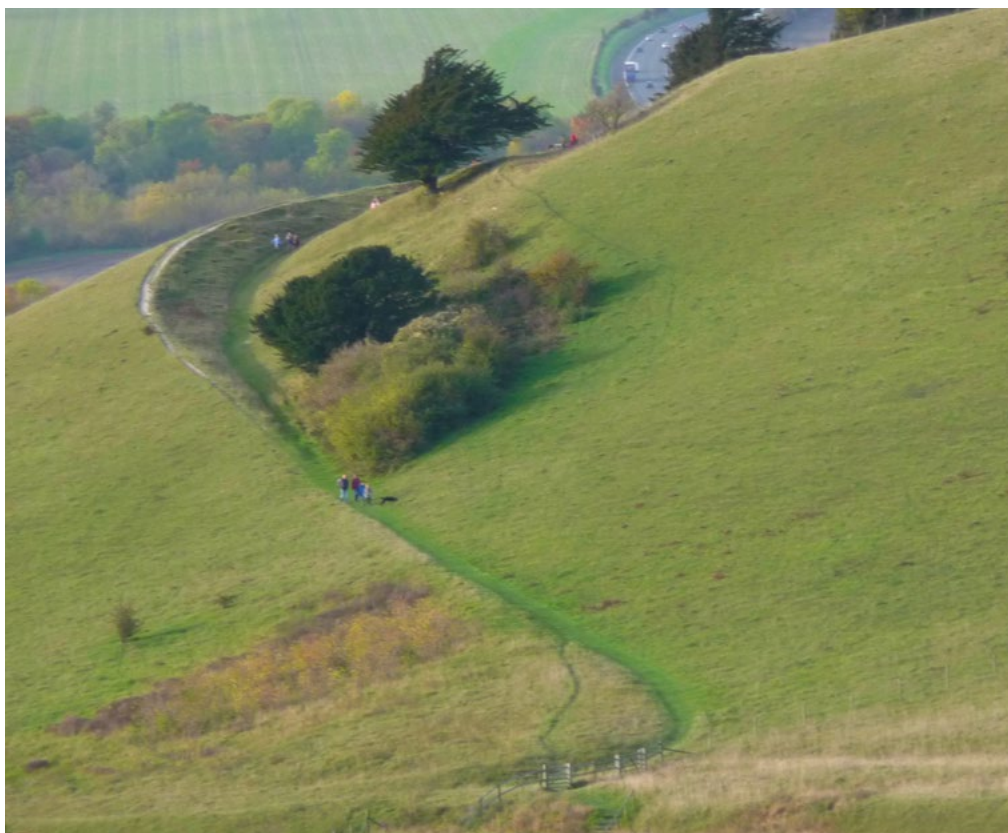


A photograph of a forest with large trees and a mossy ground covered in fallen leaves. A circular graphic contains text.

*Human influence
has shaped
the Chiltern's
landscape*

7. LAND, WOODLAND AND WATER

Through the centuries, human influence has shaped the Chiltern's landscape. Stock and arable farming, firewood and timber production have created the mosaic of fields and woodlands, interlinked with hedgerows dotted with hedgerow trees. Even the courses of many of the area's characteristic chalk streams have been modified by human intervention. Such changes were for a variety of purposes, such as milling, water cress growing, agriculture, urban development and landscaping. Overlaying all this is a network of ancient rights of way. These may have originated as paths for farm workers or extraction tracks for timber. Some developed as paths for drovers or trade routes for commodities on their way to London. Often, years of use have left incised tracks and sunken lanes cutting across the chalk escarpment and winding down the steep valley sides.



Aston Rowant Nature Reserve

Incised track traversing the escarpment at Aston Rowant Nature Reserve. This has been created by years of erosion caused by human activity.

