National Character Area profile:

147. Blackdowns

NATURAL ENGLAND

www.naturalengland.org.uk

Introduction

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

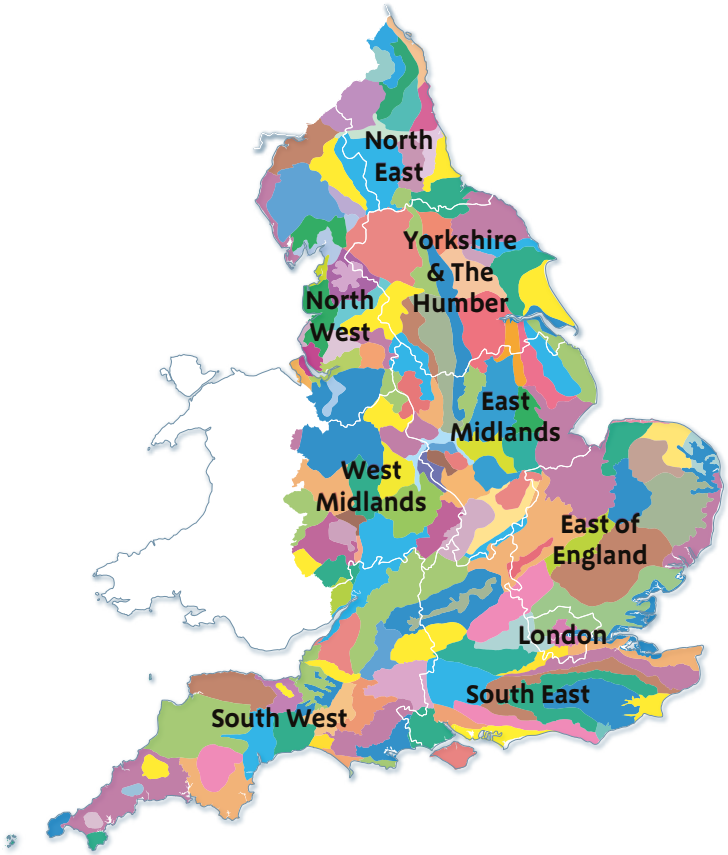
NCA profiles are guidance documents which can help communities to inform their decision-making about the places that they live in and care for. The information they contain will support the planning of conservation initiatives at a landscape scale, inform the delivery of Nature Improvement Areas and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

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

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

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

National Character Areas map



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

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

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

Summary

Long, dark ridges, deep valleys and dynamic cliffs are the essence of the Blackdowns National Character Area (NCA). The ridges create prominent backdrops from afar and offer far-reaching views. Flat plateaux, large, regular fields and long, straight roads create a sense of openness and uniformity on the ridges. Beech hedgerows and avenues enclose the grazed landscape, although areas of remnant common, lowland heath and scrub still exist, providing open access.

Woodland, much of semi-natural origin, dominates the steep valley tops, creating sinuous dark edges to the ridges; some conifer plantations also exist and intrude onto the plateaux. Below the wooded edge pastoral valleys feature with a medieval field pattern of small, irregular fields bounded by dense species-rich hedgebanks and hedgerow trees, creating an enclosed, tranquil setting. A myriad of springs and streams flow south through the valleys and can often be traced by semi-natural habitats: springline mires, rush pasture and carr woodland. Some valley floors widen and provide an opportunity for arable production, notably the Axe Valley which is characterised by a much wider flood plain. The entire River Axe within the NCA is designated for its biodiversity value, notably lamprey and bullhead fish.

Along the Jurassic Coast World Heritage Site tall red sandstone cliffs abut the starkly contrasting white chalk before passing into grey clay and limestone to the east. The geology results in frequent landslips and constantly changing coastal features: beaches, stacks and bars. Natural erosion also maintains internationally important fossil-rich exposures. The South West Coast Path National Trail follows the coastline, providing access to the wind-blown cliff-top plateaux with exhilarating views and the steeply enclosed, tranquil combes.

The NCA's ridge and valley topography has influenced settlement since prehistoric times, with bronze-age barrows and iron-age hill forts on elevated sites. The medieval pattern of settlement along springlines or clustered at river or road crossings remains evident. During the Regency era textile industries promoted the growth of inland market towns and 'fashion' established coastal resorts, coinciding with the development of the railways. Much recent development for housing and tourism has centred on these towns. Despite this growth the Blackdowns NCA retains a very rural character, with a strong sense of place, a rich biodiversity resource and opportunities to enjoy quiet recreation. These attributes are reflected in 78 per cent of the area being designated as Areas of Outstanding Natural Beauty.

Click map to enlarge; click again to reduce.

Local vernacular features within a relatively unsettled rural landscape with open skylines.

Statements of Environmental Opportunity

- **SEO 1:** Manage the coastal and estuarine landscape with its diversity of cliffs, geology, geomorphology, palaeontology, historic features, habitats and associated wildlife, contributing to livelihoods, enjoyment and education of people.

- **SEO 2:** Protect and manage the tranquil, enclosed valleys and the network of streams, springs and associated semi-natural habitats set within a farmed landscape, for the maintenance and enhancement of livelihoods, public enjoyment and ecosystem services.

- **SEO 3:** Protect and manage the open, exposed character of the ridgetop plateaux and the associated rich cultural heritage. Plan for the restoration and extension of semi-natural habitats and promote and create opportunities to enhance public understanding and enjoyment.

- **SEO 4:** Protect the relatively unsettled, rural character of this nationally important landscape, maintaining open skylines and historic settlement form. Reflect the local vernacular and geodiversity in new development and encourage provision of high-quality green infrastructure.

Description

Physical and functional links to other National Character Areas

The Blackdowns National Character Area (NCA) is characterised by a marked north–south trend of rivers, valleys and ridges, a product of its geology. The long Greensand ridges offer extensive views across adjoining NCAs and beyond. They provide prominent landscape features and the backdrop to many views across the region. The steep northern scarp slopes of the ridges create a dominant setting for the adjoining and much lower lying Vale of Taunton and Quantock Fringes NCA. At the coast the ridges are truncated, forming high, often crumbling cliffs, an abrupt transition to the sea.

Beech avenues feature along the straight ridge roads.

The ridges are the source of three main rivers (the Yarty, Culm and Otter) and numerous tributaries, including those that feed the River Axe which rises in the neighbouring Yeovil Scarplands NCA to the east. All four rivers flow south into Lyme Bay, although the topography of the northern plateau forces the River Culm westwards into the adjoining Devon Redlands NCA where it joins the River Exe before flowing south out to sea. The River Otter also flows out to sea through the Devon Redlands, parallel to the Blackdowns NCA boundary. The geology across the Blackdowns NCA is much more reminiscent of the geology to the east than the older and harder geology to the west. The significance of the area's geodiversity is recognised through the entire coast and the adjoining coastline being nominated a World Heritage Site. Natural erosion of the cliffs, particularly large landslides, supplies sediment to beaches in the east as far as Portland and possibly beyond. Access to and along the coast is exceedingly good with the South West Coast Path National Trail following its length. Sections of the coast are also of European importance, designated for their geodiversity and associated habitats and species.

Some of the roads mirror the north–south trend in the landscape, noticeably those along valley bottoms connecting villages and hamlets, and providing access to the coast. Other roads cut across the NCA connecting larger settlements both within and outside the area. Several roads have notable historic origins, for example the A35 between the Roman settlements of Exeter and Dorchester which passes through Honiton and Axminster. Part of this road is thought to follow the route of the Roman Fosse Way which connected Exeter to Lincoln. Along the coast the A3052, also of ancient origins, connects seaside resorts and harbours across the NCA and beyond. The A303/A30 trunk road cuts across the NCA, connecting London and the South-East with the South-West, and the M5 forms part of the northern boundary, at the foot of the scarp slopes. The Exeter to London Waterloo train line also traverses the NCA, again connecting Honiton and Axminster from where it follows the River Axe northwards.

Key characteristics

- Long, flat-topped Greensand ridges create distinctive landscape features offering far-reaching views. Narrow, steep-sided valleys with a strong sense of enclosure dissect the ridges and contrast with the broad, open valley of the River Axe with its flood plain.
- A dynamic coastline of tall, often crumbling cliffs and open, exposed cliff-top plateaux, incised by steep, enclosed combe valleys or open estuaries and tidal marsh. Narrow sand, shingle and pebble beaches feature along the coast.
- A landscape drained by small streams radiating out from the ridges into rivers with relatively short courses south to the sea. Springs emerge from the interface of the Greensand and clays.
- Densely-wooded, steep scarp slopes with both ancient oak woodland, carpeted in bluebells and primroses, and conifer plantations which extend onto the ridges. Across the valleys a strong hedgerow pattern with hedgerow trees and small broadleaved woodlands exists with carr woodland along some watercourses. The combination of these woodlands and their location gives the perception that the area is relatively well wooded.
- A mainly pastoral landscape with small, irregular fields of medieval origin on the slopes and in the smaller valleys. Across the wider valleys and flood plains there is a transition to larger fields and the occurrence of some arable. Regular modern and Parliamentary enclosure fields of medium and large scale feature on the Greensand ridges; medium-sized, regular fields reflecting late enclosure of waste, now often under arable production, feature on the coastal chalk plateau.
- Beech-topped hedgebanks, many now grown out, characterise the Greensand plateaux, with wider historic banks in the upper farmed valleys and more species-diverse Devon hedgerows (for example, beech, sycamore, ash, hazel, blackthorn and gorse) with flower, fern and moss-rich banks on the lower slopes.
- A mosaic of diverse semi-natural habitats: chalk grassland to unimproved acidic grassland; ancient oak woodland to carr woodland; springline mires to estuary mudflats.
- A very strong time-depth across the area, evident in bronze-age barrows in elevated positions on the ridges; iron-age hill forts on upper valley slopes; Roman roads including the Fosse Way; ruined castles and abbeys; and Second World War defences.

Continued on next page...

Key characteristics continued...

- An ancient dispersed settlement pattern with clustered hamlets and villages at road or river crossings, along springlines or at the mouth of rivers and estuaries. Farmsteads scattered throughout, nestled in dips or along springlines, with a noticeable occurrence of beech shelterbelts.
- Strong local vernacular reflecting the geology: cob and thatch, grey limestone buildings, sandstone buildings with slate roofs and red brick detailing, Beer stone churches, and the locally distinctive chert (flint-like nodules) with red brick detailing and slate roofs.
- The ridges are characterised by straight roads with verges and featuring beech avenues. These descend abruptly to sinuous lanes tightly enclosed by hedgebanks.
- An area offering opportunities to experience tranquillity, outstanding natural beauty in three designated Areas of Outstanding Natural Beauty (AONBs) and recreation, particularly along the South West Coast Path National Trail and the East Devon Way regional route.

Chert farmsteads nestle in dips with characteristic red brick detailing and rusty corrugated iron roofs on farm buildings.

Blackdowns today

Relatively open plateaux tops, steep wooded scarp slopes, enclosed small-scale pastoral valleys and crumbling cliffs with narrow beaches are the essence of the Blackdowns NCA. Collectively, the Blackdown Hills, East Devon and Dorset Areas of Outstanding Natural Beauty cover 78 per cent of the NCA. The rich geodiversity, recognised by World Heritage Site status on the coast and reflected in the various building materials, has strongly influenced the area, including man's activity, which is evident from at least the Bronze Age.

Coastal combes have an intimate, tranquil and enclosed character.

A series of Greensand ridges trend north–south across the NCA varying in width from narrow ridges to wide plateaux but sharing a characteristic flatness and abrupt falling away at the edges. Pasture with livestock grazing, notably dairy, is the dominant land use on the heavy brown soils. A field pattern of medium to large rectangular fields creates a uniform appearance reinforced by low, fairly narrow earth banks with short hedgerows and sparsely scattered hedgerow trees. Beech is a prominent species, especially in the north, where beech avenues feature. Remnant areas of common exist providing semi-natural habitat, lowland heath, and open access, for example Blackdown Common.

Long, straight roads radiate along the ridges with minor roads at right-angled junctions, winding and narrowing towards the plateau edge. A long history of settlement and land use is evidenced by bronze-age barrows (for example, Gittisham Hill) and iron-age hill forts (for example, Blackbury Camp). Settlement is dominated by isolated farmsteads on medieval sites or resulting from post-medieval enclosure of farmland and the late-18th- and 19th-century planned enclosure of plateau commons, such as Beacon Hill. There are occasional clusters of buildings, usually at crossroads. Second World War airfields including Dunkeswell (one of the finest surviving landscapes of this type) were established on some plateaux, and have been subject to some commercial and other development, including large-scale photovoltaic installations.

Immediately below the plateaux edge, steeply sloping, narrow but extensive ribbons of woodland and permanent grassland exist. Much of this woodland is ancient, semi-natural and designated as Sites of Special Scientific Interest (SSSI). This secluded area with its wooded character creates distinctive dark edges to the ridges. Undulating, sloping land falls away from the steep slopes with a transition to a pastoral landscape with grazing livestock and some mixed cultivation towards the valley bottoms. An intricate mosaic of small to medium

fields with irregular boundaries of very wide earth banks with low, species-rich hedgerows and many trees creates a well-treed and intimate character. Oak and ash are the most prominent species. Upper stream valleys are often steep and V-shaped, supporting regionally important springline mires, carr woodland and rush pasture. The River Axe, internationally important for lamprey and bullhead fish, differs from other local river valleys, a consequence of the intruding mudstone; it opens into a distinctive lowland valley with a wide flood plain and larger fields of pasture and some arable. During the autumn, winter and spring this valley has a 'watery', ephemeral and timeless quality.

