National Character Area profile:

50. Derbyshire Peak Fringe and Lower Derwent

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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.

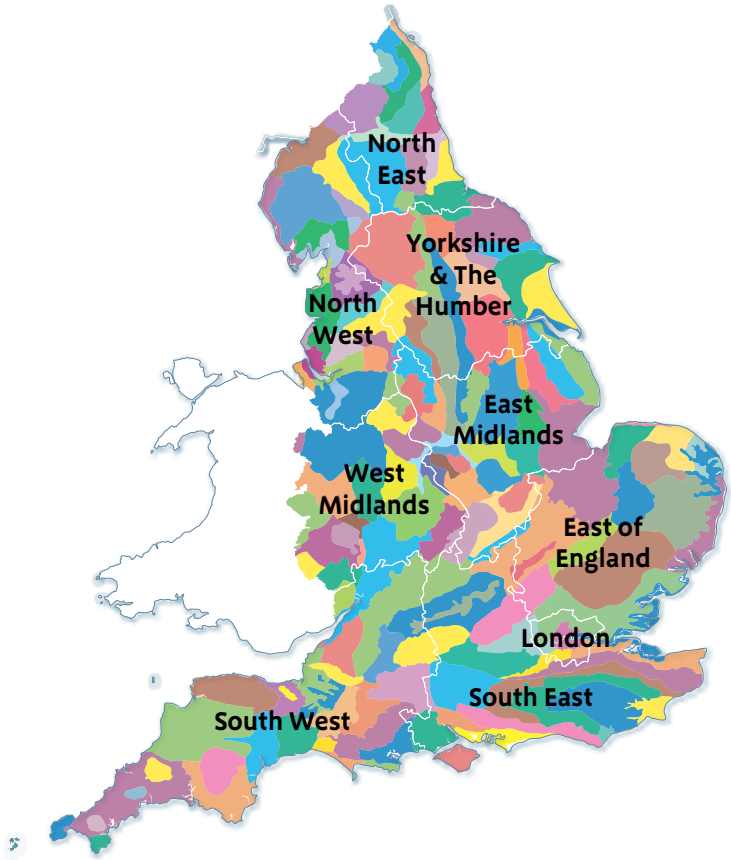
NCA profiles are guidance documents which can help communities to inform their decision-making about the places that they live in and care for. The information they contain will support the planning of conservation initiatives at a landscape scale, inform the delivery of Nature Improvement Areas and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

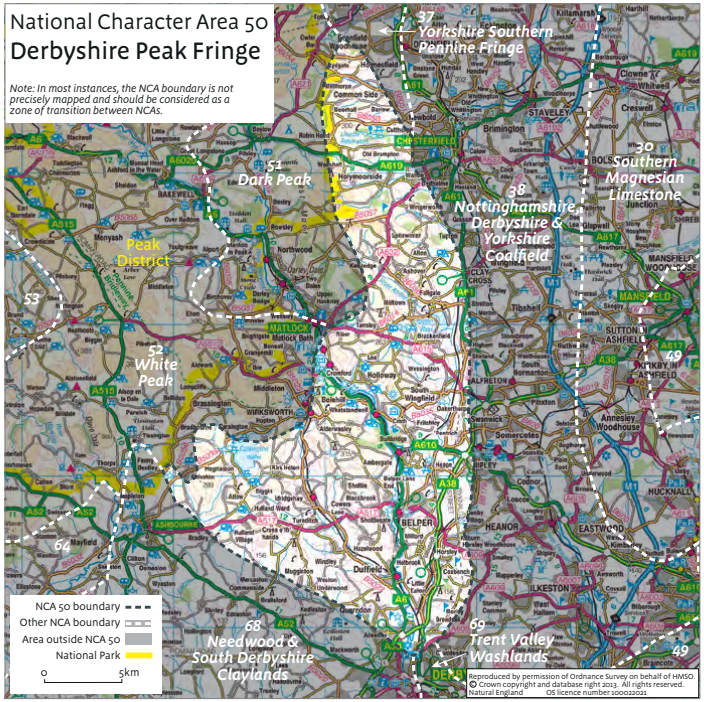
Summary

The Derbyshire Peak Fringe and Lower Derwent National Character Area (NCA) is a picturesque transitional area between the natural beauty of the Peak District National Park to the west and the largely urban, formerly mined Derbyshire Coal Measures to the east. Often referred to as the Gateway to the Peaks, this area is underlain mostly by the Carboniferous geology of the eastern Coal Measures and by Millstone Grit (sandstones) in the west – through which the rivers at the heart of this NCA have cut their valleys. Although the area was not included in the National Park, it was seriously considered during the original boundary selection in 1950 and remains a landscape of extremely high quality.

The rivers in the area are of major importance for many reasons; they drain large volumes of rainwater from the Peak District, and the River Derwent has been significant to the area's economic and industrial heritage, having powered the early mills of the Industrial Revolution. The Derwent Valley Mills were designated as a World Heritage Site by UNESCO in 2001, celebrating the area's contribution to the Industrial Revolution.

The area is rich in semi-natural habitats, intimate and dramatic landscapes, views and vistas. The transition between uplands and lowlands provides pathways for species to migrate in response to a changing climate. Ogston Reservoir, originally created to compensate for low water levels in the rivers, is of major importance for avifauna – and for passage migrants in particular. Cromford Canal, originally built as a transport route for the mills, is also now of importance for its aquatic flora. Small areas of the neighbouring Peak District's Special Areas of Conservation and Special Protection Areas extend into this NCA. Biological and geological Sites of Special Scientific Interest, as well as local sites for nature conservation and geology, are also found within this NCA.

The area has many recreational facilities, including the newest of its reservoirs, Carsington Water, as well as the former towpath of the Cromford Canal and the famous Crich Tramway Village. The major transport corridors of the A6 and intercity railways run through the NCA, providing access but also intrusion from emissions, light and noise.



Click map to enlarge; click again to reduce.

The River Derwent links this NCA to those both upstream and downstream.

Statements of Environmental Opportunity

- **SEO 1:** Protect and manage the adaptive capacity of this transitional National Character Area, and its geodiversity and biodiversity value. Manage and increase the broadleaved native woodland resource for multiple benefits including biodiversity, atmospheric carbon regulation, soil erosion, controlling water run-off and contributing to coherent habitat networks, while protecting intrinsic landscape character.

- **SEO 2:** Protect, manage and plan for change to the area's distinctive historic environment, including as a framework for sustainable development – also for the contribution that the Derwent Valley Mills World Heritage Site makes to the local economy, for sustainable energy production and for climate change mitigation.

- **SEO 3:** Manage the National Character Area's recreational assets for multi-functional and accessible opportunities for outdoor enjoyment, sustainably serving local and sub-regional demand, and thus helping to manage wider visitor pressures on sensitive areas of the Peak District National Park.

- **SEO 4:** Protect and enhance the rivers Derwent, Amber and Ecclesbourne (and their flood plains) – as well as the National Character Area's reservoirs and more minor watercourses – for their role in providing a water supply and regulating water flow, and for their biodiversity, landscape and recreational value.

Description

Physical and functional links to other National Character Areas

This National Character Area (NCA) marks the transition between the natural beauty of the Peak District National Park to the west, and the settled former north Derbyshire coalfield area to the east. It shares the Carboniferous Coal Measures with the broader, easterly Nottinghamshire, Derbyshire and Yorkshire Coalfield NCA, and the Millstone Grit with the Dark Peak NCA to the north-west. To the south, the Carboniferous Limestone underlying the White Peak NCA (and giving rise to its name) extends as far as the Derbyshire Peak Fringe and Lower Derwent NCA. Triassic sandstones, a minor feature of this NCA, extend in from the Needwood and South Derbyshire Claylands NCA, which lies to the south.

The River Derwent and its tributary, the River Amber, flow southwards through the NCA. The Derwent, which carries high volumes of rainwater from the Peak District, drains to the River Trent through the Trent Valley Washlands NCA, the Trent and Belvoir Vales NCA, and the Humberhead Levels NCA – and then finally out to sea, via the Humber. The principal aquifers are the Derwent – a Secondary Combined Aquifer that underlies the majority of this NCA and much of the Dark Peak – and the Don and Rother Millstone Grit and Coal Measures aquifer, which underlies much of the north of this NCA.

There are views to and from the Dark Peak and White Peak throughout the NCA, and from Alport Height there are very distant views south-west across the West Midlands, to Cannock Chase and The Wrekin. At Matlock and Matlock Bath there are particularly fine views across this NCA, from the Heights of Abraham and Heights of Jacob. There are reciprocal views to these (and their spectacular cliffs) from the Peak Fringe.

This NCA is seen as a Gateway to the Peaks, and is an important area for recreation – particularly for the urban population of Derby. Visitor pressure is high throughout. The Derwent Valley Mills World Heritage Site lies largely within this NCA, extending into the Needwood and South Derbyshire Claylands NCA. Of international heritage significance, the area is a focus for recreation and attracts many visitors from further afield.

Major transport routes run through the NCA: the A6 follows the course of the River Derwent to Matlock, and the East Midlands mainline runs from London St Pancras to Sheffield. Local trains from Nottingham to Matlock, via Derby, also follow the A6 corridor.

Small areas of the Special Areas of Conservation (SAC) and Special Protection Areas (SPAs) of the neighbouring Peak District extend into this NCA. Cromford Canal runs west to east through the area, and forms part of the World Heritage Site designation; also a Site of Special Scientific Interest (SSSI), the canal contributes to the area's many recreational assets, as do the reservoirs at Ogston and Carsington. The latter, in particular, also supplies water outside of the area.

The Derwent Valley Heritage Way links this NCA to the Dark Peak NCA, further north, and to the Trent Valley Washlands NCA, in the south. There are also plans to link the north of this NCA to a network of cycle routes planned for the wider Peak District.

Distinct area

- North Westerly Moorland Fringe

Key characteristics

- Transitional zone between the Peak District National Park (in which a small part of the NCA lies at its northern end) and the heavily settled Derbyshire Coal Measures, lying at an elevation of between 100 m and 300 m. It includes numerous outlying ridges, separated by impressive river valleys.
- The bedrock geology is chiefly of Carboniferous sediments – Coal Measures in the east and Millstone Grit in the west. Mainly historical quarrying activity – largely for dimension stone – forms large scars on the landscape. There are small inliers of limestone around Ashover and Crich.
- The variable soil types reflect the underlying geology: shallow, free-draining, coarse and loamy soils are found on steeper slopes over the gritstone; slowly permeable and seasonally waterlogged gley soils are found on the lower-lying slopes. On the Coal Measures, seasonally wet loams to clays predominate.
- The main rivers are the Derwent and its tributaries, the Amber and the Ecclesbourne, which drain to the River Trent and then out to sea via the Humber. Minor rivers and brooks in the north of the area flow eastwards towards large urban areas, and are dammed to create reservoirs (including Carsington Water and Ogston Reservoir). The underlying aquifers and reservoirs at Linacre, near Chesterfield, also contribute to potable water supplies – both within and outside the NCA.

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View towards Crich Stand and quarry.

Key characteristics

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- Extensive deciduous woodland along valley slopes, isolated copses on higher ground, hedgerow trees, and some large blocks of conifer plantation all contribute to the overall wooded character. The Derwent Valley holds one of the largest networks of ancient semi-natural woodland in England.
- There is stock rearing on permanent grassland and rough grazing on characteristically poor-quality agricultural land; improved grassland with arable is concentrated on the valley sides and lower valley slopes, towards the south of the area.
- Field patterns are irregular and of varying size, depending on local topography. Hedgerows are predominantly mixed species – including hawthorn, holly and hazel, with oak and ash hedgerow trees at lower altitudes – and remain largely intact; above 200 m they are replaced by a more regular field pattern, enclosed by stone walls.
- Priority habitats include lowland mixed deciduous woodland, wet woodland, grazing marsh, upland heath, and lowland meadows.
- Derwent Valley Mills World Heritage Site, stretching from Matlock to Derby, celebrates the industrial heritage of the 18th- and 19th-century cotton mills. It includes stone- and brick-built mill buildings and weirs along the River Derwent valley, as well as structures and buildings related to the Cromford Canal, together with the historic association with Sir Richard Arkwright.
- Historic mill towns are located along the course of the Derwent. Small market towns and villages tend to be nestled in valley bottoms, and are characterised by sturdy stone cottages and fine church buildings, with dispersed farmsteads in outlying enclosed land.
- The main transport corridors through the Derwent Valley are the local and mainline railways, and also the A6. The A38 trunk road runs through the east of the NCA, and a number of A roads cut the grain of the landscape east to west, providing access to the area and Peak District National Park from the surrounding coalfield towns.
- The Derwent Valley Heritage Way, the Cromford Canal and former railway tracks all provide extensive recreational routes, and the latter also provide off-road cycling trails. Carsington Water is a key recreational asset. Outdoor recreational pursuits are popular in this area: walking, cycling, climbing, bouldering, fishing, sailing and kayaking.

