



Introduction

As part of Natural England's responsibilities as set out in the Natural Environment White Paper¹, Biodiversity 2020² and the European Landscape Convention³, 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.

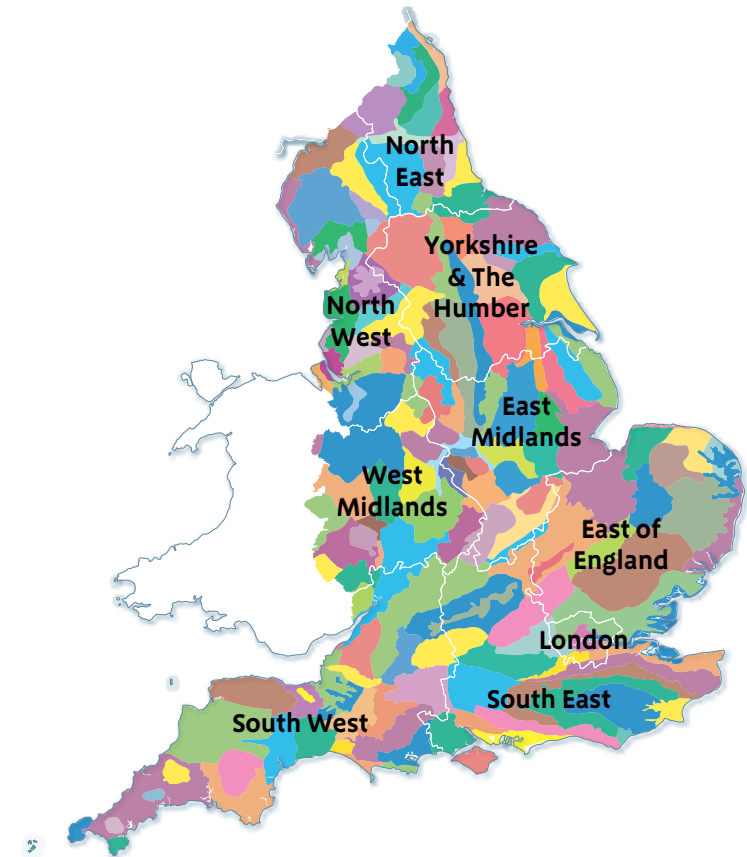
NCA profiles are guidance documents which can help communities to inform their decision-making about the places that they live in and care for. The information they contain will support the planning of conservation initiatives at a landscape scale, inform the delivery of Nature Improvement Areas and 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 Hampshire Downs are part of the central southern England belt of Chalk, rising to 297 m in the north-west on the Hampshire–Wiltshire border. A steep scarp face delineates the Downs to the north, overlooking the Thames Basin, and to the east, overlooking the Weald. The majority of the area is an elevated, open, rolling landscape dominated by large arable fields with low hedgerows on thin chalk soils, scattered woodland blocks (mostly on clay-with-flint caps) and shelterbelts. To the east hedgerows are often overgrown and there are larger blocks of woodland. A fifth of the area is within the North Wessex Downs Area of Outstanding Natural Beauty and 6 per cent in the South Downs National Park due to the scenic quality of the landscape. Flower- and invertebrate-rich remnants of calcareous grassland remain mostly along the northern scarp and on isolated commons throughout.

The Chalk is a large and important aquifer; hence groundwater protection and source vulnerability designations cover most of the area, and catchment sensitive farming – to control pollution, run-off and soil erosion – is a vital activity. The aquifer feeds several small streams flowing north and east, but the dominant catchment of the area is that of the rivers Test and Itchen, which flow in straight-sided, relatively deeply incised valleys across most of the National Character Area. The Itchen is a Special Area of Conservation and, with the Test, is designated as a Site of Special Scientific Interest. These rivers, with the watermeadows, peat soils, mires and fens of their flood plains, are the most important habitats of the area. The valleys are also home to the main settlements, the local road system and important economic activities such as watercress growing and fly fishing.

The water, supplied by the chalk aquifer feeding these catchments, is also the main ecosystem asset of the area, providing high-quality water to large populations in Andover, Basingstoke (both post-Second World War expanded

towns that accommodate the London overspill population), Winchester (the ancient capital of England on a key crossing point of the Itchen), the Southampton and Portsmouth conurbation and the Isle of Wight.

The main challenges facing the area are the continued high levels of population and economic growth in these urban areas, their associated demands for water, traffic levels on major trunk roads crossing the Downs, and further intensification of farming. The corollary is that the tranquillity of the Downs and river valleys, and their historic environment, is a magnet for informal outdoor recreation. This provides opportunities for increased awareness of the potential threats to the environment and the behavioural changes needed to mitigate them.

Click map to enlarge; click again to reduce.



The River Itchen at Itchen Abbas, the home of fly fishing.

Statements of Environmental Opportunity

- **SEO 1:** In the catchments of the rivers Test and Itchen, work with partners, landowners, land and river managers, user groups, businesses and local communities to implement sustainable management regimes that conserve, enhance and restore the priority habitats and species of the watercourses and associated wetlands.
- **SEO 2:** Ensure that the remnant areas of biodiversity-rich chalk grassland are retained and managed to ensure good condition, and seek opportunities to restore areas in poor condition and extend the area of this habitat. Protect and manage the associated historic features of these sites.
- **SEO 3:** Work with landowners and the farming community to encourage sustainable food and fodder production that also retains or enhances landscape character, provides habitats for wildlife, and minimises the impacts on ecosystems such as water and soil and on the historic features in the landscape.
- **SEO 4:** Encourage woodland management regimes that: ensure good condition of priority habitats and species; maximise the potential ecosystem benefits of woodland such as carbon sequestration, water quality and regulation, timber provision, recreation and biomass potential; and enhance the landscape visually.

Description

Physical and functional links to other National Character Areas

The Hampshire Downs are the central block of a broad belt of chalk downland that runs through southern England from west Dorset to East Sussex and Kent. North-west and west of Hampshire the landscape morphs imperceptibly into the Berkshire and Marlborough Downs National Character Area (NCA) and the Salisbury Plain and West Wiltshire Downs NCA. To the south-east the landscape rises to form the South Downs. Steep scarp slopes mark the boundary with the Thames Basin Heaths NCA to the north and, in the east, the East Hampshire Hangers mark the boundary with the Wealden Greensand. To the south the transition is more gradual, descending to the South Hampshire Lowlands and the South Hampshire Coast Plain NCAs.

This major aquifer is the source of rivers flowing into three systems: short sections of the Loddon, Lyde, Wey and Whitewater flow north and east from their source on the Chalk into the Thames; the Rother, from the base of the Hangers, flows east to join the Arun; while the Test and Itchen, in long narrow valleys, flow south through the Chalk to Southampton Water at the centre of the Hampshire Basin. The latter are the key fluvial features of the NCA and their waters provide not only a quality domestic source for the Southampton and Portsmouth conurbations, but also fresh, clean water for the aquatic habitats of the river systems and their flood plains and for the natural harbours, estuaries and marshes of the North Solent shore.

The elevation and steepness of the northern scarp provide long-distance views over the Thames Valley, and a clearly demarked 'north face' of the Downs if looking, or travelling, south. Similarly, the wooded scarp of the Hangers

dominates the skyline viewed from the A3(M) and Petersfield in the east, clearly marking the edge of the Chalk and the start of the Upper Greensand of the Weald.

Major radial transport arteries cut through the Downs connecting London with Hampshire and the South West: the M3, A31, A303 and the main railway lines from London Waterloo to Salisbury, Southampton, Bournemouth and Poole, and Weymouth. The A34 cuts north-south through the centre of the NCA connecting Southampton docks with the Midlands. Traffic on these routes has a significant impact on the landscape.



The Chalk and Greensand scarp of the East Hampshire Hangers, overlooking the Western Weald.

Key characteristics

- The rolling, elevated, chalk arable downland has an open, exposed character that provides open skies and long-distance views.
- Elevated plateaux and upper valley slopes are characterised by extensive open tracts of large, low-hedged fields with thin chalky soils, shelterbelts, and ancient semi-natural woodland blocks on clay-with-flint caps on some of the steeper slopes.
- In contrast, within the sheltered valleys and to the east of the area, the network of hedgerows, interspersed by numerous areas of oak/ash or hazel woodland coppice and smaller meadow fields, gives a strong sense of enclosure.
- The rivers and streams of the Test and Itchen catchments are internationally significant, and distinctive chalk rivers, running in deep valleys, cut into the Chalk.
- A network of distinctive and ancient droving roads and trackways is a particular feature across the Downs.
- There is widespread evidence of prehistoric settlement on the open downlands, including burial mounds with visually prominent iron-age hill forts. In the valleys, there is evidence of Roman estates and nucleated medieval village settlement patterns, and fieldscapes and farmsteads across the downlands evidence the gradual and planned enclosure from the medieval period.
- The area's distinctive appearance derives from the use of chalk cob (in the west), weatherboarded timber frame and small, handmade local brick with flint in traditional rural buildings and walls surrounding farm courtyards, with thatch surviving in many places.
- The settlement pattern varies between the relatively dense strings of villages along the lower river valleys and the very low-density, nucleated settlements in the upper reaches of the rivers and on the Downs.
- The ancient city of Winchester is located at the heart of this landscape and at the centre of the Itchen Valley, and the more modern, rapidly expanding towns of Basingstoke and Andover are on downland sites at the head of the Loddon and Test valleys.

Hampshire Downs today

The Downs are an elevated block of Middle and Upper Cretaceous Chalk that rises to 297 m at Walbury Hill near Inkpen in the north-west, from where it descends gradually to approximately 100 m to 150 m in the south. The countryside is large-scale, open and rolling, with broad, gently domed, undulating plateaux and distinct hill tops, ridges and scarps, which are dissected by both steep and shallow valleys. Soils are mainly free-draining, thin chalky loams, with heavier, younger clay-with-flint soils on the caps and some of the valley sides. These coincide with much of the scattered woodland in an otherwise uniform arable landscape of large fields, shelterbelts (many of them acting as cover for game birds) and low, thin hedgerows. A northerly scarp (much of it calcareous grassland), from Inkpen to Cottington's Hill near Kingsclere, overlooks the Thames Basin; and an eastern scarp, from Selborne to Langrish, which is heavily wooded with beech and known as the 'East Hampshire Hangers', twists sinuously north-south overlooking the Weald. The outstanding scenic quality of the landscape, in parts of the area, is recognised in the designations of the North Wessex Downs Area of Outstanding Natural Beauty and the South Downs National Park.

Cutting through this high, chalk landscape are the valleys of the rivers Itchen and Test. These are relatively narrow, with steep sides in places, and flat, lush valley bottoms of thick peaty and gravel deposits, through which flow fast, clear streams with a rich diversity of aquatic plants, insects and varieties of fish, including trout and salmon. At the head of the valleys and in small side valleys, flowing water can be seasonally intermittent, hence their name – 'winterbournes'. The main rivers, with fast-moving, well-oxygenated water, are largely fed by the chalk aquifer and much of the characteristic wildlife associated with these aquatic habitats is dependent on the quality and content of this water.



Burghclere Beacon. A hillfort on the northern scarp, popular for recreation, and managed for its chalk grassland habitat.

Although these watercourses appear 'natural', many have been engineered – for example, to power mills or for agricultural (watermeadows) or flood management reasons – often increasing the biodiversity until the mid 20th century when some engineering of watercourses resulted in some meadows and side streams drying out and losing their value for biodiversity.

In contrast to most of Hampshire, early clearance of the Downs has left relatively few areas of ancient woodland; where they remain most are associated with clay-with-flint soils of varying acidity, or with thin chalk soils on steeper slopes. The most extensive and important are the ancient sessile oaks in Harewood Forest near Andover; Crab Wood near Winchester with a rich diversity of woodland plants; Thorneycombe Wood near Vernham Dean with stands of wych elm and ash and field maple; and, the East Hampshire Hangers and Ashford, Noar and Selborne.

Across most of the downland, land use is dominated by intensive arable farming of cereals and fodder crops, some rotation pasture, and pig and cattle farming. This land management works within a framework of large historic fields. Some with sinuous boundaries and species-rich hedgerows with trees dating from 15th century and later enclosure, often in tandem with the establishment of farmsteads over that period. Regular enclosed landscapes, especially on the thinner soils, date from the late 18th century and have the largest fields and farmsteads, the latter often with workers' houses; here hedgerows can often be low and thin. Hedgerow quality has, however, improved recently as a result of agri-environment agreements. The thin chalk soils throughout the area enable high levels of spring cropping that are above the national average and support populations of rare arable flora. In contrast, the valley bottoms have a more intimate landscape of small fields, which have in many places been drained for arable crops, or for permanent grassland for cattle and sheep – the latter including widespread use of the locally distinctive 'Hampshire Down' breed.

The main semi-natural habitats are remnant chalk grassland, along the northern scarp and scattered throughout on commons; ancient woodlands (see above); the river valleys with chalk streams and aquatic valley habitats; and field margins that are the most important area in England for plants of arable cultivation and disturbed soils.

Of these the most important international designation is the River Itchen Special Area of Conservation (SAC), which covers the entire river and some of its flanking meadows. This is designated because the river supports several species of water-crowfoot and the presence of southern damselfly, bullhead fish, white-clawed crayfish, brook lamprey, salmon and otter. The quality of the Itchen Valley landscape, its habitat and recreation interest, led to its inclusion in the South Downs National Park. The valleys and watercourses of both the Itchen and the Test, and other rivers such as the Whitewater, support several other rare and important wetland species and habitats, such as those found at Greywell Fen.