There is a medieval settlement pattern in the valleys; isolated farms, hamlets and small villages are located along springlines or clustered at road and river crossings. Parish churches, depicting the underlying chert, sandstone or Beer stone geology, are central to many larger villages. Local building materials are also frequently used in dwellings, red brick detailing being a noticeable characteristic with rusty corrugated iron roofs on farm buildings. There is little widespread modern development although there has been a change in use of some farm buildings to holiday lets or residential property. Changes in agricultural practice have also seen an emergence of larger-scale agricultural buildings. Some concentrated growth has occurred around the inland market towns of Honiton, Chard and Axminster, consistent with highway improvements to the A30 and A35.

A network of narrow winding lanes connects the settlements and provides an opportunity for quiet recreation, particularly in combination with the rights of way network. The regional East Devon Way enables walkers to explore the ridges and valleys as it traverses inland across the NCA. Similarly, the South West Coast Path enables walkers to traverse the geologically diverse coastline with its unique character and breath-taking views.

The coastal zone is a landscape of high, open, gently undulating or rolling plateaux, with notable wind-blown vegetation (especially blackthorn), dissected by deep combes. The plateaux overlaying the chalk outcrop differ from the Greensand plateaux. Here, the field pattern is of medium to large regular planned fields, delineated by dense low hedgerows (often elm) with occasional hedgerow oaks.

The broad open Axe Valley contrasts with other valleys in the NCA.

There is very little woodland, except conifer shelterbelts and small deciduous woodland, and an arable dominance. The deep coastal combes, by contrast, have an intimate, tranquil and enclosed character. Some are narrow and steep, with well-wooded upper slopes and remnant orchards, while others are more gently sloping and have an open, scrubby, downland character. Pastoral cultivation occurs amidst unenclosed woodland, wet pasture and scrub along the upper edges.

The cliffs west of Seaton are generally vertical in form, with examples of vegetated landslips, most notably the Hooken Landslide. Towards Sidmouth sea stacks are a characteristic feature. East of Seaton the coast is characterised by huge landslide complexes which have created habitats of national significance, particularly soft cliff habitats. Large sections of the coast are internationally important for fossils from the Triassic and Lower Jurassic. At the foot of the cliffs are narrow sand and shingle beaches. Steep paths provide access to some beaches (for example, Western Mouth) and narrow lanes provide access to others, including for small fishing communities (for example, Branscombe). There are longer stretches of beach across some of the wider valleys. These tend to be more popular with visitors and are often backed by Regency towns such as Sidmouth and Lyme Regis. These towns have been the centre of significant urban expansion in recent years with housing 'creeping' inland. The coastal zone has also been impacted by tourism development, notably caravan sites, holiday parks and golf courses.

The Axe Estuary adds to the diversity of the coastal zone with strong sensory characteristics, the colour and texture of habitats, the smell of the mudflats, the sound of seagulls and the sight of sunlight reflecting off the sea. It hosts a mosaic of open water, ditches, salt marsh and grazing marsh, internationally important for its biodiversity value. Saline intrusion precludes settlement and limits agricultural cultivation.

The landscape through time

The geology across the Blackdowns records the Mesozoic Era, the 'Middle Ages' of life on Earth. During the Triassic (250–200 million years ago) rocks formed in desert conditions. Vast rivers flowed through baking deserts, depositing thick layers of pebbles and red sand; huge lakes spilled across the desert plains. The following period of sea level rise, the Jurassic (200–140 million years ago), flooded the deserts and provided a tropical environment in which marine life, including reptiles and ammonites, flourished and a thick sequence of clays, sandstone and limestone was deposited. A drop in sea level during the Cretaceous Period (140–65 million years ago) resulted in rocks forming in swamps, forests and lagoons. Part way through the Cretaceous, earth movements tilted rocks eastwards – a trend that is evident today – and all but the earliest Jurassic-age rocks were eroded away. Another sea level rise in the Cretaceous deposited the Gault clays, Greensand and Chalk across the eroded surface, creating an unconformity in the rock record where younger rocks lie over much older sediments, as is evident around Beer. Important fossil records were laid down during the Mesozoic, particularly during the middle Triassic and Lower Jurassic.

After the Mesozoic Era, during the Tertiary Period (65–1.8 million years ago) massive earth movements uplifted the area, creating a plateau. This plateau eroded during the Quaternary Period (1.8 million years ago to the present) following the series of ice ages and associated rises and falls in sea level, creating the hills and valleys of the current landscape and the modern coastline. Rivers cut through the Upper Greensand into the underlying red Triassic Mudstone, with Jurassic (Lias) mudstones in the east giving rise to more fertile brown earth and brown clay soils. At the junction of the Upper Greensand and the underlying low permeable mudstones springlines formed and have had an important influence on the position of settlements.

There is evidence of Palaeolithic and Mesolithic occupation from flint and chert tools, and of Neolithic activity including causewayed enclosures. Settlement and land use probably intensified in the Bronze Age; barrows remain on high ground with a noticeable concentration between Gittisham Hill and Black Down. Iron-age hill forts on coastal sites such as Berry Cliff and inland sites such as Blackbury Camp are evidence of increasing territorial conflict and perhaps population growth. The Roman period is represented in the landscape by military use of the iron-age hill fort at Hembury, the later bath-house at Whitestaunton, and several 'Romanised' farms and roads, notably part of the Fosse Way linking Exeter and Lincoln. The Romans were also the first to quarry Beer stone, now nationally recognised for church construction and carvings, for example at Westminster Abbey and Exeter Cathedral. Though iron production is thought to have started in the later Iron Age, it was an important Roman industry and continued into the Middle Ages, iron ores being found at the junction of the Upper Greensand and clay layer. The cratered landscape of open cast workings and heaps of iron slag can still be seen on plateau tops, such as at Culm Davy.

The medieval period had significant influence within the Blackdowns with earthwork castles such as Castle Neroche and Dunkeswell Abbey, founded in the 13th century, with its grange farms. The remnants of strip fields provide the distinctive small and irregular field pattern in the valleys, and the dispersed farmsteads, hamlets and villages often occur along springlines or at river crossings, clustered around parish churches. Large concentrations, by national standards, of medieval buildings still exist today. The 19th-century Parliamentary enclosure of former commons on the plateaux tops created large, regular fields with straight roads and beech hedgerows. Beacon Hill near Upottery was the last area in England to be enclosed some 100 years ago. Small boroughs such as Axminster and Colyford developed in the valleys in medieval times, but substantial urban growth occurred in the Elizabethan period when Honiton developed as a centre of the lace and cloth industries, flourishing until the 19th century. On the coast, there had also probably been small market and fishing settlements, such as Sidmouth and Lyme, since medieval times, but from the Regency period onwards they began to develop as seaside resorts. This growth was probably promoted by the development of the railway across the NCA linking Honiton and Axminster, with branch lines down to the coast, including Sidmouth; the latter are now closed.

Tall near-vertical chalk cliffs with vegetated landslips and narrow shingle beaches.

Although designed landscapes are not widespread, there are some features that make a significant contribution. The Wellington Monument (constructed from 1817 to 1892) is iconic, defining the north-west escarpment. Victorian designed landscapes and manors also make a contribution, particularly in valleys, for example Sidbury Manor with its walled garden, fish ponds and large estate. The Second World War has also had a notable influence; in the north, airfields and associated structures were built on the plateaux, for example Dunkeswell, while along the coast there are numerous defence remnants including pillboxes, bunkers and observation buildings.

Change over the last 50 years has been fairly gradual and relatively concentrated, possibly a consequence of the AONB designations. Landscape character has also probably been strengthened through Environmentally Sensitive Area agreements, available in the northern part of the NCA since 1994, and more latterly Higher Level Stewardship (HLS) agreements, for which most of the NCA has been a target area. The Neroche Landscape Partnership Scheme, covering the northern escarpment, supported the uptake of HLS and enabled the creation of 250 ha of semi-natural habitat within a 1,000-hectare public forest estate.

Increased demand for housing is impacting on the NCA, with evidence of expansion into the peri-urban fringe around Chard, Axminster, Honiton and Seaton, as well as development in the open countryside along the coast, notably inland from Sidmouth, and close to the M5 corridor, such as around Hemyock. Growth in tourism and leisure has resulted in some development: caravan sites, holiday parks, golf courses and the change of use of some farm buildings to holiday cottages. Farm buildings have also been converted to business units which, when coupled with changing agricultural practices, can lead to a demand for modern large-scale agricultural buildings. The road and rail network has not changed significantly in recent times although enhancements have featured on the trunk routes, notably the A303 in the north which is under continuing pressure for improvement, and the A35 around Axminster. Renewable energy technologies, wind and photovoltaic, are starting to have a cumulative impact and larger installations are influencing the character of the NCA in places.

Ecosystem services

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

Provisioning services (food, fibre and water supply)

- **Food provision:** Food production from this mixed farming landscape is a key service in this area. The dominance of livestock farming, notably dairy, with some arable in the valleys, reflects the soil's productivity, the favourable climatic conditions and the availability of water. Changes in climate and weather patterns may challenge the traditional outputs from the area, but new opportunities may also arise. Maintaining soil structure and condition will also be necessary to maximise adaptability. Such activity must be carried out in a sensitive manner to manage potential impacts on other assets including biodiversity and the historic environment. There has been an increase in interest in local produce, including traditional apples, apple juice and cider. Changing ownership of farms has also caused a renewal of interest in restoring or replanting orchards on traditional sites with local varieties of fruit trees.

- **Timber provision**: Fourteen per cent of the NCA is woodland (11,010 ha) of which 70 per cent is broadleaved, notably on the steep, often inaccessible slopes. While the economic value of these woodlands is low, they are significant landscape features, rich in biodiversity and important for soil and water functions. There are 1,676 ha of ancient woodland, much of it designated as SSSI. Just over 20 per cent of the woodland is coniferous, predominantly under commercial operation. Some plantations have undergone wide-scale restructuring and now achieve multiple objectives.

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

- **Regulating water quality**: Water quality is particularly important in this NCA owing to the relationship between the river catchments and the coastal designated sites. Water quality is highly variable throughout the NCA. Groundwater quality is generally good overall, but poor to the west. The chemical and ecological quality of the rivers ranges from good to moderate and poor with stretches of rivers to the west classed as poor. The Blackdowns NCA falls within two priority catchments: the River Exe (which includes the River Culm) and the rivers Axe and Otter catchment (which includes the Upper Axe and Yarty). The rivers Axe, Otter and Yarty are recorded as having high levels of phosphates and sediments, and the River Culm has problems associated with nutrient leaching, as well as soil erosion. An increase in arable cultivation and use of inorganic fertilisers and pesticides continue to affect water quality and the condition of valuable wetland habitats.

- **Regulating water flow**: While most of the area is at little or no risk from flooding because of the hilly topography, there are areas of high flood risk along the rivers Yarty, Otter and Axe. The Axe Estuary is influenced by fluvial and tidal flooding (Seaton suffers from flooding from the Axe). Flood risk is expected to increase with climate change and changes in land use. Actions within management plans for flood risk reduction include increasing flood plain storage and creating wetlands; ensuring that development does not increase run-off; reconnecting estuaries with flood plains, creating habitat and wildlife corridors and therefore enhancing biodiversity; maintaining banks; and promoting better land management practices. The upper catchments of the rivers have been recognised as the most effective location for changes in land use and land management to reduce peak flows downstream.

- **Regulating coastal flooding and erosion**: There have been attempts to manage the challenges of beach loss and coastal erosion through beach stabilisation as part of multi-million pound schemes to protect towns such as Sidmouth and Lyme Regis. The western parts of Lyme Bay consist of cliffs formed of resistant lithology that erode slowly. This western part is also sheltered from south-westerly waves, meaning that the shoreline is controlled by waves from the south and east. In the eastern part of Lyme Bay there is little cliff protection and the cliff toe erodes easily, contributing to existing instability of ancient and modern landslides which are driven largely by groundwater. The cliffs are retreating here at a relatively rapid rate. In the Shoreline Management Plan a 'with present management' scenario is being considered, involving continued presence of hard defences at Lyme Regis, and a policy of 'do nothing' for less developed areas of the coast. Seaton and Sidmouth have a high risk of coastal flooding (in Seaton, particularly, combined with fluvial flooding from the Axe Estuary) with the largest number of properties at risk. There are a range of flood defence schemes in place along this stretch of coast (within settlements mainly).

Cultural services (inspiration, education and wellbeing)

- **Sense of place/inspiration:** The significance or scale of importance of sense of place for this NCA is reflected by 78 per cent of the area being designated as AONB. It is a landscape of dramatic ridges offering a sense of exposure and opportunities for far-reaching views, incised by steep-sided, enclosed and tranquil valleys of a small scale. There is a heavily wooded appearance created by long, sinuous woodland along the scarp slopes, including ancient and semi-natural woodland, and an extensive network of hedgerows and hedgerow trees. The area's diverse geology is reflected in the local vernacular while at the

coast it is dramatically evident through the tall cliffs, landslips, and sand and shingle beaches. The vibrant red sandstone starkly contrasts with the adjoining white chalk. The significance of the coast is recognised by the entire length of the NCA being inscribed as a natural World Heritage Site. The exposed cliff-top plateaux offer exhilarating views for miles along the coast and, from high peaks, extensive views inland. Steep-sided pastoral combes dissect the plateaux and by contrast provide sheltered and tranquil areas. The Axe Estuary contributes to the area's sense of place and creates a zone of maritime influence inland. The area's landscape has inspired writers including John Fowles.

- **Sense of history**: A sense of history is associated with a wealth of archaeological remains including iron-age hill forts such as Hembury and Castle Neroche. There are bronze-age barrows predominantly between Gittisham Hill and Black Down and Second World War defences ranging from pillboxes, anti-tank cubes, rail- and road-block plinths and machine gun emplacements to military airfield landscapes at Upottery, Culmhead and Dunkeswell. The historic character of the landscape is further reinforced by a sharply defined settlement pattern. Sparse settlement on higher ground with mostly 19th-century farm buildings following straight enclosure roads contrasts with farmsteads and hamlets of medieval origin lying along the springlines at the foot of escarpments or at river crossing points. Buildings are constructed using a wide variety of traditional building materials including cob, sandstone, chalk, chert, flint, slate and thatch with older colour-washed buildings along the coastline. Threshing barns, open-fronted linhays, ancient orchards, a number of manor houses including Cricket House and Rousdon, and masonry bridges are all characteristic features of the landscape.