Derbyshire Peak Fringe and Lower Derwent today

The area ranges in altitude from approximately 100 m to 300 m, and has numerous outlying ridges separated by impressive river valleys. The geology underpinning the landscape consists almost entirely of Carboniferous sediments, with later processes having shaped the bedrock to its current form. Quarrying activity, for both gritstone and limestone, has provided plentiful exposures of these rocks within the landscape.

The River Derwent and its tributaries, the Amber and the Ecclesbourne, flow through the heart of the area, on into the River Trent and then finally out to sea via the Humber. Other minor rivers and brooks in the north of the area flow eastwards, towards large urban areas, and are dammed to create small reservoirs. The NCA is underlain by two aquifers in particular: the Derwent – a Secondary Combined Aquifer, which underlies the majority of the area and much of the Dark Peak, and the Don and Rother Millstone Grit and Coal Measures aquifer, which underlies much of the northern area of this NCA. There are lesser areas of other aquifers at the southern extent of the NCA, supplying water to urban areas outside its boundaries.

The name 'Derwent' derives from a Brythonic (ancient Celtic) word – derventio – which means 'a valley thick with oaks'. Unsurprisingly, therefore, woodland cover in this landscape is strongly characteristic, including irregularly shaped deciduous woodland along valley slopes, and wooded farmland. Woods tend to be small to medium sized and often irregular in shape, with isolated copses and woodland on higher ground (historically providing charcoal for local industries), and some large blocks of post-war commercial conifer plantation. Wet woodlands, a priority habitat, occur on the Coal Measures – particularly near Brackenfield and Bolehill, but also further south, including near Holbrook, Wingfield and Duffield. There has been some scrub encroachment, particularly where farming is marginal. Broadleaved woodlands and scrub are important for biodiversity, and the NCA has important populations of woodland birds. [4,5]

Bluebell woods are a key feature here.

[4] Woodland assemblage, East Midlands: Target areas for Lesser Spotted Woodpecker, Marsh Tit, Spotted Flycatcher and Hawfinch (accessed March 2014; URL: www.rspb.org.uk/Images/BCTP2010_WoodlandAssemblage2_EastMidlands_tcm9-208960.pdf)

[5] Woodland assemblage, East Midlands: Target areas for Restart, Pied Flycatcher, Wood Warbler and Tree Pipit (accessed March 2014; URL: www.rspb.org.uk/Images/BCTP2010_WoodlandAssemblage1_EastMidlands_tcm9-208958.pdf)

The local climate, altitude, soils and terrain dictate that stock rearing and rough grazing take place on improved grassland, with arable farming concentrated on the lower valley sides towards the south of the area. Poor-quality agricultural land, largely Grade 4 (making up 67 per cent of the NCA), is characteristic. Hedgerow field boundaries – largely consisting of hawthorn, hazel and holly, with hedgerow trees of ash and oak – at lower altitudes remain largely intact; above 200 m, stone walls are characteristic. Over time there has been a tendency to replace damaged walls and hedges with fences, to the detriment of intrinsic landscape character.

A mosaic of semi-natural habitats occurs throughout the area; lowland mixed deciduous woodland of ancient origin, including spectacular bluebell woods, follows the course of the Derwent through the World Heritage Site between Cromford and Bullbridge. Cromford Canal SSSI is an excellent example of a eutrophic freshwater habitat with a rich submerged and emergent aquatic flora, as well as a diverse margin supporting a very rich insect fauna. Cromford Canal supports nearly 80 species of hoverfly, and is important for grass snakes, water voles and water shrews. Flood plain grazing marsh follows the courses of the rivers Ecclesbourne and Derwent, from near Ambergate and Duffield to the very southern tip of the NCA. Small areas of upland heath and blanket bog of the Peak District Eastern Moors extend into the area, with lowland meadows occurring largely over the Millstone Grit in the south of the NCA.

Ogston Reservoir SSSI is of major importance for wildlife: in winter, the open water is home to large numbers of mallard, teal and wigeon, with other waterfowl (including pochard and tufted duck) present as well. The reservoir is also important for wader passage migrants. Huge numbers of gulls roost overnight and, in summer, many wildfowl feed at the margins. The water is fringed by grassland, woodland and tall herb communities, providing a range of habitats. Over 70 species of breeding birds have been recorded here.

Shining Cliff Woods SSSI is a remnant of the medieval Duffield Frith hunting forest, with sessile and pedunculate oak. Areas of wetter ground within the SSSI are dominated by alder, birch or ash and hazel, and have a rich ground flora. The Derwent Valley has the most extensive deciduous woodlands in Derbyshire – Crich Chase, adjacent to Shining Cliff Woods, has recently been designated as an SSSI.

The historic and archaeological importance of this NCA is recognised by UNESCO's inscription of the Derwent Valley Mills World Heritage Site, which stretches from Matlock to Derby and showcases the industrial heritage and technological interest of the 18th- and 19th-century cotton mills. Unsurprisingly, the World Heritage Site follows the course of the Derwent, the waters of which provided the power for the pioneering mills of Sir Richard Arkwright. Other interesting cultural associations include Florence Nightingale's links with the settlements of Dethick, Lea and Holloway.

The area has many stone-built settlements, and 18th- and 19th-century stone- and brick-built industrial buildings, with their associated infrastructure. Former mill towns follow the course of the Derwent; small market towns and villages (including Belper, Wirksworth and Duffield) tend to be nestled in valley bottoms, and are characterised by sturdy stone cottages arranged in a linear fashion along high streets, alongside fine church buildings. Isolated farmsteads are found in outlying enclosed land. In villages to the east of Matlock (Brackenfield and Wessington), red brick predominates. Buildings are attractively set around greens that are unusually large for Derbyshire.

The influence of the Derwent Valley tends to dominate the area, and is the continued focus for strategic communication routes; the A6 follows the course of the Derwent through to Matlock, and this is also the main rail route running south-west to north-east through the NCA, with many intercity trains as well as local services.

Although the Derbyshire Peak Fringe and Lower Derwent NCA lack the 'honeypot factor' of the Peak District National Park, the landscape is of a high quality. The World Heritage Site, particularly at Cromford, is a major draw, and Crich Tramway Village is internationally famous. For the adventurous, there are many popular climbing faces, and the rivers provide opportunities for canoeing and kayaking; the Milford to Darley Abbey stretch of the Derwent, for instance, is classed as an easy touring section[6]. For walkers, the Derwent Valley Heritage Way stretches from Ladybower Reservoir, in the Peak District National Park, to Derwent Mouth, at the junction with the Trent. Carsington Water and Cromford Canal are key recreational assets, presenting a range of water- and walking-based opportunities; in addition, the former is also a key source of potable water for communities outside the area.

Black Rock – a very popular climbing location.

The landscape through time

The bedrock geology of this NCA, mostly dating to the Carboniferous, is locally complex but simple in broad terms: limestone – deposited in a warm, clear sea during the early Carboniferous Period, and which now outcrops in small areas in the south and west of this NCA – forms the eastern edge of a large, broad dome that has the White Peak at its heart. Volcanic activity on the sea floor produced lava flows or later intrusions into the rock sequence. This lava cooled to form layers of basalt, whose dark colour contrasts (where exposed) with the lighter limestone.

The limestone gives way to the younger sandstones and shales of the Upper Carboniferous Millstone Grit Series, which were deposited where large river deltas built out into shallow marine waters. These dominate the west of the NCA and form the distinctive upland 'gritstone' moors of the Dark Peak to the north and east, and the higher, undulating ground north of Derby.

The geology of the east and north of the area is dominated by the Lower Coal Measures, formed where swamps developed in a tropical climate, accumulating vast quantities of plant material that was eventually compressed to form coal, an important resource for this area and for the adjoining Nottinghamshire, Derbyshire and Yorkshire Coalfield NCA. The coal seams in this western area are generally thin, and were sub-economic compared with the thicker seams developed further east. This explains why there are few coalfield communities, except in the far east of the area (for example Ripley and Denby).

[6] UK Rivers Guidebook (accessed March 2014; URL: www.ukriversguidebook.co.uk/rivers/england/midlands/river-derwent-milford-to-darley-abbey)

In contrast, South Derbyshire, including the very south of this NCA, is dominated by later mudstone and red sandstone of Triassic age, the latter having been laid down in desert conditions. The Mercia Mudstone Group represents wind-blown dust that settled in shallow salt lakes and sun-baked mudflats on the extensive flood plain.

The ice ages have left clear marks on the NCA. Till (or boulder clay), which formed in and beneath glaciers and ice sheets, occurs in pockets. Head formed as a result of the movement of soils. Glacial ice did not reach Derbyshire during the last glaciation, but the area would have been subject to an Arctic, tundra-like climate.

This is an area of great historical interest. Early features of interest and cultural heritage range from prehistoric burial mounds and a stone-age smelt mill (the latter near Wingerworth, south-west of Chesterfield), to Roman remains including the Roman road, Ryknild Street, which skirts the eastern boundary of the NCA, and evidence of an extensive Roman pottery industry aroundHazelwood.

The pattern of village-based settlement, with open fields and large areas of common land, later subject to piecemeal and planned enclosure, was established by the 13th century. There are also areas of ancient enclosure with the highest densities of historic farmsteads. Duffield Frith, a massive hunting forest that was probably established before the year 1100, became a Royal Forest in the reign of Henry IV. It was a major source of timber, but was also used for agriculture: a combination of grazing and industrial wood use for smelting completely denuded the forest of trees, and it ceased to be a Royal Forest in 1633.

Wingfield Manor now ruined but previously an ostentatious medieval great house, was originally built for Lord Cromwell in the 1450s, and was used to imprison Mary, Queen of Scots three times before it was partially demolished at the end of the Civil War.

In 1721 a silk mill was built in Derby for the Lombe brothers, and 50 years later Sir Richard Arkwright's invention, the water-powered spinning mill, was used for the first time here. This was a major landmark in the Industrial Revolution, and had far-reaching impacts on both industry and society. The silk industry required the movement of workers to the mills, and thus the first modern industrial towns – Cromford, on the boundary of this NCA, and Belper, Milford and Darley Abbey – were born. Rows of gritstone cottages tended to accompany the mill buildings. Cromford Canal (now an SSSI), linking Cromford to the Erewash Canal, was completed in 1794, but fell into disuse when the railway became the dominant means of transport in the later 19th century.

The next step change in the industry – the move from water power to steam, also in the 19th century – moved the heart of activity to larger, urban areas. The fact that the industrial infrastructure and its rural context remain so unharmed is testimony to the speed with which this relocation happened; they remain in such good condition that the Derwent Valley Mills were inscribed as a World Heritage Site by UNESCO in 2001.

The legacy of the spinning industry extends beyond the mills and the housing; the rail infrastructure between Matlock and Derby developed to serve the industry and its towns.

The area has a long tradition of lead smelting as well as farming. Lead smelting – particularly around Ashover, where it had begun in Roman times – declined in the 19th century, with a consequent decline in the population of those upland villages. Entire villages in Derbyshire were created around lead mines – remains of the industry in this NCA are particularly visible at Spitewinter, between Matlock and Chesterfield.

Other interesting cultural associations of the area include Florence Nightingale's links with the settlements of Dethick, Lea and Holloway. Modern remnants of Duffield Frith include Ravensdale Park – a Scheduled Ancient Monument – and Shining Cliff Woods SSSI.

Dry stone walls.

Current pressures on this landscape come from urban expansion, population increases, agriculture and transport. Development pressures are particularly intense on the western edge of Chesterfield, and around Matlock and Darley Dale, on the edges of the NCA. Agricultural intensification is having more of an impact, particularly in lower-lying areas that can be more easily converted to arable farming. Wooded slopes and valleys are experiencing ribbon development, or the enlargement or conversion of existing properties, which is changing the local landscape character. Visitor pressure can be enormous at busy times, especially at honeypot locations such as Matlock Bath in the White Peak; this, in turn, puts major pressure on transport routes through this NCA. These pressures have led to increased levels of light and noise pollution.

