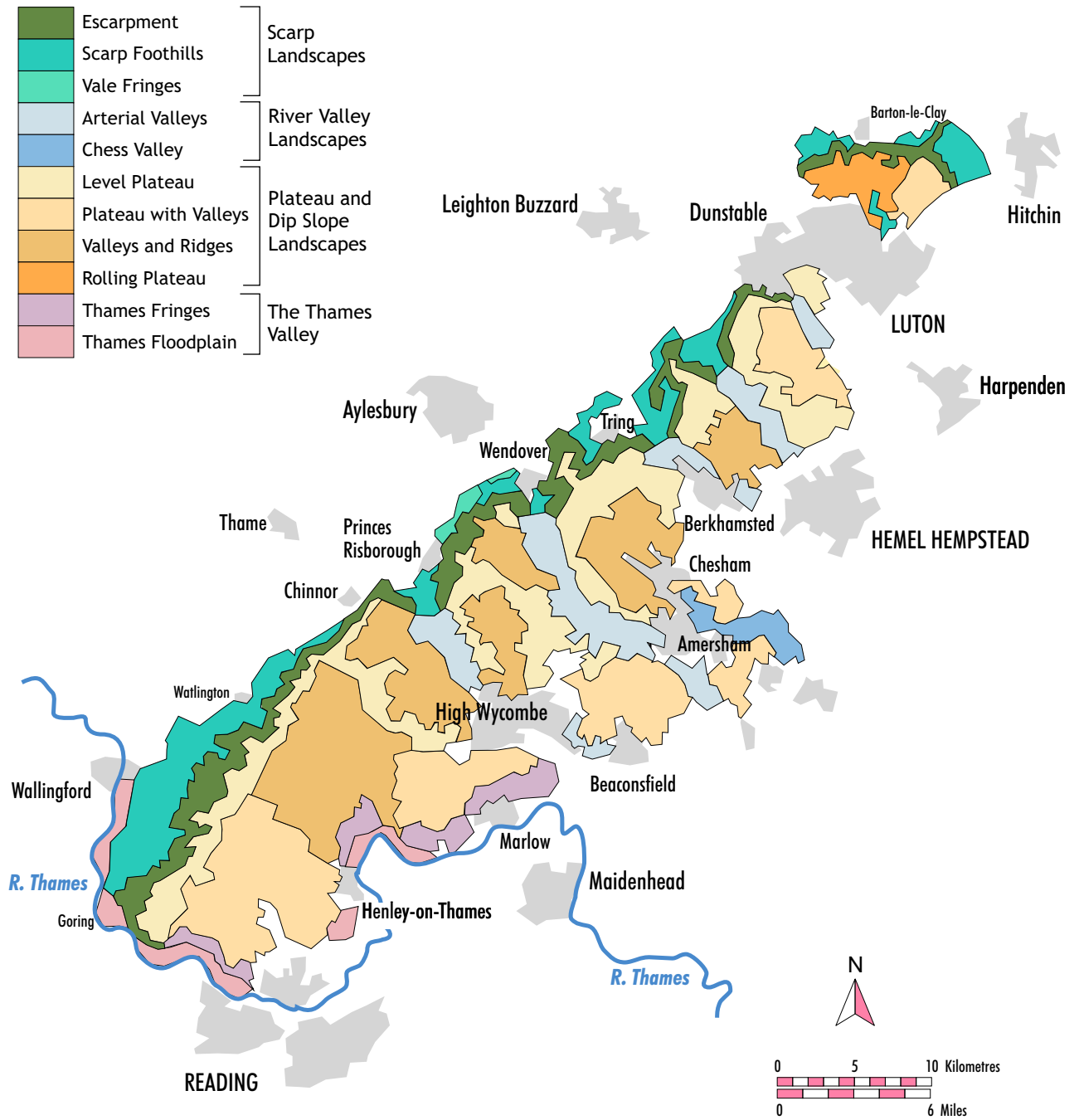


Landscape character



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Landscape

Introduction

*Dawn at
Ivinghoe Beacon*



1. The landscape of the Chiltern Hills is defined by the chalk escarpment which runs from Goring-on-Thames north-eastwards to Hitchin - a distance of 50 miles. At its highest point, near Wendover, it reaches nearly 900 feet. The steep scarp slope faces to the north west; the dip slope appears more like a plateau, gently shelving to the south east, incised by shallow valleys, some with chalk streams flowing to the River Colne and River Thames.¹ To the south and west it is the Thames Valley which provides a natural boundary.
2. Whilst all of the Chiltern Hills are within a single National Character Area (No.110)² as defined by Natural England, not all of the Chiltern Hills have been designated as an Area of Outstanding Natural Beauty. A central core deemed to contain the finest landscape and which best exhibits the Chilterns landscape character is currently within the AONB. However, in several places the Chilterns landscape extends beyond the area currently designated as AONB and there may be a case for re-considering whether some of this landscape should also be designated.
3. On a global scale chalk is a rare form of geology, laid down during the Cretaceous Era (65 - 100 million years ago), and is most commonly found in the south and east of England and north-west France, but almost nowhere else. The Chilterns shares many characteristics with other chalk landscapes in the Surrey Hills, North and South Downs, North Wessex Downs, Wiltshire and beyond into Dorset. A large proportion of these special landscapes have been designated as either Areas of Outstanding Natural Beauty or National Parks.

¹ *The Chilterns Landscape: Countryside Commission CCP392 1992*

² *National Character Area Profile: 110 Chilterns (Natural England 2013)*

4. Chalk is an unseen geology with few natural outcrops and is generally only exposed in quarries, now largely redundant. It was little used for construction, except in the manufacture of cement, and only the relatively hard forms of chalk known as Totternhoe Stone and Clunch were used in local buildings.
5. The landscape is a combination of the landform created by underlying chalk and the land uses and buildings on its surface, which owe more to the clay and flint which overlie it. The heavy clay soils support extensive woodland cover and mixed farming on mostly medium quality (Grade 3) land. There are also deposits of fire clay, suitable for commercial brickmaking, and flint which lends such distinction to all forms of building from churches to cottages.
