Access Options

National Character Area 108

Upper Thames Clay Vales

© Sarah Wright/Natural England

The Upper Thames Clay Vales National Character Area (NCA) is a broad belt of open, gently undulating lowland farmland on predominantly Jurassic and Cretaceous clays. Blenheim Palace World Heritage Site falls within the NCA, along with around 5,000 ha of the North Wessex Downs Area of Outstanding Natural Beauty (AONB) and smaller areas of the Chilterns AONB and the Cotswolds AONB. Two of its Special Areas of Conservation (SAC) are designated for their lowland meadow vegetation communities, while Little Wittenham SAC has one of the most studied great crested newt populations in the UK. There are contrasting landscapes, including enclosed pastures of the claylands with wet valleys, mixed farming, hedges, hedge trees and field trees and more settled, open, arable lands. Mature field oaks give a parkland feel in many places.

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Summary and Headline Statements of Environmental Opportunity

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Context Map

Interactive map that provides context to the National Character

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Key Characteristics

A list of the key characteristics of the National Character Area, which

Access Options

National Character Area 108

Upper Thames Clay Vales - Description

Physical and functional links to other National Character Areas

The Upper Thames Clay Vales National Character Area (NCA) covers an extensive area of low-lying land extending from west of Swindon through to Aylesbury in the east, and completely encircles the Midvale Ridge NCA.

Around 3 per cent falls within North Wessex Downs Area of Outstanding Natural Beauty (AONB), with smaller areas falling within the Chilterns and Cotswolds AONBs. To the north, Wiltshire, Oxfordshire and Buckinghamshire Vales adjoin Cotswolds NCA, while the Vales of White Horse and Aylesbury border the Berkshire and Marlborough Downs and Chilterns NCAs to the south. Avon Vales is to the west; Bedfordshire and Cambridgeshire Claylands lies to the north-east.

The Oolitic Limestone of the Cotswolds is a significant aquifer and gives rise to the rivers that cross into the NCA, including the Windrush, the Churn, the Coln and the Thames itself. Farmoor Reservoir relies on the Cotswolds for 60 per cent of its water. Principal aquifers associated with chalk bedrock in the Chilterns and Berkshire Downs also extend a little into this NCA. Main surface water abstractions are for the public water supply. To the east, the majority serves London, while Farmoor Reservoir provides for Oxford, Banbury and Swindon in neighbouring NCAs. The catchments of the rivers Ock and Thame in the south and the tributaries in the north (including the Evenlode, Windrush, Leach, Cherwell and Colne) all drain south-west into the Thames.

The Chalk scarp of the Chilterns and the Berkshire and Marlborough Downs forms a backdrop for many views from the Vales to the south.

The area is crossed by many transport corridors, including the M40, M4, A419 (M4-M5 link), Oxford and Grand Union canals and railway lines linking to the Midlands, and to the north and west of England. Cycle routes such as National Cycle Route 45 and The Ridgeway and Thames Path National Trails also pass through the area.

Distinct areas

- Wiltshire, Oxfordshire and Buckinghamshire Vales to the north and west of the Midvale Ridge
- Vales of White Horse and Aylesbury to the south of the Midvale Ridge

Access Options

People enjoy the views of the Vales from the high ground of adjacent NCAs, including the escarpment of the North Wessex Downs Area of Outstanding Natural Beauty. © Lucy Heath/Natural England

Snakes head fritillary grows in the historic meadows of North Meadow and Clattinger Farm SAC. Other characteristic species include brown hare, native black poplar and brown hairstreak butterfly. © Peter Wakely/Natural England

The Upper Thames Clay Vales today

The area is situated between the Chalk and limestone plateaux of the Cotswolds to the north and the Marlborough Downs, Berkshire Downs and Chilterns to the south and east. In the centre is the Midvale Ridge NCA, a low ridge of sandy Corallian Limestone. Either side of this ridge are river valley landscapes of flood plains, which form this NCA. Due to its size, and the different character of the Vales, this NCA has two distinct areas: Wiltshire, Oxfordshire and Buckinghamshire Vales to the north and west of the Midvale Ridge; and the Vales of the White Horse and Aylesbury to the south. The unifying feature is the Thames (or Isis) and its flood plains and tributaries.

The Wiltshire, Oxfordshire and Buckinghamshire Vales form part of a belt of clay lowland linking Cambridgeshire Claylands to the Avon Vales. This area consists of open, gently undulating lowland farmland bounded by the limestone scenery of the Cotswolds to the north and the narrow limestone outcrop of the Midvale Ridge to the south. It is underlain by an expanse of heavy blue-grey Oxford Clay and Kimmeridge Clay. In many places, the clay is covered locally by gravel deposits marked by extensive workings and flooded pits. The rivers Coln, Ray and Cherwell flow through the area, and the associated open flood plain landscapes consist of

a regular and well-ordered field pattern, with willow pollards and reedbeds along the watercourses. Cotswold Water Park, a wetland area that includes the country's largest marl lake system, was created over the last 50 years by mineral extraction and lies to the west near Cricklade. Farmoor Reservoir lies to the west of Oxford, supplying much of the water for the surrounding areas.