In the south-west, the woodland around Mottisfont (National Trust), on the western flank of the River Test, is also an SAC principally because of the maternity site and foraging area for barbastelle bats, although nine other bat species also occur. This area is also important for fritillary butterflies.

In the south-east, the East Hampshire Hangers SAC is designated for its beech-associated vascular plants, mainly hellebores and rare bryophytes.

Three major settlements dominate the Downs. Winchester, with its cathedral, college and historic town centre, developed on an ancient meeting of trackways ('dongas') at a strategic crossing point of the Itchen. This was a major Roman settlement, the pre-Norman capital of England, and is now the home of county administration and an increasingly popular international visitor attraction.

Andover (at the head of the Test catchment) and Basingstoke (at the head of the Loddon) are two market towns that were expanded to accommodate the London overspill population after the Second World War. Largely 20th-century, urban features demonstrating planned communities, they continue to experience rapid economic and housing growth. The river valleys provide the focus for smaller, nucleated settlements and market towns such as Alresford, Stockbridge, Whitchurch and Overton, and the communications that connect them.



Stockbridge High Street crossing the River Test. A typical Hampshire Downs market town.

Major transport arteries cut through the Downs connecting London with Hampshire and the South West: the M3, A31, A303 and the main railway lines from London Waterloo to Salisbury, Southampton, Bournemouth and Poole, and Weymouth. The A34 cuts north–south through the centre of the NCA connecting Southampton docks with the Midlands. Traffic has a significant impact on the landscape, but, away from these roads and the main towns, levels of tranquillity and remoteness remain relatively high, particularly in the area north-west of Andover, towards the South Downs, and in the river valleys. These features are all valued by walkers, cyclists and horse riders who are well served by a dense rights-of-way network. Offroad cycling is very popular, attracting large numbers using the specific routes promoted by the county council. There are several, well-used, long-distance routes, such as the Wayfarers Walk along the Chalk scarp, and the Clarendon Way connecting Winchester and Salisbury.

The rivers Test and Itchen are both internationally renowned as the birthplace of fly fishing. This attracts anglers from all over the world, supports an important and prestigious industry, and has been the literary inspiration for influential fishing writers such as Frederic Halford and Harry Plunket Greene.

The Hampshire Downs have inspired many artists and authors, notably the naturalist Gilbert White on Selborne Common, Jane Austen at Chawton, and Richard Adams at Watership Down. The chalk rivers have been remarked on by many authors, notably Isaak Walton, writing in 1676. William Cobbett, writing in 1825, vividly describes the landscape and farming practices of the Downs as he rode from Winchester to Whitchurch.

The landscape through time

The Upper Cretaceous Chalk, forming the main bedrock geology of this NCA, was deposited in a warm, shallow, tropical sea between 75 and 90 million years ago. It has retained its horizontal bedding across most of the area, but in places shows evidence of folding and tilting caused by earth movements related to the Alpine orogeny that elevated this landscape. Occasionally outliers of the older Middle Chalk strata, distinguished by their lack of flint nodules, have been exposed. Most exposures of the Chalk are confined to the coast, but in this NCA there are a few places – for example, Ladle Hill Site of Special Scientific Interest (SSSI) near Burghclere – where it can be studied inland.

The distinctive, incised, straight-sided valley systems of the chalk streams are a product of post-glacial erosion of the chalk bedrock that remained frozen and therefore not porous. Rivers, swollen with meltwater and eroded material, cut the deep valleys with wide bottoms in which now flow much smaller watercourses. This phenomenon also explains the numerous dry valleys at the upper end of the catchments, now unable to hold water because of the porosity of the bedrock, except when swollen after heavy – usually winter – rainfall. As rivers slowed, this allowed the deposition of sediment and plant material which, because of the high water table, allowed deep peat beds to accumulate.

Clearance of the primeval forest cover and evidence of human occupation date back to the Neolithic period when, about 4,000–6,000 years ago, agricultural practices enabled settled communities to develop, helped by the local abundance of flint for tool making. The most notable evidence, in the form of long barrows, occurs in the remnant chalk grasslands of the northerly scarp. Woodland clearance continued during the Bronze Age and Iron Age, agriculture intensified, field systems and settlement hierarchies were established,

and the hill forts such as Danebury and Burghclere beacons were built. Also at this time, many of the ancient trackways following higher ground across the Downs, now familiar as footpaths such as the Wayfarers Walk, were established. The Romans added their own roads between their major camps and settlements, many of them now followed by modern roads such as the A33 north of Winchester. In addition to opening up the landscape, woodland clearance and early agriculture also led to widespread erosion of the former deep, non-calcareous, forest soils and the formation of the thin soils upon which the chalk grasslands developed.

During the Anglo-Saxon period, farming developed further and much of the framework of the modern-day land divisions was established, along with the beginning of settlements focused in the upper valleys. A notable surviving feature of this early pastoral farming is the 'ladder' field system that links valley-bottom meadows with woodland and cleared downs on higher ground, many of the boundaries surviving as banks, ditches and parish boundaries.

King Alfred is associated with the establishment of Winchester as the capital of Wessex, which developed in the late Saxon period as a centre for trades and commerce with a cathedral, royal mint and garrison. Modern estimates suggest that up to 50 per cent of the woodland had been cleared by this time, although the influence of Forest Laws to protect land for hunting began to have an effect. Medieval influences can be clearly seen in the lush bottoms of the Itchen and Test valleys where the parish boundaries are still reflected in field boundaries and tracks, and the settlement pattern is highly nucleated and very low density.

The 15th and 16th centuries saw a rise in the importance of arable and sheep farming on the Downs, often driven by large-scale renter farmers, and this period represents the maximum extension of the chalk grassland. Woodland continued to be cleared, but many of the remaining woodlands were intensively managed

to support the thriving sheep economy, producing large quantities of hurdles from coppiced hazel, with oak and ash standards. During the same period the flood plains began to be intensively managed as watermeadows, a system of critical importance to sheep and dairy farming, providing an early spring flush of growth and a rich source of hay for winter. Animals were also used to fertilise arable land by turning them out overnight.

Arable farming continued to develop over the 17th and 18th centuries, driving the gradual and planned enclosure of downland which had reverted to grass since the 14th century. The decline of the sheep economy during the 19th century and the need to produce more home-grown cereals led to the ploughing of increasing areas of chalk grassland and the gradual dereliction of the old watermeadows. Nevertheless, the distinctive pattern of ridges and furrows is still widespread in the valleys – a precious historic landscape that supports rich flora and invertebrate life.

The area of chalk grassland has historically fluctuated; however, the last fifty years have seen an unprecedented level of chalk grassland being ploughed, or reverting to scrub. Today unimproved (species-rich) chalk grassland is confined to the steepest slopes: marginal land out of the reach of machinery, or land managed primarily for conservation.

Game fishing, which began in chalk rivers in the 19th century, has become a high-value land use and the rivers Itchen and Test are largely managed to this end. This has resulted, in the past, in some distortion of the natural fish stocks, weed cutting with implications for silt deposition and channel erosion, grazed banks of the watercourses being fenced and regular mowing of bankside paths. More sympathetic management is being slowly introduced that can benefit the natural ecosystems as well as fly fishing.

Continuing growth in population, housing and economic development in South Hampshire, Basingstoke and Andover affects the Downs in several ways, but also benefits from their proximity as a recreational outlet, with benefits for health and wellbeing. Direct effects are the increasing visual impact of towns and cities visible from the Downs, increased traffic, noise and lighting. More indirect effects are the pressures on water supply and quality through abstraction, pollution and sewage discharge.



Most of the Downs is arable land, large open fields with thin hedges and a backdrop of woodland and shelter belts.

Ecosystem services

The Hampshire Downs 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 Hampshire Downs NCA is contained in the 'Analysis' section of this document.

Provisioning services (food, fibre and water supply)

- **Food provision:** The extent of arable land makes this an important output from the Downs. Cereals and fodder crops for cattle are the main crops, and the fish farms and watercress beds of the Test and Itchen produce high-value, quality foods.
- **Timber provision:** The 3,351 ha of conifer have the potential to produce more than 10,000 m³ of sawlogs per year and the 16,000 ha of broadleaved woodland about 5,000 m³ of sawlogs per year.
- **Biomass energy:** The 3,351 ha of conifer have the potential to produce more than 8,000 m³ of lower quality wood which could be used as wood fuel and the 19,441 ha of broadleaves around 50,000 m³ of low quality wood per year. Collectively this amount of wood fuel could deliver around 140,000 MWh of energy per year.
- **Water availability:** High-quality domestic and commercial water, from boreholes or extracted from the main rivers, relies on groundwater flows, and supplies large populations in south Hampshire and the Isle of Wight.

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

- **Climate regulation:** The wet peat soils of the river valleys and areas of broadleaved woodland have high carbon storage and sequestration capacity but only occupy a small percentage of the area. The majority of the area is arable land that is likely to be a producer of carbon dioxide, as are the three large urban areas.
- **Regulating soil erosion and soil quality:** Thin chalk soils on most of the Downs are readily eroded if under constant cultivation, whereas the peat soils of the valley bottoms resist erosion if maintained wet and managed as permanent pasture.
- **Regulating water quality:** The chalk aquifer, covering the entire area, acts as a filter to surface water, providing a high-quality source of clean water to boreholes and to the rivers Test and Itchen.
- **Regulating water flow:** The rivers Test and Itchen have flood plains that flood naturally when groundwater levels are high and where they are not engineered for agriculture or flood control. This does not normally represent a significant risk to major populations and is largely a local phenomenon. Flows are controlled naturally by the aquifer source and surface water does not normally affect river levels in a significant way.

Cultural services (inspiration, education and wellbeing)

- **Sense of place/inspiration:** The open downland landscape, particularly in the South Downs National Park and the North Wessex Downs Area of Outstanding Natural Beauty (AONB), the city of Winchester, several historic parks and houses, and the intimate nature of the rivers and their valleys all provide a sense of place and inspiration.
- **Sense of history:** Proliferation of iron-age hill forts and other evidence of early human activity on the Chalk scarps and high plateaux, the historic landscapes of watermeadow management and the historic centre of Winchester all provide a sense of history.
- **Tranquillity:** The blocks of downland between major transport corridors and away from the three main towns, and the intimate nature of the river valleys, retain notable levels of tranquillity.
- **Recreation:** A high-density and popular rights-of-way network (particularly for offroad cycling over the tracks of the Downs, the National Park and the AONB), fly fishing in the river valleys, and honeypot sites such as Winchester. Mottisfont and Danebury all provide high-quality and popular recreational experiences. These are well placed for the major populations of south Hampshire, Winchester, Basingstoke and Andover.
- **Biodiversity:** The Test and Itchen catchments, watercourses and meadows, the remnant areas of chalk grassland and a small number of ancient woodlands are all designated for their high levels of biodiversity – in the case of the East Hampshire Hangars, the River Itchen, and Mottisfont, at international level.



Trackways across the Downs connect ancient field systems and are popular with walkers, off road cyclists and horseriders.

Statements of Environmental Opportunity

SEO 1: In the catchments of the rivers Test and Itchen, work with partners, landowners, land and river managers, user groups, businesses and local communities to implement sustainable management regimes that conserve, enhance and restore the priority habitats and species of the watercourses and associated wetlands.

For example, by:

- Conserving, and expanding where appropriate, the areas of semi-natural habitat in the watercourses and flood plains of the catchments, so as to improve the quality and viability of the ecological network as a whole, but focusing on maintaining and restoring priority habitats – such as chalk streams, watermeadows, mires and fens – and conserving and enhancing populations of priority species associated with these habitats – such as bullhead fish, southern damselfly, brook lamprey, water vole and otter.
- Using the biodiversity benefits achieved in areas where appropriate grazing has been restored to watermeadows and other wet valley floor habitats, either as a conservation management tool and/or as part of a commercial agricultural enterprise, to encourage further extension and support of this practice.
- Encouraging and supporting management regimes that increase the resilience of habitats and species to climate change – for example, by considering the need for more shading of watercourses where appropriate, and monitoring water levels around features that are vulnerable to drought or inundation.
- Conserving soil quality, particularly peat-based and undisturbed wetland soils which have high carbon sequestration capability; re-wetting these soils where necessary and preventing renewed drying and compaction to reduce erosion; improving habitat conditions, water regulation and water quality management; and managing wetlands such as reedbeds to store water, filter pollutants, facilitate filtration and store carbon.
- Supporting management intervention and practices aimed at restoring favourable habitat conditions and meeting Water Framework Directive objectives for good surface water and groundwater status, including: reconnecting the rivers with their flood plains and springs; working with the Environment Agency and riparian landowners and managers to establish the potential for and implications of removing, or blocking, engineered flow structures and restoring natural channels to allow natural river processes; and considering the impact of these projects on the Special Area of Conservation and other designated habitats and species.
- Encouraging and supporting farmers and other land managers across the catchment in preventing pollution, conserving soils, and using water efficiently.

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SEO 1: In the catchments of the rivers Test and Itchen, work with partners, landowners, land and river managers, user groups, businesses and local communities to implement sustainable management regimes that conserve, enhance and restore the priority habitats and species of the watercourses and associated wetlands.