Key Issues

Farming: Stock farming (sheep, beef, dairy) continues to decline. It is uneconomic to graze chalk grassland yet, without grazing, our species rich chalk grassland is lost to scrub. More intensive stock management, sometimes associated with equine, alpaca and deer enterprises, can lead to the introduction of numerous paddocks and other infrastructure that degrades traditional field patterns. There is now no need for hedgerows to keep stock in as farmers rely on fencing. An annual flail keeps surviving hedges in check but each year their quality deteriorates. With Arable farming, current economics and farming systems are leading to fewer people farming larger areas. Less time and resources are available to manage the 'non-farmed' areas.

Commons: In the past, many commons would have been grazed and wooded areas managed through the exercise of common rights. Most of these rights are no longer exercised, though over half of the wooded areas have Management Plans.

Orchards: Once widespread, during Victorian times, extensive cherry orchards attracted visitors to the Chilterns during blossom time and cherry pickers would travel from London to help with the harvest. Today, many of these orchards are gone though there is a resurgence in interest of traditional fruit varieties (apple, cherry and pear) with community orchards and a small number of commercial enterprises.

Woodland: The demise of the Chilterns furniture industry led to reduced timber production and now, due to both the rapid increases in deer and grey squirrel numbers, and the constant spread of new diseases, very few quality timber trees reach maturity. Further, there is a trend to split some large estate woodlands into small wood lots and sell them. The result can be inconsistent management, pressure for fencing, access roads and buildings. Fragmented management means that the control of pests and diseases becomes even more difficult. However, the recent trend for wood burning stoves and wood-fuel heating systems has recharged the management of small woodlands.

Chalk Streams: The porous chalk rock of the Chilterns Hills forms part of the most significant aquifer in the south east of England. Water levels within the aquifer supplying the internationally important Chiltern chalk streams, normally fluctuate with the changing seasons. Groundwater recharge occurs with the steady seepage of rainwater through farm and woodlands in the winter months. However, utility companies extract drinking water for millions of people – residents of the Chilterns and far beyond. The Chilterns has one of the highest levels of water use per head of population in the UK.

In addition, the chalk streams are particularly vulnerable to impacts of new development. Not only do flows suffer, when abstraction is increased to supply the increased demand for drinking water, but also there is an increased flood risk. Rainwater runs off quickly from paved surfaces, collects pollutants from the drainage system and, with increasing numbers of extreme weather events, can lead to flash flooding and poor water quality.

Unpredictable and extreme weather conditions, a result of climate change, also reduce the effectiveness of groundwater recharge from farm and woodland. Heavy rain fall runs quickly off valley sides and can carry silt from arable fields into the chalk streams if field margins or other measures aren't present to arrest the flow.

Poor recharge and unsustainable abstraction combine to impact rivers and, in particular, their headwaters (winterbournes). Effectively, this means that the length of chalk stream habitat within the Chilterns is declining. Currently, the underlying groundwater and all nine chalk streams that flow through the AONB are failing to attain the Water Framework Directive (WFD) objective of Good Ecological Status (GES) or Potential (GES/P). This failure is primarily due to over-abstraction of groundwater and low flows in chalk streams.

Strategic Objectives

- LO1** Protect and, where degraded, improve the Chilterns' natural capital resources, including soils, water, clean air, plant and animal life.
- LO2** Ensure that the Chilterns remain a functional, working landscape with viable, sustainable and diverse farming, forestry and rural economy sectors.
- LO3** Safeguard the Chilterns landscape by maintaining and enhancing all landscape features (such as hedges and trees), important wildlife habitats and cultural heritage at all times.
- LO4** Increase resilience to and effective management of pests, diseases, non-native invasive species and climate change.
- LO5** Achieve Water Framework Directive (WFD) objectives for the Chilterns water environment – rivers, valleys, wetlands and other riparian habitats.
- LO6** Ensure that those who work in the landscape, local and national policy makers, and the public, understand the link between environmentally sustainable farming, forestry, rural economy sectors and a healthy Chilterns AONB.

