The Midvale Ridge National Character Area (NCA) is a band of low-lying limestone hills stretching east-west from the Vale of Aylesbury in Buckinghamshire to Swindon. It is surrounded by the flat lands of the Oxfordshire clay vales, giving extensive views across the surrounding countryside. It is a predominantly agricultural area with a mixed arable/pastoral farming landscape, cereals being the most important arable crop. The main towns are Swindon, at the western end, and Oxford, which lies across the centre of the area, but otherwise the settlement pattern is characterised by small nucleated villages along the top of the ridge and along the springline. The soils types are a mix of heavy rendzinas, stagnogleys and lighter sandy brown earths with small patches of sandy soils.

© Buckinghamshire County Council

Summary and Headline Statements of Environmental Opportunity

Summary of the National Character Area,

© Sarah Wright/Natural England

Context Map

Interactive map that provides context to the National Character Area and its surrounds.

© Sarah Wright/Natural England

Key Characteristics

A list of the key characteristics of the National Character Area, which includes both natural and

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National Character Area 109

Midvale Ridge - Summary and Headline Statements of Environmental Opportunity

Summary

The Midvale Ridge National Character Area (NCA) is a band of low-lying limestone hills stretching east-west from the Vale of Aylesbury in Buckinghamshire to Swindon. It is surrounded by the flat lands of the Oxfordshire clay vales, giving extensive views across the surrounding countryside. It is a predominantly agricultural area with a mixed arable/pastoral farming landscape, cereals being the most important arable crop. The main towns are Swindon, at the western end, and Oxford, which lies across the centre of the area, but otherwise the settlement pattern is characterised by small nucleated villages along the top of the ridge and along the springline. The soils types are a mix of heavy rendzinas, stagnogleys and lighter sandy brown earths with small patches of sandy soils.

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

The unusual geology gives rise to habitats that are uncommon in the south of England, such as calcareous flushes and fens, calcareous heath and calcareous grassland. These in turn support a variety of rare plants and invertebrates. The narrowleaved marsh orchid, southern damselfly and many scarce wetland flies can be found in the wetlands while the heathland is home to several species of solitary bees. Although the NCA is small, it is also host to other key habitats such as lowland dry acid grassland and acid heath. One of the largest remaining populations of the snakeshead fritillary can be found in the area.

The NCA is notably more wooded in character than the surrounding Upper Thames Clay Vales NCA with about 9 per cent woodland coverage. To the north- east of Oxford lies Shabbington Wood, the largest remnant of the former Royal Forest of Bernwood, which supports an important population of the nationally rare black hairstreak butterfly. Today, about a third of the woodland in the NCA is designated as ancient woodland.

Evidence of previous land use is still clearly visible across the area from iron-age and Romano-British settlements and nationally important examples of ridge and furrow to the remains of quarries. The continued expansion of Swindon and Oxford will present challenges for preserving the landscape character and biodiversity of the ridge but also opportunities for improving the provision of green infrastructure and access. The NCA is dependent for potable water on neighbouring areas such as the Upper Thames Clay Vales NCA4 and it is expected that, with increasing population, demand will become more acute. Changes in agriculture and continued

mineral extraction are also likely to intensify pressure on the area's soil, water and biodiversity resources.

There are many opportunities for recreation within Oxford itself, the Thames Path National Trail passes through the NCA and two national cycle routes cross the ridge. Some 29 per cent of the NCA is designated as greenbelt around the edge of Oxford. Water for Life and Livelihoods: River Basin Management Plan, Thames River Basin District, Environment Agency (December 2009)

Grassland on old clay pits at Brill Common. © Buckinghamshire County Council

Headline Statements of Environmental Opportunity (SEO)

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

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.

Grass of Parnassus at Frilford Heath. © Judy Webb

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.

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National Character Area 109

Midvale Ridge - 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.

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

Brill Windmill, a popular visitor destination for both local residents and visitors alike. © Buckinghamshire County Council

Southern damselfly at Cothill Fen SSSI, one of the many rare invertebrates found there © Judy Webb

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 19thcentury 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.

13th-century Great Barn at Great Coxwell owned by the National Trust. © Sarah Wright/Natural England

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 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 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.

13th-century Great Barn at Great Coxwell owned by the National Trust. © Sarah Wright/Natural England

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.

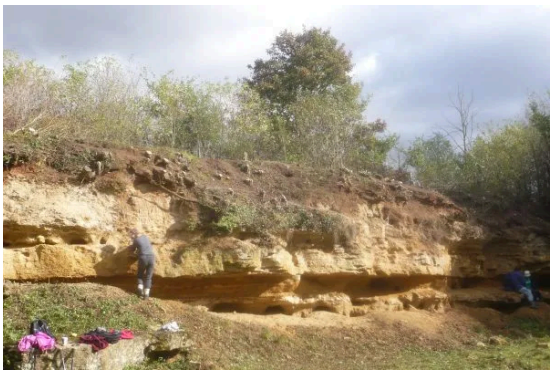
Brougham Castle and the River Eamont, near Penrith, one of several Eden Valley castles restored by Lady Anne Clifford during the 17th Century. © Susannah England/Natural England

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,



Volunteers cleaning a rockface at Dry Sandford Pits SSSI. © Alison Muldal/Natural England

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. From the 13th century onwards, the university colleges were established and Oxford's international reputation as a place of learning grew.