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- Working in partnership with the Environment Agency, water companies, local authorities, local communities and land managers to secure sustainable abstraction and consumption, control discharge quality, promote developments that are water-efficient and raise the profile of the importance of groundwater as a water supply.
- Providing information to consumers of water to help them recognise the benefits they enjoy from the rivers in the catchment, and understand both the effects of pollutants from domestic sources and the beneficial effects of water conservation through, for example, more efficient use of water through measures such as metering.
- Preventing further damage or destruction, and seeking restoration and conservation of historic structures associated with watermeadow farming practices and the creation of the historic landscape, such as carriers, sluices and bridges, and other features linked with past use of the rivers, such as mills, watercress beds and eel traps.
- Enhancing public access opportunities, landscape information and interpretation, educational access and local community links with the rivers and their meadows to enhance awareness of their history and importance and the measures needed to retain and conserve them, with priority being given to features recognised by designation and valued by local communities and visitors.
- Working with the South Downs National Park and the North Wessex Downs Area of Outstanding Natural Beauty (AONB) partners to secure landscape restoration, creation and enhancement, recreation and tourism provision, and socio-economic wellbeing of communities, with reference to the special qualities of those parts of the catchments covered by these designated landscapes.
- Working with key river-based industries, such as watercress growers and fish farms, to reduce the impact of their activities and operations on the watercourses, and to raise awareness among consumers of the benefits of their products to the natural environment.
- Continuing liaison with fishing interest groups to secure management that brings wider benefits as well as supporting fishing activity and the area's fishing heritage; and exploring the potential to realise recreation benefits for the wider public, including improving and extending public access along chalk streams where this is compatible with fishing and the need to protect designated features.
- Bringing together the various recreational user groups of the chalk streams and wetlands so that they can contribute to the future of local watercourses as recreational assets, secure sustainable recreational use, support conservation activities and avoid damaging recreational behaviour.

SEO 2: Ensure that the remnant areas of biodiversity-rich chalk grassland are retained and managed to ensure good condition, and seek opportunities to restore areas in poor condition and extend the area of this habitat. Protect and manage the associated historic features of these sites.

For example, by:

- Maintaining management regimes and practices on all identified and designated chalk grassland sites that achieve and sustain good condition for priority habitats and species.
- Working at a landscape scale – for example, the South Downs Way Ahead Nature Improvement Area, the Winning Ways for Wildlife project, and the ‘Big Chalk’ approach across several downland AONB – to achieve more sustainable and viable ecological networks across chalk grassland habitats.
- Working with landowners and managers where Scheduled Monuments and other known historic features, or monuments, occur on chalk grassland, to secure their positive management consistent with English Heritage guidance – for example, appropriate grazing, managed recreational access and control of burrowing animals.
- Working with local communities, interest groups, nature conservation groups, statutory agencies and local authorities to promote recreational access to chalk grassland sites and monuments, promoting understanding and awareness of their importance for biodiversity, species richness and how they have resulted from the interaction of farmers and communities with their environments.



Grazing the river meadow pasture at Ovington.

SEO 3: Work with landowners and the farming community to encourage sustainable food and fodder production that also retains or enhances landscape character, provides habitats for wildlife, and minimises its impacts on ecosystems such as water and soil and on the historic features in the landscape.

For example, by:

- Approaching engagement with farmers and landowners, where possible, on a landscape- scale basis with the aim of creating linked, or clustered, areas of farmland to be targeted for biodiversity improvement and other ecosystem benefits.
- Applying and extending the application of techniques promoted by the Catchment Sensitive Farming initiative, to raise awareness of the relationship between, for example, pesticide and fertiliser application, and the quality of groundwater, to control soil erosion and run-off using innovative tillage and ploughing techniques, and to filter pollutants through buffer strips and field margin vegetation.
- Targeting the creation of linear features, such as buffer strips and restored hedgerows, across slopes, particularly above watercourses or other surface water features, and near zones of rapid filtration to the aquifer.
- Developing complexes of features in the arable landscape, such as fallow plots, mature hedgerow trees, ponds, field margins and corners, and beetle banks, which benefit wildlife, particularly those that are distinctive of this area, such as the lapwing and stone curlew, or require habitat mosaics and corridors for movement; targeting conservation effort where there are known populations, or where arable farmland is in close proximity to priority habitats; and designing complexes that also help regulate soil erosion, water quality, pests and diseases.
- Introducing and conserving features that improve pest and disease regulation in areas of monoculture cropping, including not only features that increase heterogeneity but also those that potentially harbour natural predators of pests such as beetle banks and field margins.
- Recognising the high potential in this landscape for buried and undiscovered archaeological remains, managing the land in ways that carry the least risk to heritage assets and sites of heritage interest (such as cropmarks), and carrying out arable reversion where possible.
- Securing benefits for public recreation and public access, ensuring that linear access routes and access areas meet the needs of user groups; and, in consultation with user groups and landowners, targeting improvements to routeways and the creation of new temporary or permanent access routes where they are most needed.
- Managing the network of hedgerows, restoring those which form part of coherent historical field patterns, with particular focus on hedgerows that run across the dip of slopes or within floodplains, to reduce lateral water flows, soil erosion and sedimentation to watercourses.

SEO 4: Encourage woodland management regimes that: ensure good condition of priority habitats and species; maximise the potential ecosystem benefits of woodland such as carbon sequestration, water quality and regulation, timber provision, recreation and biomass potential; and enhance the landscape visually.

For example, by:

- Working with the Forestry Commission and private woodland managers and owners to conserve the distinctive characteristics of wooded features in this area, and to develop approaches that accommodate the needs of biodiversity, the historic environment, recreation (including shooting), timber and biomass. This would embrace large woodland blocks, small woodlands, beech clumps, ancient hedgerows and veteran trees.
- Engaging the full range of stakeholders – including woodland owners, managers, contractors and consumers – in bringing managed and neglected woods under sustainable long-term management.
- Co-ordinating woodland management at a large scale to tackle landscape-scale issues such as deer management, disease management and woodland ecological networks.
- Working with shooting interests to identify opportunities for benefits additional to game, particularly in relation to coverts which may currently have limited wildlife interest.
- Working to improve timber quality in terms of age structure and pest control (deer and grey squirrel).
- Ensuring appropriate conservation management of designated sites, priority woodland habitats and ancient woodland; and securing a resilient ecological network to increase the resilience of these wooded features.
- Managing woodlands – for example, through coppicing and ride management – to support populations of rare species, including dormice, bats, invertebrates (especially butterflies) and woodland birds.
- Encouraging local markets for wood fuel, including community schemes, and supporting wood fuel harvesting and use at the farm scale.
- Maximising public access and recreation opportunities in woodlands, particularly near to settlements – for example, through green infrastructure investment and strategies.
- Establishing more woodland linking existing woods and creating a more resilient network of woodland habitats, particularly where this network will help reduce soil erosion and pollution from spray-drift and run-off.

Supporting document 1: Key facts and data

Area of Hampshire Downs National Character Area (NCA): 148,912 ha

1. Landscape and nature conservation designations

Twenty per cent of the NCA lies within the North Wessex Downs Area of Outstanding Natural Beauty (AONB) covering 29,320 ha, while around 6 per cent falls within the South Downs National Park (primarily the former East Hampshire AONB).

Management plans for the protected landscapes can be found at:

- www.northwessexdowns.org.uk/
- www.southdowns.gov.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) | % of NCA |
|---------------|------------------------------------|---|-----------|----------|
| International | Ramsar | n/a | 0 | 0 |
| European | Special Protection Area (SPA) | n/a | 0 | 0 |
| | Special Area of Conservation (SAC) | East Hampshire Hangers SAC; River Itchen SAC; Mottisfont Bats SAC | 371 | <1 |

| Tier | Designation | Name | Area (ha) | % of NCA |
|----------|--|---|-----------|----------|
| National | National Nature Reserve (NNR) | Ashford Hangers NNR | 31 | <1 |
| | Site of Special Scientific Interest (SSSI) | A total of 36 sites wholly or partly within the NCA | 2,142 | 1 |

Source: Natural England (2011)

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

East Hampshire Hangers SAC and Mottisfont Bats SAC are within the SSSI designated area. Most of the River Itchen SAC is also within the SSSI designated area. The majority of Ashford Hangers NNR is SSSI designated.

There are 978 local sites in the Hampshire Downs NCA covering 11,917 ha which is 8 per cent of the NCA.

Source: Natural England (2011)

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

1.1.1 Condition of designated sites

| SSSI condition category | Area (ha) | Percentage of NCA SSSI resource |
|-------------------------|-----------|---------------------------------|
| Unfavourable declining | 324 | 15 |
| Favourable | 722 | 34 |
| Unfavourable no change | 279 | 13 |
| Unfavourable recovering | 817 | 38 |

Source: Natural England (March 2011)

- Details of SSSI condition can be searched at: <http://www.sssi.naturalengland.org.uk/Special/sssi/reportIndex.cfm>

2. Landform, geology and soils

2.1 Elevation

Elevation ranges from 18 m in the valley bottoms in the south to a maximum of 297 m on the chalk escarpment along the northern boundary. The average elevation of the landscape is 119 m above sea level.

Source: Natural England 2010

2.2 Landform and process

The Hampshire Downs are part of the broad belt of chalk downland which runs through central and southern England. The belt extends east to the South Downs, north to the Berkshire and Marlborough Downs, and west to the South Wessex Downs. The northern boundary of the Hampshire Downs forms a ridge rising to over 290 m and forming a dramatic escarpment overlooking the Thames Basin.

To the east the chalk forms an escarpment at the western edge of the Weald. Through this the Test and Itchen rivers have cut distinctive, deep generally north-east/south-west parallel valleys.

Source: Hampshire Downs Natural Area Profile, Hampshire Downs Countryside Character Area Description

2.3 Bedrock geology

The geology of the NCA consists almost entirely of Cretaceous-aged Upper Chalk deposits, consisting of soft white chalk rich in flint nodules, with occasional outliers of Middle Chalk. The chalk strata have remained horizontally bedded or only slightly folded. A small outlier of the red-mottled clays of the Reading Beds occurs at East Stratton, representing the youngest rock in the area.

Source: Hampshire Downs Natural Area Profile, Hampshire Downs Countryside Character Area Description

2.4 Superficial deposits

Some of the highest parts of the Hampshire Downs are capped with superficial deposits of clay-with-flints. These much younger deposits are mostly of local origin and represent the insoluble residue left behind from the weathering and erosion of the chalk. The constant flow of water in the chalk streams has created conditions under which peat has been able to accumulate in the valley bottoms.

Source: Hampshire Downs Natural Area Profile, Hampshire Downs Countryside Character Area Description

2.5 Designated geological sites

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

Source: Natural England (2011)

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

2.6 Soils and Agricultural Land Classification

Free-draining thin chalky soils predominate, supporting a mostly arable landscape with some remnant tracts of chalk grassland on steeper slopes. The stony clay cap on the plateau and ridges creates damp heavy soils that support former heaths and oak wood pastures.

Source: Hampshire Downs Natural Area Profile, Hampshire Downs 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):

| Grade | Area (ha) | % of NCA |
|------------------|-----------|----------|
| Grade 1 | 0 | 0 |
| Grade 2 | 3,433 | 2 |
| Grade 3 | 129,362 | 87 |
| Grade 4 | 7,448 | 5 |
| Grade 5 | 212 | <1 |
| Non-agricultural | 3,645 | 2 |
| Urban | 4,812 | 3 |

Source: Natural England (2010)

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

3. Key water bodies and catchments

3.1 Major rivers/canals

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

| | |
|--------------------|-------|
| ■ River Test | 38 km |
| ■ River Itchen | 29 km |
| ■ River Wey | 7 km |
| ■ River Loddon | 2 km |
| ■ River Whitewater | 2 km |

Source: Natural England (2010)

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

The Test also has significant tributaries, such as the Anton and the Dever in its upper reaches. The area is also crossed by the Basingstoke Canal (3 km) and the Itchen Navigation runs parallel to the main river in the Winchester area. The rivers Test and Itchen are important spring-fed chalk river systems and these swiftly flowing aquifer fed rivers are notable features within the landscape. The vast majority of other valleys within the Downs are dry, although some support winter streams or 'bournes'.

3.2 Water quality

The total area of Nitrate Vulnerable Zone is 147,508 ha, or 99 per cent of the NCA.

Source: Natural England (2010)

3.3 Water Framework Directive

Maps are available from the Environment Agency showing current and projected future status of water bodies at:

http://maps.environment-agency.gov.uk/wiyby/wiybyController?ep=maptopic&lang=_e

4. Trees and woodlands

4.1 Total woodland cover

The NCA contains 20,470 ha of woodland (14 per cent of the total area), of which 9,541 ha is ancient woodland.

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

4.2 Distribution and size of woodland and trees in the landscape

Numerous ancient woodlands occur on the higher parts of the Downs in association with the heaviest clay-with-flint soils, mostly around the edges of the NCA. Oak woodlands predominate here, the most extensive being the ancient sessile oak woods within Harewood Forest near Andover, while ash-hazel woodland occurs on the less acidic soils.

Several important ancient woods also cling to the steeper slopes with thin chalk soils, especially on the chalk escarpment to the north, characterised by stands of wych elm, ash and field maple, plus yew, holly and whitebeam. Part of the East Hampshire Hangers SAC falls within the eastern NCA boundary.

Beech is an infrequent but characteristic occurrence on the lighter valley soils, with distinctive beech clumps on the open downland.

Pockets of traditionally worked coppice remain in the area, particularly around Stockbridge.

Secondary woodlands of planted beech, sycamore and lime also occur over previously cultivated, thin chalky soil.

Oak is also found as a hedgerow tree within the frequent mixed-species hedgerows that follow the area's remote and narrow lanes.