Farming, forestry, utility companies all depend on the natural capital resources provided by the Chilterns. We all have a duty to protect and, where degraded, improve these resources – our soils (prone to erosion), our chalk aquifer and chalk streams (vulnerable to over-abstraction and diffuse pollution), our air (that benefits from ammonia and carbon uptake by trees and grassland) and the diverse range of plant and animal life these resources support.

Many farmers and woodland owners do their best to protect the land they work on and look after the wildlife it supports. Many organisations and an increasing army of members of the public, volunteer to protect reserves, habitats and the countryside they enjoy.

After leaving the European Union and, therefore, the Common Agricultural Policy (CAP), an 'agricultural transition' period in England will help farmers prepare for new trading relationships and a new environmental land management system. We hope this Management Plan will influence government thinking and the allocation of funds that, in future, will assist land managers and foresters protect and enhance the Chilterns landscape.

Policies

To achieve these objectives, we must work together to:

LO1

LP1 Make agreed best practice advice (farming, forestry and other land management) accessible to all.

Best practice will ensure healthy soils, well managed chalk streams, clean water and unpolluted air, vital for farming, forestry, wildlife, local communities and visitors. It can also help existing landowners and new entrants to the farming and forestry sectors appreciate how they can look after the landscape features under their control including hedgerows, hedgerow and in-field trees, and pollard willows alongside chalk streams.

LP2 Publicise and promote appropriate land-based skill training and advances in new technology across the AONB.

Both traditional rural skills and modern technology have their place in securing a healthy Chilterns landscape; from hedge laying to GPS guided farming operations that avoid compaction, damage to soils and over use of fertilizers and pesticides.

LP3 Promote the production and processing of local produce, including venison, traditional orchard fruit juice and wood-fuel.

Local produce can reinforce a sense of place for visitors and residents alike. However, successful marketing can also benefit the environment. For example, venison sales can help support deer management, fruit juicing can encourage interest in and viability of traditional and community orchards, wood fuel harvesting can help re-structure woodland affected by Ash dieback.



Grazing at Blows Down

In 2016, the Wildlife Trust for Bedfordshire, Cambridgeshire and Northamptonshire secured a small grant to help improve cattle handling facilities at Blow's Down, south east of Dunstable. Continued grazing will maintain diversity over 62ha of chalk grassland SSSI so that many species including common spotted, pyramidal and bee orchid, field and small scabious, greater and black knapweed, horseshoe and kidney vetch, bird's-foot trefoil, sainfoin, and small blue, chalkhill blue, dingy skipper and brown argus butterflies, all continue to flourish.

LO2

LP4 Ensure landowners and land managers continue or re-introduce favourable grazing management on all areas of Chilterns chalk grassland.

Grazing animals are needed to maintain the important mosaics of grassland and scrub, particularly found on the chalk escarpment and steep valley sides. Unfortunately, for many farmers, this is currently uneconomic. Support (both financial and non-financial) and collaboration between farmers and other groups managing land, should be encouraged.

LP5 Ensure that more landowners sensitively manage hedgerows.

There are over 4,000km of hedgerow in the Chilterns. Between 2006 and 2008, 330 hedges were surveyed and only 38% were in good condition. Consequently, 62% (approximately 2,500km or just over 1,500 miles) of our Chilterns hedgerows need attention. Reducing nutrient enrichment and buffering from cultivation would allow hedges to become wider and

taller. Further, an average Chilterns hedge may need laying or coppicing every 40 years. This means that across the Chilterns, 100km (62 miles) of hedge needs rejuvenating every year.

Maintaining the hedge network will protect wildlife corridors, the linking fabric of our countryside and will preserve ancient field patterns that are still discernible today (particularly when rejuvenating old hedgerows).

Consideration should be given to remove fencing, particularly barbed wire, where it is no longer required for stock control. Concerns have been raised over injuries to wildlife, particularly deer, and to walkers on footpaths.

LP6 Encourage landowners and local communities to plant over 500 new hedgerow trees across the Chilterns per year.