Ecosystem services

The Derbyshire Peak Fringe and Lower Derwent NCA provide 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 Derbyshire Peak Fringe and Lower Derwent NCA is contained in the 'Analysis' section of this document.

Provisioning services (food, fibre and water supply)

- **Water availability:** Outlying ridges are separated by numerous river valleys with their sources outside the area, in the Pennines. The River Derwent is the NCA's largest river, flowing through the heart of the area in a deep valley, helping to drain the Peak District's large volume of rainwater. The rivers all follow meandering routes along broad valley bottoms where many mills have historically been located, as at Belper. Towards the north of the area, smaller, fast-flowing brooks have been dammed to harness water power for local mills. Major reservoirs – Carsington Water and Ogston Reservoir – have been created to supply compensatory water to the rivers at times of low flow. Other significant rivers include the Amber and Ecclesbourne.

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

- **Regulating water flow:** The rivers in this NCA flow into the River Trent and then out to sea via the Humber. The Environment Agency flood risk map indicates a risk of flooding in the south of the NCA, around Duffield and Belper, and also in and around Derby (which is just outside the NCA). Reservoirs were constructed to provide water for the Derwent in times of low flow so that water supply could be maintained; there are opportunities to manage flow still further, through the creation of woodland upstream and through water storage in flood plains.

Cultural services (inspiration, education and wellbeing)

- **Sense of place/inspiration:** This is a transitional zone between the Peak District National Park and the industrialised urban areas of the Derbyshire Coal Measures, and also between lowland and upland England. A sense of place arises from the undulating, pastoral nature of this landscape; the numerous Millstone Grit ridges are separated by valleys, which form key features in this rural landscape – the largest is the significantly wooded valley of the River Derwent. The heart of this NCA is the Derwent Valley Mills World Heritage Site, whose architecture, historic settlements, wider landscape, watercourses, canals and wooded valleys particularly characterise the area.

- **Sense of history:** A sense of history begins with bronze-age burial mounds and continues through Roman roads (including Ryknild Street, skirting the eastern boundary of the NCA), medieval moated sites and settlements, and a strong association with the Industrial Revolution. This is not a village landscape, but an area of scattered farmsteads that have carved out an existence from a former wooded landscape. Woodland assarts are a key feature of this landscape, as reflected in the many irregular field patterns. The international importance of this area has been recognised by the Derwent Valley Mills World Heritage Site, which celebrates the mills' contribution to the Industrial Revolution.

- **Tranquillity:** The less developed rural areas are particularly important in conveying a sense of tranquillity – in particular in the south-west, around Carsington Water, and also in the upland wooded valleys. Localised impacts on tranquillity are associated with the urban fringe around Chesterfield, and larger towns like Matlock and Darley Dale.

- **Recreation:** This NCA is an important visitor attraction for local urban communities, such as Derby, but it also attracts visitors from much further afield. Carsington Water and Cromford Canal are huge recreational draws. There is a good network of rights of way, as well as some open access land. There are opportunities for both active and less intensive outdoor pursuits, as a consequence of the area's landscape character, mixed habitats and relatively extensive woodland resource. Recreational opportunities and activity within this NCA can be important in diverting visitor pressure from the Peak District National Park.

- **Biodiversity:** Ogston Reservoir is of major importance for bird passage migrants. Mires and swamps with concentrations of sedges, lousewort and marsh pennywort are occasionally to be found along the river valleys. Cromford Canal SSSI is important for grass snakes, water shrews, hoverflies, and submerged and emergent water plants. Shining Cliff Woods SSSI and Crich Chase SSSI are a valuable part of the important semi-natural oak woodlands lining much of the Lower Derwent Valley.

- **Geodiversity:** Much of the area has seen evidence of industrial activity, with people either extracting or utilising geological resources. These activities have included coal, lead and ironstone mining, glass making, and limestone and gritstone quarrying. The geomorphology of the area – especially its rivers – has been of vital industrial and historic importance, providing the energy to power the mills of the Industrial Revolution. The use of local vernacular building stone for mills and settlements (for example gritstone cottages) has greatly shaped the character of the area.

Statements of Environmental Opportunity

SEO 1: Protect and manage the adaptive capacity of this transitional National Character Area, and its geodiversity and biodiversity value. Manage and increase the native broadleaved woodland resource for multiple benefits including biodiversity, atmospheric carbon regulation, soil erosion, controlling water run-off and contributing to coherent habitat networks, while protecting intrinsic landscape character.

For example, by:

- Maintaining and improving the landscape's permeability for biodiversity migration, in the context of climate change. Improving and increasing the extent of semi-natural habitat, and enhancing linear and 'stepping stone' habitats.
- Maintaining the characteristic mix of grazing pasture, broadleaved woodland, river valley wet pasture, species-rich hay meadows and arable cropping. Seeking to increase the extent of priority habitats within the landscape, such as acidic grassland, wet woodland and flood plain grazing marsh.
- Protecting permanent grassland from conversion to cereal and arable crops – with consequent impacts on historic field patterns and ancient hedgerows – where this would damage the integrity of priority features within the World Heritage Site, such as industrial archaeology remains.
- Conserving, restoring and enhancing semi-natural grassland.
- Surveying and monitoring the extent and condition of veteran trees, protecting these from loss or poor management, and positively managing the landscape for future veteran trees.
- Seeking to restore historic field patterns, through hedgerow reinstatement and improved maintenance of the drystone wall network. Managing trees alongside fields, in areas where these are characteristic.
- Managing the broadleaved woodlands of the Derwent Valley and other areas, for biodiversity, landscape, cultural heritage and recreational value. Expanding broadleaved woodland coverage where appropriate, to increase connectivity between designated biodiversity sites.
- Where appropriate, supporting selective felling to re-establish any important vistas that have become obscured due to the growth of scrub and secondary woodland.
- Investigating the scope for creating community woodland, particularly in urban fringe areas, as part of improving high-quality, accessible green infrastructure around existing and new developments.

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SEO 1: Protect and manage the adaptive capacity of this transitional National Character Area, and its geodiversity and biodiversity value. Manage and increase the native broadleaved woodland resource for multiple benefits including biodiversity, atmospheric carbon regulation, soil erosion, controlling water run-off and contributing to coherent habitat networks, while protecting intrinsic landscape character.

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- Maintaining and enhancing access to, and interpreting, the National Character Area's (NCA's) geology and geomorphology. Emphasising the contribution of the geomorphology to the industrial and economic history of the NCA, and explaining how the geology of this NCA relates to that of the Peak District to its west and the Coal Measures to its east.
- Creating and maintaining appropriate aftercare of – and access to – redundant quarries, wherever the geology is well exposed.
- Maintaining the suite of designated geological sites covering the whole spatial and temporal range of the NCA's geology.
- Controlling run-off through good agricultural and forestry practice.

Broad-leaved woodland – an essential quality of this NCA.

SEO 2: Protect, manage and plan for change to the area's distinctive historic environment, including as a framework for sustainable development – also for the contribution that the Derwent Valley Mills World Heritage Site makes to the local economy, for sustainable energy production and for climate change mitigation.

For example, by:

- Managing and conserving the area's heritage assets as an integral part of its distinctive landscape.
- Conserving archaeological and other historic features in the landscape with heritage interest, while recognising the potential for undiscovered remains.
- Maintaining the diversity of geology and traditional buildings that contributes to the NCA, by using, promoting and encouraging locally sourced materials and skills for walling, building repairs and construction.
- Supporting and assisting the World Heritage Committee in delivering the operative management plan for Derwent Valley Mills. Meeting priorities in support of the site's Outstanding Universal Value, as is required of the Government by treaty.
- Developing an educational and interpretation infrastructure to reflect the importance of the environmental characteristics of the area, which were responsible for stimulating early industrial development.
- Maintaining the integrity and architecture of the mills and other structures recognised by the World Heritage Site designation.
- Ensuring that development and land use have full regard for the setting and integrity of the priority features of the World Heritage Site.
- Examining the potential for hydroelectricity generation within the River Derwent in such a way as to maintain the historic interest and value of the World Heritage Site infrastructure, and to provide it with ongoing economic and environmental value.
- Managing and maintaining the buildings and infrastructure of the World Heritage Site, including the Cromford Canal, to maximise its value and regulate its influence on wetland and aquatic habitats.
- Considering the sympathetic conversion of redundant industrial and farm buildings – especially those within the World Heritage Site – to create alternative uses.

SEO 3: Manage the National Character Area's recreational assets for multi-functional and accessible opportunities for outdoor enjoyment, sustainably serving local and sub-regional demand, and thus helping to manage wider visitor pressures on sensitive areas of the Peak District National Park.

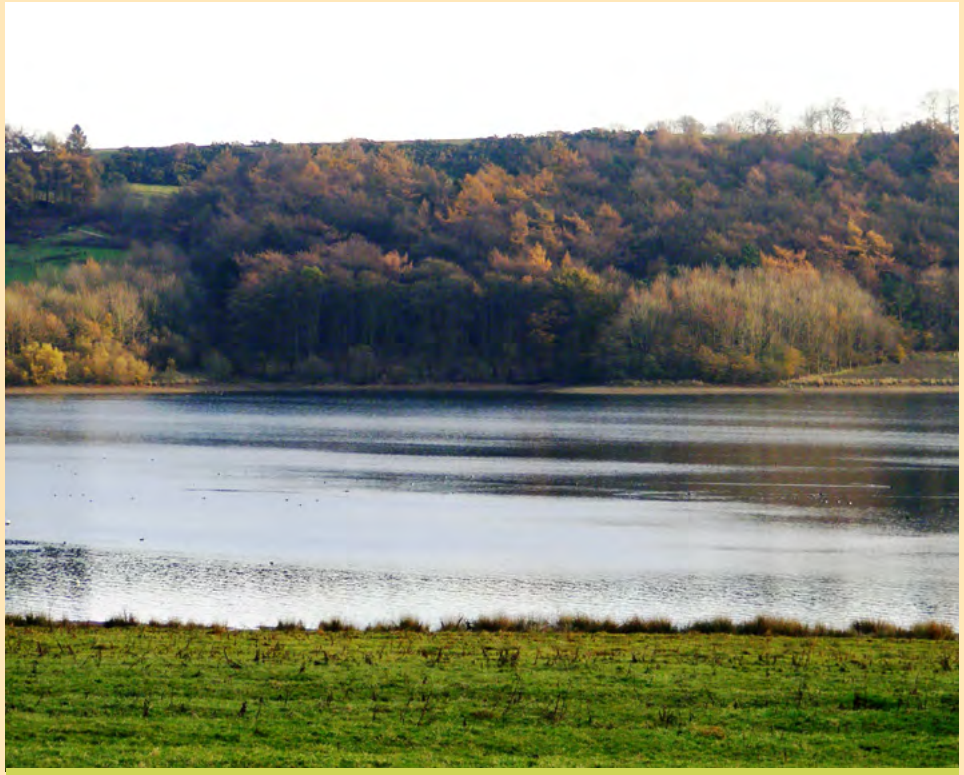
For example, by:

- Maintaining the multi-functional role of Carsington Water as a centre for watersports, outdoor enjoyment and active pursuits.
- Promoting non-intrusive access to Ogston Reservoir for ornithologists and wildlife enthusiasts, to highlight the reservoir's – and the wider NCA's – importance for biodiversity.
- Promoting the recreational uses of the rivers, including kayaking, angling, photography and painting.
- Promoting and maintaining sustainable climbing and bouldering.
- Seeking opportunities to create new – or improve or extend existing – cycle routes, to promote cycling as a recreational pursuit, to improve people's health and wellbeing, and to provide a form of sustainable transport.
- Supporting increased sustainable access to sites providing multiple recreational opportunities close to urban populations, such as Linacre Reservoirs, west of Chesterfield.
- Managing the recreational, cultural and educational value of the World Heritage Site features. Maximising these public benefits, while ensuring that local environmental capacity is not exceeded and that there is no impact on the site's outstanding universal value.
- Highlighting the NCA's links to the adjacent Peak District National Park, to draw visitors from it. This has benefits for the local economy and will reduce pressure on the National Park.
- Managing visitor use to prevent soil erosion where this becomes a problem.
- Promoting the recreational use of rivers, as long as this is compatible with their high biodiversity value.

SEO 4: Protect and enhance the rivers Derwent, Amber and Ecclesbourne (and their flood plains) – as well as the National Character Area's reservoirs and more minor watercourses – for their role in providing a water supply and regulating water flow, and for their biodiversity, landscape and recreational value.

