National Character Area profile:

148: Devon Redlands

Supporting documents

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Introduction

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

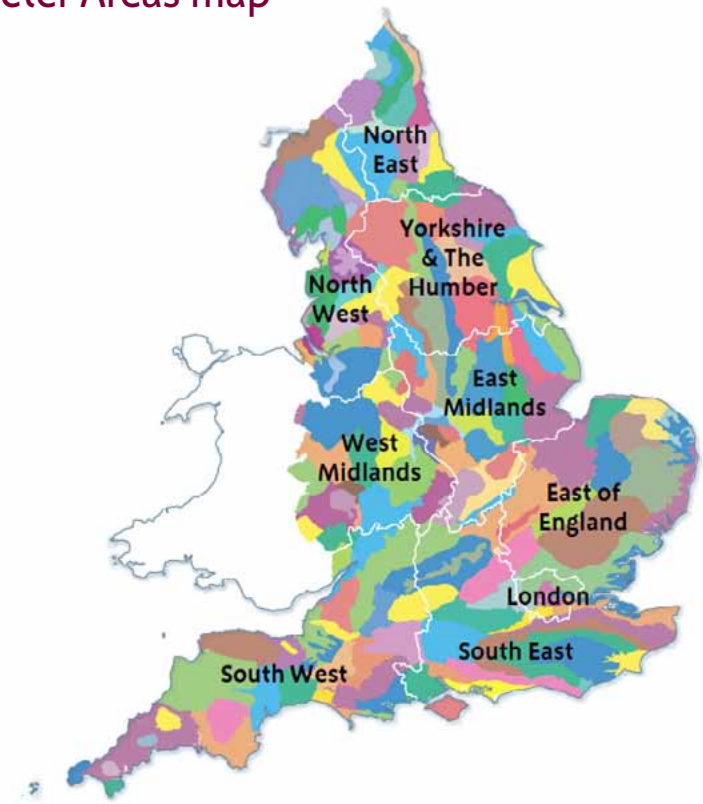
NCA profiles are guidance documents which can help communities to inform theirdecision-making about the places that they live in and care for. The informationthey contain will support the planning of conservation initiatives at a landscape scale, inform the delivery of Nature Improvement Areas and encourage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

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

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

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

National Character Areas map



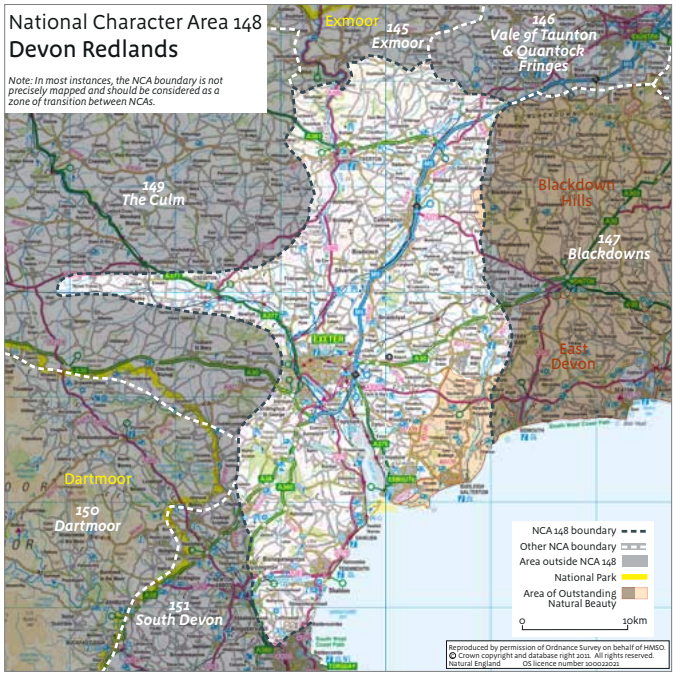
[1] The Natural Choice: Securing the Value of Nature, Defra (2011; URL: www.official-documents.gov.uk/document/cm80/8082/8082.pdf)
[2] Biodiversity 2020: A Strategy for England's Wildlife and Ecosystem Services, Defra (2011; URL: www.defra.gov.uk/publications/files/pb13583-biodiversity-strategy-2020-111111.pdf)
[3] European Landscape Convention, Council of Europe (2000; URL: http://conventions.coe.int/Treaty/en/Treaties/Html/176.htm)