Some 44,000 standard trees grow in Chilterns hedges but most of these are over mature. Many will succumb to old age or diseases, such as Ash dieback or Sudden Oak Decline, in the coming years. Even without the rapid spread of pests and diseases, based on an average mature age of 100 years (looking at a range of trees from the relatively short-lived cherry to longer lived oak), we will need to plant 440 new trees per year to maintain hedgerow tree numbers. Replanting 500 hedgerow trees a year is a minimum; to keep up with disease pressure, we should be aiming for nearer 1,000. Detailed proposals will need to be developed by those living and working within the AONB.

LP7 Link and buffer valued habitats – including grasslands, woodlands, rivers and streams – by a network of field margins (both grass and annually cultivated unsown arable margins as appropriate), new tree and woodland planting and low intensity grassland areas.

Farmland, woodland, orchards, commons, streams, golf courses, public open space, even road verges can all provide important links to connect wildlife habitats.

LP8 Ensure there is no net loss of woodland and no loss of irreplaceable ancient woodland, ancient trees and veteran trees within the AONB.

The Chilterns is renowned for its woodland, which covers 23.74% of the AONB. Much of this contains important wildlife and archaeology. 56% is classed as ancient woodland, which has been in constant woodland management for over 400 years. It is important that no woodland is lost to building works or infrastructure. In line with government policy, we should seek to increase the woodland area, but resources will be needed if the total area is to increase.

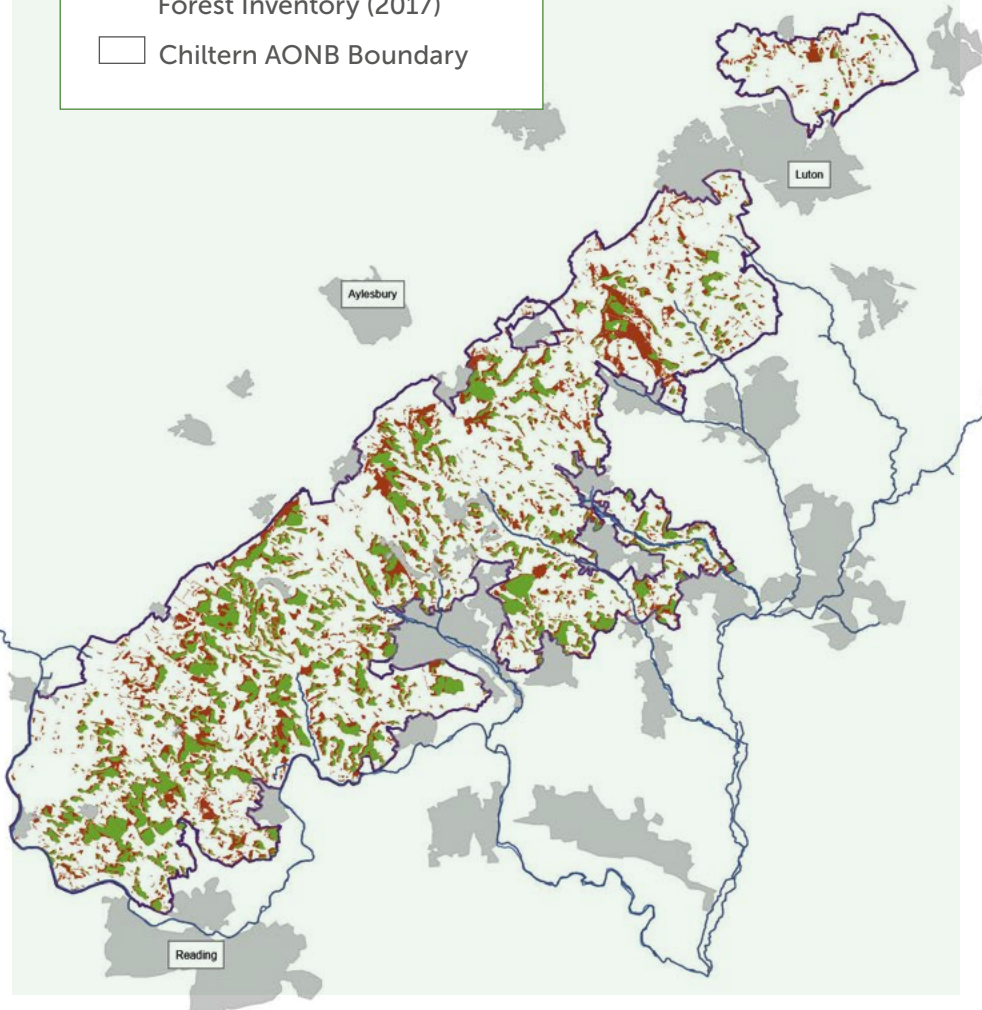
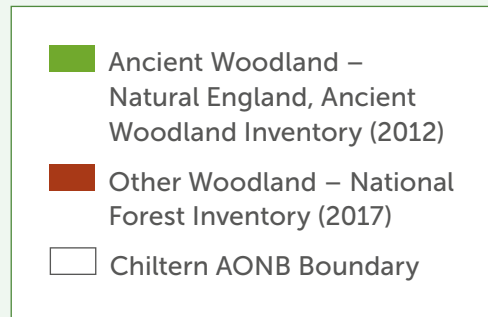
LP9 Manage woodlands to achieve a greater diversity of tree species and varied age structure to ensure economic sustainability, enhance biodiversity and make them more resilient to disease and climate change.

