National Character Area profile:

# 52. White Peak



NATURAL ENGLAND

www.naturalengland.org.uk

# Introduction

As part of Natural England's responsibilities as set out in the Natural Environment White Paper[1], Biodiversity 2020[2] and the European Landscape Convention[3], we are revising profiles for England's 159 National Character Areas (NCAs). These are areas that share similar landscape characteristics, and which follow natural lines in the landscape rather than administrative boundaries, making them a good decision-making framework for the natural environment.

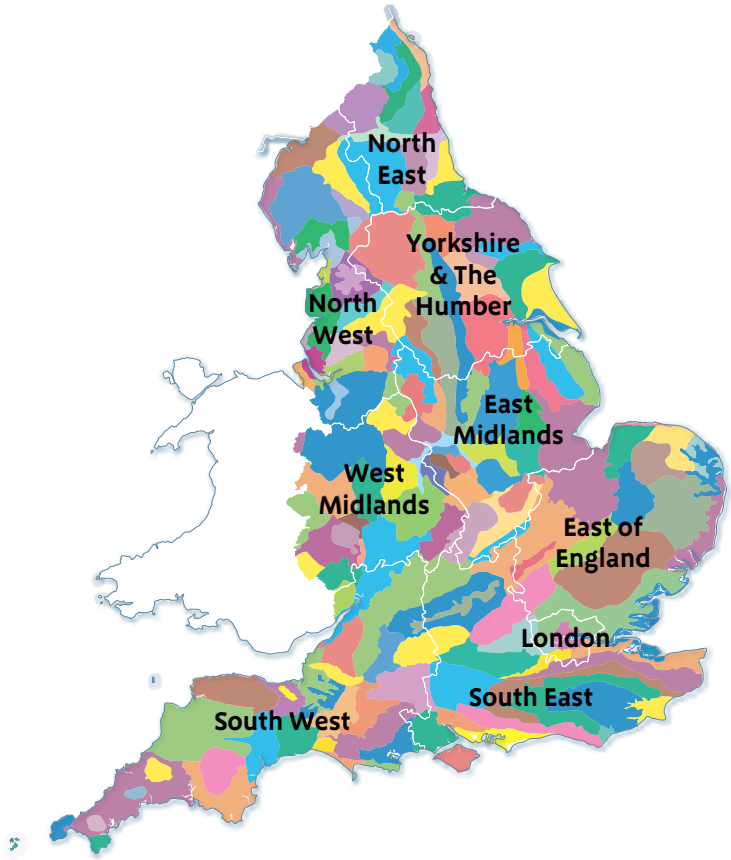
NCA profiles are guidance documents which can help communities to inform their decision-making about the places that they live in and care for. The information they contain will support the planning of conservation initiatives at a landscape scale, inform the delivery of Nature Improvement Areas and encourage broader partnership working through Local Nature Partnerships. The profiles will also help to inform choices about how land is managed and can change.

Each profile includes a description of the natural and cultural features that shape our landscapes, how the landscape has changed over time, the current key drivers for ongoing change, and a broad analysis of each area's characteristics and ecosystem services. Statements of Environmental Opportunity (SEOs) are suggested, which draw on this integrated information. The SEOs offer guidance on the critical issues, which could help to achieve sustainable growth and a more secure environmental future.

NCA profiles are working documents which draw on current evidence and knowledge. We will aim to refresh and update them periodically as new information becomes available to us.

We would like to hear how useful the NCA profiles are to you. You can contact the NCA team by emailing ncaprofiles@naturalengland.org.uk

## National Character Areas map




[1] The Natural Choice: Securing the Value of Nature, Defra (2011; URL: www.official-documents.gov.uk/document/cm80/8082/8082.pdf)

[2] Biodiversity 2020: A Strategy for England's Wildlife and Ecosystem Services, Defra (2011; URL: www.defra.gov.uk/publications/files/pb13583-biodiversity-strategy-2020-111111.pdf)

[3] European Landscape Convention, Council of Europe (2000; URL: http://conventions.coe.int/Treaty/en/Treaties/Html/176.htm)

# Summary

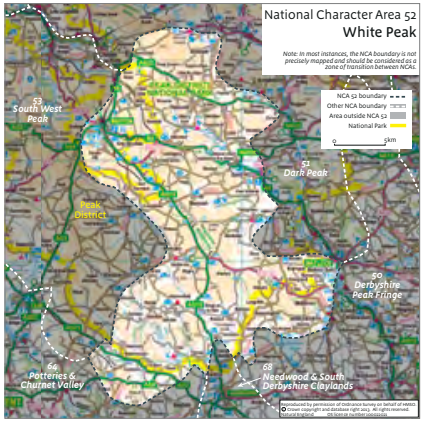
The White Peak National Character Area is a raised, undulating limestone plateau deeply incised with steep-sided limestone valleys. It has a strong sense of place arising from the effect of the underlying geology on landform and its influence on natural and manmade landscape features such as caves, crags, drystone walls and traditional buildings. The dales are of significant wildlife value, particularly because of their flower-rich limestone grassland and ash woodland, and many contain clean, clear rivers which support species such as white-clawed crayfish, bullhead, lamprey and dipper.

The plateau is rich in archaeology, from Neolithic burial mounds and stone circles, such as Minninglow and Arbor Low, to the remains of early lead workings. There are distinctive historical landscapes with well-preserved ridge and furrow and networks of field boundaries that fossilise medieval field systems around villages such as Chelmorton.

The settlement pattern is primarily of small nucleated villages and isolated farmsteads, along with the market towns of Buxton and Bakewell and the spa town of Matlock Bath. The majority of settlements are on the plateau, with a few small settlements centred on the 18th-century textile water mill buildings in the dales and the major towns in the valleys around the edge of the plateau. The area is particularly popular for recreation, with a good rights-of-way network and multi-user trails, such as the Monsal Trail and the Pennine Bridleway, and many opportunities for rock climbing, caving and fishing. It is easily accessible for a large population from surrounding urban areas and also receives visitors from all over the world.

In terms of ecosystem services, the area is particularly important for the provision of cultural services: sense of place/inspiration, sense of history, recreation, biodiversity and geodiversity. This is recognised by its inclusion in the Peak District National Park and the large number of European and national nature conservation, geological and heritage designations (Special Areas of Conservation, Special Protection Areas, Sites of Special Scientific Interest, World Heritage Sites and Scheduled Monuments).

Future challenges for the area relate particularly to development, industry, tourism and the spread of tree diseases. There will be continued pressure to meet the need for affordable local housing without compromising landscape and historic character or changing the nucleated settlement pattern. It is likely that the economic pressures on farming will continue to drive intensification and increase in farm size. The challenge will be to facilitate a thriving farming industry while enhancing its efficiency and environmental impact. The environmental pressures from active mining and quarrying industries may change according to commodity prices and site ownership but opportunities are presented through the restoration of decommissioned sites. Increased numbers of visitors are likely to put additional pressure on the infrastructure of the White Peak, with associated traffic issues and threats to tranquillity. The impact of tree diseases could be severe, particularly as the dale woodlands are so heavily dominated by ash. There is a pressing need for careful and comprehensive monitoring and for decisive and innovative action should certain tree diseases, particularly ash die-back, spread to the White Peak.




Click map to enlarge; click again to reduce.

The plateau of the White Peak is an open landscape of productive improved grassland, often used for dairy farming, divided by regular networks of limestone drystone walls.

## Statements of Environmental Opportunity

- **SEO 1:** Protect and enhance the area's clear limestone rivers, streams and springs, limestone aquifer and dramatic karst geology, to provide a source of clean water, support strong populations of fish and other wildlife, enhance recreational and educational opportunities and contribute to the White Peak's strong sense of place and history.

- **SEO 2:** Safeguard the unique character and tranquillity of the limestone dales, and enhance their limestone grasslands, woodlands and scrub of European importance, to protect sense of place, water quality, biodiversity and recreational opportunities.

- **SEO 3:** Maintain and enhance the limestone plateau's pastoral landscape with its distinctive pattern of drystone walls, dew ponds, archaeology and habitats such as hay meadows and limestone heaths, to allow a viable and sustainable farming industry that produces high-quality food and supports thriving rural communities.

- **SEO 4:** Maintain and enhance opportunities for enjoyment and understanding of the White Peak's distinctive limestone features and historical, cultural and natural heritage by providing recreational opportunities for a wide range of users and ensuring that new development makes a positive contribution to biodiversity, sense of place, sense of history, tranquillity and quality of life for local people and visitors.

# Description

## Physical and functional links to other National Character Areas

The White Peak National Character Area (NCA) is surrounded to the west by the higher gritstone uplands and moorlands of the South West ¬Peak NCA and to the north and east by the Dark Peak NCA. With them it forms the Peak District National Park, resulting in strong administrative, strategic and recreational links between the three NCAs. From the plateau and hill tops in the White Peak there are far-reaching views to the surrounding gritstone moorlands.

The White Peak's major rivers rise on the gritstone of Axe Edge, to the south-west of Buxton in the South West Peak NCA. They flow south-east into the Dark Peak NCA, the Derbyshire Peak Fringe and Lower Derwent NCA and the Needwood and South Derbyshire Claylands NCA, to join the River Trent and ultimately flow into the North Sea.

Major transport routes include the A515 linking Buxton to Ashbourne; the A6 linking Buxton to Bakewell, Matlock and to Derby beyond; and the A623 linking Chapel-en-le-Frith and Baslow. Rail links connect Buxton to Manchester and Matlock to Derby. The Pennine Bridleway starts in the south-east corner of the White Peak and runs north into the Dark Peak NCA and the rest of the Pennine chain further north.

**The clear-limestone rivers support a rich array of wildlife, including many invertebrate species such as mayflies, hoverflies and dragonflies which in turn are food for the woodland birds that thrive in the undisturbed dale-side ash woodland.**

## Key characteristics

- Elevated, gently undulating limestone plateau with occasional knolls and crags, dissected by steeply cut dales and gorges with rock outcrops, screes and caves.
- Clear rivers, streams and springs in some dales; others are dry or run water only in winter.
- Steep dale sides with a mosaic of flower-rich limestone grassland, ash woodland and wildlife-rich scrub.
- Improved grassland for dairy and livestock farming dominates the plateau, punctuated by occasional dew ponds, narrow shelterbelts of broadleaved trees and small patches of rough grassland, meadow and heath.
- Grassland enclosed by limestone walls, with small narrow strip fields often of medieval origin around villages, and larger rectangular fields away from the villages.
- Nucleated villages and small towns connected by crest and valley roads.
- A mix of limestone and gritstone used as building materials and stone and Welsh slate for roofs. Widespread features of special archaeological and historical interest including Neolithic and bronze-age ritual monuments.
- Many visible reminders of early industry, including historic limestone and lead workings, lime kilns and dramatic water mills from the 18th-century textile industry.

**The White Peak is incised by numerous steep-sided valleys, such as Lathkill Dale, the wildlife value of which is recognised by national and European designations.**

Caves, such as Thor's Cave, are a distinctive feature of the area formed by water erosion of the soluble limestone geology.

## The White Peak today

The White Peak NCA is a raised limestone plateau incised by deep dales and punctuated by occasional prominent steep hills, knolls and cliff faces. The majority of the plateau is above 300 m, rising to its highest level around Bradwell Moor and Eldon Hill to the north. The major rivers, the Manifold, Dove and Wye, run in a south-easterly direction from the edge of the gritstone moorlands on the north-west boundary to ultimately join the River Trent and run out to the North Sea. The valleys are varied in their shape and character; some are narrow gorge-like valleys such as Wolfscote Dale and Dovedale, while others are wider and more open, such as the lower reaches of the Wye Valley. Some valleys carry rivers all year round, such as Dovedale and Miller's Dale, whereas others are dry or seasonal in nature, such as Upper Lathkill, Manifold and Hamps. The spectacular beauty of this landscape, and its importance to nearby populations for recreation, was recognised by its inclusion in the UK's first National Park.

The largest areas of broadleaved woodland are confined to the steep-sided valleys and dale sides, where important stands of ash woodland remain. Isolated patches of woodland are scattered across the plateau in small plantations and shelterbelts, particularly around farmsteads. While clear-running rivers, streams and springs are a strong feature of the area, there are few other waterbodies, with the exception of dew ponds scattered across the free-draining plateau. Land cover is primarily grassland: improved pasture for grazing livestock and silage fields for dairy and beef cattle, with little arable land. This creates a distinctive patchwork of vivid green fields, unusual at this elevation, divided by grey limestone walls into geometric fields in open country and smaller strip fields of medieval origin nearer villages.

The limestone dales are of outstanding wildlife value for their flower-rich limestone grasslands, ancient ash woodlands, scrub, limestone rivers, wetlands, caves and rocky outcrops. They support species such as white-clawed crayfish, water vole, lamprey, Jacob's ladder, peregrine, raven and dipper. Caves provide roosting sites for a large number of bats and dale-side woodlands support important populations of woodland birds. The majority of the dales, 2,337ha, are included in the Peak District Dales Special Area of Conservation (SAC), and are Sites of Special Scientific Interest (SSSI) of both natural and geological importance. On the plateau, fragments of limestone heathland, traditional species-rich hay meadows, neutral grassland and calaminarian grassland (lead-loving plants on old mining sites) remain and are all important for wildlife. The plateau has far fewer features of wildlife value, but does have scattered dew ponds which, although poorly vegetated, provide an important refuge for water crowfoot and great crested newt.

The area has a rich archaeological resource, particularly Neolithic remains such as Arbor Low henge and stone circle, and bronze-age/Saxon burial places, such as Wigber Low. There are some areas of exceptionally well-preserved historic landscapes, such as the narrow strip field systems around Chelmorton and areas of ridge and furrow, such as those near Ilam. The historic value of the rocks and minerals of the area is evident in the large number of disused historic lead mines, quarries and lime kilns. Large mill buildings and associated workers' housing are prominent reminders of the importance of the area for early water-powered textile manufacturing. The protection afforded to the landscape by its National Park status has seen the majority of villages maintain a traditional appearance and retain a large proportion of historic buildings. The tradition of well-dressing is still practised widely. This takes place in spring and summer and involves creating intricate decorations, often depicting biblical scenes, by pressing flower petals and other colourful materials on to a board covered with clay.

The White Peak NCA is a settled but distinctly rural area. Settlements are a mixture of market towns, such as Buxton and Bakewell, the spa town of Matlock Bath, small nucleated or linear villages and isolated farmsteads; there are no large urban centres. Buildings tend to be made of local limestone but often with some features made out of gritstone, such as door and window surrounds and quoins. Larger, grander buildings are often made entirely of gritstone, particularly in the larger towns. A number of major roads follow the south-easterly grain of the landscape and are linked by a network of direct minor roads. Quarrying and mineral extraction remain important industries in the White Peak, with large limestone quarries still in production along with the UK's only processor and main source of fluorspar. The water resources of the area support a major bottled water enterprise at Buxton and existing and planned thermal spas at Matlock and Buxton.

The White Peak is an immensely popular area for outdoor recreation, and receives large numbers of visitors. The landscape can be easily accessed by large populations in the nearby cities of Manchester, Sheffield, Nottingham, Derby and Stoke-on-Trent. It offers excellent opportunities for traffic-free walking, cycling and horse riding, particularly along old railway lines, in the deep limestone valleys and along the Pennine Bridleway. The concentration of exposed rockfaces, vast cave networks and abandoned mines makes it an important destination for climbers and cavers, and the clear-running rivers support healthy populations of fish that attract many fly fishers.

## The landscape through time

The White Peak NCA landscape has been dramatically shaped by the interaction of climate, water and human activity with the underlying limestone over millennia. The Carboniferous Limestones of the area were formed between 360 and 326 million years ago, when the area lay just south of the equator and was covered by a shallow tropical sea. The warm nutrient-rich seas allowed coral reefs to grow, encircling clear tropical lagoons, where the remains of sea creatures accumulated and over time turned into limestone. Three distinct types of limestone formed: the pale grey, thickly bedded, 'shelf' limestone which forms the plateau and is the commonest type; the darker grey 'basin' limestone which occurs in thin strongly folded beds in the south-west of the area; and the rare 'reef' limestone which is rich in fossils and resists weathering due to its hard fine-grained nature to form distinctive conical hills (reef knolls) such as Thorpe Cloud and Wetton Hill. Volcanic eruptions during the Carboniferous Period intruded sills of darker coloured rocks (basalt) and volcanic clay interbedded with the limestone. The limestone also contains deposits of mineral ores including lead and copper and the Castleton area is also famed for the mineral Blue John (also known as Derbyshire Spar). The fractures, cracks and joints in the limestone have been enlarged over millennia by water erosion to form a network of cave systems[4].

Visible reminders of recent ice ages in the White Peak are subtle in comparison with those in the upland areas further north. Although the area was covered by deep layers of ice, the lack of steep slopes meant that the ice stayed in place until it melted, rather than flowing through and scouring the landscape. The majority of valleys, with the exception of the Wye Valley, have been cut by running water rather than worn away by flowing glaciers. The dry tundra winds of the last ice age left the biggest mark on the landscape, sculpting dramatic tors and depositing a thick layer of fertile loess soils on the plateau which enable it to support unusually rich pastures for its elevation[5].

[4] *Rocks and minerals of the Peak District National Park,* Peak District National Park Authority (URL: www.peakdistrict.gov.uk/__data/assets/pdf_file/0011/79229/factsheet6-minerals.pdf)

[5] *Ice Ages in the Peak District,* Peakscan (accessed November; URL: www.peakscan.freeuk.com/index.htm)

The White Peak retains a fantastically rich record of early human activity. Neolithic sites in the area are of great national importance, such as Arbor Low henge and stone circle and Minninglow burial mound. The Bronze Age would have seen an acceleration in woodland clearance and left behind highly visible burial mounds. Evidence remains of Romano-British farming including stock pounds to the north and numerous farmsteads and settlements further south. The Romans established a settlement at Buxton, called Aquae Arnemetiae or 'the waters of the goddess of the sacred grove', and key route ways extending south and south-eastwards along the watershed with Dovedale and the Wye Valley. By 600 AD the Anglo-Saxon 'Pecsaetan' people dominated the area; they not only gave their name to the Peak District, but renamed most places, erasing many Celtic names.

