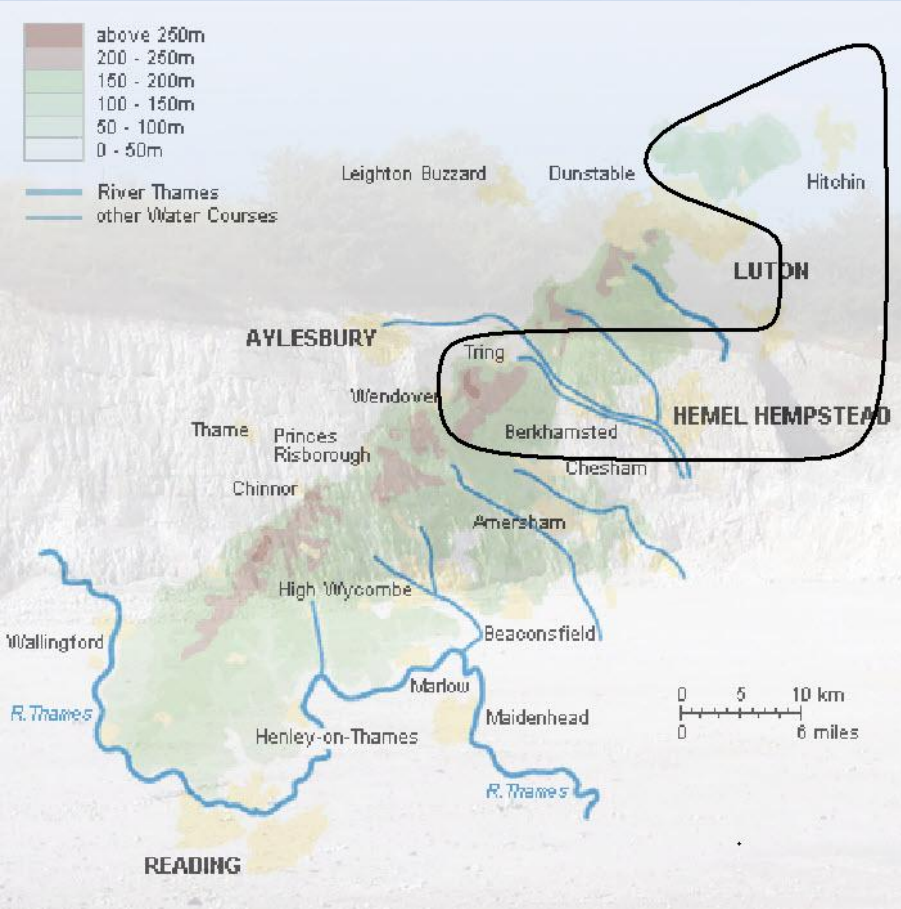
Livelihoods from Chalk

in the Hertfordshire Chilterns

Hertfordshire Geological Society



From Tring to Royston, the Chalk forms the highest land in Hertfordshire, part of it in the Chilterns Area of Outstanding Natural Beauty. The striking Chilterns landscapes are rich in wildlife, history and archaeology, with rare glimpses of a once widespread industrial past.

For those wanting to get away from the roads and hustle and bustle of modern life, numerous lanes, bridleways and footpaths cross the hills and valleys. Alternatively a more bracing route can be taken along the Icknield Way, which follows the northern scarp slope.

Today's diverse landscapes are the direct result of the underlying geology and its exploitation by people in past and present times. Springs, chalk streams, ancient woodland and chalk downland are some of the many diverse habitats based upon geology and land use. Traditional hilltop woodlands and heaths occupy clay soils and gravels, whereas scented downlands, beech hangers and arable crops occur mainly on the scarp slope and valley sides, with the most extensive agriculture on the valley floors.

Historically, the pattern of towns and villages was closely related to the landscape and our use of it. Local building resources are clearly evident in brick and flint walls, timber-framed barns and ornate churches.