Thames Path National Trail signpost © Lucy Heath/Natural England

The Vale of White Horse is a belt of heavy blue-grey Lower Cretaceous Gault Clay with exposures of underlying Jurassic Kimmeridge Clay, drained by the rivers Ock and Thame. South of Swindon, the Vale slopes down from the Berkshire and Marlborough Downs forming a clay plain, occasionally broken by minor hills of Greensand or Portland Limestone. Notable outliers of Chalk rise as hills near Dorchester and Cholsey. The area supports mainly arable farming with some pasture, producing a field pattern of large, regular fields with few hedgerows or trees. Villages such as Baulking and Goosey built around distinctive greens are located along the Ock Valley. Fruit orchards around Harwell thrive on light, fertile, sandy soils developed over the Greensand bench at the foot of the Chalk escarpment.

The Upper Thames drains the Vale to the west before cutting south at the confluence with the lower reaches of the Cherwell through the Midvale Ridge at Oxford. Wide expanses of terraced river gravels of limestone and wide alluvial flats dominate the

Oxfordshire Vale. At the confluence of the Thames with the Windrush, Evenlode and Cherwell, distinctive hillocks form low, isolated features where patches of more ancient pebbly drift rest on the underlying Oxford Clay. Soils are generally yellowish brownearth, gleyed in lower-lying areas. West of Oxford, soils are dominantly calcareous with good drainage. The River Ray joins the Cherwell at Islip and drains the wide basin of Otmoor, where the soils are covered by a layer of peaty alluvium formed before the land was drained. The gently rising land along the northern rim to the east forms a watershed between the Ray and the Ouse.

The Vale of White Horse passes eastwards into the Aylesbury Vale. Here, the valley is dissected by alluvial flats and low river gravel terraces around the confluence of the Ock and the Thame. Farther east into the narrower Aylesbury Vale, sandy brownearths, developed from the ledge of Greensand below the Chalk scarp of the Chilterns, provide some of the most productive soils in the area. Aylesbury Vale is drained by the River Thame and numerous independent streams that flow south-west into the Thames. Where drainage is impeded, underlying waterlogged brown earths give rise to wet meadows. Predominantly an agricultural landscape, arable fields, dairy herds, hedges, hedgerow trees and field trees are frequent and characteristic. In places, mature field oaks give a parkland feel. The Chalk scarp of the Chilterns and the Berkshire and Marlborough Downs is prominent in many views from the Vales to the south.

In the north, the Wiltshire, Oxfordshire and Buckinghamshire Vales form a mainly pastoral landscape dominated by stock rearing, with some arable and areas of old unimproved hay meadows north of Oxford. Wetter areas are usually under grass such as ley grassland and unimproved pasture or meadows. Larger arable fields tend to be restricted to the elevated gravel terraces with better drainage. Woodlands are generally scarce, although watercourses are often marked by lines of willows or native black poplar.

The Oxfordshire and Wiltshire Vales are characterised by 18th- and early 19thcentury enclosure landscapes of small woods and thorn hedges. Former and current gravel workings along the Upper Thames flood plain are characteristic. Many are now open water and used for recreation. Rivers and watercourses, particularly where tree lined, are important landscape features – including the springlines, which emerge from the base of the Chalk escarpment.

Aylesbury Vale is a continuation of the Vale of White Horse's agricultural landscape, with a geometric enclosure of farms set among large hedged fields with regularly spaced hedgerow trees. Around villages the fields are generally smaller and more irregular. Black poplar tree stands are distinctive features. Bankside willows and flat, open watermeadows fringe the River Thame, which drains towards the Thames in the south-west.

Woodland was already scarce by the 11th century, and the NCA now has only 3 per cent woodland cover. Watercourses are often tree lined, and there are remnants of ancient Royal Hunting Forests and concentrations of orchards on the Greensand. However, nearly 2,000 ha of historic parkland and mature hedgerow trees can give an impression of a more wooded landscape. Important wetland habitats are associated with the waterbodies, watercourses and flood plains, including internationally designated calcareous flood meadows north of Oxford. Some river valley meadows and pastures are regionally important for wading birds such as curlew and lapwing, including breeding populations and large wintering numbers. Nationally important numbers of breeding and wintering wildfowl are associated with the waterfilled gravel pits and reservoirs. In addition, the area's arable habitats support nationally important assemblages of farmland birds.

Views across green fields with yellow fields of rapeseed and woodland in the background © Sarah Wright/Natural England

A line of settlements developed along the natural springlines at the base of the Chilterns Chalk scarp. Today, they include historic and distinctive market towns. Parkland and fine houses are also notable features.

Brick-built buildings with tiled roofs reflect the widespread use of the local clay. The southern vales have many buildings plastered with ‘wichert’, a traditional chalky marl mixed with straw, and are often colour-washed. Villages on the ledge of Greensand were rarely built of the local sandstone. However, use of chalk blocks, or ‘clunch’, quarried from the chalk hills, with some thatch, adds variety. Settlement follows the rim of the northern vales, with villages on rising ground or raised gravel spreads within the flood-prone lowlands. Isolated 19th-century farmhouses are characteristic, and older stone-walled and stone-slated buildings, particularly in the Oxford Vale, reflect the Cotswolds influence.

