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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.

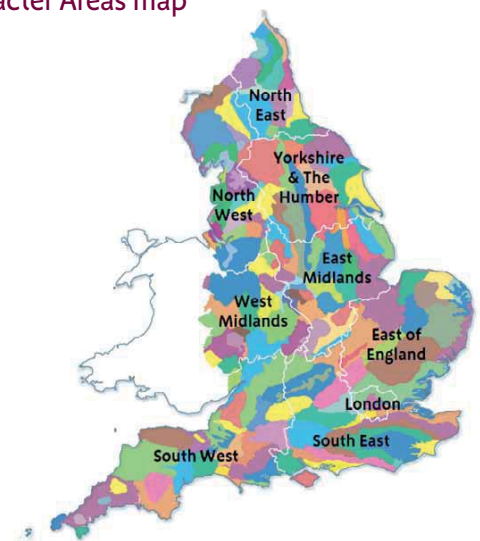
NCA profiles are guidance documents which can help communities to inform their decision-making about the places that they live in and care for. The information they contain will support the planning of conservation initiatives at a landscape scale, inform the delivery of Nature Improvement Areas and 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>)

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Summary

The Midvale Ridge National Character Area (NCA) is a band of hills stretching east-west from the Vale of Aylesbury in Buckinghamshire to Swindon. It is surrounded by the flat lands of the Oxfordshire and Berkshire Downs. It has extensive views across the surrounding countryside. It is a predominantly agricultural area with a mixed arable/pastoral farming landscape. The most important arable crop is wheat. The main towns are Swindon and Oxford, which lies across the centre of the area, but the overall pattern is characterised by small nucleated villages along the valleys. The soils are a mix of heavy red clay and lighter sandy brown earths with small patches of sandy soils.

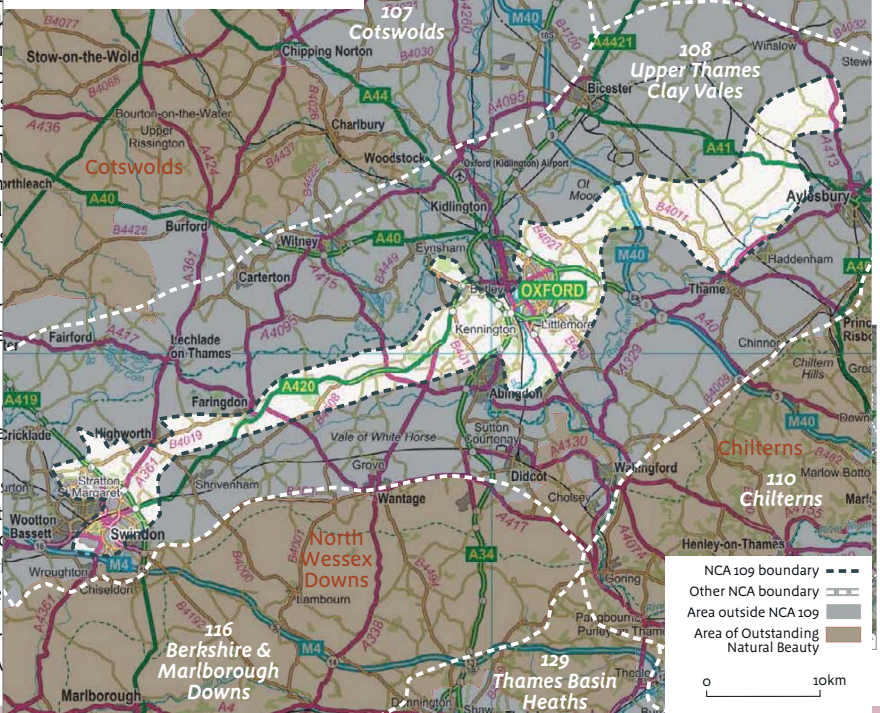
The area is significant for its geological sites and has been a focus of scientific interest since the 19th century. It has yielded fossils of international importance, including the holotypes for several ammonite species and several sponges known only from the Faringdon area.