This leaflet describes some of the past and present livelihoods of the Chiltern Hills dependent on the Chalk, the flint nodules it contains and the region's superficial deposits and soils.

The Chilterns — An Area of Outstanding Natural Beauty

The Past…..

People have been living across the Chilterns since at least 400,000 years ago, exploiting flint to make crude tools.

Lower Palaeolithic handaxe from Hitchin.

Image courtesy of St Albans Museum Service

Prehistoric living…… Palaeolithic flint handaxes have been found in Colne Valley gravels at Rickmansworth and at various sites in the Mimram and Lea Valleys. They are also scattered across the Chiltern plateau, and lake deposits dated to this period at Hitchin are an especially rich source of these multipurpose tools. Hunting campsites dating from 35,000-25,000 years ago are indicated by delicate leaf-shaped blades found in the Lower Lea valley near Broxbourne.

Neolithic long barrow, Therfield Heath.

Image courtesy of John Catt

The much smaller flint blades of the Mesolithic period (11,500-6500 years ago), known as microliths, are also widely distributed across the land surface, especially in the Ver, Colne and Lower Lea Valleys. During the Neolithic period (6500-4200 years ago) the Chilterns mixed oak woodlands were partly cleared with the help of flint axeheads, to allow agricultural use of the land. Dead chieftains were buried in long barrows on Therfield Heath, Knocking Knoll and sites near Ashwell, Offley and Wheathampstead.

In the Bronze Age (4200-2800 years ago) burials were in round barrows, of which there were at least 600 in Hertfordshire, although most have been erased by modern soil cultivation. Many occur in groups along the Icknield Way, which originated as a trackway along the Chiltern chalk scarp. Bronze Age field systems have been traced along the Gade, Colne and Ver Valleys, and hillforts, such as Arbury Banks, Wilbury Hill and Ravensburgh Castle, were constructed along the scarp.

Mining and Quarrying……Flint has been mined in Hertfordshire since the Neolithic. Roman chalk mines and quarries are also known, and since the Mediaeval period chalk has been widely used for making agricultural lime, mortar, bricks and tiles. Although much was obtained from surface excavations, over 100 subsurface mining cavities up to 200 years old are known throughout the county. When mining ceased, the entrances to vertical shafts were inadequately capped and recorded, so they have since caused subsidence problems in urban areas, including Hemel Hempstead, Hatfield and Stevenage.

Working face, Codicote Chalk Quarry; last working chalk quarry in Hertfordshire.

Image courtesy of Haydon Bailey.

Into the early 20th century gangs of itinerant ‘chalk-drawers’ worked throughout the Chilterns, mining chalk from shafts up to 10 m deep. They were paid to spread the chalk over fields with acidic clay soils. Subsequent collapse of the partially refilled shafts has created ‘dell-holes’ visible in many fields.

Other historical uses of chalk include foundations for buildings and roads, and when the rock was ground to a fine powder it was used for cement making, wall plaster and as whiting (filler) in paints, putty, plastics, cables, toothpaste, drugs, flour and other foods. Whiting from chalk mines was also used in the manufacture of paper at John Dickinson’s mills at Apsley, Croxley and Nash Mills near Hemel Hempstead.

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Present .....

Paleoargillic brown earth, Clay with flints over chalk.
Image courtesy of John Catt

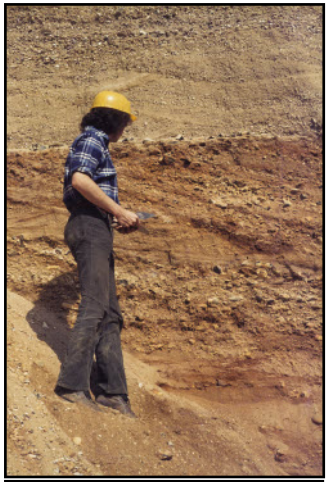
Agriculture ..... The distribution of various superficial deposits and soil types overlying the Chalk has determined different styles of agriculture.