For example, by:

- Working within the framework of the World Heritage Site management plan to conserve the form and function of the watercourses. Restoring and expanding aquatic, riparian and other flood plain habitats, to enhance the ecosystem services provided by the catchment.
- Supporting farmers and industry to reduce point-source and diffuse pollution, and to provide buffer strips to watercourses.
- Working with authorities and land managers upstream to regulate the water flowing from the adjacent Peak District National Park.
- Protecting watercourses from pollution from transport routes (such as road and rail). Building green infrastructure into the flood plain.
- Maintaining the original, compensatory roles of Carsington Water and Ogston Reservoir in times of low flow in the NCA's rivers.
- Maintaining the historic weirs for their geomorphological function, as well as for the industrial history they evidence.
- Maintaining and enhancing the biologically diverse flora and fauna of the reservoirs and watercourses, by protecting and enhancing the water quality.
- Considering the redevelopment of redundant reservoirs as sites of biological importance or as recreational facilities.



Carsington Water was created to supply water to the Derwent in times of low flow.

Additional opportunity

1. Plan for sensitively designed and sited infrastructure that is related to the utility, minerals, transport and telecommunications sectors in this National Character Area. This can make a positive contribution to both local character and the wider setting of the Peak District National Park.

For example, by:

- Developing a local land use policy that recognises the threats and pressures on the Peak District National Park from development beyond its boundary.
- Ensuring that conspicuous infrastructure development that threatens the distinctive character and setting of the World Heritage Site is only permitted where there is a demonstrated need for it, and where there are no reasonable alternatives – to justify the harm to such significant environmental and historic assets. Any harm should be mitigated to the fullest possible extent.
- Putting in place sustainable transport plans that help to manage visitor pressure in the area.
- Providing sustainable transport and access, especially in rural areas, for the benefit of both local residents and visitors.
- Maintaining the grazing flood plains of the Derwent by protecting them from inappropriate development.
- Developing and enhancing green infrastructure to mitigate visual intrusion from infrastructure related to the utility, minerals, transport and telecommunications sectors, and to maintain and enhance local character.

Supporting document 1: Key facts and data

Area of Derbyshire Peak Fringe and Lower Derwent National Character Area (NCA): 37,769 ha

1. Landscape and nature conservation designations

Around 2 per cent of the Peak District National Park (727 ha) lies within the Derbyshire Peak Fringe and Lower Derwent NCA.

Management plans for the protected landscapes can be found at:

- www.peakdistrict.gov.uk/

Source: Natural England (2011)

1.1 Designated nature conservation sites

The NCA includes the following statutory nature conservation designations:

Tier	Designation	Name	Area (ha)	% of NCA
International	Ramsar	n/a	0	0
European	Special Protection Area (SPA)	Peak District Moors – South Pennine Moors Phase 1 SPA	212	<1
	Special Area of Conservation (SAC)	South Pennine Moors SAC; Peak District Dales SAC	226	<1
National	National Nature Reserve (NNR)	n/a	0	0
	Site of Special Scientific Interest (SSSI)	A total of 16 sites wholly or partly within the NCA	521	1

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 282 local sites in the Derbyshire Peak Fringe and Lower Derwent NCA covering 2,168 ha, which is 6 per cent of the NCA.

Source: Natural England (2011)

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

1.1.1 Condition of designated sites

SSSI condition category	Area (ha)	Percentage of NCA SSSI resource
Unfavourable declining	9	2
Favourable	88	17
Unfavourable no change	0	0
Unfavourable recovering	419	81

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

This NCA has a broadly similar elevation range of 100 m to 300 m including numerous outlying ridges separated by river valleys. The lowest point is at 39 m and the highest point is 354 m to the west of the NCA around Spitewinter and Longside Moor. The mean elevation is 166 m.

Source: Natural England 2010

2.2 Landform and process

This is an area of undulating, rising ground between the coalfield in the east, to the Peak District in the west, with high points generally in the west, underlain by bands of Carboniferous sandstone and mudstone with occasional outliers of Carboniferous limestone. The underlying geology is the cause of transitional changes in the landscape. Bands of sandstone, mudstone and coal measures in the east give way to predominance of sandstone and gritstone as the land rises towards the Peak District. Occasional outcrops of Carboniferous limestone also occur within the wooded slopes and valleys at Ashover and Crich.

Source: Peak Fringe and Lower Derwent Countryside Character Area Description

2.3 Bedrock geology

The area is dominated by Carboniferous rocks. In the west Tournaisian and Visean Limestone (approximately 350 to 333 million years ago) is overlain by the later Namurian Millstone Grit (333 to 318 Ma) laid down when a river delta sequence advanced across the area from the north depositing a thick sequence of sandstones, the said Millstone Grit, interrupted by occasional marine shales associated with delta retreat and sea level rise. In the eastern half of the area fluvial conditions persisted into the Westphalian when the development of swamps in the tropical climate led to the accumulation of vast quantities of plant material which was eventually compressed to form coal; the Westphalian Coal Measures (318 to 303 Ma). This geology, and processes affecting it, produced the characteristic topography of the area.

Late Carboniferous uplift, folding and faulting has meant that the area has been subject to erosion rather than deposition for much of its subsequent history.

Source: Derbyshire Peak Fringe and Lower Derwent Countryside Character Area Description, Derbyshire Peak Fringe and Lower Derwent Natural Area Profile

2.4 Superficial deposits

The only clear evidence of glaciation in this NCA is from the Lower Pleistocene; associated boulder clays known as 'Older Drift' capping the hills. During the Upper Pleistocene the area was certainly subjected to extreme periglacial erosion forming a number of Millstone Grit tors in the north of the area.

Source: Peak Fringe and Lower Derwent Countryside Character Area Description

2.5 Designated geological sites

Tier	Designation	Number
National	Geological Site of Special Scientific Interest (SSSI)	4
National	Mixed Interest SSSI	1
Local	Local Geological Sites	33

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

The predominant land-use is pasture for stock rearing although the quality of the grassland is variable. In the more elevated areas over sandstone, soils tend to be poor and the land use, without agricultural improvement, is rough grazing. Much grassland tends to be neutral in character but there is localised calcareous grassland associated with limestone outcrops.

Soils are variable reflecting the range of underlying geology and steepness of slope. Soils overlying sandstone have a coarse loamy texture and are free-draining. The thinnest best-drained soils can become acid, particularly under semi-natural vegetation. At higher elevations the soils can become very acid and require frequent liming to prevent the development of an organic surface mat and subsequent reversion to moorland.

Over the mudstone or on lower lying slopes, the drainage is poorer and the soils can be seasonally waterlogged. As a consequence pasture is the dominant land use in this landscape. Many fields have been ploughed and reseeded and are grazed by cattle and sheep.

All of the soils are agriculturally poor (Agricultural Land Classification Grades 3 and 4) and consequently the dominant land use is permanent grassland for pasture or hay. There are occasional arable fields on the better-drained soils over sandstone or on the gentler, lower lying slopes that are easier to cultivate.

Source: Natural England 2010, Derbyshire Peak Fringe and Lower Derwent 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):

Grade	Area (ha)	% of NCA
Grade 1	0	0
Grade 2	261	<1
Grade 3	10,282	27
Grade 4	25,328	67
Grade 5	525	1
Non-agricultural	595	2
Urban	778	2

Source: Natural England (2010)

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

3. Key water bodies and catchments

3.1 Major rivers/canals

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

- River Derwent 28 km
- River Amber 19 km

Source: Natural England (2010)

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

The river valleys of the Derwent, Ecclesbourne and Amber are dominant features in the landscape. The River Derwent flows through the heart of this NCA, in a deep valley with some notably steep-sided stretches, for example, around Cromford.

Other significant rivers include the Amber and Ecclesbourne. The rivers follow meandering routes along broad valley bottoms where historically many mills have been located, as at Belper. Towards the north of the area, smaller fast-flowing brooks running from the eastern moors of the Dark Peak into the urban fringe of Chesterfield, have been dammed to harness water-power for local mills.

The NCA holds a variety of flowing and standing water habitats ranging from a generally nutrient-poor, upland character to more enriched, lowland types. Many small streams flow into the main rivers of the Derwent, Amber and Ecclesbourne. There is a network of ponds, much reduced from former times, but ranging from small garden ponds up to large mill ponds on some of the rivers. There are large reservoirs at Ogston and Carsington. There are also sections of disused, but still watertight canal, such as the 8 km section from Cromford to Ambergate.

The flood plains of the Lower Derwent and Ecclesbourne valleys are fairly broad and contain meandering rivers. The underlying sediment consists of alluvial mud lying over gravels deposited by the rivers in times of flood, the resultant soils being heavy clay loams prone to prolonged seasonal waterlogging. The River Derwent is a fairly wide and deep river within this NCA, with relatively clean water. The River Ecclesbourne is narrower and has largely unpolluted water, making it very valuable as a freshwater habitat.

3.2 Water quality

The total area of Nitrate Vulnerable Zone is 37,770 ha which represents 100 per cent of the NCA.

Source: Natural England (2010)

3.3 Water Framework Directive

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

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

4. Trees and woodlands

4.1 Total woodland cover

The NCA contains 3,704 ha of woodland (10 per cent of the total area), of which 1,171 ha is ancient woodland.

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

4.2 Distribution and size of woodland and trees in the landscape

This is predominantly a well-wooded landscape, with many interlocking deciduous woodlands, many of ancient origin, along steep-sided river valleys, most notably along the Derwent Valley, and scattered copses and hedgerow trees throughout the area. More elevated areas are sparsely wooded although there are rectilinear blocks of commercial coniferous woodland over large portions of the elevated ground north of Matlock.

Source: Derbyshire Peak Fringe and Lower Derwent Countryside Character Area Description, Derbyshire Peak Fringe and Lower Derwent Natural Area Profile

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	2,890	8
Coniferous	615	2
Mixed	118	<1
Other	81	<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	776	2
Planted Ancient Woodland (PAWS)	385	1

Source: Natural England (2004)

5. Boundary features and patterns

5.1 Boundary features

Field boundaries comprise reasonably intact hedgerows at lower elevations and stone walls on higher ground above 200 m.

Source: Derbyshire Peak Fringe and Lower Derwent Countryside Character Area Description; Countryside Quality Counts (2003)

5.2 Field patterns

On the steep-sided wooded slopes and valley bottoms fields are small in size and enclosed by hedgerows and to a lesser extent drystone walls. Hedgerows contain a mix of species including hawthorn, hazel, field maple, holly and ash, with oak as the dominant hedgerow tree. The hedgerows define an irregular field pattern suggesting that the fields are a direct result of clearance from woodland and that the area was once a more extensive ancient woodland landscape. Some of the hedgerows marking the boundaries of these fields are ancient and very diverse, and incorporate mature and old trees as well as many shrubs and flowers. Stone walls tend to replace the hedgerows at higher elevations above 200 m and define a more regular and geometric pattern of fields.

Source: Derbyshire Peak Fringe and Lower Derwent Countryside Character Area Description; Countryside Quality Counts (2003)

6. Agriculture

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

6.1 Farm type

Livestock farming represented the majority farm type in this area (414 holdings). Of these, 108 were dairy and 291 grazing livestock. In the decade between 2000 and 2009 the number of dairy farms declined by 69 and the number of lowland livestock farms by 25. The number of 'Less Favoured Area' grazing livestock farms increased by 40 per cent. Eight per cent of holdings in the area were primarily cereal farms and 7 per cent mixed farms.

Source: Agricultural Census, Defra (2010)

6.2 Farm size

A substantial proportion of farms in this area were small or medium sized, with 76 per cent of farms (covering 37 per cent of the farmed area) being smaller than 50 hectares. The number and area of small and medium sized farms decreased in the decade between 2000 and 2009, whereas farms greater than 100 hectares increased in number (from 33 to 50) and in area (by 73 per cent to 7,909 ha).

Source: Agricultural Census, Defra (2010)

6.3 Farm ownership

2009: total farm area = 27,423 ha; owned land = 17,080 ha
2000: total farm area = 24,873 ha; owned land = 16,185 ha

Source: Agricultural Census, Defra (2010)

6.4 Land use

The predominant land use was for grass and uncropped land, representing 81 per cent of the farmed area. Cereals covered 12 per cent of the farmed area. This remained fairly static between 2000 and 2009.

Source: Agricultural Census, Defra (2010)

6.5 Livestock numbers

Cattle (36,400) and sheep (39,100) each accounted for slightly less than half the total number of livestock. There were 6,200 pigs. There was a 10 per cent reduction in the number of cattle in the decade between 2000 and 2009 and a 20 per cent increase in the number of pigs. Pig farming is generally at odds with landscape character in this NCA; pigs tend to be associated with arable areas where they are often fed on the waste products of that industry.