6. The landscape has largely been shaped by farmers and foresters and remains an ancient landscape with features from many ages. Even today, field and hedgerow patterns can be traced back many centuries as can most of the lanes, woodland banks and parish boundaries.
7. It is a landscape of many hidden quarters, of enclosures and surprise views, of dark beech woods and open downland. It is its variety and timelessness which give it such charm and places such a premium on maintaining those special qualities.
8. Climate change will result in some significant changes to the landscape by changing habitats and land uses, but over a relatively long timescale with few noticeable changes in the short term. Over a period of 50 years or more the most noticeable changes are likely to be an altered species composition of woodland with less beech and a greater variety of arable crops better suited to warmer conditions. Those qualities which make the Chilterns a landscape of national importance today will almost certainly persist.
9. The attractiveness of the Chilterns landscape, the proximity of London and several large towns and the high level of accessibility of the countryside have made the Chilterns one of the most visited areas in the UK, possibly Europe. And yet the intimate enclosed nature of much of the landscape and the large number of places with public access have spread the visitor pressure, enabling it to absorb that level of use without suffering from the problems of degradation and erosion that other well-visited landscapes commonly suffer from.
10. There is no single Landscape Character Assessment (LCA) for the Chilterns AONB. The whole of the AONB is covered by a number of county- and district-based LCAs which have been undertaken over a period of 15 years, using a similar specification, but not always identical.

Broad Aims

- Conserve and enhance the outstanding qualities of the Area of Outstanding Natural Beauty as part of the national landscape heritage.
- Maintain those features which make a significant contribution to the character and quality of the area and to regional and local distinctiveness.
- Enhance and restore those parts of the landscape which are degraded or in decline.
- Enhance the level of awareness of what makes the Chilterns landscape special and the desire to care for it.

Special Qualities

1. A dramatic chalk escarpment rising to nearly 900 feet (272 metres) with flower-rich downland and panoramic views. Once extensive, the downland survives in