The unusual geology gives rise to habitats that are uncommon in England, such as calcareous flushes and fens, calcareous heath and narrowleaved marsh orchid, southern damselfly and many species of solitary bees. Although the NCA is small, it is also host to a variety of habitats such as lowland dry acid grassland and acid heath. One of the most important populations of the snakeshead fritillary can be found in the area.

The NCA is notably more wooded in character than the surrounding areas. It has a higher percentage of woodland cover than the Thames Clay Vales NCA with about 9 per cent woodland cover.

National Character Area 109 Midvale Ridge

Note: In most instances, the NCA boundary is not precisely mapped and should be considered as a zone of transition between NCAs.



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* Water for Life and Livelihoods: River Basin Management Plan, Thames River Basin District, Environment Agency (December 2009)

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Statements of Environmental Opportunities:

SEO 1: Maintain the historic environment and cultural character of the Midvale Ridge by ensuring that permitted development is well integrated to preserve local distinctiveness and sense of place and providing green space and recreational opportunities for the health and wellbeing of residents and visitors.

SEO 2: Manage, enhance and expand the valuable semi-natural habitats of the Midvale Ridge such as fens, grassland and calcareous heathland to benefit biodiversity, prevent soil erosion, improve water regulation and quality, support pollinators and protect and enhance wildlife corridors.

SEO 3: Manage and enhance the woodland cover and expand areas of native broadleaved woodland to benefit landscape character and biodiversity, for carbon sequestration, to prevent soil erosion, improve water quality, supply renewable fuel and to provide access and recreation opportunities.

SEO 4: Maintain and enhance the National Character Area's internationally important geological heritage for the educational benefits it provides, its contribution to a sense of place and history and to increase recreational opportunities.



Old clay pits at Brill Common.

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Description

Physical and functional links to other National Character Areas

Midvale Ridge National Character Area (NCA) is completely enclosed by the surrounding Upper Thames Clay Vales NCA and offers wide views across the adjacent countryside from many points. In places it is possible to see the hills of the Chilterns NCA to the south-east, the Berkshire and Marlborough Downs NCA to the south-west and the Cotswolds NCA to the north-west.

At Oxford, the Thames cuts through the ridge to flow south from its source in Gloucestershire on towards Reading and London. The Thame, a tributary of the Thames, flows along the lower reaches of the ridge in the south-eastern half of the area and joins the Thames just south of Dorchester. Much of the ridge functions as a minor aquifer, eventually feeding into the rivers Thames, Thame and Ock, also a tributary of the Thames.⁵

To the east, several major transport links between London, Oxford and the Midlands, including the M40, A40 and the Chiltern Railways line, cross the area. Although part of the city of Oxford lies within the NCA, the historical centre is in the neighbouring Upper Thames Clay Vales NCA. Many of Oxford's most notable buildings, for instance the Radcliffe Camera, are built from stone quarried on the ridge. To the west, the Great Western Community Forest stretches from Royal Wootton Bassett in the Upper Thames Clay Vales NCA to Faringdon.

⁵ Groundwater Quality Review: The Corallian, Environment Agency (April 2004)



Brill Windmill, a popular visitor destination for both local residents and visitors alike.

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Key characteristics

- Low, irregular wooded limestone ridge giving way to a series of isolated steep-sided tabular hills in the east which rise from the surrounding clay vales.
- Contrast between the moderately elevated limestone hills and ridges and the surrounding low-lying clay vales.
- Drained mostly by small springs and streams which run into the Thames, Thame and Ock.
- Well wooded – a third of the woodland is designated ancient woodland.
- Mixed pastoral and arable landscape with large, geometric fields divided by hedges and regularly spaced hedgerow trees punctuated by blocks of woodland.
- Fragmented but rare and important semi-natural habitats, including acid grassland, calcareous fens and flushes, wet woodland and calcareous grass heaths particularly around Frilford and Cothill.
- Evidence of previous land use such as iron-age and Romano-British settlements and ridge and furrow through to old quarries still visible in the landscape.
- Locally quarried limestone commonly used as building material for local houses.
- Settlement pattern of nucleated villages on the hill tops and along the springline with low density of dispersed settlement.
- Recreational opportunities include the Thames Path National Trail.