Source: Agricultural Census, Defra (2010)

6.6 Farm labour

There were 1,000 principal farmers, which accounted for 76 per cent of the agricultural workforce, and 26 salaried managers, 96 full-time workers, 115 part-time workers and 84 casual/gang workers. The total workforce decreased by almost 10 per cent between 2000 and 2009, although the number of salaried managers and part-time workers increased.

Source: Agricultural Census, Defra (2010)

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

7. Key habitats and species

7.1 Habitat distribution/coverage

The river valleys of the Derwent, Ecclesbourne and Amber are dominant features in the NCA. The open waterbodies of the rivers and reservoirs provide important habitats for pondweeds, great crested newts, migrating waders and breeding and wintering wildfowl.

Mires and swamps with concentrations of sedges, lousewort and marsh pennywort are to be found occasionally along the river valleys.
Woodland provides important habitats for deadwood invertebrates, molluscs and birds such as the lesser spotted woodpecker, wood warbler and redstart. Also important are the small, but significant, areas of upland heath, blanket bog and in-bye fields in the north of the NCA west of Chesterfield.

The remaining semi-natural woodland comes into the category of upland oak wood; a key biodiversity habitat. There are small areas of wet woodland; those dominated by alder characteristically occur as flushed slopes or small stands on low-lying wet ground in the valley bottoms.

Mixed stock rearing with rough grazing and permanent pasture is the main land cover in the area. The lower, steeply undulating foothills have valuable, quality grassland while the steeper slopes are characterised by scrub and woodland.

Patches of unimproved neutral and marshy grassland areas attract a range of butterflies such as the rare brown argus and the green hairstreak, and birds including grey partridge.

Source: Derbyshire Peak Fringe and Lower Derwent 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)	2,156	6
Blanket bog	399	1
Coastal and flood plain grazing marsh	349	1
Lowland dry acid grassland	344	1
Upland heathland	244	1
Lowland meadows	163	<1
Lowland heathland	29	<1
Fens	23	<1
Lowland calcareous grassland	22	<1
Purple moor grass and rush pastures	11	<1

Source: Natural England (2011)

Maps showing locations of priority habitats are available at

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

7.3 Key species and assemblages of species

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

8. Settlement and development patterns

8.1 Settlement pattern

Urban influences are located in the lower lying areas on the fringes of the NCA at Chesterfield and on the lower slopes of the broader valleys at Belper, Wirksworth and Duffield. Elsewhere settlements are restricted to isolated, small villages or hamlets nestled into depressions on sloping ground. Villages are typified by sturdy stone cottages arranged in a linear fashion along the main street.

Source: Derbyshire Peak Fringe and Lower Derwent Countryside Character Area Description; Countryside Quality Counts (2003)

8.2 Main settlements

The main settlements in the NCA are Belper, Duffield, Wirksworth, Holymoorside, South Wingfield and Holloway. The total estimated population for this NCA (derived from ONS 2001 census data) is 92,155.

Source: Derbyshire Peak Fringe and Lower Derwent Countryside Character Area Description; Countryside Quality Counts (2003), Natural England (2012)

8.3 Local vernacular and building materials

Villages are typified by sturdy stone cottages arranged in a linear fashion along the main street. The predominant building material throughout is gritstone with stone or Welsh slate roofs. In the southern parts towards Derby and Ashbourne, red brick is more evident as a building material; there is a transitional character change from a northern, stone appearance to a red-brick midland character.

Source: Derbyshire Peak Fringe and Lower Derwent Countryside Character Area Description; Countryside Quality Counts (2003)

9. Key historic sites and features

9.1 Origin of historic features

Traces of very early colonisation exist in the caves found in the area. These show evidence of human occupation over thousands of years. The Roman road, Ryknild Street, skirts the eastern boundary. The area's strongest association is with the Industrial Revolution where Sir Richard Arkwright and Jedediah Strutt built cotton mills in the late 18th century. The area has a long tradition of lead smelting and quarrying as well as farming. Lead mining and smelting, particularly around Wirksworth, declined in the 19th century with a consequent decline in the population of those villages.

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

9.2 Designated historic assets

This NCA has the following historic designations:

- 7 Registered Parks and Gardens covering 187 ha
- 0 Registered Battlefields
- 51 Scheduled Monuments
- 1,158 Listed Buildings

Source: Natural England (2010)

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

10. Recreation and access

10.1 Public access

- 3 per cent of the NCA (968 ha) is classified as being publically accessible.
- There are 949 km of public rights of way, giving a density of 2.5 km per km^2.
- There are no National Trails within the NCA.

Source: Natural England (2010)

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

Access designation	Area (ha)	% of NCA
National Trust (Accessible all year)	3	<1
Common Land	11	<1
Country Parks	18	<1
CROW Access Land (Section 4 and 16)	389	1
CROW Section 15	9	<1
Village Greens	8	<1
Doorstep Greens	1	<1
Forestry Commission Walkers Welcome Grants	58	<1
Local Nature Reserves (LNRs)	142	<1
Millennium Greens	<1	<1
Accessible National Nature Reserves (NNRs)	0	0
Agri-environment Scheme Access	0	0
Woods for People	618	2

Sources: Natural England (2011)

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

11. Experiential qualities

11.1 Tranquillity

Based on the CPRE map of tranquillity (2006) the lowest scores for tranquillity are generally in the east and south of the NCA along the main transport corridors and towards the city of Derby urban area. The far west of the NCA still retains relatively high tranquillity scores. Overall, when compared against NCAs to the east, the tranquillity scores for the whole NCA remain reasonably high.

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

Category of tranquillity	Score
Highest value within NCA	149
Lowest value within NCA	-141
Mean value within NCA	-8

Source: CPRE (2006)

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

11.2 Intrusion

The 2007 Intrusion Map (CPRE) shows the extent to which rural landscapes are 'intruded on' from urban development, noise (primarily traffic noise), and other sources of visual and auditory intrusion. This shows that although intrusion has increased since the 1960s, especially around urban areas and transport routes, areas away from these have remained undisturbed.

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

Category of intrusion	1960s (%)	1990s (%)	2007 (%)	% change (1960s-2007)
Disturbed	34	46	52	17
Undisturbed	64	52	44	-20
Urban	2	2	5	3

Sources: CPRE (2007)

Notable trends from the 1960s to 2007 are an overall increase in disturbed land and urban land and a decrease in the amount of land that can be considered as undisturbed.

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

The Derwent Valley Heritage Way is a major recreational resource.

12. Data sources

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

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

Supporting document 2: Landscape change

Recent changes

Trees and woodlands

- There have been no major pressures on trees and woodland and changes have been quite slow. In spite of this slow pace, a general lack of woodland management has led to declines in woodland bird assemblages over the last 50 years as the woods have become denser and darker. Woodland cover (10 per cent) has probably increased in the last 100 years, but there have been losses of ancient woodland and gains of secondary woodland, so there has been a net loss in quality.

Boundary features

- Hedgerows and drystone walls are largely intact but changes to farming practices have led to poorly maintained drystone walls and hedges in places, and their replacement by fences has impacted on intrinsic character. Restoration of these features, where necessary, through agri-environmental schemes should be a priority.

Agriculture

- There has been an increase in farm diversification and gentrification into alternative uses including riding schools, haulage and farm building conversions. There was a marked decline in the numbers of cattle and the amount of dairying over the period covered by Defra's 2010 agricultural census, and a 10 per cent decrease in the agricultural workforce, but an increase in the number of pigs farmed within the NCA – although pig farming is still the minority activity.
- There has been drainage of rushy meadows and a reduction in the number of herb-rich hay meadows with a slow change of grassland to arable use due at least in part to the lack of uptake of Environmental Stewardship schemes.

Settlement and development

- There has been and continues to be demand for new housing, with the increases in traffic that this expansion entails.
- Rural ribbon development and the conversion of existing properties have affected the character of the historic landscape, while the expansion of urban centres is also evident, especially around Chesterfield and Matlock.
- There is an increase in recreational demands for walking, cycling and horse riding and other urban fringe pressures.

Semi-natural habitat

- Overall change has been slower in this NCA than in many others, largely because it is on the upland fringe, soils are poorer and the land is steeper, which makes the improvement of land less desirable and more difficult.
- Cromford Canal, a linear SSSI and Local Nature Reserve, is important for grass snakes, water voles and water shrews, hoverflies, and submerged and emergent water plants. Restoration work has expanded habitats for this flora and fauna.
- There has been a loss of semi-natural grassland to silage and arable use.

Historic features

- A relatively small number of the listed buildings in the World Heritage Site are classed as at risk and there are plans in place to protect most of those that are. There has therefore been little visible change to the historic environment features, although there has been change of use for most of the former mill buildings to varying kinds of tourist attraction, office or shop space: Masson Mill, on the boundary with the White Peak NCA, is now a big retail outlet and Arkwright Mill is now an attraction run by the World Heritage Site.

Coast and rivers

- The River Derwent within the Derwent Valley Mills World Heritage Site is protected from major man-made change resulting from –for example, visually intrusive flood defences within its boundary. Catchment Management Plans are in place, especially for the section of the Derwent around Derby. Current and predicted 2015 ecological qualities for the Ecclesbourne are poor; the Derwent and Amber have moderate current and predicted 2015 ecological qualities.

Minerals

- There has been a decline in extraction during recent years – the only active quarry now is at Crich. Quarries at Cromford and Mercaston are on the boundary of the NCA. Many former quarries, now designated as Local Geological Sites, are highly visible in the landscape, particularly around Wirksworth, and have been designated for the educational, scientific, aesthetic or historic values. As such, they are a major resource.

Ashover Church – built from local stone.

Drivers of change

Climate change

- Climate change and consequent increased storminess could place considerable pressure on the landscape and its rivers, especially on the Derwent, which drains heavy rainfall from the Peak District. This could increase existing flood risk to Derby.

- Increased drought could place pressures of its own such as - a reduction in summer rainfall could result in reduced water levels, reduced water availability, and increased stress on the area's important aquatic flora and fauna. Drought could especially have impacts on wet woodland or there could be changes in species composition, as a result of changes in phenology.

- Potential pressures to generate hydroelectric power could result in changes to the landscape character. The necessary infrastructure should be designed to avoid this and to be in keeping in scale and design with the historic landscape and riverscape. There continues to be pressure for both wind turbines and photovoltaic panels on south facing slopes and where these go ahead, these will need to be designed so as not to compromise landscape character.

- Plant diseases, in particular sudden oak disease, could cause major changes to this landscape where woodland is a major contributor to character.

- Climate change will lead to the shift of species northwards and upwards – this will lead to the loss of some species, the spread of new species and changes in community composition over time.

Other key drivers

- Change of use of railway lines (for example High Peak Trail) to recreational walking and cycle routes producing a wider spread of recreational activity into countryside areas.

- There are potential pressures for change related to the generation of hydro-electric power in the Derwent Valley; any such structures would need to be designed and installed in such a way that they do not compromise the historic landscape or biodiversity.

- Some existing weirs are in a less-than-favourable condition, and their loss would result in changes to the flow and function of the river.

- Some landowners wish to infill and level their land by tipping operations; Nottinghamshire and Derbyshire are short of landfill space and this would be a source of revenue for the landowners.

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.

The landscape just outside Ashover.