- **Tranquillity**: The NCA has experienced a significant decline in tranquillity since the 1960s. Undisturbed areas have decreased from 97 per cent in the 1960s to 61 per cent in 2007 (Campaign to Protect Rural England Intrusion Map, 2007). Areas of low tranquillity are around the main towns (Honiton, Sidmouth, Seaton, Lyme Regis, Axminster and Chard) and along the main roads (A303,

A dramatic coast offering opportunities to experience tranquillity and outstanding natural beauty.

A30, A35 and A3052) as well as along the railway line. Away from these more developed areas, tranquillity often features as a special quality, particularly in the coastal combes and enclosed valleys. The weather can have a significant influence on tranquillity along the coast: on calm days the cliff-top plateaux can feel tranquil while on stormy days they feel exposed.

- **Recreation**: The NCA offers an extensive network of rights of way totalling 1,100 km at a density of nearly 1.4 km per km^2 as well as open access land covering 850 ha or just over 1 per cent of the NCA. In addition, 34 km of the South West Coast Path National Trail together with the National Cycle Network, East Devon Way, Blackdown Hills Valley Heads Way, the circular Herepaths and other local routes provide a wealth of recreational opportunities. However, there is a disparity in provision across the NCA: away from the coast the network is often considered fragmented with limited off-road routes for horse riders and cyclists, although there have been some successes in developing promoted circular routes. The local road network provides other opportunities but the twisting, narrow lanes raise safety concerns for walkers, cyclists and horse riders.

- **Biodiversity**: The NCA supports a range of priority habitats including 6,030 ha of woodland, 882 ha of coastal and flood plain grazing marsh, lowland meadows (658 ha) and maritime cliff and slope (606 ha). Some 1,500 ha (2 per cent) of the NCA is designated as SSSI and there are four Special Areas of Conservation (SAC). At present, 36 per cent of the designated resource is in favourable condition and a further 46 per cent is in unfavourable but recovering condition. Improvement in the condition of designated sites, principally SSSI, is likely to have a positive impact on biodiversity overall, as well as other services. Improvement in the condition of coastal habitats will also assist in the storage of carbon. Connectivity of habitats and the current mosaic of habitats are essential to supporting and maintaining the numbers of the more mobile species found in the area (mammals, birds and many invertebrates). Less mobile species (many plants, lichens and mosses, and some invertebrates) will benefit from new and permanent opportunities to extend their current range, particularly in the face of climate change.

- **Geodiversity**: The importance of the NCA's geodiversity is recognised internationally by the inclusion of the coastline as part of the Dorset and East Devon Coast World Heritage Site (Jurassic Coast). The coast is also designated as an SAC and SSSI for interests including geodiversity. There are seven geological SSSI across the NCA and a further five designated for mixed interests. Beer Quarry and Caves is also designated as an SAC and SSSI. The alternating periods of marine incursion and uplift can be observed both in the topography of the area and the coastal and inland exposures (cliffs, quarries and road cuttings). The underlying geology, particularly the red Permo-Triassic sandstones, Greensand and flint gravels, has influenced the biodiversity, agriculture, industry, building materials, culture and traditions across the area. The geodiversity of the NCA has deep cultural resonances and allows for the study and interpretation of earth sciences up to the earliest occupation of the landscape by man.

Statements of Environmental Opportunity

SEO 1: Manage the coastal and estuarine landscape with its diversity of cliffs, geology, geomorphology, palaeontology, historic features, habitats and associated wildlife, contributing to livelihoods, enjoyment and education of people.

For example, by:

- Providing space for natural coastal processes where identified by the Shoreline Management Plan and the Estuary Strategy, compensating for loss of habitats by creating new areas of coastal habitat.
- Working with local communities and stakeholders to raise awareness of the issues surrounding coastal erosion and flooding and assist them in planning for the future.
- Protecting and managing natural habitats (including nationally important reedbeds and salt and grazing marshes) backing the coast and estuaries, expanding and re-linking (including through managed realignment) to build resilience to future sea level rise and increased storminess, enhancing biodiversity, and maintaining the unsettled and unenclosed character.
- Managing the nationally and internationally important sea cliff and undercliff habitats within the National Character Area.
- Maintaining and improving the quality of recreational assets, including the South West Coast Path National Trail, and other recreational routes by supporting opportunities to connect and link with new multi-user routes, urban greenspaces extending from built-up areas and sustainable transport schemes, particularly in areas close to where people live.
- Considering water-based recreation and access to natural assets, both biodiversity and geodiversity, reducing the need for land-based infrastructure and vehicle movements, while balancing any increase in water-based leisure with any potential disturbance.
- Ensuring that coastal access opportunities remain while adapting to a dynamic coastline through the provision of roll-back land and information and advice to users.
- Working with the local fishing community to consider how to safeguard and sustainably manage the rivers and estuary.
- Increasing awareness and knowledge of coastal heritage sites, including bronze-age barrows, hill forts and Second World War artefacts, to enhance public enjoyment, understanding and appropriate management.
- Conserving and enhancing the open and largely undeveloped character of the cliffs, avoiding the siting of new development and vertical structures on prominent skylines immediately above or along the coastline which is otherwise pristine.
- Sensitively interpreting the coastline's outstanding geological, palaeontological and geomorphic features and raising awareness of the dynamic nature of the coast.

SEO 2: Protect and manage the tranquil, enclosed valleys and the network of streams, springs and associated semi-natural habitats set within a farmed landscape, for the maintenance and enhancement of livelihoods, public enjoyment and ecosystem services.

For example, by:

- Promoting management at catchment scale, encouraging good environmental management and the extension of semi-natural habitats to improve connectivity and benefit biodiversity, aid water retention, and increase water storage capacity.
- Managing and extending species-rich meadows, mires and rushy pastures to enhance biodiversity richness and connectivity, supporting the sense of tranquillity and assisting water and soil regulation.
- Encouraging the protection and traditional management of the medieval field pattern of small, irregular fields enclosed by species-rich hedgerows and the network of winding narrow lanes.
- Working with the local farming community to consider how to safeguard food provision while enhancing a range of key ecosystem services, regulating soil erosion and soil and water quality, conserving the historic environment, and benefitting biodiversity.
- Working with farmers and local communities to ensure that the necessary skills and knowledge are maintained, shared and enhanced to secure a future for farming and land management practices.
- Supporting and encouraging initiatives that add value to local food products and foster a strong brand, securing more viable farm businesses.
- Supporting community-based schemes that provide affordable food for local communities.
- Supporting initiatives that promote awareness and understanding of soil structure and management, including the consequences of mechanised activity and soil compaction, particularly in wet weather; and increasing the amount of farmland managed under principles established through the Catchment Sensitive Farming initiative.
- Following the principles described in the Catchment Flood Management Plans for the area: increase flood plain storage and create wetlands; ensure that development (particularly at Chard) does not increase run-off; reconnect estuaries with flood plains; and create habitat and wildlife corridors.
- Seeking opportunities to maximise the availability of water by reducing the rate at which water flows through the area by the reinstatement of natural, meandering drainage patterns and channels and restoring functional flood meadows adjacent to main watercourses.
- Providing wide grass buffer strips and reedbeds adjacent to river banks to act as silt traps, and preventing livestock access to the water's edge.

Continued on next page...

SEO 2: Protect and manage the tranquil, enclosed valleys and the network of streams, springs and associated semi-natural habitats set within a farmed landscape, for the maintenance and enhancement of livelihoods, public enjoyment and ecosystem services.

... continued from previous page

- Planting areas of wet woodland and expanding and connecting existing valley woodlands to further minimise soil erosion.
- Supporting and promoting sustainable management and planting of traditional orchards, including the use of local varieties.
- Raising public awareness of the consequences of erosion caused by recreational pressure and encouraging sustainable use of the access areas.
- Managing and promoting access opportunities for quiet enjoyment of the area and encouraging sustainable transport options to reduce traffic levels.

SEO 3: Protect and manage the open, exposed character of the ridgetop plateaux and the associated rich cultural heritage. Plan for the restoration and extension of semi-natural habitats and promote and create opportunities to enhance public understanding and enjoyment.

For example, by:

- Protecting the distinctive, unspoilt and exposed skylines and open plateaux from development of an inappropriate scale and character, including vertical structures and intrusion of light affecting the dark night skies.
- Encouraging management and re-creation of the heathland commons and restoration of more prominent conifer plantations to semi-natural habitats, particularly plantations on ancient woodland sites.
- Strengthening the strong, square Parliamentary enclosure field pattern and long, straight ridge roads, including the distinctive beech hedgerows and avenues.
- Protecting and appropriately managing the rich cultural heritage of the area, including bronze- age barrows, hill forts and earthwork castles, through clearance of scrub, maintaining livestock grazing at appropriate levels and recreation management.
- Considering the historic setting and associations, notably with the Second World War airfields, when planning new development.
- Protecting the high scenic value of the NCA, the tranquillity and outstanding views by giving careful consideration to the scale and siting of new development and infrastructure.
- Supporting opportunities to enhance understanding of the historic environment resource through research and conservation, and its rich potential for new discoveries.
- Promoting and supporting initiatives that provide educational and awareness opportunities for visitors and local communities.
- Managing and promoting access opportunities and supporting initiatives that link open access areas.

SEO 4: Protect the relatively unsettled, rural character of this nationally important landscape, maintaining open skylines and historic settlement form. Reflect the local vernacular and geodiversity in new development and encourage provision of high-quality green infrastructure.

For example, by:

- Promoting the use of landscape character guidance and other landscape tools to ensure that the key characteristics are protected and reinforced through land management and development.
- Promoting and supporting the significance of historic landscape character in development management. Encourage the management and sustainable development of the dispersed historic settlement pattern of farmsteads, hamlets and larger village settlements.
- Protecting the network of enclosed, narrow winding lanes and long, straight ridge roads by resisting unsympathetic highway improvements or signage, and supporting audits of roadside signage, encouraging 'decluttering' where possible.
- Conserving and enhancing the open and largely undeveloped character of the cliffs, avoiding the siting of new development and vertical structures on prominent skylines immediately above or along the coastline which is otherwise pristine.
- Protecting locally distinctive building styles and the use of local materials, where appropriate and sustainable, and encouraging their integration into new development as well as sustainable technologies.
- Encouraging and supporting initiatives that develop and enhance the traditional skills and understanding required to maintain and manage historic features and building styles.
- Softening the edges of urban areas to incorporate development into the landscape setting and minimising the impact of lighting and noise to maintain and enhance tranquillity and dark skies.
- Supporting and encouraging the integration of high-quality green infrastructure into development, ensuring provision of accessible greenspace and sustainable access to existing areas.
- Developing and improving the network of public rights of way and promoting open access land that provides more opportunities for informal recreation, access to nature and public enjoyment while ensuring that experiential qualities are maintained.
- Protecting the distinctive, unspoilt and exposed skylines and open plateaux from development of an inappropriate scale and character, including vertical structures and intrusion of light affecting the dark night skies.
- Supporting opportunities to put cables underground where this will not cause damage to the historic environment.

Additional opportunity

1. Maintain and strengthen the wooded character of the area; manage the network of species-rich hedgerows; manage and extend semi-natural woodland, particularly on steep scarp slopes; and promote multifunctional coniferous plantations where appropriate.

For example, by:

- Encouraging and supporting the maintenance of and an increase in semi-natural broadleaved woodland through natural regeneration along river valleys.
- Encouraging initiatives that promote the use of local timber and wood products and facilitate communication/greater understanding and co-operation between wood producers (large and small), processors and users.
- Working with the local forestry industry and timber processors to ensure that the necessary skills and knowledge are maintained, shared and enhanced to enable sustainable woodland management.
- Encouraging management practices that ensure well-structured woodland with quality timber and where appropriate achieve multipurpose objectives. Balance the need for timber production and replanting against the opportunity for regeneration of semi-natural habitats.
- Supporting community schemes that promote positive woodland management and the use of wood products.
- Supporting and encouraging local initiatives that promote the sustainable management of woodlands and hedgerows for wood fuel production.
- Encouraging contact between landowners and local communities including skills sharing and knowledge transfer.
- Identifying and considering opportunities for planting of short rotation coppice and miscanthus, appropriately sited within the existing pattern of woodland, hedgebanks and semi-natural habitats.
- Expanding areas of semi-natural woodland on steep slopes and extending the network of hedgerows to reduce overland flows and enhance the wooded character of the area.
- Managing and enhancing the network of hedgerows and hedgerow trees, strengthening field patterns and the sense of tranquillity and isolation. Promote traditional management techniques, such as hedge laying, coppicing of grown-out trees and styles of construction including stone facing on banks.
- Supporting and promoting sustainable management and planting of traditional orchards, including the use of local varieties.
- Promoting traditional management techniques including coppicing of semi-natural woodlands, multifunctional management of conifer plantations and restoration of traditional orchards.

Supporting document 1: Key facts and data

Area of Blackdowns National Character Area (NCA): 38,017 ha

1. Landscape and nature conservation designations

78 per cent of the NCA is within an Area of Outstanding Natural Beauty (AONB). 36,384 ha (45 per cent of the NCA) is within Blackdown Hills AONB, 20,125 ha (25 per cent of the NCA) within the East Devon AONB and 6,297 ha (8 per cent of the NCA) is within the Dorset AONB. 4 per cent of the NCA is designated as Heritage Coast. 2,623 ha (3 per cent of the NCA) is within the East Devon Heritage Coast and 478 ha (1 per cent of the NCA) is within the West Dorset Heritage Coast. 1 per cent of the NCA is a nominated natural World Heritage Site; the Jurassic Coast is the first such designation on mainland Britain and stretches the entire coastline of the NCA.