Southern damselfly at Cothill Fen SSSI, one of the many rare invertebrates found there.

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The Midvale Ridge today

The Midvale Ridge is a low-lying, irregular outcrop of limestone rising as a distinctive feature above the surrounding flat clay vales, running westwards from the Vale of Aylesbury to Swindon. Tabular hills at its eastern end give way to a thin ridge that in some places is low and narrow, but in others stands out as a striking feature. In all directions there are sweeping views across the adjacent countryside.

The Thames cuts a steep valley at Oxford to flow south across the ridge and the Thame flows along its south-east edge. Springs and streams rising on the ridge drain into the rivers Ock and Thame. The bedrock of the NCA is very porous and much of the ridge is a minor aquifer.

The area is mainly agricultural and the landscape is one of arable fields or pasture interspersed with woodland and many small settlements. Fields are generally large and rectilinear, mostly resulting from late 18th- and 19th-century enclosure and re-organisation as well as later agricultural changes, with boundaries of hedgerows and regularly spaced hedgerow trees. A mix of heavy rendzinas, stagnogleys and lighter sandy brown earths with small areas of sandy soils form the main soil types.

The ridge has good tree cover. On moister soils, particularly around Oxford, ash, oak, hazel and field maple are common. Elsewhere, on the drier soils across the ridge, the characteristic tree types are oak and birch with significant plantations of conifers. To the east of Oxford lies Shabbington Wood, the largest surviving remnants of the former Royal Forest of Bernwood, important for the rare black hairstreak butterfly. While significant parts were managed as conifer plantations, most are now being managed to gradually return them



13th-century Great Barn at Great Coxwell owned by the National Trust.

to predominantly broadleaved woodland. Around Swindon, several new plantations of woodland have been established as part of the Great Western Community Forest project, one of 12 Community Forest projects set up across the country with the aim of regenerating areas of land in the urban fringe for recreation, biodiversity, forestry and socio-economic benefits.

On the lower slopes, where the permeable limestone meets the impermeable clay of the surrounding clay vales, water percolating through the limestone emerges in a series of springs and flushes. These support several large fens which are home to a number of rare plant and invertebrate species such as the

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narrowleaved marsh orchid and the southern damselfly – both nationally rare. The largest fen, Cothill Fen, has been designated a Special Area of Conservation (SAC) for its alkaline fen vegetation.

To the south-west of Oxford, around Frilford and Cothill, are areas of calcareous grassy heaths comprising one of the most characteristic and important semi-natural habitats of the Midvale Ridge. These were once more extensive but are now greatly diminished and fragmented in character but still provide a home for several rare species of solitary bees including the girdled mining bee and the six-banded nomad bee as well as uncommon plant species such as the grass of Parnassus. Although small, the NCA is host to other areas of uncommon habitat including dry acid grassland and the only area of heathland known in Oxfordshire.

Hill top villages are a distinctive feature of the ridge. They are often clustered round a village green and are linked by small sunken lanes enclosed by low hedges. To the east, houses are built of the local limestone or sometimes red brick and timber frame with thatch or tiled roofs. In contrast, to the west houses are typically of local limestone, either Cornbrash or Corallian, with stone slate roofs. Settlements have also grown up along springlines. Isolated farmsteads mostly result from late enclosure.

The past is reflected in the landscape with the remains of Roman settlements still visible and the nationally important examples of ridge and furrow ploughing at Ashendon, Dorton, Quainton and North Marston. Windmills are a characteristic feature of the area and can be found throughout the ridge top.

Notable buildings include the barn at Great Coxwell, built at the height of the arable expansion and population growth of the 13th century, and the 19th-

century manor house at Waddesdon designed by the French architect Gabriel-Hippolyte Destailleur.