- smaller fragments and now only covers 1% of the AONB, of which less than half is considered high quality calcareous grassland important for its biodiversity.
2. The main ridge of the escarpment provides fine long views across the lower lying vales to the north and west. To the south, views are more restricted by dense woodland and low-lying ridges.
 3. The underlying chalk ridge is covered by several feet of clay with flints, but along the ridge the chalk lies near the surface and is peppered with quarries, small and large, now largely redundant.
 4. The landscape of the Chilterns is given unity by its escarpment but there are notable local variations. The northern Chilterns are generally more open with larger fields and less woodland, also a characteristic of the southern tip in the area known as the Ipsden prairie. The central and southern Chilterns are dominated by heavily wooded countryside with mixed farming and a large number of scattered villages and hamlets. Along the southern boundary the hills come down to the Thames Valley and the River Thames itself which forms a long and sinuous boundary.
 5. Woodlands, notably beech, cover over 18,000 hectares, nearly 22% of the AONB, making it one of the most wooded landscapes in England. Once the woods were home to bodgers and other woodland workers but today are mainly valued for their amenity, wildlife and as places to visit.
 6. Farmland covers approximately 60% of the Chilterns³, creating a mosaic of fields with arable crops and livestock, bordered by ancient hedgerows and trees. A mix of crops, dairy cattle, sheep and pigs was once commonplace, but grazing of livestock is less prominent now and more land is given over to arable farming.
 7. Chalk landscapes are dry landscapes, but in a few shallow valleys can be found gently-flowing streams, often bordered by pollarded willows and remnants of meadows and former watercress beds, once a common sight and thriving local industry.
 8. The folds of the landscape hide many small dry valleys or coombs with no springs or streams. These places provide hidden 'secret' landscapes and unspoilt countryside.
 9. Commons, heaths and greens are a defining characteristic of the Chilterns landscape covering 2.4% of the landscape (2,016 ha). However, they were once more extensive, and many have been lost to a combination of enclosure, urbanisation and woodland encroachment. Whilst open landscapes tend to be associated with common land, a significant number of Chiltern commons would originally have been woodland or wood pasture.
 10. Over 191 areas of registered common land still provide special landscapes largely untouched by development and modern agriculture. Much of the common land in the Chilterns is in close proximity to towns and villages, providing valued, easily accessible green spaces for local communities. Nearly 10% of the remaining common land in the AONB is ancient woodland.
 11. The Chilterns has an extensive network of ancient routes, roadside hedges and sunken lanes. The Ridgeway (Icknield Way), reputedly the oldest road in the country, is elevated along the entire length of the Chilterns, linking Wessex with East Anglia.
 12. Villages and farmsteads with brick and flint cottages, churches and timber barns are scattered throughout the area. The more ancient settlements tend to nestle alongside streams and rivers or springs at the foot of the escarpment. More recent settlements sprung up on the higher ground, strung along the edge of commons and beside droving routes.
 13. The area boasts a wealth of great houses, follies, parkland and designed

³ *Chilterns Land Use Survey 2010, CCB*

landscapes. Often built and embellished by statesmen and businessmen making their fortune in London, it is a trend which continues to this day. Foremost is the Prime Minister's rural retreat at Chequers near Wendover.

14. The Chilterns is a long settled landscape with relics of many different eras: Bronze Age barrows and fields, Iron Age hillforts, medieval deer enclosures, eighteenth century sawyer pits and chalk figures carved in unknown times.

Key Issues

There are many factors affecting the landscape and how it is managed. Often the causes of change are complex and the trends uncertain. The scale and variety of the Chilterns landscape means that trends and issues affect different parts in different ways. Perhaps as much as at any other time, global factors and trends are influencing the Chilterns as, for example, farmers respond to world prices for grain and landowners from overseas invest funds in newly acquired estates. Increasing numbers of pests and diseases, many new to the UK, are now posing a serious and long term threat to wildlife, farming and forestry.

Changes to farming

1. The growth of arable farming in response to the world price of cereals is likely to be a factor for several years as concerns about food security grow and demand increases from China, India and other countries. Traditional growers of grain may be affected increasingly by weather extremes and climate change and as prices rise above recent lows, farmers in the Chilterns will grow crops for which they anticipate a steady if not increasing market price. This is unlikely to lead to ploughing up of grassland important for its wildlife, as it once did, as these sites are largely protected, but it will change the landscape, as has been seen, for example, where short term grass leys have been converted to grow cereals

and oil seed rape. In general, it can be anticipated that many farmers will increase their area of actively farmed land and the relative attraction of agri-environment options will reduce.

