



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.

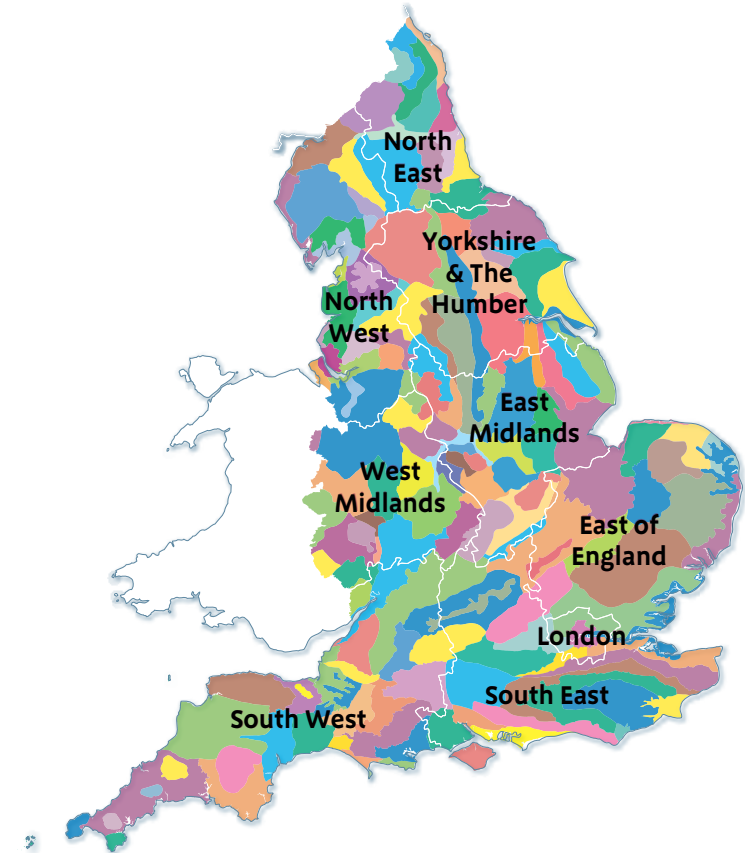
NCA profiles are guidance documents which can help communities to inform their decision-making about the places that they live in and care for. The information they contain will support the planning of conservation initiatives at a landscape scale, inform the delivery of Nature Improvement Areas and 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 extensively wooded and farmed Chilterns landscape is underlain by chalk bedrock that rises up from the London Basin to form a north-west-facing escarpment offering long views over the adjacent vales. From the vales, the River Thames breaches the escarpment in the south at the Goring Gap and flows on past riverside towns such as Henley. Small streams flow on chalk down some of the dip slope valleys or from the scarp foot, passing through numerous settlements. The major sources of public water supply for the Chilterns and the London area are the chalk aquifer and the Thames.

The countryside is a patchwork of mixed agriculture with woodland, set within hedged boundaries. Furthest from London, the natural and built features of the countryside are recognised as special and attractive in approximately half the National Character Area (NCA) by the designation of the Chilterns Area of Outstanding Natural Beauty (AONB) and, in a small area south of the River Thames, by the North Wessex Downs AONB. Outside the AONBs there are major settlements that incorporate extensive urban fringe and growth areas, including Luton, Hemel Hempstead and High Wycombe. Motorways and railways make the area very accessible to visitors and connect the Chilterns to nearby London. Opportunities for residents and visitors to enjoy the outdoors are wide-ranging, including extensive rights of way; open access commons, woods and downland; Registered Parks and Gardens open to the public; golf courses; shooting estates; and urban green spaces. The Ridgeway and the Thames Path National Trails pass through the Chilterns, and the River Thames and Grand Union Canal are major water-based recreation corridors.

Human history dates back to the Palaeolithic, as evidenced by flint scatters. Farming of the valleys and escarpment began in the Neolithic and continues to this day as a major land use. Arable farming is concentrated on deep, well-drained soils found in the valleys, along the scarp foot and beneath the hills in the north. Nucleated settlements, often featuring historic buildings dating back to medieval times, are found in the valleys and along the scarp foot, as are the major routes. Chalk streams are found only in the main valleys and can be dry in their upper reaches.

Click map to enlarge; click again to reduce.

Above the valley floors, cultivation is made difficult by steep slopes, convoluted terrain and extensive clay-with-flint soils on the dip slope ridges. This has given rise to a diversity of land management practices throughout history, including mixed farming, woodland, extensively grazed downland and common land. Settlement on the plateau is characterised by dispersed farmsteads and villages linked by historic, small-scale routes including sunken lanes.

Today, common land and downland exist as fragments of their former extents. Commons are numerous across the plateau, providing green space near to people's homes. Historic downland is largely confined to the scarp and is strongly associated with prehistoric archaeology; its species-rich grassland and scrub include areas designated as a National Nature Reserve (NNR) and Special Areas of Conservation (SAC). Woodland cover accounts for 14 per cent of the NCA and makes the Chilterns one of the most wooded lowland landscapes in the country. Woods are found on poor agricultural soils, on commons and 'hanging' on steep slopes. A long history of a wood-based economy has helped to maintain many woodlands on ancient sites and generate rich woodland archaeology. More recently, local demand for wood fuel is helping to maintain the woodland resource. Chilterns NCA is renowned for its native beechwoods, a number of which are designated as SAC for their ecological interest.

Throughout the area, historic buildings and also some more recent constructions display locally distinctive uses of local materials, particularly brick and flint. Large mansions and follies are frequent in the countryside, many relating to Registered Parks and Gardens.



Walkers can enjoy an extensive rights of way network across farmland and woodland.

Statements of Environmental Opportunity

- **SEO 1:** Manage the wooded landscape, the woodlands (including internationally important Chilterns beechwoods), hedgerows, commons and parklands with the aims of conserving and enhancing biodiversity and the historic landscape and its significant features; maximising the potential for recreation; and securing sustainable production of biomass and timber.
- **SEO 2:** In pockets of historic land use where natural and cultural heritage are both particularly rich, aim to restore and strengthen the historic landscape, ecological resilience and heterogeneity, and to conserve soils. Ensure that species-rich habitats are conserved and extended, including internationally important species-rich Chiltern downland. Secure environmentally and economically sustainable management to ensure conservation in the long term.
- **SEO 3:** Conserve the Chilterns' groundwater resource, River Thames and chalk streams by working in partnership to tackle inter-related issues at a catchment scale and also across the water supply network area. Seek to secure, now and in the future, sustainable water use and thriving flood plain landscapes that are valued by the public.
- **SEO 4:** Enhance local distinctiveness and create or enhance green infrastructure within existing settlements and through new development, particularly in relation to the urban fringe and growth areas such as Luton. Ensure that communities can enjoy good access to the countryside.



Remnant downland is rich with orchids and other flowering plants.

Description

Physical and functional links to other National Character Areas

Chilterns is one of several NCAs that make up an outcrop of the Chalk stretching from East Anglia to Dorset and to the South Downs. To the north-east, the Chiltern escarpment lowers into the East Anglian Chalk. In the south-west, the neighbouring escarpments of the Chilterns and the Berkshire and Marlborough Downs face each other across the Thames at the Goring Gap. From the north-west-facing escarpment, the Chilterns dip slope descends to the south-east into the London Basin, where the Chalk is overlain by younger bedrock.



The escarpment offers panoramic views across the vales and hills to the north-west.

Adjacent to the low-lying NCAs of Bedfordshire and Cambridgeshire Claylands and Upper Thames Clay Vales, the Chilterns scarp is prominent and offers panoramic views of the adjacent vales, principally Aylesbury Vale, from viewpoints such as Ivinghoe Beacon. Across the vales there is inter-visibility between Chilterns and other elevated NCAs such as Midvale Ridge and Bedfordshire Greensand Ridge.

From the northern end of the scarp, the rivers Flit and Ouzel (also known as Lovat) flow north onto the Bedfordshire and Cambridgeshire Claylands as part of the Anglian catchment. Along the remainder of the scarp, watercourses flow into the Upper Thames Clay Vales to feed the Thames catchment. The Thames flows from the Upper Thames Clay Vales through the Chiltern ridge at the Goring Gap to enter the London Basin.

