National Character Area profile:

99. Black Mountains and Golden Valley

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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.

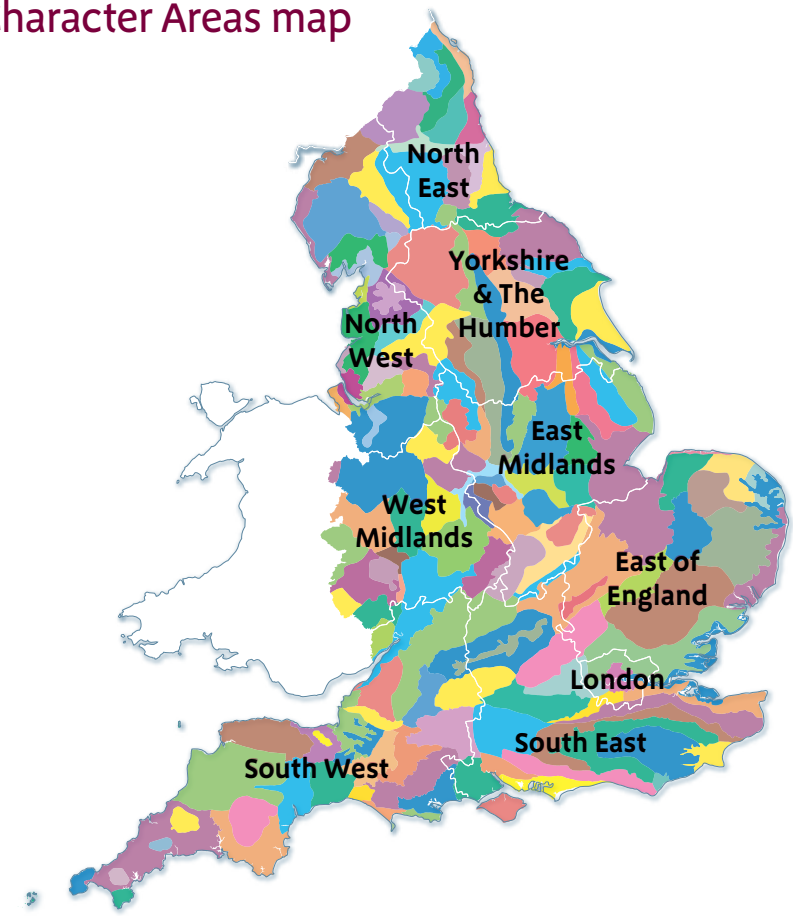
NCA profiles are guidance documents which can help communities to inform their decision-making about the places that they live in and care for. The information they contain will support the planning of conservation initiatives at a landscape scale, inform the delivery of Nature Improvement Areas and 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)

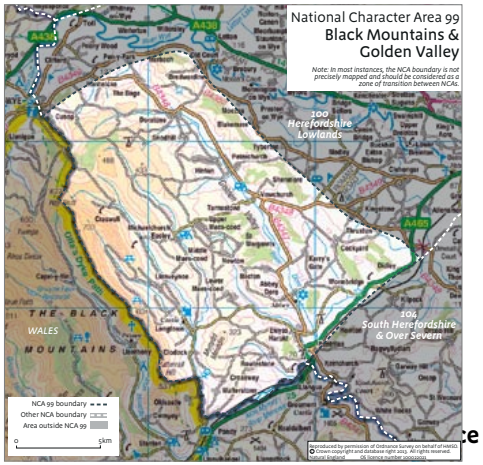
Summary

The Black Mountains and Golden Valley National Character Area (NCA) lies within the south-west corner of Herefordshire. It is one of the most tranquil areas of England, with few settlements and relatively little new development or transport infrastructure. Key challenges for the area include the fragmentation of semi-natural habitats, in particular the fragile upland habitats, and maintaining a sense of remoteness while providing a range of recreational opportunities. A border landscape, it is bounded by the Welsh half of the Black Mountains and the Brecon Beacons to the west, the Wye Valley and Herefordshire lowlands to the north and east and the River Monnow to the south. There is a strong sense of transition from the wild and remote beauty of the upland plateau to the cultivated intimacy of lowland England.

The highest land on the plateau has extensive upland habitat, much of which falls within the Black Mountains Site of Special Scientific Interest (SSSI). Habitats include wet heath and blanket bog with peat deposits and small flushed areas with species such as sedge-butterwort, and deer grass and cross-leaved heath. Designated sites are few; a very small part of Moccas Park, a historic deer park and National Nature Reserve, falls within the NCA, along with eight SSSI. This includes two Geological Conservation Review Sites. Woodlands are an important habitat, covering 13 per cent of the area, with much of the woodland cover predominantly along the ridges to the east.

The Golden Valley has very fertile, high-grade agricultural soils, has been intensively cultivated for centuries and is still very important for commercial agricultural. Here there are extensive areas of arable land, with many low hedgerows where the hedgerow treecover is relatively poor. There are small villages, enlarged in recent years, and some fine older buildings in red sandstone or grey limestone. A small part of Hay-on-Wye lies within the NCA, on the north-western boundary. A book town internationally renowned for its literature festival, it is the largest settlement; other settlements include a number of villages such as Peterchurch and Bredwardine and some small, dispersed hamlets.

From the Golden Valley the landscape begins its transition to the uplands. There are irregular pasture fields, often with overgrown hedgerows and mature hedgerow oaks. Small hamlets, many with low, whitewashed buildings, are interspersed with isolated farmsteads and, as the land continues to rise, hedgerow trees decrease and hedgerows become lower. There are increasingly prominent views of the abrupt moorland edge of the Black Mountains, with the outliers of Mynydd Merddin and Black Hill prominent in the east. Eventually, the field boundaries and improved pasture stop and the landscape changes to wind-swept acid grassland and moorland from which there are panoramic views across much of the Welsh Marches.



Click map to enlarge; click again to reduce

Statements of Environmental Opportunities:

- **SEO 1:** Protect, manage and enhance the open, expansive upland habitats and peat deposits of the Black Mountains to ensure that they are healthy and contiguous, protecting the important species and the soil and water resources that they support.

- **SEO 2:** Protect, manage and enhance the upland fringes, the lower slopes and the valleys, with their mosaics of habitats including moorland, heathland, woodland, meadows and pastures, and their field patterns defined by hedgerows, to enhance ecological networks and strengthen the distinctive landscape character of the Black Mountains and Golden Valley.

- **SEO 3:** Protect and manage the rivers Dore and Monnow, their flood plains and their associated watercourses, to maintain high water quality and to enhance their nature conservation interest, to strengthen their contribution to landscape character, to help reduce the potential risk of flooding both within the National Character Area and downstream, and to increase the recreational opportunities they provide for public enjoyment.

- **SEO 4:** Protect, manage and enhance the qualities of tranquillity, wildness and remoteness and the area's historic and geological assets while providing nature-based recreational opportunities that are accessible to a diverse range of people and encourage sustainable tourism.

Sandstone beds in the Devonian Senni Formation form a steep edge to the Black Mountains at Black Darren.

Description

Physical and functional links to other National Character Areas

The Black Mountains and Golden Valley National Character Area (NCA) lies at the western edge of Herefordshire, at the boundary with Wales; its western boundary follows the boundary of the Brecon Beacons National Park. The Black Mountains extend into the NCA from the west, and this remote, wild upland edge country creates a sharp contrast with the neighbouring Herefordshire Lowlands to the east and the South Herefordshire and Over Severn NCA to the south. It is a border landscape with a strong sense of transition from the remote, wild, moorland mountaintops with a distinctly Welsh flavour in the west to the wide, fertile agricultural lands of the Golden Valley in the east, which evoke the cultivated intimacy of lowland England. The Black Mountains' rugged hill-top plateau can be seen from the Malvern Hills to the east and beyond, offering inspiration, a sense of space, peace, and quiet enjoyment of nature.

The Black Mountains and Golden Valley NCA is formed from Old Red Sandstone laid down at the end of the Silurian and throughout the Devonian Periods which was uplifted and formed a plateau. These rocks underlie much of the NCA. The St Maughans Formation and Raglan Mudstone Formation rocks are geological features that are shared with the Herefordshire Lowlands. The south-eastern boundary of the NCA is the line of the Neath Disturbance, a major geological fault line that runs north-east to south-west and continues into the Neath Valley in South Wales.

The main watercourses in the area are the rivers Dore and Monnow, which both flow from Wales in the north in a south-easterly direction through the NCA, following the line of the deep valleys and passing into the South Herefordshire Over Severn NCA. The River Dore is a tributary of the Monnow; the River Monnow joins the River Wye at Monmouth. The strong pattern of parallel ridges and valleys follows a north-west to south-east orientation, developed on the tilted surface of the original uplifted plateau. The soils, water and nutrients washed down from the valley sides have created very fertile, high-grade agricultural soils within and beyond the area. The Worm Brook and Monnow River, along the south-eastern boundary of the NCA, run perpendicular to the drainage pattern described above, following the line of the major geological fault line, the Neath Disturbance.

Transport links and settlements are few; the busiest road is the A465, which runs along the south-eastern edge of the NCA. The A438 follows the eastern and northern boundaries of the NCA, while the B4348 cuts across the NCA from north-west to south-east. The area is laced by lanes, tracks and footpaths and is bounded by the first upwellings of the Black Mountains, making it popular for walking. A section of Offa's Dyke Path National Trail cuts through the NCA for 6 km between Hay-on-Wye and Hay Bluff and continues south-east along the NCA boundary. Hay Bluff is a well-known landmark on the western boundary, rising to a height of 677 m and forming a vantage point with views out to Wales and across Herefordshire. Part of the historic book town of Hay-on-Wye falls into the area, adding to its cultural diversity.

Key characteristics

- Remote, steep-sided plateau of the Black Mountains in the west. Mainly made up of sandstones, the plateau is formed from resistant Old Red Sandstone rocks of the Devonian Senni and Brownstone Formations and rises to an elevation of 700 m, with a dominant pattern of north-west- to south-east-oriented ridges and valleys, following the line of the initial erosion of the uplifted and tilted plateau surface.
- Lower hills in the middle and east of the NCA underlain by less resistant Old Red Sandstone rocks, made up of sandstones and mudstones of the lowest Devonian St Maughans Formation.
- Wide glacial Golden Valley in the east, underlain by the more easily eroded Upper Silurian Raglan Mudstone Formation and glacial deposits, with high-grade agricultural soils important for commercial farming, largely for animal husbandry with some arable cultivation.
- Rivers Dore and Monnow, which are the most prominent of the watercourses in the area, flowing from the north-west to the south-east, following the line of the valleys.
- Well-wooded landscape at 13 per cent of landcover, particularly on the slopes of the eastern and northern hills, and a high proportion of ancient woodland compared with the national average.
- Transition from agricultural lowlands in the east to high moorland ridge of the Black Mountains in the west, reflecting the underlying geodiversity. Arable fields and pastures of the valley, bounded by low hedgerows with few hedgerow trees, give way to irregular pastures with overgrown hedgerows and abundant hedgerow trees on the valley sides. Fields become larger and more regular, with lower hedgerows further up the slopes before the boundaries stop at the open moorland.
- Heather moorland, peat deposits, wet flushes, blanket bog and acid grassland, characteristic of the upper slopes and plateau.
- Unimproved permanent pastures and hay meadows, which harbour uncommon plants such as globe-flower and meadow saffron. Characteristic upland species such as raven, peregrine falcon, merlin and red grouse are present on the plateau near the southerly limits of their range.
- Border character and a sense of a transitional landscape evident in the mixture of Welsh and English settlement styles and defensive structures such as iron-age hill forts and Norman mottes and castles scattered throughout the area.
- Scattered hamlets and villages with dispersed farmsteads; the border town of Hay-on-Wye lies on the north-western boundary. Red sandstone and grey limestone are typically found in older buildings.
- One of the most undisturbed parts of England, with little transport infrastructure and no major roads. High levels of tranquillity can be experienced, particularly in the western uplands. Recreational opportunities including a section of the Offa's Dyke Path National Trail enables people to enjoy this landscape.

Black Mountains and Golden Valley today

The Black Mountains and Golden Valley NCA lies within the south-west corner of Herefordshire. It is one of the most tranquil areas of England, with few settlements and little new development or transport infrastructure. Bounded by the Welsh half of the Black Mountains and the Brecon Beacons to the west, the Wye Valley and Herefordshire lowlands to the north and east and the River Monnow to the south, it is a border landscape between the upland moors to the west and the cultivated, settled valleys to the east.

Some 13 per cent of the NCA is woodland, and almost none of the area is urban. Designated sites are few; a very small part of Moccas Park National Nature Reserve, a historic parkland important for veteran and ancient trees and associated invertebrates, falls within the NCA. Eight Sites of Special Scientific Interest (SSSIs) – including Wayne Herbert Quarry, designated for its geology and the fish fossils found there, and Cusop Dingle Geological Conservation Review Site – fall either partly or wholly within the NCA and form 5 per cent of the total area. There are two Local Geological Sites.

The Golden Valley has a wide flood plain and a varied pattern of pasture, arable agriculture and small scattered woodlands. Further west, the landscape begins its transition to the uplands. There are irregular pasture fields, often with mature hedgerow oaks and overgrown hedgerows. These thin out at the ridge tops, where a more regular pattern and larger fields are apparent. Small hamlets, many with low, whitewashed buildings, are interspersed with isolated farmsteads. As the land continues to rise, hedgerow trees decrease and hedgerows become lower. There are increasingly prominent views of the abrupt moorland edge of the Black Mountains, with the outliers of Mynydd Merddin and Black Hill prominent in the east. Eventually, the field boundaries and improved pasture stop and the landscape changes to wind-swept acid grassland and moorland. The Offa's Dyke Path and the rights-of-way network provide recreational opportunities and offer panoramic views across much of the Welsh Marches.

The Black Mountains are a high tableland of Old Red Sandstone cut by the rivers Dore and Monnow that flow from north-west to south-east to form a strong pattern of ridges and valleys. The fast-flowing rivers are important for otters. There are several colonies of sand martin, and grey wagtail, dipper, kingfisher and heron are also frequent. Both rivers have a rich invertebrate fauna, including several nationally important fly species and a small population of white-clawed crayfish. Many of these watercourses have well-developed tree line canopies and wet woodland characteristics.