2. At the time of writing the reform of the Common Agricultural Policy (CAP) is ongoing. Already announced by the UK Government is a new environmental land management scheme to come into effect in January 2015, which combines environmental and forestry grants. It will be targeted instead of being available universally. At the time of writing it is not known if all of the Chilterns AONB will be a target area.
3. The decline of livestock farming, of all types, is leading to problems for the management of sites which need grazing in order to retain their biodiversity and landscape qualities. There is little likelihood of a reversal of this trend as farmers give up livestock and increasingly choose to concentrate on growing cereals or leave farming altogether.
4. Although the number of full-time farmers is declining there are many more small agricultural holdings reflecting the relative popularity of hobby and part-time farming. In some places this is leading to a fragmentation of the landscape with smaller fields, new buildings and a greater diversity of activity in a smaller area. Inevitably not all of these new holdings are well managed and some detract from landscape quality.

Climate change

5. The changing climate with its extremes of weather may alter the landscape but predicting the nature of that shift is difficult. Examples of possible effects include a reduction in the extent of beech woodland, effects on the flows of chalk streams and the introduction of new crops in response to different growing conditions.
6. The increasing variability of the climate with the associated difficulties of predicting the weather from one season

to the next is affecting yields and, in most cases, profitability. Such uncertainty, together with the availability of grant support, will have an impact on related environmental management and the resources available for such activities.

7. The potential for scrub to spread across open grassland landscapes is increasing due to a combination of the problem of grazing sites and the potential for more rapid growth of scrub in those years when the weather is mild and growing season is longer.
8. For the foreseeable future the landscape will still be dominated by farming and forestry and the spatial pattern of land use is unlikely to alter directly as a consequence of climate change. It is more likely that, for example, the species composition of woodlands may change - the general appearance will be similar to the woodlands of today but will become more varied over time.

Attitude of owners

9. There is evidence of the amalgamation of farm units to create bigger businesses with an increasing use of contractors. One consequence is that those who make the main decisions have less time, and sometimes knowledge, of the environmental options available to them.
10. As new owners buy land they often place higher priority on leisure and amenity than production. This is partly behind the expansion of the area covered by pony paddocks, extension of gardens and newly landscaped grounds. Often it is accompanied by the spread of fencing, screening of all kinds and inappropriate clutter such as lights and temporary buildings.
11. The general growth of leisure uses, notably equestrian, has resulted in a significant number of horses, new pony paddocks and associated buildings and equipment. Also prominent in the landscape are new and expanded golf courses. Whilst they can provide high quality habitat this is dependent upon

extensive sympathetic management. Such land uses are often most prevalent on the outskirts of towns and villages, a perspective seen by large numbers of people for whom such a landscape may become the norm.

12. Many Chilterns commons are affected by the increasing demands for access and recreation and changing public attitudes, for example towards grazing livestock close to towns and villages.
13. A continuing and largely unnoticed trend has been the loss, usually partial, of unregistered parks and gardens, for example around large houses now used for institutions or businesses.

Decline of cherry orchards

14. The once large number of cherry orchards continues to decline to the point they are now a fast vanishing feature of the landscape. There is a growing interest in conserving and restoring some of the best examples to ensure this element of the traditional Chilterns rural scene is not lost and forgotten. Recently there has been a welcome small increase in the area of apple orchards.

Fragmentation of land ownership

15. The continuing fragmentation of the landscape by transfer to smaller holdings is affecting the scale and nature of management of land. Such fragmentation also highlights the nature of intervening land, for example between fragments of chalk grassland or ancient woodland. The links are important to allow wildlife to move around a larger network of suitable habitat.

Under-management of woodland

16. Many types of woodland, especially small woodlands, are under-managed, even neglected. The long term decline of timber prices, notably for beech, has depressed the market and is unlikely to change in the near future. However prices for fuel wood are increasing and helping

to stimulate management of woodland. A decline of skills and the availability of skilled contractors with the necessary machinery and transport is a concern, as is the loss of knowledge and experience of timber production.