Within the London Basin, the Chilterns' natural groundwater and surface water flows are linked to those of the wider basin which centres upon London and the Thames. These links are significant since the Chilterns function as the larger of the two principal aquifers in the basin (the other being the North Downs). Infiltration in the Chilterns supports groundwater levels and quality in London's confined aquifer and base flow in the Thames, which passes through the Thames Valley and inner London.

The Chilterns are linked into a modern transport network of motorways and railways radiating from nearby London. Outside London, major roads around Reading, Maidenhead, Slough and Aylesbury also link to the Chilterns. Long-distance historic routes that now function as key recreation corridors pass through the Chilterns: the Grand Union Canal, the Thames and the Ridgeway.

Distinct areas

- Thames Valley

Key characteristics

- The chalk plateau is incised by parallel branching valleys gently shelving to the south-east into the London Basin. The large chalk aquifer is abstracted for water to supply London and its surrounds and also supports flows of springs, chalk streams and the River Thames.
- There are several chalk streams. Features associated with a history of modification include historic mills, watercress beds, culverts and habitat enhancements.
- The north-west-facing escarpment is an abrupt relief feature beside low-lying vales, breached notably by the Thames at the Goring Gap. The escarpment lowers northwards, terminating as distinct hills. The Chiltern ridge offers panoramic views.
- Within the Chilterns, views are enclosed within branching valleys, sunken routeways and extensive woodland and hedgerow-enclosed fields. There are hidden, tranquil pockets along single track lanes and rights of way.
- A mixture of arable, grassland and woodland and the numerous commons reflects the dominance of Grade 3 agricultural land. Ancient woodland has remained on extensive clay-with-flint deposits, while very steep slopes are rarely cultivated. There are, however, not inconsiderable areas of Grade 1 and 2 land that are associated with lower-lying areas and river valleys.
- The Chilterns are one of the most wooded lowland landscapes in England. The area is particularly renowned for its extensive native beechwoods, several of which are designated as part of the Chilterns Beechwoods Special Area of Conservation (SAC). Other distinctive features include rare box woods, 'hanging' woods on steep slopes and rare yew woods, including Hartslock Wood SAC.



The River Thames offers a variety of recreation opportunities, particularly as it passes through towns fronting the river such as Marlow shown here.

Key characteristics continued

- Pre-18th-century fields defined by ancient, often sinuous hedged boundaries are scattered throughout, including co-axial fields. Parliamentary enclosure fields are limited. Large modern fields, usually with ancient boundaries, cover the better agricultural land, most notably in the north-east.
- Remnants of various historic land use types can combine rich and diverse habitats and archaeology. Many key places are publicly accessible, including Registered Parks and Gardens, historic downland and common land. Traditional flood plain landscapes and orchards are the most restricted in extent. Historic routeways, hedged boundaries and watercourses provide connectivity.
- Historic downland preserves prehistoric archaeology and supports high numbers of rare and scarce chalk grassland vascular plants, mosses and liverworts. Diversity is enhanced by a mosaic of chalk grassland, scrub and woodland, with Hartslock Wood SAC being one example.
- Species strongly associated with the Chilterns include the red kite, pasque flower, stag beetle, Chiltern gentian, shepherd's needle, chalkhill blue butterfly and native box. Aston Rowant SAC protects an internationally important juniper scrub population. Farmland birds and deer are a feature of the wider countryside.
- Nucleated settlements of medieval origin and land farmed since prehistory are found alongside watercourses and springs in the through-valleys and at the foot of the scarp. Elsewhere, dispersed farmsteads dating from the medieval period and mid-19th-century development around commons are characteristic of the plateau.
- The River Thames and its flood plain mark a distinctive area in the south. The river is a focus for settlement, abstraction and recreation.
- Major transport routes, including motorways, radiate from adjacent Greater London, associated with significant 20th-century development and extensive urban fringe areas.
- Brick and flint are the dominant traditional building materials, with Totternhoe Stone (clunch) being less common, but still a distinctive
- Numerous parkland landscapes define large, historic estates. Designs by Humphry Repton and Lancelot 'Capability' Brown are represented, and the houses, follies and wooded features provide local landmarks.
- Extensive rights of way, commons, open access downland, woodland and some parklands provide access to the countryside. The Thames Path, the Ridgeway and the Grand Union Canal are high-profile recreation routes; locally promoted routes include the Chilterns Cycleway. Private leisure land uses, including golf courses and horse paddocks, are common near urban centres.

Chilterns today

The Chilterns are a distinctive outcrop of the Chalk, with a dramatic scarp forming the north-western boundary. From the long, north-west-facing scarp there are extensive, panoramic views over the adjacent vales. The dip slope, with the character of a plateau, falls gently to the south-east, cut by a series of branching valleys. The enclosed character of the valleys contrasts with the open plateau and long views from the scarp. Rising to just above 260 m, the hills stretch from the Thames in Oxfordshire at their south-western point, across Buckinghamshire and Hertfordshire to Bedfordshire in the north-east. The area includes the lower-lying substantial settlements of Luton, Dunstable, Hemel Hempstead, Berkhamsted, Chesham, Amersham and High Wycombe, as well as sections of the M40 and M1 motorway corridors. The south-western boundary is formed by the River Thames as it flows past Wallingford, Reading, Henley and Marlow. Although part of the Chilterns, this belt of countryside is dominated by the river and its flood plain rather than by the hills.

While many of the dip slope valleys are dry, there are several chalk rivers flowing through others, such as the Chess. Springs and watercourses also issue from the foot of the scarp, such as the Ewelme Brook. Many of the watercourses are 'bournes' or 'winterbournes', which dry up near their source when groundwater levels are low. Many chalk streams receive treated discharges, often to counter low flows caused by abstraction. The presence of accessible and reliable water sources has determined, in large part, the location of settlement, including major urban centres. Canalisation, relict watercress beds, mills, sewage treatment works, habitat enhancements and riverside green spaces catalogue a history of use and modification and the significance of water in a chalk landscape.

The countryside of the Chilterns combines mixed agriculture with numerous woodlands and hedgerow boundaries that are often ancient. Steeper ground is often characterised by small fields, and there is a notable concentration of pre-18th-century fields, including assarts and co-axial fields, in the Buckinghamshire and Oxfordshire parts of the NCA. There are localised concentrations of arable production in the north, around Luton, and in the 'Ipsden prairie' of Oxfordshire. Livestock farming is dominated by sheep and cattle and, across the remaining fragments of historic downland, grazing



The nucleated village of Fingest lies in a valley. Woodland cover is considerable and sheep graze the grasslands.



Large flocks of red kites are common.

animals help to conserve open grassland. Meadows remain alongside watercourses but are rarely traditionally managed. Cherry orchards, once a widespread feature of the central part of the NCA, are now encountered only occasionally. Farmland supports a wide range of birds, including corn bunting, yellow hammer and grey partridge, and also arable weeds, such as prickly poppy and shepherd's needle.

Woodland cover is extensive, making the Chilterns one of the most wooded lowland landscapes in England. Large woods, dominated by beech, are found on the plateau and as 'hanging' woods above the valleys; there are also small farm woodlands. Secondary woodland can be found on once-open common land and downland but, elsewhere, many woods are ancient. Chilterns beechwoods are renowned for 'cathedral-like' qualities and bright autumn colours, and their importance is recognised through SAC designation. Local variations include the very rare natural box woods that occur on the scarp, as well as mosaics of habitats such as at Hartslock Wood SAC, which includes a species-rich area of chalk downland within a mosaic of beech and yew woodland. Soaring above the woods and valleys, the distinctive forked tail of the red kite is now a common sight. Deer are often glimpsed in woodlands and fields.

Remnant areas of heathland, acid grassland and wood pasture are scattered across the plateau, often associated with common land and parkland on low-fertility agricultural soils. The scarp and some dry valley slopes are characterised by fragmented areas of species-rich chalk grassland with scrub. Colourful flowers are a feature of these grasslands during spring and summer and include the rare Chiltern gentian, pasque flower and a number of orchids. Butterflies, including the restricted Duke of Burgundy and chalkhill blue, can also be spotted. There are also a few small areas of rare chalk heath.