Although the NCA retains many tranquil spaces, the overwhelming impression is of an area criss-crossed by transport routes including motorways, major roads, canals and railway lines, dominated by Didcot Power Station and industrial activities around Abingdon in the south and Oxford Airport in the north, with the large towns of Swindon and Aylesbury to the west and east. Activity from military

airbases such as Fairford and Brize Norton outside the NCA also impacts on the tranquillity of the area.

The landscape through time

The Upper Thames Clay Vales NCA is predominantly underlain by clay rocks deposited on ancient sea floors between 165 and 100 million years ago. The Oxford Clay and Kimmeridge Clay were deposited during the Jurassic Period, and contain fossils laid down in a marine environment. At the end of the Jurassic Period and the start of the Cretaceous Period, shallow marine estuarine conditions prevailed and sands and limestones of the Portland Group and Purbeck Limestone were laid down. The Cretaceous Period then saw the return of a marine environment in which more clay – the Gault Clay – was deposited, followed by the Upper Greensand and then the Chalk. More recent Quaternary ice-age events (over the last 2 million years) are represented by river terrace gravels, some of which have yielded rich fossil faunas of large mammals and molluscs.

There is widespread evidence of Neolithic settlement of the river terraces downstream from Radley, and ancient field systems are visible as cropmarks in the Thames gravels. Many of these settlements survive beneath Medieval market towns along the ancient route of the Lower Icknield Way; much of the prehistoric trackway runs along the Greensand ledge. There is significant prehistoric and Roman archaeology throughout the Upper Thames gravels. A network of Roman roads connected the frontier post of Dorchester with wider areas and acted as trade routes after the conquest. Roman farms were concentrated on the better draining loams of the gravel terraces along the river valleys, particularly the Thames. These are no longer visible, but routes of Roman roads such as the Ermine Way remain significant features in modern-day road patterns.

Didcot power station. © Lucy Heath/Natural England

Most of the area's towns have significant time depth. There are Saxon remains, such as defences at Wallingford and Cricklade, and a concentration of Anglo-Saxon burial sites in the south of the area. Domesday survey showed the narrow belt of springline villages on the Greensand at the foot of the Chilterns in Aylesbury Vale as the most densely populated area. Significant archaeological features remain visible, including ancient field systems evident as cropmarks and remnant embankments and ditches associated with royal hunting grounds. Around Aylesbury, deserted villages such as Quarrendon, Fleet Marston and Creslow are also significant medieval features. Ridge and furrow survives across the area, with nationally important survivals at West Hanney, Denchworth, Lodgershall, Hogshaw and Creslow. Straight-sided large fields enclosing the northern Vales are typical of a 'planned countryside'. Domesday records little woodland cover, with scarcely any placenames relating to woodland.

The sparse settlement pattern within the Vales was more or less established by the 11th century, with the Upper Thames area generally more populated than the Vale to the east. Otmoor was, as now, largely devoid of any buildings or settlement and was used for summer and autumn grazing. Contrast existed between the pattern of pastures and hedgerows of the clays, pollarded willows on alluvium and the hedgeless arable fields and villages confined to gravel spreads within river valleys. Generally older, smaller fields

surround riverine areas, while larger fields dominate higher, drier ground. Evidence of reclamation of the wetter lands exists in the occurrence of ‘moor’ placenames such as Otmoor. Otmoor was a wet, open landscape before enclosure, at which point it was divided up. Some of the earliest regional Parliamentary enclosures were in the Vale of White Horse, reaching a peak in the second half of the 18th century as new ideas of farm husbandry spread. Dairy farming developed rapidly as new methods increased productivity from the rich clay soils. The still predominant field pattern of large hedged fields dates from this time. Historically most Buckinghamshire orchards were located in the south of the county around High Wycombe and south of Aylesbury, with cherry orchards the county’s speciality. The Aylesbury prune, a black plum or damson, was widely grown and principally used for cooking and making jam.

Villages that were slow to develop have remained small and retained their early settlement layout and old buildings. Aylesbury is the only town of any size, growing partly from its trade in Aylesbury ducks as the breed was refined and popularised during the 18th century. The Thames and Severn Canal and the Oxford Canal, completed in 1789 and 1790 respectively, were important trade routes between London and the East Midlands, and the Wilts and Berks Canal linked the Thames at Abingdon to the Kennet and Avon Canal. The arrival of the railway in 1839 had a powerful impact and boosted other industries; for example, up to a ton (1,000 kg) of ducks a night were being shipped from Aylesbury to London by 1850. Swindon Railway Works opened in 1843 and transformed Swindon into a busy industrial town, employing over 12,000 people in its heyday in the early 20th century.

The introduction of hardier Peking ducks in 1873 eventually led to the decline of the duck-rearing industry, and the Aylesbury duck is now a rare breed. Changes in agriculture reduced the area’s characteristic cherry, plum and apple orchards by over 90 per cent by 1994, and they continue to decline. The County Council’s Survey of Orchards in Southern Buckinghamshire revealed a 39 per cent

loss in orchards between 1975 and 1995 in one of the areas that was previously extremely important for fruit production. The condition of the remaining orchards is generally poor.