Pests and diseases

17. The impact of pests and disease on trees, woodlands and forestry will be profound. The recent spread of ash dieback (*Chalara fraxinea*) may have severe and widespread impacts. It is likely that many, but not all, of the several million ash trees in the Chilterns will be affected in the next 20 years. It should not lead to the loss of woodland cover if other species naturally regenerate or are planted, however a very severe loss will be the larger mature ash trees in hedgerows and along most roads. Its likely impact is still uncertain and whilst many trees may die others may survive. A positive programme of replacing those lost trees will be needed otherwise the landscape, particularly farmland, will be bereft of mature trees for many years. Acute Oak Decline, Oak Processionary Moth and *Phytophthora* are also of particular concern for Chiltern woodlands. It is essential that a considered approach, based on the best available scientific advice, is taken and quick responses are avoided.
18. The widespread damage caused by excessive numbers of grey squirrels, deer (muntjac, fallow and increasingly roe) together with localised problems caused by the edible dormouse (*Glis glis*) continues to hamper efforts to establish and grow trees, especially for timber.

Removal of conifers

19. Government policy to remove plantations, especially of conifers, from ancient and semi-natural woods (PAWS) will help restore their natural qualities. Where existing conifers are important for their amenity, for example by providing winter greenery, a careful and phased removal is advocated.

Ageing beech woodlands

20. The changes to the many mature beech woods may result in long term changes in the woodland landscape. They will be barely discernible in the short term, but already ash, which regenerated in the gaps left by beech trees blown down in the early 1990s, has changed the landscape by altering the colours and timing of flushing and leaf-fall.
21. It is likely that beech will persist in smaller pockets even through significant changes in climate, but it will no longer be as dominant. The balance of woodland cover needs to slowly change to reflect the tolerance of species to more extreme weather. If the Chilterns is to be a timber-producing area in the long term unfamiliar species may have to be introduced.

Renewable energy

22. Although it cannot be ruled out, it is unlikely there will be many applications to erect wind turbines in the AONB due to low wind speeds generally and the unacceptability of siting them along the skyline where wind speeds are higher. There may be places where relatively small turbines could be accommodated without unacceptable intrusion in the landscape.
23. With growing pressure to increase generation of renewable energy there are likely to be more proposals for solar farms, anaerobic digesters and wood-fired systems. Providing they are on an appropriate scale in non-sensitive locations it is possible these forms of energy generation can be accommodated in the Chilterns landscape, but these are important caveats.

Setting of the AONB

24. The potential impact of development in the area surrounding the AONB needs to be given greater weight as inappropriate and poorly designed development can significantly affect the AONB and its

enjoyment. This plan places considerable emphasis on the need to value the setting of the AONB as an integral part of the efforts to conserve the landscape of the AONB itself and should be reflected in neighbouring Local Plans.

Development pressure

25. Large numbers of new houses are planned in surrounding towns and construction will affect the land adjacent to, and visible from, the Chilterns. Land scheduled for development may be less well managed, even abandoned in anticipation of new development in the relatively near future. Once created there may be a harder, more defined edge between town and country. The view from the ridge of the escarpment will be significantly affected in some places, although green infrastructure provision is an intrinsic part of the growth area strategies. The provision and long term management of green infrastructure should be an integral component of planning any new development, both enhancing the new development itself and the way it is integrated with the surrounding area.
26. A more immediate, but less obvious change in the landscape is the impact of building new houses on infill sites and gardens in villages. Usually the resulting houses have small gardens and there is less scope for trees to grow to maturity and provide highly value amenity and screening. In some cases the infilling itself and unsympathetic design of the new development changes the character of the settlement.
27. As the Chilterns landscape is a mosaic of the natural and built environment it is important that the design of new buildings complements the existing character of the landscape and settlement, especially where it is based on vernacular architecture. New designs must also exhibit the highest environmental standards in terms of energy and water conservation.

Landscape clutter

28. There is a tendency for clutter of all types (e.g. signs, masts, barriers and fences) to accumulate along roadsides, around settlements and along the skyline. It is an insidious problem which is difficult but not impossible to reverse. The co-operation of the highways authorities is essential as they are often responsible for much of the clutter.

Loss of tranquillity

29. According to national surveys, half of all visitors to the countryside say that peace and quiet is a primary reason for their visit. The enjoyment of the landscape is being increasingly eroded by a loss of tranquillity - peace and quiet is harder to find largely due to traffic noise, notably the M40 and several of the trunk roads, and the increase in over-flying by aircraft of all types using Luton, Heathrow and local airfields. The loss will intensify if the proposal by Luton airport to double its capacity goes ahead. The expansion of Heathrow would also mean more over-flying aircraft at low altitudes.
30. The darkness of the night sky and the absence of visual intrusiveness of structures and buildings all add to a sense of tranquillity; these are attributes which are over-looked and are being continuously and insidiously lost. If High Speed 2 is built the corridor through which it passes will lose most of its remaining tranquillity in all senses - it would be largely protected if the railway is in a continuous bored tunnel.