Statement of Environmental Opportunity	Ecosystem Service: Food provision	Timber provision	Water availability	Genetic diversity	Biomass provision	Climate regulation	Regulating water quality	Regulating water flow	Regulating soil quality	Regulating soil erosion	Pollination	Pest regulation	Regulating coastal erosion	Sense of place/inspiration	Sense of history	Tranquility	Recreation	Biodiversity	Geodiversity
SEO 1: Protect and manage the adaptive capacity of this transitional National Character Area, and its geodiversity and biodiversity value. Manage and increase the broadleaved native woodland resource for multiple benefits including biodiversity, atmospheric carbon regulation, soil erosion, controlling water run-off and contributing to coherent habitat networks, while protecting intrinsic landscape character.	↔ **	↗ *	↗ *	↗ *	↗ *	↗ *	↑ ***	↑ ***	↑ ***	↑ ***	↗ *	↗ *	n/a	↗ *	↗ *	↗ *	↔ **	↑ ***	↑ ***
SEO 2: Protect, manage and plan for change to the area's distinctive historic environment, including as a framework for sustainable development – also for the contribution that the Derwent Valley Mills World Heritage Site makes to the local economy, for sustainable energy production and for climate change mitigation.	↔ **	↔ **	↑ ***	↔ **	↔ **	↔ **	↑ ***	↑ ***	↔ **	↔ **	↔ **	↔ **	n/a	↑ ***	↑ ***	↔ **	↗ ***	↑ ***	↑ ***

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

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

Statement of Environmental Opportunity	Ecosystem Service																		
	Food provision	Timber provision	Water availability	Genetic diversity	Biomass provision	Climate regulation	Regulating water quality	Regulating water flow	Regulating soil quality	Regulating soil erosion	Pollination	Pest regulation	Regulating coastal erosion	Sense of place/inspiration	Sense of history	Tranquility	Recreation	Biodiversity	Geodiversity
SEO 3: Manage the National Character Area's recreational assets for multi-functional and accessible opportunities for outdoor enjoyment, sustainably serving local and sub-regional demand, and thus helping to manage wider visitor pressures on sensitive areas of the Peak District National Park.	↔ **	↗ *	↔ **	↔ **	↗ *	↗ *	↗ *	↗ *	↔ **	↗ *	↔ **	↔ **	n/a	↑ ***	↑ ***	↘ *	↑ ***	↗ *	↗ *
SEO 4: Protect and enhance the rivers Derwent, Amber and Ecclesbourne (and their flood plains) – as well as the National Character Area's reservoirs and more minor watercourses – for their role in providing a water supply and regulating water flow, and for their biodiversity, landscape and recreational value.	↔ **	↔ **	↑ ***	↔ **	↗ **	↔ **	↑ ***	↑ ***	↑ ***	↗ **	↔ **	↔ **	n/a	↑ ***	↑ ***	↗ *	↑ ***	↑ ***	↑ ***

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

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

Landscape attributes

Landscape attribute	Justification for selection
Transitional zone between the Peak District National Park and the urban areas of the Coal Measures, underlain almost entirely by Carboniferous sediments. Elevation range of 100 - 300 m with ridges and impressive river valleys.	■ Transition between these very distinct areas and gives rise to a huge variety of habitats and landscape character types, from pastoral lowland landscapes to rugged moorland and uplands. ■ Sandstones (Millstone Grit) and Coal Measures account for the vast majority of the underlying geology. ■ There are small areas of Carboniferous limestones, and there are Triassic sediments in the south of the NCA. ■ The elevation decreases from west to east with increasing distance from the Peak District National Park. ■ Hills and Ridges are major components of the landscape.
The rivers Derwent and the Amber are major features of the area and have been key factors in its industrial history.	■ The river valleys have an impressive profile in places. ■ The main rivers are the Derwent and its tributary the Amber. The Derwent drains to the River Trent and to sea via the Humber. ■ Minor rivers and brooks in the north of the area flow eastwards towards large urban areas and are dammed to create important reservoirs. ■ Water-powered mills were at the heart of the Industrial Revolution, for which this area is internationally recognised in its World Heritage Site status.
Substantial areas of semi-natural and ancient woodland and blocks of conifer plantation.	■ Woodland cover of 10 per cent of the NCA includes; deciduous woodland along valley slopes and isolated copses on higher ground (historically providing charcoal for local industries). ■ High levels of ancient woodland and plantations on ancient woodland covering 3 per cent of the NCA. ■ Woods tend to be small to medium sized and often irregular in shape. ■ There are also some large blocks of conifer plantation.

Landscape attribute	Justification for selection
Agriculture consisting mainly of livestock husbandry rather than arable farming. Variation in field size and boundaries depending on local topography.	■ Poor quality agricultural land, largely Grade 4 (67 per cent) is characteristic of the NCA. ■ Stock rearing and rough grazing take place on unimproved grassland. ■ Arable farming is concentrated on the valley sides towards the south of the area. ■ The fields vary in size according to their altitude, slope and surroundings. ■ Hedgerows at lower altitudes remain largely intact, stone walls are the dominant field boundaries above an elevation of roughly 200 m.
A patchwork of semi-natural habitats through the landscape.	■ There is a mosaic of lowland mixed deciduous woodland, wet woodland, flood plain grazing marsh, upland heath lowland meadows covering approximately 10 per cent of the NCA and often associated with the river valleys or the higher ridges. ■ The heathland areas, very sparsely wooded.
Derwent Valley Mills World Heritage Site.	■ Derwent Valley Mills World Heritage Site stretches from Matlock to Derby. The World Heritage Site is at the heart of the NCA in both geographic and historic terms. ■ It celebrates the historic and technological interest and achievements of the 18th and 19th century cotton mills.
Settlement pattern: Former mill towns following the course of the Derwent. The use of vernacular building materials strongly contributes to sense of place.	■ Former mill towns, including Milford, Duffield and Belper, were built along the River Derwent. ■ Small market towns and villages tend to be nestled in valley bottoms; they are characterised by sturdy stone cottages and fine church buildings with dispersed farmsteads in outlying enclosed land. ■ Streets of stone cottages typify local villages. ■ Villages of red brick predominate east of Matlock. ■ 18th and 19th century stone- and brick-built industrial buildings along valley bottoms, together with their historic association with Sir Richard Arkwright, contribute to a strong visual unity as well as highlighting their globally important industrial heritage.

Crich Tramway Village, a popular tourist destination in the NCA.

Landscape attribute	Justification for selection
Strategic transport routes run through the area, which acts as a gateway to the Peak District National Park.	■ The Derwent Valley has long been the focus for strategic communication routes. ■ The railway follows the course of the Derwent in this NCA, with the Midland Mainline railway route from London St Pancras to Sheffield, via Chesterfield, branching off at Ambergate. ■ The A6 road follows the Derwent and the rail line from Derby to Matlock along this part of its route.
Diverse, landscape-based recreational assets.	■ This NCA is renowned for its good walking territory; The Derwent Valley Heritage Way, for instance, is a key resource for walkers. ■ Former railway tracks are now in use as recreational walking and cycling routes, which produce a wider spread of recreational activity into countryside areas. ■ Active recreation here includes kayaking, sailing, climbing and bouldering. Angling is also popular. ■ Carsington Water is a major recreational resource, as is Cromford Canal. ■ Crich Tramway Village is a famous and popular attraction known widely outside the area.

Landscape opportunities

- Maintain the visibility and stability of important geological exposures and features by managing vegetation and guiding public access.
- Explain and promote the links between geodiversity, landscape form and land use; and increase understanding of the contribution that the area's geodiversity made to the development of early industry.
- Promote and protect the Derwent Valley Mills World Heritage Site and preserve the character of the buffer zones around it.
- Promote interpretation of the landscape and the surviving historic evidence from all periods and manage the extensive archaeological evidence and historic sites.
- Protect the character of the rivers and provide interpretation explaining their role in the Industrial revolution.
- Maintain the river levels throughout the year, using compensatory reservoirs, such as Carsington Water to manage low flow conditions, and maintain or extend the flood plain grazing marshes in the NCA to mitigate future extremes of drought and storminess resulting from climate change.
- Conserve, enhance and expand the mosaic of priority habitats, linking these where possible into a coherent habitat network to allow species to move in response to a changing climate. Woodlands are important habitats and there are opportunities to link and enlarge them. Plantations on ancient woodlands restoration is an important element in this landscape.
- Promote awareness of the area's accessible land and rights of way networks, as a resource to encourage people to visit the countryside so as to mitigate the effects of deprivation, while ensuring that visitor numbers are managed sustainably.
- Enhance the historic network of hedges and drystone walls, for their landscape value, to reduce soil erosion, and to provide habitat corridors for wildlife.

A view towards Ecclesbourne Valley from Alport Heights, showing a landscape of small mixed fields enclosed by stone walls, and the area's characteristic woodlands.

Ecosystem service analysis

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

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

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Food provision	Livestock and arable farming	The area of land farmed between 2000 and 2009 increased while the pattern of local agriculture has changes. Stock rearing and rough grazing are the major agricultural activities, with more than 80 per cent of the farmed area uncropped and used for grazing. There has been an increase in farm diversification and gentrification including riding schools and farm building conversions.	Local	Livestock production is the dominant agricultural activity on the Peak Fringe. Limitations on land quality mean that less than 15 per cent of the land is used for arable farming. Well managed livestock production systems have the potential to increase the overall food provision of this NCA while benefiting many of the other key ecosystem services.	Seek opportunities to work with land managers and the farming community to consider how and where to improve the carrying capacity of this landscape for livestock, thereby improving food provision, while ensuring that vital supporting services such as soils, water and biodiversity are protected and enhanced. There are opportunities to promote the produce as a locally grown/reared premium product. A "Peak Fringe" brand would promote produce and increase the sense of place.	**Food provision** **Biodiversity** **Regulating soil erosion** **Regulating soil quality** **Sense of place/ inspiration**

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Timber provision	Deciduous woodland Wet woodlands Copses on higher ground Conifer plantations	Woodland covers 10 per cent of this NCA. There is deciduous, often ancient, woodland along valley slopes with a few copses and beech hangers, wood from which historically provided charcoal for local industries, on higher ground. There are some blocks of conifer plantation. The Forestry Commission owns some land in the WHS Buffer Zone.	Local	The is no real potential to increase timber production from existing woodlands here – the Forestry Commission land is within the buffer zone of the World Heritage Site and most of the woodland consists of priority habitats – wet woodland and lowland mixed deciduous woodland. There are opportunities for bringing further woods into management, and to explore small-scale use of hardwood timber from existing woodland for high-quality projects looking to restore vernacular buildings and features.	There are opportunities to replace conifer woodland with native deciduous and evergreen species, which could potentially impact on timber production. There are opportunities to bring the many small ancient woodlands into management and to use conifer wood for timber and biomass as well as for recreational activities providing tranquillity and opportunity for exercise while retaining deadwood for the benefit of biodiversity.	**Timber provision** **Biodiversity** **Sense of place/ inspiration** **Sense of history** **Climate regulation** **Recreation** **Tranquillity**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Water availability	Rivers Derwent and Amber and underlying aquifers Carsington Water, Ogston Reservoir and smaller reservoirs Smaller Brooks, especially in the north of the NCA Rainfall of between 750 and 1,000 mm per year	Central to water availability within and outside the NCA are the rivers running from the Peak District to the sea, and, to a lesser extent, the underlying aquifers. The NCA benefits from its own fairly high rainfall and the run-off from the much higher rainfall in the Peak District. In addition to these there are many smaller but important brooks and water is stored in Carsington Water and in smaller, former industrial reservoirs. Carsington Water and Ogston reservoir are part of a water compensation scheme, which maintains the necessary water levels in the Derwent at times of low river levels. The River Derwent as a whole is over-licensed for abstraction.	Regional	Central to water availability are the rivers running from the Peak District to the sea, and the Carsington Water and Ogston Reservoir, which maintain water levels in the Derwent when its natural levels are low. The underlying aquifers are not, comparatively, of major importance. Climate change may bring about a reduction in summer rainfall and water flow but there could also be an increase in winter precipitation resulting from increased storminess. The River Derwent as a whole is over-licensed for abstraction, and this needs to be remedied by reducing the need for water or by sourcing water elsewhere. Measures could be taken to assure and stabilise the availability of water for wet woodlands (a priority habitat) on the Coal Measures.	Maintain the quality of the water supply for industry and drinking by managing existing heathland vegetation to enhance its biological condition, reducing the degree of water colouration within associated watercourses. Establish permanent grassland (non-intensive), scrub and woodland along cloughs, steep valley sides and near watercourses. Improve the efficiency of domestic, agricultural and industrial water use, ensuring that new developments use best practice in water harvesting and reuse. Work with farmers to increase awareness of the water demands of different crop types, promoting use of crops that are resilient to lower water availability. Conserve, manage and enhance priority habitats, especially wet woodland and flood plain grazing marsh.	**Regulating water quality** **Regulating water flow** **Recreation** **Sense of place/ inspiration** **Biodiversity**

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Biomass energy	Deciduous woodland Copses on higher ground Conifer plantations Energy crops	There are areas of deciduous woodland, with copses and beech hangers on higher ground. There are conifer plantations. Woodland management is sporadic in places, which has resulted in scrub encroachment[7].	Local	There is potential for small-scale biomass production alongside timber production. For information on the potential landscape impacts of biomass plantings within the NCA, please refer to the tables on the Natural England website.	There are opportunities to use conifer wood for timber and biomass. This could be achieved by managing the woods to provide local sources of environmentally sustainable timber products and fuel, though this is likely to be limited in scope due to the scale of woodlands and access issues. There are also limited opportunities to increase biomass production via energy crops but this would have to be small-scale and take account of the wider landscape to ensure it did not have a negative impact on its character or key characteristics such as heritage assets.	**Biomass energy** **Timber production** **Sense of place/ inspiration** **Sense of history**