The switch from steam to electric in the 1950s, and later from rail to road transport, resulted in the decline and eventual closure of the Swindon Railway Works. Didcot Power Station was completed in 1968 and its infrastructure dominates the area south of Oxford. The original Didcot A was decommissioned in 2013, replaced by Didcot B, a gas-fuelled station on the same site. The area's motorways (M40 and M4) were built in the early 1970s, although the final section of the M40 north of Oxford was not completed until 1991, the route being altered to avoid Otmoor following local objections. During the late 20th century, the population of the area increased dramatically, partly because families moved out of the capital from the 1960s as part of the London overspill policy and also because commuters were attracted by the area's excellent rail and road links.

Pump drainage allowed wet land on Otmoor to be drained to enable arable farming from the 1960s. The Royal Society for the Protection of Birds (RSPB) bought the first of these fields in 1997 and began to return them to grassland. Some sand and gravel had been sourced from this area since Roman times but was only exploited on a large commercial scale during the 20th century. Mineral extraction on the Wiltshire/Gloucestershire border over the past 50 years has resulted in the formation of a series of wetlands, recognised as a country park, the Cotswold Water Park in 1967 and now managed for wildlife and recreation.

The population of Aylesbury had more than doubled by 2011, and this change is reflected across the area.

Access Options

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National Character Area 108

Upper Thames Clay Vales - Key Characteristics

- Low-lying clay-based flood plains encircle the Midvale Ridge. Superficial deposits, including alluvium and gravel terraces, spread over 40 per cent of the area, creating gently undulating topography. The Upper Jurassic and Cretaceous clays and the wet valley bottoms give rise to enclosed pasture, contrasting with the more settled, open, arable lands of the gravel.

- The large river system of the River Thames drains the Vales, their headwaters flowing off the Cotswolds to the north or emitting from the springline along the Chilterns and Downs escarpments. Where mineral extraction takes place, pits naturally fill with water, and limestone gravels from the Cotswolds give rise to marl formation. There are a high number of nationally important geological sites.

- Woodland cover is low at only about 3 per cent, but hedges, hedgerow trees and field trees are frequent. Watercourses are

often marked by lines of willows and, particularly in the Aylesbury Vale and Cotswold Water Park, native black poplar.

- Wet ground conditions and heavy clay soils discourage cultivation in many places, giving rise to livestock farming. Fields are regular and hedged, except near the Cotswolds, where there can be stone walls. The Vale of White Horse is made distinct by large arable fields, and there are relict orchards on the Greensand.

- In the river corridors, grazed pasture dominates, with limited areas of historic wetland habitats including wet woodland, fen, reedbed and flood meadow. There are two areas of flood meadow designated for their importance at a European level as Special Areas of Conservation (SAC). There are also rich and extensive ditch systems.

- Gravel extraction has left a legacy of geological exposures, numerous waterbodies and, at the Cotswold Water Park, a nationally important complex of marl lakes.

- Wetland habitat attracts regionally important numbers of birds including snipe, redshank, curlew and lapwing and wintering wildfowl such as pochard. Snake’s head fritillary thrives in the internationally important meadows. The area also supports typical farmland wildlife such as brown hare, bats, barn owl, tree sparrow and skylark.

- Blenheim Palace World Heritage Site, including its Capability Brown landscape, is the finest of many examples of historic parkland in this NCA. There are many heritage features, including nationally important survivals of ridge and furrow, Roman roads, deserted medieval villages and historic bridges.

- Brick and tile from local clays, timber and thatch are traditional building materials across the area, combined with limestone near

the Cotswolds and occasional clunch and wichert near the Chilterns.

- Settlement is sparse on flood plains, apart from at river crossings, where there can be large towns, such as Abingdon. Aylesbury and Bicester are major urban centres, and the outer suburbs of Oxford and Swindon spread into this NCA. Market towns and villages are strung along the springlines of the Chilterns and Downs. Major routes include mainline rail, canals, a network of roads including the M40 and M4 and The Ridgeway and Thames Path National Trails.

Access Options

National Character Area 108

Upper Thames Clay Vales - Description

Physical and functional links to other National Character Areas

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The Oolitic Limestone of the Cotswolds is a significant aquifer and gives rise to the rivers that cross into the NCA, including the Windrush, the Churn, the Coln and the Thames itself. Farmoor Reservoir relies on the Cotswolds for 60 per cent of its water. Principal aquifers associated with chalk bedrock in the Chilterns and Berkshire Downs also extend a little into this NCA. Main surface water abstractions are for the public water supply. To the east, the majority serves London, while Farmoor Reservoir provides for Oxford, Banbury and Swindon in neighbouring NCAs. The catchments of the rivers Ock and Thame in the south and the tributaries in the north (including the Evenlode, Windrush, Leach, Cherwell and Colne) all drain south-west into the Thames.

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Distinct areas

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- Vales of White Horse and Aylesbury to the south of the Midvale Ridge

Access Options

People enjoy the views of the Vales from the high ground of adjacent NCAs, including the escarpment of the North Wessex Downs Area of Outstanding Natural Beauty. © Lucy Heath/Natural England

Snakes head fritillary grows in the historic meadows of North Meadow and Clattinger Farm SAC. Other characteristic species include brown hare, native black poplar and brown hairstreak butterfly. © Peter Wakely/Natural England

The Upper Thames Clay Vales today

The area is situated between the Chalk and limestone plateaux of the Cotswolds to the north and the Marlborough Downs, Berkshire Downs and Chilterns to the south and east. In the centre is the Midvale Ridge NCA, a low ridge of sandy Corallian Limestone. Either side of this ridge are river valley landscapes of flood plains, which form this NCA. Due to its size, and the different character of the Vales, this NCA has two distinct areas: Wiltshire, Oxfordshire and Buckinghamshire Vales to the north and west of the Midvale Ridge; and the Vales of the White Horse and Aylesbury to the south. The unifying feature is the Thames (or Isis) and its flood plains and tributaries.