**Harder limestones have eroded more slowly over time to form distinctive knolls rising up above the plateau.**

The current nucleated and linear settlement pattern generally developed through the 10th to 13th centuries. Enclosure of the open field systems started in the 14th century and was completed in the mid-18th century under Parliamentary Enclosure Acts, creating the larger rectangular fields away from the villages. The small narrow medieval field systems, with their distinctive S-shaped curves, were created by early enclosure around villages, such as at Chelmorton. There is a high survival rate of intact ridge and furrow, especially to the south and west of Bakewell.

**The minerals of the area have been economically important for many centuries, as evidenced by numerous historic lead mining sites such as the Lees and Dove Rakes.**

The rich mineral and geological resources of the White Peak have been exploited for millennia, with increased intensity from the mid-17th century onwards, using gunpowder, horse power and, later, steam power. Lead mining left many distinctive landscape features including rakes, waste heaps, pits, engine sites and smelt houses. Later, deeper mines needed enhanced drainage, which resulted in a lowering of the water table that persists to this day and contributes to the drying out of valley rivers in summer. Other mining activities focused on copper, semi-precious Blue John, limestone for construction, smelting and lime production. Industrial enterprises expanded to include water-powered textile mills in the 18th century, with large mills built at Cressbrook, Litton and Bakewell. These encouraged the influx of many people to work in the mills and live in the associated housing. A small part of the White Peak NCA falls within the Derwent Valley Mills World Heritage Site.

The Victorians were the first to embrace the White Peak as a tourism destination; railways opened it up to mass tourism and spas were developed at Buxton and Matlock Bath. The popularity of the area with tourists continues to this day, but the large numbers of people now arriving by car puts intense pressure on roads and infrastructure. Agricultural land-use change in the 19th century resulted in the natural regeneration of many of the dale-side ash woodlands.

In the early 20th century, fluorspar, once disposed of as a waste material by lead miners, became an important component of steel manufacturing in nearby Sheffield, and the Peak District became the principal source of fluorspar in the UK. During the second half of the 20th century, the rural landscape saw a dramatic conversion of traditional hay meadows to improved pasture and silage fields, and widespread conversion of traditional farm buildings for other uses as they became too small for modern farm machinery. Since the 1990s, agri-environment schemes have contributed to the restoration and maintenance of many traditional farm boundaries, buildings and habitats, with a particular focus on drystone walls, stone field barns, dew ponds and flower-rich grasslands.

## Ecosystem services

The White Peak NCA provides a wide range of benefits to society. Each is derived from the attributes and processes (both natural and cultural features) within the area. These benefits are known collectively as 'ecosystem services'. The predominant services are summarised below. Further information on ecosystem services provided in the White Peak NCA is contained in the 'Analysis' section of this document.

### Provisioning services (food, fibre and water supply)

- **Food provision:** The primary food products of the area are meat (beef and lamb) and dairy products. The NCA's elevation makes the area unsuitable for large-scale arable production. The agricultural land on the plateau is productive, equivalent to areas of much lower elevation. There is good potential for increasing the efficiency of food production and there are good opportunities for local marketing and sale of food products.

- **Water availability:** The limestone aquifer and the major rivers provide water for use in agriculture and industry and for drinking water. The more remote properties are supplied by spring water and some areas of the plateau are lacking in water sources due to the permeable nature of the limestone. Dew ponds were created in large numbers historically to provide livestock with drinking water, and some of these are still in use today. Some of the rivers suffer extreme low flows, or complete drying out, in summer. In some cases this is natural, with flow captured by underground watercourses, but in some cases it is exacerbated by historic deep drainage for mining which artificially lowered the water table. Measures to increase the efficiency of water use and the use of grey water/ rainwater and to reverse the unnatural lowering of the water table would all help to improve water availability.

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

- **Regulating water quality:** The limestone helps to maintain water quality by filtering groundwater; however, it also makes the area's water vulnerable to pollution by creating close links between surface water and groundwater. Water quality is generally good in the area, with some exceptions due particularly to nutrient pollution and sedimentation. Measures to limit diffuse pollution from agriculture (efficient and appropriate use of nutrients and chemicals, restricting livestock access to watercourses and avoiding soil erosion) and to reduce nutrient outputs from water treatment works could be beneficial.

- **Regulating water flow:** Some of the White Peak's rivers suffer very low summer flows, partly due to an artificial lowering of the water table by the historic drainage of mines. Innovative approaches may be needed to reverse the lowering of the water table and to help farmers, residents and businesses use less water and capture and (re)use more rain and grey water. Flooding is more of a problem downstream than within the NCA itself and opportunities may exist to ameliorate this by creating/restoring small natural water storage areas and wetlands in river valleys where the topography and geology will allow.

### Cultural services (inspiration, education and wellbeing)

- **Sense of place/inspiration:** The area has an exceptionally strong sense of place because of its limestone geology and karst features (such as gorges, rock outcrops, caves); far-reaching views; dramatic and tranquil steep-sided valleys; clear springs, streams and rivers; well-preserved historic landscapes (e.g. drystone wall networks, ridge and furrow, traditional villages); rich archaeology (e.g. Neolithic and Bronze Age stone circles and burial mounds, historic mining sites); and cultural traditions (e.g. well-dressing). It is important to preserve all these elements as well as the area's traditional and undeveloped character. It is also important to promote and explain the landscape to visitors and to incorporate high-quality design into new buildings and infrastructure that improves environmental sustainability and quality of life for local people.

- **Sense of history:** Prehistoric ritual and early industry are still visible in this landscape with stone circles and burial mounds in prominent locations; an impressive concentration of historic lead mining sites and features associated with limestone extraction and processing (e.g. quarrying, lime kilns, railways); and the early years of mechanised textile production embodied in the grand mill buildings along the rivers. The historic landscapes of narrow sinuous fields alongside villages preserve the layout of medieval field systems. Historic features, landscapes and cultural traditions should be preserved and interpreted for locals and visitors.

- **Tranquillity:** Overall 76 per cent of this NCA is classed as 'undisturbed'. The steep-sided dales are havens of tranquillity, particularly where they have no roads and are wilder in character. Areas of the plateau can also be tranquil, but are more vulnerable to traffic noise. The intensity of visitor numbers during peak times of year can reduce the sense of tranquillity in even the wildest dales and needs to be carefully managed to minimise negative impacts. All opportunities to encourage people to visit without their cars should be explored.

- **Recreation:** Some 7 per cent of the NCA is classed as publicly accessible – it has 2km per sq km of public rights of way and can be easily reached by a large number of people in the surrounding conurbations. It has very good multi-user trails, including the Pennine Bridleway, many of which are along disused railways and separate from the traffic. It is a very popular place for outdoor recreation, including fishing, walking, cycling, visits to show caves, rock climbing and caving. Outdoor recreation is actively encouraged and supported by the National Park Authority.

- **Biodiversity:** The limestone dales are of exceptional biodiversity value, recognised by the designation of many of them as a European SAC. Their primary assets are their rivers (above and below ground), wetlands, flower-rich calcareous grassland, scrub and woodland, as well as their rocky outcrops and caves. Scarce and valuable habitats and species also persist in small pockets on the plateau, particularly in the traditional hay meadows, limestone heath, calaminarian grasslands, neutral pasture and dew ponds, which support great crested newts. Measures to protect these habitats, improve water quality and ensure wildlife-friendly farming practices could all play an important role in maintaining the outstanding biodiversity of this area.

- **Geodiversity:** The area is of outstanding geological interest for its karst features and has a large number of mixed interest and geological SSSI. Geological features include caves, gorges, outcrops and tors. The limestone is veined by a rich array of minerals, many of which are economically valuable and have been exploited for millennia. The geodiversity of the area presents a rich educational, recreational and scientific resource that should be conserved and sympathetically managed.

**The White Peak is an immensely popular site for recreation, with key sites like Dove Dale attracting vast numbers of local and international tourists.**

# Statements of Environmental Opportunity

**SEO 1: Protect and enhance the area's clear limestone rivers, streams and springs, limestone aquifer and dramatic karst geology, to provide a source of clean water, support strong populations of fish and other wildlife, enhance recreational and educational opportunities and contribute to the White Peak's strong sense of place and history.**

**For example, by:**

- Providing advice, information and financial support to help farmers to reduce diffuse and point source water pollution through good land, soil and water management, including efficient use of fertilisers, agricultural chemicals and water, avoiding compaction and soil erosion and updating farm infrastructure.
- Working with water treatment works to reduce the levels of nutrients discharged to the rivers, particularly the River Dove.
- Encouraging and supporting the removal of artificial barriers to fish migration, where this is compatible with historic and landscape objectives.
- Exploring opportunities for the creation of small-scale natural storage of floodwater in flood plains, ponds and wetlands.
- Exploring innovative solutions for limiting loss of river water into underground soughs associated with disused mines, using measures that minimise disruption to cave access and monitoring.
- Encouraging sympathetic management, restoration and creation of riparian habitats, particularly grassland, woodland and wetland.
- Providing advice and support to businesses and residents on how to minimise water usage, maximise capture and reuse of grey water and rainwater and reduce abstractions from watercourses.
- Encouraging retrofitting of water-saving features to existing housing and industry.
- Planning new development, housing and industry to include sustainable drainage systems that minimise run-off and maximise water storage capacity.
- Protecting geological features and maintaining their visibility by removing/managing vegetation.
- Ensuring that access routes and new developments do not intrude on geological features.
- Continuing to develop and enhance interpretation material, using new media to increase public understanding and appreciation of the White Peak's geodiversity, especially its karst features.
- Continuing to work with cavers to assess the condition of cave Sites of Special Scientific Interest and to monitor pollution incidents; and to work with fishing interests to monitor river conditions.
- Working with owners and operators of quarries to limit the landscape and environmental impacts of active quarries and ensure high-quality restoration of disused sites to provide opportunities for recreation, education and creation of habitats and refuges for priority species such as crayfish.

**SEO 2: Safeguard the unique character and tranquillity of the limestone dales, and enhance their limestone grasslands, woodlands and scrub of European importance, to protect sense of place, water quality, biodiversity and recreational opportunities.**

**For example, by:**

- Protecting the tranquil and undeveloped character of the steep limestone dales and gorges.
- Protecting, sympathetically managing and enhancing species-rich limestone grassland, working with farmers to identify solutions to make grazing/management of neglected limestone grassland financially viable.
- Managing scrub to enhance its wildlife value and prevent damage to and loss of valuable habitats and archaeological and historical features.
- Buffering dale-side grasslands by the creation of hay meadows and unimproved pasture on dale brows.
- Protecting, conserving and sympathetically managing the dale-side ash woodlands through conservation management (fencing, control of non-native species, and creation of deadwood) and non-intervention management.
- Creating and maintaining woodland edge habitats and buffer zones on dale brows to protect and link dale-side woodlands.
- Encouraging the best use of future agri-environment schemes to conserve, enhance and buffer the best wildlife habitats in the area, taking a landscape-scale view to ensure that individual agreements deliver environmental benefits for the wider area as well as individual holdings.
- Carrying out thorough and regular monitoring to allow early identification of tree diseases, particularly ash die-back, and taking co-ordinated action to limit their spread.
- Exploring ways of limiting the impact of ash die-back on the landscape and biodiversity interest, such as researching resistance among local ash trees.

**SEO 3: Maintain and enhance the limestone plateau's farmed pastoral landscape with its distinctive pattern of drystone walls, dew ponds, archaeology and habitats such as hay meadows and limestone heaths, to allow a viable and sustainable farming industry that produces high-quality food and supports thriving rural communities.**

**For example, by:**

- Protecting, enhancing and restoring species-rich hay meadows and creating new meadows, using local seeds and by securing traditional/sympathetic hay meadow management and grazing regimes.
- Conserving, restoring and, where appropriate, creating limestone heath.
- Conserving calaminarian grassland and its rare lead-loving plants on old lead workings.
- Encouraging the retention and creation of small areas of rough habitats (rough grassland, scrub, heath and woodland) on dale brows and the plateau to buffer, connect or link dale-side grasslands and woodlands and to provide valuable wildlife habitat on the plateau.
- Retaining, managing and replenishing trees and woodland features on the plateau, particularly boundary trees and shelterbelts around farmsteads, settlements and historic lead rakes.
- Providing information, advice, training and support to farmers on how to improve efficiency and the environmental impact of food production through good land, soil and water management including measures such as the efficient use of fuel, chemicals, medicines and water; improving soil quality; and the capture and re-use of rain and grey water.
- Encouraging and supporting wildlife-friendly farming practices that allow scarce species to co-exist with commercial farming, such as late cutting of silage fields/meadows with nesting waders, and the sympathetic restoration and conversion of traditional farm buildings to allow their continued use by barn owls, swallows and bats.
- Encouraging and supporting the development of local products and marketing based on the distinctive landscape and environmental standards.
- Exploring opportunities for small-scale extraction of woody biomass from existing plantations.
- Protecting, maintaining and restoring networks of drystone walls and field barns using traditional materials, styles and techniques.
- Conserving and maintaining dew ponds, particularly where they contain great crested newts.
- Supporting training and apprenticeships in drystone walling and traditional crafts.
- Providing information and training for owner/occupiers, builders and tradesmen on the sympathetic maintenance and restoration of old buildings using traditional techniques and appropriate materials.
- Ensuring conservation and sympathetic management of above and below ground archaeology and historic landscapes on the plateau, particularly Neolithic and bronze-age burial structures, medieval fieldscapes and industrial sites.

**SEO 4: Maintain and enhance opportunities for enjoyment and understanding of the White Peak's distinctive limestone features and historical, cultural and natural heritage by providing recreational opportunities for a wide range of users and ensuring that new development makes a positive contribution to biodiversity, sense of place, sense of history, tranquillity and quality of life for local people and visitors.**

**For example, by:**

- Seeking opportunities to makes it easy and appealing for people to visit without their cars, for example by creating good bike/multi-user routes to surrounding settlements and providing good, well-co-ordinated public transport links and other facilities.
- Continuing to develop interpretation and education facilities using new media and delivered by a wide range of people and organisations.
- Managing visitors to popular locations to minimise traffic, disturbance, erosion and other negative environmental impacts.
- Enhancing recreational opportunities by improving existing access routes (for example signage, surfacing, links), providing new facilities for a wide range of users (for example cyclists, horse riders, walkers, cavers, climbers, people with limited mobility, anglers) and producing route maps.
- Promoting the health benefits of outdoor recreation to residents and visitors alike and by incorporating accessible green spaces into new developments, providing local residents with opportunities to enjoy the many health benefits afforded by contact with the natural environment.
- Ensuring sympathetic management and high-quality interpretation of below and above ground archaeology, particularly sites associated with Neolithic, bronze-age, Anglo-Saxon, medieval and industrial heritage.
- Ensuring the protection, sympathetic management, restoration and interpretation of historic structures associated with the use of the area's watercourses to power early industry, such as water leats and mill buildings, particularly where associated with the Derwent Valley Mills World Heritage Site, compatible with the restoration of natural river function.
- Protecting the nucleated pattern and historic character of villages, ensuring that high-quality, innovative and sustainable design is encouraged.
- Encouraging the use of traditional techniques, styles and materials for the maintenance, repair and restoration of historic buildings.
- Ensuring that new housing, infrastructure and other developments are sympathetically sited and designed to minimise visual impact.
- Supporting the continuation and promotion of the traditional local custom of well-dressing.

# Supporting document 1: Key facts and data

**Area of White Peak National Character Area (NCA): 52,860 ha**

## 1. Landscape and nature conservation designations

Around 78 per cent of this NCA (41,059 ha) falls within the Peak District National Park.

A management plan for the protected landscape can be found at:

- http://www.peakdistrict.gov.uk/

**Source: Natural England (2011)**

### 1.1 Designated nature conservation sites

| Tier | Designation | Name | Area (ha) | % of NCA |
|---|---|---|---|---|
| International | Ramsar | n/a | 0 | 0 |
| European | Special Protection Area (SPA) | Peak District Moors (South Pennine Moors Phase 1) SPA | 8 | <1 |
| | Special Area of Conservation (SAC) | Peak District Dales SAC; Bees Nest and Green Clay Pits SAC; Gang Mine SAC | 2,346 | 4 |
| National | National Nature Reserve (NNR) | Dovedale NNR; Derbyshire Dales NNR | 1,069 | 2 |
| | Site of Special Scientific Interest (SSSI) | A total of 53 sites wholly or partly within the NCA | 5,014 | 9 |

**Source: Natural England (2011)**

*Please note: (i) Designated areas may overlap (ii) all figures are cut to Mean High Water Line, designations that span coastal areas/views below this line will not be included.*

There are 138 local sites in the White Peak NCA covering 1,100 ha which is 2 per cent of the NCA.

**Source: Natural England (2011)**

- Details of individual Sites of Special Scientific Interest can be searched at: http://www.sssi.naturalengland.org.uk/Special/sssi/search.cfm
- Details of Local Nature Reserves (LNR) can be searched at: http://www.lnr.naturalengland.org.uk/Special/lnr/lnr_search.asp
- Maps showing locations of Statutory sites can be found at: http://magic.Defra.gov.uk/website/magic/ – select 'Rural Designations Statutory'

### 1.1.1 Condition of designated sites

| SSSI condition category | Area (ha) | Percentage of NCA SSSI resource |
|---|---|---|
| Unfavourable declining | 101 | 2 |
| Favourable | 3,377 | 68 |
| Unfavourable no change | 122 | 3 |
| Unfavourable recovering | 1,349 | 27 |

**Source: Natural England (March 2011)**

- Details of SSSI condition can be searched at: http://www.sssi.naturalengland.org.uk/Special/sssi/reportIndex.cfm

## 2. Landform, geology and soils

### 2.1 Elevation

The lowest elevation in this NCA is 91 m; the highest point is 475 m. The mean elevation across the NCA is 295 m.