The highest land on the plateau ridges has extensive upland habitat (1,200 ha), much of which falls within the Black Mountains SSSI. Habitats include wet heath, blanket bog and peat deposits, with small, flushed areas, and species such as sedge-butterwort, deer grass and cross-leaved heath. Other characteristic species include purple moor-grass, tufted hair-grass, heather, star sedge, flea sedge, bilberry and crowberry. Wet flushes are botanically rich; typical species include sphagnum, mire star sedge, yellow sedge, soft rush, butterwort, opposite-leaved golden saxifrage, water mint and water forget-me-not. Blanket mire lies on the gentler slopes, with species of heather, hare's-tail grass and cotton grass predominating. Cotton grass and mosses are abundant in the wet ground, with lichens, bilberry and crowberry. Further down the ridges, on more sloping ground, drier heath communities occur, with characteristic species including bell heather, heath

grass, foxglove, harebell and heath bedstraw. This drier heathland habitat grades into acidic grassland towards the bottom of the slopes. Most of the priority bird breeding species have declined in the SSSI, and are possibly no longer present in the English section. It is possible that red grouse, merlin and peregrine falcon can recover if the condition of the SSSI improves. There are small populations of curlew in the NCA, mainly in the valleys, and populations of woodland birds that would benefit from enhanced woodland management and new woodland creation.

A sparcely populated area with a number of scattered villages and hamlets.

Neolithic and bronze-age activity is evident (for example the megaliths of Arthur's Stone on the ridge above the Golden Valley) and there are iron-age hill forts at Poston, Timberdine, Walterstone and Pentwyn. There are a number of Norman mottes and castles, as well as the medieval Cistercian abbey at Abbey Dore. A Roman road lies within the valley, but evidence of settlement before the Norman conquest is sparse. The predominant settlement pattern is highly dispersed farmsteads and hamlets in the valley bottoms and on the valley sides, with access to extensive upland grazing. Villages formed in the Golden Valley around Norman castles from the late 11th century to the 13th century (for example Longtown). To the west there is generally a small-scale and irregular pattern of enclosures around farmsteads and hamlets, and more ancient woodland remains here. Further east, larger enclosures resulting from later re-organisation, including farm amalgamation, predominate, including former extensive communal open fields that lay around the larger nucleated settlements – especially in the Golden Valley.

In the valleys the older buildings and churches are mainly built of red sandstone, often of a strikingly deep colour, as at Abbey Dore. Grey Silurian limestone or a range of intermediate coloured sandstones have also been used. Traditionally, stone slates were used for roofing but these have now been largely replaced by Welsh slate. In the west, the farmhouses and cottages within hamlets are often quite low, of rubble construction and sometimes whitewashed, giving them a Welsh appearance. Nineteenth- and early 20th-century buildings in the east, particularly along the Golden Valley, are mainly of brick. Some of the larger, older houses have the typical foursquare appearance and hipped roof of Herefordshire gentry houses, and locally there are also timber-framed buildings.

Only a small part of Hay-on-Wye lies within the NCA but it is the largest settlement, with a number of smaller villages, such as Peterchurch and Bredwardine, and smaller dispersed hamlets. Along the Golden Valley, the small villages feature a rather dispersed settlement pattern around them, for example at Ewyas Harold and Longtown. With a fair amount of recent development and the farmsteads on the valley sides, the Golden Valley gives the impression of being quite frequently settled. As far west as the lower slopes of the Olchon Valley there are frequent farms and hamlets on the valley sides and bottoms and larger settlements at river crossings. They are linked by narrow lanes and by minor roads running along valley bottoms or ridges, emphasising the valley orientation. Locally the pattern changes to more closely grouped clusters where there has been settlement on former commons. As well as Abbey Dore, the area contains some fine historic buildings, notably the timber-framed late medieval Wellbrook Manor at Peterchurch and the nearby imposing, spired church.

Tranquillity is a significant feature of the NCA, with nearly 94 per cent of the area classified as 'undisturbed'; as such, it is one of the most tranquil parts of England. The area remains largely unaffected by development and is remote from large settlements and transport routes, apart from the A465, which runs along the south-eastern edge of the NCA. The sense of tranquillity is particularly associated with the extensive upland areas as well as the woodlands, parklands, strongly pastoral landscape to the west and attractive hamlets and farmsteads. It is an important area for recreation, with a strong rights-of-way network, open access land and a section of the Offa's Dyke Path National Trail.

Low cut hedgerows are typical boundary features in the Golden Valley.

The landscape through time

The NCA is underlain by Old Red Sandstone rock laid down on an arid land surface about 400 million years ago at the end of the Silurian and throughout the Devonian Periods by seasonal streams as sandstones and mudstones. Sandstones, conglomerates and limestones form the ridges, with mudstones forming the lower-lying ground. The area was uplifted and formed a plateau and there is a great contrast between the highland and lowland. The Black Mountains are a high tableland of the most resistant sandstone rocks of the Senni and Brownstone Formations, the youngest of the Lower Devonian rocks. Older, less resistant Old Red Sandstone and mudstones of the St Maughans Formation underlies the rest of the NCA, cut by rivers flowing from north-west to south-east to form a strong pattern of parallel ridges and valleys. The high ridge between the Vale of Ewyas within Wales and the Olchon Valley has very steep slopes and outcrops of conglomerate and calcrete beds – concentrations of calcium carbonate left in the fossil soils when lime-rich groundwater was drawn to the surface and evaporated – but many of the lower slopes are covered with downwash deposits, and rilling and gullying have fluted the valley sides. There are areas of landslips on the steep slopes, many occurring where there is a springline at the base of the calcrete (or the Ffynnon Limestone – 'Ffynnon' being the Welsh for spring). Other calcrete bands are found in the Old Red Sandstone, the most important of which, the Bishop's Frome Limestone, lies between the Raglan Mudstone Formation and the St Maughans Formation. A short distance below the Bishop's Frome Limestone is the Townsend Tuff, a band of volcanic ash that forms an important marker horizon on the slopes of Merbach Hill. Calcareous tufa is found in the Moccas Park area.

The Golden Valley is much wider than the other valleys. It is thought to have been carved out by a tongue of the glacier that once filled much of the Wye Valley to the north; the present river is too small to have cut the valley. Downwash from the adjacent slopes and glacial deposits have created very fertile land in the valley. The lowest land is in the north-east, bordering the Wye and its flood plain. Here soft, easily eroded mudstones (Raglan Mudstone Formation – mainly mudstone with some sandstone, formed in the Upper Silurian) are overlain in places by hummocky glacial moraine.

There have been important finds within the NCA of fossils of the first creatures to emerge from the seas onto the land about 400 million years ago. These include fossils of the earliest fish, and trace fossils including burrows.

Neolithic and bronze-age activity in the area is evident from the focus of sites around the megaliths of Arthur's Stone on the ridge above the Golden Valley. There are iron-age hill forts at Poston, Timberdine, Walterstone and Pentwyn. While the fertile soils of the Golden Valley may have attracted early settlement, there is recorded evidence only from the Bronze Age. A Roman road ran along the valley and there appears to have been civil sites near it. However, the history of the area prior to the arrival of the Normans is not well documented. It was probably under Welsh control until the 9th or 10th century and, even in the high Middle Ages, Norman and English culture sat lightly on the landscape. Offa's Dyke dates from the 8th century and was a defensive structure lying between England and Wales. Ewyas Harold Castle may have been constructed by Norman mercenaries in the pay of Edward the Confessor and could thus be one of the earliest motte castles built in England. Certainly, the many mottes in this area reflect the importance of its political and military control by the Normans in the 11th and 12th centuries.

The Cistercians came to Abbey Dore in 1147 and appear to have been a strong influence on the cultivation and prosperity of the Golden Valley. Indeed, the present rural settlement pattern of this fertile corridor is due in no small part to the piecemeal activities of the Cistercians in the 12th and 13th centuries. Gerald of Wales accused them of 'changing an oak wood into a wheat field'. The agricultural importance continued after the Reformation, when Roland Vaughan's grand scheme of irrigation was partially completed as the 'Lombardy of Herefordshire'. Traces of it can still be seen today, and a small number of the drains in the Ribble flood plain are monastic in origin and may have high archaeological value. Beyond the valley, however, the settlement pattern was a typically Welsh one of loosely clustered farmsteads and hamlets in the valley bottoms and on the valley sides, with access to extensive upland grazing.

In many ways, apart from the enclosure of upland grazing in the 18th and 19th centuries, the old pattern of the landscape outside the Golden Valley has continued to the present day. Within the Golden Valley, agriculture has always taken precedence, and one of the reasons for the establishment of the railway along it in 1881 was the export of agricultural produce. It has been affected by the commercialisation of modern agriculture but retains much of the character that the Reverend Francis Kilvert described so eloquently in the 1870s: 'shining in the evening sunlight with the white houses of Dorstone scattered about the green hillsides like a handful of pearls in a cap of emeralds, and the noble spire of Peterchurch rising from out of the heart of the beautiful rich valley'.

The beautiful Cistertian abbey at Abbey Dore.

Ecosystem services

The Black Mountains and Golden Valley 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 Black Mountain and Golden Valley NCA is contained in the 'Analysis' section of this document.

Provisioning services (food, fibre and water supply)

- **Food provision:** This is an important area for animal husbandry, making a strong contribution to the local economy. Some 19 per cent of the land is used for arable crops, grown in the rich and fertile soils of the Golden Valley. A total of 89 per cent of the agricultural land is graded between 1 and 4. The uplands are used for rough grazing, with livestock farming the dominant agricultural system.

- **Timber provision:** The NCA contains 3,290 ha of woodland (13 per cent of the total area), of which 1,715 ha is ancient woodland, although only 687 ha is coniferous. This does not represent a large resource for timber production. Clearance of timber from some conifer plantations may provide opportunities to restore to more valuable semi-natural habitats. The riparian corridors are well wooded and would yield a firewood source on a coppice rotation.

- **Biomass energy:** This is a well-wooded landscape, with woodland covering 13 per cent of the area, much of which occurs on the slopes of the eastern and northern hills.[4] There is potential for the provision of biomass by bringing unmanaged and under-managed woodland under management and as a by-product of commercial timber production. In the case of short rotation coppice, there is mostly medium potential yield, although this decreases to low potential in the far west of the NCA.

- **Water availability:** The NCA is in a high rainfall area. There are no reservoirs or aquifers in the area and most of the streams and rivers are fast flowing. The upland areas contain significant blanket bog and mire habitat, which effectively slows down the infiltration and flow of water (also helping to prevent soil erosion and potentially flooding). Habitat management that slows water down within the catchment, particularly within the upland areas, has an important role in ensuring that river flow remains stable within the catchment.

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

- **Climate regulation:** There is generally a low soil carbon content (0–5 per cent) across the NCA, reflecting the dominance of mineral soils. Carbon content in the soil is associated with the 1,158 ha of blanket bog along the western border of the NCA and with the very acid loamy upland soils with a wet peaty surface (2 per cent) found in the uplands of this NCA. Carbon storage is also provided by woodland and its underlying humus-rich soils, and permanent pasture. Management and restoration of these habitats will increase the capacity for carbon sequestration and storage within the NCA.

[4] Opportunities and optimum sitings for energy crops, Natural England (accessed December 2010; URL: www.naturalengland.org.uk/ourwork/farming/funding/ecs/sitings/areas/099.aspx)

- **Regulating soil erosion:** This is an NCA at high risk of soil erosion, with 94 per cent of the soil cover potentially at risk in the arable areas and uplands. The only soils that are not at risk of soil erosion are the small areas of freely draining flood plain soils and the slowly permeable, seasonally wet, acid loamy and clayey soils. Those soils that are most at risk of soil erosion are the slightly acid loamy and clayey soils with impeded drainage (68 per cent) and the freely draining, slightly acid loamy soils (24 per cent). Restoration and good management of moorland habitats, in particular blanket bog, can ensure good vegetation cover and can reduce sediment run-off by restoring hydrological function and ecology of peatland and grassland habitats. Management and restoration of riparian habitats, woodland and wetlands will help to reduce peak flows and stabilise eroding river banks. Good grazing practices on the moorland and land management practices in the arable areas will help to maintain good soil structure, improve infiltration and prevent channelling, run-off and flooding. New planting of trees, woodland and, where appropriate, hedgerows on steep slopes and alongside watercourses will help to stabilise ground.

- **Regulating soil quality:** The slowly permeable, seasonally wet, acid loamy and clayey soils are slow to drain and pose a risk of diffuse pollution and flooding as a result. These soils are easily damaged when wet so it is important to minimise compaction and/or capping risk to mitigate run-off problems. These soils may have limited potential for increasing organic matter levels by management interventions. Maintenance of good soil structure can be improved through enhancing organic matter content to enable the permeable, freely draining, slightly acid loamy soils (under 20 per cent) to recharge underlying groundwater. The slowly permeable, wet and very acid upland soils with a peaty surface are at risk of loss of organic matter through climate change and soil erosion. With the very acid loamy upland soils with a wet peaty surface, peat has low strength when wet and is easily damaged by grazing and trafficking for much of the year, with poaching common. Beneficial measures include those that retain water in situ, ensure good vegetative cover and avoid overgrazing/trampling or damage by mechanised activities.

- **Regulating water quality:** The ecological status of the River Monnow is 'good'; the River Dore is 'moderate'. The chemical status of the lower reaches of the River Monnow, running along the southern boundary of the NCA, is 'good', while the chemical status of the remainder of river lengths in the NCA 'does not require assessment'. Groundwater chemical status is 'good' across the NCA.[5] The River Wye is a Special Area of Conservation and the entire NCA lies within the Department for Environment, Food and Rural Affairs River Wye priority catchment where, in addition to problems of sedimentation of watercourses, there is widespread diffuse pollution from muck and slurry; this reflects the high density of livestock and the dumping of excess muck and slurry on maize stubbles over the winter. There are also problems from sheep dip pollution. The NCA is largely upland in nature and is relatively extensively managed, with low population density and high rainfall. There is rapid run-off, with consequent erosion and increased sediment load impacting on rivers downstream, especially after heavy rainfall. Changes to rainfall patterns, especially more storm events arising from climate change, may increase sediment run-off and hydraulic scour of rivers. Soil erosion leading to sedimentation of watercourses can occur as a result of overgrazing, or allowing livestock to poach or erode river banks. Maintenance of permanent grassland, or introducing scrub or woodland along watercourses, can aid infiltration and reduce soil erosion, especially on steep slopes.