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Thames Path National Trail signpost © Lucy Heath/Natural England

The Vale of White Horse is a belt of heavy blue-grey Lower Cretaceous Gault Clay with exposures of underlying Jurassic Kimmeridge Clay, drained by the rivers Ock and Thame. South of Swindon, the Vale slopes down from the Berkshire and Marlborough Downs forming a clay plain, occasionally broken by minor hills of Greensand or Portland Limestone. Notable outliers of Chalk rise as hills near Dorchester and Cholsey. The area supports mainly arable farming with some pasture, producing a field pattern of large, regular fields with few hedgerows or trees. Villages such as Baulking and Goosey built around distinctive greens are located along the Ock Valley. Fruit orchards around Harwell thrive on light, fertile, sandy soils developed over the Greensand bench at the foot of the Chalk escarpment.

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Oxfordshire Vale. At the confluence of the Thames with the Windrush, Evenlode and Cherwell, distinctive hillocks form low, isolated features where patches of more ancient pebbly drift rest on the underlying Oxford Clay. Soils are generally yellowish brownearth, gleyed in lower-lying areas. West of Oxford, soils are dominantly calcareous with good drainage. The River Ray joins the Cherwell at Islip and drains the wide basin of Otmoor, where the soils are covered by a layer of peaty alluvium formed before the land was drained. The gently rising land along the northern rim to the east forms a watershed between the Ray and the Ouse.

The Vale of White Horse passes eastwards into the Aylesbury Vale. Here, the valley is dissected by alluvial flats and low river gravel terraces around the confluence of the Ock and the Thame. Farther east into the narrower Aylesbury Vale, sandy brownearths, developed from the ledge of Greensand below the Chalk scarp of the Chilterns, provide some of the most productive soils in the area. Aylesbury Vale is drained by the River Thame and numerous independent streams that flow south-west into the Thames. Where drainage is impeded, underlying waterlogged brown earths give rise to wet meadows. Predominantly an agricultural landscape, arable fields, dairy herds, hedges, hedgerow trees and field trees are frequent and characteristic. In places, mature field oaks give a parkland feel. The Chalk scarp of the Chilterns and the Berkshire and Marlborough Downs is prominent in many views from the Vales to the south.

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Aylesbury Vale is a continuation of the Vale of White Horse's agricultural landscape, with a geometric enclosure of farms set among large hedged fields with regularly spaced hedgerow trees. Around villages the fields are generally smaller and more irregular. Black poplar tree stands are distinctive features. Bankside willows and flat, open watermeadows fringe the River Thame, which drains towards the Thames in the south-west.

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Views across green fields with yellow fields of rapeseed and woodland in the background © Sarah Wright/Natural England

A line of settlements developed along the natural springlines at the base of the Chilterns Chalk scarp. Today, they include historic and distinctive market towns. Parkland and fine houses are also notable features.

Brick-built buildings with tiled roofs reflect the widespread use of the local clay. The southern vales have many buildings plastered with ‘wichert’, a traditional chalky marl mixed with straw, and are often colour-washed. Villages on the ledge of Greensand were rarely built of the local sandstone. However, use of chalk blocks, or ‘clunch’, quarried from the chalk hills, with some thatch, adds variety. Settlement follows the rim of the northern vales, with villages on rising ground or raised gravel spreads within the flood-prone lowlands. Isolated 19th-century farmhouses are characteristic, and older stone-walled and stone-slated buildings, particularly in the Oxford Vale, reflect the Cotswolds influence.

Although the NCA retains many tranquil spaces, the overwhelming impression is of an area criss-crossed by transport routes including motorways, major roads, canals and railway lines, dominated by Didcot Power Station and industrial activities around Abingdon in the south and Oxford Airport in the north, with the large towns of Swindon and Aylesbury to the west and east. Activity from military

airbases such as Fairford and Brize Norton outside the NCA also impacts on the tranquillity of the area.

The landscape through time

The Upper Thames Clay Vales NCA is predominantly underlain by clay rocks deposited on ancient sea floors between 165 and 100 million years ago. The Oxford Clay and Kimmeridge Clay were deposited during the Jurassic Period, and contain fossils laid down in a marine environment. At the end of the Jurassic Period and the start of the Cretaceous Period, shallow marine estuarine conditions prevailed and sands and limestones of the Portland Group and Purbeck Limestone were laid down. The Cretaceous Period then saw the return of a marine environment in which more clay – the Gault Clay – was deposited, followed by the Upper Greensand and then the Chalk. More recent Quaternary ice-age events (over the last 2 million years) are represented by river terrace gravels, some of which have yielded rich fossil faunas of large mammals and molluscs.