**Source: Natural England 2010**

### 2.2 Landform and process

South-west of Castleton, the massive beds of off-white, grey or even dark blue-grey limestone give rise to a higher inner plateau seldom below 330 m and rising in places to top the 460 metre contour. The highest parts are close to the area's northern rim around Bradwell Moor and Eldon Hill. Seasonal meltwaters and meltwater following glaciation during the last ice age would have assisted in carving out the limestone caverns of the White Peak and deep steep-sided gorges such as Winnats Pass near Castleton.

**Source: White Peak Countryside Character Area Description**

### 2.3 Bedrock geology

The Carboniferous Limestone of the White Peak can be subdivided into three distinct types, each indicative of a different depositional environment and producing different landscapes today. The most common over much of the plateau area is the so called 'shelf' limestone which is pale grey and thickly bedded in gently dipping beds. The next most common, in the south-west of the area is the 'basin' limestone which is darker grey in colour and occurs in thinner, strongly folded beds. The least common is the 'reef' limestone found within the wider basin limestone area, which is rich in fossils. Volcanic rocks, which erupted just over 300 million years ago, commonly occur interbedded with the limestone in the White Peak. The limestone also contains deposits of mineral ores including lead and copper, which have been mined since Roman times. The Castleton area is also famed for the mineral Blue John that lines the walls of cavities in the limestone.

**Source: Natural England 2010, White Peak Countryside Character Area Description**

### 2.4 Superficial deposits

During the final phase of glacial history cold icy winds swept across the limestone plateau depositing a liberal supply of fine silt or loess which makes a significant contribution to the present soils of the area.

**Source: White Peak Countryside Character Area Description**

### 2.5 Designated geological sites

| Tier | Designation | Number |
|---|---|---|
| National | Geological Site of Special Scientific Interest (SSSI) | 18 |
| National | Mixed Interest SSSI | 10 |
| Local | Local Geological Sites | 97 |

**Source: Natural England (2011)**

- Details of individual Sites of Special Scientific Interest can be searched at: http://www.sssi.naturalengland.org.uk/Special/sssi/search.cfm

### 2.6 Soils and Agricultural Land Classification

Within the NCA the soil types vary depending on factors including topography and position. Intensive dairy farming on improved grassland tends to be the dominant land cover throughout the White Peak on the limestone plateau due to the deep productive soils that were deposited during the final phase of glacial history. This has resulted in rich loam soils even at heights above 350 m. In certain areas superficial deposits have resulted in a layer of stoneless loam in excess of 1.2 m thick. Where limestone outcrops occur the surrounding soil is thin and generally of poor quality and the top of the dale slopes tend to have more acidic soils. However, away from the steeper dale sides, the valley bottoms are now occupied with highly productive grass leys helped by nutrients being washed down the steep slopes or deposited by flooding rivers, creating a rich productive soil.

**Source: White Peak Countryside Character Area Description, White Peak Natural Area Profile**

The main grades of agricultural land in the NCA are broken down as follows (as a proportion of total land area):

| Grade | Area (ha) | % of NCA |
|---|---|---|
| Grade 1 | 0 | 0 |
| Grade 2 | 0 | 0 |
| Grade 3 | 7,514 | 14 |
| Grade 4 | 35,086 | 66 |
| Grade 5 | 9,798 | 19 |
| Non-agricultural | 46 | 19 |
| Urban | 415 | 1 |

**Source: Natural England (2010)**

- Maps showing locations of Statutory sites can be found at: **http://magic.Defra.gov.uk/website/magic/** – select 'Landscape' (shows ALC and 27 types of soils).

## 3. Key water bodies and catchments

### 3.1 Major rivers/canals

The following major rivers/canals (by length) have been identified in this NCA.

- River Wye 27 k m
- River Dove 21 km
- River Manifold 14 km
- River Derwent 1 km

**Source: Natural England (2010)**

**Please note: Other significant rivers (by volume) may also occur. These are not listed where the length within the NCA is short.**

The gently rolling plateau of the limestone is deeply dissected by the rivers Manifold, Dove, Larkhill and Wye and their associated network of dry tributary valleys. Both the Dove and Manifold rivers manage to cross the porous limestone tract only because their courses are superimposed. In a series of tight loops, the River Dove has made an impressive gorge-like incision into the limestone plateau. The Manifold Valley has a different character to the Dove, being more open and on a larger scale. The river disappears completely underground for a whole section of its course. Occasionally, during winter months, there is a continuous flow, but a dry spell can cause the water table to drop and the river to disappear. Its main tributary, the Hamps, is also dry for much of the year. At the eastern edge of the White Peak, the River Derwent produces an impressive feature at Matlock Gorge.

### 3.2 Water quality

The total area of Nitrate Vulnerable Zone is 52,787 ha which is 99 per cent of the NCA.

**Source: Natural England (2010)**

### 3.3 Water Framework Directive

Maps are available from the Environment Agency showing current and projected future status of water bodies at:

http://maps.environment-agency.gov.uk/wiyby/wiybyController?ep=maptopics&lang=_e

## 4. Trees and woodlands

### 4.1 Total woodland cover

The NCA contains 3,096 ha of woodland (6 per cent of the total area), of which 953 ha is ancient woodland.

**Source: Natural England (2010), Forestry Commission (2011)**

### 4.2 Distribution and size of woodland and trees in the landscape

Woodland is now restricted to small isolated copses on high ground and larger areas of ancient woodland and scrub along the steep sides of the dales. Copses tend to be broadleaved plantations, typically sycamore which is a species commonly found along lead rakes and colonising spoil tips. Deciduous semi-natural woodland is also concentrated along the steep sides of the numerous dales.

**Source: White Peak Countryside Character Area Description**

### 4.3 Woodland types

A statistical breakdown of the area and type of woodland found across the NCA is detailed in the following table.

Area and proportion of different woodland types in the NCA (over 2 ha)

| Woodland type | Area (ha) | % of NCA |
|---|---|---|
| Broadleaved | 2,809 | 5 |
| Coniferous | 136 | <1 |
| Mixed | 71 | <1 |
| Other | 80 | <1 |

**Source: Forestry Commission (2011)**

Area and proportion of ancient woodland and planted ancient woodland within the NCA.

| Type | Area (ha) | % of NCA |
|---|---|---|
| Ancient semi-natural woodland | 782 | 2 |
| Planted Ancient Woodland (PAWS) | 171 | <1 |

**Source: Natural England (2004)**

## 5. Boundary features and patterns

### 5.1 Boundary features

The predominant boundary type on the plateau and higher ground is drystone walling made of local stone (either limestone or gritstone). Later walls are often made of quarried stone, with earlier walls of rougher 'rubble' stone. Hedgerows are common on lower ground, mostly of hawthorn and blackthorn.

**Source: White Peak Countryside Character Area description; Countryside Quality Counts (2003)**

### 5.2 Field patterns

Around villages fields tend to be small and narrow, often with boundaries of medieval origin. Fields further away from villages tend to be large and rectangular, delineated by a regular network of drystone walls. There are some particularly good examples of the strip field system, dating from the Parliamentary Enclosures Acts, in the Chelmorton area.

**Source: White Peak Countryside Character Area description; Countryside Quality Counts (2003)**

## 6. Agriculture

The following data has been taken from the Agricultural Census linked to this NCA.

### 6.1 Farm type

In 2009 the majority of the areas farm holdings were livestock farms, with 418 classified as 'grazing livestock', 159 as 'dairy' and 150 as 'other'.

**Source: Agricultural Census, Defra (2010)**

### 6.2 Farm size

Just over half of the area's agricultural land (23,187 ha) in 2009 was in farms greater than 100 ha, and only 5 per cent (2,218 ha) in farms smaller than 20 ha (these figures do not include the access that many farms have to common grazing on the moors).

**Source: Agricultural Census, Defra (2010)**

### 6.3 Farm ownership

2009: Total farm area = 43,805 ha; owned land = 25,741 ha
2000: Total farm area = 41,983 ha; owned land = 27,261 ha

**Source: Agricultural Census, Defra (2010)**

### 6.4 Land use

Almost the entire commercial agricultural area (96 per cent) (not including common land) is grass and uncropped land.

**Source: Agricultural Census, Defra (2010)**

### 6.5 Livestock numbers

In 2009 there were 65,974 dairy and beef cattle (68,531 in 2000), 151,298 sheep (171,238 in 2000) and 9,854 pigs (5,978 in 2000).

**Source: Agricultural Census, Defra (2010)**

### 6.6 Farm labour

In 2009 there were 1,531 agricultural workers of which 1,151 (75 per cent) are principal farmers, 146 (10 per cent) part time workers, 120 (8 per cent) full time worker, 104 casual/gang workers and 10 (1 per cent) salaried managers.

**Source: Agricultural Census, Defra (2010)**

**Please note: (i) Some of the Census data is estimated by Defra so will not be accurate for every holding (ii) Data refers to Commercial Holdings only (iii) Data includes land outside of the NCA belonging to holdings whose centre point is within the NCA listed.**

## 7. Key habitats and species

### 7.1 Habitat distribution/coverage

The White Peak is famous for its extremely rich limestone grassland; dry calcicolous grassland of this type is listed as a key biodiversity habitat. The best examples in the White Peak are internationally important and have been designated as Special Areas of Conservation.

Important areas of shorter neutral grassland, managed by grazing, also occur on the dale slopes and can have a wide variety of species.

Areas of acidic grassland occur on poor leached soils on the upper edges of some of the dales and steeper land on the plateau.

The limestone heaths of the White Peak owe their origin to the extensive woodland clearance which occurred on the plateau in Neolithic times, this internationally important habitat is close to disappearing due to agricultural practices.

Calaminarian grasslands, grasslands that have developed a highly specialised plant cover composed of species that can cope with high toxicity can be found in the White Peak. These are recognised as a key biodiversity habitat and some of the best examples have been designated a Special Area of Conservation. These tend to be found on the small heaps of worked spoil associated with lead mining in the area.

Many of the dale sides are cloaked by limestone scree which is home for a surprising number of species, many of them nationally rare.

The woodland cover of the White Peak can be described in three broad groups: dale-side ash woods, wet alder woods and upland plateau oak woodland. All three types are key biodiversity habitats, although the ash woods are the only type which is extensive in the White Peak. These are internationally important examples of the type of ravine forests found on the continent and some have been designated a Special Area of Conservation.

Often overlooked and with a poor standing in the eyes of both land managers and conservationists, the extensive areas of scrub found particularly on the dale sides of the White Peak are an important wildlife habitat. There are three distinct types, the first is thought to be derived from ancient woodland and is home to some important and restricted plants, and is found on the slopes of the dales. The second is restricted to leached soils and is dominated by western gorse and the third is a more general type often rich in bird and insect life.

**Source: White Peak Natural Area Profile**

### 7.2 Priority habitats

The Government's new strategy for biodiversity in England, *Biodiversity 2020*, replaces the previous Biodiversity Action Plan (BAP) led approach. Priority habitats and species are identified in *Biodiversity 2020*, but references to BAP priority habitats and species, and previous national targets have been removed. Biodiversity Action Plans remain a useful source of guidance and information. More information about *Biodiversity 2020* can be found at;

http://www.naturalengland.org.uk/ourwork/conservation/biodiversity/protectandmanage/englandsbiodiversitystrategy2011.aspx

The NCA contains the following areas of mapped priority habitats (as mapped by National Inventories). Footnotes denote local/expert interpretation. This will be used to inform future national inventory updates.

| Priority habitat | Area (ha) | % of NCA |
|---|---|---|
| Lowland calcareous grassland | 2,843 | 5 |
| Upland calcareous grassland | 2,360 | 4 |
| Broadleaved mixed and yew woodland (broad habitat) | 2,064 | 4 |
| Lowland dry acid grassland | 2,010 | 4 |
| Lowland meadows | 1,716 | 3 |
| Upland heathland | 137 | <1 |
| Purple moor grass and rush pasture | 55 | <1 |
| Fens | 33 | <1 |
| Blanket bog | 17 | <1 |
| Lowland heathland | 12 | <1 |
| Coastal and flood plain grazing marsh | 9 | <1 |

**Source: Natural England (2011)**

Maps showing locations of priority habitats are available at

- http://magic.Defra.gov.uk/website/magic/ select 'Habitat Inventories'

### 7.3 Key species and assemblages of species

- Maps showing locations of priority habitats are available at: http://magic.Defra.gov.uk/website/magic/
- Maps showing locations of S41 species are available at: http://data.nbn.org.uk/

## 8. Settlement and development patterns

### 8.1 Settlement pattern

Buxton is the largest town in the White Peak with much interest related to its development as a spa town. Bakewell, at the heart of the Peak District, is a small market town of about 4,000 people and the largest settlement within the Peak District National Park. The present strongly nucleated pattern of settlement developed by the 13th century and many villages retain this evidence in their linear or branched forms for 12-13th century origins as planned settlements. It is not unusual for isolated farmsteads to have originated as medieval granges. Although some settlements, for example, Bradwell and Winster, expanded considerably due to the lead industry, there are generally fewer nucleated villages and more dispersed settlement on the higher areas of the plateau on the high White Peak. Some planned village settlements, such as Monyash, originated as markets. Matlock Gorge and Matlock Bath grew in the 18th and 19th centuries, first as spas and then as small inland resorts.

**Source: White Peak Countryside Character Area description; Countryside Quality Counts (2003)**

### 8.2 Main settlements

The main settlements are; Buxton, Bakewell, Wirksworth, Youlgreave, and Tideswell. The total estimated population for this NCA (derived from ONS 2001 census data) is: 46,601.

**Source: White Peak Countryside Character Area description; Countryside Quality Counts (2003)**

### 8.3 Local vernacular and building materials

Local building traditions use both limestone and 'gritstone' singly or in combination, the latter particularly for lintels and architectural detailing. Sandstone flags were largely replaced by later Welsh slate roofs. Some 16th century or earlier timber frame buildings remains, the latter often surviving as cruck-framed buildings with later stone infill.

**Source: White Peak Countryside Character Area description; Countryside Quality Counts (2003)**

## 9. Key historic sites and features

### 9.1 Origin of historic features

Mesolithic and Neolithic activity is widely reflected by the discovery of stone tools and flint scatters. There are Neolithic chambered cairns and barrows throughout the area, examples include Green Low and Minninglow, and associated trackways, along with hilltop henges; including Arbor Low.

There is extensive evidence for Romano-British farmsteads and fields, including stock pounds around the northern fringes with gritstone dales.
Roman roads extend south and south-eastward.

Seventh century Anglican barrows attest to high levels of population in the middle Saxon period. Late Saxon royal manors formed the core of extensive areas of medieval royal forests.

Lead mining is a distinctive feature of the area, having taken place at least from Roman times. Richer exposed veins were generally worked down to water table level by the mid 17th century such as Magpie Mine, Sheldon. Mining for lead and the semi-precious stone, Blue John, was developed during the mid 18th century in the north-west corner of the white peak.

Other industrial activities included quarrying of decorative limestones, such as Ashford Black Marble from the 13th century, and limestone for building in the Buxton area, Stoney Middleton, Dove Hols, Eldon Hill and Castleton.

There are also extensive remains of commercial lime production from the mid 17th to 19th centuries, for example, Grin Low.

**Source: Draft Historic Profile, Countryside Quality Counts Countryside Character Area description**

### 9.2 Designated historic assets

This NCA has the following historic designations:

- 1 World Heritage Site and buffer zone covering 230 ha
- 5 Registered Parks and Gardens covering 101 ha
- 0 Registered Battlefields
- 292 Scheduled Monuments
- 1,428 Listed Buildings

**Source: Natural England (2010)**

- More information is available at the following address:
  **http://www.english-heritage.org.uk/caring/heritage-at-risk/**
  **http://www.english-heritage.org.uk/professional/protection/process/national-heritage-list-for-england/**

## 10. Recreation and access

### 10.1 Public access

- 7 per cent of the NCA 2,632 ha is classified as being publically accessible.
- 1,080 km of public rights of way at a density of 2 km per km$^2$.
- 1 National Trail (Pennine Bridleway National Trail) of which 51 km runs through the White Peak.

**Source: Natural England (2010)**

The table below shows the breakdown of land which is publically accessible in perpetuity:

| Access designation | Area (ha) | % of NCA |
|---|---|---|
| National Trust (Accessible all year) | 517 | 1 |
| Common Land | 81 | <1 |
| Country Parks | 176 | <1 |
| CROW Access Land (Section 4 and 16) | 2,686 | 5 |
| CROW Section 15 | 80 | <1 |
| Village Greens | 13 | <1 |
| Doorstep Greens | 0 | 0 |
| Forestry Commission Walkers Welcome Grants | 304 | 1 |
| Local Nature Reserves (LNRs) | 13 | <1 |
| Millennium Greens | 0 | 0 |
| Accessible National Nature Reserves (NNRs) | 1,070 | 2 |
| Agri-environment Scheme Access | 28 | <1 |
| Woods for People | 746 | 1 |

**Sources: Natural England (2011)**

**Please note: Common Land refers to land included in the 1965 commons register; CROW = Countryside and Rights of Way Act 2000; OC and RCL = Open Country and Registered Common Land.**

## 11. Experiential qualities

### 11.1 Tranquillity

Based on the CPRE map of tranquillity (2006) the highest scores for tranquillity are found on the plateaux, away from centres of population and road corridors. The lowest scores for tranquillity are generally found along the main route corridors including the A6, A623 and A515 and around the main population centres of Buxton and Bakewell. However, it is clear that when compared to adjoining NCAs the tranquillity score remains high away from these few areas.