Aston Rowant SAC features an internationally important juniper population. Dispersed farmsteads and hamlets are found on the high plateau, with nucleated towns and villages in valleys and at the foot of the scarp. Some linear villages dating from the mid-19th century occur on the plateau, usually associated with common land. Many lower-lying settlements contain historic centres, often dating back to the medieval period. St Albans contains remains of the major Roman town of Verulamium. Historic, and some modern, buildings use local, traditional materials, including flint, brick, clay tiles and occasionally thatch. Clunch, an impure and harder form of chalk, is sometimes used as a highly distinctive building material. Designed parklands and gardens make a dramatic contribution to the area, with follies and grand houses often located in prominent positions and featuring other distinctive attributes such as tree avenues and gatehouses. A number of landscaped parklands and gardens are the work of famous 18th-century designers such as Bridgeman, Brown and Repton.

Major roads and railway lines follow the valleys cutting through the escarpment, linking London and the Midlands. Settlements along main routes have expanded considerably during the 20th century, with major urban centres found near motorways at Luton and High Wycombe. There is also an airport near Luton. Business and industrial parks adjacent to watercourses are often located on the sites of former mills. Ancient, often sunken lanes can be found beyond the network of major routes, some running straight along valley bottoms or ridgetops and others winding up the scarp or valley sides. Away from main settlements, roads and railways are areas with high levels of tranquillity, many associated with concentrations of well-preserved prehistoric monuments, including bronze-age burial mounds and iron-age hill forts and dykes.

With a large population in or near the area, demand for recreation has generated a considerable number of golf courses, horse paddocks and managed public green spaces near settlements. Numerous parklands and woodlands are also open to the public, alongside the designated open access commons and downland. The Thames Path and the Ridgeway National Trails pass through the area. Boating is popular on the River Thames, and horse riding, walking and cycling are supported by an extensive rights of way network that includes locally promoted routes such as the Grand Union Canal, the Chilterns Cycleway and the Icknield Way Riders' Route. Easy access has resulted in some busy 'honeypot' sites, such as Ashridge, with accompanying, prominent visitor facilities – car parks, information panels and signage.

Overall, the countryside has a predominantly quiet and prosperous farming and estate character, and the scenic qualities in the half of the NCA furthest from London are recognised by their Area of Outstanding Natural Beauty (AONB) designations.

The landscape through time

The NCA is defined by a Chalk outcrop that formed between 95 and 70 million years ago during the Upper Cretaceous. Deposits on the bed of warm, shallow, lime-rich seas built up over Upper Greensand and Gault Clay to create distinct bands of chalk recording changing conditions. They contain marine fossils, including ammonites. Massive earth movements 60 to 40 million years ago during the Palaeogene tilted the Chilterns and the wider area into a downfold to form the London Basin. High on the northern rim of the London Basin, the Chilterns were exposed to erosion, causing a reduction in the height and westward extent of the Chalk. During the Quaternary, ice sheets overrode the outcrop in the north, lowering the escarpment and blocking the passage of the Thames through the Vale of St Albans. The Thames, forced southwards, carved its gorge through the escarpment at Goring and shaped its gravel deposits into terraces. Upon the frozen ground of the dip slope, water could not percolate into the Chalk and so carved branching valleys down into the London Basin, eroding as deep as the Melbourn Rock in the main valleys. Various Quaternary deposits were laid down on the Chalk, the most extensive being clay-with-flint deposits, which were created through disintegration of upper chalk bedrock by freeze-thaw action.

Quaternary deposits are associated with the earliest humans in the Chilterns. Extensive flint-working sites at Caddington and the largest Palaeolithic hand axe in Britain – and probably Europe – have been dated to the early Palaeolithic. Finds of Mesolithic flint implements are widespread.

Monuments, boundaries and tracks remain visible today as tangible evidence of prehistoric people in the Chilterns. The oldest monuments, for example the long barrow overlooking Princes Risborough, date from the Neolithic. The Bronze Age is largely represented by burial mounds, while iron-age monuments consist of simple hill forts, such as Pulpit Hill, and dykes – earth boundaries – including Grim's Dyke. There is a notable concentration of iron-age defensive features commanding prominent hills overlooking key routes such as the Thames, the Ridgeway and the Icknield Way.



Country mansions, follies and parkland are frequent across the Chilterns. West Wycombe mausoleum occupies a prominent position in the valley.

The management of woodland for a range of products or to release land for agriculture defines much of this landscape. Farming in the Chilterns began in the Neolithic when woods were cleared along the scarp and river valleys. Favourable farmland in the valleys and along the springline attracted late iron-age settlers. Existing farmsteads were later adapted into Roman villas. Thriving Roman markets, such as Verulamium (now St Albans), and a growing population encouraged farmers onto marginal soils, evidenced by the remains of Roman farmsteads and fields, many of which are now preserved under woodland. Verulamium was connected to London by Watling Street through the Ver Valley – now the modern A5 – and to the west by Akeman Street following the Bulbourne Valley – now the A41. Charcoal produced from the extensive woodlands was an important resource for the Roman iron smelting industry in the area.

In contrast to the more productive valley and scarp foot soils, the marginal agricultural land of the plateau lent itself to woodland and rough grazing. Minor droveways developed linking the vales to the plateau. Saxon estate boundaries, many still discernable today, indicate the equal apportionment and distribution of resources of clay vale, springline, chalk escarpment and wooded plateau. The marginal nature of growing conditions on the plateau made farming sensitive to phases of reclamation and abandonment. Population declines and a collapse in agricultural markets in the 5th and 6th centuries led to abandonment to rough grazing and woodland. By the time of Domesday in 1085–86, woodland had spread to exceed today's cover.

'Manorial wastes' were established between the 10th and 13th centuries across the plateau, often linked together by thin tracts of land. Commons developed providing small centres for industry, producing bricks, tiles and lime, and were used for occasional grazing, providing firewood and places for local gatherings.

The 12th century saw another period of population growth and 'land hunger' driving renewed woodland clearance to allow cultivation, and the establishment of farms and settlement. Some steeper slopes were cultivated for the first time. Medieval assarts and strip lynchets provide evidence of intense agricultural activity in the Chilterns during this period. Monasteries, such as Missenden Abbey, were also accumulating land into large estates and establishing priories. Clearance of common woods slowed towards the end of the 13th century.



Sunken routeway through beech woodland.

Despite increased demands for farmland, the value of woodland produce and the low fertility of some areas were sufficient to ensure the retention of substantial areas of woodland. In the 13th century, the demand from the adjacent vales for timber and firewood made Chilterns woodlands valuable and stemmed the steady clearance that had begun in the preceding century. Many wooded commons were enclosed as private property, and further woodland was enclosed in parks.

Tudor population increases instigated resurgence in clearance for agriculture, which included enclosing common heaths. Woodlands in the south were saved from clearance by London's demand for firewood and timber, combined with their proximity to the Thames shipping route.

Since 1600, approximately 12,000 ha have remained under continuous woodland cover, assisted in the 18th and 19th centuries by the demand from the local furniture industry for beech timber. This grew from its 'cottage industry' beginnings to a nationally recognised, large-scale industry known for the 'Windsor' chair. This industry drove widespread planting of beech and the conversion of many semi-natural mixed woods into beech woodland. Coppice for charcoal was devalued by the opening of the Grand Union Canal, which made coal more readily available. Secondary woodland cover also increased. Ancient woodlands were extended, particularly in Oxfordshire, and the agricultural depression of 1880 to 1940 led to the scrubbing up of downland and commons, including Totternhoe and Naphill.

Further change in the 18th and 19th centuries was associated with agricultural improvements involving Parliamentary enclosure of commons and the re-organisation of farm and older boundaries. Some commons were lost entirely, including Wycombe, while others, such as Berkhamsted,

survived intact. The Chilterns, within easy travelling distance of London, also became a focus for the wealthy, who established grand houses and fashionable parks and gardens. Many had earlier antecedents as hunting parks but were substantially remodelled or expanded. Designed landscapes include examples by Lancelot 'Capability' Brown and Humphry Repton. Many large estates survive, having diversified to include schools, tourist attractions and shooting estates.

Water-powered mills, which first appeared during medieval times, gradually increased in number, but it was not until the 19th century that the paper industry reached an industrial scale along the Wye and Gade. At a similar time the Chilterns became famous for their apples and soft fruit, with orchards surviving, particularly around the 'cherry pie villages' of Seer Green and Holmer Green.