There is widespread evidence of Neolithic settlement of the river terraces downstream from Radley, and ancient field systems are visible as cropmarks in the Thames gravels. Many of these settlements survive beneath Medieval market towns along the ancient route of the Lower Icknield Way; much of the prehistoric trackway runs along the Greensand ledge. There is significant prehistoric and Roman archaeology throughout the Upper Thames gravels. A network of Roman roads connected the frontier post of Dorchester with wider areas and acted as trade routes after the conquest. Roman farms were concentrated on the better draining loams of the gravel terraces along the river valleys, particularly the Thames. These are no longer visible, but routes of Roman roads such as the Ermine Way remain significant features in modern-day road patterns.

Didcot power station. © Lucy Heath/Natural England

Most of the area's towns have significant time depth. There are Saxon remains, such as defences at Wallingford and Cricklade, and a concentration of Anglo-Saxon burial sites in the south of the area. Domesday survey showed the narrow belt of springline villages on the Greensand at the foot of the Chilterns in Aylesbury Vale as the most densely populated area. Significant archaeological features remain visible, including ancient field systems evident as cropmarks and remnant embankments and ditches associated with royal hunting grounds. Around Aylesbury, deserted villages such as Quarrendon, Fleet Marston and Creslow are also significant medieval features. Ridge and furrow survives across the area, with nationally important survivals at West Hanney, Denchworth, Lodgershall, Hogshaw and Creslow. Straight-sided large fields enclosing the northern Vales are typical of a 'planned countryside'. Domesday records little woodland cover, with scarcely any placenames relating to woodland.

The sparse settlement pattern within the Vales was more or less established by the 11th century, with the Upper Thames area generally more populated than the Vale to the east. Otmoor was, as now, largely devoid of any buildings or settlement and was used for summer and autumn grazing. Contrast existed between the pattern of pastures and hedgerows of the clays, pollarded willows on alluvium and the hedgeless arable fields and villages confined to gravel spreads within river valleys. Generally older, smaller fields

surround riverine areas, while larger fields dominate higher, drier ground. Evidence of reclamation of the wetter lands exists in the occurrence of ‘moor’ placenames such as Otmoor. Otmoor was a wet, open landscape before enclosure, at which point it was divided up. Some of the earliest regional Parliamentary enclosures were in the Vale of White Horse, reaching a peak in the second half of the 18th century as new ideas of farm husbandry spread. Dairy farming developed rapidly as new methods increased productivity from the rich clay soils. The still predominant field pattern of large hedged fields dates from this time. Historically most Buckinghamshire orchards were located in the south of the county around High Wycombe and south of Aylesbury, with cherry orchards the county’s speciality. The Aylesbury prune, a black plum or damson, was widely grown and principally used for cooking and making jam.

Villages that were slow to develop have remained small and retained their early settlement layout and old buildings. Aylesbury is the only town of any size, growing partly from its trade in Aylesbury ducks as the breed was refined and popularised during the 18th century. The Thames and Severn Canal and the Oxford Canal, completed in 1789 and 1790 respectively, were important trade routes between London and the East Midlands, and the Wilts and Berks Canal linked the Thames at Abingdon to the Kennet and Avon Canal. The arrival of the railway in 1839 had a powerful impact and boosted other industries; for example, up to a ton (1,000 kg) of ducks a night were being shipped from Aylesbury to London by 1850. Swindon Railway Works opened in 1843 and transformed Swindon into a busy industrial town, employing over 12,000 people in its heyday in the early 20th century.

The introduction of hardier Peking ducks in 1873 eventually led to the decline of the duck-rearing industry, and the Aylesbury duck is now a rare breed. Changes in agriculture reduced the area’s characteristic cherry, plum and apple orchards by over 90 per cent by 1994, and they continue to decline. The County Council’s Survey of Orchards in Southern Buckinghamshire revealed a 39 per cent

loss in orchards between 1975 and 1995 in one of the areas that was previously extremely important for fruit production. The condition of the remaining orchards is generally poor.

The switch from steam to electric in the 1950s, and later from rail to road transport, resulted in the decline and eventual closure of the Swindon Railway Works. Didcot Power Station was completed in 1968 and its infrastructure dominates the area south of Oxford. The original Didcot A was decommissioned in 2013, replaced by Didcot B, a gas-fuelled station on the same site. The area's motorways (M40 and M4) were built in the early 1970s, although the final section of the M40 north of Oxford was not completed until 1991, the route being altered to avoid Otmoor following local objections. During the late 20th century, the population of the area increased dramatically, partly because families moved out of the capital from the 1960s as part of the London overspill policy and also because commuters were attracted by the area's excellent rail and road links.

Pump drainage allowed wet land on Otmoor to be drained to enable arable farming from the 1960s. The Royal Society for the Protection of Birds (RSPB) bought the first of these fields in 1997 and began to return them to grassland. Some sand and gravel had been sourced from this area since Roman times but was only exploited on a large commercial scale during the 20th century. Mineral extraction on the Wiltshire/Gloucestershire border over the past 50 years has resulted in the formation of a series of wetlands, recognised as a country park, the Cotswold Water Park in 1967 and now managed for wildlife and recreation.

The population of Aylesbury had more than doubled by 2011, and this change is reflected across the area.