[5] Severn River Basin Management Plan, Annex A: Current state of waters, Environment Agency (December 2009)

- **Regulating water flow:** This NCA is considered an area of 'low to moderate' fluvial flood risk. It is in a high rainfall area, with fast-flowing rivers that potentially create a downstream flood risk. However, there is important agricultural land in this area, and a large proportion of good quality land is at risk of flooding.[6] There is an increased risk of fluvial flooding in the south of the NCA at the confluence of the rivers Monnow and Dore, such as at Ewyas Harold.[7] There are approximately 50 properties at risk of flooding in Hay-on-Wye. The Environment Agency supports opportunities to store water or manage run-off to provide flood risk or wider environmental benefits, including along the River Monnow.[8] Improvement of soil structure and management of good vegetation cover would enhance rainwater infiltration, reduce run-off rates and increase rates of groundwater recharge through permeable soils. Natural vegetation in flood plains and expansion of wetlands will help to increase water storage and regulate flows. Coarse woody debris in suitable places in watercourses inside and outside woodlands can help to regulate flows.

Cultural services (inspiration, education and wellbeing)

- **Sense of place/inspiration:** Sense of place is provided by a border landscape between the high upland moors of the Welsh Black Mountains to the west and the fertile, cultivated and settled valleys of the Herefordshire lowlands to the east. There is a dominant pattern of north-west to south-east valleys, with the wide, fertile, intensively farmed Golden Valley providing a sharp contrast to the open heather moorland found on the ridges. Parklands and woodland are features of the valley slopes and ridges, with scattered farms and small Welsh-named hamlets frequent in the west. The area has fine views of the hills of Wales, with the ridge of the Black Mountains, Mynydd Merddin and Black Hill all visible. The historic book town of Hay-on-Wye has an international reputation for the arts, in particular literature and philosophy, with a world-famous festival every year. Although fairly accessible from the major conurbations there is a sense of remoteness and tranquility that is one of the area's important assets.

- **Sense of history:** The landscape has a long history of cross-border defence and settlement. Neolithic, bronze-age and iron-age sites including the megaliths of Arthur's Stone, as well as iron-age hill forts (such as Poston, Timberdine, Walterstone and Pentwyn) and the linear earthwork of Offa's Dyke which, in the 8th century, formed a delineation between the Anglian kingdom of Mercia and the Welsh kingdom of Powys are prominent features. There is evidence of earlier cultivation in the form of ridge-and-furrow and watermeadow systems. Other visible features include several Norman motte-and-bailey castles reflecting the importance of military control in the area, while within the previously wooded Golden Valley the Cistercian monks of Abbey Dore were influential in widespread cultivation during the 12th and 13th centuries. A mix of English and Welsh placenames, the latter predominately in the uplands and on valley floors to the west, adds to the strong sense of a border landscape. Aspects of history likely to be most evident to the public include Abbey Dore and the historic parklands of Moccas Court with its ancient and veteran oaks referred to in the diaries of Kilvert and Whitfield, as well as other distinctive smaller manor houses and gentry houses such as Wellbrook Manor at Peterchurch.

[6] Wye and Usk Catchment Flood Management Plan, Summary Report, Environment Agency Wales (January 2010)
[7] Risk of flooding from rivers and sea, Environment Agency (accessed December 2010; URL: http://maps.environment-agency.gov.uk/wiyby/wiybyController? x=531500.0&y=181500.0&topic=floodmap&ep=map&scale=3&location=London, per cent20City per cent20of per cent20London&lang=_e&layerGroups=default&textonly=off)
[8] Wye and Usk Catchment Flood Management Plan, Summary Report, Environment Agency Wales (January 2010)

- **Tranquillity:** Tranquillity is a significant feature of the NCA, with nearly 94 per cent classified as 'undisturbed', although this is a decline from nearly 100 per cent in the 1960s. The area remains largely unaffected by development and is remote from large settlements and transport routes, apart from the A465, which runs along the south-eastern edge of the NCA. A sense of tranquillity is particularly associated with the extensive upland areas as well as the woodlands, parklands, strongly pastoral landscape to the west and attractive hamlets and farmsteads. This NCA is one of the most tranquil parts of England and is extremely important in providing experience of wild, open spaces with few structures or manmade roads. Careful environmental management is required to safeguard some of the NCA's special qualities and sense of tranquillity.

The transition from agricultural lowlands in the east to the high moorland ridge of the Black Mountains in the west reflects the underlying geodiversity.

- **Recreation:** Recreation is supported by Offa's Dyke Path National Trail (nearly 6 km of which cuts through the NCA), 470 km of rights of way (with a density of 1.8km per km^2) as well as 1,589 ha of open access land (6.1 per cent of the NCA). The NCA offers accessible upland outdoor recreation opportunities, as well as quiet enjoyment of the tranquil lowland areas. Recreational walking, cycling, angling and horse riding are also popular on the lower-lying land.

- **Biodiversity:** There are eight SSSI in the NCA, totalling over 1,300 ha (5 per cent of the NCA). By far the largest of these (almost 1,200 ha) is a portion of the Black Mountains SSSI, an extensive area of upland moorland that straddles the English–Welsh border and supports a mosaic of characteristic upland heath flora and fauna. There is almost 3,000 ha of priority habitat within the NCA; most of this is wet woodland (1,311 ha) or blanket bog (1,158 ha). The Black Mountains in this NCA represent the most south-easterly area of upland habitat in southern England and in this context they are of particular importance for nature conservation. The head of the Olchon Valley has an area of unimproved permanent pasture and hay meadow the juxtaposition of which contributes greatly, along with the high moorland, to the overall value of the site to nature conservation.

- **Geodiversity:** There is one geological SSSI and one Geological Conservation Review Site within the NCA. Geodiversity features include the exposed plateau, bluffs and slopes and the deeply cut glacial Golden Valley, as well as occasional finds of fossils – including of the earliest fish – Beaconites burrows several centimetres across, hummocks and moraines, and conglomerate, mudstone and calcrete beds.

Statements of Environmental Opportunity

SEO 1: Protect, manage and enhance the open, expansive upland habitats and peat deposits of the Black Mountains to ensure that they are healthy and contiguous, protecting the important species and the soil and water resources that they support.

For example, by:

- Managing and enhancing the extent, diversity and condition of upland habitats to ensure that they can support the important assemblages of bird species, including red grouse, peregrine falcon, merlin and breeding waders, allowing population sizes to be maintained and where possible increased. Maintain and restore vegetation cover on degraded areas of blanket bog, to promote active peat formation, to encourage carbon sequestration and to reduce soil erosion.
- Maintaining and restoring degraded heathland communities through sustainable grazing and burning regimes, to reduce poaching, aid water infiltration and reduce the loss of peaty soils through erosion.
- Seeking opportunities to retain water and slow down run-off by re-wetting, and maintaining and re-vegetating peat surfaces to bring blanket bog back into favourable ecological and hydrological condition, reducing water discolouration, sediment loss and peat erosion and improving downstream water quality.
- Seeking opportunities to restore and enhance links between fragmented upland habitats to improve the condition and increase the area of the vegetation. Aim to achieve a strong ecological network that is resilient to climate change and supports a more diverse range of species.
- Promoting links between landscape, sensitive land and soil management practices and high-quality food production, to enhance the marketability of products through high environmental standards.
- Conserving the peat deposits on the Black Mountains, which are important for storing carbon.

A pool in peat deposits on the top of the Black Mountains near Black Darren.

SEO 2: Protect, manage and enhance the upland fringes, the lower slopes and the valleys, with their mosaics of habitats including moorland, heathland, woodland, meadows and pastures, and their field patterns defined by hedgerows, to enhance ecological networks and strengthen the distinctive landscape character of the Black Mountains and Golden Valley.

For example, by:

- Planning at a landscape scale for the expansion of various habitats, informed by an understanding of the historical development, ecology, species priorities (such as woodland bird populations and breeding curlew), recreational use and potential, and agriculture of the area, to create an interconnected network and mosaic of habitats – for climate change resilience, to prevent soil erosion and to enhance landscape character.
- Conserving and enhancing the mosaic and diversity of woodlands, trees, grasslands and semi-natural habitats by working with farmers and landowners to restore and maintain these habitats to enable them to capture and store carbon, thus reducing run-off and sedimentation in rivers.
- Managing woodlands to enable natural regeneration of existing woodlands and planting of new small-scale native woodlands. The expansion and connection of existing woodlands – particularly small areas of ancient, semi-natural woodland along the slopes and valley sides – will strengthen landscape character and improve their ability to capture and store carbon. Develop the potential of woodland to contribute to the local economy, including through products, skills, crafts and wood fuels.
- Ensuring that woodlands are well managed, to reduce run-off, guard against soil erosion, improve water quality and improve their ability to capture and store carbon. Thin coniferous woodland and replant it with native species where appropriate.
- Promoting and developing the use of trees of local genetic provenance, free from disease, for stocking and replanting, to reduce the spread of disease.
- Maintaining standing dead trees and fallen trees within historic parkland, hedgerows and woodland, to provide habitats for a range of species including invertebrates, roosting bats and birds; and replanting to replace fallen or decayed ancient and mature trees, to maintain landscape character, contribute to sense of place and enhance biodiversity.
- Promoting the management of species-rich hay meadows and pastures, to conserve and enhance their biodiversity interest.
- Maintaining pastoral character of the lower hills and river valleys by encouraging good land, water and soil management practices and sustainable grazing regimes, to maintain a sustainable livestock farming sector and reduce sediment loading and pollution in rivers.
- Developing stronger local food markets and branding, to support local producers and traditional products and to create strong links between people, food and landscapes.
- Working with the local authority and local parishes to create multi-functional greenspaces that incorporate sympathetic management for pollinators, including appropriate management of road verges, adding to the network of nectar sources close to food crops that require insect pollination. Encourage the use of field margins, beetle banks and headlands in arable land, to encourage pollinators and pest-regulating species and to act as wildlife corridors.
- Retaining, restoring, managing and planting new hedgerows in traditional local style, to enhance landscape character and improve habitat connectivity, particularly where this can assist in regulating soil erosion.

SEO 3: Protect and manage the rivers Dore and Monnow, their flood plains and their associated watercourses, to maintain high water quality and enhance their nature conservation interest, to strengthen their contribution to landscape character, to help reduce the potential risk of flooding both within the National Character Area and downstream, and to increase the recreational opportunities they provide for public enjoyment.

For example, by:

- Promoting a catchment-scale approach to enhancing the water quality within the National Character Area's (NCA's) rivers and streams, to restore and maintain good water quality and comply with the Water Framework Directive.
- Ensuring that any future development addresses water use, abstraction and demand, to minimise impacts on water quality, resources, flood risk and associated aquatic habitats, and to improve the ecology and resilience of reservoir and river systems.
- Working with the farming community to promote good land, soil and water management on farmland, and ensuring that farm practices maximise grass growth, minimise run-off rates and reduce diffuse pollution.
- Promoting sustainable river management that works with natural processes and allows storage of flood waters, reducing run-off rates and managing the downstream flood risk.
- Retaining, restoring and protecting bankside vegetation and the natural flood plain function of the rivers by appropriately managing, restoring and creating wetland habitats such as flood plain wetlands.
- Improving the management of agricultural drainage and land use, increasing flood water storage capacity, reducing surface water run-off and soil erosion, reducing impacts of flooding, and improving resilience to climate change, water quality and biodiversity.
- Working with the farming community and water companies to create grassland buffer strips, watermeadows and wet woodland next to rivers, to reduce soil erosion and improve water quality.
- Managing bogs and mires, to protect peat soils, increase water-holding capacity and encourage active peat formation, to mitigate the effects of climate change.
- Promoting sustainable recreational opportunities along and on the watercourses, enabling quiet enjoyment, while continuing to conserve and enhance biodiversity.

SEO 4: Protect, manage and enhance the qualities of tranquillity, wildness and remoteness and the historic and geological assets while providing nature-based recreational opportunities that are accessible to a diverse range of people and encourage sustainable tourism.

For example, by:

- Maintaining a sense of wildness and remoteness through ensuring that new developments are sympathetic to these objectives.
- Planning and seeking to accommodate development so as not to increase disturbance through traffic or light pollution.
- Actively managing visitors by ensuring that there are a wide range of opportunities – for example, circular walks from the villages – that allow visitor load to be spread. Manage visitor access and recreational activities to ensure that there is no impact on tranquillity for visitors and local communities. For example, provide information and interpretation in a range of destinations and develop access opportunities throughout the NCA.
- Reducing car numbers by developing alternatives to car-based transport, for example by creating a minibus for walkers linking to circular walks, developing and promoting walking and cycling opportunities from key centres such as Hay-on-Wye, and providing information on public transport into the area.
- Exploring opportunities to increase sustainable tourism initiatives that will improve visitors' enjoyment, understanding and environmental awareness and will support the local economy, while protecting the special qualities of the area.
- Creating strong links between nature-based activities and the local community and economy. For example, encourage and incentivise local businesses such as bicycle hire, woodland management, guided walks and farm diversification businesses, to develop local tourism.
- Developing interpretation material for the area that promotes its unique qualities, wildlife and links to wider environmental issues such as climate change.
- Developing the rights-of-way network and promoting opportunities to visitors for circular walks of various lengths. Ensure that paths are well marked and maintained and that key features, wildlife and points of interest are highlighted.
- Conserving, enhancing and making accessible the network of geological sites where appropriate, to help improve the understanding of the role that geodiversity plays – in particular its connection to biodiversity, landscape character, and industrial and cultural heritage.
- Providing opportunities for designation of Local Geological Sites in this area which have not yet been covered by funding.
- Developing interpretation material to increase public awareness of the underlying geology and glacial features that shape the landscape.
- Encouraging the use of locally available building stone to maintain the vernacular character of the area.
- Encouraging sustainable geotourism based on the geodiversity of the area.
- Conserving archaeological and other historic features in the landscape with heritage interest, while recognising the potential for undiscovered remains.
- Using understanding of the area's traditional and historical architecture, and its distinct patterns of settlement, to inform appropriate conservation and use of historic buildings, and to plan for and inspire any environmentally beneficial new development that makes a positive contribution to local character.
- Maintaining and restoring traditional farm buildings, through continued agricultural use where possible, and ensuring that through re-use their heritage interest is retained.
- Maintaining the diversity of geology and traditional buildings, by using, promoting and encouraging locally sourced materials and skills for walling and building repair and construction.