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

- www.blackdown-hills.net/
- www.eastdevonaonb.org.uk/
- www.dorsetaonb.org.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)	n/a	0	0
	Special Area of Conservation (SAC)	Beer Quarry and Caves SAC, Quants SAC, River Axe SAC, Sidmouth to West Bay SAC	649	1
National	National Nature Reserve (NNR)	Axmouth to Lyme Regis Undercliffs NNR, Barrington Hill NNR	276	<1
	Site of Special Scientific Interest (SSSI)	A total of 35 sites wholly or partly within the NCA	1,533	2

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.

Beer Quarry and Caves, Quants and Sidmouth to West Bay SAC are all within the SSSI designated area, as is Barrington Hill NNR. Most of Axmouth to Lyme Regis Undercliffs NNR and River Axe SAC are within the SSSI designated area.

There are 615 local sites in the Blackdowns NCA covering 5,613 ha which is 7 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	156	10
Favourable	547	36
Unfavourable no change	129	8
Unfavourable recovering	701	46

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

Elevation ranges from sea level at the coast to a maximum of 313 m above the Vale of Taunton on the Blackdown Plateau, which lies to the north. The average elevation of the landscape is 149 m above sea level.

Source: Natural England (2010)

2.2 Landform and process

The area is characterised by a marked north-south trend of rivers, valley and ridges; the result is a clearly differentiated landscape of high and low land, often in close proximity. The ridge lines, which run from the Blackdowns escarpment, vary between quite substantial widths, almost plateaus, and much narrower ridges. In all cases the characteristic feature is flatness on the tops, with valley sides falling abruptly away on either side.

The north-south grain of the land is less obvious further south within the NCA, with streams creating a more incised landscape. However, the ridge and valley trend does continue to the coast giving rise to dramatic cliffs.

The distinctive coastal landscape consists mainly of erosional cliffs, interrupted by a small number of estuaries with associated salt marsh and pebble ridges. The cliffs comprise red Triassic mudstones, sandstones and pebble beds which dip eastwards and east of Sidmouth are overlain by flat-lying upper Greensand and Chalk capped with clay flints. There are sheer chalk cliffs at Beer.

The chalk plateau area in the south-east of the NCA displays rolling features typical of chalk scenery, but unique to Devon. At the coast the plateau falls abruptly to the sea; in places this results in characteristic white chalk cliffs, the most westerly in England. However, the geology has also resulted in dramatic landslips at the coast, sometimes on a very large scale.

The valleys are cut through the flat-lying Upper Greensand into the underlying red Triassic Mercia Mudstone, with Jurassic (Lias) mudstones into the east giving rise to more fertile brown earth and brown clay soils. The soils on the higher ground, derived from clay-with-flints and upper Greensand, are generally stagnogleys and brown earths.

Source: http://www.devon.gov.uk/text/index/environmentplanning/natural_environment/landscape/landscapecharacter/originaldevonlca.htm

2.3 Bedrock geology

The underlying geology is varied. The plateaux and ridges are mainly Cretaceous Upper Greensand with some Gault outcropping towards the south-east, and with Chalk at Beer and Whitestaunton-Chard. Chert from the Greensand has been quite frequently used in the older buildings. The valleys are cut through the flat-lying Upper Greensand into the underlying red Triassic Mercia Mudstone, with Jurassic (Lias) mudstones in the east.

Source: Blackdowns Countryside Character Area Description, Blackdowns Natural Area Profile, British Geological Survey Maps

2.4 Superficial deposits

Clay sands and gravel cover a significant amount of the area. Clay-with-flints cover a fair amount of the bedrock.

Source: Blackdowns Countryside Character Area Description, Blackdowns Natural Area Profile, British Geological Survey Maps

2.5 Designated geological sites

Tier	Designation	Number
National	Geological Site of Special Scientific Interest (SSSI)	7
National	Mixed Interest SSSI	5
Local	Local Geological Sites	20

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

Soils on the high ground, derived from the clay-with-flints and Upper Greensand, are generally poor and acidic. The valleys are cut through the flat lying Upper Greensand into the under lying red Triassic Mercia Mudstone, with Jurassic mudstones, giving rise to more fertile brown earth and brown clay soils. The land use within this NCA is mixed, the infertile long greensand ridges are often covered by heathland or forestry. The plateau landscape includes common land and parliamentary enclosures and the steep valleys between ridges enclose a varied pastoral landscape. The flat chalk plateau is more arable than the surrounding area.

Source: http://www.devon.gov.uk/text/index/environmentplanning/natural_environment/landscape/landscapecharacter/originaldevonlca.htm

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	73	<1
Grade 2	2,551	3
Grade 3	57,025	71
Grade 4	18,976	23
Grade 5	168	<1
Non-agricultural	584	1
Urban	1,392	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 Axe 26 km
- RIver Otter 24 km
- River Yarty 23 km
- River Culm 14 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.

A complex pattern of rivers emerge along the spring lines near the northern escarpment and flow southwards over a variety of rock types.

3.2 Water quality

The total area of Nitrate Vulnerable Zone is 12,408 ha, 15 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 11,010 ha of woodland (14 per cent of the total area), of which 1,676 ha is ancient woodland.

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

4.2 Distribution and size of woodland and trees in the landscape

A well wooded appearance dominates the area, created by wooded scarp slopes, shelterbelts and avenues, and coniferous and deciduous plantations of beech, oak and pine, willow-dominated carr woodland on valley spring lines, and hedgerow trees and copses.

Source: Blackdowns Natural Area Profile, Blackdowns Countryside Character Area Description

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	7,647	9
Coniferous	2425	3
Mixed	481	1
Other	457	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	959	2
Planted Ancient Woodland (PAWS)	717	1

Source: Natural England (2004)

5. Boundary features and patterns

5.1 Boundary features

On the northern plateau the hedgerows are mostly straight beech topped hedgebanks regular in pattern, dating from late (19th century) enclosure of common land. In the valleys and on the slopes over the Vale of Taunton, the hedgerows follow a very strong irregular pattern and are predominately ancient, some no doubt dating back to the time when fields were first cut out of the natural woodland cover. The relative abundance of mature hedgerow trees is also an important characteristic giving a well-wooded appearance.

Source: Blackdowns Countryside Character Area Description; Countryside Quality Counts (2003)

5.2 Field patterns

On the high ground the land is predominately pasture within a regular pattern of parliamentary enclosure with regular field patterns. Lower down the valley land is in ancient irregular field patterns, both arable and pasture use. There are areas of wet grassland and scrub on the steep valley sides. Mixed farming takes place in the wider southern valleys. Within the valleys, floodplains are enclosed within large fields. They are mainly used as pasture but some are arable.

Source: Blackdowns 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

The landscape's livestock farming character is supported by figures on farm type. In 2009, there were 494 grazing livestock farms (35 per cent), compared to 62 cereal farms (4 per cent) and 33 horticultural holdings (2 per cent). Farms classified as 'other' (likely to be small holdings) totalled 405, which accounted for 29 per cent of total agriculture holdings. There was a notable drop in dairy farms from 407 in 2000 to 280 in 2009, a reduction of 32 per cent.

Source: Agricultural Census, Defra (2010)

6.2 Farm size

Holdings of more than 100 ha accounted for 194 of all holdings (last in terms of frequency) but covered 49 per cent of the total farmed area in 2009. Small holdings of less than 5 ha accounted for 222 units, but covered less than 1 per cent of the total farmed area.

Source: Agricultural Census, Defra (2010)

6.3 Farm ownership

1,984 of farms are owner-occupied, covering 74 per cent of the total area of farmland.
2009: Total farm area = 67,626 ha; owned land = 50,159 ha
2000: Total farm area = 60,017 ha; owned land = 48,773 ha

Source: Agricultural Census, Defra (2010)

6.4 Land use

The landscape is predominately characterised by grazing livestock farms. There was a drop in grazing livestock farms overall from 519 in 2000 to 494 in 2009. Grazing livestock farms represented 34 per cent of the total farm holdings. The amount of land used as arable has remained static with little change between 2000 and 2009. It is worth mentioning the decline in oil seed growth, from 451 ha produced in 2000 to 262 ha in 2009, this decline is probably due to the government incentives available in 2000 that are now no longer offered.

Source: Agricultural Census, Defra (2010)

6.5 Livestock numbers

There were 98,300 cattle in the NCA in 2009, which has stayed constant since 2000 when the number of cattle was only slightly less at 98,000. Sheep numbers have dipped considerably from 111,200 in 2000 to 89,100 in 2009. This may change in the future as the market responds to lamb prices. The number of pigs farmed in the area had declined from 33,300 in 2000 to 21,700 in 2009.

Source: Agricultural Census, Defra (2010)

6.6 Farm labour

The number of full-time and salaried workers had dropped over 50 per cent from 451 to 251 between 2000 and 2009. The number of part-time farm workers had risen by 27 per cent from 233 to 316, supporting the national trend of agricultural workers boosting their income with non-agricultural work.

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

On the scarps and steep slopes, pine and oak woodland, gorse scrub heathland and rough grassland predominate. There are patches of heather and gorse heathland and heathy scrub emerges where land is neglected. Lower down the valley land is in both arable and pasture use. There are areas of wet grassland and wet heath on the valley sides where springs and flushes emerge. Here, willow dominated carr woodlands are found and these habitat mosaics are of particular nature-conservation interest. Where the rivers meet the coast there are salt marshes and shingle bars, but the principle coastal land cover is agricultural land, cliffs, settlements, clifftop grassland and scrub. Elsewhere along the coast, the Upper Greensand ridges extend right down to the cliffs.

Source: Blackdowns 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

Extensive woodland and permenant pasture create 'secluded' valleys.

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)	6,030	7
Coastal and flood plain grazing marsh	882	1
Lowland meadows	658	1
Maritime cliff and slope	606	1
Lowland calcareous grassland	282	<1
Lowland dry acid grassland	186	<1
Purple moor grass and rush pasture	212	<1
Lowland heathland	15	<1
Mudflats	3	<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

The settlement pattern is quite sharply defined. On the high ground there are few buildings. They are mainly the farmhouses built when the land was enclosed, and are linked by straight enclosure roads. In the valleys, farmsteads and hamlets tend to lie along the spring lines, with villages more centrally places, often close to the rivers. Apart from Honiton and Chard, the larger villages and ancient boroughs are small, retaining much of their 20th century character. The larger settlements are mainly the holiday villages and towns along the coast. Axminster was substantially rebuilt in 18th and 19th centuries, its wealth mainly deriving from its carpet factories. Honiton, its wealth deriving from cloth industry and lace-making prior to 19th century, was also rebuilt after two fires in the mid-18th century. There are few major roads and often very little 20th century influence on settlements. Settlement has historically been dispersed with some nucleation arising from industry. Today, hamlets and small villages provide the main bulk of the settlements, with agriculture the main source of income.

Source: Blackdowns Countryside Character Area Description; Countryside Quality Counts (2003)

8.2 Main settlements

The main settlements in the area are Sidmouth, Chard, Seaton, Honiton, Lyme Regis and Axminster The total estimated population for this NCA (derived from ONS 2001 census data) is 92,776.

Source: Blackdowns Countryside Character Area Description; Countryside Quality Counts (2003), Natural England (2012)

8.3 Local vernacular and building materials

The geological diversity of the area is reflected in the range of building types. Cob is widespread, particularly in the east. Triassic sandstone is locally used and Beer stone from the chalk is used for carving, examples include Exeter Cathedral. Use of Chert is widespread mainly as squared coursed stone, commonly with brick banding and edging and is the most characteristic material of the area. Brick tiles and slate became widespread in the 19th century, although many thatched buildings are still present.

Source: Blackdowns Countryside Character Area Description; Countryside Quality Counts (2003)

9. Key historic sites and features

9.1 Origin of historic features

There is evidence of Palaeolithic and Mesolithic occupation in coastal areas. There are extensive prehistoric remains of many periods, for example, hillforts such as Membury, Musbury and Lambert's castles. There are also barrows and cemeteries such as on Broad Down, with a mix of earthworks and buried (ploughed) examples. Bronze-age barrows are found predominately between Gittisham Hill and Black Down, with iron-age hillforts both on the coast and inland, including Castle Neroche. There are Roman and medieval settlement remains. The agricultural character hides earlier industrial activity linked with iron working and stone extraction which has left a legacy on the landscape and architecture of the area.

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

9.2 Designated historic assets

This NCA has the following historic designations:

- 7 Registered Parks and Gardens covering 495 ha.
- 0 Registered Battlefields.
- 101 Scheduled Monuments.
- 2,692 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 (2,525 ha) is classified as being publically accessible.
- There are 1,098 km of public rights of way at a density of 1.4 km per km^2.
- There is 1 National Trail (South West Coastal Path) covering 34 km within the NCA.

Source: Natural England (2010)

Access is predominantly along the coast and along the ridges where there is remnant heathland, common land and forestry. The coastal stretch of this NCA has unrestricted public access and supports the South West Coast Path National Trail.

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)	134	<1
Common Land	570	1
Country Parks	32	<1
CROW Access Land (Section 4 and 16)	1,246	2
CROW Section 15	157	<1
Village Greens	5	<1
Doorstep Greens	0	0
Forestry Commission Walkers Welcome Grants	374	<1
Local Nature Reserves (LNRs)	140	<1
Millennium Greens	1	<1
Accessible National Nature Reserves (NNRs)	276	<1
Agri-environment Scheme Access	39	<1
Woods for People	1,298	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 NCA suffers considerable disturbance along major transport corridors especially the A30/303 trunk road from the south-east and to a lesser extent along the A3052 coastal road and the larger towns. Away from these, there are several areas that are more tranquil, such as to the north-west of Honiton.