The 19th century saw the first deliberate construction of transport networks since Roman times. Turnpike trusts improved all the main routes running along the through-valleys. The Grand Union Canal, railways (including three London mainlines) and motorways followed. The effect of improved connections with the capital was dramatic, leading to development of light industry and suburbs. This is most clearly seen in the 'Metroland' suburbs along the Metropolitan Line, which were promoted to commuters as accessible rural retreats away from the city. With suburbanisation came an increase in recreational land use, with areas of downland converted to golf courses, such as near Luton and Dunstable.

Many towns and villages have retained their historic core, with notable medieval buildings and Norman churches, but many have expanded substantially. Settlements on the plateau have more recent origins in the

19th century. Luton was targeted for growth as an early 'new town' and remains a focus for growth. Old mill sites along chalk streams have been redeveloped as business and industrial estates. Three industrial-scale cement works extracted material from the scarp in the 20th century but have subsequently closed.

In the countryside there has also been recent change. Post-war enlargement of fields by hedgerow removal saw the creation of some prairie fields, particularly concentrated in Hertfordshire and Bedfordshire. Across the commons and downs, the continuing decline of livestock farming led to further significant areas of open land being lost to scrub and woodland. Traditional grazing and clearance of scrub became a conservation activity. The woodland resource also fell out of management with the demise of the local furniture industry, although increasing local demand for wood fuel in recent years has incentivised management in some woods. Farms have evolved to include increasing numbers of 'hobby' farms and historic farm buildings converted to dwellings and offices. In the face of change, the scenic qualities and natural beauty of the countryside furthest from London have been conserved by AONB designations: the Chilterns AONB to the north of the Thames (designated in 1965) and the North Wessex Downs AONB to the south of the Thames (designated in 1972).

Ecosystem services

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

Provisioning services (food, fibre and water supply)

- **Food provision:** As a result of the predominance of Grade 3 agricultural land, farming is mixed, with average levels of productivity. There is a concentration of arable production on Grade 1 and 2 land along the Thames Valley, beneath the hills in the north and along the scarp foot. Cereals dominate arable production, with wheat being a predominant crop. There are limited but well-established sheep farms and localised areas of dairy and beef production.
- **Water availability:** The Chalk is the most significant aquifer of southern England and is of national importance in terms of abstracted volume and development for abstraction. Groundwater abstraction volumes far outweigh those from surface waters in the Chilterns, with much of it being for public water supply. A large and growing population combined with high consumption rates per person put significant demands on the resource. Chilterns water resources also support London's groundwater supplies in the confined aquifer and the Thames river system downstream of the Chilterns. Unsustainable abstraction currently takes place in the north of the Chilterns, where the rivers Ver, Misbourne, Mimram and Lee are considered to be over-

abstracted and hence experience low flows exacerbated by abstraction pressures. There is hydraulic continuity between the aquifer and watercourses, which means that changes in groundwater levels directly affect surface water levels. The Thames is relatively resilient to abstraction but alleviation schemes and monitoring have been required for the Chilterns' small chalk streams to address negative impacts of low flows on valued biodiversity.

- **Biomass energy:** The extensive woodland cover represents a source of wood fuel, particularly since timber quality is limited in the immediate future. The market for firewood is growing significantly in parts of the Chilterns. The potential for miscanthus is limited and there have been very few plantings. Short rotation coppice coverage is minimal and is discouraged in areas such as the Chilterns where there are water availability concerns.

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

- **Climate regulation:** Across most of the NCA, carbon stored in the topsoil horizon is typically in the range of 0–5 per cent, which is good for mineral soils in agricultural use. The considerable area of undisturbed soils beneath remnant historic land uses such as ancient woodlands and downland represents a large, longstanding carbon store with maximised storage capacity. The extensive tree cover also sequesters carbon, although trees make a greater contribution to carbon reduction by providing alternatives to fossil fuels.
- **Regulating water quality:** Since the Chalk aquifer is nationally important for water supplies and chalk stream biodiversity is influenced by water quality, pollution is a concern across the NCA. Nitrate concentrations in groundwater exceed drinking water standards at points across the Chilterns and appear to be rising in some areas. Steep slopes increase rates of run-off, potentially increasing the movement of sediment and chemicals from cultivated or damaged soils into watercourses. Catchment sensitive farming measures are being promoted across some catchments, with a particular focus in the north. A dense hedgerow network, extensive woodlands and permanent grasslands will contribute to trapping mobile soils and pollutants and to slowing rapid run-off. Point sources of pollution are also associated with settlements and highways, such as High Wycombe, Luton and Dunstable. Extensive settlement entails numerous sewage treatment works, which pose pollution risks.



The Chilterns countryside is accessible to many people along major road and rail links radiating out from London. The M40 passes through Aston Rowant National Nature Reserve.

- **Regulating water flow (flooding):** The Thames Valley has a fairly high risk of flooding, with riverside settlements including Reading, Henley and Marlow susceptible. The Thames Valley also offers potential floodwater storage areas. Smaller-scale flooding may also affect those settlements adjacent to chalk streams in the dip slope valleys but, historically, low flows have been a more significant issue, with natural flows needing to be artificially supplemented in many cases. Natural river processes are often constrained by channel modifications in urban and developed areas, for example canalisation in Luton and High Wycombe.
- **Regulating soil quality:** Agricultural opportunities are optimal across the Grade 1 and 2 land found in valley bottoms, along the scarp foot and in other lower-lying areas. Historic land uses with a long history of low or zero chemical input and limited or no cultivation, including traditionally managed downland, parkland and ancient woodland, represent areas of soil that have benefited from a long continuity of conservation practices and natural soil processes. Soil quality is at risk across much of the NCA due to compaction. The role of soil quality in water filtration to the aquifer and water pollution is of significance to groundwater quality in the Chilterns' principal aquifer and to the biodiversity of chalk streams.

Cultural services (inspiration, education and wellbeing)

- **Sense of place/inspiration:** Landscape character ranges from enclosed and intimate folded valley landforms to the exposed plateau tops and scarp that afford extensive views, with the separate character of the Thames flood plain to the south. The unifying elements include sunken lanes, woodland, downland, chalk streams, parkland and a distinctive vernacular architecture. Red kites are now a common sight adding to sense of place. Prominent

landmarks include grand houses and follies (as at West Wycombe), chalk figures (such as Whiteleaf Cross) and monuments (such as Coombe Hill Monument). The undeveloped commons and dry valleys evoke a sense of rural endurance, particularly when contrasted with nearby London and its fringe. The Chilterns landscape inspired John Milton, Stanley Spencer⁴, John Nash⁵ and Roald Dahl. Properties owned by key historic figures include Benjamin Disraeli's country estate, Hughenden Manor, and the Rothschild family's Natural History Museum at Tring.

- **Sense of history:** Extensive flint-working sites and finds date from the early Palaeolithic Period. The prehistoric routeways of the Ridgeway and the Icknield Way and associated prehistoric monuments create a particularly strong sense of prehistory along the escarpment. Roman influence on the landscape is still evident, primarily through the communications network and settlement pattern. Many villages, farmsteads and field patterns are of medieval origin, including rare co-axial fields. Commons and woodlands rich with archaeology are widespread. Historic buildings and more recent constructions make use of traditional materials such as flint, brick, and tiles and, in places, weatherboard and thatch. Designed parklands and large gardens are prominent, covering 3 per cent of the area, and many are included on the national Register of Historic Parks and Gardens. There are examples by key landscape designers such as Brown and Repton. More recent heritage features include the Grand Union Canal and the 'Metroland' towns along the London Underground Metropolitan Line.