Supporting document 1: Key facts and data

Black Mountains and Golden Valley National Character Area (NCA): 25,974 ha

1. Landscape and nature conservation designations

There are no National Parks or Areas of Outstanding Natural Beauty within this NCA.

Source: Natural England (2011)

1.1 Designated nature conservation sites

The NCA includes the following statutory nature conservation designations:

Tier	Designation	Designated site(s)	Area (ha)	% of NCA
International	n/a	n/a	0	0
European	Special Protection Area (SPA)	n/a	0	0
	Special Area of Conservation (SAC)	n/a	0	0
National	National Nature Reserve (NNR)	Moccas Park	124	<1
National	Site of Special Scientific Interest (SSSI)	A total of 8 sites wholly or partly within the NCA	1,366	5

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 80 local sites in the Black Mountains and Golden Valley NCA covering 3,651 ha, which is 14 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

Condition category	Area (ha)	% of SSSI land in category condition
Unfavourable declining	156	11
Favourable	176	13
Unfavourable no change	374	27
Unfavourable recovering	658	48

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 65 m. The highest point is 703 m. The mean elevation across the NCA is 216 m.

Source: Natural England (2010)

2.2 Landform and process

The Black Mountains and Golden Valley NCA bring the character of upland Wales into contrast with the hills around the edge of the Herefordshire Lowlands. It is a border landscape with a transition from the wide, fertile Golden Valley in the east to a steep-sided moorland ridge in the west which is at the border with Wales. It is dominated by the bulk of the Black Mountains which rise to a height of 700 m.

Source: Black Mountain and Golden Valley Countryside Character Area Description

2.3 Bedrock geology

The Black Mountains are a high table land of Old Red Sandstone. The high ridge between the Vale of Ewyas within Wales and the Olchon Valley has very steep slopes and outcrops of conglomerate beds.

Source: Natural England (2010), Black Mountain and Golden Valley Countryside Character Area Description

2.4 Superficial deposits

Golden Valley is much wider than the other valleys. It is thought to have been carved out by a tongue of the glacier which once filled much of the Wye Valley to the north, leaving behind extensive deposits of glacial sand and gravel.

Source: Black Mountain and Golden Valley Countryside Character Area Description

2.5 Designated geological sites

Designation	Number
Geological Site of Special Scientific Interest (SSSI)	1
Mixed interest SSSI	0

There is 1 Local Geological Site within 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

2.6 Soils and Agricultural Land Classification

Old Red Sandstone forms the bedrock throughout the area and gives rise to the distinctive red–brown soils. Alluvial deposits within the Golden Valley have created fertile soils, while in the upland areas the soils tend to be thin and acidic.

Source: Black Mountain and Golden Valley Countryside Character Area Description

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

Agricultural Land Classification	Area (ha)	% of NCA
Grade 1	822	3
Grade 2	3,600	14
Grade 3	11,219	43
Grade 4	7,542	29
Grade 5	22,231	9
Non-agricultural	501	2
Urban	0	0

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.

Name	Length in NCA (km)
Afon Mynwy/River Monnow	23
River Dore	20
Afon Honddu	<1

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.

There are numerous rivers and streams in the NCA. The River Monnow forms the southern boundary of the NCA, and the River Dore flows southwards through the Golden Valley to join the Monnow at Monmouth Cap. The main brooks, Dulas, Escley and Olchon are all fast-flowing streams over rocky substrates, often with good fringes of woodland.

3.2 Water quality

The total area of Nitrate Vulnerable Zone is 5,077 ha, which is 20 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

Looking across the Vale of Ewyas.

4. Trees and woodlands

4.1 Total woodland cover

The NCA contains 3,290 ha of woodland (13 per cent of the total area), of which 1,715 ha is ancient woodland.

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

4.2 Distribution and size of woodland and trees in the landscape

Small woods are a common feature of the valleys of the Olchon and Escley brooks. Most woods occur on the valley sides and low hills in the north and east of the NCA. Many have been modified by conifer or broadleaved planting. Most woodland occurs on ancient woodland sites, sites which have been continuously wooded since 1600AD. About half the ancient woodland is thought to be ancient and semi-natural, supporting relatively unmodified native tree cover. Ancient woodlands along the ridge east of the Golden Valley are thought to be fragmented remnants of the former ancient Forest of Trevil. Many small alder woods are found on the slopes of the Olchon, Escley and Dulas brooks. There is one woodland SSSI; Chanstone Wood.

Source: Black Mountains and Golden Valley Natural Area Profile and Countryside Character Description

Networks of narrow lanes and footpaths make the area attractive for walking and cycling.

4.3 Woodland types

A statistical breakdown of the area and type of woodland found across the NCA is detailed below.

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

Woodland type	Area (ha)	% of NCA
Broadleaved	2,100	8
Coniferous	687	3
Mixed	307	1
Other	196	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	871	3
Ancient re-planted woodland (PAWS)	844	3

Source: Natural England (2004)

5. Boundary features and patterns

5.1 Boundary features

There are extensive areas of arable land with many low hedgerows and the hedgerow tree cover is variable to poor. From the Golden Valley there are irregular pasture fields, commonly with mature hedgerow oaks and overgrown hedgerows. As the land continues to rise, hedgerow trees decrease and hedgerows become lower.

Source: Black Mountain and Golden Valley Countryside Character Area Description; Countryside Quality Counts (2003)

5.2 Field patterns

The land use is predominantly pasture in small- to medium-size fields, generally with low hedgerows. In the Golden Valley there are extensive areas of arable cultivation on the lower slopes and valley floors within large fields. There are smaller fields on the valley sides. To the east the fields are small and the hedgerows often overgrown.

Source: Black Mountain and Golden Valley Countryside Character Area Description; Countryside Quality Counts (2003)

View from Hay Bluff.

6. Agriculture

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

6.1 Farm type

In 2009 the area's farm holdings were predominately grazing livestock farms with 256 holdings, 63 per cent, with a small amount of dairy (7 holdings, 2 per cent). Only 11 per cent of holdings were predominately arable or horticulture businesses.

Source: Agricultural Census, Defra (2010)

6.2 Farm size

Forty per cent of holdings were smaller than 20 hectares, although these only accounted for 7 per cent of the agricultural area. Forty-five per cent of holdings were between 20 and 100 hectares and accounted for 41 per cent of the agricultural area. Fifteen per cent of holdings were greater than 100 hectares and covered 52 per cent of the agricultural area. These figures do not include any access farms may have to common land.

Source: Agricultural Census, Defra (2010)

6.3 Farm ownership

2009: Total farm area = 22,635 ha; owned land = 16,203 ha
2000: Total farm area = 19,717 ha; owned land = 16,036 ha

Source: Agricultural Census, Defra (2010)

6.4 Land use

Grass and uncropped land covered 78 per cent of the total agricultural area. Arable crops accounted for 19 per cent of the agricultural area; most of this was cereals (12 per cent).

Source: Agricultural Census, Defra (2010)

6.5 Livestock numbers

In 2009 there were 134,100 sheep (188,900 in 2000), 15,400 cattle (15,900 in 2000) and 200 pigs (1,200 in 2000).

Source: Agricultural Census, Defra (2010)

6.6 Farm labour

Of the total agricultural workforce of 742, 76 per cent were principal farmers, 8 per cent were casual/gang workers, 8 per cent were part-time workers, 6 per cent were full-time workers and 1 per cent was 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

'In-bye' unimproved neutral grasslands are a feature of the western edge of the NCA. They contrast with the open acidic grasslands found on the hills and give rise to a characteristic upland edge landscape with densely hedged field systems. The uplands of the Black Mountains carry large tracts of unimproved acidic grassland, derived from heathland by grazing, which grades into a mosaic of moorland and shrub heath. Small areas of rich calcareous grassland are confined to rock outcrops and spring lines at Red Darren and Black Darren. The Black Mountains support extensive areas of moorland and upland heath. The highest land on the plateau ridges has wet heath and bog with small, flushed areas. Blanket mire lies on the gentler slopes. The grassland resource of the NCA is boosted by the extent of ancient hedgerows surviving on road verges.

Source: Black Mountain and Golden Valley 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
Broadleaved mixed and yew woodland (broad habitat)	1,588	6
Blanket bog	1,158	4
Lowland heathland	449	2
Lowland meadows	19	<1
Reedbeds	8	<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/

The remote steep-sided plateau of the Black Mountains and Hay Bluff.

8. Settlement and development patterns

8.1 Settlement pattern

Along the Golden Valley there are small villages with a rather dispersed settlement pattern around them, for example at Ewyas Harold and Longtown. With a noticeable amount of recent development and the farmsteads on the valley sides, the Golden Valley gives the impression of being frequently settled. As far west as the lower slopes of the Olchon Valley there are frequent farmsteads and hamlets on the valley sides and bottoms and larger settlements at river crossings. Locally the pattern changes to more closely grouped clusters where there has been settlement on former commons.

Source: Black Mountains and Golden Valley Countryside Character Area Description; Countryside Quality Counts (2003)

8.2 Main settlements

The main settlements in the area are Hinton, Ewyas Harold, Longtown, Peterchurch and Abbey Dore. The total estimated population for this NCA (derived from ONS 2001 census data) is 5,938.

Source: Black Mountains and Golden Valley Countryside Character Area Description; Countryside Quality Counts (2003)

8.3 Local vernacular and building materials

The older buildings and churches are mainly built of red sandstone, often of a strikingly deep colour, as at Abbey Dore. Grey Silurian limestone or a range of intermediate coloured sandstones have also been used. Traditionally, stone slates were used for roofing but these have now largely been replaced by Welsh slate. In the west the farmhouses and cottages within hamlets are often quite low, of rubble construction and sometimes whitewashed, giving them a Welsh appearance. 19th and early 20th century buildings in the east, particularly along the Golden Valley, are mainly of brick. Some of the larger, older houses have the typical foursquare appearance and hipped roof of Herefordshire 'gentry' houses and locally there are timber-framed buildings.

Source: Black Mountains and Golden Valley Countryside Character Area Description; Countryside Quality Counts (2003)

A transition landscape, from the high pleateau of the Black Mountains in the west, to the intimate cultivated land of the Golden Valley.

9. Key historic sites and features

9.1 Origin of historic features

There is extensive evidence for Neolithic and bronze-age activity, including the megaliths of Arthur's Stone.

Iron-age hill forts (such as Poston and Pen Twyn) provided foci for valley communities, and the Romano-British period saw more settlement around the Roman road in the valley.

Villages formed in Golden Valley around Norman castles (and also the pre-Conquest castle at Ewyas Harold) and were founded from the late 11th to 13th centuries (for example at Longtown).

The NCA has a long history as a frontier landscape with Welsh place names a strong element and Offa's Dyke forming the boundary of the Saxon kingdom of Mercia to the west.

From the late 11th century into the 12th century, and as a result of the Norman Conquest, there is a high concentration of earthen motte-and-bailey castles; the large castle at Hay-on-Wye forming, with the Black Mountains, a defensive barrier to the west.

Some defensive sites formed foci for the development of small manorial centres in the medieval period, including some moated sites of the 12th to 14th centuries.

The Cistercian Abbey at Abbey Dore (founded in 1147) was a major influence on settlement and agricultural development in the area.

Smaller manor houses and gentry houses are also another feature of the area, for example Wellbrook Manor at Peterchurch.

There was also the development of country houses together with their landscaped gardens and wider settings, notably Moccas Park with its surviving ancient oak trees.

Source: Countryside Quality Counts Draft Historic Profile, Countryside Character Area Description

9.2 Designated historic assets

This NCA has the following historic designations:

- 2 Registered Parks and Gardens covering 771 ha.
- 0 Registered Battlefields.
- 46 Scheduled Monuments.
- 404 Listed Buildings.

Source: Natural England (2010)

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

10. Recreation and access

10.1 Public access

- 8 per cent of the NCA, 2088 ha, is classified as being publically accessible.
- There are 470 km of public rights of way at a density of 1.8 km per km2.
- There is 1 National Trail within the NCA. Offa's Dyke Path National Trail runs for 6 km through this NCA.

Source: Natural England (2010)

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

Access designation	Area (ha)	% of NCA
National Trust (accessible all year)	0	0
Common Land	1,087	4
Country Parks	0	0
CROW Access Land (Section 4 and 16)	1,589	6
CROW Section 15	1	<1
Village Greens	2	<1
Doorstep Greens	0	0
Forestry Commission Walkers Welcome Grants	58	<1
Local Nature Reserves (LNR)	52	<1
Millennium Greens	0	0
Accessible National Nature Reserves (NNR)	0	0
Agri-environment Scheme Access	0	0
Woods for People	411	<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.

Trail on Hay Bluff.

11. Experiential qualities

11.1 Tranquillity

Based on the CPRE map of tranquillity (2006) the most tranquil area lies on the western boundary of the NCA on the hills surrounding Hay Bluff. The area of least tranquillity coincides with the line of the A465 main road to the southern boundary of the NCA.

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

Category of tranquillity	Score
Highest	128
Lowest	-25
Mean	21

Sources: CPRE (2006)

More information is available at the following address: **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 94 per cent of the area is undisturbed, highlighting the rural nature of this NCA. A breakdown of intrusion values for this NCA is detailed in the following table.

Intrusion category	1960s (%)	1990s (%)	2007 (%)	Percentage change (1960s-2007)
Disturbed	0	9	6	6
Undisturbed	100	96	94	-6
Urban	0	0	0	0

Sources: CPRE (2007)

Notable trends from the 1960s to 2007 were a slight increase in the area of disturbed/intruded land by 6 per cent, matched by a decrease in the areas of undisturbed/un-intruded land by 6 per cent.