National Character Area 108

Upper Thames Clay Vales - Landscape Change

Monitoring Landscape Change

Drivers for change

The Upper Thames Clay Vales is a broad belt of open, gently undulating lowland farmland, wet valleys, mixed farming with hedges, hedge trees and field trees, and more settled, open, arable lands. Wetter winters and drier summers may impact on the flow regimes of the area's watercourses. More frequent storms and heavier downpours will increase flooding which could have significant implications for settlements. Settlement expansion, associated infrastructure development and mineral extraction could also affect landscape change.

Monitoring landscape change

The most recent monitoring of landscape change within NCAs forms part of the **Outcome Indicator Framework for the 25 Year Environment Plan** . This includes indicator **G1: Changes in landscape and waterscape character** , informed by indicator component G1a: Changes in the landscape characteristics of NCAs in England.

Access Options

Indicator component G1a measures the extent to which landscape change is achieving the aspirational landscape outcomes described in the NCA Statements of Environmental Opportunity (SEOs). For this purpose, SEOs across all NCAs are distilled into 34 Super Landscape Objectives (SLOs).

NCAs with broadly similar character and pressures for change have been grouped into 18 sub-Agricultural Landscape Types (sub-ALTs) that represent rural, urban and coastal landscapes. Equal numbers of relevant SLOs were identified for monitoring within each sub-ALT and their associated NCAs. These SLOs were assessed based on changes between 2015 – 2019 (or the closest approximations to those dates with the data available). The results of each SLO were combined to form an integrated view of overall landscape change within each NCA during this time period.

For further details on this landscape monitoring, refer to the G1a Landscape Change Atlas and report, which are available via the Landscape Change Evidence Hub.

Landscape Change Evidence Hub

The Natural England Landscape Change Evidence Hub has been created to provide access to information that can help us understand how, where, and why England's landscapes are changing, and how to manage change into the future. This includes the information on the Outcome Indicator Framework for the 25 Year Environment Plan, indicator G1, and the indicator component G1a Landscape Change Atlas and report.

Results of G1a: Changes in the landscape characteristics within this NCA

Listed below are:

- the overall trend for this NCA
- the results of the underlying analysis for each of the individual Super Landscape Objectives considered relevant to the NCA; this includes the 'provisional status' (i.e. current understanding of state/condition) and the 'change trend' associated with each SLO.

The following SLOs are considered relevant to this NCA. The current provisional status of each objective and the assessment of change (expressed as a trend) is listed below. The overall integrated trend assessment is also listed.

Overall trend:

Mainly improving

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SLO Code	Super Landscape Objective	Provisio… Status	Change Trend
SLO1	Conserve and enhance landscapes for their tranquillity and dark skies particularly where they are under pressure from the potential impacts of development and associated infrastructure.	Unknown	Strongly declining
SLO2	Conserve and enhance our priority habitats for their contribution to landscape character and quality (including natural/cultural values).	Good	Little change
SLO3	Improve the ecological condition of rivers and canals as important landscape features including habitats, connectivity and cultural significance.	Poor	Strongly declining
SLO4	Conserve and enhance our heritage assets for their physical and cultural contribution to landscape/waterscape character and quality.	Good	Improving

Access Options

SLO Code	Super Landscape Objective	Provisio… Status	Change Trend
SLO5	Ensure that agri-environment schemes are contributing positively to landscape and waterscape character.	Good	Improving
SLO6	Conserve and enhance the field boundary features and patterns that characterise our varied landscapes.	Good	Improving
SLO7	Improve access to and through landscapes with cycle paths and long distance footpaths, to increase recreational and educational opportunities for engagement with the natural environment.	Unknown	Strongly declining
SLO8	Enhance the visual and experiential quality of our landscapes and waterscapes.	Unknown	Unknown
SLO9	Improve the overall condition of Sites of Special Scientific Interest for their contribution to landscape character and quality.	Good	Strongly improving
SLO10	Seek to mitigate climate change through enhancement of carbon sequestration capacity within the landscape, and increasing above ground carbon stocks within vegetation and soil.	Unknown	Unknown
SLO11	Seek to mitigate climate change through enhancement of carbon sequestration capacity within the landscape, and increasing below ground carbon stocks within vegetation and soil.	Unknown	Unknown
SLO12	Seek to conserve, enhance and increase characteristic broadleaved woodland through appropriate management.	Good	Improving
SLO14	Conserve and enhance the characteristic and historic patterns of woodland, grassland and pasture.	Poor	Little change

Access Options

SLO Code	Super Landscape Objective	Provisio… Status	Change Trend
SLO18	Improve the landscape and waterscape character and quality of watercourses and waterways, where appropriate improving visual and physical access and increasing riparian vegetation and tree cover, and thereby providing additional filtration, flood mitigation, and habitat.	Unknown	Little change
SLO24	Connect existing broadleaved woodlands and enhance woodland cover, increasing extent of habitat connectivity where appropriate.	Poor	Little change
SLO26	Conserve and enhance wetland habitats for climate resiliency, biodiversity and the sense of place they provide.	Poor	Little change
SLO28	Conserve and enhance traditional orchard habitats as characteristic landscape features strengthening the historic sense of place.	Poor	Strongly improving
SLO29	Conserve and enhance lowland meadows and acidic grasslands as characteristic landscape features strengthening the historic sense of place.	Good	Improving
SLO33	Enhance and protect the estuarine and floodplain grazing marsh and semi-natural grasslands as characteristic features strengthening sense of place.	Good	Little change

Additional information on landscape change

Historic Aerial Photo Explorer

The Historic England Aerial Photo Explorer presents a nationally important collection of aerial photographs from across the country, depicting how the landscape has changed within the NCA over time.