A breakdown of tranquillity values for this NCA is detailed in the table below:

| Category of tranquillity | Score |
|---|---|
| Highest value within NCA | 42 |
| Lowest value within NCA | -62 |
| Mean value within NCA | -2 |

**Source: CPRE (2006)**

- More information is available at the following address: http://www.cpre.org.uk/what-we-do/countryside/tranquil-places/in-depth/item/1688-how-we-mapped-tranquillity

### 11.2 Intrusion

The 2007 Intrusion Map (CPRE) shows the extent to which rural landscapes are 'intruded on' from urban development, noise (primarily traffic noise), and other sources of visual and auditory intrusion. This shows that the bulk of the NCA remains relatively undisturbed, though Buxton, Bakewell and the main transport routes suffer from significant levels of intrusion, when compared to the surrounding areas, as do the pockets of settlements dotted throughout the NCA.

A breakdown of intrusion values for this NCA is detailed in the following table.

| Category of intrusion | 1960s (%) | 1990s (%) | 2007 (%) | % change (1960s-2007) |
|---|---|---|---|---|
| Disturbed | 21 | 27 | 23 | 2 |
| Undisturbed | 79 | 73 | 76 | -3 |
| Urban | 0 | 0 | 1 | 1 |

**Sources: CPRE (2007)**

Notable trends from the 1960s to 2007 are only a small increase in areas of disturbed land by 2 per cent, matched by similar levels in a decrease in undisturbed land by 3 per cent.

- More information is available at the following address: http://www.cpre.org.uk/resources/countryside/tranquil-places

**The limestone grasslands support many rare plants and are one of the features for which the Derbyshire Dales Special Area of Conservation was designated.**

## 12. Data sources

- British Geological Survey (2006)
- Natural Area Profiles, Natural England (published by English Nature 1993-1998 )
- Countryside Character Descriptions, Natural England (regional volumes published by Countryside Commission/Countryside Agency 1998/1999)
- Joint Character Area GIS boundaries, Natural England (data created 2001)
- National Parks and AONBs GIS boundaries, Natural England (2006)
- Heritage Coast Boundaries, Natural England (2006)
- Agricultural Census June Survey, Defra (2000,2009)
- National Forest Inventory, Forestry Commission (2011)
- Countryside Quality Counts Draft Historic Profiles, English Heritage (2004)*
- Ancient Woodland Inventory, Natural England (2003)
- Priority Habitats GIS data, Natural England (March 2011)
- Special Areas of Conservation data, Natural England (data accessed in March 2011)
- Special Protection Areas data, Natural England (data accessed in March 2011)
- Ramsar sites data, Natural England (data accessed in March 2011)
- Sites of Special Scientific Interest, Natural England (data accessed in March 2011)
- Detailed River Network, Environment Agency (2008)
- Source protection zones, Environment Agency (2005)
- Registered Common Land GIS data, Natural England (2004)
- Open Country GIS data, Natural England (2004)
- Public Rights of Way Density, Defra (2011)
- National Trails, Natural England (2006)
- National Tranquillity Mapping data, CPRE (2007)
- Intrusion map data, CPRE (2007)
- Registered Battlefields, English Heritage (2005)
- Record of Scheduled Monuments, English Heritage (2006)
- Registered Parks and Gardens, English Heritage (2006)
- World Heritage Sites, English Heritage (2006)
- Incorporates Historic Landscape Characterisation and work for preliminary Historic Farmstead Character Statements (English Heritage/Countryside Agency 2006)

Please note all figures contained within the report have been rounded to the nearest unit. For this reason proportion figures will not (in all) cases add up to 100%.
The convention <1 has been used to denote values less than a whole unit.

# Supporting document 2: Landscape change

## Recent changes

### Trees and woodlands

- The area of new tree planting in recent years has been small. Between 1999 and 2003 only an area equivalent to 1 per cent of the 1999 total stock was approved for new planting under a Woodland Grant Scheme agreement (28 ha). However during the same period, the proportion of woodland sites covered by a Woodland Grant Scheme agreement raised from 7 per cent in 1999 to 15 per cent in 2003.

### Boundary features

- Between 1999 and 2003 Countryside Stewardship agreements for linear features included fencing (24 km), hedge management (4 km), hedge planting and restoration (7 km), restored boundary protection (6 km) and stone wall restoration (112 km).

- Environmental Stewardship agreements within the NCA between 2005 and November 2013 included options for 59.8 km of hedgerow management, 2.7 km of restoration and 0.8 km of planting. They also included options for 1,478 km of stone wall maintenance, and 18.5 km of restoration.

### Agriculture

- Results from Defra's 2010 June census suggest that the dairy industry has undergone a significant reduction in number of holdings in recent years, decreasing from 242 holdings in 2000 to 159 holdings in 2009. The small dairy farms that have gone out of business are now either used for beef or sheep production or amalgamated into larger dairy holdings.

- The increase in size of dairy herds has led to an increase in size of new agricultural buildings, an intensification of grassland management (more silage fields, fewer hay meadows) and increased cultivation of land for fodder crops.

### Settlement and development

- There have been low rates of development outside urban areas and the urban fringe in recent years. However, there are local concentrations of development, especially between Buxton and Bakewell in the north, and south of the A523/A52 in the south.

### Semi-natural habitat

- Uptake of Countryside Stewardship options for habitat management was consistently above national average. Agreements in 2003 included 1,029 ha of options for calcareous grasslands and upland limestone grassland. In addition more than 13 per cent of the national uptake of Countryside Stewardship options for upland hay meadows (~953 ha) were in the White Peak.

- Environmental Stewardship agreements within the NCA between 2005 and 2013 included options for restoration of 1,551 ha species-rich grassland on 138 farms. 15 of these agreements included a supplementary payment for use of native seed. Options for management of species-rich grassland covered 1,257 ha on 112 farms.

- There has been active management, restoration and creation of a small number of ponds under both schemes.

- There is an increasing problem with scrub encroachment of dale-side limestone grasslands as they become uneconomic to graze with livestock. This undermines the wildlife potential and distinctive flora of the grasslands and is also a threat to below-ground archaeology, particularly terraces and lynchets.

- Atlantic salmon have started to return to the River Dove from the North Sea to spawn, following successful releases of parr in the river since 1998.

### Historic features

- There has been a decline in the condition and number of traditional structures associated with farmland due to lack of maintenance, particularly traditional farm buildings and dew ponds. Some traditional buildings and dew ponds have been restored, in some cases with funding from agri-environment schemes.

### Rivers

- There has been an increase in nutrient pollution and sedimentation of rivers, thought to be associated with increasing intensity of livestock production such as re-seeding of silage fields/cultivation of fodder crops, higher rates of nutrient application to fields and larger herds of cattle indoors over winter.

- The impact of water treatment works on water quality is thought to have improved with upgrades of several plants in recent years.

### Minerals

- Two of the largest limestone quarries within the Peak District National Park are located within the White Peak: Tunstead Old Moor and Ballidon. Limestone from the White Peak supplies markets mainly in the Midlands, north-west and east England, and Yorkshire[6].

- Although active quarries can have a range of negative impacts on the environment and amenity of surrounding areas, they currently provide a source of local building stone, aggregates and chemical and industrial end use products. They also provide employment for local communities.

- The number of active limestone quarries has reduced in recent years, with some closing at the end of their permitted lives and some being 'mothballed' due to the current economic climate.

- Some disused quarry sites have been restored to provide new wildlife habitat and recreation opportunities, such as Horseshoe Quarry which is now a popular climbing site.

**Buildings are a mixture of limestone and gritstone, often with a mixture of the two stones in the same buildings, as here at Youlgreave.**

[6] *Quarrying and mineral extraction in the Peak District National Park,* Peak District National Park Authority (2010)

## Drivers of change

### Climate change

As for the rest of the UK, climate change for the White Peak is predicted to result in hotter drier summers, warmer wetter winters and more extreme weather events. Evidence from the UK Climate Change Impacts programme suggests that by 2050, summer temperatures are likely to be 1.4°C higher and rainfall 18 per cent lower, and in winter temperatures 2.2°C higher and rainfall 22 per cent greater.

Hotter drier summers could have particularly serious implications for the people and wildlife of the White Peak as it is an area that is already vulnerable to drought due to the free-draining nature of soils and underlying geology.

Lower rainfall and higher temperatures in summer could result in:

- Increased drought stress for semi-natural habitats, particularly calcareous grasslands on thin soils, aquatic and marginal flora associated with rivers/ponds and limestone dale woodlands. Algal blooms in ponds and rivers may become more frequent. There may be a decline of species at the southern end of their range, such as globeflower, mountain pansy and Jacob's ladder. Negative effects on habitats could be ameliorated by buffering important sites with complementary habitats and improving connectivity between habitats.

- Freshwater habitats experiencing drier conditions, becoming more fragmented and seasonal, with some ponds disappearing altogether (especially dew ponds). Lower water levels and increased water temperature could cause increased problems with eutrophication and High Biological Oxygen Demand. There may be a reduction in extent and quality of habitat and prey species for aquatic (lamprey, bullhead, trout, white-clawed crayfish), amphibious (great crested newts, frogs, toads) and riparian species (kingfisher, yellow wagtail, dipper, otter, water vole). Drinking resources for a wide range of animals may be reduced and there may be negative impacts on fishing interests. Sympathetic management and restoration of dew ponds will increase potential for species movement as ponds become drier and strategic tree planting could help to cool watercourses.

- Drier agricultural soils leading to poorer hay yields and changes in cutting times of meadows with negative implications for food production, farm income, meadow flora, ground nesting birds and nectar-feeding insects. There may be a decline in plant species-richness, breeding success of wading birds and species that require mud/soft ground to build nests, such as swallows. Conversely hotter drier summers could increase opportunities for making hay.

- Increased periods of drought leaving insufficient water to sustain livestock in areas already susceptible to drought (such as the limestone plateau), resulting in a reduction in viable grazing land, removal of grazing from some valuable habitats such as calcareous grassland. It could also result in increased stress and welfare issues for livestock, increased demand for water storage structures such as farm reservoirs or tanks and increased demand for water abstraction from watercourses and the groundwater aquifer.

- Reduced humidity of clough woodland, resulting in lower numbers and diversity of invertebrates, meaning less food for woodland birds such as pied and spotted fly catcher and lesser spotted woodpecker.

- Springs supplying water to properties, businesses and visitor facilities in remote locations becoming unreliable or drying up completely creating a need for emergency measures such as water bowsers. Adaptation/mitigation could include measures to improve water use efficiency and rainwater harvesting.

Higher summer temperatures could result in:

- Increased heat stress for livestock, with impacts on livestock welfare and farm viability, and an increased demand for new buildings and trees to provide shelter/shade.
- Greater recreational/visitor demand for access to areas with shade or close to water, with increased pressure on White Peak dales, caves/caverns, woodland and riverside routes. Increased visitor numbers to these areas could bring increased congestion/traffic pollution, conflict between different user groups and disturbance for local residents and landowners. Conversely drier hotter summers could provide opportunities for an increased range and number of outdoor events.

Warmer, wetter winters and an increase in extreme rainfall events could lead to:

- An increase in winter floods, flash floods and severe storms, causing damage to roads, bridges and other access structures.
- An increase in run-off and malfunction of drainage systems leading to rights of way becoming unusable, outdoor events more frequently disrupted and more frequent access restrictions. The design of new and replacement bridges may need to allow for greater fluctuations in water levels. A systematic review of existing bridges and associated work plans may be needed[7].

[7] *Adapting to Climate Change in the Peak District National Park,* Peak District National Park Authority (2011) (URL: **http://www.peakdistrict.gov.uk/__data/assets/pdf_file/0016/137320/PDNPA-AdaptingtoClimateChangeReport-Sep2011.pdf**)

[8] *Supplementary Planning Document: Climate Change and Sustainable Building: Annex 1 – Landscape Sensitivity Assessment and Guidance for Wind Turbine Applications,* Peak District National Park Authority (2011) (URL: **http://resources.peakdistrict.gov.uk/ctte/authority/reports/2013/130315Item7App1.pdf**)

## Other key drivers

- Visitor numbers and traffic are likely to continue to increase as surrounding urban populations and tourism increase, bringing more pressure on the area's infrastructure, greater problems with road safety, increased disturbance, loss of tranquillity and pollution.
- Increased demand for renewable energy has potential to impact on the landscape, particularly large-scale wind farms around the edge of the National Park, and photovoltaic panels and small wind turbines within the Park. The National Park Authority assessment of landscape sensitivity to wind turbines classifies all parts of the NCA as of 'high sensitivity' to medium turbines (15–65 m to blade tip) and large turbines (over 65 m to blade tip). In addition Limestone Village Farmlands/Limestone Slopes and Limestone Dales are classified as of 'moderate-high sensitivity' to small wind turbines (up to 15 m to blade tip)[8].
- There is continuing pressure for the conversion of traditional farm buildings into dwellings. Conversions that are sympathetically done with appropriate materials and design can help preserve important features in the landscape, but the conversion from agricultural to domestic use has potential impacts not just on the historic buildings themselves but their surroundings, with the introduction of access tracks, gardens and other domestic features.
- The need for more affordable housing has been an ongoing issue for some time and is likely to continue, with pressure to infill sites in existing settlements and a resultant need to ensure high-quality, appropriate design that does not detract from the character of the villages nor impact on important open green spaces.

- The financial climate for farming may mean there is a decline in livestock numbers, and holding numbers resulting from farm amalgamation and intensification. Increased size and fragmentation of holdings could also increase levels of farm traffic on the roads. It could also result in changes in farming practices and farm types.

- Tree diseases are likely to be an increasingly serious threat to the landscape and biodiversity of the White Peak, particularly if ash die-back disease spreads to the area as the majority of the semi-natural daleside woodland is ash dominated.

**The White Peak is one of the top fly-fishing destinations in England thanks to its relatively clean rivers with rich insect life that helps support good populations of fish, particularly trout.**

- Sustained demand for aggregates, building materials and minerals, both locally and nationally, may result in pressure to re-open old quarries and establish new sites. Increasing the depth of quarries would necessitate careful management of water resources and protection of the surrounding water table.

- Changes in commodity prices and ownership of key mineral sites and quarries could result in pressure to enlarge these sites, and/or extend their licences to other minerals and means of extraction, all with potential to impact negatively on the local environment and landscape.

- Restoration of quarries at the end of their natural life presents good opportunities to create new habitats and refuges for rare species such as white-clawed crayfish and new recreational and educational opportunities.

- Many underground drainage soughs associated with historic mines are becoming unstable and are at risk of collapse. This could cause a rising of the water table in some areas, with benefits for wildlife, habitats and the summer flow of rivers and springs, but significant changes in character of some dales which are currently seasonally or permanently dry.

- Increasing populations in surrounding urban areas, and further afield, is likely to result in increased demand for access and recreational facilities, and possibly increased demand for second homes.

- Reform of the Common Agricultural Policy and changes to rural development schemes, particularly agri-environment, could have an impact on the landscape as funding will be lower and more tightly targeted on priority sites.

# Supporting document 3: Analysis supporting Statements of Environmental Opportunity

The following analysis section focuses on a selection of the key provisioning, regulating and cultural ecosystem goods and services for this NCA. These are underpinned by supporting services such as photosynthesis, nutrient cycling, soil formation and evapo-transpiration. Supporting services perform an essential role in ensuring the availability of all ecosystem services.

Biodiversity and geodiversity are crucial in supporting the full range of ecosystem services provided by this landscape. Wildlife and geologically-rich landscapes are also of cultural value and are included in this section of the analysis. This analysis shows the projected impact of Statements of Environmental Opportunity on the value of nominated ecosystem services within this landscape.

White Peak.

| Statement of Environmental Opportunity | Food provision | Timber provision | Water availability | Genetic diversity | Biomass provision | Climate regulation | Regulating water quality | Regulating water flow | Regulating soil quality | Regulating soil erosion | Pollination | Pest regulation | Regulating coastal erosion | Sense of place/inspiration | Sense of history | Tranquility | Recreation | Biodiversity | Geodiversity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Ecosystem Service | | | | | | | | | | | | | | | | | | |
| **SEO 1:** Protect and enhance the area's clear limestone rivers, streams and springs, limestone aquifer and dramatic karst geology, to provide a source of clean water, support strong populations of fish and other wildlife, enhance recreational and educational opportunities and contribute to the White Peak's strong sense of place and history. | ↗ * | ↔ ** | ↗ ** | ↔ ** | ↔ ** | ↗ ** | ↑ *** | ↑ ** | ↗ * | ↗ * | ↔ * | ↗ * | n/a | ↗ ** | ↗ ** | ↑ *** | ↑ *** | ↑ *** | ↑ *** |
| **SEO 2:** Safeguard the unique character and tranquillity of the limestone dales, and enhance their limestone grasslands, woodlands and scrub of European importance, to protect sense of place, water quality, biodiversity and recreational opportunities. | ↗ ** | ↔ * | ↗ * | ↗ ** | ↔ ** | ↗ * | ↗ ** | ↗ * | ↗ ** | ↗ ** | ↗ ** | ↗ ** | n/a | ↑ *** | ↗ * | ↑ *** | ↗ ** | ↑ *** | ↑ *** |

Note: Arrows shown in the table above indicate anticipated impact on service delivery: ↑ = Increase ↗ = Slight Increase ↔ = No change ↘ = Slight Decrease ↓ = Decrease. Asterisks denote confidence in projection (*low **medium***high) ° symbol denotes where insufficient information on the likely impact is available.