It is important that statutory agencies and advisers work together with woodland owners and managers. They can provide advice, training and support identifying the most appropriate tree species and on-going woodland management to achieve this policy. Species selection tools, such as Forest Research's Ecological Site Classification, can help plan site appropriate planting which will help connect wildlife habitats and replace trees lost to disease.



MAINTAINING THE HEDGE NETWORK WILL PROTECT WILDLIFE CORRIDORS AND PRESERVE ANCIENT FIELD PATTERNS

Woodland Cover



LP10 Restore Planted Ancient Woodlands (PAWS) returning them to predominantly broadleaf species and implement sensitive long-term management.

Ongoing support and advice need to be maintained and management plans for these important sites are recommended. Restoration, particularly of non-native conifer plantations, will offer significant wildlife, landscape and cultural heritage benefits.

LP11 Manage glades, other open areas and woodland edges to provide a varied habitat for woodland birds, butterflies and plants.

Partnerships between woodland owners, statutory agencies, local wildlife and volunteer groups will help achieve this policy.

LP12 Maintain and enhance traditional Chilterns orchards and encourage their use.

Orchards were once scattered across the Chilterns, valuable for their fruit crops and providing useful grazing between the trees. Many of the remnant orchards contain veteran fruit trees some of which may be 'forgotten' varieties once grown in specific localities within the Chilterns.

LP13 Protect and sensitively manage historic and cultural features.

These features include ancient parish boundary hedges and field patterns, medieval Strip Lynchets, woodland boundary banks, saw pits and traditional orchards.

LP14 Restore chalk stream flows through reduction of abstraction to environmentally sustainable levels.

The ongoing work of the Environment Agency's 'Restoring Sustainable Abstraction' programme, together with an abstraction licencing scheme that provides appropriate protection of the water environment, will be essential for the long-term health of the area's chalk streams.

See also Nature (NP4, Key Action 4), Development (DP4)



RIVER WYE, WYDE DENE RESTORATION

LP15 Support a catchment-based approach to the enhancement and sustainable management of the Chilterns water environment.

This will include natural flood management (through farming, woodland planting and management practises) and help reconnect rivers with their flood plains.

LP16 Enhance and restore the natural form, function and connectivity of chalk streams and associated habitats.

Encourage and support the development and delivery of projects where statutory agencies, water companies, landowners and other stakeholders work together to recreate more natural, wildlife rich chalk streams.