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

View from Cat's Back toward Black Darren. Distinctive calcrete formations can be seen in the foreground.

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 per cent. The convention <1 has been used to denote values less than a whole unit.

Supporting document 2: Landscape change

Recent changes and trends

Trees and woodlands

- There is some evidence of replanting in association with management of the conifer plantation along the eastern side of the area. In 2003 Countryside Stewardship annual agreements included management of small upland woodlands (19 ha).

- At the end of 1998 young trees approved for planting under a Woodland Grant Scheme agreement accounted for about 6 per cent of the mature woodland stock. Between 1999 and 2003 an area equivalent to 1 per cent of the 1999 total stock was approved for new planting under a Woodland Grant Scheme agreement (20 ha).

- In 1999 about 25 per cent of the established eligible National Inventory of Woodlands and Trees stock was covered by a Woodland Grant Scheme management agreement. In 2003 the proportion of established, eligible National Inventory of Woodlands and Trees stock was about 38 per cent.

- About 60 per cent of the woodland cover is on an ancient woodland site. The proportion of these sites covered by a Woodland Grant Scheme has changed since 1999 from 35 per cent to 56 per cent. The scale of management suggests character of the wooded landscape has at least been maintained.

Boundary features

- Between 1999 and 2003 Countryside Stewardship capital agreements for linear features included fencing (126 km), hedgerow management (51 km), hedgerow planting and restoration (31 km) and restored boundary protection (27 km).

- The estimated total boundary length for the area is about 1,996 km. The total length of boundaries managed under agreements between 1999 and 2003 is equivalent to about 13 per cent of all boundaries. Commercialisation of farming in the Golden Valley led to the removal of hedgerows and loss of hedgerow trees and subsequent soil erosion and run-off has affected river margins and river water quality.

Agriculture

- The area of grassland has been stable, with some expansion in cattle and sheep in the Less Favoured Area. Countryside Stewardship uptake for annual area features was consistently above the national average. In 2003 most were for lowland pastures on neutral/acid soils (398 ha) and lowland hay meadows (189 ha).

Settlement and development

- Although pressure from development is low in the area, new housing has given rise to concern over loss of character from the spread of non-vernacular development which is visually prominent for example at Longtown and Dorstone.

Semi-natural habitat

- Hay meadows on the lower ground and along river corridors have been improved for agriculture in recent decades and the resource has become fragmented.

- The larger part of the SSSI resource in the area is bog, most of which is in unfavourable condition.

Historic features

- In 1918 about 4 per cent of the NCA was historic parkland. By 1995 it is estimated that 16 per cent had been lost. About 68 per cent of the remaining parkland is covered by a Historic Parkland Grant, and about 1 per cent is included within an agri-environment scheme.

- About 96 per cent of historic, listed farm buildings remain unconverted. About 76 per cent are intact structurally. Although evidence is unavailable to assess the status of the wider range of historic features, and the fact that the stock of historic farm buildings appears to be intact, the overall assessment is possibly one of neglect.

- There is a threat of erosion to Offa's Dyke and the loss of the archaeological integrity of the ancient monument through human and animal activity.

Rivers

- Historically river water quality has been good, particularly close to upland sources, with increasing levels of sediment and nitrate and phosphorus as the rivers pass through more intensively managed farmland in the more fertile valleys. In their upper reaches the courses of rivers and streams remain unaltered and natural.

Minerals

- There are many delves and small quarries that historically provided local buildings stone, for example at Llandraw, Tybwbach and Westonhill Wood. Some small quarries remain operational.

Horses near Offa's Dyke National Trail at Hay Bluff.

Drivers of change

Climate change

- Evidence from UK Climate Impacts Programme (UKCP09) shows that over the coming century the UK climate is expected, on average, to become warmer and wetter in winter and hotter and drier in summer.

- Extreme weather events are likely to occur more frequently, resulting in increased rainfall that may cause flooding and soil and peat erosion, resulting in sedimentation and discolouration of watercourses downstream. In addition, increased flows could cause rivers to change course.

- Peatlands may dry out during prolonged droughts increasing the risks of soil erosion and wildfires, resulting in loss of habitat and stored carbon. Changing soil conditions are likely to lead to changing habitats and species migration as species move and adapt accordingly.

- Climate change may play a role in the spread of significant plant pathogens such as Phytophthora, with potentially very significant consequences for moorland dwarf-shrubs in particular. It may also play a role in the spread of other pests and diseases which may affect woodland and livestock.

- Increasing pressure to accommodate renewable energy installations, such as wind turbines – including small-scale developments for individual settlements or communities or large-scale schemes on higher, open ground – small scale hydro-power schemes in watercourses, or solar, photo-voltaic units for domestic, agricultural or commercial buildings.

- There may be changes to agricultural practices as a result of changing climate conditions, such as a longer growing season or wetter ground surfaces at times of high rainfall. Opportunities exist to drive good agricultural practices that can deal with change and yet manage, conserve and enhance the mosaic of habitats.

Stone slab path on trail at Hay Bluff.

Other key drivers

- Changing economic factors may lead to a decline in livestock numbers, an increase in marginal farming and abandonment of some upland hill farms.
- Agricultural specialisation, intensification, and farm amalgamation with attendant impact on landscape character and its component parts.
- Environmental stewardship schemes are under review as part of Common Agricultural Policy reform. There will be a need for continuing support to ensure flexible land management for upland landscapes, especially to address climate change, soil erosion, water quality, the conservation of valuable habitats, the movement of species, and the protection and enhancement of the historic environment and landscape character.
- The trends towards separation of farmstead from land, hobby farming and diversification are likely to continue.
- Ongoing need for appropriate moorland management regimes, to secure good condition of the vegetation and water quality, including the enhancement and conservation of peatland habitats, particularly where designated as SSSI.
- The management of woodlands to increase diversity, build resilience and enhance habitat value.
- Development, traffic and light pollution both inside and on the fringes of the NCA. Managing increased pressure for new development in open exposed landscapes to ensure that landscape character is protected and enhanced.
- Managing increased visitor pressure for access and challenges of recreational activities at key visitor sites.

Heather and triangulation point, Hay Bluff.

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.

View from Hay Bluff.

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	Tranquillity	Recreation	Biodiversity	Geodiversity
SEO 1: Protect, manage and enhance the open, expansive upland habitats and peat deposits of the Black Mountains to ensure that they are healthy and contiguous, protecting the important species and the soil and water resources that they support.	↔ **	↔ *	↔ **	↗ *	↗ *	↗ ***	↗ ***	↗ ***	↗ ***	↗ ***	↔ *	o *	o *	↗ ***	↔ **	↗ ***	↗ ***	↗ ***	↗ **
SEO 2: Protect, manage and enhance the upland fringes, the lower slopes and the valleys, with their mosaics of habitats including moorland, heathland, woodland, meadows and pastures, and their field patterns defined by hedgerows, to enhance ecological networks and strengthen the distinctive landscape character of the Black Mountains and Golden Valley.	↗ ***	↗ ***	↗ ***	↗ **	↗ ***	↗ ***	↗ ***	↗ ***	↗ ***	↗ ***	↗ *	o *	o *	↗ ***	↗ ***	↔ ***	↗ ***	↑ ***	↔ **
SEO 3: Protect and manage the rivers Dore and Monnow, their flood plains and their associated watercourses to maintain high water quality and to enhance their nature conservation interest, to strengthen their contribution to landscape character, to help reduce the potential risk of flooding both within the National Character Area and downstream, and to increase the recreational opportunities they provide for public enjoyment.	↔ **	↔ **	↑ **	↔ **	↔ **	↗ ***	↑ ***	↑ ***	↗ ***	↗ ***	↔ ***	o *	o *	↗ **	↔ **	↔ **	↗ **	↗ ***	↔ **
SEO 4: Protect, manage and enhance the qualities of tranquillity, wildness and remoteness and the historic and geological assets while providing nature-based recreational opportunities that are accessible to a diverse range of people and encourage sustainable tourism.	↔ ***	↔ ***	↔ ***	↔ **	↔ *	↔ *	↔ **	↔ **	↔ **	↑ ***	↔ **	o *	o	↗ ***	↗ ***	↔ ***	↗ ***	↔ **	↔ **

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.

National Importance; Regional Importance; Local Importance

Landscape attributes

Landscape attribute	Justification for selection
The Black Mountains and Golden Valley NCA is characterised by upland and steep-sided fertile valleys, and a transition from lowland hills in the east to upland in the west.	■ A transition landscape from lowland to upland. ■ The Golden Valley is the widest of the valleys in the NCA and was carved out by glacial action. ■ The valleys have a north-west to south-east orientation. ■ Elevation ranges from 65 m to 700 m. ■ There are extensive views across and beyond the NCA. ■ The Black Mountains support extensive areas of moorland and upland heath. The highest land on the plateau ridges has wet heath and bog with small, flushed areas. Blanket mire lies on the gentler slopes. ■ The Black Mountains form a distinctive skyline visible from the Malvern Hills and other high ground to the east and south.
An upland landscape characterised by a tableland of Old Red Sandstone dating from the Silurian to the Devonian periods incised by many valleys and watercourses.	■ A landscape formed by Old Red Sandstone rocks laid down at the end of the Silurian and throughout the Devonian periods, which was later pushed up to create a high tableland as tectonic plates collided. ■ The river valleys are parallel following the original regional trend on the uplifted surface upon which the drainage developed. The height of the land reflects the varying hardness of the underlying 'Old Red Sandstone' rock. ■ With the exception of the Dore Valley, the rivers have carved out the deep-sided valleys creating a trellis-like pattern of drainage. ■ Glaciation has had a pronounced impact on the area, carving out the wide Dore Valley and leaving moraines and hummocks. ■ The strong pattern of ridges and valleys follow a north-west to south-east orientation. Golden Valley is the widest and is thought to have been carved out by glacial action. The downwash from the valley sides has created very fertile land. ■ The high ridge between the Vale of Ewyas in Wales and the Olchon Valley has very steep slopes and outcrops of conglomerate beds. Many of the downslopes are covered with downwash deposits with rilling and gullying creating fluted sides to the valley.
There are numerous rivers and streams in the NCA. They are fast flowing and are important wildlife corridors.	■ The River Dore and the River Monnow flow from Wales in the north, in a south-easterly direction through the NCA following the line of the deep valleys and passing into the South Herefordshire and Over Severn NCA. ■ The rivers flow into the River Wye – a Special Area of Conservation – and potentially impact on the quality of water and nature conservation interests downstream ■ The River Monnow forms the southern boundary of the NCA, and the boundary between England and Wales, and the River Dore flows southwards through the Golden Valley to join the Monnow at Monmouth Cap. ■ The main brooks – the Dulas, Escley and Olchon – are all fast flowing streams over rocky substrates, often with good fringes of woodland. ■ The total area of nitrate vulnerable zone is 5,077 ha, which is 20 per cent of the NCA. ■ There is high variation in river flow rates after heavy rain. ■ High rainfall, often steep topography and upland areas result in a variety of semi-natural habitats and conditions with bogs, streams, brooks and rivers providing essential connections and a common component. The availability and flow of water is important in maintaining these habitats, controlling the erosion of soils, flooding and public water supply.

Landscape attribute	Justification for selection
Woodland is predominantly found on the slopes of the eastern and northern hills and is a defining element of the landscape.	■ The NCA contains 3,290 ha of woodland (13 per cent of the total area), of which 1,715 ha is ancient semi-natural woodland. This contributes strongly to the character of the area. ■ The priority habitat 'broadleaved mixed and yew woodland (broad habitat)' is identified as covering 1,588 ha of the NCA. ■ Approximately 50 per cent of the woodland is on ancient woodland sites. Many have been modified by conifer or broadleaved planting. About half the ancient woodland is thought to be relatively unmodified native treecover. ■ Ancient woodlands along the ridge east of the Golden Valley are thought to be fragmented remnants of the former ancient Forest of Trevil. Many small alder woods are found on the slopes of the Olchon, Escley and Dulas brooks. Chanstone Wood is the only woodland SSSI. ■ In the north of the area, along Dulas Brook and tributaries of the River Dore, are several steep-sided dingles which support rich ash–oak woodlands, as at Cusop Dingle and Bach Dingle. ■ Woodland is predominantly found on the slopes of the eastern and northern hills, including within the ancient parkland and wood pasture at Moccas Park, and is mostly broadleaved, but with some blocks of mixed and coniferous plantations. ■ Dead wood, in particular ancient oaks are a feature of Moccas Park and are an important biodiversity resource in parkland and wood pasture as well as in semi-natural woodlands. It provides habitat for fungi, lichen and invertebrates, and is valuable for nutrient cycling and soil formation.
The lower lying land is predominantly managed as pasture in small- to medium-size fields generally bounded by low hedgerows.	■ Irregular pasture fields, commonly with mature hedgerow oaks and overgrown hedgerows. ■ Hedgerows thin out at the ridge tops where a more regular pattern and larger fields are apparent. ■ Removal and lack of appropriate management of hedgerows and loss of hedgerow trees and run-off has affected river margins, weakening landscape character.
The agriculture landcover varies with rough grazing on the higher land to the west through low- to moderate-intensity pastoral land use to intensive arable cultivation on the floor of the Golden Valley.	■ Grass and uncropped land covers 78 per cent of the total agricultural area. Farm holdings are predominately grazing livestock farms with a small amount of dairy. There is a long history of livestock farming in this area and food provision is an important ecosystem service provided. ■ The fertile soils of the Golden Valley make this area important for arable farming; 11 per cent of holdings are predominately arable or horticulture businesses and arable crops (predominantly cereals) account for 19 per cent of the agricultural area. ■ Many of the farms have rough grazing and inappropriate stocking levels and uncontrolled burning can lead to deterioration of the habitats. ■ Pasture improvement and arable intensification has caused the loss of meadow and boundary features and threatens areas of ridge and furrow, buried archaeology and other historic earthworks.