High Speed Two

31. The impact of High Speed 2 on the Misbourne Valley will be severe and permanent. At the time of writing the impact of the current design with a long section on the surface crossing two viaducts cannot be adequately mitigated. The proposal to provide screening by using spoil from the cuttings to create line-side embankments is not an appropriate design solution in an AONB. The loss of ancient woodland

cannot be replaced by the proposed tree planting, much of which will be planted on farmland which should be kept in agricultural use.

32. The Conservation Board opposes High Speed 2 because it is not convinced that an adequate case has been made that it is in the national interest. The Board also believes that it is possible to avoid the AONB with changes to the design specification, notably the line speed. The Board believes that if the railway is finally given the go ahead by Parliament, it should be in a full length bored tunnel as it passes through the Chilterns.

Policies

L1 The overall identity and character of the Chilterns should be recognised and managed positively.

The main characteristics of the Chilterns landscape have been created by human intervention. In most cases they need to be managed actively in order to retain those qualities or restore natural characteristics which are in decline e.g. chalk downland, hedgerows, ancient woodlands, chalk streams, traditional cherry and apple orchards.

L2 There should be greater understanding and awareness of local landscape character which contributes to local distinctiveness.

The main landscape types such as woodland, farmland, river valleys and downland are large in scale, but are owned by large numbers of individuals, who often own small plots. The challenge is to help all owners and managers to be aware of the character of the wider landscape and the context for their own activities. It also highlights the importance of managing boundary features well and where possible, ensuring there are no intrusive boundaries such as close board fencing in open countryside. This policy aims to help current stewards of the land to

ensure that future generations benefit from an equally high quality landscape.

L3 Local pride in the landscape and special sense of place should be encouraged to promote concern for their conservation.

The Chilterns is fortunate in that so many people and organisations are concerned about its environmental quality. The Chiltern Society alone has over 6,500 members and the Wildlife Trusts, National Trust and RSPB amongst others are well supported. Together with local authorities, including 117 town and parish councils and voluntary and community groups, there are many organisations with powers, resources and a willingness to work to conserve what is special about the Chilterns and to act as stewards of the landscape. These organisations and individuals all need support to maintain their active roles.

L4 The distinctive character of buildings, rural settlements and their landscape setting should be conserved and enhanced.

A primary characteristic of the Chilterns landscape is the large number of attractive towns and villages, buildings, farms, barns and churches. It is the combination of their charm and setting in the landscape that contributes so much to the special qualities of the Chilterns and reinforces what is distinctive about the area.

L5 Developments which detract from the Chilterns' special character should be resisted.

There are significant pressures to change the use of land, erect new buildings and structures, improve transport infrastructure or expand economic and leisure activities. They can often be satisfactorily accommodated without detriment to the landscape, but not always. The town and country planning system and other regulatory and advisory processes need to be in place and applied to ensure that damaging changes are prevented. A great deal of

information and advice is available to help ensure proposed changes are in keeping with the special character of the AONB and its setting.

L6 Degraded aspects of the landscape should be enhanced including the removal or mitigation of intrusive development and features

In some senses the Chilterns is a busy landscape with a large number of buildings, structures and, what some might call, clutter. Such clutter comes in many forms and can include: masts, signs, fences, utilities infrastructure and highways structures. It tends to accumulate rather than be removed even after its useful life has ended. Sometimes concerted effort is needed to bring about its removal by planning conditions, regulations, advice, practical assistance or incentives. There is also scope to mitigate, or even screen, less attractive structures and features where they are still in active use or are unlikely to be removed.

Similarly what was once regarded as an acceptable design is now considered out of place. The utilitarian and universal designs used by national utility companies is a good example of when a more sensitive and tailored approach would have been more appropriate for an AONB.

Some developments have been constructed which, over time, now look out of place by virtue of their location, scale or design. Whilst removal remains unlikely or impossible greater consideration should be given to mitigation to diminish those negative impacts.

L7 The quality of the setting of the AONB should be conserved by ensuring the impact of adjacent development is sympathetic to the character of the Chilterns.