LP17 Encourage management that conserves and enhances the characteristic river valley landscape.

Smaller and irregular field patterns, wet meadows, woodland carr and pollard willows often characterise river valleys within the AONB.

LO3

LP18 Raise awareness of pest, diseases and non-native invasive species along with the need for improved biosecurity.

Up to date training and advice on the best methods and continued action to reduce, and where possible eliminate, the threats posed by pests, diseases

and invasive non-native species is vital. Care must be taken to source pest and disease-free trees for planting, possibly from seed grown on in UK nurseries. *See also Nature (NP7)*

LP19 Control and manage native pests and, where possible, seek to eradicate non-native invasive species, coordinated at a landscape scale.

Species include both native and introduced deer, grey squirrel, Glis glis (Edible Dormouse), American mink, Himalayan balsam, Japanese knotweed, Signal crayfish and Demon shrimp (an example of an emerging threat that could devastate all our chalk streams if action is not taken).

Statutory agencies will need to support landowner collaboration and partnership groups (similar to the 'Farmer Cluster' model) if this policy is to succeed. *See also Nature (NP7)*

LO5

LP20 Make relevant, informative and interesting information about farming, forestry and the rural economy readily available to all residents and visitors to the AONB.

The Chilterns is a working environment. It is important for visitors and residents to understand the processes that shape the environment they enjoy and the wider environmental benefits that are provided. These benefits include carbon capture and flood water management provided by both grassland and woods.

It is also important for the farming and forestry sectors to appreciate both the challenges and opportunities provided by working within a much loved and visited nationally protected landscape.

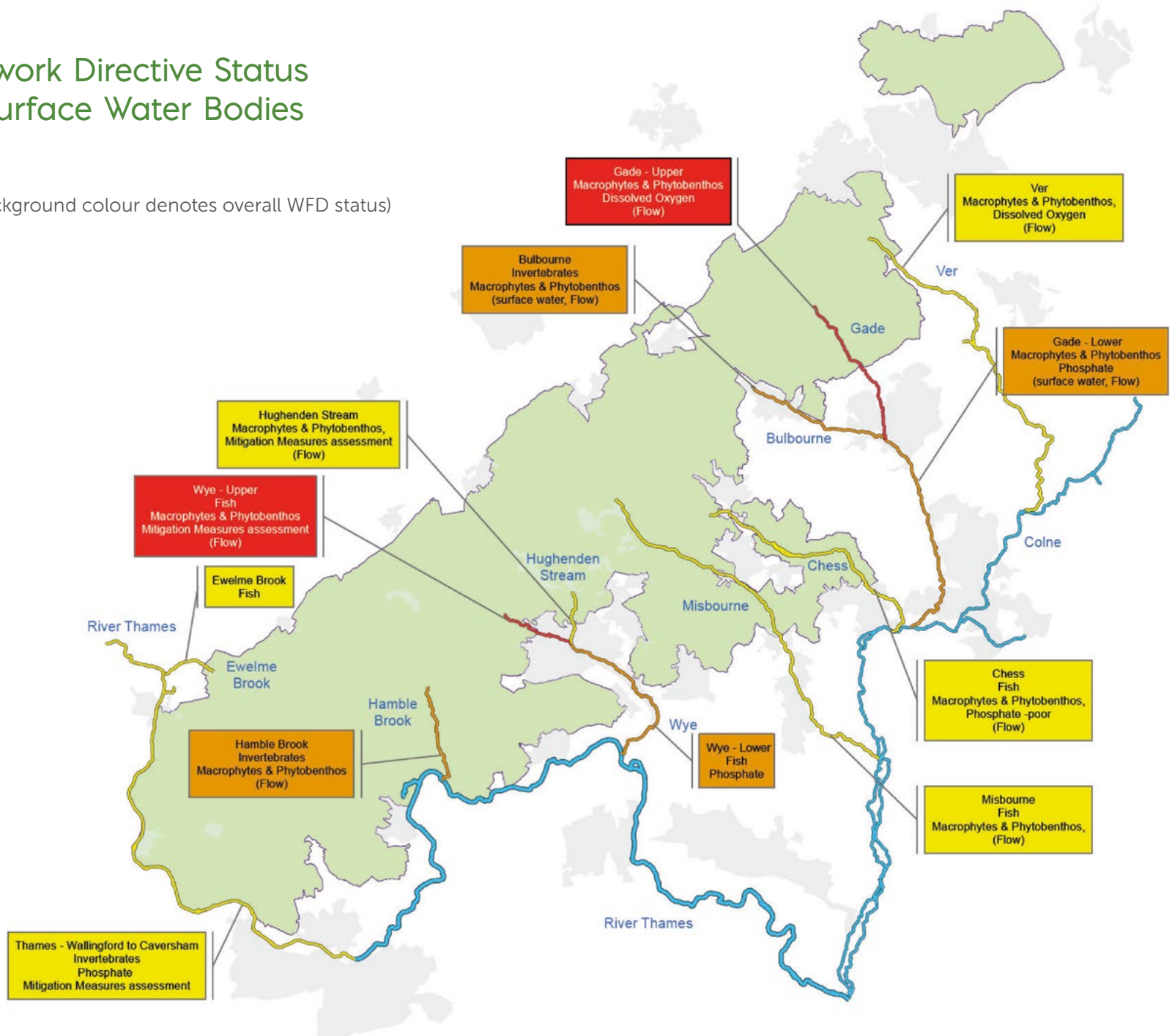
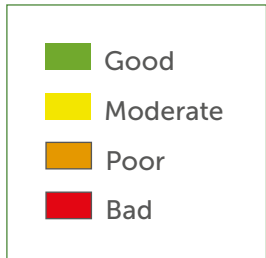
LP21 Promote public awareness and understanding of the link between water demand, abstraction and chalk stream flows and support measures to reduce demand and increase water use efficiency.