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

Category of tranquillity	Score
Highest value within NCA	44
Lowest value within NCA	-60
Mean value within NCA	1

Source: CPRE (2006)

- More information is available at the following address: **http://www.cpre.org.uk/campaigns/landscape/tranquillity/our-tranquillity-map-explained**

The Axe Estuary, a mosaic of open water, ditches, saltmarsh and grazing marsh, internationally important for its biodiversity value.

11.2 Intrusion

The 2007 Intrusion Map (CPRE) shows the extent to which rural landscapes are 'intruded on' from urban development, noise (primarily traffic noise), and other sources of visual and auditory intrusion. This shows that the NCA experiences intrusion in the areas bordering the M5 and the A30/A303, but in between it is still relatively 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	3	21	36	33
Undisturbed	96	78	61	35
Urban	0	0	2	2

Sources: CPRE (2007)

Notable trends from the 1960s to 2007 are the large increase (by a third) in areas experiencing disturbance and the urbanisation of the NCA (albeit on a small scale), noted for the first time in 2007.

- More information is available at the following address: http://www.cpre.org.uk/campaigns/planning/intrusion/our-intrusion-map-explained

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

- Results from Countryside Quality Counts data indicate that there was a marginal increase in the amount of woodland under management agreements between 1999 and 2003. In 1999 about seven per cent of the established eligible National Inventory of Woodlands and Trees stock was covered by a Woodland Grant Scheme management agreement. This increased to eight per cent in 2003. There are 1,676 ha of woodland on ancient woodland sites. The proportion of these sites covered by a Woodland Grant Scheme has changed since 1999 from nine per cent to 13 per cent in 2003. The majority of woodland Sites of Scientific Interest (SSSI) are in favourable condition. In 2003, within the ESA, the extent of agreements for woodland maintenance was 471 ha. A significant proportion of the woodlands are within the Forestry Commission public forest estate, but there is limited evidence of restructuring/restocking.

- Large areas of coniferous plantation have been removed in the northern part of the NCA as part of the Neroche Landscape Partnership Scheme (2006–2011). In other areas, post-Second World War coniferous plantations are reaching maturity and areas are being felled and forests restructured, changing their visual appearance, character and setting in the landscape.

- The Blackdowns and East Devon Woodland Association has done much to encourage the cooperative management of smaller woodlands and use of local timber. There is considerable scope for continuing this work. Community woodland schemes, such as Neroche Woodlanders, Axe Woods and Culm Woods, are encouraging new ways of managing woodlands.

- Woodland is increasing in value and there is growing interest in wood as a sustainable energy source.

- Disease in woodland, such as *Phytophthora* in larch and ash die back, has resulted in the clear-felling of some areas with a resultant change in character.

Boundary features

- In 2003, within the ESA, the extent of annual agreements for traditional hedge management supplement was 111 km, hedge and hedgebank restoration supplement was 6 km, and protective fencing (sheep fencing) was 15 km. Between 1999–2003, Countryside Stewardship agreements for linear features included fencing (76 km), hedge management (67 km), hedge planting and restoration (60 km), and restored boundary protection (66 km). The estimated boundary length for the NCA is about 5,908 km; the total length of boundaries under agreement, between 1999 and 2003, was equivalent to about ten per cent of this total.

- A decline in traditional skills including hedge-laying has impacted on landscape character, particularly noticeable with a change away from traditional succession ownership.

Agriculture

- Evidence from Countryside Quality Counts suggests that, for the period from 1999–2003, although the rate of grassland loss seemed to have slowed, there was continued loss of rough and permanent grass offset only partly by an expansion of temporary grass. There was a decline in the number of holdings classified as dairy, and a shift to lowland cattle and sheep. In 2003, within the ESA, the extent of agreements for all land was 5,847 ha; low-input permanent grassland was 3,929 ha, improved permanent grassland was 3,195 ha, and all unimproved pasture was 512 ha. The most extensive Countryside Stewardship agreements in 2003 were for lowland pastures on neutral/acid soils (1,065 ha) and base payment to sustain existing heath (226 ha).

- The landscape is still predominately characterised by grazing livestock farms. There was a drop in the overall number of grazing livestock farms from 519 in 2000 to 494 in 2009, but this still represented 34 per cent of all farm holdings. The amount of land used as arable has remained static. There was a significant decline in oil seed growth from 451 ha produced in 2000 to 262 ha in 2009, a visually noticeable difference in the summer months.

- The number of full time and salaried workers dropped over 50 per cent from 451 in 2000 to 251 in 2009. The number of part time farm workers rose by 27 per cent from 233 in 2000 to 316 in 2009, in line with the national trend of agricultural workers boosting their income with non-agricultural work. It was also consistent with the relatively high number of small holdings.

- Changes in land ownership, away from successional ownership, and the consequent loss of traditional land management skills coupled with the introduction of new management practices such as use of synthetic fleece is beginning to have an impact on landscape character.

Settlement and development

- As some agricultural practices continue to intensify, the demand for modern large-scale agricultural buildings is rising. The introduction of new regulations regarding the management of agricultural nitrates has imposed the requirement for large-scale slurry storage facilities, often in isolated and elevated locations with associated landscape and visual impacts. The need to manage surface water has resulted in the enclosure of open yards, often infilling the gaps between existing structures resulting in the visual massing of buildings.

- Noise and activity arising from developments, together with light pollution, are having an adverse impact on the area's tranquillity and dark skies.

- Numerous significant wind and solar energy development applications have been made within the NCA, which, along with similar developments within the setting of the NCA, may impact on landscape character.

- Increased demand for new housing is impacting on the NCA. There is evidence of expansion into the peri-urban fringe around Chard, Axminster, Honiton and Seaton, as well as development in the open countryside, especially along the coast and most notably inland from Sidmouth.

- Over the last decade there has been notable tourism- and leisure-related development including caravan sites, holiday parks and golf courses, especially along the coast, impacting on the character of the NCA, its tranquillity and its built form.

Semi-natural habitat

- Ten per cent of the NCA SSSI resource is classed as unfavourable declining. The River Axe is notable within this category, with issues caused by invasive species including Himalayan balsam, and heavy grazing of the riparian zone.
- Widespread flooding and storm events have more frequently impacted on the coastal and flood plain grazing marsh priority habitat in recent years.
- There is evidence (from the Umborne grassland project) to suggest an under-recording of biodiverse semi-natural habitat, in particular grassland. Sites are generally small in scale and particularly marginal, often on small farm holdings.

Historic features

- Evidence from Countryside Quality Counts suggests that in 1918 about two per cent of the NCA was historic parkland, but by 1995 it is estimated that 49 per cent of this area had been lost. Between 1999 and 2003 approximately 45 per cent of the remaining parkland was covered by a historic parkland grant, and 42 per cent was included in an agri-environment scheme. It should also be noted that about 67 per cent of historic farm buildings remain unconverted and most are intact structurally.
- Remnant traditional orchards are scattered across the NCA, providing significant cultural associations in some neighbourhoods, for example in the coastal combes. Interest in local products, including cider, is beginning to drive the restoration of these landscape features.
- Development pressures are threatening some historic features and cultural landscapes, for example redevelopment at some Second World War airfields.

Chert and thatch create a locally distinctive vernacular.

Coast and rivers

- Storm surges coupled with high tides have led to a higher incidence of flooding and landslips along the coast, sometimes impacting on property and changing the character and morphology of the seascape.
- The occurrence of river flooding has been more frequent in recent years, impacting on communities, particularly at road crossing points.
- There have been water quality improvements across the area as a result of European directives, private investment programmes and Environment Agency-supported initiatives which aim to improve the standard of bathing waters.

Minerals

- Both Beer and Uplyme quarries have current planning permissions but are not currently being worked.
- Isolated cases of small-scale quarrying is enabling heritage building restoration schemes to be progressed at former quarry sites such as Dunscombe Manor Quarry for restorative work at Exeter Cathedral.

Drivers of change

Climate change

- The main issues likely to result from climate change, away from the coast, include increased soil erosion, run off and flooding due to heavy rainfall events, impacting on the road network (particularly at river crossing points) and the associated communities.
- Coastal properties and infrastructure may be particularly vulnerable to flooding and damage with a predicted increase in the occurrence of severe storms coupled with high tides. These events may also result in landslips along the coast and accentuated cliff erosion.
- With future predicted rises in sea level, coastal areas will be more vulnerable to flooding, as will settlements around the estuaries, as protective spits and bars potentially become inundated. Such inundation will have a significant effect on the biodiversity of the internationally important estuaries and their wildlife, including the wading birds on Seaton marshes.
- Increasing occurrences of droughts may lead to increases in water demand for crop growth, business and domestic use, and drying out and erosion of soils.
- As is common across the south coast, the area may be more susceptible to colonisation by migratory species currently not native to England, and particularly flying invertebrates. Northward migration in response to a changing climate may be first recorded throughout this and other coastal areas.
- Warmer winters could promote increased tree growth, as well as the suitability of new non-native species such as Corsican pine and holm oak, further affecting woodland composition, with, in particular, the potential loss of characteristic beech.
- Changing climate may also result in an increase in the prevalence of pests and diseases which may affect species and semi-natural habitats, change woodland tree species composition, change crops and cropping practices, and see a spread of non-native and alien species.

Other key drivers

- The introduction of vertical elements in the landscape such as wind farms may become a significant challenge as the pressure to increase the provision of renewable energy continues. The setting of the NCA may particularly be challenged with developments in the adjoining NCAs and out to sea.

Some cultivated land lies in the valley bottoms below a steeply sloping, enclosed, pastoral landscape.

- The emergence of large-scale photovoltaic 'farms' and the cumulative impact of smaller units present both challenges and opportunities within this relatively small-scale landscape with a strong sense of place.
- Rising food demands may result in the intensification of agriculture on the more fertile valley pastures, leading to an increased risk of diffuse pollution in watercourses and loss of semi-natural habitats.
- Reform of the Common Agricultural Policy and the impact this will have on land management will be a significant factor influencing the character of the NCA.
- Increased demand for housing is impacting on the NCA, with evidence of expansion into the peri-urban fringe around Chard, Axminster, Honiton and Seaton, as well as development in the open countryside, especially along the coast (notably inland from Sidmouth), and close to the M5 corridor (such as around Hemyock).
- Recreational pressure is likely to increase with further demand from expanding urban centres both within and adjoining the NCA, such as Cranbrook; a potential increase in UK-based tourism; and an increase in more active recreation such as mountain biking and 'challenge' events such as The Grizzly.
- Economic regeneration and development of communication/broadband is likely to result in increases in small-scale enterprise development, alternative use of rural buildings and a demand for communication masts.
- Demand for improved transport connections into the south-west, notably the A303, could result in enhancements to the trunk roads or possibly dualling.

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.

Sid Valley.

Statement of Environmental Opportunity	Food provision	Timber provision	Water availability	Genetic diversity	Biomass provision	Climate regulation	Regulating water quality	Regulating water flow	Regulating soil quality	Regulating soil erosion	Pollination	Pest regulation	Regulating coastal erosion	Sense of place/inspiration	Sense of history	Tranquility	Recreation	Biodiversity	Geodiversity
	Ecosystem Service																		
SEO 1: Manage the coastal and estuarine landscape with its diversity of cliffs, geology, geomorphology, palaeontology, historic features, habitats and associated wildlife, contributing to livelihoods, enjoyment and education of people.	o **	o ***	**	↔ **	↔ ***	↗ **	↗ **	↗ **	↔ **	↗ **	↔ ***	↔ ***	↗ ***	↗ ***	↗ ***	↗ ***	↗ ***	↗ ***	↗ ***
SEO 2: Protect and manage the tranquil, enclosed valleys and the network of streams, springs and associated semi-natural habitats set within a farmed landscape, for the maintenance and enhancement of livelihoods, public enjoyment and ecosystem services.	↗ ***	↗ ***	↗ ***	↗ *	↗ **	↗ **	↗ ***	↗ ***	↗ ***	↗ ***	↔ **	↔ **	o ***	↗ ***	o ***	↗ ***	↗ ***	↗ ***	o **

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

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: Protect and manage the open, exposed character of the ridgetop plateaux and the associated rich cultural heritage. Plan for the restoration and extension of semi-natural habitats and promote and create opportunities to enhance public understanding and enjoyment.	↗ **	↗ ***	↔ **	↔ **	↗ ***	↗ ***	↔ **	↔ **	↗ **	↗ **	↔ *	↗	o ***	↗ ***	↗ ***	↗ ***	↗ ***	↗ ***	↔ ***
SEO 4: Protect the relatively unsettled, rural character of this nationally important landscape, maintaining open skylines and historic settlement form. Reflect the local vernacular and geodiversity in new development and encourage provision of high-quality green infrastructure.	o ***	o ***	o ***	o ***	o ***	↔ **	↗ **	↗ **	o ***	o ***	o ***	o ***	↗ **	↗ **	↗ **	↗ **	↗ **	↗ **	↗ **

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

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

Landscape attributes

Landscape attribute	Justification for selection
An area of high scenic value with open, exposed plateaux tops, often fringed by dark woodland on the adjoining steep scarp slopes, creating distinctive, unspoilt and extensive skylines, and far-reaching and dramatic views.	■ Steep scarp slopes which are densely wooded – ancient oak with bluebells and primroses – and some conifer plantations which extend onto the ridges, collectively creating perceptions of tranquillity. ■ Several areas designated as SSSI including ancient woodland sites such as Quants (also a SAC), Prior's Park and Adcombe Wood (providing important habitats for bats), and heathland commons such as Blackdown and Sampford Commons. ■ Outstanding views across East Devon; northern vantage points rising to 313 m offer extensive views across Somerset including the Vale of Taunton and beyond to the Quantock Hills and Exmoor National Park. ■ Sense of isolation and remoteness, enhanced by exposure of the plateaux. ■ Remnant areas of gorse, heathland and bracken on the plateaux, some registered common land (one per cent of the NCA). ■ Straight roads with verges running along the length of the ridges. ■ High scenic quality reflected by designation as the Blackdown Hills, Dorset and the East Devon Areas of Outstanding Natural Beauty. ■ Distinctive, north-facing scarp marked by the Wellington Monument, lending a strong sense of place and widespread visual influence across the Vale of Taunton. ■ Regular modern and Parliamentary enclosure fields of large and medium scale on the plateaux, reflecting late enclosure of common land such as Stockland Hill.
Strong hedgerow pattern with hedgerow trees, notably beech in the north, coupled with beech avenues, small broadleaved woods, occasional farm orchards and carr woodland, create an enclosed wooded appearance.	■ Low, narrow earthbanks with hedgerows on the plateaux, with wider historic banks in the upper farmed valleys, and more species-diverse Devon hedgerows (including beech, sycamore, ash, hazel and gorse) with flower, fern and moss-rich banks on lower slopes. ■ Carr and wet woodland found along springlines and valley bottoms are designated as local wildlife sites. ■ Extensive belts of oak-ash woodland and some areas of conifer plantation lend visual enclosure. ■ Woodlands separated by small fields enclosed by species-rich hedgerows and mature hedgerow trees create a well-wooded appearance. ■ Magnificent beech avenues on the plateaux tops, particularly towards the north. ■ Traditional orchards associated with springline villages and farmsteads, and the coastal combes. ■ The NCA contains 11,010 ha of woodland (14 per cent of the total area), of which 1,676 ha (15 per cent) is ancient woodland: 959 ha is ancient semi-natural woodland and 717 ha is Plantations on Ancient Woodland Sites (PAWS). ■ Many woods are designated as SSSI or local wildlife sites.