The Chilterns is surrounded by many market towns and the larger settlements of Reading, Hemel Hempstead, High

Wycombe, Luton, Dunstable and Aylesbury where large numbers of new houses and other developments will be built during the next 20 years. The design and location of these buildings need to be sensitive to the AONB, for example by not having excessively high or reflective roofs. The impact of development adjacent to the AONB will be significant in many ways including its visibility from many popular sites. It is important that appropriate landscape and visual assessments are undertaken.

L8 Landscapes close to existing and new areas of development should be maintained and enhanced to conserve, enhance and extend: natural capital; green infrastructure; character and amenity; biodiversity; and opportunities for recreation.

The boundary of the AONB is long and sinuous, curling around many towns and villages. The interface between the AONB and these communities is important and the quality of landscape in this belt is often under pressure. Such problems may be compounded where new development is planned, resulting in less intensive management and additional pressures placed by new residents seeking to use adjacent countryside for leisure and recreation. These places create what is being called green infrastructure and need to be identified in advance and appropriate management and investment put in place. The countryside close to home is often the most important, which means creating green spaces within the development zones as well as adjacent to it. It is essential there is no reliance on sensitive sites, for example along the scarp ridge, to provide green space in lieu of sites closer to new development.

L9 Multiple ecosystem services should be provided through landscape-scale activity.

In a small country it is essential that land provides as many benefits as possible. In the Chilterns this means ensuring that in addition to any productive capacity land may have it is part of a high quality landscape, supports biodiversity, locks up carbon, helps ensure clean supplies of water as well as providing places for leisure and recreation. This may seem very demanding but much of the Chilterns is capable of providing such multiple benefits. This has long been the case but as demands on a limited area of land continue to grow such multiple benefits (ecosystem services) need to be generated and may be a requirement in return for public funding.

L10 The cumulative impact of development and land use change should not adversely affect landscape quality and character.

Often approval for new development is given on its own merits and the cumulative impact it represents is given a much lower level of consideration. The effect over time can be negative by creating a more crowded landscape with an array of associated, often unplanned or even unforeseen, features and structures.

Some forms of development, in particular housing, can have an impact on the use of surrounding land, for example, making it harder to farm or manage woodland because of the public pressure. This effect is particularly prevalent in the urban fringe where valued rural character can quickly be lost.

L11 The design and management of transport infrastructure and services should reduce their harmful impacts, including greenhouse gases, and not damage the natural beauty of the Chilterns.

Transport infrastructure has a major impact on the landscape of the Chilterns. Over 300 roads cross the AONB boundary and four railways including the west coast mainline. Many of the roads are ancient in origin and are part of the environmental and cultural heritage. Many roadsides are rich in wildlife and sunken lanes and milestones add to the landscape. In recent years the design and management of roads and other transport infrastructure has been unsympathetic to the environment which has changed the landscape. Inevitably the use of this infrastructure is a major source of greenhouse gas emissions and speeding traffic in villages and in open countryside adds to the negative impacts.

L12 The construction of High Speed 2, as proposed in April 2014, is opposed because of the likely negative impacts on the special qualities and character of the AONB.

a) Should HS2 be constructed it should be in a full-length bored tunnel under the AONB in order to minimise the impacts.

b) Should HS2 not be constructed in a full length bored tunnel, then the negative impacts of the design should be mitigated to reflect fully the Chilterns' status as an AONB – a nationally protected landscape.

The advice by the Conservation Board to Government has been that High Speed 2 will have a severe and permanently negative impact on the special qualities of the Chilterns Area of Outstanding Natural Beauty; and its enjoyment by both local people and visitors. Whilst it is understood that national infrastructure has to be built in the national interest, the case for HS2 is not compelling and less damaging alternatives are available.

At the time of writing (March 2014) the Second Reading of the High Speed 2 Bill has not taken place by Parliament. If it is Parliament's decision that HS2 should be built, the best way of protecting

the AONB is for the railway to be in a bored tunnel for its full length under the Chilterns. In particular the current proposal to deposit up to 12 million tonnes of spoil in the AONB on farmland is wholly unacceptable.