Source: Hampshire Downs Natural Area Profile, Hampshire Downs Countryside Character Area Description

4.3 Woodland types

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

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

| Woodland type | Area (ha) | % of NCA |
|---------------|-----------|----------|
| Broadleaved | 15,599 | 10 |
| Coniferous | 2,885 | 2 |
| Mixed | 974 | 1 |
| Other | 1,012 | 1 |

Source: Forestry Commission (2011)

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

| Type | Area (ha) | % of NCA |
|---------------------------------|-----------|----------|
| Ancient semi-natural woodland | 5,807 | 4 |
| Planted Ancient Woodland (PAWS) | 3,735 | 2 |

Source: Natural England (2004)

5. Boundary features and patterns

5.1 Boundary features

Major boundaries alongside tracks are often formed by mature hedgerows of hazel, field maple, hawthorn and blackthorn, but otherwise there are few hedgerows on higher ground, with divisions between fields often being marked by wire fences or grass baulks between different crops.

Source: Hampshire Downs Countryside Character Area description; Countryside Quality Counts (2003)

5.2 Field patterns

Fields surrounding settlements tend to be small, representing meadowland or former arable strips. Large fields predominate on the valley sides and higher ground, mostly with a degree of irregularity that suggests enclosure by agreement mainly from between the 16th and early 18th centuries. The fields of the higher downland between the main river valleys are predominantly regular enclosures, as is the area to the north-west and west of Winchester, where the dominance of regular surveyed boundaries is notable. In the east of the area enclosure by agreement and regular field patterns are more intermixed. There is evidence in the north-west corner of the area that cattle rearing was a major element of the agricultural system.

Source: Hampshire Downs Countryside Character Area description; Countryside Quality Counts (2003)

6. Agriculture

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

6.1 Farm type

Cereals were the most numerous farm type in this area in terms of numbers of holdings (303 or 40 per cent of holdings), followed by grazing livestock (148 or 19 per cent). The breakdown of farm types in 2009 was as follows: 303 cereals (40 per cent); 148 grazing livestock (19 per cent); 42 mixed (6 per cent); 31 horticulture (4 per cent); 23 dairy (3 per cent); 22 general cropping (3 per cent); and 18 specialist poultry (2 per cent). The most significant change between 2000 and 2009 was the decline in the number of mixed farm holdings, which fell by 32 (or 43 per cent). Horticultural holdings fell by 8 holdings (21 per cent) and dairy by 5 (18 per cent). Both grazing and uncropped land and cereals remained around the same.

Source: Agricultural Census, Defra (2010)

6.2 Farm size

This area was dominated in 2009 by farms that were 100 ha or larger, with 291 holdings covering 89 per cent of the farmed area. The next most numerous were holdings of 5 ha to 20 ha, with 181 holdings. Smaller farms (under 20 ha) had increased slightly in number of holdings since 2000 (9 holdings total), although still only accounted for 2 per cent of the farmed area. The number of farms sized over 100 ha declined by 11.

Source: Agricultural Census, Defra (2010)

6.3 Farm ownership

65 per cent of the total farm area was owner-occupied in 2009 compared to 72 per cent in 2000. The total farm area had decreased since 2000 by 4,178 ha.

2009: Total farm area = 112,702 ha; owned land = 73,357 ha

2000: Total farm area = 116,880 ha; owned land = 84,554 ha

Source: Agricultural Census, Defra (2010)

6.4 Land use

Cereals were the dominant land use in 2009, covering 51,429 ha or 46 per cent, followed by grass and uncropped land, which covered 29,355 ha (26 per cent). The other major land uses were oilseeds (10,948 ha or 10 per cent) and other arable crops (7,999 ha or 7 per cent). Between 2000 and 2009, cereals and grass and uncropped land both declined, losing 5,558 ha and 4,255 ha respectively. Oilseeds and other arable crops by contrast both increased, by 3,123 ha and 1,474 ha respectively.

Source: Agricultural Census, Defra (2010)

6.5 Livestock numbers

Sheep were the most numerous livestock in 2009 (68,800), followed by cattle (23,900) then pigs (22,700). Between 2000 and 2009 sheep numbers decreased by nearly 35,000, while cattle decreased by nearly 9,000 and pigs by more than 17,000.

Source: Agricultural Census, Defra (2010)

6.6 Farm labour

The figures suggest that the vast majority of holdings were run by principal farmers (940) compared with salaried managers (151) in 2009. There were also more full-time workers (559) than part-time workers (332), and there were 203 casual/gang workers. Trends between 2000 and 2009 showed a decrease in principal farmers by 84 while the numbers of salaried managers remained more or less constant. Full-time worker and part-time worker numbers had both decreased (by 179 and 61 respectively), while the number of casual/gang workers remained the same.

Source: Agricultural Census, Defra (2010)

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

7. Key habitats and species

7.1 Habitat distribution/coverage

Remnant tracts of calcareous grassland are predominantly confined to the steeper downland slopes to the north and west, with a few small scattered sites further east. Numerous ancient semi-natural woodlands occur on the clay soils covering the gentle plateau slopes, notably the ancient sessile oak woods within Harewood Forest, while several floristically-rich ancient woods cling to the steeper slopes with thin chalk soils. The chalk rivers of the Test and Itchen support a wealth of aquatic life, including important examples of floating water-crowfoot vegetation, and there are associated wetland habitats include fens and ancient water meadows. The arable-dominated farmland supports probably the richest and most diverse arable flora of any area in England, including populations of several nationally rare and scarce species, as well as nationally important populations of rare and declining bird species.

Source: Hampshire Downs Natural Area Profile

7.2 Priority habitats

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

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

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

| Priority habitat | Area (ha) | % of NCA |
|--|-----------|----------|
| Broadleaved mixed and yew woodland (broad habitat) | 10,671 | 7 |
| Coastal and flood plain grazing marsh | 1,533 | 1 |
| Lowland calcareous grassland | 764 | 1 |
| Lowland meadows | 189 | <1 |
| Fens | 652 | <1 |
| Reedbeds | 448 | <1 |
| Purple moor grass and rush pasture | 34 | <1 |
| Lowland dry acid grassland | 13 | <1 |

Source: Natural England (2011)

Maps showing locations of priority habitats are available at

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

7.3 Key species and assemblages of species

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

8. Settlement and development patterns

8.1 Settlement pattern

The settlement pattern is dominated by the city of Winchester, the county town of Hampshire and a historic capital, and the major towns of Basingstoke and Andover, both of which have grown significantly in modern times as a result of planned depopulation from London. From these centres the settlement pattern is radial along river valley routes and trackways over the chalk, linking with the market towns of New Alresford and Alton, and just on the edge of NCA to the east, Farnham. Elsewhere there is a widely dispersed settlement pattern of villages and hamlets linked together by a complex network of remote and narrow lanes. Settlement is predominantly nucleated, though in the west linear villages lying in valley bottoms are typical (except in the north-west corner of the area where settlement lies on ridge tops). In the east small agglomerations, often at road junctions, are widely scattered across the landscape with few strong valleys dominating the landscape.

Source: Hampshire Downs Countryside Character Area description; Countryside Quality Counts (2003)

8.2 Main settlements

The main towns/cities within the NCA (with populations recorded in 2001) are; Andover (52,000), Alton (19,000), Basingstoke (82,000), and Winchester (38,000). The total estimated population for this NCA (derived from ONS 2001 census data) is: 295,426.

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

8.3 Local vernacular and building materials

Traditional historic buildings are brick or brick and timber in the valleys, or of brick and distinctive knapped flint in the hills. Plain clay tiles are the most common roofing material, though thatch survives in some buildings, with Welsh slate another variation. Chalk cob is used in walls surrounding farmsteads, though rarely as a building stone. Large aisled timber-framed barns are typical of many farms (the NCA has one of the main concentrations in the country).

Source: Hampshire Downs Countryside Character Area description; Countryside Quality Counts (2003)

9. Key historic sites and features

9.1 Origin of historic features

There are numerous bronze-age burial mounds in the landscape along the open-downland ridges. Iron-age settlement is represented by major hillforts (such as Danebury) and several smaller hillforts, with iron-age farmstead sites and enclosures scattered across the downs. Winchester is a city of Roman origin, while Roman villa and farmstead sites are found across the downland, evidenced by crop and soil marks and occasionally small areas of earthworks. Kiln sites have been excavated at Michelmersh in the south-west corner of the area, where an important Anglo-Saxon pottery industry existed.

Source: Draft Historic Profile, Countryside Character Area description

9.2 Designated historic assets

This NCA has the following historic designations:

- 27 Registered Parks and Gardens covering 2,823 ha
- 1 Registered Battlefield covering 440 ha
- 230 Scheduled Monuments
- 4,866 Listed Buildings

Source: Natural England (2010)

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

10. Recreation and access

10.1 Public access

- 2 per cent of the NCA 3,482 ha is classified as being publically accessible.
- There are 1,865 km of public rights of way at a density of 1.2 km per km².

- There are 2 National Trails within the NCA. Around 8 km of National Trails occur; the North Downs Way (<1 km) and the South Downs Way (7 km) cut across the NCA.

Source: Natural England (2010)

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

| Access designation | Area (ha) | % of NCA |
|--|-----------|----------|
| National Trust (Accessible all year) | 170 | <1 |
| Common Land | 498 | <1 |
| Country Parks | 111 | <1 |
| CROW Access Land (Section 4 and 16) | 2,186 | 1 |
| CROW Section 15 | 185 | <1 |
| Village Greens | 26 | <1 |
| Doorstep Greens | 0 | 0 |
| Forestry Commission Walkers Welcome Grants | 666 | <1 |
| Local Nature Reserves (LNRs) | 124 | <1 |
| Millennium Greens | 5 | <1 |
| Accessible National Nature Reserves (NNRs) | 32 | <1 |
| Agri-environment Scheme Access | 21 | <1 |
| Woods for People | 2,394 | 2 |

Sources: Natural England (2011)

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

11. Experiential qualities

11.1 Tranquillity

Based on the CPRE map of tranquillity (2006) it appears that the lowest scores for tranquillity are associated with the urban areas of Basingstoke, Andover and Winchester, while the highest scores are found on the elevated areas of downland away from the main roads.

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

| Category of tranquillity | Score |
|--------------------------|-------|
| Highest value within NCA | 44 |
| Lowest value within NCA | -88 |
| Mean value within NCA | <1 |

Source: CPRE (2006)

- More information is available at the following address:
<http://www.cpre.org.uk/campaigns/planning/intrusion/our-intrusion-map-explained>

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 'disturbed' areas of land are predominantly associated with the main transport corridors and towns, with significant areas of 'undisturbed' land remaining between these, notably in the north-west and south-west of the NCA either side of Andover and to the south of Basingstoke.

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

| Category of intrusion | 1960s (%) | 1990s (%) | 2007 (%) | % change (1960s-2007) |
|-----------------------|-----------|-----------|----------|-----------------------|
| Disturbed | 17 | 37 | 47 | 30 |
| Undisturbed | 80 | 60 | 49 | -31 |
| Urban | 2 | 2 | 4 | 2 |

Sources: CPRE (2007)

Notable trends from the 1960s to 2007 are the significant loss of undisturbed land (just over 30 per cent) and an increase in the area of disturbed land of just under 30 per cent. More information is available at the following address:

- More information is available at the following address:
<http://www.cpre.org.uk/campaigns/planning/intrusion/our-intrusion-map-explained>

12. Data sources

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

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

Supporting document 2: Landscape change

Recent changes

Trees and woodlands

- There has been a small (2 per cent), increase in the extent of woodland. This has been achieved by new planting mostly in the form of small scattered blocks reinforcing the existing framework, strengthening of boundary features and screening of trunk roads.
- The extent of woodland covered by Woodland Grant Schemes has increased by 7 per cent.
- Large areas of ancient woodland and traditional coppice woodland remain poorly managed despite several conservation initiatives to enhance biodiversity value for species such as the Duke of Burgundy fritillary and pearl bordered fritillary butterflies.
- Woodland managed for game shooting has increased, which has limited biodiversity benefit but can, in partnership, result in associated woodland conservation.

Boundary features

- Historic take up of Countryside Stewardship agreements for boundary features only covered approximately 4 per cent of the total estimated length of boundary in the NCA, suggesting that the character of these features is not being well maintained.
- More recent figures from 2011 indicate that this figure had increased to cover 17 per cent of the estimated length of boundary features, suggesting an improvement, but take up of these options is now declining.

- Generally the condition of boundary features in the Hampshire Downs is poor and hedgerow removal has continued to take place.

Agriculture

- Cereal farms are the dominant farm type making up 40 per cent of all holdings. The trend indicates a gradual increase with a consequent decline in mixed farming, dairy cattle and horticulture. Cattle farms continue as the second most common type.
- Large farms of more than 100 ha, make up 89 per cent of the farmed area and continue to dominate, but with a recent slight decline in favour of smaller holdings of less than 20 ha.
- In terms of crops, cereals continue their recent dominance with 46 per cent of the farmed area in cereal production, but oilseeds and other arable crops are increasing at the expense of cereals and temporary grass.
- Sheep are the dominant livestock – 68,000 in 2010 – with cattle and pigs at both around 22,000. Numbers of all livestock dropped over the 10 years up to 2010; sheep by 35,000, cattle by 9,000 and pigs by 17,000 reflecting the trend towards arable farming.
- Trends in Countryside Stewardship agreements show an overall increase in area covered, in excess of the national average. Many of these agreements have been for the regeneration of grassland or semi-natural habitats with some increase in permanent grassland, but the overall loss of permanent grassland since 1990 has not been reversed.