The Landscape through time

The Midvale Ridge was laid down mainly during the Upper Jurassic, about 157–146 million years ago, when sands and limestones were deposited in what was then an area of coral reefs in a shallow tropical sea. Fossils found locally are evidence for an abundance of marine life in the area at that time, including many species of ammonites and marine reptiles such as plesiosaurs and ichthyosaurs. Over time the softer clay of the surrounding Upper Thames Clay Vales NCA eroded more quickly than the limestone of the ridge, leaving it today as a prominent feature. Watercourses have since laid down layers of clays, silts, sands and gravels and small areas of peat developed around the fens.

Evidence for the first significant occupation of the area during the Bronze Age is seen, for instance, in possible bronze-age round barrows found across the area, including those at Buckland. Occupation continued into the Iron Age and the Romano-British period with settlements such as the Romano-British temple complex, villa and amphitheatre at Frilford,

Oxford first developed during the Anglo-Saxon period as a fording place. From the 6th to 9th centuries the area was disputed between the Anglo-Saxon kingdoms of Mercia and Wessex with the Thames eventually forming the boundary between the two. In the early 10th century, the town was fortified to resist the attacks of Danish invaders, becoming part of the burh system established to defend Wessex.⁶ From the 13th century onwards, the university colleges were established and Oxford's international reputation as a place of learning grew.

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⁶ *A History of the County of Oxford: Volume 4 - The City of Oxford*, Alan Crossley and C.R. Elrington (eds), Victoria County History (1979)

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Throughout the region in the Middle Ages the open field system of agriculture was widespread and ridge-and-furrow earthworks can still be seen, particularly in the eastern half of the region. Enclosures and reorganisation of farmland during the 18th and 19th centuries saw the introduction of large regular fields. The area is described in Domesday Book as being well forested but in a national context the extent of woodland cover was probably low at that time. Bernwood Forest, remnants of which are still extant in the eastern half of the NCA, was a popular hunting spot for Anglo-Saxon royalty and following the Norman Conquest attained the status of a Royal Forest. The area subject to forest law was reduced over time and Bernwood Forest finally lost its legal status in 1632. The removal of legal protection also saw the reduction in forest cover.⁷ A number of windmills, such as that at Brill, provide distinctive landmarks throughout the area.

Industry has also played an important part in the area's history. The clay deposits at Brill provided the material for a pottery, brick-making and tile industry.⁸ Corallian Limestone was quarried at Wheatley from the 12th century and at Headington from the 15th century. In the 16th and mid-17th centuries, Oxford was famous for its tanning and woollen industries. In 1624, an Act of Parliament allowed navigation to be improved on the Thames between Burcote and Oxford and by 1790 the Oxford Canal was opened, linking the city to the rest of the canal network. During the 19th century, Oxford developed as a centre for light engineering, particularly for agricultural tools. The first steam rollers and ploughs were invented by John Allen of Oxford. The association with engineering continued with the founding of Morris Motors at Cowley in the early 20th century. The motor industry continued to be an important employer.⁹

Prior to the 19th century, Swindon had been a small market town. It was boosted by the opening of the Wiltshire and Berkshire Canal in 1810 and the North Wiltshire Canal in 1819 but the arrival of the Great Western Railway in 1840 and the



Views across to the Chilterns AONB near Ashendon.

subsequent decision to site the company's works there provided a spur for rapid growth. Until the early 20th century, it remained the city's largest employer.¹⁰

The M40 was constructed between 1967 and 1974, later being extended to link London and Birmingham.

⁷ Buckinghamshire County Council website (URL: http://apps.bucksc.gov.uk/eforms/medieval_life/history1.htm)

⁸ Brill: Historic Town Assessment Report, Consultation Draft, English Heritage (undated)

⁹ *A History of the County of Oxford: Volume 4 - The City of Oxford*, Alan Crossley and C.R. Elrington (eds), Victoria County History (1979)

¹⁰ *A History of the County of Wiltshire: Volume 9*, Elizabeth Crittall (ed.), Victoria County History (1970)

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Ecosystem Services

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

Provisioning services (food, fibre and water supply)

- **Food provision:** The Midvale Ridge supports a mixed pastoral/arable (mostly cereals and oil seed rape) farming system. It has historically been considered a good grain-growing area and today cereals are still the main arable produce. Sheep are the most important livestock.
- **Water availability:** The main rivers are the Thames and the Thame, but for most of its potable water the NCA is dependent on supplies from neighbouring areas including the Upper Thames Clay Vales NCA, for instance from Farmoor Reservoir. Much of the ridge is underlain by a minor aquifer and groundwater is important for supplying the fens and flushes which are notable features of the area. The rivers and groundwater within the NCA are not deemed to be over-abstracted, although the Thames catchment area as a whole is in deficit due to the shortage of supply for London in dry years.

