. Juvenile eel populations in the River Thames have fallen by 98 per cent in the last five years (ZSL).	Measures to improve water quality and improve flood management will also benefit biodiversity with the creation of new wetlands and wetland habitats and restored rivers forming corridors for wildlife between sites Some heathland in the area is already managed under a countryside stewardship agreement so opportunities exist to improve and extend this important habitat within the NCA The creation of green and blue infrastructure associated with new development can bring benefits for biodiversity. Measures to ease fish passage, such as elver ladders, will increase the population in the freshwater Thames upstream to the benefit of eels and other aquatic species.	**Biodiversity** **Regulating water quality** **Regulating water flow** **Regulating soil quality** **Sense of place** **Pollination**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Geodiversity	3 Geological SSSI 4 Local Geological Sites	The alluvial terraces alongside the Thames provide significant gravel yields and have been extensively excavated. There are important geological exposures, including those of the Reading Beds, the Upper Chalk and London Clay, plus the only known British example of a late Santonian-early Campanian chalk phosphorite deposit at South Lodge Pit. The sediments are an important resource for palaeontological study.	Regional	Former mineral extraction sites have been landscaped and resulted in the creation of internationally important water bodies. Much carbon was stored when the chalk deposits were formed. The geological SSSI provide important access to geodiversity, enabling interpretation, understanding and continued research. Exposure of these features also makes a positive contribution towards sense of place and sense of history. Accessible fossil exposures are particularly good for instilling a sense of history in young children.	Manage former extraction sites for their range of mutually beneficial interests including geodiversity, biodiversity, industrial heritage and educational purposes. Work to improve the condition of designated sites. Engage communities and property owners in encouraging use of local building materials. Develop restorative management of Local Geological Sites offering opportunities for volunteering and community engagement. Maintain views of geological features and exposures and where appropriate, improve access to cuttings, quarries and other exposures of geological features to promote understanding and enjoyment.	**Biodiversity** **Water availability** **Sense of place** **Regulating water flow** **Tranquillity** **Recreation** **Climate regulation** **Sense of history**

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