Whilst it is known that a full length bored tunnel (possibly with an intervention gap) is technically feasible and desired by local people, it is possible that the Government will decide to retain the, largely, surface route through the Chilterns in order to reduce the cost to itself. In which case, every effort should be made to avoid and mitigate the negative impacts. This has to be done in such a way that the mitigation itself does not create unacceptable negative environmental impacts. This is desirable both for the conservation of the special qualities of the Chilterns AONB, and to demonstrate that significant weight is given by the Government to the protection of nationally-designated landscapes with their heritage assets, ancient woodland and other sites and features of importance.

L13 The management of the landscape to enable it to adapt to climate change and to help mitigate the causes should be promoted.

The landscape of the Chilterns is dynamic and one of the factors causing this is the changing climate. For example, the low flows in chalk streams were, until recently, due to prolonged periods of winter drought. The relative strength of climate change as a driver of change is likely to increase and be persistent over a long time. It is unlikely there will be rapid changes in the landscape and some changes are barely discernible.

However more extreme weather events will become more commonplace requiring short term changes in management of the landscape, for example by coping with frequent heavy downpours and minimising run off. Longer term changes may affect the ability of beech to survive on many sites



A farmland landscape in the Stonor Valley

where it is now found. Foresters will need to consider how to manage woods to make them more resilient to climate change. For example, by making stands of trees less prone to wind throw, or planning for a modification of species composition to those more tolerant of predicted climate changes – for example it is suggested that walnut might fare better as a timber tree than beech. In general, natural regeneration is to be encouraged as these systems cope best with climate change. These adaptations will also help build resilience to the threat from pests and diseases.

To halt the damaging effects of climate change it is essential that long term measures are put in place. For example, ensuring that carbon dioxide is fixed in soils by maintaining and enhancing the organic matter content. Other measures may include the use of trees to provide shade to reduce the need for air conditioning of buildings. Farming systems which minimise the loss of water from soil will encouraged.

L14 Tranquillity should be conserved and restored when all development and major landscape management is planned.

Everyone values peace and quiet and attractive, unspoilt scenery. These are the key characteristics of tranquillity, a quality which is much valued but being constantly lost. Experience shows that once lost it is very difficult to restore, thus the need to prize it highly and conserve it whenever possible. The noise pollution and visual intrusion that will be created, for example, by High Speed 2 will significantly diminish any sense of tranquillity currently enjoyed by residents and visitors along that part of the Misbourne Valley through which the line will pass.

L15 The understanding and importance of how geology and soils contribute to the special character of the Chilterns should be enhanced.

The long term care and stewardship of the AONB depends upon a deep understanding of what makes it special. An understanding of how the geology of the Chilterns and associated soils form both the topography of the Chiltern Hills and sustain the various land uses, even buildings, which make it so special is essential. In practice knowledge of the geology and soils of the area is extremely limited.

L16 Sites of geological importance should be conserved and actively managed.

Because chalk is a soft rock it is almost never visible at the surface through outcrops and cliffs. Instead it erodes easily and is quickly covered by vegetation. This, in part, explains why there is so little general appreciation of the geology of the Chilterns. And yet there are a small number of sites (Regionally Important Geological Sites – RIGS) where it is possible to appreciate and learn about the special geology of the area. Most are man-made - cliffs

created by quarrying which has exposed the various layers of chalk laid down in the Cretaceous Period (65- 100 millions years ago).

L17 All land management should conserve soil quality.

It is important for many reasons to maintain and enhance soil quality. It is a very large store of carbon and water. If its organic content is reduced it stores less of both. Inevitably that also reduces its productive potential for farming. Where the soil structure and fertility has been diminished farming yields can only be maintained by adding fertilisers and other inputs, which is less sustainable, more expensive and often results in environmental problems such as run off - much of which ends up in rivers and the aquifer where it can affect drinking water supplies.

L18 The impacts of pests and diseases (notably grey squirrels, deer and ash dieback) on the landscape should be prevented, minimised and mitigated.

The impact of pests and diseases will be severe and unless there is more concerted effort to prevent specific species from assuming pest status, it will be more difficult to maintain landscape quality, conserve wildlife and maintain the productive potential of woodland and farmland. Prevention is by far the best strategy and it will require new ways of managing land. For example, the age and species diversity of woodlands will have to change, possibly with more use of non-native species (in accordance with Forestry Commission advice), otherwise the ongoing ravages of pests and diseases will increase.