Very few people are likely to understand how their use of water might affect a Chilterns chalk stream. Utility companies need to continue work to reduce leakage in the public water supply system, but members of the public can also do a lot to reduce wastage. *See also Nature (NP4, Key action 4), Development (DP4)*

Water Framework Directive Status for Chiltern Surface Water Bodies

Water course

Reasons for failure (background colour denotes overall WFD status)



KEY ACTIONS

1. Support existing and develop new collaborative projects. For example, both the Chiltern Woodlands Project and Chilterns Chalk Streams Project already provide advice across the AONB and, during the life of this Management Plan, the Chalk, Cherries and Chairs Landscape Partnership will deliver many partnership projects in the central Chilterns area. See also Nature (NP7).
2. Secure existing and seek new funding from government agencies, local government and from other sources such as lottery fund distributors and charitable trusts.
3. Work with government and local stakeholders to design new environmental land management measures that offer pragmatic solutions to protect and enhance the natural capital, landscape and wildlife of the Chilterns.
4. Develop and deliver schemes that achieve Water Framework Directive (WFD) objectives for the water environment. See also Nature (NP4, Key action 4), Development (DP4)
5. Work collaboratively with local advisers, land agencies, representative organisations to encourage landowner, farmer and forester uptake of existing and future environmental land management measures.
6. Encourage even greater volunteer activity to strengthen the many existing groups and the valuable work they do and support new initiatives.
7. Work with stakeholders and seek funding to establish a freely accessible website (E-hub) to promote good practice (including, management advice for chalk streams, woodland, sustainable farming, biosecurity measures),³⁴ publicise training and technical innovation to local businesses; provide information to the public and promote the Chilterns AONB.

³⁴GB Invasive Non-Native Species Strategy www.nonnativespecies.org/index.fm?sectionid=55 Check Clean Dry campaign www.nonnativespecies.org/checkcleandry Forestry Commissions' 'Keep It Clean' campaign www.forestry.gov.uk/forestry/beeh-a6tek3