Settlement and development

- Because of its proximity to London, the economic potential of south Hampshire and planned growth to accommodate post-Second World War London overspill the pressures for settlement growth and development in this area continue to be very high. This is focussed on Basingstoke and Andover. Winchester is experiencing less expansion because of its environmental constraints. Smaller towns like Alresford, Alton, Four Marks, Overton, Stockbridge and Whitchurch also continue to expand.
- In terms of visual impact this is most notable around Basingstoke and Andover because of their exposed location on the Downs rather than in valleys.
- Traffic on trunk roads continues to increase disproportionately particularly on the M3 and A34 connecting with Southampton docks.

Semi-natural habitat

- Of the five principal semi-natural habitats in the area woodland is in the best condition with 84 per cent of area of Sites of Special Scientific Interest (SSSI) in favourable condition, calcareous grass SSSI with 48 per cent, closely followed by fen, marsh and swamp at 47 per cent, and neutral grassland (watermeadows included) at 36 per cent. Of the chalk rivers and streams, probably the most important habitat in terms of designation, only 10 per cent is in favourable condition.
- Recent take up of Countryside Stewardship suggest that while the condition of grassland habitats is gradually improving, the condition of rivers and streams remains poor because of the levels of pollutants and abstraction.

Historic features

- Although much of the historic parkland in the area has been lost to agriculture, of the area that remains, 39 per cent is receiving grant aid and 30 per cent is covered by Countryside Stewardship agreements, so the quality of this asset is being maintained.
- Take up of Stewardship agreements on chalk grassland (which contains most of the iron-age hill forts, burial mounds and other archaeological features), including measures to maintain these ancient monuments, also suggests that the condition of these features is being maintained.

Rivers

- Water Framework Directive status of the main watercourses – the Test and Itchen – is mostly 'Moderate' with 'Good' quality in the upper Test. SSSI condition of river channel habitats is in unfavourable condition overall. Recent trends in this status show gradual improvement as the effects of engagement with riparian land managers and owners, and long-term engagement with water companies, takes effect. However, the pressure resulting from various pollutants and increasing demands for abstraction and discharge of waste, management of engineered channel structures, unregulated activities, and surface run-off from highways and farmland requires further action to maintain quality.
- Groundwater sources that supply the rivers are mostly at risk from agriculture and remain in 'Poor' condition, suggesting that similar increases in management will be necessary to maintain or improve condition.

Drivers of change

Climate change

- Longer periods with less rainfall, more extreme rainfall events and increased evaporation rates may lead to more rapid run-off, and greater soil erosion and pollution. Aquifer recharge may be affected and increased numbers of pollution incidents.
- Chalk streams and wetland habitats are vulnerable to low groundwater levels and their resilience is already reduced by low flows. Polluted run-off may have a greater impact if dilution capacity is reduced.
- Increasing temperatures and reduced dissolved oxygen may affect spawning success and may justify some additional shading of watercourses, where appropriate, depending on conservation objectives.
- The fragmented and small size of priority habitats, such as chalk grassland, watermeadow and ancient woodland, reduces their resilience to climate change. Core areas will become increasingly important as will habitat corridors that will enable species to migrate as temperatures increase. Changing temperatures and rainfall patterns may also affect species diversity and encourage returning native and new non-native species.
- Diseases and pests, some already threatening many tree species, may increase.
- National demands for food are likely to increase, with more demand for local production because of transport and other costs. This will result in further pressure to increase agricultural productivity, with ploughing of marginal land, and increased fertiliser application and use of pesticides. Soil erosion and run-off will also be increased without greater efforts to control it through catchment sensitive farming.
- Similarly demands for other food products, like watercress and freshwater fish, could add further to water pollution in the chalk streams, and affect flows.
- Changing traditional supplies of fuel for energy production, and a rise in demand for sources of renewable energy, may increase demand for biomass from woodland, solar farms, wind turbines and energy crops. These have some potential for some biodiversity and woodland management gain, but may also pose threats to sensitive habitats and landscape.
- Markets for woodland produce, especially wood fuel are increasing, and this trend is likely to continue. Local 'Woodheat' generation is substituting wood fuel for heating oil offering a considerable incentive to restore active woodland management and traditional management regimes such as coppice.
- Impacts of diseases in trees, in particular ash dieback (Chalara) are likely to have a major impact on the woods of the NCA. Hedgerows where ash is a common component will be particularly vulnerable. In addition the recent move to diversify beech plantations by thinning to encourage ash regeneration and natural regeneration of windblown woods, as at Noar Hill which is dominated by ash, may be threatened. While work to identify resistance is important there is likely to be a need to identify and promote the use of alternative species in the short term.

Other key drivers

- Continued economic growth in south Hampshire, Basingstoke and Andover will have impacts on the Downs. This will have direct and indirect effects: directly through the visual impact of new development on landscape character, and more light pollution, and indirectly through increased resource demands, for example for water and space for recreation.

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.



View across field stubble to copse.

| Statement of Environmental Opportunity | Ecosystem Service | | | | | | | | | | | | | | | | | | |
|--|-------------------|------------------|--------------------|-------------------|-------------------|--------------------|--------------------------|-----------------------|-------------------------|-------------------------|-------------|-----------------|----------------------------|----------------------------|------------------|-------------|------------|--------------|--------------|
| | Food provision | Timber provision | Water availability | Genetic diversity | Biomass provision | Climate regulation | Regulating water quality | Regulating water flow | Regulating soil quality | Regulating soil erosion | Pollination | Pest regulation | Regulating coastal erosion | Sense of place/inspiration | Sense of history | Tranquility | Recreation | Biodiversity | Geodiversity |
| SEO 1: In the catchments of the rivers Test and Itchen, work with partners, landowners, land and river managers, user groups, businesses and local communities to implement sustainable management regimes that conserve, enhance and restore the priority habitats and species of the watercourses and associated wetlands. | ↑ ** | ↔ ** | ↔ ** | ↔ ** | ↔ *** | ↑ *** | ↑ *** | ↑ *** | ↔ ** | ↔ *** | ○ *** | ○ *** | n/a | ↗ *** | ↗ *** | ↔ * | ↗ ** | ↑ *** | ○ *** |
| SEO 2: Ensure that the remnant areas of biodiversity-rich chalk grassland are retained and managed to ensure good condition, and seek opportunities to restore areas in poor condition and extend the area of this habitat. Protect and manage the associated historic features of these sites. | ↗ ** | ↔ *** | ↔ ** | ↗ *** | ↔ * | ↑ *** | ↑ *** | ↑ *** | ↑ *** | ↑ ** | ↑ *** | ↑ ** | n/a | ↑ *** | ↑ *** | ↔ *** | ↑ *** | ↑ *** | ↔ * |

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

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

| Statement of Environmental Opportunity | Ecosystem Service | | | | | | | | | | | | | | | | | | |
|--|-------------------|------------------|--------------------|-------------------|-------------------|--------------------|--------------------------|-----------------------|-------------------------|-------------------------|-------------|-----------------|----------------------------|----------------------------|------------------|-------------|------------|--------------|--------------|
| | Food provision | Timber provision | Water availability | Genetic diversity | Biomass provision | Climate regulation | Regulating water quality | Regulating water flow | Regulating soil quality | Regulating soil erosion | Pollination | Pest regulation | Regulating coastal erosion | Sense of place/inspiration | Sense of history | Tranquility | Recreation | Biodiversity | Geodiversity |
| SEO 3: Work with landowners and the farming community to encourage sustainable food and fodder production that also retains or enhances landscape character, provides habitats for wildlife, and minimises the impacts on ecosystems such as water and soil and on the historic features in the landscape. | ↗ ** | ↔ *** | ↔ *** | ↔ *** | ↗ ** | ↑ *** | ↑ *** | ↑ *** | ↑ ** | ↑ *** | ↑ ** | ↗ *** | n/a | ↔ * | ↔ ** | ↔ *** | ↗ * | ↑ *** | ↔ *** |
| SEO 4: Encourage woodland management regimes that: ensure good condition of priority habitats and species; maximise the potential ecosystem benefits of woodland such as carbon sequestration, water quality and regulation, timber provision, recreation and biomass potential; and enhance the landscape visually. | ↔ *** | ↑ *** | ↗ ** | ↔ ** | ↑ *** | ↑ *** | ↑ *** | ↑ *** | ↗ ** | ↑ *** | ↗ ** | ↗ ** | n/a | ↗ *** | ↔ *** | ↔ *** | ↗ *** | ↑ *** | ↔ *** |

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

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

Landscape attributes

| Landscape attribute | Justification for selection |
|---|---|
| The domination of the Cretaceous Chalk bedrock geology. | <ul style="list-style-type: none"> The Chalk provides the basis for the elevated open downland landscape, the flora of the remaining calcareous grassland, the relatively poor thin soils limiting tree growth, the dominance of arable farming, the settlement sites and trackways established by early man and the porous aquifer providing the dry valleys and clear streams of the Test and Itchen catchments. |
| Broad, open, long-distance views and big skies and a rolling arable landscape with patches of chalk grassland, thick shelterbelts and swathes of broadleaved woodland on valley slopes and clay plateaux. | <ul style="list-style-type: none"> This is the defining human experience and image from the top of the Hampshire Downs and is a landscape steeped in well-preserved, rich and diverse archaeological evidence, on chalk grassland, in ancient woodland and in the field boundaries of early farming practices. |
| The north facing scarp slope of the Chalk, from Ham, Inkpen and Walbury Hill, through Highclere Beacon to Ladle Hill, Watership Down, Cottington's and Plantation Hill. | <ul style="list-style-type: none"> This northern limit of the Hampshire Downs produces a steep landscape boundary between the Cretaceous Chalk and the Thames Basin Heaths which presents dramatic and distinctive scenery to travellers on the A34 and walkers on the Wayfarers Walk, which follow the scarp edge. Much of the slope is retained and managed as calcareous grassland; a nationally rare priority habitat supporting many priority species. Ancient trackways, burial mounds, hill forts and other earthworks are concentrated along the scarp providing evidence of early human occupation and a popular attraction for visitors. |
| The valleys, meadows, watercourses and settlements of the Test and Itchen valleys. | <ul style="list-style-type: none"> These straight-sided, narrow, incised valleys are the dominant linear features of the NCA, contrasting sharply with the blocks of downland, they cut through the landscape and provide the focus for settlement, such as Alresford, Stockbridge, Whitchurch and Overton, and the communication routes that connect them. The rivers and their watermeadows acted as a magnet for early agriculture and water powered industry, the basis for watercress cultivation and fly fishing, the habitat for many of the priority species and a draw for much recreation and tourism. As a water resource both catchments are very important and support numerous priority freshwater wetland species and habitats. The whole length of the Itchen valley is a Special Area for Conservation (SAC); the only one wholly in the NCA. |

| Landscape attribute | Justification for selection |
|---|--|
| The city of Winchester. | <ul style="list-style-type: none"> ■ The city, cathedral, college and historic town centre, developed on an ancient convergence of downland trackways (known as 'dongas') and at a strategic crossing point of the Itchen. ■ A major Roman settlement, the pre- Norman capital of England, and now the home of county administration and an increasingly popular international visitor destination. |
| Basingstoke and Andover. | <ul style="list-style-type: none"> ■ In contrast to Winchester these two newly expanded market towns, built to accommodate post-Second World War London overspill population, are major, largely 20th-century, urban features integrated into the downland landscape, demonstrating planned communities and experiencing continued rapid economic and housing growth. |
| The M3, A31, A34 and A303. | <ul style="list-style-type: none"> ■ These heavily-used trunk roads (the A303 is nicknamed the 'Highway to the Sun' because of its use by holidaymakers) cut across and over the contours of the Downs, often with significant visible and audible impact on the landscape, and are, in many parts of the area, dominant and to some, alien features. |
| The Chalk–Upper Greensand scarp slope forming the eastern limit of the Chalk and the western edge of the Weald. | <ul style="list-style-type: none"> ■ A long, thin, sinuous, steep scarp which twists between the Hampshire Downs and the Wealden Greensand NCAs. It forms a dramatic landform, distinctly visible from the A3(M) near Petersfield, covered in dark, mostly beech-dominated woodland, giving long-distance views into the central Weald and to the main ridge of the South Downs National Park. ■ The slopes are an SAC supporting priority species woodland flora. |
| Strong remaining evidence of early agricultural practices linking river valleys, the Downs and woodland. | <ul style="list-style-type: none"> ■ Remnant drove roads that now form sunken rural lanes reflect the former movement of livestock between valleys and the Downs. ■ The boundaries of 'ladder' field systems reflect the same agricultural practices and form the foundation of later enclosure patterns. |

Landscape opportunities

- In the catchments of the rivers Test and Itchen work with partners, landowners, land managers, user groups, businesses and local communities to implement sustainable management regimes that conserve, enhance and restore the priority habitats and species of the watercourses and associated wetlands.
- On the largely arable open downland – the majority of the Hampshire Downs – work with landowners and the farming community to encourage sustainable food and fodder production that also enhances or retains landscape character, provides habitats for wildlife and minimises its impacts on ecosystems, such as water quality and flow and soil quality and erosion, and historic features in the landscape.
- Ensure the remnant areas of biodiversity-rich chalk grassland are retained and managed to ensure good condition and seek opportunities to restore areas in poor condition and extend the area of this habitat, incorporating the protection of historic sites and features of interest also present.
- In areas of ancient woodland across the Hampshire Downs, and in woodland habitats generally, encourage management regimes that ensure good condition of priority habitats and species, and maximise the potential ecosystem benefits of woodland, such as carbon sequestration and storage, water quality and flow regulation, timber provision, recreation and biomass potential.