Landscape attribute	Justification for selection
The landscape consists of unimproved neutral grassland – a feature of the western edge of the NCA – contrasting with the open acidic grasslands found on the hills that gives rise to a characteristic upland-edge landscape with densely hedged field systems.	■ The uplands of the Black Mountains carry large tracts of unimproved acidic grassland, derived from heathland by grazing, which grades into a mosaic of moorland and shrub heath. ■ Small areas of rich calcareous grassland are confined to rock outcrops and spring lines at Red Darren and Black Darren. ■ The Black Mountains support extensive areas of moorland and upland heath. The highest land on the plateau ridges has wet heath and bog with small, flushed areas. ■ Blanket bog lies on the gentler slopes and covers 1,158 ha (4 per cent) of the NCA. Lowland heath can be found on the lower slopes and valley sides and covers 449 ha (4 per cent) of the NCA. ■ The grassland resource of the NCA is complemented by the network of road verges and the extent of ancient hedgerows surviving alongside many roads. ■ Caerion Meadow SSSI is a fine example of an MG5 hay meadow with plants such as globeflower, eyebright, bistort, lady's mantle and wood bitter-vetch. ■ Several grassland species occur near the edge of their natural range in this area. Globeflower is near its southerly limit in Britain and wood bitter-vetch extends, from its core area in Wales, eastward into Herefordshire. ■ Small wet flushes and rush pastures are a feature of some grasslands and, although not particularly rich botanically, they add diversity to the grassland mosaic and have at least local significance for invertebrates. ■ Anthills, with their distinctive plant communities, are a feature of several commons. At Little Mountain the margins of a small pool provide habitat for pillwort, a nationally scarce plant.
There is much evidence of Neolithic, bronze-age and iron-age activity and a long history of a border landscape.	■ Extensive evidence for Neolithic and bronze-age activity, including the megaliths of Arthur's Stone. ■ Iron-age hill forts (as at Poston and Pentwyn) provided foci for valley communities. The Romano-British period saw more settlement around the Roman road along the Golden Valley. ■ Villages formed in the Golden Valley around Norman castles (and also the pre-Conquest castle at Ewyas Harold) and developed from late 11th to 13th century (for example, Longtown). ■ The NCA has a long history as a frontier landscape; with Welsh place names a strong element and Offa's Dyke forming the boundary of the Saxon kingdom of Mercia. ■ From the late 11th into the 12th century, and as a result of the Norman conquest, the border landscape was reinforced resulting is a high concentration of earthen motte and bailey castles; the large castle at Hay-on-Wye forming, with the Black Mountains, a defensive barrier to the west. ■ The Cistercian abbey at Abbey Dore (founded in 1147) was a major influence on settlement and agricultural development in the area and it has become a popular tourist destination. ■ Smaller manor houses and gentry houses are a feature of the area, for example Wellbrook Manor at Peterchurch. ■ There are also country houses together with their landscaped gardens, parkland and wider settings, notably Moccas Park with its ancient oak trees.

Landscape attribute	Justification for selection
A dispersed settlement pattern of medieval origins.	■ Unenclosed and unoccupied upland areas. ■ Historical field patterns from the medieval period and Moccas Park, a fine example of historic parkland and wood pasture. ■ Enclosed farmland, hedgerows, isolated farmsteads, hamlets, villages and small settlements. ■ Along the Golden Valley, there are small villages with a rather dispersed settlement pattern around them, for example at Ewyas Harold and Longtown. With more recent development and the farmsteads on the valley sides, the Golden Valley has the impression of being frequently settled. ■ As far west as the lower slopes of the Olchon Valley there are frequent farms and hamlets on the valley sides and bottoms and larger settlements at river crossings. Locally the pattern changes to more closely grouped clusters where there has been settlement on former commons. ■ The main settlements in the area are; Hay-on-Wye, Hinton, Ewyas Harold, Longtown, Peterchurch and Abbey Dore. ■ The older buildings and churches are mainly built of red sandstone, often of a strikingly deep colour, as at Abbey Dore. Grey Silurian limestone or a range of intermediate coloured sandstones have also been used. ■ Traditionally, stone slates were used for roofing but these have now largely been replaced by Welsh slate. ■ In the west, the farmhouses and cottages within hamlets are often low, of rubble construction and sometimes whitewashed, giving them a Welsh appearance. ■ Nineteenth- and early 20th-century buildings in the east, particularly along the Golden Valley, are mainly of brick. Some of the larger, older houses have the typical foursquare appearance and hipped roof of Herefordshire gentry houses and locally there are timber-framed buildings.
A tranquil landscape much valued for its recreational opportunities, wildlife, remote uplands and intimate lowlands.	■ Eight per cent of the NCA (2,088 ha) is classified as being publically accessible. Four per cent (1,087 ha) of this is classified as common land and 6 per cent (1,589 ha) is open access land. ■ There are 470 km of public rights of way at a density of 1.8 km per km2. ■ Based on the CPRE map of tranquillity (2006) the most tranquil area lies on the western boundary of the NCA on the hills surrounding Hay Bluff. ■ Walking in the tranquil upland area is the primary recreational activity; other activities include cycling, horse riding and running and fishing in the Golden Valley and enjoying the area's natural beauty and history. ■ Offa's Dyke Path National Trail.

Landscape opportunities

- Protect, manage and conserve the area's woodland resource, looking for opportunities to link isolated woodland where appropriate. Develop access and interpretation of the woodland sites to enable people to enjoy them.
- Protect and conserve the open moorland plateau with its extensive views and its sense of tranquillity and remoteness, encouraging people to enjoy the uplands while preserving these qualities and ensuring recreation and disturbance does not cause damage to sensitive habitats and species.
- Protect, conserve and enhance semi-natural habitats including blanket bog, acid grasslands, heathland, woodland, species-rich pastures, hay meadows, improved grassland and flower-rich road verges.
- Protect habitats from further fragmentation, seeking opportunities to link habitats to ensure good condition and enhance their value for biodiversity.
- Conserve, manage and enhance the mosaic of moorland and grassland habitats, including open moorland,
- Conserve, maintain and enhance riverside pastures and meadows, encouraging extensive management to enhance habitat for breeding wading birds. Restore traditional hay meadows and other species-rich grasslands and reintroduce wetland vegetation and habitats where it has been lost along the river corridors.
- Conserve the diversity and integrity of geological and geomorphological features and enhance their interpretation, education and visual amenity value.
- Protect and conserve archaeological and historical features including prehistoric burial mounds and other heritage assets, enabling public access, understanding and enjoyment.
- Conserve and enhance traditional field and settlement patterns that contribute to sense of place by encouraging the restoration and management of hedgerows, the restoration of historical and traditional buildings and ensuring that new developments are in keeping with the historic settlement pattern and vernacular.
- Protect the fertility of the soils in the Golden Valley to ensure the ongoing viability of farming in the area. Use sustainable land management and farming methods to retain soil fertility and structure, protecting watercourses from sedimentation and excess nutrient levels.
- Conserve, manage and enhance the rights-of-way and open-access networks, ensure that they are maintained and signposted and available for users of all abilities as appropriate; link them with key sites and the provision of interpretation material to enable more people to access, understand and enjoy the area. Ensure access links in with sustainable modes of transport.
- Plan and manage any new development – including road schemes, industry and housing, overhead lines and renewable energy technologies, and telecommunications apparatus – to ensure that the area's tranquillity, sense of remoteness, landscape character and view are maintained and enhanced.

Ecosystem service analysis

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Food provision	Soils Livestock farming (meat and dairy) Semi-natural habitats	Grass and uncropped land covers 78 per cent of the total agricultural area. Holdings are predominately grazing livestock farms; in 2009 there were 134,100 sheep, 15,400 cattle and 200 pigs. Arable crops account for 19 per cent of the agricultural area; most of this is cereals (12 per cent). Eighty-nine per cent of the agricultural land is graded between 1 and 4.	Regional	This is an important area for animal husbandry, making a strong contribution to the local economy. Arable crops are grown in the rich and fertile soils of the Golden Valley. The uplands are used for rough grazing with livestock farming the dominant agricultural system. With good animal husbandry, appropriate stocking levels and grazing regimes there is the potential to increase the overall food provision from this NCA while safeguarding biodiversity, reducing soil erosion, improving water quality and water storage, carbon sequestration and climate regulation. Climate change may mean a further move away from hay meadows towards improved and intensively managed grassland. This could increase the risk of soil erosion. There may be scope for developing local and specialist markets which benefit from the links with the distinctive landscape.	Develop stronger local food markets and branding, to support local producers and traditional products to create strong links between people, food and landscapes. Work with farmers to support the production of food in ways that optimise productivity while maintaining biodiversity, the historic environment and landscape character to increase the resilience of heritage assets, habitats and species to climate change, and to minimise carbon emissions. Promote links between landscape and sensitive land and soil management practices and high-quality food production to enhance the marketability of products through high environmental standards.	**Food provision** **Biodiversity** **Climate Regulation** **Sense of place/ inspiration** **Sense of history** **Regulating water quality** **Regulating soil quality** **Regulating soil erosion**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Timber provision	Existing woodland Soils	The NCA contains 3,290 ha of woodland (13 per cent of the total area), of which 1,715 ha is ancient woodland with 687 ha coniferous. Woodland is predominantly found on the northern and eastern valley sides, with little woodland on higher ground.	Local	Places for woodland creation are limited to lower hillsides and valleys. Clearance of timber from some conifer plantations will release a single crop of timber and may provide opportunities to restore to more valuable semi-natural habitats. Good practice in woodland management may support a local source of timber for wood fuel and specialist woodland products and will help to minimise soil erosion and regulate water availability and flow. Climate change may provide new opportunities to establish more woodland in the future.	Seek opportunities to increase timber production from existing woodlands while maintaining their biodiversity and landscape value, and the regulation of soil erosion and quality and water flow and quality. Protect and enhance the mosaic and diversity of existing woodlands and improve their connectivity. Seek opportunities to create new woodlands where they will fit into the local pattern of woodland cover on the lower hillsides, valleys and along watercourses and on areas of low biodiversity interest. There may be opportunities for small-scale local woodland products, including biomass and wood fuel, from well-managed conifer and broadleaved woodlands. New or improved opportunities for recreation may result from an increase in planting schemes and improved woodland management, including thinning coniferous woodland and replanting with native species where appropriate.	**Timber provision** **Biomass energy** **Climate regulation** **Regulating soil erosion** **Regulating water flow** **Regulating water quality** **Recreation** **Biodiversity** **Sense of place/ inspiration**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Water availability	High levels of precipitation Geology Soils Rivers and streams Semi-natural habitats	This upland catchment and its rivers feed into the River Wye. The main rivers are the Dore and the Monnow, neither of which provide public water supply. There is 'no water available' from the rivers Monnow or Dore. New licenses for abstraction in this area will only be granted if it can be 'demonstrated that the abstractions will have no adverse effect on the integrity of the River Wye Special Area of Conservation (SAC)'. Groundwater sources are closely connected to surface water resources, and their availability has been included within that of the surface water resources described above. The NCA does not overlay any major aquifers.	Regional	The NCA receives high levels of rainfall due to its upland nature and westerly location. The extensive semi-natural habitats in this area play an important role in water infiltration and storage in the upper catchment. The Environment Agency Wales encourages the use of 'water management measures' such as winter storage reservoirs in this area, in order to make supplies more reliable. Climate change is likely to result in more intense precipitation events and warmer, drier summers in the long term, and demand for water is likely to increase in future. As water availability is already an issue it is imperative that water is used sustainably and that land management practices are employed that improve soil structure, water infiltration and storage of surface water run-off. It is important to minimise soil compaction and/or risk of capping on wet soils in the uplands from over-grazing and trafficking and other mechanised activities.	Seek opportunities to improve water conservation and efficient water use. Ensure moorland habitats, especially blanket bog, are under good environmental management to maintain good vegetative cover and encourage active peat formation. Seek opportunities to store water for slower release by managing and restoring upland and moorland habitats, such as wet woodland, wet grassland and mires. This will also help to mitigate flood risk, reduce soil erosion and improve water quality, climate regulation, habitat networks and ecosystem resilience to climate change. Promote good farming practices to improve the structure of soils, thereby improving infiltration of rainwater and reducing surface flow.	**Water availability** **Biodiversity** **Regulating water flow** **Regulating water quality** **Regulating soil erosion** **Climate regulation**
Genetic diversity	N/A	N/A	N/A	N/A	N/A	**N/A**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Biomass energy	Existing woodland Soils	Woodland occurs over 13 per cent of the area (3,290 ha), particularly on the slopes of the eastern and northern hills. There is one sawmill and several wood fuel suppliers in the area.	Local	There is potential for the provision of biomass by bringing unmanaged and under-managed woodland into management and as a by-product of commercial timber production. Over-management of woodland should be avoided as dead wood is an important biodiversity resource in semi-natural woodlands, providing habitat for fungi, lichens and invertebrates, and is valuable for nutrient cycling and soil formation. It is important that woodland management aims to retain some of this valuable resource. Within this NCA there is medium potential yield for miscanthus in the west, increasing to high in the east and south. In the case of short rotation coppice, there is mostly medium potential yield, although this decreases to low potential in the far west of the NCA. Warmer and wetter climatic conditions and an increasing demand for biomass in the future may lead to a shift towards planting biomass crops. For information on the potential landscape impacts of biomass plantings within the NCA, refer to the tables of 'opportunities and optimum sitings for energy crops' on the Natural England website.[9]	Encourage the management of existing woodlands to produce surplus timber for local sources of biomass, wood fuel and charcoal. Create and establish new small-scale woodlands to provide wood fuel and enhance sense of place and biodiversity interests. Promote sustainable soil management when harvesting and replanting occurs. Seek opportunities for new short rotation coppice and miscanthus planting in suitable locations.	**Biomass energy** **Biodiversity** **Climate regulation** **Sense of place/ inspiration**

[9] Opportunities and optimum sitings for energy crops, Natural England (accessed December 2010; URL: www.naturalengland.org.uk/ourwork/farming/funding/ecs/sitings/areas/099.aspx)