Summary

The Devon Redlands National Character Area (NCA) has a very strong, unified character. The underlying red sandstone and consequent red soil dominate the landscape through ploughed fields, cliffs and exposures, and are visually evident in the traditional stone and cob farmsteads, hamlets and villages that are scattered across the area. Not only does the soil visually characterise the area but its fertility also makes it the agricultural heart of Devon. Mixed agriculture has shaped this landscape since medieval times, an era that left a dense pattern of deep and narrow lanes imprinted in the landscape. The gently rolling hills that feature across the NCA support a network of hedgerows enclosing relatively small fields that are either grazed or under arable cultivation. Hedgerow trees and small copses often give a wooded appearance to the hills. The valleys in between are flat bottomed and open into extensive flood plains across the central part of the Redlands. Here, more 'shrubby' hedgerows or fences enclose larger arable or grazed fields.

Rivers have created the topography that we see today and they remain as key landscape features. The core of the Devon Redlands is low lying, with land rising around the periphery, except to the south where it gives way to the coast. Consequently, most of the rivers rise in higher, adjoining NCAs and flow from north to south to the coast, often through estuaries that are internationally and nationally important for wildlife. The coastal strip of this NCA, now partially inscribed as a World Heritage Site for its natural attributes, has significant Victorian influence, with railways, promenades and piers for seaside visitors. The area is still a popular visitor destination with access along the coast facilitated by the South West Coast Path National Trail.

Land in the west of the NCA rises to the flat, flint-topped Haldon Hills, now mainly under coniferous plantation with some remnant lowland heath. These hills form a prominent landscape feature which is visible across the Redlands and beyond. They provide a distinctive landscape setting for the Roman city of Exeter, now a regional centre with a significant amount of planned growth to the east. The character of this part of the NCA is fast changing. Land in the east of the NCA rises to the East Devon Pebblebed Heaths, an area of extensive open access lowland heath, designated as a Site of Special Scientific Interest and part of the East Devon Area of Outstanding Natural Beauty.



Click map to enlarge; click again to reduce.

Statements of Environmental Opportunities:

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

SEO 2: Manage, enhance and where necessary protect the diversity of land use and activity which gives the Devon Redlands its distinctive character. Increase the connectivity of key habitats for the benefit of landscape, biodiversity and ecosystem services.

SEO 3: Protect and manage the distinctive character of the landscape, the natural beauty, scenic quality, historic environment and geological features. Enhance recreational resources, access to nature and heritage assets, particularly along the coast, to ensure public benefit and enjoyment.

SEO 4: Plan and manage for a strong landscape framework to support and integrate the expansion of Exeter, Exmouth, Teignmouth, Tiverton, Crediton and Cullompton, and the road and rail network throughout the area. Conserve and enhance the existing character, form and pattern of the area's historic settlement, from single farmsteads to larger villages.

The extensive Exe Valley with hills rising to the north, an area supporting mixed agriculture.

Description

Physical and functional links to other National Character Areas

The Devon Redlands National Character Area (NCA) covers a diverse area, stretching from the fringes of Exmoor NCA in the north to the Exe Estuary and coast in the south, and from the edge of Dartmoor NCA and The Culm NCA in the west to Blackdowns NCA in the east. This generally low-lying, fertile NCA is centred on the north–south axis of the Exe Valley, with an important extension to the west through Crediton, intruding into The Culm NCA and the north-eastern fringes of Dartmoor NCA.