The River Itchen south of Winchester with fenced banks for fishing and typical water meadow habitats.

Ecosystem service analysis

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

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

| Service | Assets/ attributes: main contributors to service | State | Main beneficiary | Analysis | Opportunities | Principal services offered by opportunities |
|-----------------------|--|--|------------------|--|---|--|
| Food provision | Arable farmland with some associated, improved pasture Watercress beds Fish farms Chalk grassland and valley bottom meadows | Large areas of intensively farmed land, right across the Downs, producing large quantities of cereal, fodder (mostly maize, rape and kale) and, increasingly, poppies for medicinal use. This is predominantly Grade 3 agricultural land, with small patches of Grade 2 in a belt from north-west of Basingstoke to Alton. Improved pasture is mostly used for sheep with small numbers of beef and dairy cattle and pigs, and some limited farming of llama and other exotics. Continued on next page... | National | Food provision from arable farming is at present operating successfully, for national and local benefit, within the constraints of current farming economics. There are concerns, however, related to soil erosion, because of repeated ploughing, cultivation and hedgerow removal, and in the decline in pollinators, predominantly bees. Production is heavily reliant on pesticide and fertiliser application, and irrigation. Increases in any of these to enhance food production would be detrimental to flora and fauna and to water availability and quality in the aquifer and watercourses. Any extension of the land in arable use at the expense of natural habitats, particularly the priority habitats of chalk grassland and broadleaved woodland, would exacerbate the potential for the concerns identified above, and be detrimental to biodiversity. | Work with landowners and farmers to encourage soil conservation techniques that reduce run-off and erosion, and the creation of buffers that contribute to this and also provide habitat for pollinators and other flora and fauna like farmland birds. Similarly, encourage the implementation of various measures promoted by the Catchment Sensitive Farming (CSF) initiative to raise awareness and influence the level and nature of fertiliser and pesticide applications, and irrigation practices and impacts on soil and water quality. | Food provision Biodiversity Regulating soil erosion Regulating soil quality Pollination Water availability Regulating water flow Regulating water quality |

| Service | Assets/ attributes: main contributors to service | State | Main beneficiary | Analysis | Opportunities | Principal services offered by opportunities |
|------------------------------------|--|--|------------------|--|---|---|
| <p>Food provision cont.</p> | | <p>... continued from previous page</p> <p>Commercial watercress beds in the upper Test and Itchen valleys, benefiting from clean chalk stream water, are long established. They have recently experienced a big increase in demand.</p> <p>Fish farms in the Test and Itchen valleys, also benefiting from clean chalk stream water, produce fresh trout and carp commercially.</p> <p>Limited grazing, often for conservation, on scarp slopes and other remnant chalk grassland, and on wet meadows in the Itchen and Test valleys. This is Grade 4 agricultural land and produces some niche market meat.</p> | | <p>Production of watercress has already been intensified, with significant implications for downstream water quality because of additional pollutants entering the environment. The industry relies on clean river water so measures to maintain or improve this for conservation purposes would also benefit the industry.</p> <p>Similar issues affect fish farming to those identified for watercress beds.</p> <p>Where it does not take place commercially, food provision is largely a by-product of conservation grazing. Any extension of the chalk grassland or river meadows available for grazing, or additional conservation grazing on existing land, would potentially enhance food provision.</p> | <p>Raise awareness of the benefits and increase the protection of semi-natural habitats within the farmed environment to help reduce the potential and incidence of arable cultivation extending into sensitive areas.</p> <p>Work with the owners and managers of commercial watercress beds to implement the principles of catchment sensitive farming to help minimise the impacts on water quality.</p> <p>Encourage and support landowners and managers to extend conservation grazing where appropriate, and arable reversion to chalk grassland.</p> | |

| Service | Assets/ attributes: main contributors to service | State | Main beneficiary | Analysis | Opportunities | Principal services offered by opportunities |
|-------------------------|--|---|------------------|---|--|--|
| Timber provision | Scattered blocks of mostly broadleaved woodland | <p>Woodland covers only 11 per cent of the NCA and it occurs randomly across the area. Combined, the conifer and broadleaved woodlands could produce in the region of 15,000 m³ of sawlogs per year. Woodland is generally associated with clay-with-flint capping of the Chalk, and along valley flanks, with concentrations west of Winchester, in the north-east around Basingstoke and north-west around Andover. Just over half is ancient woodland with important areas in Harewood Forest, Crab Wood, Mottisfont and the East Hants Hangers. Site of Special Scientific Interest (SSSI) designation covers approximately 5 per cent of the resource.</p> <p>The woodland is a strong visual feature in the landscape but timber production is not significant in any areas. Many woods are poorly managed, while some are managed for game or conservation, with coppiced products as the main output.</p> <p>Some clearances of conifers and non-natives, for example in Crab Wood, have produced timber but as a result of conservation and amenity management.</p> <p>Historically timber was not valued from this area, for example for shipbuilding, because of the unfavourable dry, thin soil, growing conditions.</p> | Regional | <p>Scattered distribution of the resource, poor woodland management, fragmented ownership, lack of economic incentives and the absence of readily available market outlets are the main determining factors restricting utilisation of this resource and ecosystem service.</p> <p>Improved management, particularly expansion of coppicing and other woodland management practices, would produce larger crops, for biomass, charcoal and other uses and enhance biodiversity value.</p> <p>Carbon sequestration and storage, and water flow and quality regulation would benefit from enhanced woodland management.</p> | Work with woodland managers and owners to encourage improved management, and increase awareness of grant availability, potential markets, biodiversity and other ecosystem benefits. | <p>Timber provision</p> <p>Biodiversity</p> <p>Regulating water flow</p> <p>Regulating water quality</p> <p>Regulating soil quality</p> <p>Sense of place/ inspiration</p> |

| Service | Assets/attributes: main contributors to service | State | Main beneficiary | Analysis | Opportunities | Principal services offered by opportunities |
|---------------------------|---|--|------------------|---|---|--|
| Water availability | <p>The rivers and tributaries of the rivers Itchen and Test</p> <p>The chalk aquifer and groundwater sources of the river catchments</p> <p>(The rivers Wey, Loddon, Lyde and Whitewater have their source on the Hampshire Downs but only short sections of their course in this NCA. They are dealt with in Thames Basin Lowlands, Wealden Greensand, and Thames Basin Heaths NCAs)</p> | <p>The Environment Agency describes these rivers as ‘among the finest chalk streams in the world’ and they provide both a high, quality and quantity source of water for domestic, agricultural and commercial use, including a paper mill, fish farms and watercress beds, in some places located within the waterbody.</p> <p>These sources are heavily abstracted, particularly at their southern end (outside this NCA), but their catchment is almost entirely within the NCA. The water resource serves much of the 1 million or so population of the south Hampshire conurbation (outside this NCA), as well as many other urban areas and villages in Hampshire. This includes both water supply and foul and surface water discharge management. Water is exported to the Isle of Wight from this area.</p> <p>Integral to their value as a water resource, both rivers and their valley beds also support a large number of priority habitats and species, many of them chalk stream specialists. Both the principal rivers are designated SSSI and the Itchen is a Special Area for Conservation (SAC).</p> <p>Continued on next page...</p> | National | <p>Although these catchments continue to provide a high quality water resource, and support priority species and habitats, they are coming under increasing pressure from rising levels of abstraction and pollution, particularly nitrates and phosphates in surface water, and nitrates in groundwater. The 2009 ecological status of the rivers under the Water Framework Directive (WFD) varied from good to poor.</p> <p>The waters of the Test and Itchen SSSI are in unfavourable recovering condition, failing targets on engineered channel modifications, water quality, aquatic vegetation management, siltation and water resource criteria.</p> <p>Both the Itchen and Test Chalk groundwater bodies are at poor status overall.</p> | <p>Continue to support and promote the existing initiatives underway to improve water availability (and quality) and at the same time enhance biodiversity and improve the condition of the SSSI.</p> <p>The scale of the catchments and the number of issues involved leaves substantial scope to explore sustained and extended activity in the same areas of engagement with a wide range of partners.</p> | <p>Water availability</p> <p>Biodiversity</p> <p>Climate regulation</p> <p>Regulating soil erosion</p> <p>Recreation</p> <p>Regulating water flow</p> <p>Regulating water quality</p> <p>Sense of place/ inspiration</p> |

| Service | Assets/ attributes: main contributors to service | State | Main beneficiary | Analysis | Opportunities | Principal services offered by opportunities |
|---------------------------------|--|---|------------------|--|--|--|
| Water availability cont. | | <p>... continued from previous page</p> <p>The rivers also have important recreational, tourism and access attractions, and both rivers are managed, along most of their length, for game fishing.</p> | | <p>Various measures are already in place to address these issues, including; a review of abstraction and discharge licences; improvement of the quality of sewage discharges and highway run-off, particularly phosphate and nitrate levels; addressing diffuse pollution through the Catchment Sensitive Farming initiative and other programmes such as the Farming and Forest and Improvement Scheme that promote woodland creation; implementing fish passage programmes; and, seeking land management agreements with landowners and managers to improve the condition of species and habitats for which the rivers are designated.</p> | | |
| Genetic diversity | Hampshire Down sheep | Hampshire Down sheep, although not a 'rare breed' are grazed over some areas and represent a locally developed breed suited to the area. | Local | <p>The use of locally distinctive and adapted breeds for grazing, and particularly conservation grazing, supports a farm genetic resource and can add market value to finished livestock and produce.</p> | <p>Encourage land owners and farmers to take up the use of Hampshire Down sheep for grazing, particularly areas of species-rich chalk grassland.</p> | <p>Genetic diversity</p> <p>Sense of place/ inspiration</p> <p>Sense of history</p> <p>Biodiversity</p> <p>Food provision</p> |

| Service | Assets/ attributes: main contributors to service | State | Main beneficiary | Analysis | Opportunities | Principal services offered by opportunities |
|-----------------------|--|---|------------------|---|---|--|
| Biomass energy | <p>Open arable downland, woodland blocks and boundary features</p> <p>Valley slopes and bottoms</p> <p>Planting around and within expanding urban areas and transport infrastructure</p> | <p>It is estimated that low quality timber produce from woodland management has the capacity to generate around 60,000 m³ of wood fuel per year, generating an equivalent of 140,000 MWh of energy per year, the same as 14 million litres of heating oil.</p> <p>The amount of coppice product from the low level of managed existing woodland used for biomass is unknown. There is no known current assessment of the potential of coppice biomass from existing woodlands.</p> | Local | <p>Woodland management is currently poor across much of the area. Extended and improved management, particularly expansion of coppicing and other woodland management practices would produce larger crops, for biomass and additionally enhance biodiversity and habitat value. This is however likely to be on a small, non-industrial scale.</p> <p>There is potential for additional biomass planting in the form of short rotation coppice (SRC) and miscanthus but this is likely to have adverse and negative effects on the AONB, the National Park, ancient monuments and other historic features, and the essential character of the open downland landscape. Careful additions to existing non-native shelterbelts may be possible outside the designated landscapes.</p> <p>Small scale biomass crop planting on valley slopes, where it enhances existing woodland may be possible, with potentially beneficial or neutral impacts on the landscape. This would most likely be restricted to areas outside the designated landscapes.</p> <p>Valley bottoms would not be suitable for biomass planting because of the designated habitats; the wet meadows, fens and other features associated with the chalk streams.</p> <p>Major extensions of urban areas are taking place, particularly around Andover and Basingstoke, and the visual impact of trunk roads across the NCA is significant. Biomass planting as a screen for adverse visual and other (noise, light and pollution) impacts may have potential benefits in these areas. The sensitivity and impact on protected landscapes and other designations would need to be carefully considered in all cases.</p> <p>In all cases the water demand for biomass crops, particularly SRC, would be a significant factor to be considered in view of the importance of the downland aquifer for water availability and quality.</p> | <p>Work with landowners and managers to improve and extend the management of existing woodlands to increase biomass potential and improve the condition of habitats.</p> <p>Work with developers and planners to realise the potential for biomass planting as screening of intrusive features and developments on the open downland landscape.</p> | <p>Biomass energy</p> <p>Biodiversity</p> <p>Climate regulation</p> <p>Regulating water flow</p> <p>Sense of place/ inspiration</p> |

| Service | Assets/ attributes: main contributors to service | State | Main beneficiary | Analysis | Opportunities | Principal services offered by opportunities |
|---------------------------|--|---|------------------|---|---|--|
| Climate regulation | <p>Long, narrow linear areas of wetland in river valleys</p> <p>Large areas of land in arable cultivation, with some pasture</p> <p>Broadleaved woodland</p> <p>Urban areas and transport infrastructure</p> | <p>The flat bottoms of the Itchen and Test valleys, a small percentage area of the NCA, are characterised by accumulations of peat and other deposited material with high vegetative content. This has medium to high carbon storage potential.</p> <p>More than 80 per cent of the NCA is in arable production on mostly thin, dry, chalk soils; a combination that has low carbon sequestration potential.</p> <p>Woodland cover, which makes an important positive contribution to climate regulation, is a small proportion of the NCA.</p> <p>Large urban areas –Basingstoke, Andover and Winchester – and the traffic on trunk roads crossing the NCA are major contributors to carbon emissions.</p> | Local | <p>The river valleys are an important area of wetland with high carbon sequestration and storage potential, particularly if managed and maintained in a suitably wet condition. The biodiversity interest of the valleys is also dependent on the wetland habitats being well managed, so these two features are mutually supportive. Drainage for agriculture, reduced water flows and seasonal flooding, lower water table levels as a result of over abstraction and areas reverting to, for example scrub, therefore have the potential to be detrimental to climate regulation, biodiversity and water availability in this area.</p> <p>Where not pasture, the farmed area (the majority of the area) of the NCA is likely to be a source of carbon, rather than a sink. Any conversion to pasture, permanent or otherwise, or woodland is likely to reverse this position because of the enhanced sequestration characteristics. Likewise measures to extend the area of planted field margins and buffers, and reduce the level and frequency of ploughing and tillage to reduce soil erosion, would increase carbon storage.</p> <p>Continued on next page...</p> | <p>Work with landowners and managers to extend and maintain habitat and species management on the Itchen and Test valley floors and watercourses to have multiple ecosystem benefits and improve the condition of SSSI and SAC.</p> <p>Where consistent with landscape conservation objectives, climate regulation services could be enhanced by working with landowners and land managers to increase the vegetated cover of arable areas through buffers and field margins, additional woodland and permanent pasture, and by encouraging farming practices that reduce soil erosion. These measures would also benefit water availability and quality, and biodiversity.</p> | <p>Climate regulation</p> <p>Biodiversity</p> <p>Water availability</p> <p>Regulating water quality</p> <p>Regulating soil quality</p> <p>Regulating soil erosion</p> <p>Recreation</p> <p>Sense of place/ inspiration</p> |