[7] *East Midlands Regional Landscape Character Assessment*, Natural England (2010) (accessed March 2014; URL: www.naturalengland.org.uk/Images/section1_tcm6-14486.pdf)

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Climate regulation	Soils Semi-natural habitats Woodland cover Permanent grassland/pasture	Soils with the highest carbon content are found in the south west and north east of the NCA (5-10 per cent) and in the centre and in the north of the NCA (10-20 per cent carbon content). These areas of higher carbon content may be associated with the loamy and clayey flood plain soils with naturally high groundwater. These are mainly mineral soils but some may be peaty at depth or include small areas of peaty soils. They may also be associated with areas of woodland, wetland habitats (blanket bog and fen), heathland and semi-natural grassland found in the NCA where lack of disturbance has allowed organic-rich and peaty soils to develop (different types of peaty soils together cover some 1 per cent of the NCA). Much carbon has been locked up in the limestone rocks that underlie this NCA at depth. Areas of woodland, unimproved grassland and permanent pasture will act as carbon stores.	Local	Carbon sequestration and storage could be increased in the area by carefully managing organic matter in agricultural soils (where this will not lead to a reduction in species richness on flower-rich grasslands), increasing woodland cover where appropriate and restoring wetlands where feasible. Regulating the effects of climate change could include increased tree planting to provide shade for wildlife, livestock and people and to regulate the temperature of water bodies.	Provide advice, information and support to farmers on managing organic matter in soils and other measures to improve drought tolerance of farmland. Explore opportunities to regulate the impacts of a changing climate such as tree planting where it will not only increase carbon storage, but also provide shade for people, livestock and watercourses. Explore opportunities to restore wetlands and protect permanent grasslands.	**Climate regulation** **Water availability** **Regulating water quality** **Regulating water flow** **Regulating soil quality** **Regulating soil erosion** **Recreation** **Biodiversity**

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Regulating water quality	Rivers Derwent and Amber, brooks and reservoirs Land management	There are no Priority Catchments in the NCA. The surface water chemical status of the River Derwent is 'poor' while that of the River Amber has not been assessed. The potential ecological status of the River Derwent and the River Amber is 'moderate'. Both Carsington Water and Ogston Reservoir have 'good' potential ecological status (the current chemical quality of the reservoirs has not been assessed). Although there are no major aquifers in the NCA the groundwater chemical status in the NCA is 'poor' in the east but 'good' in the west. The whole NCA is classed as a nitrate vulnerable zone (NVZ).	Regional	Water quality of rivers and streams declined through the 20th century due to factors such as the use of agricultural fertilizers, farmyard run-off and sewage effluent. The effect of this pollution is made worse locally by abstraction, which reduces water flows in rivers and streams, concentrating the pollutant. Action to reduce chemical pollution of watercourses and to reduce water abstraction and low flow conditions within watercourses will ameliorate this. For instance, the Ecclesbourne Brook catchment is a priority for the Environment Agency, mainly due to water quality issues from arable agriculture in the flood plain.	Provide advice, information and support to farmers on reducing diffuse and point source water pollution through efficient and appropriate use of fertilisers and agricultural chemicals, appropriate timing of nutrient application, good soil management, avoiding soil erosion and avoiding pollution incidents. Provide buffer strips to watercourses to trap sediment and pollutants. Plant trees in the upper catchment to reduce sediment load into streams. Explore innovative solutions for limiting loss of river water into underground soughs associated with disused mines, thereby helping to maintain summer flow levels. Work with water treatment works to reduce the levels of nutrients discharged, including phosphate, to the rivers.	**Regulating water quality** **Regulating water flow** **Recreation** **Biodiversity**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Regulating water flow	Rivers Derwent and Amber, brooks and reservoirs (especially those reservoirs constructed specifically to regulate river flows)	The rivers in this NCA flow into the River Trent and to the sea via the Humber. The Environment Agency flood risk map indicates there is a risk of flooding in the south of the NCA around Duffield and Belper and in and around Derby (which is just outside the NCA). The River Derwent is still in continuity with its broad flood plain in some places particularly between Duffield and Little Eaton and regularly floods the surrounding flood plain in winter months between Derby and Duffield where there are a number of residential properties in the flood plain. Carsington Reservoir was constructed to provide water for the Derwent in times of low flow.	Local	Approaches to reducing flood risk potentially include the large-scale creation and restoration of priority wetland and flood plain habitats including flood plain grazing marsh (between Duffield and Little Eaton), the investigation of opportunities for storage or reduced conveyance upstream of urban areas and the identification of locations where flood attenuation ponds or wetland areas could be developed with associated habitat improvement. Tree planting would bind soils and increase rainwater infiltration, reducing sediment load in channel and volume of water that the watercourses have to deal with. Managing flood risk on the River Derwent in this NCA has flood benefits both in this NCA and for settlements downstream, including Derby.	Regulate water flow by transferring water to and from the backup reservoirs to ensure adequate water flow in times of low rainfall. Opportunities to create or restore priority habitats and plant trees to increase rainfall infiltration and excess water volumes in streams and rivers. Conserve and increase biodiversity while regulating water flow. There is opportunity to harness fast-flowing rivers and brooks to create small-scale hydroelectricity.	**Regulating water flow** **Regulating water quality** **Recreation** **Biodiversity** **Climate regulation** **Sense of history** **Sense of place/ inspiration**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Regulating soil quality	Geology Soil types Land management practices	There are 9 main soil types in this NCA, each reflecting the underlying geology, their formation and histories, and influencing the use of the land. More than 50 per cent of the soils are classified as slowly permeable seasonally wet acid loamy and clayey where there is a risk of diffuse pollution and flooding as a result of poor water infiltration. These soils are easily damaged when wet. The freely draining slightly acid loamy soils, which account for a further 25 per cent, do have potential for increased organic matter levels through management interventions.	Local	Slowly permeable, seasonally wet soils are easily damaged when wet and therefore it is important to minimise compaction and/or capping risk, which will tend to exacerbate run-off problems. These soils may have limited potential for increasing organic matter levels by management interventions. The freely draining soils do have potential for improved organic matter content through careful management. They require the maintenance of good structural conditions to aid water infiltration and require the matching of nutrients to needs to prevent pollution of any underlying groundwater. Appropriate and careful use of fertilisers can help to reduce diffuse pollution.	Provide information, advice and training for farmers on how to protect and enhance the organic matter content and structure of their soils. Promote best practice in soil management such as the appropriate timing of machinery use and appropriate grazing regimes that avoid compaction.	**Regulating soil quality** **Regulating soil erosion** **Regulating water quality** **Regulating water flow** **Regulating climate change**
Regulating soil erosion	Soil type Vegetation cover and semi-natural habitats Land management practice	The dominant soil types found in the NCA are the slowly permeable seasonally wet acid loamy and clayey soils and freely draining slightly acid loamy soils and are generally at low risk of erosion. **Continued on next page...**	Local	The small area of slightly acid loamy and clayey soils with impeded drainage and the freely draining slightly acid but base-rich soils (covering 4 per cent of the NCA) can be prone to capping/slaking, leading to increased risk of erosion requiring careful timing of activities and maintenance of a vegetation cover.	Promote best practice in soil management such as appropriate timing and routes of machinery use, maintaining vegetation cover on steep slopes, upgrading machinery and livestock routes and river crossings and using appropriate grazing regimes that avoid poaching, over-grazing and access to watercourses.	**Regulating soil erosion** **Regulating soil quality** **Climate Regulation** **Biodiversity** **Sense of place/ inspiration**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Regulating soil erosion cont.		**... continued from previous page** However, where there are freely draining slightly acid loamy and freely draining slightly acid sandy soils (covering 28 per cent of the NCA), these are at risk of erosion. This risk is enhanced on moderately or steeply sloping land where cultivated or bare soil is exposed and/or 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 of these soil types and there has been some soil erosion arising from the increase in pig farming in the NCA.		The slightly acid loamy and clayey soils are also easily compacted if accessed when wet, increasing the risks of soil erosion by surface water run-off, especially on steeper slopes. The small area of restored soils mostly from quarry and opencast spoil (covering 2 per cent of the NCA) are often compacted and subject to erosion from rainfall that cannot infiltrate. Poaching is a risk where stocking levels are too high on wet ground; this risk could be reduced by appropriate stocking levels.	Manage recreational access routes to minimise soil erosion. Protect grasslands from cultivation through the use of agri-environment schemes. Manage and extend semi-natural habitats, especially woodlands, to bind soils and reduce erosion.	
Pollination	Semi-natural habitats Hedgerows Pollinating insects	Lowland meadows and heathlands in the NCA and species-rich hedgerows provide some nectar sources for pollinating insects.	Local	The potential for pollination as an ecosystem service within the wider NCA is limited due to the lack of insect-pollinated crops. There are opportunities however to improve pollinator habitat within the farmed landscape in proximity to crops that require pollination.	Protect, enhance and extend flower-rich habitats such as limestone grassland, hay meadows, heathland and hedgerows, particularly habitats which occur in mosaic with arable land.	**Pollination** **Biodiversity**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
A sense of place/ inspiration	Topography, particularly the ridges and valleys Pastoral character Drystone walls and hedgerows World Heritage Site Ancient woodlands Rivers, reservoirs, streams and the Cromford Canal	This is a transitional zone between the Peak District National Park and the industrialised urban areas of the Coal Measures. A sense of place is provided by the undulating pastoral nature of this landscape. The numerous Millstone Grit ridges are separated by steep, sometimes, gorge-like, river valleys which form key features in this agricultural landscape - the largest is the significantly wooded valley of the River Derwent. The heart of this NCA is the Derwent Valley Mills World Heritage Site, whose natural and historic built character contributes to the strong sense of culture and place of the area. Deciduous woodlands clad steeper valley sides with isolated copses on ridgetops and significant blocks of conifer plantations on higher ground. **Continued on next page...**	National	The conservation and sympathetic management of geological features, archaeology, semi-natural habitats, rivers and historic buildings in particular and traditional farmed landscapes, are all critical to maintaining the strong sense of place which exists in the NCA. The maintenance of far-reaching, extensive views is also crucial, and there may be opportunities for creation of more views through appropriate tree thinning in defined areas. There is development pressure, both from expanding urban areas and from rural ribbon development, which threatens to undermine the essential character of this area. The strong sense of place of the area could be an asset to local food, craft, art and tourism based businesses, both in terms of attracting customers and of marketing products.	Ensure conservation and sympathetic management of the key components of sense of place. Conserve the geodiversity and access to it through the creation and extension of the suite of designated sites and access agreements. Conserve the sense of place arising from the Rivers Derwent, Amber, and Ecclesbourne, both their natural attributes and the historic buildings and archaeology for which the World Heritage Site was inscribed. Conserve the priority habitats and traditional farmlands that make the rural areas of the NCA special. Explore opportunities to use woodland management and tree thinning to open up far-reaching views, especially in the river valleys.	**Sense of place/ inspiration** **Sense of history** **Recreation** **Geodiversity**

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
A sense of place/ inspiration cont.		**... continued from previous page** Dispersed pattern of small market towns, villages and isolated farmhouses, with villages often sited in the shelter of the valley bottoms. Their character results largely from stone cottages and fine church buildings following a linear layout. Quarrying for limestone and gritstone forms major scars on the landscape on Chesterfield's urban fringe. Significant areas of the urban fringe are used as pony paddocks and golf courses.			Encourage local agriculture and businesses to use the strong sense of place to market their products. Support the wide range of organisations and landowners throughout the NCA in continuing explaining and promoting the sense of place and the origins of the landscape. Promote the retention, though the planning process, of existing built character, using local materials and styles and avoiding ribbon development. Planting trees around the fringes of new settlements would help to them to blend into the landscape and provide habitat for insects and birds as well as providing a recreational asset and helping to reinforce the sense of place.	