⁴ URL: www.chilternsaonb.org/about-chilterns/people-and-history.html#1325

⁵ URL: www.chilternsaonb.org/about-chilterns/people-and-history.html#1345

- **Tranquillity:** Contrasting with nearby London, this area offers relative tranquillity. Tranquillity is found along parts of the escarpment but the largest area is found in the remote and sparsely settled dip slope in Oxfordshire. Transport corridors, such as the motorways, and aircraft impact negatively on tranquillity in localised areas.
- **Recreation:** A variety of green spaces and an extensive rights of way network offer a range of recreation opportunities suitable for walkers, horse riders and cyclists, as well as for those who enjoy less common pursuits, such as carriage drivers and paragliders. Improvements have also been made to increase accessibility for disabled users. Long-distance trails include the Ridgeway and the Thames Path National Trails, and the Chiltern Way. There are more than 3,500 ha of open access land, around 2.5 per cent of the NCA, including significant tracts of common land close to settlement. There are three National Nature Reserves (NNRs) that provide access to some of the best examples of semi-natural habitats in the country and a particularly large area of accessible woodlands. Green space is well distributed except in the north, where Luton, for example, is noticeably lacking.
- **Biodiversity:** The approximate area of priority habitat amounts to just over 16,000 ha, of which the huge majority is woodland and includes the Chilterns Beechwoods SAC. Fragments of lowland calcareous grassland total more than 700 ha⁶ and include Barton Hills and Knocking Hoe NNRs. Chiltern chalk grasslands are distinctive for their large number of rare and scarce vascular plant species such as the Chiltern gentian. At Hartslock Wood SAC and Aston Rowant SAC, there are important examples of the Chilterns' mosaic of chalk grassland, scrub and woodland. Site of Special Scientific Interest (SSSI) designation protects more than 3,600 ha of habitat and Local Wildlife Sites a further 12,647 ha. In addition, there are undesigned chalk streams and parklands. The area is popularly known for its numerous red kites.
- **Geodiversity:** The Chalk outcrop of the Chilterns filters and stores large quantities of high-quality potable water, making it a principal aquifer. The Chalk produces water that is naturally mineral rich, sediment free and of a stable temperature and as such supports specialised chalk stream ecology. In the Thames Valley, large flood plain terraces create a distinct landform and comprise a valuable aggregate resource. Buildings have made use of Chiltern flint; a particular form of hard chalk called 'clunch' or Totternhoe; a conglomeration of flint and pebble called puddingstone; and red brick made from local clays⁷. Of the 14 SSSI designated for their geological interest, many are small-scale historical sites of mineral extraction, including brickworks, sand pits, gravel pits and chalk pits. There are 33 Local Geological Sites.

⁶ *Chilterns Area of Outstanding Natural Beauty: Management Plan 2008 - 2013 – A Framework for Action*, Chilterns Conservation Board (undated)

⁷ *Chilterns Building Design Guide, Chilterns Area of Outstanding Natural Beauty* (February 2010, second edition)

Statements of Environmental Opportunity

SEO 1: Manage the wooded landscape, the woodlands (including internationally important Chilterns beechwoods), hedgerows, commons and parklands with the aims of conserving and enhancing biodiversity and the historic landscape and its significant features; maximising the potential for recreation; and securing sustainable production of biomass and timber.

For example, by:

- Planning for landscape restoration, creation and enhancement activities with reference to the special qualities of the Chilterns Area of Outstanding Natural Beauty (AONB) and North Wessex Downs AONB.
- Building on existing stakeholder groups and strategies involved in woodland conservation including, for example, AONB management plans and county green infrastructure strategies.
- Working across administrative boundaries to develop a resilient ecological network that supports wooded habitat and species.
- Bringing as many wooded features as possible into appropriate management, drawing support from woodland grant schemes and agri-environment schemes. Restore management to those woodlands that have fallen out of management, particularly those with already poor woodland structure, declining timber prospects and deteriorating visitor infrastructure. Secure sustainable management in all cases.
- Seeking to secure woodland and tree health in the long term. Maintain and enhance a heterogeneous woodland resource to ensure that it is resilient to climate change and to pests and diseases such as ash dieback. In existing woodlands and in new plantings, allow for positive species composition changes and maintain woodland on varying terrain, soils and aspect. Conserve the genetic diversity of the woodland resource.
- Co-ordinating deer population management across ownership boundaries. Protect woodlands and trees from deer damage as appropriate. Restore key woodlands and other wooded features that have been severely damaged by deer and squirrels, including important beech woodlands.
- Monitoring impacts of climate change, pests and diseases on native beechwoods, including the Chilterns Beechwoods Special Area of Conservation (SAC), and implementing appropriate adaptation and mitigation strategies. Recognise and conserve all habitats and species of principal importance, including those within SAC, Sites of Special Scientific Interest (SSSI) and Local Wildlife Sites. Restore and conserve all native beechwood types and conserve other semi-natural woodland types that are less extensive than the beechwoods.
- Identifying current and future threats to wooded features in the Chilterns and reviewing ecological, historic and landscape designations to ensure that there is appropriate protection of the range of wooded features. Consider ecological designations for parklands, orchards and hedgerows in particular. Consider Tree Preservation Orders in relation to 'landmark' and veteran trees.

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SEO 1: Manage the wooded landscape, the woodlands (including internationally important Chilterns beechwoods), hedgerows, commons and parklands with the aims of conserving and enhancing biodiversity and the historic landscape and its significant features; maximising the potential for recreation; and securing sustainable production of biomass and timber.

For example, by:

- Maintaining woodland on ancient woodland sites and conserving ancient hedgerow boundaries. Conserve ancient trees and veteran trees, planting or identifying nearby successors in order to secure the deadwood resource and associated biodiversity in the long term. Continue restoration of Plantations on Ancient Woodland Sites.
- Conserving the diverse arrangements and particular species compositions of wooded features in designed landscapes, incorporating native and exotic species in avenues, groves, belts, shrubberies and so on. Carry out historic landscape character assessments and devise management plans to inform conservation efforts. Ensure that succession planting respects the original plantings and seeks to maintain the historical continuity and sense of place. Target Registered Parks and Gardens, particularly those 'at risk', but also consider parklands of local importance and 'landmark trees'.
- Managing all wooded features to benefit biodiversity, considering the needs of woodland species including woodland butterflies, birds and deadwood invertebrates.
- Conserving and recording archaeology in ancient and secondary woodland. Draw on best practice developed by, for example, the Chilterns AONB and North Wessex Downs AONB.
- Using historic landscape information to engage the public in discussion about change in the landscape, particularly in relation to tree clearance and scrub management on once-open common land and downland.
- Drawing on best practice developed by, for example, the Chiltern Woodlands Project, to ensure appropriate management of woodlands across the Chilterns.
- Drawing on the best practice example of the Chilterns Special Trees and Woods Project to engage the public in recording and celebrating wooded features beyond the Chilterns AONB. Focus such efforts in green spaces and along routes that are publicly accessible. Manage and enhance field boundaries and small woodlands as connections in the woodland network and also as part of a diverse habitat mosaic. Plant hedgerows where there is poor connectivity, particularly where this will also restore historic boundaries. Manage large, species-rich woodlands, such as the Chilterns Beechwoods SAC, as core areas in the ecological network. Focus particularly on conservation of ancient hedged boundaries and ancient woodlands in order to secure their high species richness.
- Conserving historic boundary features, including veteran trees, and creating optimal edge habitat along the woodland or boundary edge.

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SEO 1: Manage the wooded landscape, the woodlands (including internationally important Chilterns beechwoods), hedgerows, commons and parklands with the aims of conserving and enhancing biodiversity and the historic landscape and its significant features; maximising the potential for recreation; and securing sustainable production of biomass and timber.

For example, by:

- Planning clearance of secondary woodland where it would restore species-rich and fragmented open habitats and restoring key views and historic landscapes. Due to the sensitivities of tree clearance and major landscape change, undertake this work in partnership with local stakeholders. Ensure that historic features are not negatively impacted by clearance. (Open habitats include grassland and heathland in downland, common land, farmland and flood plain settings.)
- Strengthening and developing new local markets for 'local', 'sustainable', 'traditional' woodland products, including wood fuel, which delivers climate regulation benefits.
- Managing the woodland resource to accommodate and drive appropriate woodland-based recreation activities that generate an income to support suitable woodland management. Draw from existing successful examples such as the visitor attractions at Wendover Woods and at Aston Hill Bike Park, the mountain bike course at Halton. Promote and manage demand for recreation to avoid unsustainable visitor numbers, recognising that recreational uses are not appropriate in some woodlands.
- Managing visitor pressure and forestry impacts on the woodland's ecological and historic environment features.
- Strengthening and enhancing multi-user access links between settlements and woodlands, facilitating greater community stewardship of local green spaces. Prioritise access to woodlands near to people's homes and workplaces, creating new woodlands where appropriate.
- Managing small woods associated with farmland as part of the wider ecological network and as a resource that can be managed to provide small-scale products of value to the farmer. Secure buffers in farmland adjacent to woodlands, veteran trees and hedgerow boundaries, particularly where high chemical input and deep ploughing is undertaken.
- Creating new forestry infrastructure that makes sustainable woodland management more viable, such as rides and sawmills.