| Service | Assets/ attributes: main contributors to service | State | Main beneficiary | Analysis | Opportunities | Principal services offered by opportunities |
|--------------------------|--|-------|------------------|---|---|---|
| Climate regulation cont. | | | | <p>... continued from previous page</p> <p>Some of these measures would however potentially reduce the contribution to food provision by reducing productive capacity, and detract from some of the main landscape characteristics of the area.</p> <p>Much of the broadleaved woodland is poorly managed and improvement to this would enhance climate regulation by enhancing carbon sequestration potential, at the same time potentially improving biodiversity and biomass production.</p> <p>Urban areas are likely to be a major carbon source in the NCA, and with continued economic growth and the expansion of the developed area, this will increase. In addition to national initiatives and regulations relating to, for example, building efficiency and emission controls, there is potential for initiatives such as additional green and blue infrastructure, and green roofs to improve carbon sequestration within the built environment. This would also contribute to urban cooling and biodiversity levels, in addition to the benefits to human health and living conditions.</p> | <p>Increase the potential carbon storage abilities of mineral soils under arable production through increasing organic matter inputs and by introducing break crops into arable rotations. Introduce minimum tillage to reduce carbon loss.</p> <p>Work with owners and managers to improve woodland management for multiple ecosystem benefits.</p> <p>Input to the content of local development documents and planning applications to maximise the provision of green and blue infrastructure provided as part of the development process.</p> | |

| Service | Assets/ attributes: main contributors to service | State | Main beneficiary | Analysis | Opportunities | Principal services offered by opportunities |
|---------------------------------|--|--|------------------|--|---|---|
| Regulating water quality | <p>The chalk aquifer of the Hampshire Downs</p> <p>The waterbodies of the rivers Itchen and Test catchments</p> <p>(The rivers Wey, Loddon, Lyde and Whitewater have their source on the Hampshire Downs but only short sections of their course in this NCA. They are dealt with in Thames Basin Lowlands, Wealden Greensand, and Thames Basin Heaths NCAs)</p> | <p>The crops, vegetation, soils and bedrock of the Hampshire Downs filter water percolating through to the aquifer that provides the principal source of water in the watercourses of the Test and Itchen catchments.</p> <p>The entire chalk downland area is a Principal Aquifer, and much of it covered by high or intermediate Groundwater Vulnerability Zones, and Groundwater Source Protection Zones 1, 2 and 3. Combined it is a Defra Priority Catchment.</p> <p>The ecological quality of the Test catchment waters are classed as Moderate/Good while the Itchen is Poor, apart from the headwaters near the source.</p> <p>Both catchments are designated for the biodiversity value of their wetland and aquatic habitats and species; the Itchen, as an SAC, at international level.</p> | Regional | <p>Despite the effectiveness of the chalk in filtering, water in the aquifer, and therefore the rivers, is reduced in quality by chemical pollution mostly from agricultural use. Nitrates and phosphates are the principal pollutants.</p> <p>The main source is arable farming across the NCA which involves pesticide and fertiliser applications, involves ploughing and tillage that increases soil erosion and run-off, and involves minimal vegetation cover for much of the year. Permanent vegetation is unusual.</p> <p>Fish farms and watercress beds also contribute pollutants more directly to the rivers and streams.</p> <p>Additional pollution comes from urban and road sources; surface run-off and treated sewage discharge.</p> <p>These effects are exacerbated by low or absent summer flows in many of the smaller streams at the headwaters of the catchments, and the effects of climate change on rainfall patterns.</p> <p>There are already a number of initiatives underway to improve water quality (and availability) and at the same time enhance biodiversity and improve the condition of the SSSI. However, the scale of the catchments and the number of issues involved leaves substantial scope for sustained and extended activity in the same areas of engagement.</p> | <p>Encourage the implementation of various measures promoted by the Catchment Sensitive Farming (CSF) initiative to raise awareness and influence the level and nature of fertiliser and pesticide applications, and irrigation and cultivation practices.</p> <p>Work with landowners and farmers to encourage soil conservation techniques and the creation of buffers that reduce run-off and erosion.</p> <p>Work with regulating authorities and water companies to further improve surface water and sewage discharges.</p> <p>Continue to support and promote the existing initiatives underway to improve water quality (and availability) and at the same time enhance biodiversity and improve the condition of the SSSI.</p> | <p>Regulating water quality</p> <p>Food provision</p> <p>Water availability</p> <p>Regulating soil quality</p> <p>Biodiversity</p> |

| Service | Assets/attributes: main contributors to service | State | Main beneficiary | Analysis | Opportunities | Principal services offered by opportunities |
|------------------------------|--|--|------------------|---|--|--|
| Regulating water flow | <p>The watercourses and flood plains of the rivers Test and Itchen</p> | <p>The two main rivers of the NCA run in narrow linear valleys, with steep sides in places, and have distinct, well defined flood plains.</p> <p>Several smaller tributaries, 'winterbournes', only usually have winter flows, or flow following high rainfall.</p> <p>Flood plains flood regularly as part of the natural pattern of the river systems. Because of the geology of the catchment river water source is mainly groundwater so the response to rainfall in river levels is slow.</p> | Local | <p>A 1 per cent annual flooding probability affects approximately 200 properties in Andover, 600 properties in Winchester (Flood Zones 2 and 3) and small numbers in villages in the upper catchment areas. Risk warnings are sent to 840 properties.</p> <p>Both main rivers have several flood and flow control structures, raised banks and culverted channels associated with urban development. Fish farms and watercress beds also add to the number of artificial structures affecting natural flows.</p> <p>The wet habitats of the flood plains – watermeadows and fens, among others – and the species they support are the basis of the SSSI and SAC designations.</p> <p>Both rivers are, in large part, failing their SSSI condition status and artificial flow controls, limiting flooding of the meadows and other wet habitats, are one of the main contributors.</p> <p>Development of the emerging Test and Itchen Restoration Strategy is being driven by many of these factors.</p> | <p>Aim to restore the SSSI to favourable condition through various initiatives such as the Itchen and Test Restoration Strategy, many of which involve restoring the river to its natural courses and bank profiles, allowing better continuity between the river and the flood plain.</p> | <p>Regulating water flow</p> <p>Biodiversity</p> <p>Water availability</p> <p>Regulating water quality</p> |

| Service | Assets/attributes: main contributors to service | State | Main beneficiary | Analysis | Opportunities | Principal services offered by opportunities |
|--------------------------------|---|--|------------------|--|---|--|
| Regulating soil quality | <p>Loamy, free-draining lime-rich or slightly acid soils over chalk</p> <p>Loamy/clay and fen peat soils in flood plains with naturally high groundwater levels</p> | <p>Soils vary between two basic types with small local variations.</p> <p>Over the Downs thin lime-rich soils predominate (46 per cent of the area) with some thicker base-rich soils at the upper end of valleys and plateaux caps. These areas are mostly under arable use, with some beech or oak woodland on plateaux tops and valley sides. These soils also underlie the remnant areas of chalk grassland.</p> <p>In the Test and Itchen valley bottoms are deep accumulations of loam/clay soils and fen peat (38 per cent of the area), supporting meadow pasture, carr and fen.</p> | Regional | <p>The thinner downland soils are productive and regularly cultivated for arable farming. These shallow lime-rich soils over chalk or limestone are droughty but due to their calcareous nature have a degree of natural resilience.</p> <p>It is also the poor, thin lime-rich quality of these soils that supports the rare flora and fauna of the permanent chalk grassland, much of which is designated for its biodiversity interest.</p> <p>Valley soils support important flora and fauna associated with wet habitats. Drainage and reduced river flooding, either to regulate water flow or enable farming, may dry out these soils resulting in loss of structure, organic matter and biodiversity value.</p> <p>Both the principal soil types are valuable for aquifer recharge, requiring the maintenance of good structural conditions to aid water infiltration and requiring the matching of nutrient inputs to needs to prevent pollution of the underlying aquifer.</p> | <p>Promote the principles and techniques described in the Catchment Sensitive Farming initiative that contribute to improving soil quality.</p> <p>Increase levels of organic matter, both through direct application and cultivation methods, to improve soil structure and quality, contributing to carbon storage and improved water infiltration rates.</p> <p>Enlarging the areas managed as conservation chalk grassland or broadleaved woodland will extend the area of permanent vegetative cover with improved soil quality and enhanced biodiversity.</p> <p>Implementing the Itchen and Test Restoration Strategy will also benefit valley soils, their water tables and their biodiversity.</p> | <p>Regulating soil quality</p> <p>Biodiversity</p> <p>Food provision</p> <p>Water availability</p> <p>Regulating water quality</p> <p>Regulating water flow</p> <p>Climate regulation</p> |

| Service | Assets/attributes: main contributors to service | State | Main beneficiary | Analysis | Opportunities | Principal services offered by opportunities |
|--------------------------------|--|--|------------------|--|--|---|
| Regulating soil erosion | <p>Soils</p> <p>Uncultivated soils under woodland and permanent pasture</p> <p>Hedgerows and buffer strips</p> | <p>The thin, lime-rich soils of the Downs are predominantly used for arable production and are regularly and repeatedly cultivated. Arable cropping patterns regularly leave large areas without vegetative cover. As a result the downland soils are prone to loss through wind and water erosion particularly on sloping ground.</p> <p>The Test and Itchen and their tributaries have been identified as a Defra Priority Catchment, in part due to issues of sedimentation as a result of soil run-off from intensively managed agricultural land.</p> | Regional | <p>When not covered in permanent vegetation (as they are in grass or woodland areas) the principal soil types dry out quickly and are prone to erosion which is exacerbated by cultivation, particularly on slopes.</p> <p>Erosion of the loamy/clay soils is exacerbated where organic matter levels are low after continuous arable cultivation or where soils are compacted.</p> <p>The wetter soils (5 per cent of the NCA) generally have a low risk of soil erosion, although there is a high risk of wind erosion of the fen peat soils, especially where spring sown crops are grown, and of water erosion where cultivated land is susceptible to flooding.</p> <p>Drainage and cultivation is leading to ongoing loss (wastage) of peat through shrinkage and oxidation.</p> | <p>Manage cultivated land to reduce risks of soil erosion, including contour ploughing, careful timing of cultivations and maintenance of vegetation cover.</p> <p>Incorporate features such as grassland strips into the arable landscape that; conserve soils; provide ecological connectivity; provide wildlife habitat; filter pollutants in run-off; and increase carbon sequestration. Avoid introducing new hedgerows across the high Downs to serve this purpose where there will be a negative impact upon the open landscape.</p> <p>Secure arable reversion to grassland on steep slopes and other high risk areas, especially where it will extend existing species-rich grassland and conserve heritage assets such as buried archaeological remains and scheduled monuments.</p> <p>Work at a catchment scale to tackle sediment pollution of watercourses, particularly where sediment is a recognised problem.</p> | <p>Regulating soil erosion</p> <p>Regulating soil quality</p> <p>Regulating water quality</p> <p>Food provision</p> <p>Climate regulation</p> <p>Sense of history</p> |
| Pollination | n/a | n/a | n/a | n/a | n/a | n/a |