Dark plum = National Importance; Mid plum = Regional Importance; Light plum = Local Importance

| Statement of Environmental Opportunity | Ecosystem Service: Food provision | Timber provision | Water availability | Genetic diversity | Biomass provision | Climate regulation | Regulating water quality | Regulating water flow | Regulating soil quality | Regulating soil erosion | Pollination | Pest regulation | Regulating coastal erosion | Sense of place/inspiration | Sense of history | Tranquility | Recreation | Biodiversity | Geodiversity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **SEO 3:** Maintain and enhance the limestone plateau's pastoral landscape with its distinctive pattern of drystone walls, dew ponds, archaeology and habitats such as hay meadows and limestone heaths, to allow a viable and sustainable farming industry that produces high-quality food and supports thriving rural communities. | ↗ ** | ↔ * | ↗ ** | ↔ * | ↗ * | ↗ * | ↗ ** | ↗ * | ↗ ** | ↗ ** | ↗ * | ↗ * | n/a | ↗ ** | ↗ ** | ↗ * | ↗ * | ↗ ** | ↗ * |
| **SEO 4:** Maintain and enhance opportunities for enjoyment and understanding of the White Peak's distinctive limestone features and historical, cultural and natural heritage by providing recreational opportunities for a wide range of users and ensuring that new development makes a positive contribution to biodiversity, sense of place, sense of history, tranquillity and quality of life for local people and visitors. | ↔ * | ↔ * | ↗ ** | ↔ * | ↔ * | ↗ ** | ↗ ** | ↗ ** | ↔ * | ↗ ** | ↔ * | ↔ * | n/a | ↑ ** | ↑ ** | ↑ ** | ↑ ** | ↗ * | ↗ * |

Note: Arrows shown in the table above indicate anticipated impact on service delivery: ↑ = Increase ↗ = Slight Increase ↔ = No change ↘ = Slight Decrease ↓ = Decrease. Asterisks denote confidence in projection (*low **medium***high) ° symbol denotes where insufficient information on the likely impact is available.

Dark plum = National Importance; Mid plum = Regional Importance; Light plum = Local Importance

## Landscape attributes

| Landscape attribute | Justification for selection |
|---|---|
| Elevated, gently undulating, limestone plateau with occasional knolls and crags, dissected by steeply cut dales and gorges with rock outcrops, screes and caves. | ■ Elevation ranges from 91 m to 475 m, the mean elevation is 295 m and the majority of the plateau sits above 330 m with its highest area at around 460 m near Bradwell Moor and Eldon Hill in the north.<br>■ The plateau presents a very open landscape, with views often framed by rising hills of Dark Peak and South West Peak to the north, east and west of the NCA boundary.<br>■ Limestone dales and gorges cut into the plateau mainly running north-west to south-east.<br>■ Dramatic rock outcrops, tors, reef knolls and pinnacles form prominent features in the landscape offering far-reaching views. They are often individually named with mythical associations – such as Ilam Rock, High Tor, Rainster Rocks, Harboro Rocks, Thor's Cave, Heights of Abraham, Thorpe Cloud and Wetton Hill.<br>■ The cave network is very significant in terms of geological interest, with most of the network designated as Geological or Mixed Interest SSSI.<br>■ The extensive limestone caves and numerous karst features provide valuable and popular recreational destinations, with show caves such as Speedwell Cavern, Treak Cliff and Peak Cavern for visitors/tourists, a much larger network accessible to experienced cavers and many sites for rock climbing. |
| Clear rivers, streams and springs in some dales; others are dry or only run water in winter. | ■ The NCA has 63 km of major rivers including the Wye, Manifold, Dove and Derwent, and many smaller streams and tributaries.<br>■ Seasonally dry valleys include Lathkill Dale (whose name is derived from the Middle English term for 'summer dry'[9]).<br>■ Springs are very important in the area: historically for water supply (still important for some remote properties and farms); culturally, as evidenced by the well-dressing festivals which are still celebrated by a large number of communities with the creation of elaborate murals from natural materials pressed in to clay-covered boards; and, ecologically as recognised by the inclusion of alkaline fen and tufa-forming springs in the Derbyshire Dales SAC. |

[9] *A Survey and Analysis of the Place-Names of Staffordshire, PhD thesis,* University of Nottingham, David Horowitz LLB (2003)

| Landscape attribute | Justification for selection |
|---|---|
| Dale sides with a mosaic of flower-rich limestone grassland, ash woodland and wildlife-rich scrub. | ■ Some dale sides are very heavily wooded with semi-natural ash woodlands, such as those along the Wye and Manifold and in Miller's Dale. They support important populations of woodland birds.<br>■ Ash is the dominant tree in the dale-side woodlands, with its liking for alkaline soil conditions and its particular facility for rooting in scree.<br>■ Scrub in the dales is of particular wildlife value. There are three main types: hazel 'retrogressive' scrub (developed on formerly wooded areas, with an open canopy and diverse mix of woodland and grassland ground flora), western gorse scrub (on more acidic ground) and hawthorn scrub (that develops on ungrazed grassland).<br>■ The exceptional wildlife value of the limestone dales is recognised by their inclusion in the Peak District Dales Special Area of Conservation which includes the majority of the dales and covers 2,323 ha within the White Peak. The site is designated primarily for its calcareous grassland, scrub, woodland and white-clawed crayfish. The habitat mosaics of the dales are well connected and mostly uninterrupted by developed or agriculturally improved land, with wooded and open habitats grading into one another and draining down through semi-natural flood plains to the rivers in the valley bottoms. |
| Improved grassland for dairy and livestock farming dominates the plateau, punctuated by occasional dew ponds, narrow shelterbelts of broadleaved trees and small patches of rough grassland, meadow and heath. | ■ In 2009 over three-quarters of the area's holdings were livestock farms (129 dairy, 464 livestock). Most of the remaining holdings classified as 'other', are likely to be mixed/livestock due to the general scarcity of arable farming in the area.<br>■ The fertile stone-less loess soils that were deposited on the plateau at the end of the last ice age are up to 1.2 m thick in some places and support agriculturally productive pastures and meadows/silage fields.<br>■ 96 per cent of agricultural land is classed as grass or uncropped land and there are over 5,000 ha of upland and lowland limestone grassland, 2,000 ha lowland dry acid grassland and 1,700 ha hay meadows.<br>■ The limestone heath on the plateau originates from extensive Neolithic woodland clearance.<br>■ The free-draining nature of the limestone plateau, lacking in natural water bodies, necessitated the creation of large numbers of dew ponds in past centuries to capture and supply drinking water for livestock. Some of these are still in active use, but many have fallen into disrepair, with cracked linings allowing water to drain out.<br>■ On the open windswept plateau long narrow shelterbelts were planted to provide shelter for farmsteads and livestock and to provide a source of firewood from otherwise unproductive lead-polluted ground. Many remain as distinctive features in the landscape. |

| Landscape attribute | Justification for selection |
|---|---|
| Grassland enclosed by grey limestone drystone walls, with small narrow strip fields, often of medieval origin, around villages, and larger rectangular fields away from the villages. | ■ Sinuous, narrow fields show the remains of medieval field systems around villages, with well-preserved networks in areas such as Chelmorton and Wardlow.<br>■ Further away from the village the field boundary patterns are larger and typical of the planned, regular enclosures created under the Parliamentary Enclosures Acts. |
| Nucleated villages and small towns connected by crest and valley roads. | ■ The historic character of many of the settlements has been very well-preserved and the nucleated pattern of the villages has been retained.<br>■ The spa town of Matlock Bath and the market towns of Bakewell and Buxton are the largest settlements in the NCA.<br>■ Major routes include the A515 linking Buxton to Ashbourne and the A6 linking Buxton to Bakewell.<br>■ The network of small roads carrying large volumes of commuter and tourist traffic are prone to high numbers of accidents and road-signs to improve safety have proliferated as a result, with an impact on the traditional undeveloped character of the landscape in some areas. |
| A mix of limestone and gritstone used as building materials. | ■ Some settlements are dominated by limestone (such as Monyash) and some are comprised of buildings constructed with a mix of limestone and gritstone (such as Buxton).<br>■ Gritstone is an easier stone to work and to obtain a fine finish on than the harder Carboniferous Limestone, so gritstone was often used for larger, grander buildings or as material for the front faces of limestone buildings.<br>■ Where gritstone and limestone are used on the same building the gritstone is usually used for features such as door and window surrounds and quoins. |

| Landscape attribute | Justification for selection |
|---|---|
| Widespread features of special archaeological and historical interest including Neolithic and bronze-age ritual monuments. | ■ Many of the Neolithic and bronze-age ritual monuments are in eye-catching positions on hill-tops and ridge lines.<br>■ Arbor Low henge and stone circle is a Neolithic site considered to be a site of immense national importance and the most important prehistoric site in the east Midlands. It consists of an earthen bank and ditch, a circle of 50 limestone slabs, all now fallen, and a central stone 'cove'.<br>■ Other important Neolithic sites include Minninglow and Green Low burial chambers.<br>■ A number of prominent locations are host to multi-phase sites, such as Wigber Low which has bronze-age and Anglo-Saxon burials overlaying a possible Neolithic settlement, and was later also used for lead smelting.<br>■ There are some very well-preserved historic landscapes scattered with reminders of early human occupation and activity such as hilltop camps, burial mounds and Roman roads. |
| Many visible reminders of early industry including historic limestone and lead workings, lime kilns and dramatic water mills from 18th-century textile industry. | ■ Features associated with lead mining pepper the landscape of the limestone plateau, including lead rakes, waste heaps, pits, engine sites and smelt houses.<br>■ Many lead mining sites support a rare and valuable plant community called calaminarian grassland (for example Gang Mine SAC), made up of low-growing lead-tolerant plants, such as spring sandwort and Alpine pennycress. There used to be large numbers of small limestone quarries used for very local supply of limestone to make lime for agricultural purposes (burning off vegetation, raising the pH and fertility of poor, acidic ground), building purposes (for lime mortars and plaster) and for building stone (for buildings and drystone walls).<br>■ The landscape is scattered with numerous historic lime kilns and extensive remains of commercial lime production from the mid-17th to the19th century, such as at Grin Low.<br>■ 18th century water mills and associated textile factory buildings form dramatic landmarks in many of the dales with larger rivers, such as Miller's Dale, Cromford, Litton and Cressbrook.<br>■ Approximately 12 ha of the Derwent Valley Mills World Heritage Site falls within the NCA, and 218 ha of its buffer zone. The World Heritage Site status is in recognition that the area was the birthplace of the factory system which harnessed water power for textile production. |

## Landscape opportunities

- Maintain the visibility, accessibility and integrity of important geological exposures and features by managing vegetation, directing public access and providing interpretation and educational opportunities.
- Work with quarrying companies to limit the landscape and environmental impacts of large-scale active limestone quarries and ensure high-quality restoration of disused quarry sites for agriculture, habitat creation and recreational use.
- Protect the area's limestone rivers, their clean and clear water and natural courses by working with farmers, water companies, residents, developers and industry to encourage good practice in land, soil, water and waste management and introduction of sustainable drainage systems.
- Conserve, sympathetically manage and enhance species-rich limestone grassland, securing appropriate grazing/management regimes that protect it from scrub encroachment and soil erosion.
- Conserve, manage and extend the dale-side ash woodlands through: protecting existing sites, active and non-intervention management; creation of woodland edge habitats and buffer zones; and, planting new woodland to connect existing isolated patches of woodland, where this is appropriate in terms of landscape, biodiversity, historic and recreational interests.
- Protect and maintain views by managing, thinning and replanting woodlands and shelterbelts.
- Conserve, manage, enhance and extend the diverse plateau grasslands, including traditional hay meadows and neutral and calaminarian grasslands.
- Secure sympathetic traditional management of hay meadows management, including appropriate grazing regimes and cutting dates.
- Conserve, manage and replenish trees and woodland features on the plateau, particularly long narrow shelterbelts, lead rake woodlands and boundary trees.
- Protect the tranquil and undeveloped character of the steep limestone dales and gorges.
- Ensure new housing, infrastructure and other development is sympathetically sited and designed to minimise visual impact and that it is appropriate in scale for this sensitive landscape with strong historic character.
- Protect and manage above and below ground archaeology, particularly Neolithic and bronze-age burial structures and ridge and furrow.
- Conserve, maintain and restore traditional farmsteads and field barns using traditional building materials/techniques and local styles.
- Protect and maintain historic structures related to use of the area's watercourses to power early industry, such as water leats and mill buildings, particularly where associated with the Derwent Valley Mills World Heritage Site and where compatible with restoration of natural river function.
- Protect, manage and maintain traditional historic structures associated with farming on the limestone plateau, particularly the distinctive patterns of drystone walls (medieval and later enclosure), dew ponds and lime-kilns using traditional materials and techniques.
- Protect the nucleated pattern and historic character of villages, encourage restoration using traditional materials, techniques and local styles and allowing for high-quality, innovative and sustainable design.

## Ecosystem service analysis

The following section shows the analysis used to determine key ecosystem service opportunities within the area. These opportunities have been combined with the analysis of landscape opportunities to create Statements of Environmental Opportunity.

Please note that the following analysis is based upon available data and current understanding of ecosystem services. It does not represent a comprehensive local assessment. Quality and quantity of data for each service is variable locally and many of the services listed are not yet fully researched or understood. Therefore the analysis and opportunities may change upon publication of further evidence and better understanding of the inter-relationship between services at a local level.

| Service | Assets/ attributes: main contributors to service | State | Main beneficiary | Analysis | Opportunities | Principal services offered by opportunities |
|---|---|---|---|---|---|---|
| **Food provision** | Soils<br><br>Surface and groundwater<br><br>Livestock<br><br>Semi-natural habitats | The main agricultural products from the area are dairy products and meat (beef, lamb and pork). There have been recent increases in the average size of dairy farms.<br><br>Although some of the land on the plateau has productive soils and a long history of cultivation the majority of soils, 85 per cent, are Grade 4 or 5. There is now very little arable production and few mixed farms. | Regional | The White Peak is an important area for livestock grazing. It contributes to the local economy, employment and helps to maintain landscape and habitats.<br><br>The deep, rich loam soils, over 1 m thick in places, were deposited by strong winds at the end of the last ice age. They provide unusually productive agricultural land for 300 m+ altitude.<br><br>The grassland is currently managed quite intensively, so while there are many opportunities to improve the efficiency with which food is produced, there is less opportunity to increase the amount of food produced in the area.<br><br>**Continued on next page...** | Provide information, advice and training to farmers on how to improve efficiency of food production by using good practice and innovative approaches to: minimise use of fuel, artificial fertiliser, herbicides and veterinary medicines; increase water efficiency and rainwater harvesting; and, improve soil condition, organic matter and fertility.<br><br>Support local branding and marketing of produce on the basis of the distinctive landscape of the farms and surrounding countryside and environmental performance. | **Food provision**<br><br>**Climate regulation**<br><br>**Biodiversity**<br><br>**Sense of place/ inspiration**<br><br>**Sense of history** |

| Service | Assets/ attributes: main contributors to service | State | Main beneficiary | Analysis | Opportunities | Principal services offered by opportunities |
|---|---|---|---|---|---|---|
| **Food provision cont.** | | | | **... continued from previous page**<br><br>Elevation and slopes limit the amount of land suitable for arable production.<br><br>The high number of visitors to the area provides a good potential market for food produced in the area. The National Park Authority was one of the UK pioneers in attempts to market local food products on the basis of the area's special qualities and high environmental value. The Peak District Environmental Quality Mark is the most recent incarnation of this approach.<br><br>Climate change could have a particularly serious impact on food production on the limestone plateau if it does result in hotter, drier summers, due to its high vulnerability to drought and scarce water sources for livestock drinking water. Springs and dew ponds are still used to water livestock and these could be under threat from drier hotter summers in future, rendering some areas unsuitable for production of livestock without new sources of water (such as reservoirs, rainwater harvesting or bowsers). | | |

| Service | Assets/ attributes: main contributors to service | State | Main beneficiary | Analysis | Opportunities | Principal services offered by opportunities |
|---|---|---|---|---|---|---|
| **Timber provision** | Soils<br><br>Woodland<br><br>Surface and groundwater | Woodland covers 4 per cent of the NCA, 41 per cent of which is ancient semi-natural woodland.<br><br>The majority (91 per cent) of woodland in the area is broadleaved woodland, predominantly ash.<br><br>Much of it is located in the steep-sided dales and cloughs and protected by both UK and EU nature conservation designations (SAC and SSSI).<br><br>Very little of the area's woodland is actively managed. Most is unsuitable for timber production due to: its importance for nature conservation and recreation; the poor quality, size and volume of timber; and the difficulty of accessing sites due to steep slopes, unstable surfaces, lack of vehicle tracks and direct access to public highways. In addition to this, timber traffic on already busy narrow roads could be problematic.<br><br>**Continued on next page...** | Local | Existing broadleaved woodlands are small-scale or difficult to access, meaning that timber extraction is often not economically viable. There is limited history of active management for timber production, so few trees are suitable for timber production. There is also very little recent history of coppice management for small-diameter timber production.<br><br>There is little potential to increase timber production through management of existing woodland in the dales due to the high environmental value and sensitivity to disturbance of existing woodland and the difficulty of accessing sites. The dales present few opportunities for woodland creation due to the environmental value of existing grassland, wetland and scrub.<br><br>The small area of woodland that occurs on the plateau is mostly in the form of scattered small plantations and shelterbelts and has not been managed to produce good timber trees. The open and iconic character of the plateau landscape means that it has very low capacity to accommodate new large areas of woodland without a fundamental change in character. | Explore opportunities for small-scale use of hardwood timber from existing woodland for restoration of traditional buildings and use of small-diameter timber for furniture and craft, where this is consistent with nature conservation objectives and could help to restore diverse age structure of woodland.<br><br>Encourage management to enhance timber-production potential and ecological condition of plantation woodlands. | **Timber provision**<br><br>**Climate regulation**<br><br>**Sense of place/ inspiration**<br><br>**Biodiversity** |

| Service | Assets/ attributes: main contributors to service | State | Main beneficiary | Analysis | Opportunities | Principal services offered by opportunities |
|---|---|---|---|---|---|---|
| **Timber provision cont.** | | **... continued from previous page**<br><br>There is very little local capacity for timber processing. Although there are sawmills in the neighbouring NCAs, those in the White Peak started to close in the 1980s as demand for timber for the coal-mining industry declined. The sawmill at Rowsley in the adjacent Dark Peak NCA uses low quality timber from the White Peak and processes it for the firewood and pulp market[10]. | | There may be potential to explore very small-scale use of hardwood timber from existing woodland for restoration of traditional buildings, furniture making and craft. However management of woodland for production and harvesting of sizeable timber is, in the case of the daleside woodland, in many ways not easily reconciled with management for nature conservation. | | |