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Climate regulation	Localised soils with high carbon content Blanket bog and heath Woodland cover Semi-natural grassland	Generally there is low soil carbon content across the NCA of 0–5 per cent, reflecting the dominance of mineral soils. Carbon content will be higher in soils associated with the 1,158 ha of blanket bog along the western border of the NCA and with the very acid loamy upland soils with a wet peaty surface (covering 2 per cent of the NCA) found in the uplands. Carbon storage is also provided by woodland and its underlying humus-rich soils.	Regional	The blanket bog and heath on the higher ground to the west of the area are currently carbon stores due to the peat that makes up their soils. However if the peat were to dry out due to climate change or poor management then its carbon storage capabilities would be lost. Elsewhere there is little storage of carbon due to the nature of the soils in this NCA. Where there is increased storage under woodlands, particularly the wet woodlands along the bottom of valleys, and permanent grasslands, most notably in parkland and wood pasture, there is an opportunity to maintain the carbon storage of the area and increase it through the extension of these habitats. High concentrations of permanent pasture retain carbon, an increased proportion of which would be released through microbial action if the soil was ploughed and exposed to air. Production of inorganic fertiliser is particularly energy intensive and large volumes of greenhouse gases emitted during production. Soil testing enables the calculation of optimal fertiliser application rates, so reducing excess use of fertiliser, saving energy, money and benefiting water quality.	Seek opportunities to conserve and enhance peatland habitat, through sustainable land management practices. Ensure appropriate hydrology and vegetation cover is maintained to prevent the loss of carbon into the atmosphere, to improve the ability of habitats to sequester increased volumes of carbon and to make upland habitats more resilient to climate change. Encourage good management of existing woodlands and plantations to improve their role in capturing carbon. Create new small-scale woodland where it would benefit water quality and flood alleviation, contribute to biodiversity, local landscape character and historic environment and recreation opportunities. Seek opportunities to protect, manage and enhance and extend areas of existing semi-natural and wet grassland along valley bottoms, alongside watercourses, so that they sustain carbon-rich soils and their role in sequestering and storing carbon is enhanced. Encourage extensive low-input grazing regimes on managed pastures and leys to reduce applications of artificial fertilisers and maintain carbon within the soils.	**Climate regulation** **Biodiversity** **Regulating water quality** **Regulating water flow** **Regulating soil quality** **Regulating soil erosion** **Sense of place/ inspiration** **Timber provision**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Regulating water quality	Rainfall Fast-flowing rivers and streams Soils Low-input farming Semi-natural vegetation	The ecological status of the River Monnow is 'good', and the River Dore is 'moderate'. The chemical status of the lower reaches of the River Monnow, running along the southern boundary of the NCA, is 'good'. The chemical status of the remainder of river lengths in the NCA 'does not require assessment'. Groundwater chemical status is 'good' across the NCA.[10] Nevertheless, the entire NCA lies within Defra's River Wye priority catchment where, in addition to problems of sedimentation of watercourses, there is widespread diffuse pollution from muck and slurry reflecting the high density of livestock and the dumping of excess muck and slurry on maize stubbles over winter. There are also problems from sheep dip pollution.[11]	Regional	The NCA is upland in nature, relatively extensively managed and with low population density and high rainfall; 960 mm per annum recorded for Hay-on-Wye. There is rapid run-off, with consequent erosion and increased sediment load impacting on rivers downstream, especially after heavy rainfall events. Changes to rainfall patterns, especially more storm events arising from climate change, may increase sediment run-off and hydraulic scour of rivers. On farmed land, water quality can be affected by diffuse pollution from applications of slurry, manure, artificial fertilisers and other chemicals. Soil erosion leading to sedimentation of watercourses can occur through over-grazing, or allowing livestock to poach or erode river banks. Maintenance of permanent grassland, or introducing scrub or woodland along watercourses, can aid infiltration and reduce soil erosion, especially on steep slopes.	Work with farmers and landowners to adopt good agricultural, land, water and soil management practices to reduce surface water run-off and prevent water pollution. Encourage farmers to adopt the principles of the England Catchment Sensitive Farming Project. Work with farmers and landowners to seek opportunities to manage heather moorland and blanket bog and restore peat to ensure good vegetative cover to reduce water discolouration. Manage grazing levels and restrict access by livestock to watercourses to avoid poaching of river banks. Seek opportunities to manage, restore and expand riparian habitats through the establishment of permanent grassland, scrub and woodland along dingles and adjacent to watercourses and waterbodies. Restore riparian and wetland habitats and plant trees along watercourses to help stabilise banksides, reduce erosion and filter pollutants, while benefitting riparian and riverine wildlife. Seek ways of reducing pollution from residential sources such as sewage treatment plants.	**Regulating water quality** **Regulating water flow** **Regulating soil erosion** **Biodiversity**

[10] Severn River Basin Management Plan, Annex A: Current state of waters, Environment Agency (December 2009)
[11] Defra catchments priorities

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Regulating water flow	Rivers and streams Soils Semi-natural vegetation (including blanket bog, wet woodland and wetlands)	The NCA is considered an area of 'low to moderate' fluvial flood risk. However, there is important agricultural land in this area, and a large proportion of productive land is at risk of flooding.[12] There is an increased risk of fluvial flooding in the south of the NCA at the confluence of the rivers Monnow and Dore, at Ewyas Harold.[13] There are approximately 50 properties at risk of flooding in Hay-on-Wye. The Environment Agency supports opportunities to store water or manage run-off to provide flood risk or wider environmental benefits, including along the River Monnow.[14]	Regional	Improvement of soil structure and management of good vegetation cover would enhance rainwater infiltration, reduce run-off rates and increase rates of groundwater recharge through permeable soils. Natural vegetation in flood plains and expansion of wetlands may help to increase water storage and regulate flows. This is likely to have a large impact on mitigating flooding downstream.	Seek opportunities to manage heather moorland and blanket bog, and restore peat to ensure good vegetative cover. Encourage natural vegetation in the flood plain, including wet woodlands and wetland habitats, and seek opportunities to create new flood storage areas in particular wet pastures along the valley bottoms. Promote and encourage good soil and land management practices on farms to reduce run-off and improve infiltration.	**Regulating water flow** **Regulating water quality** **Regulating soil erosion** **Regulating soil quality** **Biodiversity**

[12] Wye and Usk Catchment Flood Management Plan, Summary Report, Environment Agency Wales (January 2010)
[13] Risk of flooding from rivers and sea, Environment Agency (accessed December 2010; URL: http://maps.environment-agency.gov.uk/wiyby/wiybyController? x=531500.0&y=181500.0&topic=floodmap&ep=map&scale=3&location=London, per cent20City per cent20of per cent20London&lang=_e&layerGroups=default&textonly=off)
[14] Wye and Usk Catchment Flood Management Plan, Summary Report, Environment Agency Wales (January 2010)