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.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.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.

A field of cattle with views across to the Chilterns AONB near Ashendon. © Sarah Wright/Natural England

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 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.

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

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

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

Brill: Historic Town Assessment Report, Consultation Draft, English Heritage (undated) A History of the County of Oxford: Volume 4 – The City of Oxford, Alan Crossley and C.R. Elrington (eds), Victoria County History (1979)

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

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NATURAL ENGLAND

National Character Area 109

Midvale Ridge - 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.

National Character Area 109

Midvale Ridge - Landscape Change

Monitoring Landscape Change

Drivers for change

The Midvale Ridge is a band of low-lying limestone hills that is a predominantly agricultural area with a mixed arable/pastoral farming landscape, areas of woodland and calcareous land. Drier summers and wetter winters, could increase the susceptibility of the fenlands and other to drought or diminution of water quality from pollution run-off due to intense rainfall. Development pressure around Swindon and Oxford into the peri-urban area will threaten the current character of the area and associated habitats.

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.

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:

Mixed change, mainly improving

Excel CSV Copy

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	Declining
SLO2	Conserve and enhance our priority habitats for their contribution to landscape character and quality (including natural/cultural values).	Neutral	Little change
SLO3	Improve the ecological condition of rivers and canals as important landscape features including habitats, connectivity and cultural significance.	Poor	Strongly improving
SLO4	Conserve and enhance our heritage assets for their physical and cultural contribution to landscape/waterscape character and quality.	Good	Little change

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SLO Code	Super Landscape Objective	Provisio… Status	Change Trend
SLO5	Ensure that agri-environment schemes are contributing positively to landscape and waterscape character.	Poor	Little change
SLO6	Conserve and enhance the field boundary features and patterns that characterise our varied landscapes.	Good	Little change
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	Little change
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.	Poor	Little change
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.	Neutral	Little change
SLO14	Conserve and enhance the characteristic and historic patterns of woodland, grassland and pasture.	Good	Little change

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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.	Poor	Strongly improving
SLO33	Enhance and protect the estuarine and floodplain grazing marsh and semi-natural grasslands as characteristic features strengthening sense of place.	Neutral	Strongly declining

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.

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National Character Area 109

Midvale Ridge - Analysis: Landscape Attributes & Opportunities

Analysis supporting Statements of Environmental Opportunity

The following analysis section focuses on the landscape attributes and opportunities for this NCA.

Further analysis on ecosytem services for this NCA is contained in the Analysis: Ecosytem Services section.

Landscape attributes

Long thin ridge with great variation in geology and biodiversity and extensive views across the neighbouring clay vales.

Justification for selection:

- Sweeping views across the surrounding flatter countryside.

Rich geodiversity, the result of deposition of limestone and sandstones particularly during the Upper Jurassic.

Justification for selection:

- Nationally and internationally important sites for fossils, such as at Wicklesham and Coxwell Pits with some assemblages, such as the sponges at Great Coxwell known only from this area.
- Provides stratigraphic evidence for the geological history of the region.
- Local quarries provided some of the building stone for Oxford's historic city centre.

Ancient semi-natural woodland with patches of wet woodland.

Justification for selection:

- 3 per cent of the area and 33 per cent of the total woodland resource is designated ancient woodland.
- Woodland stock includes patches of wet woodland, a valuable wildlife habitat.
- The former royal hunting forest of Bernwood is mentioned in Domesday Book.

Fragmented but important and unusual semi- natural habitats including acid grassland, calcareous grassland, calcareous heath and calcareous fens.

Justification for selection:

- Possibly the most important region in southern England for calcareous fens with an associated assemblage of rare plants and insects.

Distinctive settlement pattern of hill top and springline villages.

Justification for selection:

- Buildings are often made from locally quarried stone and are typically grouped around a village green.

Historical landscape.

Justification for selection:

- Ridge and furrow particularly in the eastern half of the region.
- Romano-British settlement remains.
- Historic parklands.
- Past industrial use of the landscape such as quarrying or brick kilns at Brill.

Landscape opportunities

- Maintain, restore and consolidate areas of semi-natural grasslands that have an Conserve and promote the area's geological heritage including designated sites and abandoned quarry sites where appropriate.
- Protect the historic environment of the area including the nationally important remnants of ridge and furrow, Romano-British remains, remnants of the local industry such as brick making at Brill, the historic parklands, historic buildings such as the windmills.

- Protect and appropriately manage calcareous grassland, calcareous heathland, ancient woodland sites (in particular wet woodland and moist ash woodland) and calcareous flushes and plan to link fragmented habitat wherever possible through new habitat creation.
- Manage large-scale development impacts (where possible obtaining improvements to biodiversity, access and greenspace) so that the structure of the area is maintained and the impacts of development on tranquillity and the landscape quality of the area are maintained.
- Conserve the character of the villages by using local materials in building or repairs and maintain the network of sunken lanes.