[10] *Timber and Non-Timber Markets – The markets for timber and non-timber products arising from the conservation management of ravine woodlands in the Peak District,* Ravine WoodLIFE (2007)

| Service | Assets/ attributes: main contributors to service | State | Main beneficiary | Analysis | Opportunities | Principal services offered by opportunities |
|---|---|---|---|---|---|---|
| **Water availability** | Precipitation<br><br>Geology<br><br>Soils<br><br>Watercourses<br><br>Springs (especially at Buxton and Matlock)<br><br>Dew ponds<br><br>Semi-natural habitats | Average annual rainfall over the area varies between 850–1,600 mm/year (1961–90). River flows are mostly groundwater-fed, originating from the large upland catchment to the north-west. [11]<br><br>Water is available for abstraction from the Manifold and Dove rivers during periods of high flows, and restricted volumes are also available from the Wye and Derwent rivers at periods of medium to high flows. Water is also available for abstraction from the Alstonefield management unit of the limestone aquifer, but not other units within the NCA. [12,13]<br><br>**Continued on next page...** | Regional | Summer low flows are a feature of some of the rivers, with some drying out completely. This is a natural process on some rivers, such as on stretches of the Manifold and Hamps, but on others, such as the Lathkill, it is exacerbated by historic mining drainage. As summers are predicted to become hotter and drier summer drying out of rivers could be exaggerated, with negative consequences for aquatic and riparian species.<br><br>Some areas on the limestone plateau have few natural water resources, although some remote properties and businesses are supplied by spring water. Hotter drier summers resulting from climate change could cause drying out of dew ponds and springs, threatening water supplies for people, livestock and wildlife and rendering some drier areas of the plateau unsuitable for livestock grazing. [14] | Encourage efficient water use, rain and grey water capture and retro-fitting of water-saving features to houses, farms, industry and other businesses.<br><br>Explore innovative solutions for limiting loss of river water into underground soughs associated with disused mines, thereby helping to maintain summer flow levels.<br><br>Encourage good farming practice to enhance soil structure, avoid compaction and maintain vegetative cover. | **Water availability**<br><br>**Food provision**<br><br>**Regulating water flow**<br><br>**Regulating water quality**<br><br>**Biodiversity**<br><br>**Sense of place/ inspiration**<br><br>**Sense of history**<br><br>**Recreation** |

[11] *Baseline groundwater chemistry of aquifers in England and Wales: the Carboniferous Limestone aquifer of the Derbyshire Dome,* C Abesser and P L Smedley, British Geological Survey (2008) (URL: http://nora.nerc.ac.uk/5671/1/DerbyshireCarbLimestoneOR08028.pdf)

[12] *Derbyshire Derwent Abstraction Licensing Strategy, Environment Agency (2013) (URL:* http://a0768b4a8a31e106d8b0-50dc802554eb38a24458b98ff72d550b.r19.cf3.rackcdn.com/LIT_2458_0ad516.pdf*)*

[13] *Dove Abstraction Licensing Strategy,* Environment Agency (2013) (URL:http://a0768b4a8a31e106d8b0-50dc802554eb38a24458b98ff72d550b.r19.cf3.rackcdn.com/LIT_5655_f44f7f.pdf)

[14] *Adapting to Climate Change in the Peak District National Park,* Peak District National Park Authority (2011) (URL: www.peakdistrict.gov.uk/__data/assets/pdf_file/0016/137320/PDNPA-AdaptingtoClimateChangeReport-Sep2011.pdf)

| Service | Assets/ attributes: main contributors to service | State | Main beneficiary | Analysis | Opportunities | Principal services offered by opportunities |
|---|---|---|---|---|---|---|
| **Water availability cont.** | | **... continued from previous page**<br><br>Numerous remote households, farms and other businesses are supplied by springs. There are no reservoirs and some of the rivers are seasonally dry or suffer low flows and so cannot support abstraction. The limestone plateau has few surface water sources.<br><br>Water abstracted from rivers in the NCA is used principally for general agriculture, spray irrigation, industrial use, power generation and public water supply. There are only a small number of licensed abstractions from the limestone aquifer, primarily for quarrying. There is a significant commercial bottled water enterprise in Buxton and thermal springs at Buxton and Matlock. | | While climate change may see summer water resources reduced, pressure to maintain or increase food production and continued development pressure may increase demand for abstraction. In order to preserve scarce water resources on the plateau, and reduce pressure on rivers with low summer flows, efforts should be made to increase efficiency of water use by households, farms and other businesses and to increase capture and use of rain and grey water.<br><br>The availability of groundwater and spring water is critical to commercial interests in the historic spa towns and for the bottled water industry.<br><br>Although aquifer recharge is good, due to the porous nature of the underlying limestone and numerous fissures running through it, good management of agricultural land and soils can help to maintain and enhance infiltration of water. Enhancing soil structure, avoiding compaction and maintaining vegetative cover are some of the measures that could aid infiltration. | | |

| Service | Assets/ attributes: main contributors to service | State | Main beneficiary | Analysis | Opportunities | Principal services offered by opportunities |
|---|---|---|---|---|---|---|
| **Genetic diversity** | Native breeds | In Nov 2013 there were 12 Environmental Stewardship agreements that included the supplement for grazing with native breeds at risk. Breeds include Derbyshire Gritstone sheep, Belted Galloway cattle, Beef Shorthorn cattle and Hereford cattle.<br><br>Numerous farmers produce and market food products from traditional breed livestock within this NCA. | Local | Traditional native breed livestock can thrive on agriculturally marginal land so are particularly well-suited to graze some of the calcareous grasslands on steeper slopes and sites with difficult access. Using traditional native breeds can help to prevent scrub encroachment on these marginal sites and helps to preserve the genetic resource.<br><br>Traditional/rare breeds can be difficult to integrate into the predominant local farm type, commercial dairy, in practical and financial terms. Helping farmers find ways of gaining added value from such stock would help to make them a viable venture. Developing and marketing niche products from traditional breeds is one such approach.<br><br>The Derbyshire Gritstone Sheep, which is kept on a number of farms within the NCA, originates from the Goyt Valley in the neighbouring South West Peak NCA. Its wool is known to be one of the best hosiery wools procurable in Great Britain'. [15] | Encourage conservation grazing by traditional native breeds on marginal grasslands with high species diversity, particularly where they are at risk of abandonment and/or scrub encroachment.<br><br>Encourage development and marketing of products from traditional native breeds, particularly the Derbyshire Gritstone sheep and where products can be linked to environmental standards. | **Genetic diversity**<br><br>**Food production**<br><br>**Biodiversity**<br><br>**Sense of place/ inspiration**<br><br>**Sense of history** |

[15] *The Derbyshire Gritstone Sheepbreeders Society*. See: www.derbyshiregritstone.org.uk/

| Service | Assets/ attributes: main contributors to service | State | Main beneficiary | Analysis | Opportunities | Principal services offered by opportunities |
|---|---|---|---|---|---|---|
| **Biomass energy** | Soils<br><br>Woodland and scrub | Woodland cover is primarily in the form of small broadleaved plantations and shelterbelts on the plateau and semi-natural woodland in the steep-sided valleys. Most of the dale-side woodland is protected by nature conservation designations and on steep inaccessible ground.<br><br>The area has one large-scale woodfuel supplier and four biomass boilers generating 820 kWh. | Local | There is limited potential to increase biomass production in the NCA as the landscape and the semi-natural habitats of both the dales and the plateau are very sensitive to, and have very low capacity for short rotation coppice, miscanthus or new woodland planting. There may be limited opportunities for new woodland planting on shallow slopes and in sheltered valleys, provided the effects of scale and pattern are carefully considered.<br><br>The potential yield for short rotation coppice (SRC) in the NCA varies, for example, the area around Bakewell in the east of the NCA has medium potential yield, around Winkhill in the west of the NCA the potential is good and in the north of the NCA around Buxton it is poor. For information on the potential landscape impacts of biomass plantings within the NCA, refer to the tables on the Natural England website. [16]<br><br>Some existing neglected woodlands, mainly the small plantations on the plateau, might be able to provide small amounts of woody biomass through re-introduction of active management and replanting, but this should only be encouraged where it will not undermine nature conservation or landscape interests. Woodchip generated from small-diameter wood and scrub may be more viable, but would still be constrained by issues of poor access, difficult working conditions and nature conservation requirements.<br><br>**Continued on next page...** | Explore opportunities for small-scale extraction of woody biomass from existing plantations where this will enhance their conservation interest.<br><br>Encourage introduction of conservation management to neglected broadleaved woodlands where this will help to restore a more varied age structure, encourage natural regeneration, enhance conservation interest and not disturb sensitive habitats/ species or cause soil erosion. | **Biomass energy**<br><br>**Sense of place/ inspiration**<br><br>**Biodiversity** |

[16] See: www.naturalengland.org.uk/ourwork/farming/funding/ecs/sitings/areas/default.aspx

| Service | Assets/ attributes: main contributors to service | State | Main beneficiary | Analysis | Opportunities | Principal services offered by opportunities |
|---|---|---|---|---|---|---|
| **Biomass energy cont.** | | | | **... continued from previous page**<br><br>The potential for coppice management of dale-side woodlands to 'deliver economically viable coppice crops is low or unfeasible'. Only two sites were under coppice management in 2007, Monsal Dale and All Soles Wood near Ilam, and in both cases the work was to facilitate reintroduction of dormice, paid for by environmental schemes and the coppice was cut to waste. Many of the dale-side ash woodlands have no history of coppice management.<br><br>There are potentially conflicting requirements for commercial coppicing for and nature conservation, and there may be better ways of managing woodland to benefit species that favour coppice management (such as thinning and creation of small clearings).[17] | | |

[17] *Coppice Management*, Ravine WoodLIFE (2007)

| Service | Assets/ attributes: main contributors to service | State | Main beneficiary | Analysis | Opportunities | Principal services offered by opportunities |
|---|---|---|---|---|---|---|
| **Climate regulation** | Soils<br><br>Semi-natural habitats (heathland, grassland, scrub, wetlands)<br><br>Woodland | The mineral soils that cover the majority of the NCA (92 per cent) typically have a relatively low carbon content (between 0-10 per cent). The peaty surface soils (covering approximately 7 per cent of the NCA) will have a higher carbon content and are likely to be associated with areas of heathland, purple moor grass and wetlands.<br><br>The small areas of broadleaved woodland and unimproved grassland will also act as carbon stores. | Local | Maintaining heathland cover, semi-natural grassland, woodland and wetlands is important in order to prevent release of stored carbon and improve capacity to sequester/ store carbon and increase resilience to climate change impacts. The role of woodland in carbon sequestration and storage is limited due to low cover.<br><br>Carbon sequestration and storage could be increased in the area by increasing organic matter in agricultural soils (where this will not lead to a reduction in species-richness on flower-rich grasslands), increasing woodland cover where appropriate and restoring heathland and wetlands where feasible.<br><br>The effects of climate change could be ameliorated by planting additional trees to provide shade for wildlife, livestock and people and to regulate the temperature of watercourses. | Encourage and support farmers and landowners to retain and sympathetically manage heathland, unimproved grassland, woodland and wetlands, to maintain vegetative cover, improve ecological condition and avoid soil erosion and compaction.<br><br>Provide advice, information and support to farmers on increasing organic matter in soils and other measures to increase carbon storage and improve drought tolerance of farmland.<br><br>Explore opportunities to regulate the impacts of a changing climate by planting trees where they will provide shade for people, livestock and watercourses, where this does not have a negative impact on landscape character. | **Climate regulation**<br><br>**Water availability**<br><br>**Regulating water quality**<br><br>**Regulating water flow**<br><br>**Regulating soil quality**<br><br>**Regulating soil erosion**<br><br>**Recreation**<br><br>**Biodiversity** |

| Service | Assets/ attributes: main contributors to service | State | Main beneficiary | Analysis | Opportunities | Principal services offered by opportunities |
|---|---|---|---|---|---|---|
| **Regulating water quality** | Watercourses<br><br>Geology (limestone aquifer)<br><br>Soils<br><br>Semi-natural habitats | The rivers Wye and Dove are of 'good' ecological status, whereas the River Manifold, between Hopedale and Ilam, is of 'poor' ecological status (poor for diatoms and moderate for fish).<br><br>The chemical quality of the River Dove is 'good'. The chemical quality of the River Wye within the NCA has only been assessed between Buxton and Miller's Dale, where it is good, and the River Manifold has not been assessed. [18]<br><br>The western and central parts of the NCA are within the Peak District Dales Priority Catchment under the Catchment Sensitive Farming Initiative, which covers the catchments of the Dove, Manifold and Hamps rivers, the top of the River Lathkill and the River Wye at Millers Dale and Tideswell Brook. Excessive levels of nutrients have been identified in the River Dove and its tributaries due to nutrient loss from yard runoff, farm tracks, river crossings, riparian access for stock and applications of slurry and manure on farmland.<br><br>**Continued on next page...** | Regional | Groundwater and surface water are closely linked due to the many fissures and underground passages in the limestone. This makes groundwater particularly vulnerable to pollution by anything applied to or spilt on the land. For example nitrate concentrations in groundwater more than doubled between 1967/68 and 2005 and in the Castleton area presence of faecal bacteria in cave water has been a problem in the past.<br><br>It is important for farmers to match nutrient applications closely to the needs of the grassland and crops, and to avoid pollution incidents, particularly spillages of agricultural chemicals, diesel and oil. Water quality could also benefit from upgrades to farm infrastructure and measures to keep livestock away from watercourses, such as fencing and dedicated watering points, and efforts to ensure manure/slurry application at appropriate times/in appropriate conditions. | Provide advice, information and support to farmers on good farming practice to avoid water pollution, such as: efficient, appropriate and timely use of fertilisers, chemicals and manures; good soil management; and, appropriate grazing regimes.<br><br>Encourage capital investment in farm infrastructure to help avoid diffuse and point source pollution including measures such as improving animal housing, drainage and slurry storage; upgrading farm tracks and river crossings; providing surfaced livestock drinking/ feeding points; and riverside fencing.<br><br>Encourage sympathetic management, restoration and creation of riparian habitats, particularly grassland, woodland and wetland, to stabilise banks and reduce erosion and diffuse pollution. | **Regulating water quality**<br><br>**Regulating soil quality**<br><br>**Regulating soil erosion**<br><br>**Regulating water flow**<br><br>**Climate regulation**<br><br>**Biodiversity**<br><br>**Sense of place/ inspiration**<br><br>**Recreation** |

[18] *What's in your back yard?* Interactive maps, Environment Agency (2009)

| Service | Assets/ attributes: main contributors to service | State | Main beneficiary | Analysis | Opportunities | Principal services offered by opportunities |
|---|---|---|---|---|---|---|
| **Regulating water quality cont.** | | **... continued from previous page**<br><br>Pollution incidents from sheep dipping and from shared sheep grazing have also been identified. [19]<br><br>The groundwater quality of the Carboniferous Limestone Aquifer is 'good'.<br><br>The area does not overlap with any Nitrate Vulnerable Zones. | | Measures promoted by the Catchment Sensitive Farming initiative to limit diffuse pollution from agriculture include watercourse fencing, alternative drinking points for livestock, rainwater storage tanks, upgrading of tracks and watercourse crossings.<br><br>Pollutants can become particularly concentrated in rivers under periods of low flow in summer. Measures to maintain higher water levels, and limit abstraction, will also help to avoid this increased concentration.<br><br>The Humber River Basin Management plan suggests there is a need to address discharges from water treatment works into the Dove, particularly to improve the condition of the SAC[20]. Work has been done in recent years to improve and relocate water treatment plants. | Explore innovative solutions for limiting loss of river water into underground soughs associated with disused mines, thereby helping to maintain summer flow levels.<br><br>Work with industry and water treatment works to reduce the levels of nutrients discharged, to the rivers, particularly the Dove, in order to improve water quality. | |

[19] *Capital Grant Scheme – Funding Priority Statement 2013/14*, Natural England (2013) (URL: http://www.naturalengland.org.uk/ourwork/farming/csf/cgs/)
[20] *River Basin Management Plan Humber River Basin District*, Environment Agency (2009)

| Service | Assets/attributes: main contributors to service | State | Main beneficiary | Analysis | Opportunities | Principal services offered by opportunities |
|---|---|---|---|---|---|---|
| **Regulating water flow** | Geology<br><br>Soils<br><br>Watercourses<br><br>Semi-natural habitats<br><br>Precipitation | Some of the watercourses are fast flowing and show a flashy response to rainfall, such as the Derwent which runs through steep-sided valleys and drains and upland catchments with impermeable geology. Others in wider valleys that drain the permeable limestone, such as the Wye and Dove, flow more gently and respond more slowly to rainfall. [21]<br><br>The settlements of Buxton, Bakewell, Tideswell and Ashford in the Water are at risk of flooding from the River Wye.[22] There is localised flooding from Dale Brook at Eyam and Stoney Middleton.[21]<br><br>There is a risk of fluvial flooding in Ashbourne (outside the NCA to the south in the Needwood and South Derbyshire Claylands NCA) from the River Dove.[22]<br><br>**Continued on next page...** | Regional | Infiltration of rainwater is generally good because of the highly permeable nature of the underlying geology. However, it could be maintained and enhanced through good management of agricultural land to maintain vegetation cover and soil structure.<br><br>Planned flood risk management on the River Wye aims to enhance the natural function of the river and reduce dependence on raised flood defences through measures such as restoring natural storage of floodwater on undeveloped flood plains and investigating opportunities for storage or reduced conveyance upstream of urban areas. However opportunities will be limited by the narrow nature of the valleys and the permeable nature of the underlying geology.<br><br>The approach to managing flood risk in Ashbourne includes improvements to existing balancing areas and creating further storage areas upstream of the town, potentially along the River Dove or the River Manifold. | Encourage farmers to adopt good land, water, and soil management practices.<br><br>Encourage uptake of environmental grants and schemes on farms for management such as creation of buffer strips and riparian habitat and improvement of farm infrastructure, to enhance infiltration rates and minimise run-off.<br><br>Explore opportunities for creation and/or restoration of small-scale natural storage of floodwater in flood plains, attenuation ponds and wetlands to enhance biodiversity and sense of place while protecting downstream settlements from flooding.<br><br>Plan new development, housing and industry to ensure inclusion of sustainable drainage systems that minimise run-off and maximise water storage capacity. | **Regulating water flow**<br><br>**Water availability**<br><br>**Climate regulation**<br><br>**Regulating water quality**<br><br>**Regulating soil quality**<br><br>**Regulating soil erosion**<br><br>**Sense of place/ inspiration**<br><br>**Biodiversity** |