SEO 2: In pockets of historic land use where natural and cultural heritage are both particularly rich, aim to restore and strengthen the historic landscape, ecological resilience and heterogeneity, and to conserve soils. Ensure that species-rich habitats are conserved and extended, including internationally important species-rich Chiltern downland. Secure environmentally and economically sustainable management to ensure conservation in the long term.

For example, by:

- Building on existing stakeholder groups and strategies involved in landscape conservation including, for example, AONB management plans and county green infrastructure strategies.
- Designing any new development to accommodate and sustainably conserve the historic and ecological features and functions of historic land uses and their setting. Avoid negative impacts upon historic setting and the ecological network, working across administrative boundaries within and adjacent to the NCA.
- Using understanding of the area's traditional and historic architecture, and its distinct patterns of settlement, to inform appropriate conservation of historic buildings and settings, and planning for and inspiring any new development so that it makes a positive contribution to local character. Where an existing structure is negatively impacting on a historic setting, consider removal or concealment where it is not possible to improve the structure.
- Identifying and conserving semi-natural habitats that are often associated with historic land uses in the Chilterns, such as chalk grassland, heathland, species-rich scrub, lowland meadow, species-rich hedgerow, traditional orchards, chalk streams and acid grassland. Recognise and conserve all habitats and species of principal importance, including those within SAC, SSSI and Local Wildlife Sites.
- Managing the landscape around pockets of habitat to provide buffers, connections and food for wildlife, for example by locating field margins, field corners and low-input grassland where they will most benefit the ecological network and nearby species populations.
- Identifying where bats, owls and other species are making use of historical structures such as barns, and manage structures and the surrounding ecological network accordingly. Prioritise management of protected species and species of principal importance.
- Confirming the specialist species associated with historic land uses and establishing management that reflects the requirements of specialist species; that is, niche management, or traditional management. Develop management strategies for species with restricted distributions, particularly in light of climate change.
- Restoring historic features associated with chalk streams, such as mills, ponds, watercress beds and watermeadows, particularly where restoration of the historic land use will support traditional management that can sustain valued habitats.

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SEO 2: In pockets of historic land use where natural and cultural heritage are both particularly rich, aim to restore and strengthen the historic landscape, ecological resilience and heterogeneity, and to conserve soils. Ensure that species-rich habitats are conserved and extended, including internationally important species-rich Chiltern downland. Secure environmentally and economically sustainable management to ensure conservation in the long term.

For example, by:

- Identifying current and future threats to historic land uses and features in the Chilterns and reviewing ecological, historic and landscape designations to ensure that there is appropriate protection. Consider ecological designations for parklands, orchards, chalk streams and hedgerows in particular. Develop a strategy for conserving historic features that are not recognised by Scheduled Monument or Registered Park and Garden designations, such as co-axial fields.
- Establishing resilient core areas from which to expand by targeting conservation in those locations where existing ancient natural and cultural features are particularly numerous and accessible to the public, including the strip parishes along the scarp, parklands, pockets of ancient field systems and areas of open access common and downland.
- Maintaining and enhancing habitat heterogeneity to support specialist and generalist species associated with historic land uses and to provide connections to assist species movement through the landscape. Develop a strategy to address northward and southward migration of species at the northern and southern ends of the Chilterns working across administrative boundaries.
- Restoring historic inter-visibility, long-distance views and viewpoints as appropriate, targeting historic assets that have since become wooded, such as prehistoric monuments on the escarpment.
- Beyond concentrations of habitat, working with neighbouring landowners to restore and create new areas of habitat and establish ecological and access connections, particularly in relation to fragmented chalk grassland and commons that are important to communities.
- Ensuring that planned change in the landscape, such as restoration and creation, is informed by an understanding of the area's historic landscape in order to avoid destruction of historic features and to identify opportunities to restore historic landscapes.
- Planning to strengthen networks or co-operatives of farmers, estates and land managers in order to facilitate landscape-scale approaches, including commercially viable large-scale downland grazing systems and catchment-scale resource protection.
- Ensuring that soil conservation is integrated into management objectives for historic landscapes, particularly where there is a long history of limited or no disturbance and chemical use. In doing so, secure climate regulation, soil quality and water quality benefits.

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SEO 2: In pockets of historic land use where natural and cultural heritage are both particularly rich, aim to restore and strengthen the historic landscape, ecological resilience and heterogeneity, and to conserve soils. Ensure that species-rich habitats are conserved and extended, including internationally important species-rich Chiltern downland. Secure environmentally and economically sustainable management to ensure conservation in the long term.

For example, by:

- Strengthening and creating new markets that support sustainable grazing and woodland management, including those around 'local'/'sustainable' products and recreation, for example visitor pay-back and charged car parking. Pursue opportunities to bring abandoned or neglected areas into productive management, particularly where losses to biodiversity and historic environment are high, such as on scrub-covered downland. Wood fuel and sheep's wool as insulation material are examples of products recently under demand which could potentially drive commercially viable management on a small or large scale.
- Creating new visions for habitat management and scenery where continuing tradition is not possible as a result of climate change or long-term economics. Explore possibilities such as non-traditional livestock on the downs, commercial recreational activities in woodlands, new species compositions and different vegetation structures in woodlands and grasslands. Planning to engage local communities in helping to conserve their local landscape by recruiting 'volunteer wardens' or 'lookers', attracting sponsors and establishing positive community uses of green spaces and rural buildings. Support and build capacity among existing community groups, for example the Chiltern Society, to conserve their local landscapes.
- Maximising visual and/or physical public access to restored historic landscapes, particularly near to settlements. Provide interpretation and education to enhance visitor experiences and encourage support for conservation activities, particularly near to settlements and at popular destinations.
- Enhancing visitor experience by providing a fit-for-purpose access network that links features across the landscape and appropriate visitor facilities that are sustainable and do not impact negatively on the rural scene.



Brick and flint are common building materials.

SEO 3: Conserve the Chilterns' groundwater resource, River Thames and chalk streams by working in partnership to tackle inter-related issues at a catchment scale and also across the water supply network area. Seek to secure, now and in the future, sustainable water use and thriving flood plain landscapes that are valued by the public.

For example, by:

- Working in partnership to meet Water Framework Directive objectives for good ecological status (surface water) or good status (groundwater) across the Chilterns. Working at a catchment scale, continue to investigate and implement measures that improve river morphology and river ecology, including measures to tackle low flows.
- Building on existing stakeholder groups and strategies involved in water resource management and conservation including, for example, catchment management plans, AONB management plans and county green infrastructure strategies.
- At the parish and neighbourhood level, providing information that will enable residents to recognise, conserve and enjoy their local chalk streams, ponds and other waterbodies. Strengthen the identity of chalk streams as positive focal points for settlements and communities.
- Drawing on best practice developed by the Chilterns Chalk Streams Project and others to deliver work along the entire length of chalk streams in the Chilterns.
- Reviewing ecological designations for chalk streams and other flood plain habitats in the Chilterns to ensure appropriate protection and conservation management.
- At a catchment scale, strengthening engagement with resident, workplace and farmer communities regarding water usage, pollution, flood risk and low flows in the Chiltern environment. Support consumers in bringing consumption rates down to average or below average levels.
- Through a partnership of water companies operating across the water supply network area, securing sustainable abstraction and consumption across the water supply network area. Recognise and address the links of supply and environmental impact between the Chilterns and other National Character Areas (NCAs), including Berkshire and Marlborough Downs, Inner London and North Downs.
- Building public and consumer support across the water supply network area for the conservation of groundwater and surface water by enhancing access to watercourses. Consider Local Nature Reserve declaration for chalk stream green spaces and hold events and volunteering activities at waterside locations.
- Providing information about chalk stream ecology and the negative impacts on the landscape of unsustainable water use. Enable consumers to recognise the visual/obvious signs of positive and negative impacts of their water use on Chiltern chalk streams.
- Bringing together the various recreational user groups relating to the Thames and Chilterns chalk streams so that they can shape the future of local watercourses as recreational assets and secure sustainable recreational use. Enable them to support conservation activities.