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Regulating soil quality	Geology Soils Semi-natural vegetation Soil flora and fauna	This NCA has five main soilscape types: ■ Slightly acid, loamy and clayey soils with impeded drainage, covering 68 per cent of the NCA. ■ Freely draining, slightly acid loamy soils (24 per cent). ■ Freely draining flood plain soils (4 per cent). ■ Very acid, loamy upland soils with a wet peaty surface (2 per cent). ■ Slowly permeable, seasonally wet acid loamy and clayey soils (2 per cent). Those covering 10 per cent or more of the NCA are described below. The slightly acid, loamy and clayey soils with impeded drainage (68 per cent) are easily poached by livestock and compacted by machinery when wet. Weak topsoil structure can be easily damaged. Careful timing of activities is required to reduce the likelihood of soil compaction. The freely draining, slightly acid loamy soils (24 per cent) have potential for increased organic matter levels through management interventions. They may be valuable for recharging groundwater that supports river base flows. This requires the maintenance of good soil structure to aid water infiltration and the matching of nutrients to needs to prevent groundwater pollution.	Regional	The slowly permeable, seasonally wet, acid loamy and clayey soils are slow to drain and, as a result, pose a risk of diffuse pollution entering main watercourses and localised flooding These soils are easily damaged when wet and therefore it is important to minimise compaction and/or capping which will tend to exacerbate run-off problems. These soils may have limited potential for increasing organic matter levels by management interventions. Maintenance of good soil structure can be improved through enhanced organic matter content to enable the permeable, freely draining, slightly acid loamy soils to recharge underlying groundwater. The slowly permeable, wet, very acid upland soils with a peaty surface are at risk of loss of organic matter through climate change and soil erosion. With the very acid loamy upland soils, with a wet peaty surface, peat has low strength when wet and is easily damaged by grazing and trafficking for much of the year, with poaching common. Beneficial measures include those that retain water in situ, ensure good vegetative cover and avoid over-grazing/trampling or damage by mechanised activities.	Seek and realise opportunities to promote good grassland management to improve the organic matter content and structure of soils and reduce poaching through extensive grazing regimes and restoration of grassland. Manage moorland habitats by sustainable grazing and maintaining hydrological function to ensure vegetation cover and peat formation that improve and conserve the condition and structure of carbon-rich soils.	**Regulating soil quality** **Regulating water quality** **Regulating water flow** **Regulating soil erosion** **Biodiversity** **Food provision**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Regulating soil erosion	Soils Semi-natural habitats including woodlands and grasslands	Ninety-four per cent of the soil cover in this NCA is potentially at risk of erosion. The only soils that are not at risk of erosion are the small areas of freely draining flood plain soils and the slowly permeable, seasonally wet, acid loamy and clayey soils. The slightly acid loamy and clayey soils with impeded drainage (68 per cent) are easily compacted if accessed when wet and prone to capping and slaking, leading to increased risk of soil erosion by surface water run-off, especially on steeper slopes. The freely draining, slightly acid loamy soils (24 per cent) are vulnerable on moderately or steeply sloping land where cultivated or bare soil is exposed. This is exacerbated where organic matter levels are low after continuous arable cultivation or where soils are compacted. There is the potential for wind erosion on some coarse textured cultivated variants. The very acid loamy upland soils with a wet peaty surface (2 per cent) are also at risk of erosion from a combination of easily damaged peat layers, steep slopes and rapid run-off. Reflecting this sensitivity to soil erosion, the entire NCA lies within Defra's River Wye priority catchment where there are problems of soil erosion where arable land is left bare over winter and especially where maize is grown and stubbles are left over winter and fields are used for the disposal of slurry/muck over winter months. There are also issues of run-off pathways through gates and down tracks, and the eroding of river banks by livestock.	Regional	Erosion of the freely draining soils is exacerbated on steeply sloping ground where surface vegetation cover has been removed or damaged, organic matter levels are low or where soils are compacted. The peaty soils are at risk of gullying and a loss of organic matter where surface vegetation is damaged or lost. Bare soils are also at risk of erosion from high winds. The other peaty soils in the NCA – the very acid loamy upland soils with a wet peaty surface – are at risk of erosion from a combination of rapid run-off, easily damaged peat layers and steep slopes. Beneficial measures include those that retain water in situ, ensure good vegetative cover, and avoid over grazing/trampling or damage by mechanised activities.	Restore and manage moorland habitats, in particular blanket bog, to ensure good vegetation cover and reduce sediment run-off by restoring hydrological function and the ecology of peatland and grassland habitats. Manage and restore riparian habitats, woodland and wetlands to help reduce peak flows and stabilise eroding riverbanks. Seek opportunities to secure sustainable grazing practices on the moorland. Seek opportunities to secure sustainable grazing management of pastures and meadows and restore permanent grassland to maintain good soil structure, improve infiltration and prevent channelling, run-off and flooding. Encourage new planting of native trees, hedgerows where appropriate and woodland on steep slopes and alongside watercourses to stabilise ground.	**Regulating soil erosion** **Regulating soil quality** **Regulating water quality** **Regulating water flow** **Biodiversity**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Pollination	Heather moorland Flower-rich hedgerows Wood pasture and parkland Flower-rich roadside verges Traditional orchards	Nectar will be provided by areas of heather on upland moorland and ridges, small areas of remaining meadows and other species-rich grasslands, the hedgerow network and flower-rich roadside verges. Some commercial agriculture, orchard fruit and arable crops in this NCA require insect pollination.	Local	There is scope to improve the condition and expand the area of habitats to provide for pollinators, including heathland, parkland, pasture, unimproved grassland, flower-rich meadows and verges. Incorporation of flower-rich headlands, hedgerows and buffer strips into agricultural systems maintains a network of nectar sources throughout the farmed landscape. Sympathetic management of road verges can be a beneficial addition to this network and are also aesthetically pleasing reinforcing a sense of naturalness of place. Some traditional orchards remain in various conditions. There is a need for these orchards to be restored to good condition and to plant new ones using traditional varieties.	Seek opportunities to improve nectar resources and the structural diversity of semi-natural habitats, expanding and restoring these wherever possible, with particular emphasis on traditional orchards, unimproved grassland, wood pasture and parkland and species-rich hedgerows. Work with the local authority and parishes to create multi-functional green spaces incorporating sympathetic management for pollinators including appropriate management of road verges, adding to the network of nectar sources close to food crops requiring insect-pollination. Through mechanisms such as agri-environment schemes, encourage the use of field margins, beetle banks and headlands in arable land, to encourage pollinators and pest-regulating species in close proximity to food crops requiring pollination.	**Pollination** **Food provision** **Biodiversity** **A sense of place/ inspiration** **Sense of history**
Pest regulation	N/A	N/A	N/A	N/A	N/A	**N/A**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Sense of place/ inspiration	Open expansive moorland and remote bluffs River valleys Semi-natural grasslands Meadows and pastures Hedgerows and field pattern Woodlands Parklands Archaeological features Historic features and settlements such as Hay-on-Wye Strong local vernacular	Sense of place is provided by a border landscape between the high upland moors of the Welsh Black Mountains, to the west, and the fertile, cultivated and settled valleys of the Herefordshire lowlands, to the east, with cross-border influences and a wealth of historic defences including mottes, castles and hill forts. There is a dominant pattern of north-west to south-east orientated ridges and valleys with the wide, fertile, intensively farmed Golden Valley, largely under arable cultivation, providing a sharp contrast to the open heather moorland, acid grassland, bracken and hay meadows found on the ridges, which rise to over 700 m and that are either rough grazed or in moderate intensity pastoral use. This contrast is accentuated by the varied field pattern ranging from small, irregular enclosures with thick, mixed hedgerows, becoming larger and semi-regular on the lower ground to the east, to the high hills to the west that are mostly unenclosed. Parklands and woodlands are a dominant feature on the valley slopes and ridges; woodlands are mostly broadleaved but there are some blocks of mixed and coniferous plantations. Scattered farms and small Welsh-named hamlets are frequent in the west, while in the lower valleys to the east, villages dominate with English placenames. The area has fine views of the hills of Wales, with the ridge of the Black Mountains, Mynydd Merddin and Black Hill all visible. The historic book town of Hay-on-Wye has an international reputation for the arts, in particular literature and philosophy, with an internationally renowned festival held there every year.	National	This NCA lies on the edge of the Brecon Beacons National Park. Nearby Hay-on-Wye is a popular tourist destination attracting people from all over the country and beyond. Feelings of inspiration and tranquillity are associated with the wild and expansive moorland and remote bluffs. The Black Mountains and Golden Valley has a strong and distinctive character of wild, open moorland and more intimate pastoral character respectively. Valleys, high, open hills, steep, narrow, wooded dingles with fast-flowing streams, meadowlands and woodlands are all found within a relatively compact area. Development pressure and change has been relatively low; however, the landscape can be and has been affected by small and cumulative changes, for example to roads, by new buildings, unsympathetic conversions and restorations, demand for improved social and recreational facilities, pressure to adopt renewable energy technologies and increased levels of visitors which result in incremental suburbanisation of this distinctive transitional landscape.	Protect and manage the contrasts and distinctive character of and between open moorland and intimate valley landscapes. Protect and conserve sites designated for their natural, geological and historical interest, and their setting. Protect, maintain and restore characteristic undesignated heritage features including historic parkland, hedgerows, field patterns and vernacular buildings, using materials appropriate to location. Plan and manage new development to ensure that the area's tranquillity, sense of remoteness, landscape character, heritage assets and views are maintained. Protect, manage and enhance key habitats including moorland and grassland mosaics, meadows, pastures and woodlands through adoption of good land, water and soil management practices. Explore opportunities to increase sustainable tourism initiatives that will improve visitors' enjoyment, understanding and environmental awareness, support the local economy and protect the special qualities of the area.	**Sense of place / inspiration** **Sense of history** **Recreation** **Biodiversity** **Geodiversity**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Sense of history	Archaeological remains Scheduled Monuments Geological features Soils Historical field systems and patterns Characteristic buildings and strong vernacular architecture Parklands	The history of the landscape is most evident in its long-standing cross border defense and settlement features with Neolithic, bronze-age and iron-age sites including the splendid megaliths of Arthur's Stone, as well as iron-age hill forts (such as Poston, Timberdine, Walterstone and Pentwyn) and the linear earthwork of Offa's Dyke that in the 8th century formed a delineation between the Anglian kingdom of Mercia and the Welsh kingdom of Powys. There is evidence of earlier cultivation in the form of ridge-and-furrow and watermeadow systems. Turnstone Court, Vowchurch in particular is famous as the place where Rowland Vaughan developed the art of building watermeadows. Other visible features include the motted sites and several Norman motte and bailey castles reflecting the importance of military control in the area. Within the previously wooded Golden Valley, the Cistercian monks of Abbey Dore were influential in widespread cultivation during in 12th and 13th centuries adding to the distinctive feel of the area. Scattered hamlets and farmsteads form a dispersed settlement pattern with occasional villages on valley sides and valley bottoms often clustered around medieval churches and manor houses, and planned villages in the west. Older buildings in the lowlands are often of red sandstone in a mixture of hues from red to grey or grey limestone. In the uplands low whitewashed farmsteads are more common, indicating the links between this area and the hill farms of Powys. A mix of English and Welsh placenames, the latter predominately in the uplands and valley floors to the west, adds to the strong sense of a border landscape. Aspects of history likely to be most evident to the public include, Abbey Dore and the historic parklands of Moccas Court, with its ancient and veteran oaks – referred to in the diaries of Kilvert – and Whitfield as well as other distinctive, smaller manor houses, parks and gentry houses such as Wellbrook Manor at Peterchurch.	Regional	The strong sense of history, and particularly the history of land management and the sense of a border between two countries, is vulnerable to the homogenising influences of modern agricultural practices and modern development. Below ground archaeology and earthworks, such as ridge-and-furrow and watermeadow remains are at risk from some agricultural practices, particularly deep ploughing and over-stocking. Traditional buildings within farmsteads are often neglected and no longer of use due to modern housing requirements for livestock.	Protect, conserve and enhance features of historical and archaeological interest (above and below ground) and their setting, retaining the evidence of inter-relationships between features that improve understanding and allow interpretation and enjoyment of past activities and cultural heritage. Work with farmers and other landowners to conserve soil resources to protect buried features of archaeological or historical interest. Protect, conserve and enhance historic parkland landscapes. Conserve and enhance historical field patterns including field boundaries. Promote the use of local traditional building materials and vernacular architecture in new and restored developments. Provide sustainable access and clear interpretation of historical and geological sites, and landscapes to enable greater public understanding and enjoyment.	**Sense of history** **Sense of place/ inspiration** **Biodiversity** **Geodiversity** **Regulating soil erosion** **Recreation**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Tranquillity	Wild, expansive, open and remote moorlands and high bluffs Woodlands, parkland, meadows and river valleys Few settlements or roads across the upland core	Tranquillity is a significant feature of the NCA, with nearly 94 per cent classified as 'undisturbed'; a decline from nearly 100 per cent in the 1960s. The area remains largely unaffected by development and is remote from large settlements and transport routes, apart from the A465 that runs along the south-eastern edge of the NCA. A sense of tranquillity is likely to be particularly associated with the wild upland areas, the extensive areas of woodlands, parklands, strongly pastoral landscape to the west and the attractive hamlets and farmsteads. It is one of the most tranquil parts of England, reflecting its remoteness and the absence of strategic transport corridors through it.	National	This NCA is extremely important in providing experiences of wild open spaces (with few structures or manmade roads) and is one of the most tranquil areas in England. Careful environmental management is required to safeguard some of the NCA's special qualities and sense of tranquillity against development pressure. A sense of tranquillity is most strongly associated with the open upland area; however, it can also be experienced in the valleys with their semi-natural habitats of woodland, parkland and meadows.	Protect the sense of remoteness and tranquillity of the area, by avoiding the introduction of inappropriate development and infrastructure, especially on the moorlands. Plan and seek to accommodate development so as not to increase disturbance through traffic or light pollution. Promote quiet enjoyment of the landscape. Manage visitor access and recreational activities to ensure no erosion of the tranquillity for visitors and local communities. Seek opportunities to change the pattern of visitor and resident travel away from car travel to more sustainable modes, including public transport, park and rides from urban areas, safe cycling and walking routes.	**Tranquillity** **Biodiversity** **Recreation** **Sense of place/ inspiration.** **Sense of history**
Recreation	Public rights of way Open access land and common land Rivers Geodiversity Historical and archaeological features and landscapes Country parks Woodlands	Recreational activity is supported by Offa's Dyke Path National Trail (nearly 6 km runs through the NCA). There are 470 km of rights of way (with a density of 1.8 km per km^2) as well as 1,589 ha of open access land (6.1 per cent of the NCA). There are numerous features in the landscape that attract visitors from around the country and beyond, including Abbey Dore, the Black Mountains and Hay-on-Wye that act as gateways to the wider landscape and recreational opportunities available.	Regional	The NCA offers accessible upland outdoor recreation opportunities, as well as quiet enjoyment of the tranquil lowland areas. Being adjacent to the Brecon Beacons National Park draws many visitors from across the country and the area remains relatively undisturbed. Recreational walking, cycling, angling and horse riding are also popular in the lower lying parts of the area. Increasingly popular, some 'honey-pot' sites may be negatively affected by visitor pressure, such as the numbers of cars accessing and parking in Hay-on-Wye and using narrow country lanes.	Further opportunities for enhancements to the public rights-of-way network should be realised. Improved access opportunities should incorporate enhanced interpretation, particularly of heritage assets and features. Extend awareness of access and recreational opportunities available across the area, and particularly from Hay-on-Wye and developing 'honey-pot' sites and from the Brecon Beacons National Park.	**Recreation** **Biodiversity** **Geodiversity** **Tranquillity** **Sense of place/ inspiration** **Sense of history**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Biodiversity	8 SSSI Soils Geology Semi-natural vegetation and habitats Woodlands Rivers and wetlands	There are no internationally designated sites within the NCA. There are eight SSSI in the NCA, totalling more than 1,300 ha (5 per cent of the NCA area). By far the largest of these (almost 1,200 ha) is a portion of the Black Mountains SSSI; an extensive area of upland moorland that straddles the English–Welsh border and supports a mosaic of characteristic upland heath flora and fauna. None of the Black Mountains SSSI (including that extending beyond this NCA) is in 'favourable' condition; 55 per cent is in 'recovering' condition and the remaining area has 'no change' or is 'declining'. Of all the SSSI habitats in the NCA, over half (56 per cent) are in unfavourable 'declining' or 'no change' condition; 31 per cent are in 'unfavourable recovering' condition, and only 13 per cent are in favourable condition. There are almost 3,000 ha of priority habitat within the NCA, totalling 11 per cent of the area. Most of this is wet woodland (1,311 ha) or blanket bog (1,158 ha).	National	The Black Mountains in this NCA represent the most south-westerly area of upland habitat in southern England and in this context is of particular importance for nature conservation. The head of the Olchon Valley has an area of unimproved permanent pasture and hay meadow whose juxtaposition with the high moorland contributes greatly to the overall value of the site to nature conservation. These meadows contain uncommon plants such as globe-flower and meadow saffron. Bird species characteristic of upland areas include raven, peregrine falcon, merlin and red grouse and these are present near the southerly limits of their ranges and their breeding status vulnerable to changes. The unimproved pastures and scattered scrub communities of the upper Olchon Valley provide some of the best habitat for species such as redstart and grey wagtail in this part of the country, but again, are vulnerable to change. Many of these species and habitats can be seen and enjoyed by the public from the open access land and public rights-of-way network. Many semi-natural habitats are fragmented, but improved management, connectivity, restoration of hydrological systems and promotion of sustainable grazing regimes and uptake of environmental incentives would enhance the biodiversity value as well as improve regulating services and enhance sense of place.	Protect and restore priority habitats and designated sites, through appropriate management to increase the area in favourable or recovering condition. For example, restore blanket bog and manage unimproved grassland and pastures through cutting and grazing. Restore and create habitats, particularly grassland and woodland, to enhance sense of place, to increase connectivity of existing, fragmented habitats, allowing species to move more freely through the landscape, to create more favourable conditions that will help combat the affects of climate change. Maintain and enhance the connectivity of habitats for priority species, for example golden plover, red grouse and merlin. Seek and explore opportunities to improve the interpretation of the area's rich biodiversity, encourage eco-tourism and engage with voluntary groups and local people to promote sustainable recreation and education opportunities linked to biodiversity and the monitoring of climate change. Encourage positive woodland management and protection, to help achieve greater biodiversity within woods.	**Biodiversity** **Climate regulation** **Sense of place/ inspiration** **Recreation** **Tranquillity** **Regulating water quality** **Regulating soil quality**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Geodiversity	Old Red Sandstone tablelands Bluffs Alluvial deposits and conglomerate beds Evidence of glaciation; landform, hummocks and moraines Soils	A landform of an exposed plateau, bluffs and slopes. The deeply-cut glacial Golden Valley The high ridge between the Vale of Ewyas within Wales and the Olchon Valley has very steep slopes and outcrops of conglomerate and calcrete beds but many of the lower slopes are covered with downwash deposits and rilling and gullying that have fluted the valley sides. There are landslips on the steep slopes. Locally available building stone expresses the underlying geodiversity. Small working quarries (delves) provided sandstone for building stone. Designated and Local Geological Sites in Towsend Tuff and localised glacial deposits and features.	National	There is a lack of geodiversity data for this area and an opportunity to undertake additional mapping and research work. The topography and altitude reflects the underlying rock types. In the south-west of the NCA, the distinctive plateau of Old Red Sandstone, Senni Formation and Brownstones Formation, uppermost Lower Devonian rocks and shape of Hay Bluff can be seen from a great distance and provides panoramic views across the NCA and beyond. Ffynnon Limestone (calcrete) outcrops on steep slopes and springs emerging from the base often give rise to landslips. To the north-east of the NCA lower level hills have developed on Lowest Devonian St Maughans Formation. Golden Valley cuts into the Uppermost Silurian, the Raglan Mudstone Formation (the lowest of the Old Red Sandstone rocks). These formations are separated by the Bishop's Frome Limestone. Within the upper layers of the Raglan Mudstone Formation, the Townsend tuff, a layer of volcanic ash outcrops on the north side of Merbach Hill. There is a need to make geological sites more accessible and to ensure that the distinctive topography and accessible exposures allow for interpretation, understanding and continued research into the geodiversity of the area. They also contribute to sense of place and sense of history in the area. The upland plateau, slopes and river valleys provide important habitats for wildlife. Peat deposits are found on the top of the Black Mountains plateau. There are glacial deposits in the valley bottoms. There is evidence of periglacial conditions outside the limit of the glaciers. There are examples of protalus or pronival ramparts, formed under periglacial conditions which are parallel ridges running along the steep slopes as in the Black Darren area. The area has a distinctive parallel drainage pattern with valleys trending north-west to south-east cut into the plateau surface. This drainage pattern has developed on the original land surface developed after uplift.	Protect and maintain views and access to exposed geological features to allow further interpretation, research and understanding of the area's geology. The many important geological sites need to be identified and designated as Local Geological Sites (of which there are only two within the NCA at present) as this area has been previously neglected. Conserve and enhance soil resources and geomorphology to safeguard the relationship between landform, landscape, and the history of land use, wildlife, natural, archaeological and cultural heritage. Promote respect and understanding for the local building traditions and architectural styles and facilitate the use of appropriate locally sourced materials. Identify sources of local building stone to allow continuing research into the geodiversity of the area while maintaining the local distinctiveness and sense of history. Protect the peat deposits which provide carbon storage.	**Geodiversity** **Biodiversity** **Recreation** **Sense of place/ inspiration** **Sense of history**

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