Landscape attribute	Justification for selection
An enclosed, predominantly pastoral valley landscape with narrow, winding, sinuous lanes bordered with species-rich hedgebanks, connecting historic villages, hamlets and springline settlements.	■ Picturesque villages with traditional buildings linked by narrow, winding lanes crossing historic stone bridges. ■ Early 20th-century artist Robert Bevan and the Camden Town Group of artists associated with Clayhidon. ■ Smaller, curving fields of medieval origin on valley slopes. ■ Historic settlements sited at old river-crossing points just above the flood plain including Axminster, Seaton and Colyton and the villages of Hemyock, Whitford, Maidenhayne, Musbury, Kingsdon and Colyford. ■ Villages clustered at road crossings, for example Hawkschurch and Uplyme and the more recent development of Raymond's Hill. ■ A dispersed pattern of farmsteads scattered across the valley sides, often nestling next to springlines. ■ A high degree of tranquillity and remoteness in the tributary valleys. ■ Ninety-four per cent of the NCA is classified as either Grade 4 or 5 agricultural land with a dominance of grazing livestock.
A landscape supporting a mosaic of diverse semi-natural habitats: chalk grassland to unimproved acidic grassland, ancient oak woodland to carr woodland, springline mires to estuary mudflats.	■ Remnant areas of gorse, heathland and bracken on the plateau; ancient semi-natural and broadleaved woodlands on the scarp slopes; semi-improved and unimproved acidic and neutral grassland and springline mires (including carr woodland) occurring mainly on the scarp slope and in the upper farmed valleys; and rare chalk grassland and coastal and estuarine habitats, all resulting in a plethora of designations. ■ Four Special Areas of Conservation covering one per cent of the NCA, ranging from dry grassland and woodland, through riverine to estuarine habitats. ■ A total of 35 SSSI wholly or partly within the NCA, covering two per cent of area. ■ The diversity and richness of the NCA's biodiversity is reflected in the number of local wildlife sites: 615 sites are identified, covering 7 per cent of the NCA.
A landscape drained by streams and rivers radiating out from the plateaux into deeply incised valleys and giving rise to springline mires, carr woodland and rushy grassland.	■ The sense of isolation, tranquillity and remoteness is enhanced by the natural qualities of the rivers and woodlands. ■ Springs emerge from the interface of Greensand and clays resulting in numerous streams and associated areas of mires, willow carr and rushy grassland. Many such areas are designated as local wildlife sites or SSSIs, for example Southey and Gotleigh Moors SSSI. ■ All rivers have fairly short courses and flow to the south coast.

Landscape attribute	Justification for selection
A dramatic and dynamic coastline of distinctive tall red sandstone cliffs contrasting with the adjacent white chalk cliffs. Large-scale landslips continue to create undercliffs of international importance.	■ High scenic quality reflected by designation of entire coastline as part of the East Devon AONB. ■ One per cent of the NCA is a nominated natural World Heritage Site; the Jurassic Coast is the first such designation on mainland Britain and stretches the entire coastline of the NCA. ■ The chalk and limestone cliffs are unique in a Devon context and represent the most westerly chalk cliffs in England. ■ Shingle beach between Beer Head and Sidmouth is one of three UK sites for the rare scaley cricket. ■ The coastline from Sidmouth westwards is also designated as a Special Area of Conservation (Sidmouth to West Bay SAC) for features including the sea cliffs and shingle. ■ Eleven km of coastal National Nature Reserve. The Axmouth to Lyme Regis Undercliffs NNR is one of the largest and most important active coastal landslip systems in Western Europe.
A coastal landscape with deeply incised, wooded combes nestling between high, exposed and windblown plateaux.	■ High value for recreation, including part of the South West Coastal Path long distance route. ■ Many cultural associations with writers and artists who have been inspired by the dramatic coastal scenery including Lionel Aggett, John Fowles and Carolyn Vernon. ■ Exceptional views out to sea and along the coast. ■ Area of high tranquillity away from larger settlements and A3052 coastal road, particularly in the sheltered combes.
A flat, biodiversity-rich, estuarine landscape; a mosaic of open water, reedbeds, salt marsh and grazing marshes, unsettled and unenclosed.	■ Meandering course of the River Axe and network of drainage ditches are features of the flood plain and maritime tidal marsh at the estuary and coast. ■ Estuary habitats valued for their saltmarshes, mudflats and waders. ■ River Axe is SSSI and SAC. Notable species include the lamprey, bullhead fish, otter and salmon.

Landscape attribute	Justification for selection
A landscape with a strong time connection and association with its geology and geomorphology. From bronze-age barrows and hill forts utilising the elevated ridges to fishing harbours hugging the coast, the diverse and rich local vernacular reflects the internationally significant geodiversity.	■ Seven Registered Parks and Gardens covering 495 ha including Woodend Park which contains notable veteran trees of national importance for their wood decay invertebrates and lichens, and Combe House noted for its historic wood pasture and parkland. ■ 101 Scheduled Monuments including bronze-age barrows at Gittisham Hill; iron-age hill forts such as Castle Neroche and Blackbury Camp; earthwork remains of former castles, for example Stockland Little Castle; remains of a Cistercian abbey at Dunkeswell; and the site of Roman villa at Whitestaunton, all lending strong time-depth. ■ 2,692 Listed Buildings. ■ Diverse local vernacular including: local cherts (flint-like nodules occurring within Greensand) with red brick detailing and slate roofs; cob and thatch; and sandstone buildings with slate roofs and red brick detailing. ■ Many historic features including the Fosse Way Roman road, the Roman town of Axminster, ancient lanes and greenways. ■ Second World War buildings and features including: pillboxes which form a distinctive landscape feature within the flood plain; historic ruins of Colcombe Castle, Newenham Abbey and other defensive features; airfields and associated buildings, such as control towers and aircraft bunds. ■ Intact historic hamlets centred on churches, with many listed buildings and little or no modern development, adding to local distinctiveness and sense of place. ■ Seven SSSI designated for their geological interest and five for their mixed interest, including Beer Quarry caves, designated for its geological features and population of hibernating bats. ■ Twenty Local Geological Sites, including the former sand and gravel workings at Kilmington (terrace gravels containing exotic pebbles).

Landscape opportunities

- Protect the distinctive, unspoilt and exposed skylines from inappropriate development, particularly vertical structures, and encourage management of the characteristic woodland 'fringe' using traditional methods.
- Protect and enhance the open, uniform character of the ridgetop plateaux by encouraging management and re-creation of the heathland commons, restoring prominent conifer plantations to semi-natural habitats, and resisting development of an inappropriate scale and character.
- Conserve the historic settlement form of clustered villages and hamlets at road and river crossings and along springlines. Protect locally distinctive building styles and use of local materials, encouraging their integration into new development as well as sustainable technologies.
- Protect and appropriately manage the rich cultural heritage of the area, including bronze-age barrows, hill forts and earthwork castles, through appropriate land, stock and recreation management.
- Protect the network of enclosed, narrow, winding lanes and long, straight ridge roads by resisting unsympathetic highway improvements or signage; encouraging restoration and management of species-rich hedgebanks, hedgerow trees and avenues; and promote sustainable transport options to reduce traffic levels.
- Conserve and enhance the open and largely undeveloped character of the cliffs, avoiding the siting of new development and vertical structures on prominent skylines immediately above or along the coastline where otherwise largely bucolic. Sensitively interpret the coastline's outstanding geological and geomorphic features and raise awareness of the dynamic nature of the coast.
- Manage and enhance the woodlands, planning for greater connectivity that is sympathetic to landscape character and protection of the 'wooded' character. Promote traditional management techniques including coppicing of semi-natural woodlands, multi-functional management of conifer plantations and restoration of traditional orchards.
- Within the valleys, manage and extend species-rich meadows, mires and rushy pastures to enhance biodiversity richness and connectivity, support the sense of tranquillity, and assist water and soil regulation.
- Manage and enhance the network of hedgerows and hedgerow trees, strengthening the strong, square field pattern with distinctive beech hedgerows and avenues, enhancing perceptions of tranquillity and isolation. Promote traditional management techniques, such as coppicing of grown-out trees and styles of construction including stone-facing on banks.
- Manage nationally important coastal and estuarine habitats including the reedbeds, salt and grazing marshes, enhancing biodiversity and protecting the unsettled and unenclosed character.
- Protect the high scenic value of the NCA, the tranquillity and outstanding views by giving careful consideration to the scale and siting of new development and infrastructure.

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	Dairy and meat products Cereal crops	The predominant land use is grassland, with over a third (35 per cent) of all holdings classified as livestock farms. Another third (29 per cent) are classified as 'other' and likely to be small holdings. Between 2000 and 2009 there was a notable drop (32 per cent) in the number of dairy farms. In 2009 there were 194 holdings of more than 100 ha which represented 49 per cent of the total farmed area. Small holdings of less than 5 ha accounted for 222 units, but covered less than 1 per cent of the total farmed area. There is increasing interest in apple production for ciders and apple juices in the area.	Regional	Food production from this mixed farming landscape is a key service in this area. The levels and type of food produced reflects the soil productivity, the favourable climatic conditions and availability of water. Changes in climate and weather patterns may challenge the traditional outputs from the area, but new opportunities may also arise. Maintaining soil structure and condition will also be necessary to maximise adaptability. Such activity must be in a sensitive manner to manage potential impacts on other assets including biodiversity and the historic environment. Changes in land ownership and the loss of traditional skills will not only impact on food production but on the management and conservation of the area and the benefits it provides for visitors and residents. With the increase in interest in local produce, apples, apple juice and cider are increasingly being produced. Furthermore, changing ownership of farms has caused a renewal of interest in restoring or replanting orchards on traditional sites with local varieties of fruit trees.	Work with the local farming community to consider how to safeguard food provision while enhancing a range of key ecosystem services. Work with farmers and local communities to ensure that the necessary skills and knowledge are maintained, shared and enhanced to secure a future for farming. Support and encourage initiatives that add value to local food products and foster a strong brand, securing a more viable farm business. Support community-based schemes that provide affordable food for local communities.	**Food provision** **Biodiversity** **Regulating soil erosion** **Regulating soil quality** **Regulating water quality** **Sense of place/ inspiration**

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Timber provision	Existing commercial plantation Accessible broadleaved woodland	Fourteen per cent of the NCA is woodland (11,010 ha) of which 1,676 ha is ancient woodland; much is designated SSSI. Seventy per cent of the woodland is broadleaved, notably on the steep, often inaccessible slopes. Just over 20 per cent is coniferous woodland, predominantly under commercial operation. Some plantations have undergone wide-scale restructuring and now achieve multi-purpose objectives.	Regional	Many of the woodlands within the NCA have little value as providers of high-quality timber because of poor management. This may be a consequence of restricted access (for example on steep slopes), cost, the timber market, public relations, or lack of information and knowledge. Restoration of some of the plantations, particularly those planted on ancient woodland sites, has occurred and is a priority for other such sites. Invasive species (notably rhododendron and laurel) are impacting on woodland productivity, by restricting natural regeneration or favouring regeneration of undesirable species. Pests and diseases are also affecting woodland productivity; *Phytopthora* pathogens have already led to the clear-felling of areas within the NCA.	Encourage initiatives that promote the use of local timber and wood products and encourage communication and greater understanding between wood producers (large and small), processors and users. Work with the local forestry industry and timber processors to ensure that the necessary skills and knowledge are maintained, shared and enhanced to enable sustainable woodland management. Encourage management practices that produce well-structured woodlands and high-quality timber and, where appropriate, achieve multipurpose objectives. Balance the need for timber production and replanting against the regeneration of semi-natural habitats. Support community schemes that promote positive woodland management and the use of wood products.	**Timber provision** **Regulating soil erosion** **Biodiversity** **Regulating water flow** **Sense of place/ inspiration** **Tranquillity** **Recreation**