[21] *Peak Sub Region: Strategic Flood Risk Assessment, Level1, Executive Summary,* Halcrow Group Ltd (2008) (URL: www.highpeak.gov.uk/sites/default/files/documents/pages/SFRA_Exec_Summary_Level1.PDF)

[22] *River Trent Catchment Flood Management Plan*, Environment Agency (2010) (URL: http://cdn.environment-agency.gov.uk/gemi1109brdz-e-e.pdf)

| Service | Assets/attributes: main contributors to service | State | Main beneficiary | Analysis | Opportunities | Principal services offered by opportunities |
|---|---|---|---|---|---|---|
| **Regulating water flow cont.** | | **... continued from previous page**<br><br>A number of areas of extended flood plain act as natural storage: along the River Derwent, Henmore Brook (at Ashbourne) and the River Dove (at Mayfield).[23]<br><br>Some of the rivers, such as the River Lathkill, suffer from limited or lack of flow in summer, exacerbated by abstraction and loss of water into soughs and other disused mining infrastructure.<br><br>The River Derwent is linked to the Upper Derwent and Ogston Reservoirs, which release compensation flows to the River Derwent. | | Previous attempts to limit loss of river water into underground soughs have proved problematic and ineffective in the long-term, with water finding routes around cement and clay blockages and forcing off plugs and pipes[24]. New measures are being planned for Lathkill. Care should be taken to find ways of carrying work out that do not compromise access to the cave network. | Explore innovative solutions for limiting loss of river water into underground soughs associated with disused mines, using measures that minimise disruption to cave access and monitoring. | |

[23] *Peak Sub Region: Strategic Flood Risk Assessment, Level1, Executive Summary,* Halcrow Group Ltd (2008) (URL: **www.highpeak.gov.uk/sites/default/files/documents/pages/SFRA_Exec_Summary_Level1.PDF**)

[24] *Personal comment,* Derbyshire Caving Association

| Service | Assets/attributes: main contributors to service | State | Main beneficiary | Analysis | Opportunities | Principal services offered by opportunities |
|---|---|---|---|---|---|---|
| **Regulating soil quality** | Geology<br><br>Soils<br><br>Semi-natural habitats | There are 7 main soilscape types in the NCA:<br><br>■ Freely draining slightly acid but base-rich soils (71 per cent of NCA).<br>■ Shallow lime-rich soils over chalk or limestone (8 per cent).<br>■ Slowly permeable seasonally wet acid loamy and clayey soils (8 per cent).<br>■ Very acid loamy upland soils with a wet peaty surface (5 per cent).<br>■ Slightly acid loamy and clayey soils with impeded drainage (3 per cent).<br>■ Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils (2 per cent).<br>■ Slowly permeable wet very acid upland soils with a peaty surface (2 per cent). | Local | The freely draining slightly acid but base-rich soils cover 71 per cent of the NCA. Within this soil, calcareous layers (horizons) near the surface help to provide some natural resilience and enhanced workability.<br><br>Some of the area's soils are at risk from topsoil compaction and poaching, erosion and the development of iron pans from poor farming practices. Optimal timing of machinery operations and appropriate grazing regimes, both avoiding waterlogged conditions as far as possible, will all be important in avoiding these problems. Measures such as settlement ponds and silt traps can play an important role in intercepting run-off and catching sediment before it reaches watercourses.<br><br>Good management of weak topsoils will help to maintain a good soil structure and levels of organic matter, thereby increasing resilience to climate change. Minimum tillage, direct drilling and an increase in organic matter levels can benefit some of these soils and improve structure. | Provide information, advice and training for farmers on how to protect and enhance the organic matter content and structure of their soils.<br><br>Promote best practice in soil management such as: optimal timing, location and intensity of machinery use; appropriate grazing regimes that avoid poaching and compaction; and, creation of features such as settlement ponds.<br><br>Encourage uptake of environmental grants that can enhance farm infrastructure (for example, concrete yards, surfaced livestock feeding and watering points) in ways that help to avoid poaching and compaction.<br><br>Use environmental payments to encourage sympathetic management, restoration and creation of semi-natural habitats, particularly grassland, wetland and heathland. | **Regulating soil quality**<br><br>**Food provision**<br><br>**Climate regulation**<br><br>**Regulating water flow**<br><br>**Regulating water quality**<br><br>**Regulating soil erosion**<br><br>**Biodiversity** |

| Service | Assets/ attributes: main contributors to service | State | Main beneficiary | Analysis | Opportunities | Principal services offered by opportunities |
|---|---|---|---|---|---|---|
| **Regulating soil erosion** | Semi-natural vegetation<br><br>Soils/geology<br><br>Footpaths and tracks | The majority of the soils found within this NCA (89 per cent) are prone to erosion.<br><br>The western and central parts of the NCA are within the Peak District Dales Priority Catchment under the Catchment Sensitive Farming initiative. Within this catchment soil erosion and subsequent sedimentation of surface waters has been identified due to livestock accessing banks and watercourses and river crossings. | Local | All soils need to be carefully managed to reduce erosion risk through careful timing of cultivations, appropriate grazing regimes (intensity, timing and location) and maintenance of vegetation cover, especially on steeper slopes.<br><br>The freely draining slightly acid but base-rich soils and the acid loamy and clayey soils with impeded drainage (74 per cent of NCA) are susceptible to capping and slaking, which increases the risk of soil erosion.<br><br>Peaty surface soils (7 per cent of NCA) are at risk of erosion from a combination of rapid runoff, easily damaged peat layers and steep slopes. They are particularly at risk of erosion and gullying where surface vegetation is damaged or lost. Beneficial management for peaty soils include retaining water in situ (for example, through blocking drainage), ensuring good vegetative cover and avoiding over grazing/ trampling or damage by machinery.<br><br>The shallow lime-rich soils over chalk or limestone (8 per cent of NCA) are shallow, sometimes unstable and prone to loss through erosion. Thin soils on chalk and limestone are particularly at risk on sloping cultivated ground or where bare soil is exposed along over-used footpaths and tracks. | Promote best practice in soil, land and water management such as optimal timing and routes for machinery use, maintaining vegetation cover on steep slopes and using grazing regimes that avoid poaching, over-grazing and access to watercourses.<br><br>Encourage uptake of grants to upgrade farm infrastructure in ways that avoid poaching and soil erosion, such as surfacing of tracks/ gateways/river crossings and installation of hard-surfaced livestock watering and feeding points.<br><br>Manage recreational pressure on access routes to minimise soil erosion.<br><br>Encourage uptake of environmental scheme options which support good management and restoration of semi-natural habitats (grassland, heathland, woodland and scrub) to maintain/restore permanent vegetation cover, reduce surface water run-off and reduce soil erosion. | **Regulating soil erosion**<br><br>**Food provision**<br><br>**Climate regulation**<br><br>**Regulating water flow**<br><br>**Regulating water quality**<br><br>**Biodiversity**<br><br>**Geodiversity**<br><br>**Recreation** |

| Service | Assets/ attributes: main contributors to service | State | Main beneficiary | Analysis | Opportunities | Principal services offered by opportunities |
|---|---|---|---|---|---|---|
| **Pollination** | Semi-natural habitats<br><br>Pollinators | Agricultural land cover in the NCA is primarily grassland, with few commercial food crops that require insect pollination. Pollination is therefore primarily important for biodiversity and gardens.<br><br>The large areas of calcareous grassland (over 5,000 ha) and lowland meadows (over 1,700 ha), complemented by areas of heathland, fen, scrub and other grassland, provide a rich nectar source for pollinating insects. | Local | Pollinator species supported by this NCA may provide a pollination service for food crops in nearby areas of surrounding NCAs. | Encourage protection, management and enhancement of flower-rich limestone grassland, hay meadows and heathland, to provide nectar sources for pollinators, particularly through environmental payments.<br><br>Encourage less intensive farm management practices with more sustainable grazing/cutting regimes that allow plants to flower. | **Pollination**<br><br>**Food provision**<br><br>**Sense of place/ inspiration**<br><br>**Biodiversity** |
| **Pest regulation** | Semi-natural habitats<br><br>Invertebrates<br><br>Birds | The potential for regulation of arable pests is very limited, in view of the lack of arable crops. However there is potential for regulation of grassland pests.<br><br>The scrub in the dales and rougher habitats on the plateau (such as rough grassland, heath, scrub and woodland) may play an important role in supporting bird, mammal, amphibian and invertebrate species that could prey on the pests of surrounding grassland. | Local | There may be an important role for certain species which prey on grassland pests such as leather jackets, slugs and frit flies. These pests can do significant damage to grasslands, particularly newly sown leys, which are common on dairy farms. Bird, mammal and amphibian species are likely to have the biggest impact on leather jackets and slugs, whereas parasitoids and parasites may have a bigger impact on frit flies. | Encourage retention and creation of small areas of rough habitats (rough grassland, scrub, heath and woodland) to support populations of birds, mammals, amphibians and insects which prey on grassland pests. | **Pest regulation**<br><br>**Biodiversity** |

| Service | Assets/ attributes: main contributors to service | State | Main beneficiary | Analysis | Opportunities | Principal services offered by opportunities |
|---|---|---|---|---|---|---|
| **A sense of place/ inspiration** | Geology (particularly karst features)<br><br>Clear rivers and streams<br><br>Topography (particularly seasonally dry river valleys and hills offering far-reaching views)<br><br>Soils<br><br>Semi-natural habitats (particularly grassland, woodland and limestone heaths)<br><br>Archaeology (including bronze-age burial sites and ridge and furrow)<br><br>Historic structures (such as houses, mills, bridges, field barns)<br><br>Cultural traditions (such as well-dressing)<br><br>Disused quarries and mines | The Peak District was the UK's first National Park.<br><br>This is a very distinctive landscape with an exceptionally strong sense of place created by:<br><br>■ The steep-sided limestone valleys and gorges (for example, Dovedale) with clear rivers and streams, and daleside woodlands;<br>■ Prominent limestone cliffs and caves (for example, Thor's Cave).<br>■ The high limestone plateau with its productive pastures and flower-rich meadows, dew ponds and strong networks of field walls.<br>■ Traditional villages (for example, Monyash) and Victorian Spa towns (such as Buxton and Matlock Bath) and grand mill buildings;<br>■ Archaeology, particularly bronze-age burial sites, ridge and furrow and disused historic mines and quarries.<br><br>Many artists, past and present, have been inspired by the landscapes of the White Peak, such as those now represented under the umbrella group of Peak District Artisans. | International | The conservation, sympathetic management and enhancement of geological features, archaeology, historic buildings and settlements, semi-natural habitats, rivers and traditional farmed landscapes and unique cultural heritage are all critical to maintaining the strong sense of place in the area.<br><br>The maintenance and creation of far-reaching and iconic views is also crucial.<br><br>The distribution of woodland is very distinctive. All the semi-natural woodland occurs in the dales, in a mosaic with highly valuable species-rich grassland and scrub. Woodland on the plateau is limited to small planted geometric shapes; long and narrow shelterbelts around farmsteads, along historic lead rakes and defining access routes. Therefore, this landscape has very low capacity for additional tree/woodland planting, without a substantial change in character.<br><br>**Continued on next page...** | Ensure conservation, sympathetic management and enhancement of the key components of sense of place (karst features, historic buildings, walls, archaeology, habitats, grasslands, scrub and woodlands, clean rivers and traditional farming) through advice, information and environmental schemes and grants.<br><br>Support and encourage implementation of Peak District National Park Management Plan.<br><br>Explore opportunities to use woodland management and thinning to open up far-reaching views, as at Monsal Head.<br><br>Support and encourage local businesses to use the strong sense of place to promote their products. | **Sense of place/ inspiration**<br><br>**Sense of history**<br><br>**Tranquillity**<br><br>**Recreation**<br><br>**Biodiversity**<br><br>**Geodiversity** |

| Service | Assets/ attributes: main contributors to service | State | Main beneficiary | Analysis | Opportunities | Principal services offered by opportunities |
|---|---|---|---|---|---|---|
| **A sense of place/ inspiration cont.** | | | | **... continued from previous page**<br><br>Farmers, land owners, the National Park Authority, National Nature Reserves, National Trust, English Heritage and the World Heritage Site among many other sites, landowners and organisations, all play an important role in communicating, explaining and promoting the sense of place and its origins.<br><br>The strong sense of place can be used by local food, craft, art and tourism based businesses to attract customers and market local products, such as by the Peak District Environmental Quality Mark. | Support activity by a wide range of organisations and landowners to: interpret and promote the sense of place and origins of the landscape; enhance visitor understanding and enjoyment; and, encourage activity to sustain and enhance the local landscape.<br><br>Plan and manage development to use traditional building styles, local materials and high-quality, sympathetic modern design. | |

| Service | Assets/ attributes: main contributors to service | State | Main beneficiary | Analysis | Opportunities | Principal services offered by opportunities |
|---|---|---|---|---|---|---|
| **Sense of history** | Geology<br><br>Archaeology<br><br>Historic built structures<br><br>Field boundary networks<br><br>Cultural traditions (for example well-dressing) | The area has one World Heritage Site (part of Derwent Valley Mills WHS), five Registered Parks and Gardens, 292 Scheduled Monuments and 1,428 Listed Buildings.<br><br>The area has a particularly strong sense of history, with a high concentration of Neolithic and bronze-age earthworks (for example, Arbor Low), numerous iconic structures from the industrial revolution (such as Litton Mill) and good preservation of traditional buildings, settlement pattern and field boundary networks (for example Chelmorton).<br><br>Remains from early mineral extraction are also a prominent reminder of the area's past, particularly in the form of lead rakes.<br><br>The numerous dew ponds scattered across the plateau are a reminder of times when people and farming were more dependent on natural, rather than piped, water supplies. | International | Above and below ground field archaeology is a particularly strong feature of the area and needs to be sensitively managed to avoid damage from agricultural activity or neglect and scrub encroachment.<br><br>Drystone walls and traditional farm buildings are particularly at risk of neglect and deterioration. Both are expensive and time consuming to maintain and repair, and in the case of traditional farm buildings, no longer have an agricultural use. Changes in farm practice and amalgamation of farm holdings can result in loss of walls, filling in of dew ponds, conversion of traditional buildings and loss/ deterioration of other historic features.<br><br>Cultural traditions include well-dressing, which is thought to have ancient origins. It involves the 'blessing' of wells in the summer months by the creation of brightly coloured scenes, often relating to the Bible, using flower petals pressed onto large clay-covered boards. | Protect and manage sensitive historical and archaeological sites through adoption of good land management practices and encourage uptake of agri-environment options for historic structures and archaeological sites.<br><br>Conserve and maintain traditional drystone wall boundaries and field barns, and their historic network pattern, by supporting farmers to maintain, repair and restore them and by supporting training and apprenticeships in drystone walling and other traditional crafts.<br><br>Provide information and training for property owners and builders/ tradesmen on the sympathetic maintenance of old buildings and use of traditional techniques and appropriate materials.<br><br>Plan for new development that is sympathetic to traditional landscapes, historic buildings and features, and historic settlement pattern.<br><br>Provide improved access to and interpretation of historical and archaeological sites to increase public awareness, understanding and enjoyment.<br><br>**Continued on next page...** | **Sense of history**<br><br>**Sense of place/ inspiration**<br><br>**Tranquillity**<br><br>**Recreation**<br><br>**Biodiversity**<br><br>**Geodiversity** |

| Service | Assets/ attributes: main contributors to service | State | Main beneficiary | Analysis | Opportunities | Principal services offered by opportunities |
|---|---|---|---|---|---|---|
| **Sense of history cont.** | | | | | **... continued from previous page**<br><br>Encourage conservation, restoration and interpretation of industrial /mining archaeology and artefacts.<br><br>Support the continuation and promotion of traditional local customs such as well-dressing. | |
| **Tranquillity** | Topography (particularly deep dales, gorges and caves, isolated tors/hills)<br><br>Semi-natural habitats (particularly woodland, flower-rich grassland and rives) | Tranquillity is a significant feature of this NCA, with 76 per cent classified as 'undisturbed', a figure that has remained relatively static over the past fifty years following only a very small decline from 79 per cent in the 1960s. Only 1 per cent classed as urban.<br><br>The main source of disturbance is associated with the urban settlements of Buxton and Bakewell and the urban fringes of Matlock and Wirksworth. In addition, the main road corridors (A623, A6 and parts of the A515) all contribute to decreased levels of tranquillity in the north of the NCA.<br><br>**Continued on next page...** | National | Despite a slight reduction in tranquillity (3 per cent 1960s-2007), the NCA is extremely important in providing a rural/ tranquil escape to nearby urban populations. Its central location and ease of accessibility means that high levels of visitors can be a threat to tranquillity. Access and recreation therefore needs careful consideration, planning and management to maintain and protect levels of tranquillity.<br><br>The hidden deep dales, without roads, offer the greatest tranquillity. However this can be undermined by pressure from large numbers of visitors at busy times of the year to the more popular dales such as Dovedale. | Seek, encourage and promote opportunities to help visitors use alternative means of transport (other than private cars), such as: creating good new bike/multi-user routes linking to surrounding settlements; providing good, well-co-ordinated public transport links; shared transport and park and ride schemes, and other facilities and services.<br><br>Seek, encourage and promote opportunities to manage visitor flows and numbers to maintain the tranquillity of heritage sites, monuments and landscapes, to ensure their aesthetic appreciation and connection with landscape and the past is maintained. | **Tranquillity**<br><br>**Sense of place/ inspiration**<br><br>**Sense of history**<br><br>**Recreation**<br><br>**Biodiversity** |

| Service | Assets/ attributes: main contributors to service | State | Main beneficiary | Analysis | Opportunities | Principal services offered by opportunities |
|---|---|---|---|---|---|---|
| **Tranquillity cont.** | | **... continued from previous page**<br><br>The deep dales that dissect the plateau are some of the most tranquil locations in the area, particularly where they do not have roads running through them. Examples include Wolfscote Dale, Deep Dale and Cressbrook Dale.<br><br>In 2005, 55 per cent of visitors to National Park did so for its tranquillity. [25] | | Areas of the plateau can be affected by traffic noise due to the intensity of traffic at certain times of day and year. However traffic management measures can result in a proliferation of signs, which have a negative visual impact on an otherwise traditional farmed landscape.<br><br>All opportunities should be explored to help visitors use alternative means of transport other than private cars, through provision of multi-user routes, better co-ordinated public transport and infrastructure. Means of transport should be encouraged that avoid negative impacts on tranquillity, landscape, biodiversity and soil/water/ air quality.<br><br>The Peak District National Park Authority secured a large grant from government in 2013 to help improve cycling routes and infrastructure, including links to surrounding conurbations. | Protect the 'undisturbed' nature of farmed limestone plateau and deep valleys from inappropriate/ insensitive development.<br><br>Plan to limit traffic/light pollution particularly that associated with new development in villages and urban fringes of larger towns (Buxton, Matlock and Bakewell) to minimise loss of tranquillity. | |