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SEO 3: Conserve the Chilterns' groundwater resource, River Thames and chalk streams by working in partnership to tackle inter-related issues at a catchment scale and also across the water supply network area. Seek to secure, now and in the future, sustainable water use and thriving flood plain landscapes that are valued by the public.

For example, by:

- Planning to review and build networks of stakeholders across a catchment and/or abstraction area to help conserve the water resource and develop approaches to deliver sustainable development, sustainable land management and sustainable water use. Focus particularly on achieving sustainable water use in areas where rivers and groundwater are considered to be over-abstracted and around growth areas such as Luton. Plan for climate change impacts and future consumer demands.
- Minimising soil compaction and soil sealing in order to facilitate infiltration to the aquifer and minimise the volume and rate of run-off.
- Maximising opportunities arising from waterside development to restore and enhance the adjacent watercourse. In relation to any development, seek planning gain that will restore modified sections and enhance visual and/or physical public access to a watercourse.
- Drawing from best practice and developing innovative solutions that restore watercourses constrained by existing development and that improve poorly engineered channels. Restore urban sections so that watercourses are attractive focal points within the urban environment.
- Expanding the areas of semi-natural habitat in chalk stream flood plains with the aim of improving the ecological network and increasing the extent of habitats of principal importance, such as wet woodland. Conserve and create new ponds. Create habitat so that it also provides recreation, floodwater storage, pollution filtration and biodiversity benefits, as appropriate.
- Designing any work on the ground to contribute positively to the ecological network and natural processes that operate across the landscape, both within and beyond the catchment and within both urban and rural settings. Where possible, restore natural channels to allow natural river processes to take place and create areas of floodwater storage in the flood plain. Seek to extend and connect fragments of semi-natural habitat in the flood plain and nearby.
- Planning any developments to minimise demands and impacts on the water resource, including incorporating features such as sustainable urban drainage systems (SUDS). Seek opportunities to address negative impacts of existing development, including tackling pollution pathways from industry.
- Supporting farmers and other land managers in preventing pollution, conserving soils, using water efficiently and managing and creating flood plain habitats. Draw on best practice, for example catchment sensitive farming techniques.
- Ensuring that there is adequate understanding of future water resource challenges among all key stakeholders, particularly in relation to resources and habitats that are already under stress, such as the Colne catchment.

SEO 4: Enhance local distinctiveness and create or enhance green infrastructure within existing settlements and through new development, particularly in relation to the urban fringe and growth areas such as Luton. Ensure that communities can enjoy good access to the countryside.

For example, by:

- Building on existing stakeholder groups and strategies that influence development, including, for example, AONB management plans and county green infrastructure strategies.
- Designing and locating development to maintain landscape character and enhance green infrastructure provision across the NCA, drawing on best practice as undertaken by, for example, the Chilterns AONB and North Wessex Downs AONB. Adapt or remove existing development where to do so would significantly strengthen landscape character, enhance views and address barriers to natural processes and public access to the countryside.
- Seeking to conserve the setting of the two AONB landscapes outside of their boundaries when undertaking development and land management, working across planning authority boundaries as necessary.
- Maximising the benefits of planning gain by strategically allocating gain across the NCA and across planning authority boundaries. Ensure that planning gain supports an ecosystems approach. Prioritise such efforts where there are development pressures, for example in growth areas.
- Ensuring that there is an accurate and up-to-date understanding of green infrastructure needs, particularly in relation to growth areas such as Luton.
- Responding to recreation demands and visitor pressures strategically. Manage green spaces and routes across the landscape as a connected network that can dissipate or concentrate visitor pressure.
- Addressing deficits in greenspace and access links, integrating the public transport and cycle network and creating new or improved multi-user routes and green spaces working across administrative boundaries as necessary.
- Supporting farmers in providing public access routes and areas and hosting school visits, particularly where this fills gaps in provision and secures access near settlements. Target farmers around Watford, Hemel Hempstead and Amersham.
- Maximising the appeal of existing and new green spaces and sustainable transport routes close to people's homes and workplaces, including in the urban fringe where it could also strengthen landscape character.
- Considering declaration of additional Local Nature Reserves and new country parks, particularly near to settlements. Ensure that visitor needs are well met at Local Nature Reserves and country parks.
- Establishing improved and new green infrastructure that supports natural processes through securing resilient ecological networks and functioning flood plains. Identify major barriers to significant ecological processes and seek to restore better ecological function working across administrative boundaries as necessary.
- Enhancing the rural and urban scene by promoting the use of traditional local building materials and vernacular styles and utilising appropriate infrastructure. Draw on best practice as developed by, for example, the Chilterns AONB.

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SEO 4: Enhance local distinctiveness and create or enhance green infrastructure within existing settlements and through new development, particularly in relation to the urban fringe and growth areas such as Luton. Ensure that communities can enjoy good access to the countryside.

For example, by:

- Addressing negative impacts on tranquillity associated with traffic and large visitor numbers across the NCA. Promote alternative routes and destinations at a strategic scale to disperse impacts where appropriate. Design new and existing green spaces, routes and visitor facilities to better manage noise, high visitor numbers and multiple user groups or activities. Identify those locations where improved tranquillity will significantly enhance people's experience of key places and routes across the landscape.
- Designing all development and transport infrastructure to support sustainable soil and water use, flood management and pollution prevention, incorporating features such as SUDS. Focus particularly on areas where pollution, flooding and/or low flows have a negative impact. Co-ordinate activity on a catchment scale. Consider opportunities to combine with green space, to realise biodiversity and access benefits.
- Adapting traditional building designs and materials as appropriate to ensure resilience to climate change.
- Supporting suppliers and contractors who can help to conserve the traditional built environment and incorporate traditional materials into new constructions.
- Identifying key viewpoints where the appearance of the landscape is particularly valued. Monitor and conserve these viewpoints as a priority and promote them as visitor destinations as appropriate.

READING TALL BUILDINGS STRATEGY UPDATE NOTE 2018
March 2018

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APPENDIX 1: UPDATES TO TOWNSCAPE ANALYSIS OF CHARACTER AREAS

Character Area 1: Station Hill

Consideration	Original Tall Buildings Strategy comment	2018 update
Land Use	A mixture of offices and retail land uses	These uses remain, although residential uses have also been introduced around Garrard Street.
Historical significance	Railway town and growth of manufacturing and commerce: post 1840. The Station building, Edward XVII statue and Great Western House (now Malmaison) are all listed.	No change
Architectural style	The architectural style is predominantly 1970s. Concrete is a widely used material. Ramps and staircases navigate the awkward spaces and level changes.	Much of the 1970s concrete architecture has now been demolished ahead of redevelopment, although the multi-storey car park remains and demolition has temporarily made it more prominent. The new station building is of a modern architectural style.
Urban grain and townscape scale	The large block size and occasionally tall buildings, the tallest being Thames Tower (11 storeys) and Western Tower (17 storeys) create a large townscape scale.	Thames Tower has been extended by four storeys to 15 storeys (2017). Western Tower has been demolished in advance of Station Hill redevelopment. A large townscape scale remains, including new station building and Station Square south.
Townscape condition	The buildings are occasionally derelict and all are either of a poor condition or an unexceptional design quality. The spaces between the buildings are awkward shapes and sizes and poorly maintained. The overall effect is of a poor quality townscape.	The area is in the process of improvement. The station itself has been much improved with the new station having been completed together with a new station square and transport interchange. Thames Tower has been re-clad and is in improved condition. Most of the poorest quality areas have been demolished, and await development.
Key views within the character area	-	No change.
Key views into the character area	Views of current buildings within the character area are possible from the A4, A327 and A33 when travelling into the city. From the elevated position of Caversham Park, Balmore Park and Horse Close, built form within the character area contributes to the view of central Reading.	No change.
Landmark structures and existing tall buildings	Thames Tower and Western Tower both form localised focal points to views.	Western Tower has been demolished. The new Station building, although not tall, forms a focal point and landmark within the area. Thames Tower's increased height makes it more of a focal point
Tall buildings planning applications	The 2007 application for the Station Hill site proposes residential units together with The proposed development at the Station Hill site would comprise no less than 577 and no more than 624 residential units together with office, retail, cultural and leisure land uses. The tallest building would range from 150-161 metres. There are two planning applications for tall buildings which have been approved.	There have been two subsequent iterations of the Station Hill scheme. Permission 090622 proposed up to 782 dwellings, 80,000 sq m offices plus retail and leisure. It included eight buildings, of which six qualify as tall buildings. The tallest building, B1, would have been 28 commercial storeys, and this would have been the tallest building in Reading. This was then superseded by a new permission, 130436, amended in 151426, which took in some adjacent buildings. This proposed up to 475