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Water availability	Rivers Aquifer	Overall the Blackdowns NCA is considered to have further water available for abstraction. The majority of the area is underlain by the Upper Greensand aquifer, with some smaller areas of limestone aquifer towards the east. The method of abstraction from this aquifer is normally from single boreholes or spring sources for public and private water supply. Natural springs support the flow of the main rivers of the NCA and associated wetland habitats. The Axe and the Culm are maintained by groundwater, contributing to its base flow during dry weather. The Luxhay reservoir in the north of the NCA provides compensation flows to the River Tone which also supplies water to the Bridgewater and Taunton Canal.	Local	Abstraction in this NCA is predominantly for public water supply and agriculture[4]. Across the NCA many stream headwaters are impounded for shooting and fishing. Growth largely outside the NCA may affect abstraction levels in the future, such as the growth of Taunton, immediately to the north.	Seek opportunities to maximise the availability of water by reducing the rate that water flows through the area by the reinstatement of natural, meandering drainage patterns and channels and reinstating functional flood meadows adjacent to main water courses. Promote management at the catchment scale, encouraging good environmental management of semi-natural habitats to aid water retention, increase storage and improve connectivity.	**Water availability** **Regulating water quality** **Regulating water flow** **Food provision** **Biodiversity** **Recreation**

[4] *East Devon WFD Management Area Abstraction Licensing Strategy*, Environment Agency, 2012 (URL: https://www.gov.uk/government/publications/east-devon-abstraction-licensing-strategy)

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Genetic diversity	Fish Orchards	The Axe is an internationally important habitat, noted for its populations of lamprey, bullhead, otter and salmon. Most rivers support breeding trout populations. The NCA contains some traditional orchards along river valleys which are a priority habitat and support local varieties of fruit trees.	Local	Estuaries provide carbon sequestration opportunities as well as opportunities for biodiversity. Traditional orchards contribute to sense of place and history and can provide high-value end produce.	Work with the local fishing community to consider how to safeguard and sustainably manage the rivers and estuary. Encourage the expansion of areas of traditional orchards, especially those growing traditional Devon and Somerset varieties of fruit, and ensure that the necessary skills and knowledge are maintained, shared and enhanced to manage these orchards. Support and encourage initiatives that add value to local food products and foster a strong brand.	**Genetic diversity** **Biodiversity** **Food production** **Regulating water flow** **Sense of place/ inspiration** **Sense of history**

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Biomass energy	Woodland Hedgerows	Fourteen per cent of the NCA is under woodland cover (11,010 ha) of which 7,647 ha is broadleaved and 2,425 ha coniferous. Included within these figures are 1,676 ha of ancient woodland. Hedgerows are a key landscape feature across the NCA.	Local	Many of the woodlands, particularly those with restricted access due to their location on the steep valley sides, are small scale and are not currently under productive management. However, across the NCA there is some potential for the provision of biomass from some of these woodlands for local use. Similarly there is potential of using by-products from commercial timber production for local use. With appropriate management it would be possible to produce woodfuel from hedgerows within the NCA for local use. There is potential for short rotation coppice and miscanthus within the NCA however the benefits of biomass energy production would need to be balanced against biodiversity, landscape character and provision of other ecosystem services[5].	Support and encourage local initiatives that promote the sustainable management of woodlands and hedgerows for woodfuel production. Encourage join-up between landowners and local communities, including skills sharing and knowledge transfer. Identify and consider opportunities for planting of SRC and miscanthus, appropriately sited within the existing pattern of woodland, hedgebanks and semi-natural habitats.	**Biomass energy** **Biodiversity** **Climate regulation**

[5] http://archive.defra.gov.uk/foodfarm/growing/crops/industrial/energy/opportunities/sw.htm

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Climate regulation	Soils Floodplain grazing meadows Estuarine habitats Low input crops/ grassland Woodland	Carbon storage in the soils of the Blackdowns NCA is low (0–10 per cent) apart from small, dispersed pockets where soil carbon may reach 20–50 per cent beneath heathland and woodland, predominately in the north of the NCA. In addition, there will be higher levels of carbon locked up in the soils of the flood plain grazing meadows. Estuarine mud, silt and fringe habitats, particularly reedbeds and marsh, have a high carbon content. The Axe Estuary within the NCA provides carbon storage opportunities.	Local	Most of the soils in the Blackdowns NCA offer limited potential to improve climate regulation. Therefore woodland is expected to be the most significant contributor to climate regulation in this NCA. Expansion of woodland on suitable sites could help increase carbon sequestration while also offering increases in biodiversity, regulating soil erosion and water availability. Estuarine habitats, particularly mudflats, reedbeds and marsh, have a high carbon content secured in deposits. While expanding the areas of these habitats may be restricted by topographic and fluvial systems, they should be allowed to develop and expand naturally and remain undisturbed. Reductions of inputs can also play a role and will in turn help improve water quality and aquatic biodiversity services.	Increase sequestration of carbon by increasing woodland area and encouraging sustainable management, restoration and expansion of woodland, heathland and associated mire habitats, and wetland habitats in the river valleys. Encourage sustainable and extensive grazing regimes on permanent pasture, particularly areas of flood plain and coastal grazing marsh. Reduce greenhouse gas emissions through reduced fertiliser inputs and anaerobic digestion of farm wastes.	**Climate regulation** **Regulating soil erosion** **Regulating soil quality** **Water availability** **Biodiversity**

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Regulating water quality	Watercourse fencing Wooded valleys Permanent pasture or woodland on steep slopes Cross-field hedgerows in arable areas	Water quality is highly variable throughout the NCA. Groundwater quality is generally good overall, but poor to the west. The chemical and ecological quality of the rivers range from good, through moderate, to poor with stretches of rivers to the west classified as poor. The Blackdowns NCA falls within two priority catchments: the River Exe catchment (which includes the River Culm) and the rivers Axe and Otter catchment (which includes the Upper Axe and Yarty). The rivers Axe, Otter and Yarty are recorded as having high levels of phosphates and sediments and the River Culm has problems associated with nutrient leaching and soil erosion. An increase in arable cultivation and use of inorganic fertilisers and pesticides continues to affect water quality and the condition of valuable wetland habitats.	Regional	Water quality is particularly important in this NCA due to the relationship between the river catchments and the coastal designated sites. Improvement of water quality through buffering watercourses, reducing pollution pathways and run-off of both soil and nutrients could have significant impacts on regulating soil erosion, and enhancing biodiversity and soil quality. Additionally these changes could lead to improvements in the water quality status of bathing waters with a positive impact on recreational use of the waters. The spread of non-native invasive species, especially Himalayan balsam, can lead to greater erosion of river banks and is detrimental to biodiversity.	Increase the amount of farmland managed under principles established under Defra's Catchment Sensitive Farming initiative. Restore, extend and create reedbeds and wetland habitats to act as silt traps. Fencing watercourse and introducing cross-field hedgerows and tree planting, where appropriate, will reduce sedimentation and nutrient loading. Eradicate non-native invasive species along river corridors. (See also measures under regulating soil erosion.)	**Regulating water quality** **Regulating soil erosion** **Regulating soil quality** **Biodiversity** **Recreation**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Regulating water flow	Extensive grazing Hedgebanks and hedgerows Grazing marsh	While most of the area is at little or no risk from flooding because of the hilly topography, there are areas of high flood risk along the rivers Yarty, Otter and Axe. The Axe estuary is influenced by fluvial and tidal flooding; Seaton suffers from flooding from the Axe. The mudstones, sandstones and pebble beds lying beneath the Otter catchment lead to significant surface run-off. The river responds rapidly to rainfall, and floods are characterised by a very rapid rise and fall in water levels, with high flood peaks. Beneath the Axe catchment there are calcareous clays and mudstones, and Cretaceous Greensand and Chalk. Because of this mixed geology the river responds more slowly to rainfall than the other East Devon rivers. The flood peaks of the River Axe reduce as they reach the wide flood plain in its lower reaches but here floodwaters are often slow to recede.	Regional	Flood risk is expected to increase with climate change and changes in land use. Management plans for flood risk reduction seek to: increase flood plain storage and create wetlands; ensure that development does not increase run-off; reconnect estuaries with flood plains, creating habitat and wildlife corridors and therefore enhancing biodiversity; maintain riverbanks; and promote better land management practices. The upper catchments of the rivers have been recognised as the most effective location for changes in land use and land management to reduce peak flows downstream.	Follow the principles described in the Catchment Flood Management Plans for the area: increase flood plain storage and create wetlands; ensure that development (particularly at Chard) does not increase run-off; and reconnect estuaries with flood plains, creating habitat and wildlife corridors. Support land management practices that reduce flood risk by reducing soil compaction. Expand areas of semi-natural woodland on steep slopes and extend the network of hedgerows to reduce overland flows.	**Regulating water flow** **Biodiversity** **Water availability** **Regulating soil erosion**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Regulating soil quality	Underlying geology Soils Hedgerows and hedgebanks Woodland Semi-natural habitats Permanent pasture	The majority of the soils within the NCA are relatively poor. Over 96 per cent of the area is classed as Grade 3 or poorer agricultural land. Soils on the high ground are generally poor and acidic while the valleys have more fertile brown earth and brown clay soils. The flat chalk plateau is more arable. Organic matter may be being lost through frequent tillage. Lack of organic matter makes soils more susceptible to compaction and erosion.	Local	Improving soil quality through increasing soil organic matter will have potential benefits for regulating soil erosion. It may also help with climate change regulation, though the capacity of these soils to make a significant contribution is limited.	Support management of soils that encourages the build-up of organic matter, for example through extensive grazing. Support initiatives that promote awareness and understanding of soil structure and management. Consider the consequences of mechanised activity and soil compaction, particularly in wet weather. Promote good management of weak top soils; minimum tillage can help to maintain good soil structure. Where organic matter is low, carefully increase organic matter inputs to improve soil structure.	**Regulating soil quality** **Regulating soil erosion** **Regulating water quality** **Regulating water flow**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Regulating soil erosion	Cross-field hedgerows Buffer strips Uncultivated areas Woodland Semi-natural habitats	The Blackdowns NCA falls within two Defra priority catchments: the River Exe catchment (which includes the River Culm) and the rivers Axe and Otter catchment (which includes the Upper Axe and Yarty). The rivers Axe, Otter and Yarty are recorded as having high levels of sediments, partly as a result of soil erosion on the steeper slopes of these light sandy soils, especially where under cultivation. The open soils created by arable growing are particularly susceptible to soil erosion.	Local	Efforts to increase vegetation cover on cultivated or bare soils on steep slopes, for example by reverting to grassland or semi-natural habitats, will help to increase the regulation of soil erosion. Hedgerows can also help to impede overland flows and subsequent erosion, while having a positive impact on landscape character. In addition, taking measures to avoid bare soil conditions and exposed soils on steep slopes will also be beneficial. This can be achieved through avoiding clear-felling of woodland in sensitive areas.	Strengthen hedgebanks and hedgerows, and create grass buffer strips running at right angles to the slope across steeper slopes under arable cultivation to prevent soil erosion, especially in the Axe and Otter priority catchments. Strengthen the hedgerow network and increase the population of hedgerow trees across the flood plains of the Axe to filter out soils in suspension in times of flood. Avoid clear-felling areas of woodland on steep slopes, and encourage new woodland planting to impede overland flows. Encourage change from cultivation on steep slopes to permanent grassland and semi-natural habitats with extensive grazing and low fertiliser inputs. Provide wide grass buffer strips and reedbeds adjacent to river banks to act as silt traps, and prevent livestock access to the water's edge. Plant areas of wet woodland and expand and link existing valley woodlands to further minimise soil erosion. Support initiatives that promote awareness and understanding of soil structure and management. Raise public awareness of the consequences of erosion caused by recreational pressure and encourage sustainable use of publically accessible areas.	**Regulating soil erosion** **Regulating water quality** **Water availability** **Regulating soil quality** **Sense of place/ inspiration** **Biodiversity** **Recreation** **Food provision**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Pollination	Heathland Hedgerows and hedgebanks Orchards Species-rich meadows	Areas of semi-natural habitat across the NCA, including species-rich grassland and heath provide sources of nectar for pollinating insects. Dense networks of species-rich hedgerows also provide a source of nectar. Traditional orchards are still found within the NCA, often adjacent to settlements or farmsteads.	Local	The species-rich hedgerows and meadows and other areas of semi-natural habitat provide important sources of nectar for pollinating insects, although the contribution of pollination services to food production in this NCA is currently limited. Over the last 20 years there has been a renewed interest in traditional orchards, with both new orchards being planted and old orchards being restored. Several community orchards have been established.	Increase the areas of semi-natural habitat, especially lowland heathland, coastal saltmarsh, fen and woodland with a diverse ground flora, as well as species-rich hedgerows and hedgebanks, to increase the diversity of flowering plants, and increase the area and diversity of habitat mosaics. Support and promote sustainable management and planting of traditional orchards, including the use of local varieties. Encourage and support initiatives that provide new markets for apples.	**Pollination** **Biodiversity** **Sense of place/ inspiration** **Food provision**
Pest regulation	n/a	n/a	n/a	n/a	n/a	n/a