The thin chalk soils (rendzinas) occurring on the steep scarp and valley slopes are alkaline and often low in nutrients, but have a good water-supplying capacity. They are best suited to pasture or cereals, though the vineyard at Frithsden is also sited on these soils, which resemble those of the Champagne region of France.

The clayey and often flinty soils on the Chiltern plateau (paleoargillic brown earths) are naturally acidic and need liming every few years. Some are poorly drained, so cultivation is restricted in wet springs. Flints also cause farm implements and tyres to wear rapidly. These soils are best suited to woodland or autumn-sown cereals.

On the valley floors the soils (mainly brown calcareous earths) are better drained and more silty and drought-resistant, so they are suited to a wider range of crops. However, the alluvial soils close to streams are too wet for most arable crops. Since the mid-19th century they have provided numerous watercress beds, though only two in the Mimram valley are still active.

Brickmaking..... Brickearth has been dug from various plateau sites where ancient sinkholes have been filled with windblown silt (loess). It is suitable for brickmaking because it is usually free of flints, though at some sites (e.g. Gaddesden Row, Kensworth) Palaeolithic flint handaxes and refitting flakes suggest that the sinkholes were used for Palaeolithic flint-knapping. The only sites still in use are near Bovingdon.



Chalky glacial gravel over proto-Thames gravels, Westmill Pit.
Image courtesy of John Catt

Gravels..... Used for aggregate, the sands and gravels were mainly deposited by the Thames when this flowed through Hertfordshire during cold stages of the Pleistocene. Others are glacial outwash deposits, and at Little Heath near Berkhamsted a small patch of Pliocene marine beach gravels was worked during World War I. Over the last century there have been at least 200 gravel pits in Hertfordshire, but only four remain active today.

Water supply..... Almost all of Hertfordshire's water supply comes from the Chalk aquifer. Springs supplying streams occur along the valley floors and near the foot of the Chiltern scarp. Some (e.g. St John's Well at Berkhamsted) were used medicinally, and the Chadwell and Amwell Springs near Ware were a major source of clean water for London from 1613 until the early 20th century. Boreholes to extract underground water are most productive where they penetrate zones of enlarged fissures, such as beneath valley floors and above marl bands in the Chalk.

Temporarily flooded swallow hole in Hertfordshire Bourne Valley.
Image courtesy of Haydon Bailey

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And the Future …..

The Hertfordshire Chilterns will continue to be important for farming, forestry, water supply and leisure. The damaging extractive industries of the past are long gone, though evidence for them is still preserved in old chalk quarries and gravel pits. Many of these have served as landfill sites. Most were well restored, but some were not and may threaten pollution of the Chalk aquifer for many decades to come.

Woodlands will continue to occupy much of the landscape, though there is a trend towards replanting with native species for their amenity value and to increase biodiversity. Arable crops typical of southern Europe, such as maize and sunflowers, will probably increase in response to future climate change. Also, new fast growing energy crops, such as willow and elephant grass, will probably be grown to replace fossil fuels.

But above all the future of the Chilterns lies in leisure and tourism, which demands careful landscape conservation and improvement. The Hertfordshire Geological Society is working with local partners to promote correct use of the Chalk landscape, and to preserve those quarries, pits and geomorphological features important for demonstrating the county's geological heritage.

Watercress beds near Kimpton Mill, Mimram Valley
Image courtesy of John Catt

Flaunden chalk Quarry, partially backfilled for agriculture.
Image courtesy of Haydon Bailey

The Hertfordshire Geological Society aims to promote and look after the geological heritage of the Chilterns and, in doing so, promotes and looks after the many features and wildlife that rely on that geology. There are walks and geological sites accessible to the public and details of many may be found on the society's website: www.hertsgeolsoc.ology.org.uk Sites are maintained by volunteers and we are always looking for more helping hands, so please contact us for details. When visiting the countryside please remember to leave only footprints and take only photographs.

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