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Sense of history	Scheduled Monuments Derwent Valley Mills World Heritage Site Crich Tramway Village Historic buildings Field boundaries Ancient woodlands Rivers Derwent and Amber and the Cromford Canal Historic houses and associated parkland	A sense of history begins with bronze-age burial mounds and continues through Roman roads (including Ryknild Street skirting the eastern boundary of the NCA), medieval moated sites and settlements and a strong association with the Industrial Revolution leaving a legacy of stone quarrying, coal and lead mining (particularly around Ashover). Some villages have rich historic value and attractive gritstone and slate-built centres, such as at Ashover in the upper Amber Valley and Kirk Ireton in the west of the NCA. The Derwent Valley Mills World Heritage Site is an extensive designation, running north to south along the River Derwent, incorporating complexes of historic mills and associated infrastructure and community buildings. These recognise the area's international significance as the cradle of early industrialisation, and the strong associations with Sir Richard Arkwright and Jedediah Strutt. It holds strong reminders of the industrial revolution with remains of cotton mills, rows of 'gritstone' cottages and later 18th and 19th century red brick rows of workers cottages evident throughout the area. **Continued on next page...**	International	The sense of history here could be promoted more widely and targeted towards those visiting the site by 'green' transport to reduce the impacts of road travel where possible. The appearance of historic villages and town centres could be maintained or improved by for example minimising the use of obtrusive road signage using vernacular materials for any new developments. Drystone walls and fences are difficult and expensive to maintain but the area would soon deteriorate visibly if these were not maintained – as is the case in places. Repair and replacement of these traditional field boundaries, where necessary, would be beneficial. For the World Heritage Site, a relatively small number of the Listed Buildings are classed as at risk and there are plans for most of those that are.	Protect and promote the area's industrial heritage, seeking to remedy features listed on the English Heritage 'At Risk' register. Maintain historic weirs to protect water flow and natural habitats. Improve sustainable access to historic sites, through improved green transport throughout the NCA and to Crich Tramway Village. Promote the use of vernacular materials for repairs and new developments and remove unsympathetic obtrusive signage and 'street furniture.' Promote the historic environment of the wider NCA, especially the parts accessible by public transport or to long-distance walkers, canoeists and horse-riders. Encourage the maintenance and reinstatement, where missing, of traditional field boundaries – drystone walls and hedgerows.	**Sense of history** **Sense of place/ inspiration** **Recreation** **Geodiversity**

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Sense of history cont.		**... continued from previous page** The designation also includes a significant 'buffer zone', within which development and land use proposals must have full regard to its impact upon the key interest features of the area. Other aspects of history that are likely to be particularly evident to the general public include Wingfield Manor, now a ruin, and parkland in the Derwent Valley which is a consequence of the NCA's early industrial wealth such as at Lea. Denby Pottery has been made in the NCA for more than 200 years. The Denby Visitor Centre has a museum showcasing this history. Crich Tramway Village museum enjoys a national profile and is a rich heritage and educational asset. Cromford Canal, which crosses this NCA, is an important relic of the Industrial Revolution.		There is a threat of collapse of some historic weirs – this would alter the shape and flow of the river as well as being a loss of visible history. Further promotion of the Cromford Canal would add to people's perception of the area's history. The historic houses and parklands of the area, and the association with Mary, Queen of Scots, add another dimension to the perception of the NCA's history.	Promote and enhance access to Cromford Canal and the historic houses and parklands, restoring historic parkland features and managing veteran trees.	

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Tranquillity	Countryside areas Villages and small towns River and streamsides Carsington Water Woodland	This NCA has experienced a significant decrease in tranquillity; undisturbed areas have decreased from 64 per cent in the 1960s to 44 per cent in 2007 according to CPRE data. The main source of disturbance is associated with the urban development to the east along the A61 linking Chesterfield with Derby, including the urban fringes of Chesterfield, Clay Cross, Ripley, Derby and the town of Belper. With the exception of Belper, these main urban centres lie just beyond the NCA boundary along the eastern boundary of the NCA but their influence is felt within the NCA. In the west, urban development on the fringes of Matlock and Wirksworth and the main routes to the south the A6, A610 and A38 are also sources of considerable disturbance.	Regional	The areas that are particularly important in conveying a sense of tranquillity, are the less developed rural areas, in particular in the south west, such as around Carsington Water, and in the upland wooded valleys. Tranquillity can be maintained by promoting non-car transport: by creating good cycle routes, providing good public transport links and any other type of infrastructure that makes it easy and appealing for people to visit without their cars.	Secure opportunities to reduce traffic noise through landscaping and innovative road surface materials. Preserve the tranquillity of the dales by managing visitor access, taking measures to reduce traffic and securing sympathetic management of habitats. Promote the use of integrated transport systems through for example rail/bus rover tickets. Increasing woodland cover to provide tranquil recreation opportunities - walks, rides, ornithology. Restore natural river courses and riparian habitats. Promote high quality green infrastructure around new developments to improve screening from visual and auditory intrusion and to enhance local character.	**Tranquillity** **Recreation** **Sense of place/ inspiration** **Biodiversity**

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Recreation	Open access land and public rights of way Cycle paths and routes Crich Tramway Village Carsington, Ogston and Linacre reservoirs Rivers Derwent and Amber Cromford Canal Woodlands Derwent Valley Mills World Heritage Site Derwent Valley Heritage Way	The NCA offers a network of rights of way as well as some open access land. There are opportunities for both active and less intensive outdoor pursuits as a consequence of its landscape character, mixed habitats and relatively extensive woodland resource. Recreational opportunity and activity in the NCA can be important in diverting visitor pressure from the Peak District National Park. Locations such as Carsington, Ogston and Linacre reservoirs all present accessible mixed recreational assets which serve local communities. The Cromford Canal's towpath is a popular and tranquil walking and birdwatching route; similar walking opportunities are provided in the area's woodlands. There has been change of use of railway lines (for example High Peak Trail) to recreational walking and cycle routes producing a wider spread of recreational activity into countryside areas, but the old Wirksworth – Duffield line has been 'lost' as the Ecclesbourne Valley heritage railway has reopened. **Continued on next page...**	Regional	The open access land and rights of way could be further promoted both outside the NCA and within it to encourage residents as well as visitors to make use of them. Visitor access should be managed sensitively, encouraging access at suitable places and times, to reduce soil erosion or disturbance to breeding birds. The pre-Industrial Revolution historic environment could be promoted and interpreted to draw in visitors and raise public awareness of their importance. Continued promotion, interpretation of, and sustainable access to, the World Heritage Site would raise awareness of both its historic and industrial importance as well as its contribution to the unique local landscapes without degrading its structure or causing further congestion.	There are opportunities to improve access by maintaining and improving the rights of way, seeking opportunities to expand the rights of way network and to create multi-user routes. Paths should be maintained and well signposted, and some surfaced paths should be provided for use by all levels of ability at key locations. There are opportunities to create new cycling routes and to link existing ones, for instance linking to the Peak District National Park, for health and wellbeing as well as to provide opportunities for sustainable transport. Seek opportunities to manage recreation provision to enhance other services, for example managing visitor pressure to reduce soil erosion and disturbance to breeding birds. There are opportunities to provide interpretation of the landscape and its many features, especially historic features such as boundary stones, tracks, farms, canals, mills and reservoirs.	**Regulating soil erosion** **Recreation** **Sense of place/ inspiration** **Tranquillity** **Sense of history**

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Recreation cont.		**... continued from previous page** The World Heritage Site is a major draw attracting tourists from across the world as well as from within the UK. The historic country houses are a major draw for tourists.		Visitor pressure is strong throughout and needs to be managed. Transport must be managed effectively and sustainably so that visitors can access the NCA and that residents will have their needs met, while minimising congestion. Visitor numbers to the historic houses need to be managed at sustainable levels.	Explore opportunities for reusing redundant reservoirs for recreational facilities. Continue to manage visitor numbers so that they do not degrade the places being visited and congestion is minimised.	
Biodiversity	Designated sites Semi-natural terrestrial habitats Priority species Rivers, streams and reservoirs Ancient woodland including wet woodland	Just over 520 ha (just over 1 per cent of the NCA) is nationally designated as SSSI and there are 7 Local Nature Reserves within the NCA. More than 2,000 ha (just under 6 per cent of the NCA) consists of priority habitats influenced by the local geology and hydrology. Very small areas of the South Pennine Moors and Peak District Dales SAC overlap into this NCA; the Peak District Moors SPA is coterminous with the South Pennine Moors SAC in this NCA. Rivers, streams and reservoirs are important habitats which also influence the character and available habitats of surrounding land. **Continued on next page...**	National	The rivers and reservoirs of the NCA have a dominant influence, providing important habitats for pondweeds, great crested newt, migrating waders and breeding and wintering wildfowl. Mires and swamps with concentrations of sedges, lousewort and marsh pennywort are to be found occasionally along the river valleys. Woodland covers 10 per cent of the NCA and provides important habitats for deadwood invertebrates, molluscs, and birds such as the less spotted woodpecker, wood warbler and redstart. The remaining upland Oakwood – semi-natural woodland on the higher ground - is a key biodiversity habitat.	Opportunities to increase the area of priority habitat and maintain or improve the condition of existing sites and by buffering and extending these and provide stepping stones or linear connecting habitats, especially woodland, grassland and wetland sites – these could help species respond to a changing climate. Maintain the water flow and levels of the rivers and reservoirs to maintain aquatic and wetland habitats. Control of mink and habitat enhancement should help increase the range of water vole.	**Biodiversity** **Sense of place/ inspiration** **Recreation** **Sense of history** **Regulating water quality** **Water availability**

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Biodiversity cont.		**... continued from previous page** Great-crested newt, otter, water vole, dormouse, white-clawed crayfish and dingy skipper have all been recorded in the NCA in the last 25 years.		There are small areas of wet woodland. Those dominated by alder characteristically occur on flushed slopes or small stands on low-lying wet ground in the valley bottoms. Patches of unimproved neutral and marshy grassland areas attract a range of butterflies such as the rare brown argus and the green hairstreak and birds including grey partridge. Ogston Reservoir is of major importance for passage migrants. This NCA provides important transitions between lowland and upland habitats. With predicted climate change, transitional landscapes with a range of altitudes can play a vital role in accommodating shifts in species' range in response to climate change.	Maintain woodland to protect and enhance biodiversity. Measures could be taken to increase the range of great-crested newt. Ensure that Ogston Reservoir remains favourable for the important assemblages of passage migrants.	

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Geodiversity	Designated sites Bedrock and superficial deposits Geomorphology Minerals	The NCA has a good suite of sites designated for their geological or mixed interest. The geological SSSI that lie fully within the NCA are in good condition, as are the majority of the Local Geological Sites, which have been designated for their educational, scientific/research, aesthetic or historic values. Much of the area has experienced industrial activity extracting or utilising geological resources. These have included coal, lead and ironstone mining, glass making and limestone and 'gritstone' quarrying. The geomorphology of the area – especially its rivers – has been of vital industrial and historic importance, providing the energy to power the mills of the Industrial Revolution. Quarrying activity has caused some local loss of character around Wirksworth and Crich, but conversely the use of vernacular building stone for mills and for example gritstone cottages has greatly shaped the character of the area. **Continued on next page...**	National	The underlying Carboniferous geology gives the NCA its distinctive landform and has strongly influenced the area's economic and historic importance with gritstone quarried in the south and west and Coal Measures underlying the north and east; Triassic rocks underlie the very south of the NCA. The river valleys of the Derwent, Amber, and Ecclesbourne, including the Derwent Valley Mills World Heritage Site, carved out of the bedrock, have strongly influenced the NCA's economic and industrial history. Vernacular building stone has contributed unmistakeably to the World Heritage Site. Exposures of bedrock reveal processes taking place both at the time of their formation and since then. Access to natural exposures and disused quarries allows continued research into the geodiversity of the NCA.	Maintain natural geomorphological processes, particularly along the rivers Derwent and Amber. Increase understanding of how the geomorphology of the area and its World Heritage Site, and in particular the rivers, has shaped England's economic and industrial history. Maintain a suite of nationally and locally designated geological sites and work with interested groups to designate others. Continue to enhance interpretation material, using new media where appropriate, to increase the understanding and appreciation of the area's geodiversity among both visitors and residents.	**Geodiversity** **Sense of place/ inspiration** **Sense of history** **Recreation**

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Geodiversity cont.		**... continued from previous page** There has been a long tradition of lead smelting, especially around Ashover. Considerable carbon has been locked up in the limestones and coals that underlie the NCA.		Exposure of these features also makes a positive contribution toward sense of place and sense of history. Maintenance of exposures through vegetation clearance, prevention of landfill through 'rock-friendly' climbing techniques and by preventing inappropriate development can be required to maintain sites of interest in favourable condition. Gritstone buildings are more predominant in the north, with brick appearing southward towards Derby – in many ways this is a transitional zone between typical Midlands buildings and recognisably 'northern' buildings.	Protect geological features and maintain their visibility by removing vegetation and ensuring that access routes and nearby development is sympathetic.	

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