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Regulating coastal erosion and flooding	Shingle ridges, spits and beaches Estuaries and estuarine habitats Maritime cliff and slopes, coastal saltmarsh, coastal vegetated shingle	There have been attempts to manage the challenges of beach loss and coastal erosion through beach stabilisation as part of a number of schemes to protect towns such as Sidmouth and Lyme Regis. The western parts of Lyme Bay consist of cliffs formed of resistant lithology that erode slowly. This western area is also sheltered from south-westerly waves meaning that the shoreline is controlled by waves from the south and east. In the eastern part of Lyme Bay there is little cliff protection and the cliff toe erodes easily, contributing to existing instability of ancient and modern landslides which are driven largely by groundwater. The cliffs are retreating here at a relatively rapid rate.	Regional	In the Shoreline Management Plan a 'with present management' scenario is being considered, involving continued presence of hard defences at Lyme Regis, and a policy of 'do nothing' for less developed areas of the coast. Seaton and Sidmouth have a high risk of coastal flooding (in Seaton this is combined with fluvial flooding from the Axe Estuary) with the largest number of properties at risk. There are a range of flood defence schemes in place along this stretch of coast, mainly within settlements. The route of the South West Coast Path follows the coastline, linking the many beaches along this stretch of coast. Coastal erosion can interfere with access to these features.	Provide space for natural coastal processes where identified by the Shoreline Management Plan and the Estuary Strategy, compensating for loss of habitats by creating new areas of coastal habitat. Work with local communities and stakeholders to raise awareness of the issues surrounding coastal erosion and flooding and assist them in planning for the future. Manage natural habitats backing the coast and estuaries, expanding and re-linking (including through managed realignment) to build resilience to future sea level rise. Manage the nationally and internationally important seacliff and undercliff habitats within the NCA. Ensure that coastal access opportunities remain while adapting to a dynamic coastline through the provision of roll back land and information and advice to users.	**Regulating coastal erosion and flooding** **Geodiversity** **Biodiversity** **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
A sense of place/ inspiration	Long Greensand Ridges Exhilarating views Dramatic coastline Enclosed pastoral valley landscape Densely wooded slopes Tranquillity Streams and springs with associated habitats	A nationally important landscape; 78 per cent designated as Areas of Outstanding Natural Beauty. A landscape of dramatic ridges offering a sense of exposure and opportunities for far-reaching views, incised by steep-sided, enclosed and tranquil valleys of a small scale. A heavily-wooded appearance created by long sinuous woodland along the scarp slopes, including ancient and semi-natural woodland, and an extensive network of hedgerows and hedgerow trees. The ridge top plateaux are of a uniform and open nature, characterised by regular Parliamentary enclosure of medium- to large-sized fields with low hedgerows and long, straight roads. There is a dominance of beech, including beech avenues and remnant commons of lowland heath and scrub. Numerous streams rise from the ridges and flow through the valleys, giving rise to wet pasture and carr woodlands as well as springline mires and rush pasture. The medieval irregular field pattern is delineated by dense, species-rich hedgerows, with a change in notable species to oak and ash. The winding and narrow road network sits deep within the hedgebanks. **Continued on next page...**	National	The significance and scale of 'sense of place' for this NCA is reflected by 78 per cent of the area being designated as Areas of Outstanding Natural Beauty. Most residents and visitors value and appreciate the attributes that combine to create the area's sense of place; and there is a need for appropriate management to ensure that it is sustained for future generations. Changes to landscape character through development or agriculture, and consequently potential impacts on the Blackdowns' strong sense of place, need to be monitored, planned and managed. Traditional land management practices and the associated skills and knowledge to enable these practices are essential to ensure the maintenance and enhancement of the distinctive landscape character.	Promote the use of landscape character guidance and other landscape tools to ensure that the key characteristics are protected and reinforced through land management and development. Promote and manage sustainable recreation to ensure that experiential qualities are maintained. Maintain and enhance tranquillity and dark skies, and their appreciation, minimising the impact of lighting and noise. Work with land managers and local communities to ensure that the necessary skills and knowledge for the management of key landscape features, such as coppicing and hedge-laying, are maintained, shared and enhanced.	**Sense of place/ inspiration** **Sense of history** **Recreation** **Tranquillity** **Biodiversity**

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** At the coast the area's diverse geology is dramatically evident through the tall cliffs, landslips, and sand and shingle beaches. The vibrant red sandstone starkly contrasts with the adjoining white Chalk. The significance of the coast is recognised by the entire length of the NCA being inscribed as a natural World Heritage Site. The exposed cliff top plateaux offer exhilarating views for miles along the coast and, from high peaks, extensive views inland. Steep-sided pastoral combes dissect the plateaux and, by contrast, provide sheltered and tranquil areas. The Axe Estuary contributes to the area's sense of place and creates a zone of maritime influence inland. The landscape of this NCA has inspired writers including John Fowles.				

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Sense of history	Historic settlements and buildings Vernacular architecture A wealth of heritage assets Long-established farming culture and tradition	A sense of history is associated with a wealth of archaeological remains, including iron-age hill forts such as Membury and Castle Neroche, bronze-age barrows predominately between Gittisham Hill and Blackdown, and Second World War defences ranging from pillboxes, anti-tank cubes, rail- and road-block plinths and machine gun emplacements to military airfield landscapes at Upottery, Culmhead and Dunkeswell. The historic character of the landscape is further reinforced by a sharply defined settlement pattern: sparse settlement on higher ground with farm buildings following straight enclosure roads contrasts with several settlements, many medieval in origin, lying along the springlines at the foot of escarpments or at river-crossing points. Buildings are constructed using a wide variety of traditional building materials including cob, sandstone, chalk, chert, flint, slate and thatch, with older colour-washed buildings along the coastline. Threshing barns, open-fronted linhays, ancient orchards, a number of manor houses including Cricket House and Rousdon, and masonry bridges are all characteristic features of the landscape.	National	Archaeological remains are at risk of decay and damage because of a lack of knowledge and awareness. Some medieval buildings are at risk due to inappropriate maintenance techniques and lack of traditional skills, understanding, and knowledge. A decline in farming families has resulted in a change of use of some traditional farm buildings and farmsteads, impacting on the sense of history. Recreational pressure damages some archaeological and historic assets. Erosion, through heavy recreational use, causes some damage while lack of knowledge and understanding causes unintentional 'vandalism'. A change in farming practices has resulted in an increase in large sheds being built, sometimes out of scale with adjoining historic farmsteads. Overhead cables and a proliferation of road signs can impact on the sense of history in towns and villages.	Support opportunities to enhance understanding of the historic environment resource through research and conservation. Promote and support initiatives that provide educational and awareness opportunities for visitors and local communities. Encourage and support initiatives that develop and enhance the traditional skills and understanding required to maintain and manage historic features. Promote and support the significance of historic landscape character in development management. Support audits of roadside signage and encourage a 'decluttering' where possible. Support opportunities to put cables underground where there is not likely to damage the historic environment.	**Sense of history** **Sense of place/ inspiration** **Recreation** **Biodiversity** **Climate regulation** **Regulating soil erosion**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Tranquillity	Wooded scarps and slopes Small-scale pastoral landscape Sunken, narrow, winding country lanes enclosed by hedgerows Dramatic coastline and coastal combes Rivers and estuary	The NCA has experienced a significant decline in tranquillity since the 1960s. Undisturbed areas have decreased from 97 per cent in the 1960s to 61 per cent in 2007 (CPRE Intrusion Map, 2007). Areas of low tranquillity are around the main towns (Honiton, Sidmouth, Seaton, Lyme Regis, Axminster and Chard) and along the main roads (A303, A30, A35 and A3052) and railway line.	Regional	Much of the area remains undeveloped, uncluttered and free from recent development, particularly away from the coast and A35 corridor. Seasonally, the coast can become a little less tranquil due to the many tourists and visitors to the area.	Maintain the current settlement pattern and seek to minimise the impacts of light and noise pollution. Soften the edges of urban areas to incorporate development into the landscape setting and provide a network of green spaces and routes. Support sustainable transport options to visitor destinations. Support opportunities to put cables underground where this will not damage the historic environment. Promote awareness of dark night skies and encourage and support initiatives that reduce light pollution.	**Tranquillity** **Recreation** **Sense of history** **Sense of place/ inspiration**

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Recreation	Coast and estuaries South West Coast Path Regional routes Cycle trails Public rights of way Open access land/commons	The NCA offers an extensive network of rights of way totalling 1,100 km at a density of nearly 1.4 km per km^2, as well as open access land covering 850 ha or just over 1 per cent of the NCA. In addition, 34 km of the South West Coast Path National Trail, together with the National Cycle Network, East Devon Way, Blackdown Hills Valleyheads Way, the circular Herepaths and other local routes, provide a wealth of recreational opportunities.	National	The coastal strip of this NCA has been popular with tourists and visitors since the Victorian times, both land-based visitors attracted by the beaches, surrounding countryside and often milder climate, and water-based users. The public rights of way network inland of the coast is often considered fragmented with limited off-road routes for horse riders and cyclists; however, there have been some successes in developing promoted circular routes. The local road network provides other opportunities but the twisting, narrow lanes raise safety concerns for walkers, cyclists and horse riders. The National Cycle Network Southern Coastal route (NCN Route 2, promoted as part of the Tour de Manche through the Cycle West Interreg project) and the Stop Line Way (NCN 33) running north from Seaton, are currently being developed. The latter offers potential as a green tourism trail linked with the developing the Axe Wetland and Natural Seaton initiatives.	Maintain and improve the quality of recreational assets, including the South West Coast Path National Trail, and other recreational routes, by supporting opportunities to connect and link with new multi-user routes, urban green spaces extending from built-up areas, and sustainable transport schemes, particularly in areas close to where people live. Support proposals in the Devon, Somerset and Dorset Rights of Way Improvement Plans and in the various Green Infrastructure Delivery Plans. Water-based recreation can provide close access to natural assets, both biodiversity and geodiversity, reducing the need for land-based infrastructure and vehicle movements. Balancing the increasing demand for water-based leisure with any potential resulting disturbance should be given careful consideration.	**Recreation** **Sense of place/ inspiration** **Biodiversity** **Geodiversity**

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Biodiversity	Special Areas of Conservation Sites of Special Scientific Interest National Nature Reserves Semi-natural habitats Local wildlife sites	The NCA supports a range of priority habitats including 6,030 ha of woodland, 882 ha of coastal and flood plain grazing marsh, lowland meadows (658 ha) and maritime cliff and slope (606 ha). 1,533 ha (2 per cent) of the NCA is designated as SSSI. At present 36 per cent of the designated resource is in favourable condition and a further 46 per cent is in unfavourable but recovering condition.	National	Improvement in the condition of designated sites, principally SSSI, is likely to have a positive impact on biodiversity over all, as well as other services. Improvement in the condition of coastal habitats will also assist in the storage of carbon. Connectivity of habitats and the current mosaic of habitats are essential to supporting and maintaining populations of the more mobile species found in the area (mammals, birds and many invertebrates). Less mobile species (many plants, lichens and mosses, and some invertebrates) will benefit from new and permanent opportunities to extend their current range, particularly in the face of climate change.	Maintain and where necessary improve the condition of all designated sites and priority habitats. Encourage and support the maintenance and expansion of semi-natural woodland, particularly through natural regeneration along river valleys. Promote management at a landscape scale, encouraging the extension and linking of habitats, the creation of new habitats and increased species diversity. Support the restoration and improvement of plantations on ancient woodland sites for the benefit of biodiversity and a range of ecosystem services. Work with land managers and local communities to ensure that the necessary skills and knowledge are maintained, shared and enhanced to secure a future for traditional farming and forestry and the habitats associated with them. Promote and increase knowledge and understanding of the NCA's biodiversity amongst those who influence, or are engaged in, the management of the landscape.	**Biodiversity** **Sense of place/ inspiration** **Climate regulation** **Pollination**

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Geodiversity	Jurassic Coast World Heritage Site Geological and geomorphology interest SSSI Local Geological Sites Cliffs and geological exposures Coastal geomorphology Triassic red sandstones and mudstone Upper Cretaceous Chalk Lower Cretaceous Upper Greensand and Gault Clay	The importance of the NCA's geodiversity is recognised internationally by inclusion of the entire coastline as part of the Dorset and East Devon Coast World Heritage Site (Jurassic Coast). The significance of the site is derived from the exceptional rock record, fossil record and geomorphological processes. Each of these elements is exemplified within the NCA boundaries including the fossil rich sites around Sidmouth and Lyme Regis, stratigraphy that includes the Triassic-Jurassic boundary and geomorphology that includes some of the largest and most-studied coastal landslide complexes in Europe. Historically these features have been the source of significant developments in the Earth Sciences since the early 1800s, including the first scientific recording of a landslide and the earliest artistic re-creation of a prehistoric environment (Durior Antiquior). The coast is also designated a Special Area of Conservation and SSSI, for features including geodiversity. **Continued on next page...**	International	Geodiversity sites and features occur across the area with concentrations and particular features of interest along the coast, including hard rock features and coastal processes. The underlying geology, particularly the red Permo-Triassic sandstones, Greensand and flint gravels have influenced the biodiversity, agriculture, industry, building materials, culture and traditions across the area. The geology and geomorphology across this area allows for the study and interpretation of earth sciences up to the earliest occupation of the landscape by man.	Identify and realise opportunities for enhanced access to, and recognition and understanding of, the internationally important geodiversity of the area. Maintain natural geomorphological processes, particularly along rivers, estuaries and at the coast, that contribute to the regulation of coastal erosion and flooding. Maintain vernacular buildings using local stone wherever possible and support the use of local stone in new development to reinforce links with the underlying geology.	**Geodiversity** **Regulating coastal erosion and flooding** **Food provision** **Biodiversity** **Regulating soil quality** **Sense of place/ inspiration** **Sense of history**

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Geodiversity cont.		**... continued from previous page** There are 7 geological SSSI across the NCA and a further 5 mixed interest SSSI. Beer Quarry and Caves is also designated a Special Area of Conservation and SSSI. The alternating periods of marine incursion and mountain building can be observed both in the topography of the area and the coastal and inland exposures (cliffs, quarries and road cuttings). More recent coastal geomorphological features, including sand and shingle spits and beaches, are present.				

Photo credits

Front cover: Extensive ribbons of woodland along the steep upper valley slopes creates distinctive dark edges to the ridges. © Blackdown Hills AONB
Page 4: © Cathy Fitzroy
Page 5: © Iain Harris
Pages 7, 9, 30, 34: © Cathy Fitzroy
Page 8: © Phillip Capper
Pages 11, 36: © East Devon AONB
Page 14: © Ian Dalgliesh
Page 26: © Dan Bryan
Page 37: © Natural England

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

Catalogue Code: NE566 ISBN 978-1-78367-126-7

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

www.naturalengland.org.uk