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

- **Regulating soil erosion:** More than a third of the NCA is covered by shallow, lighter and freely draining lime-rich and slightly acid soils which are at risk

of both wind- and water-borne erosion, particularly where the ground is subject to continuous arable cultivation.

- **Regulating soil quality:** The heavier loamy and clayey soils which cover nearly half of the area are liable to compaction when wet. The far eastern end of the NCA, around Oving and North Marston, is in the Upper Ouse Catchment Sensitive Farming Programme area. This has the aim of improving the water quality of the Ouse (in the nearby Bedfordshire and Cambridgeshire Claylands NCA).
- **Regulating water quality:** Groundwater quality in the north-eastern half of the NCA meets the target for good chemical status under the Water Framework Directive, but in the south-western half it fails to meet this standard. The ecological status of the rivers in the NCA (which include part of the Thame, Thames and some tributaries) varies between poor and moderate as assessed under the Water Framework Directive. High phosphate levels are the main reason for this.¹¹ The entire NCA is within a nitrate vulnerable zone designated to protect groundwater and surface water for public water supply.¹²

Cultural services (inspiration, education and wellbeing)

- **Sense of place/inspiration:** Although the NCA is surrounded by the Upper Thames Clay Vales NCA and has many links with it, it maintains its own character. Its elevation allows wide views across the flatter surrounding countryside to the hills of the Chilterns Area of Outstanding Natural Beauty (AONB) and the Cotswolds AONB beyond. The past use of the landscape, such as the quarries at Headington and the kilns at Brill, is also evident across the NCA. It has a characteristic vernacular architecture with some buildings constructed from locally quarried stone.

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¹¹ *Water for Life and Livelihoods: River Basin Management Plan, Thames River Basin District*, Environment Agency (December 2009)

¹² *Groundwater Quality Review: The Corallian*, Environment Agency (April 2004)

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- **Sense of history:** This is provided by the evidence for medieval and earlier settlement and land use from ridge and furrow to iron-age hill forts and the rich vernacular architecture.
- **Recreation:** There are some good recreational opportunities on offer within the NCA with a range of access routes enabling visitors to explore the countryside as well as allowing residents to enjoy green spaces near where they live. However, in some parts of the NCA, such as the city of Oxford, green space is limited. The Thames Path National Trail runs through the NCA near Oxford and is well connected with other local walking routes; open access woodland is available at Shabbington Woods further east along the ridge; and there are several small but interesting nature reserves with high geological and biological interest in the vicinity of Oxford. There are also two large country parks for people to enjoy: Shotover in Oxford and Stanton Park in Swindon
- **Biodiversity:** Although only 2 per cent of the NCA is designated as a Site of Special Scientific Interest for its biodiversity interest, the NCA hosts a number of rare and important habitats including calcareous fens, calcareous heath, calcareous grassland, ancient woodland and acid grassland. The snakeshead fritillary enjoys one of its last strongholds here as does the black hairstreak butterfly. A third of the area's woodland is designated as ancient and supports important populations of uncommon and rare butterflies. There is one European designated site, Cothill Fen SAC, part of which is also a National Nature Reserve.
- **Geodiversity:** The Midvale Ridge is extremely geologically important with 16 nationally designated sites and 14 Local Geological Sites. It has provided stratigraphic evidence for the geological history of the region showing that



Volunteers cleaning a rockface at Dry Sandford Pits SSSI.

during the Jurassic it was covered by a shallow tropical sea. Noteworthy fossils of international importance, including the holotypes for several ammonite species and prehistoric sponges, have been found here. The local limestone has been used as a source of building material since the Middle Ages, providing the stone for some of the Oxford colleges.

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