| Service | Assets/attributes: main contributors to service | State | Main beneficiary | Analysis | Opportunities | Principal services offered by opportunities |
|--------------------------------------|---|---|------------------|--|---|---|
| Pest regulation | n/a | n/a | n/a | n/a | n/a | n/a |
| A sense of place/ inspiration | <p>Outstanding downland landscapes of rolling hills, plateaux, scarp slopes and with extensive views</p> <p>Winchester</p> <p>Houses, estates and parkland</p> <p>The Test and Itchen valleys and fly fishing</p> | <p>A significant proportion of the area, 26 per cent, has been designated for its outstanding natural and scenic beauty through the South Downs National Park and the North Wessex Downs Area of Outstanding Natural Beauty (AONB).</p> <p>The designated landscapes provide inspiration due to their natural beauty, and are managed to conserve and promote public enjoyment of their assets.</p> <p>The Hampshire Downs have inspired many artists and authors, notably the naturalist Gilbert White on Selborne Common, Jane Austen at Chawton and Richard Adams at Watership Down.</p> <p>Winchester is an internationally recognised historic heritage destination.</p> <p>Numerous great houses and their parklands have provided inspiration.</p> <p>Continued on next page...</p> | National | <p>The Hampshire Downs are not immediately recognised as a major source of inspiration, but the list of assets demonstrates that there are numerous locations offering a strong sense of place and inspiration, and links with famous artistic and literary endeavour.</p> <p>It would be a surprise to many that the South Downs National Park extends so far in to Hampshire. It includes the watermeadows through Winchester almost to the Cathedral, and the Itchen valley from Alresford to Brambridge.</p> <p>Similarly the North Wessex Downs covers much of the downland in north-west Hampshire, north of Andover, flanking the A34.</p> <p>Winchester, the pre-Norman capital of England and Wessex and burial place of early Kings, attracts an increasingly large number of visitors to be inspired by its sense of place and history – and shops.</p> | <p>Work with the National Park and AONB to conserve and enhance the landscape and the special qualities of the designated landscapes to meet the aim and objectives of the respective management plans.</p> <p>Work with various stakeholders to identify features that contribute significantly to sense of place. Seek to conserve these features, particularly where it conserves the landscape and special qualities of the National Park and AONB.</p> | <p>Sense of place/ inspiration</p> <p>Biodiversity</p> <p>Recreation</p> <p>Sense of history</p> <p>Tranquillity</p> <p>Climate regulation</p> <p>Water availability</p> <p>Food provision</p> <p>Timber provision</p> |

| Service | Assets/ attributes: main contributors to service | State | Main beneficiary | Analysis | Opportunities | Principal services offered by opportunities |
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| A sense of place/ inspiration cont. | | <p>... continued from previous page</p> <p>Mottisfont Abbey (National Trust), Avington Park, Northington Grange (open air opera) and Hinton Ampner (National Trust), among other sites, all attract large numbers of visitors.</p> <p>The rivers Test and Itchen both claim be the home of fly fishing and large stretches remain managed for this activity. The valleys, villages, streams and footpaths also provide a high quality recreational attraction for walkers and cyclists.</p> | | <p>The level of interest in these attractions, the numbers of visitors, and the management structures put in place by national and local government, charitable trusts and other bodies to conserve and promote them, provides an opportunity for education and awareness-raising about the natural environment and our heritage. These assets also provide a direct and indirect stimulus to the local economy, and a platform to promote the value of ecosystems.</p> | | |

| Service | Assets/ attributes: main contributors to service | State | Main beneficiary | Analysis | Opportunities | Principal services offered by opportunities |
|-------------------------|---|--|------------------|---|---|---|
| Sense of history | <p>Danebury Ring and other evidence of early human activity on the chalk scarp and other downland sites</p> <p>Winchester</p> <p>Cheriton battle site</p> | <p>The chalk downs are a rich source of visible evidence of human occupation of the landscape during the Neolithic, Bronze and Iron Ages. This evidence ranges from the spectacular Danebury Ring, on the downs above Stockbridge, a very popular Hampshire County Council Countryside Site and the location of seminal archaeological exploration, through to burial mounds, long barrows, hill forts and field systems. These are concentrated on the scarp edge, mainly because this is largely unploughed, but evidence also occurs throughout the NCA.</p> <p>Later Saxon and early Medieval evidence occurs in the upper Test and Itchen valleys, providing a link with 18th and 19th century mills and other industrial sites.</p> <p>Winchester provides evidence of a settlement, sited on a crossing site of the Itchen, occupied from, at least, the Iron Age.</p> <p>Many artefacts and buildings remain, including the cathedral, Great Hall and Wolvesey Abbey, from the Roman and Medieval periods through to remains of Charles II palace and modern military buildings.</p> <p>The site at Cheriton marks the location of an important battle in the Civil War; a notable victory for the Parliamentarians.</p> | National | <p>Most of these sites and assets are well-documented, protected and visited, particularly where managed by, for example the County Council, National Trust or English Heritage. The visitor outlets provide good locations for promoting education and awareness of the heritage significance and value and the various threats to them. The relationship between human occupation, exploitation and adaption of the environment across many centuries is evident in the landscape of the Hampshire Downs.</p> <p>Many downland sites are not so well managed and can suffer from erosion, particularly if near footpaths, agricultural damage from ploughing and cultivation or scrub invasion. Often these sites are also designated, usually as SSSI, for their biological interest, and therefore provide multiple interest and ecosystem benefit.</p> | <p>The level of interest in these attractions, and the numbers of visitors, provides an opportunity for education and awareness-raising about the natural and cultural environment and our heritage. Work with land owners and site managers to realise the full educational potential of heritage sites and assets.</p> <p>These assets also provide a direct and indirect stimulus to the local economy, and a platform to promote the value of ecosystems. Work with land owners and site manager to realise the full economic potential of the strong sense of history in this area.</p> <p>Improve management of sites and assets to control damage to designated features that would also benefit biodiversity as well as maintain heritage significance and value.</p> | <p>Sense of history</p> <p>Biodiversity</p> <p>Sense of place/ inspiration</p> <p>Recreation</p> <p>Tranquillity</p> |

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| Tranquillity | <p>The higher blocks of the Downs</p> <p>The Itchen and Test valleys</p> | <p>Levels of tranquillity have declined from 80 per cent 'undisturbed' in the 1960s, to 50 per cent in 2007. The remaining relatively tranquil areas are in the three blocks of Downland away from the three main urban areas and between the trunk roads. The largest tranquil area is north-west of Andover towards the scarp at Inkpen.</p> <p>Although they do not show up in the mapped analysis, the footpaths along the Test and Itchen, enclosed by the narrow valleys with the ever present sound of flowing chalk streams, are isolated havens of tranquillity.</p> | Local | Levels of tranquillity have been affected mostly by extended urban areas on the fringes of Basingstoke and Andover, traffic levels on the main trunk roads and increases in lighting generally, particularly visible from the north-facing scarp towards the Thames Valley. | Promote the value of tranquillity and dark skies as a valuable asset and raise awareness of the impacts of new development on tranquillity, wildlife and the sense of place and history. | <p>Tranquillity</p> <p>Recreation</p> <p>Sense of place/ inspiration</p> <p>Sense of history</p> <p>Biodiversity</p> |

| Service | Assets/ attributes: main contributors to service | State | Main beneficiary | Analysis | Opportunities | Principal services offered by opportunities |
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| Recreation | <p>Footpath, bridleway and offroad cycling networks</p> <p>Fly fishing and game</p> <p>South Downs National Park and North Wessex Downs AONB</p> <p>Winchester, Danebury, Overton Mill, Mottisfont (National Trust) and other visitor attractions</p> | <p>A relatively dense rights of way network with approximately 1,850 km over the downs and along river valleys. Offroad cycling is very popular and specific routes and guidance has been prepared by the County Council.</p> <p>There are no National Trails but there are several long-distance routes such as the Wayfarers Walk, Clarendon Way and St Swithuns Way that connect with the South Downs Way.</p> <p>The Test and Itchen are the home and stronghold of fly fishing and this is an important, although restricted, recreational pursuit along most of the length of both rivers.</p> <p>Many estates and woodlands are managed for wild game.</p> <p>Both the South Downs National Park and the North Wessex AONB are managed for conservation and promote outdoor recreation with both containing large areas of accessible land. The chalk scarp is a popular recreational feature of the AONB with access to several bronze- and iron-age earthwork sites, and providing dramatic and stimulating views.</p> <p>There are a number of popular visitor destinations across the NCA, including historic buildings and sites, parkland, wildlife reserves, and local authority Countryside Sites.</p> | Regional | <p>Outdoor informal recreation is well provided for in the NCA, but usage of much of the rights of way network is relatively light and quiet rural tranquillity is not hard to find.</p> <p>The opportunities for outdoor activity are particularly well placed to serve the growing urban populations of Andover, Basingstoke and Winchester, and the bigger nearby settlements of Newbury, Reading and Southampton.</p> | <p>In line with Countryside Access Plans, improve the rights of way network by providing more circuits and loops, encouraging public transport access and removing use conflicts.</p> <p>Raise awareness and understanding of the facilities available, linked with education and information about the importance of quality of the countryside, the benefits to health and wellbeing and the need to respect private land.</p> | <p>Recreation</p> <p>Tranquillity</p> <p>Sense of place/ inspiration</p> <p>Sense of history</p> |

| Service | Assets/ attributes: main contributors to service | State | Main beneficiary | Analysis | Opportunities | Principal services offered by opportunities |
|---------------------|--|--|------------------|--|--|---|
| Biodiversity | <p>Chalk grassland</p> <p>Chalk rivers and river valleys</p> <p>Ancient woodland</p> <p>Arable flora and birds</p> | <p>The River Itchen is designated as a Special Area for Conservation (SAC) and is the main internationally recognised site in the NCA, with Mottisfont Bats SAC and East Hants Hangers SAC smaller and only partially in the area.</p> <p>There are 33 SSSI spread evenly across the downs and the valleys and are mainly designated for chalk grassland or chalk stream and associated wetland habitats, with 7 woodland SSSI.</p> <p>These 3 habitats support the main biodiversity interest of the area which is not confined to designated sites.</p> <p>The arable areas, particularly in the north and central parts of the NCA, support many unusual and rare arable flowers (or weeds) and farmland birds.</p> | International | <p>The biodiversity of the Itchen and Test relies on the high quality and nature of the water, sourced mainly from the downland aquifer, supporting rare chalk-related flora and fauna. The peaty materials laid down in the flood plains, regularly inundated (in a natural system) by the rivers, also support rare wetland vegetation and species. Both these habitats are under pressure from a combination of pollution, mainly from diffuse sources but also point sources like watercress beds and urban run-off, and reduced water flows and inundation events, as a result of abstraction, artificial drainage or, possibly, climate change. Agricultural practices based on watermeadows and grazing of wet pasture enable these areas to be maintained in good condition while still being farmed.</p> <p>Chalk grassland sites, a relic from earlier farming activity, dominated by sheep runs over much of the Downs, only survive in small fragmented areas along the scarp slope and on small, scattered sites such as commons.</p> <p>Continued on next page...</p> | <p>Water quality is already being addressed through various measures such as the Catchment Sensitive Farming (CSF) initiatives. Promote and extend the principles of CSF to landowners, managers and partners to raise awareness of the effects of diffuse pollution and the range of measures available to reduce and control it.</p> <p>Support and promote the measures outlined in the Catchment Abstraction Management programme and the Itchen and Test Restoration Strategy to maintain flows and re-connect the rivers with their flood plains.</p> <p>Encourage, where appropriate, the reversion of arable land to chalk grassland, particularly on steep slopes and valley sides.</p> <p>Positively manage broadleaved woodland, particularly ancient semi-natural woodland to improve condition and resilience to climate changes,</p> | <p>Biodiversity</p> <p>Water availability</p> <p>Regulating water quality</p> <p>Regulating water flow</p> <p>Food Provision</p> <p>Recreation</p> <p>Sense of Place/ inspiration</p> <p>Sense of history</p> <p>Regulating soil quality</p> <p>Regulating soil erosion</p> |

| Service | Assets/ attributes: main contributors to service | State | Main beneficiary | Analysis | Opportunities | Principal services offered by opportunities |
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| Biodiversity cont. | | | | <p>... continued from previous page</p> <p>Their survival and condition depends largely on appropriate grazing and protection from erosion. Alternatively absence of grazing results in reversion to scrub which is of lower biodiversity value. Many chalk grassland sites coincide, because of the topography, with hill forts, barrows and other bronze- and iron-age remains.</p> | <p>and seek to replace conifer plantations with broadleaved woodland as appropriate.</p> <p>Work with land owners and farmers to secure the future for rare arable plants and farmland birds.</p> | |
| Geodiversity | <p>Middle and Upper Cretaceous Chalk</p> <p>Chalk aquifer</p> <p>Chalk rivers and streams</p> <p>Chalk soils</p> <p>Land form</p> <p>Chalk cob and flint</p> | <p>The Dunbridge Pit and Dunford Farm Pit are geological SSSI.</p> <p>The Chalk supports an important aquifer which in turn supplies high quality water to the chalk streams and rivers of the area.</p> <p>Free-draining, thin chalk soils cover significant amounts of the area and have influenced the pattern and type of land use and habitat.</p> <p>The Chalk generates a highly distinctive downland land form of scarp slope, ridge and plateaux, and narrow, often dry or with winterbournes, valleys.</p> <p>Chalk cob and flint is used as a vernacular building materials and flints attracted prehistoric settlers to be used as tools and implements.</p> | Regional | <p>Although the geology of the Chalk is fundamental in shaping and giving character to this NCA, there are limited opportunities to study it. In addition to the 2 SSSI referred to, Ladle Hill, or Old Burghclere Quarry, is a former lime quarry, and Micheldever Tunnel Top is of interest because of the chalk spoil heaps resulting from excavation. Both are designated SSSI but not for geological interest.</p> <p>The formation of the Chalk locked up large quantities of carbon, which, as the area is not widely quarried, remain preserved in the geology of the area.</p> | <p>Work with local groups to identify and establish further sites of geodiversity interest and promote awareness of these as educational and scientific resources.</p> <p>Maintain natural geomorphological processes along the rivers to contribute to regulating water flow and maintaining biodiversity interests and soil quality.</p> <p>Support the use of local stone as a building material to maintain local distinctiveness.</p> | <p>Geodiversity</p> <p>Water availability</p> <p>Regulating water quality</p> <p>Regulating water flow</p> <p>Regulating soil quality</p> <p>Sense of place/ inspiration</p> <p>Sense of history</p> <p>Biodiversity</p> |

Photo credits

Front cover: Chalk grassland, scrub, woodland and arable fields with long distance views.
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