[25] *Peak District National Park Visitor Survey 2005,* Peak District National Park Authority (2005)

| Service | Assets/ attributes: main contributors to service | State | Main beneficiary | Analysis | Opportunities | Principal services offered by opportunities |
|---|---|---|---|---|---|---|
| **Recreation** | Distinctive limestone geology (tors, dales, gorges, caves and cliffs)<br><br>Public rights-of-way network<br><br>Open access land<br><br>Rivers and streams<br><br>Historical and archaeological features and landscapes | Over three quarters of the area falls within the Peak District National Park and has many opportunities for public access to local green space through rights of way and open access land. It also has good tourist and recreational facilities and a wealth of natural features that can be accessed for diverse activities including hill walking, rock climbing, caving and fly fishing.<br><br>The NCA offers a network of rights of way totalling 1,080 km at a density of just over 2 km per km$^2$, including 51 km of the Pennine Bridleway, as well as 2,632 ha or 5 per cent of the NCA which is publicly accessible.<br><br>The Derbyshire Dales National Nature Reserve offers a popular venue for recreation and opportunities for the public to learn more about the environment, including school visits and volunteering.<br><br>The area has some of the best fly fishing in the England.[26]<br><br>**Continued on next page...** | National | The White Peak, along with the rest of the Peak District, is immensely important in terms of recreation for the Midlands, Yorkshire and north-west England. Its central location is easily accessed by adjacent urban populations mainly by road (car and bus), less so by rail. The Peak District National Park Authority has a statutory purpose to 'promote opportunities for the understanding and enjoyment of the special qualities by the public'.<br><br>The 2005 Peak District National Park visitor survey asked respondents about their reasons for visiting, features important to their enjoyment of the area and activities undertaken. Top reasons for visiting the White Peak included scenery (85 per cent), tranquillity (50 per cent) and easiness to get to (35 per cent). Features considered 'very important' to enjoyment of the National Park as a whole included scenery (80 per cent), good walking (62 per cent), clean air/no pollution (57 per cent) and peace and quiet (50 per cent). Activities undertaken in the White Peak included sightseeing (36 per cent), 2–10 mile walk (55 per cent), <2 mile walk (32 per cent) and picnic (25 per cent). | Seek, encourage and promote opportunities to help visitors use alternative means of transport (other than private cars), such as: creating good new bike/ multi-user routes linking to surrounding settlements; providing good, well-co-ordinated public transport links; shared transport and park and ride schemes, and other facilities and services.<br><br>Manage visitor access to popular locations to minimise traffic, disturbance, footpath erosion and other negative environmental impacts.<br><br>Seek opportunities to enhance access by ensuring paths are well maintained and sign posted, linking routes to improve connectivity, providing new routes/ facilities for a wide range of users and providing self-guided route maps. | **Recreation**<br><br>**Regulating soil erosion**<br><br>**Sense of place/ inspiration**<br><br>**Sense of history**<br><br>**Tranquillity**<br><br>**Biodiversity**<br><br>**Geodiversity** |

[26] *Dove Abstraction Licensing Strategy,* Environment Agency (2013) (URL: http://a0768b4a8a31e106d8b0-50dc802554eb38a24458b98ff72d550b.r19.cf3.rackcdn.com/LIT_5655_f44f7f.pdf)

| Service | Assets/ attributes: main contributors to service | State | Main beneficiary | Analysis | Opportunities | Principal services offered by opportunities |
|---|---|---|---|---|---|---|
| **Recreation cont.** | | **... continued from previous page**<br><br>Former railway lines which run down the spine of the NCA are now managed as multi-user trails, presenting level access along the Monsal, Tissington and High Peak Trails, particularly popular with those with more limited mobility.<br><br>The White Peak area has over 1,300 ha of limestone cave system designated as SSSI. Parts of the cave system attract large numbers of visitors, to show caves such as the famous Blue John and Treak Cliff Caverns. Other sections are also used by recreational cavers and educational groups.<br><br>The area suffers from high visitor pressure, particularly in 'honeypot' locations such as Hartington, Dovedale and outside the National Park at Matlock Bath and Buxton. | | The high level of visitor numbers is both a benefit and a threat to the area. It has catalysed creation of outstanding access routes, particularly multi-user routes on disused railways, stimulated a thriving tourism industry and provided essential additional income for many farming families.<br><br>The intensity and peaks of visitor numbers (summer weekends and school holidays) puts the transport infrastructure and popular 'honeypot' sites, under significant pressure and can undermine the tranquillity of popular areas. Potential benefits could be gained by encouraging people to visit at quieter times of year to provide continuity for tourism businesses and take pressure off sites at peak times.<br><br>One disused quarry, Horseshoe Quarry, has been opened up to climbers as it has a large vertical exposed face, resulting from early quarrying practices, and is now a very popular site. | Enhance interpretation and education facilities using new media and innovative techniques. Encourage delivery by a wide range of people and organisations in order to enhance the resident and visitor experience and understanding of the landscape.<br><br>Creation of new recreational facilities linked to restoration of disused industrial sites for example, disused quarries for bikers/climbers.<br><br>Promote the health benefits of recreation to residents and visitors alike and by incorporating accessible green spaces into new developments, provide local residents with opportunities to benefit from the many health benefits afforded by contact with the natural environment. | |

| Service | Assets/ attributes: main contributors to service | State | Main beneficiary | Analysis | Opportunities | Principal services offered by opportunities |
|---|---|---|---|---|---|---|
| **Biodiversity** | Limestone geology<br><br>Soils<br><br>Topography (tors, plateau, gorges, dale sides, cliffs)<br><br>Caves<br><br>Watercourses<br><br>Semi-natural habitats (especially limestone and calaminarian grasslands, limestone heath, native woodland and scrub)<br><br>Wild plant and animal species | Over 20 per cent of the NCA is covered by priority habitats, with nearly 10 per cent of the NCA protected by national and/or European nature conservation designations (SSSI, NNR, SAC or SPA).<br><br>68.2 per cent of the White Peak's SSSI are in favourable condition, and 27.3 per cent are unfavourable recovering.<br><br>Much of the wildlife value and biodiversity is concentrated in the steep-sided limestone dales and gorges, which have been protected from development and agricultural improvement by their relative inaccessibility. They contain clear rivers and streams, species-rich flushes, semi-natural ash woodlands, scrub and flower-rich limestone grasslands. Many priority species are associated with these habitats such as white-clawed crayfish, bullhead, lamprey, trout, dipper, water vole, Jacob's ladder, small leaved lime and white hair streak butterfly.<br><br>**Continued on next page...** | International | The primary threats to biodiversity of the White Peak include: scrub encroachment of limestone grassland; agricultural improvement of hay meadows; water pollution from agriculture and water treatment works; low flows and drying out of rivers in summer; removal or neglect of dew ponds; and, conversion of traditional farm buildings that do not allow for barn owls, bats and swallows.<br><br>Tree diseases are one of the most serious potential threats to the biodiversity of the White Peak. Ash die-back could devastate the dale-side woodlands and scrub which are dominated by ash. Careful thought needs to be given to management that will help limit the spread of ash die-back and to research to identify genetics of any resistant local trees.<br><br>Opportunities to increase connectivity of habitats are limited in this landscape. The dales are very tightly defined and consist of a mosaic of valuable grassland, scrub and woodland habitats. Increasing the area and connectivity of one could undermine that of another priority habitat. On the plateau existing habitats are highly fragmented and dispersed and there are strong financial reasons for farmers to maintain productivity of agriculturally improved land. | Conserve, enhance and sympathetically manage semi-natural habitats, particularly hay meadows, limestone pastures, calaminarian grassland and limestone heath.<br><br>Encourage uptake and best use of agri-environment schemes to conserve, enhance and extend habitats, to achieve a co-ordinated approach at a landscape-scale, thereby allowing species to move more freely and ecosystems to become more resilient to climate change.<br><br>Encourage and support wildlife-friendly farming practices that allow scarce species to co-exist with commercial farming, such as late cutting of meadows and silage fields, careful management of dew ponds containing great | **Biodiversity**<br><br>**Food provision**<br><br>**Water availability**<br><br>**Climate regulation**<br><br>**Regulating water quality**<br><br>**Regulating water flow**<br><br>**Regulating soil quality**<br><br>**Regulating soil erosion**<br><br>**Sense of place/ inspiration**<br><br>**Tranquillity**<br><br>**Recreation**<br><br>**Geodiversity** |

| Service | Assets/ attributes: main contributors to service | State | Main beneficiary | Analysis | Opportunities | Principal services offered by opportunities |
|---|---|---|---|---|---|---|
| **Biodiversity cont.** | | **... continued from previous page**<br><br>The rivers support abundant plant life (including water crowfoot and watercress), and have an important impact on the wider ecology of the dales as they support swarms of hoverflies, mayflies and dragonflies, which in turn support important populations of birds to the dale-side woodland and scrub. The rivers flowing below ground through the cave network also support a wealth of wildlife including fish, eels, leeches and shrimps.<br><br>The adjacent limestone cliffs and crags are also important for birds such as ravens and peregrines. Cave systems are important for bats.<br><br>The limestone plateau is significant for its historic dew ponds (with great crested newts), traditional hay meadows and its mosaic of open grassland habitats for ground nesting birds.<br><br>Calaminarian grassland is an important and rare habitat that has developed in association with the remains of lead mines, and supports rare plants such as spring sandwort. | | The best opportunities for habitat creation/restoration are therefore to consider, and if appropriate enhance, the balance between habitats in the dales and to target habitat creation at the dale brows/plateau edge where they can buffer, extend and connect priority habitats in the dales.<br><br>The ecological condition of some rivers is heavily affected by artificial structures such as weirs. These limit fish migration to upstream spawning grounds, and can also cause silt accumulations which smother fish spawning gravels and release nutrients into the water. Removal of weirs and similar structures could allow a 'flushing out of the system' as well as easier passage of fish, but many of these structures are historically significant and the slow-flowing rivers with frequent pools, resulting from frequent weirs, have become a distinctive component of the landscape in some dales.<br><br>Partnerships with fishing interests can provide useful data for monitoring the ecological condition of rivers, for example, the Riverfly Initiative.<br><br>**Continued on next page...** | crested newts, and sympathetic restoration and conversion of traditional farm buildings to allow continued use by barn owls, swallows and bats.<br><br>Work with farmers to identify solutions to make grazing/management of neglected limestone grassland financially viable, to protect their wildlife interest and limit scrub encroachment.<br><br>Use information, advice, training, environmental schemes and grants to secure sympathetic management of soil, land and water to minimise water pollution from agriculture and abstraction from rivers.<br><br>Work with water companies to minimise water pollution from treatment plants. | |

| Service | Assets/ attributes: main contributors to service | State | Main beneficiary | Analysis | Opportunities | Principal services offered by opportunities |
|---|---|---|---|---|---|---|
| **Biodiversity cont.** | | | | **... continued from previous page**<br><br>The biodiversity value of some of the area's native woodlands is undermined by lack of positive management, particularly absence of fencing to exclude grazing livestock resulting in loss of ground flora, lack of regeneration, uniform age structure and lack of species diversity. Some woodlands also suffer from lack of deadwood, proliferation of non-native species (sycamore) and lack of open clearings. The management needed to address these issues in the White Peak woodlands is often not conducive to harvesting sizeable timber, extracting other timber or working woodland to establish/ harvest other products, with the exception of sycamore removal which could be used for wood-fuel production. | Explore innovative solutions for limiting loss of river water into underground soughs associated with disused mines, thereby helping to maintain summer flow levels and retain wildlife value of rivers.<br><br>Carry out thorough and regular monitoring to allow early identification of tree diseases, particularly ash die-back, and plan/develop an action plan to limit their spread.<br><br>Explore ways of mitigating the impact of ash die-ack on landscape and biodiversity interest of ash woodlands and boundary trees, such as researching resistance among local ash trees, and seeking opportunities to introduce other tree species, particularly locally scarce native species, such as oak and lime.<br><br>Encourage and support removal of artificial barriers to fish migration, where this is compatible with landscape and historic interests.<br><br>Support activity by a wide range of organisations and landowners to: interpret and promote the wildlife and habitats of the area; enhance visitor and resident understanding and enjoyment; and, encourage activity to protect and enhance the local wildlife.<br><br>Work with fishing interests to monitor condition of rivers through the use of indicator species of fish and invertebrates. | |

| Service | Assets/ attributes: main contributors to service | State | Main beneficiary | Analysis | Opportunities | Principal services offered by opportunities |
|---|---|---|---|---|---|---|
| **Geodiversity** | Geology<br><br>Topography (tors, plateau, gorges, dale sides, cliffs)<br><br>Caves<br><br>Precipitation<br><br>Watercourses<br><br>Soils<br><br>Disused and active quarries | This area has many outstanding karst features (including caves, sinkholes, outcrops, cliffs, gorges and tufa), recognised by a particularly high concentration of 18 geological and 10 mixed interest SSSI and 97 Local Geological Sites.<br><br>The predominant geology is Carboniferous Limestone, with veins of minerals such as fluorspar, galena, chalcopyrite, barite and Blue John. There are also three types of igneous rock: dolerites, basalts and tuffs.[27]<br><br>Many of the features and sites are within the National Park and some are easily accessible and well used by schools, universities and specialist groups for recreation and education. | National | The geology and minerals of the area are still economically important. Limestone is still actively quarried as are fluorspar and Blue John. These provide jobs and income for the area, but can also have negative impacts on the local environment, landscape and tranquillity. The limestone of the area has long been important for construction of buildings, structures and walls, meaning that the geology is highly visible in the landscape.<br><br>Active and disused quarries are an important resource for their large exposures of rock, illustrating geological processes. Some disused sites are now protected as SSSI and many are now important for educational and recreational use.<br><br>A partnership has been set up between Natural England and Peak District Cavers to involve cavers in monitoring the condition of cave SSSI. [28]<br><br>The condition of cave SSSI is good and has been stable in recent years. Threats to the geological interest of caves in the area include pollution (causing changes in chemistry and disrupting stalagmite formation).<br><br>**Continued on next page...** | Protect distinctive geological features and maintain their visibility by removing vegetation and ensuring that existing and new access routes and nearby development are sympathetic.<br><br>Continue to develop and enhance interpretation material, using new media to increase the understanding and appreciation of the area's geodiversity among visitors and locals.<br><br>Plan restoration of disused quarries to provide opportunities for education and recreation. | **Geodiversity**<br><br>**Sense of place/ inspiration**<br><br>**Sense of history**<br><br>**Biodiversity**<br><br>**Regulating water quality**<br><br>**Tranquillity**<br><br>**Recreation** |

[27] *Rocks and minerals of the Peak District National Park,* Peak District National Park Authority (URL: www.peakdistrict.gov.uk/__data/assets/pdf_file/0011/79229/factsheet6-minerals.pdf)
[28] See: www.peakcavemonitoring.org.uk/

| Service | Assets/ attributes: main contributors to service | State | Main beneficiary | Analysis | Opportunities | Principal services offered by opportunities |
|---|---|---|---|---|---|---|
| **Geodiversity cont.** | | | | **... continued from previous page**<br><br>There is also a recent practice on farmland of applying large quantities of paper pulp as a soil conditioner, some of which has been getting washed into cave systems. However it is not thought to cause physical or chemical damage to the cave systems.<br><br>There are easily accessible and visible examples of geological processes in action in the White Peak, in terms of formation of tufa (calcareous deposits on bryophytes next to springs) and stalagmite/stalactite formation in caves. These are really valuable educational resources, but are usually on very sensitive sites so access needs careful management to avoid damage. | Continue to work with cavers to assess the condition of cave SSSI and to monitor pollution incidents in caves to identify pollutants and their sources and take action to reduce them. | |

**Photo credits**

Front cover: Far reaching views towards the gritstone moors looking west towards Tideswell. © Natural England/Jonathan Dix

Pages 4, 6, 7, 10: © Natural England/Rosy Eaton
Pages 5, 32: © Natural England/Jonathan Dix
Pages 9, 26: © Natural England/Lucy Heath
Page 12: © Natural England/McCoy Wynne & Associates
Page 29: © Natural England/Janet Belfield
Page 33: © Natural England/Mike Williams

NATURAL ENGLAND

**Natural England is here to secure a healthy natural environment for people to enjoy, where wildlife is protected and England's traditional landscapes are safeguarded for future generations.**

Catalogue Code: NE534 ISBN 978-1-78367-094-9

Should an alternative format of this publication be required, please contact our enquiries line for more information: 0845 600 3078 or email enquiries@naturalengland.org.uk

www.naturalengland.org.uk