Access Options

National Character Area 108

Upper Thames Clay Vales - Summary and Headline Statements of Environmental Opportunity

Summary

The Upper Thames Clay Vales National Character Area (NCA) is a broad belt of open, gently undulating lowland farmland on predominantly Jurassic and Cretaceous clays. Blenheim Palace World Heritage Site falls within the NCA, along with around 5,000 ha of the North Wessex Downs Area of Outstanding Natural Beauty (AONB) and smaller areas of the Chilterns AONB and the Cotswolds AONB. Two of its Special Areas of Conservation (SAC) are designated for their lowland meadow vegetation communities, while Little Wittenham SAC has one of the most studied great crested newt populations in the UK. There are contrasting landscapes, including enclosed pastures of the claylands with wet valleys, mixed farming, hedges, hedge trees and field trees and

more settled, open, arable lands. Mature field oaks give a parkland feel in many places.

The area encircles the Midvale Ridge NCA and covers an extensive area of low-lying land extending from Wiltshire and Gloucestershire to the west of Swindon through to Aylesbury in Buckinghamshire in the east. It comprises two separate sub-character areas: the Wiltshire, Oxfordshire and Buckinghamshire Vales to the north; and the Vales of White Horse and Aylesbury to the south. The area is dominated by watercourses, including the Thames and its tributaries, and there are also lakes associated with mineral extraction areas, such as the Cotswold Water Park. Watercourses and lakes provide important areas for wildlife and recreation. There are a number of major transport routes and patches of intensive industrial influence, including Didcot Power Station. There is little woodland cover (around 3 per cent) but hedgerows and mature field and hedgerow trees are a feature, and many watercourses are fringed with willow or poplar.

The area's internationally important lowland meadows require enhanced management alongside improved care of adjacent land, and its wetland habitats require appropriate hydrological regimes to be secured and an ecological network that is resilient to climate change. Wet grassland and wetland habitats also offer opportunities to manage floodwaters and improve water quality.

Potential growth of urban areas, particularly around Oxford and Swindon, may provide opportunities for creation of significant areas of accessible natural greenspace as part of comprehensive green infrastructure planning.

Rural and urban areas are at high risk of flooding. There are opportunities to slow and store water run-off across the NCA. © Lucy Heath/Natural England

Bluebells at Pinsley Wood. © Alison Muldal/Natural England

Headline Statements of Environmental Opportunity (SEO)

See the **Statements of Environmental Opportunity** section for more details on the headlines listed below.

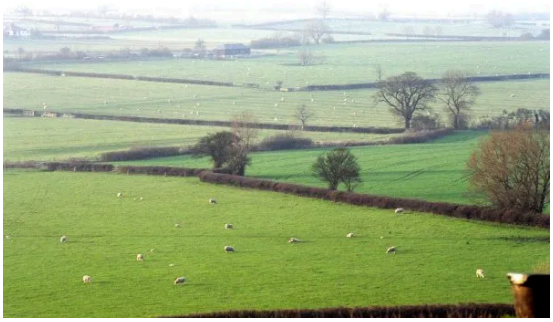
SEO 1

Along the Thames and its tributaries, promote sustainable farming and best practice mineral working in order to conserve and restore seminatural habitats, historic features, geodiversity, soil quality and soil carbon stores and also to regulate water flow in this area and downstream. Ensure conservation of Oxford Meadows Special Area of Conservation and North Meadow and Clattinger Farm Special Area of Conservation. Engage the public in river heritage and maintain traditional land management practices where appropriate.

Sheep grazing by the Thames near Farmoor Reservoir. © Lucy Heath/Natural England

SEO 2

Manage farmland across the Upper Thames Clay Vales to produce food sustainably and to maintain sense of place. Taking a catchment approach, improve filtration of pollutants and regulation of water flow by realising a farmland habitat mosaic that incorporates strategic areas of wet grassland, reedbed, wet woodland and ponds as well as ditches and hedgerows.



The regular field pattern dates back to Parliamentary enclosure. There are nationally important areas of ridge and furrow and frequent hedgerow trees in Buckinghamshire, as shown here. © Ben Hall/rspb-images.com

SEO 3

Ensure that heritage assets, especially characteristic features such as ridge and furrow, abandoned medieval villages, Roman roads, canals and historic parkland, including Blenheim Palace World Heritage Site, are maintained in good condition. Integrate conservation of these features with sustainable food production and provide public access to key examples. Seek opportunities to restore the wider historic setting of a feature, particularly in relation to the historic Royal Hunting Forests of Bernwood, Braydon and Wychwood.

An example of the locally distinctive quarried stone used for domestic architecture at Snowshill, Gloucestershire. © Nick Turner/Cotswolds Conservation Board/Nick Turner

SEO 4

Realise sustainable development that contributes positively to sense of place and built heritage. Ensure adequate greenspace in association with all development and most importantly in growing settlements such as Aylesbury and Swindon. Create and manage greenspace to provide benefits for biodiversity, floodwater management, filtration of pollutants, tranquillity and recreation, and secure strategic access routes between town and country.