		<p> dwellings, 122,000 sqm of offices plus retail and leisure uses. This comprises seven buildings. Although six would potentially qualify as tall buildings, heights would be reduced from the previous scheme, with the tallest building, plot C, being 40m shorter than permitted in the previous scheme, and heights of other plots also reduced. However, plot C would still potentially be Reading's tallest building. The planning permission for 22 residential storeys on 29-35 Station Road (in place at the time of the TBS) has now expired.</p>
<p>Townscape sensitivity to the inclusion of tall buildings</p>	<p>Low: The large townscape scale, the absence of historic townscape features and the precedence for tall structures, all contribute to this area having a high capacity for the development of further tall buildings in terms of townscape character.</p>	<p>Townscape sensitivity remains low. Planning permissions have continued to establish this as the primary opportunity for tall buildings in Reading.</p>

Character Area 2: Station Area East

Consideration	Original Tall Buildings Strategy comment	2018 update
Land Use	Offices	No change.
Historical significance	Railway town and growth of manufacturing and commerce: post 1840 Adjacent to Forbury Gardens	No change.
Architectural style	1970s - late 20th century office blocks.	Addition of four more modern office blocks - three at and adjacent to the former Energis site, and one at former Aldwych House on Blagrave Street.
Urban grain and townscape scale	The individual buildings within the character area e.g Apex Plaza and Queens House are large and blocky structures which create a sense of large scale townscape.	The new additions to the area have only served to reinforce this large scale townscape.
Townscape condition	The buildings within the character area are of an unexceptional design and quality.	The more recent office additions are of reasonably good quality, and have generally enhanced the overall condition of the area.
Key views within the character area	No key views have been defined for this area.	No change.
Key views into the character area	From the elevated position of Caversham Park, Balmore Park and Horse Close, built form within the character area contributes to the view of central Reading.	No change.
Landmark structures and existing tall buildings	Apex plaza is a local landmark due to its height and distinctive pink colour. The Energis/Metal box is a local landmark due to its prominence and distinctive shape.	The Energis/Metal Box/Queens House building has been demolished, and replaced by two 8-storey office buildings which were completed in 2017. Adjacent to this is 3 Forbury Place, an 11-storey office building which was completed in 2010.
Tall buildings planning applications	-	No change.
Townscape sensitivity to the inclusion of tall buildings	Low: The high density of development within the character area, the characteristic large block size and the absence of historic townscape features within the area ensures a low sensitivity to the development of further tall buildings. The absence of any key views also contributes to this being an appropriate location when judged against townscape character criteria.	Townscape sensitivity remains low.

Character Area 12: Caversham Road

Consideration	Original Tall Buildings Strategy comment	2018 update
Land Use	Residential	No change.
Historical significance	Railway town and growth of manufacturing and commerce post 1840	No change.
Architectural style	Two storey, red brick, terraced housing	No change.
Urban grain and townscape scale	The low rise, terraced housing creates a small scale townscape.	No change.
Townscape condition	The buildings are in good condition. The consistent architectural style create a strong townscape character.	No change.
Key views within the character area	View from Caversham Bridge westwards	No change.
Key views into the character area	From the elevated position of Caversham Park, Balmore Park and Horse Close, built form within the character area contributes to the view of central Reading.	No change.
Landmark structures and existing tall buildings	There are no landmarks structures within the character area.	No change.
Tall buildings planning applications	-	No change.
Townscape sensitivity to the inclusion of tall buildings	High: There is a low capacity for the development of buildings of this scale due to the low rise, small scale residential character which predominates. Taller buildings would dilute the townscape pattern and would be uncharacteristic. The area is also inappropriate in terms of market demand and transport connections.	Townscape sensitivity remains high .

Character Area 22: Vastern Road

Consideration	Original Tall Buildings Strategy comment	2018 update
Land Use	Warehouses and retail park	Major land uses remain the same, although the opening of the northern entrance to the station has brought a public transport interchange into the heart of the site.
Historical significance	Railway town and growth of manufacturing and commerce post 1840	No change.
Architectural style	The predominant material is coloured, metal cladding	No change.
Urban grain and townscape scale	The building blocks have a large floor space, although the buildings are not high rise and there is extensive car parking adjacent to the buildings. These features combine to create a medium scale townscape.	No change.
Townscape condition	The large, blank faces of the warehouses create an unexceptional area of townscape which does not respond well to the surrounding residential land use. Although the buildings are occupied and function well for their purpose, their design is unattractive and creates a weak and uninspiring area of townscape.	Although the new entrance to the station and adjacent square have improved the townscape condition of a small part of the site, the surrounding buildings remain unchanged.
Key views within the character area	There are no key views defined for the character area.	No change.
Key views into the character area	Buildings within the character area contribute to the skyline visible from Oxford Road when approaching Reading from the west. From the elevated position of Caversham Park, Balmore Park and Horse Close, built form within the character area contributes to the view of central Reading.	No change.
Landmark structures and existing tall buildings	The large, warehouse structures create a consistent, unexceptional townscape. There are no landmark structures. Although the warehouses create a roofline which is elevated above the surrounding residential buildings, there is no one structure which is notable as a tall building.	The new northern entrance to the station is a landmark, albeit not particularly high. It will become more prominent as development of surrounding sites allows views of it to open up. The new Christchurch Bridge is a landmark on the river, but is currently visually separated from the rest of the area.
Tall buildings planning applications	-	Outline planning permission (110024) was granted on the sorting office site for a major mixed use development including residential, office, hotel and retail. The plot adjacent to the station entrance would have been up to 16 commercial storeys or 21 hotel storeys, with heights decreasing to the west. This permission has now expired.
Townscape sensitivity to the inclusion of tall buildings	Low: The large block size which exists within the character area and the absence of any key views or visual focal point makes this an appropriate location for tall buildings. However it is proposed that tall structures should not be developed along the north and western boundaries of the character area as these boundaries are shared with small scale residential areas. any proposed built form should respond in terms of height and scale to the residential area. The tallest structures should be located to the south of the character area, adjacent to the railway line. In this area the townscape features are larger scale, and adjacent to large scale features outside of the area e.g. existing station buildings, Thames Tower and Western Tower.	Townscape sensitivity remains low, albeit with the caveats expressed in 2008 continuing to apply.

Character Area 23: King's Meadow

Consideration	Original Tall Buildings Strategy comment	2018 update
Land Use	Sports ground and river meadows	No change.
Historical significance	-	Kings Meadow Baths, an unused listed Victorian facility at the time of the TBS, has been reopened as Thames Lido.
Architectural style	N/A	No change.
Urban grain and townscape scale	The large expanse of open meadows creates a large townscape scale.	No change.
Townscape condition	The meadows are a well maintained recreational resource and contribute positively to the townscape character.	No change.
Key views within the character area	The open views across the meadows to the wooded skyline created by bankside vegetation, has been identified as a key view.	No change.
Key views into the character area	From the elevated position of Caversham Park, Balmore Park and Horse Close, built form within the character area contributes to the view of central Reading.	No change.
Landmark structures and existing tall buildings	-	The Christchurch Bridge, opened in 2015, is a new prominent landmark on the Thames that links Caversham and central Reading. The 39m high bridge support is tall within a local context.
Tall buildings planning applications	-	No change.
Townscape sensitivity to the inclusion of tall buildings	High: The majority of the site is protected open space and therefore inappropriate as a location for tall buildings.	Townscape sensitivity remains high .