Towards the edges of the Devon Redlands NCA, the landscape becomes more diverse in character. In the north, the land rises to relatively flat-topped hills with beech hedgerows, indicating the transition towards Exmoor. In the south-west the north–south Haldon Ridge is a major sub-regional landmark and signifies a fundamental change in geology and landscape character. West of Haldon the Teign Valley is also transitional, having elements which relate it to Dartmoor in the west as well as a close interrelationship with the Haldon Ridge.

All the main rivers flowing through the Devon Redlands rise in adjoining, higher NCAs and flow into the sea through tidal estuaries. The Exe rises on Exmoor and passes for 39 km through the NCA before flowing into the internationally designated Exe Estuary. On its course it passes through Exeter, a regional centre and hub for all road and rail networks into Devon and Cornwall. The Teign rises on Dartmoor and flows southwards outside, but parallel to, the Devon Redlands before turning abruptly eastwards at Kingsteignton into the estuary. The Otter rises in the adjoining Blackdown Hills before flowing out to sea through the nationally designated estuary. All the estuaries have significant coastal features at their mouths, the most notable being the sand spit across the Exe. These features signify the relationship with the adjoining coastal NCAs, particularly the Blackdowns to the east, as coastal processes move sand, pebbles and sediment eastwards.

Open lowland heath and 'big' skies on the East Devon Pebblebeds.

The topography of this NCA, a relatively lowland core with land rising at the fringes, gives way to extensive and far-reaching views. The coast can be seen from many high points along the inland western boundary and Dartmoor forms a distinct, distant south-western skyline from much of the NCA.

Distinct areas

- Haldon Ridge
- East Devon Pebblebed Heaths

Key characteristics

- Hilly landscape of villages, hamlets, farmsteads, hedgebanks and winding sunken lanes, rising in height towards the fringes of the NCA. Steep-sided but flat-bottomed river valleys cut through the hills, opening onto wide flood plains which are important for wintering wildfowl nearer the coast.
- Red soils derived from the Permo-Triassic sandstone and red-tinged cob buildings give the name to this NCA.
- Large woodlands confined mainly to steep valley sides. In upper valleys small, broadleaved woodlands and copses give a strong sense of enclosure and provide valuable habitat for wildlife. There is a high concentration of ancient semi-natural woodland in the northern part of the NCA.
- Mixed farming predominates, but as the land rises in the transitional areas towards Dartmoor and Exmoor pasture becomes widespread. Fields tend to be small and irregular with dense hedgerows on top of earthbanks in the transitional areas, while there is a larger, more open field pattern elsewhere.
- A high frequency of designed landscapes.
- Cob, red sandstone and thatch buildings are distinctive of the area.
- Distinctive area of the East Devon Pebblebed Heaths on infertile, acidic soils supporting important populations of birds such as the hobby, nightjar and Dartford warbler, and butterflies such as the studded blue. The area is also nationally important for relict prehistoric landscapes and features.
- Estuaries with reedbeds and salt and grazing marshes.
- Striking red sandstone cliffs with well-developed wave-cut platforms and stacks.
- Significant urban development around the estuaries and along the coast. The motorway and trunk road network linking Devon and Cornwall with the rest of the country cuts through the landscape, exposing the red sandstone. It converges around Exeter, a historic city and now a key regional centre.
- The Haldon Ridge, a coniferous plantation with remnant heath, forms a landscape setting for Exeter and the settlements around the Exe.

The distinctive red geology reflected in historic buildings: a working mill has been at Otterton since the Norman times.

Devon Redlands today

The rolling, hilly landscape of the Redlands, with its deep red soils, is the classic landscape of W.G. Hoskins' eloquent descriptions of Devon. It is a landscape of mixed farming, but as the land rises to The Culm in the north-west (284 m) pasture predominates and the red soils disappear. The principal rivers, of which the Exe is the largest, are characterised upstream by steep, wooded valley sides. Some of the valley woodlands are oak dominated and of high conservation value. In the upper valleys, particularly in summer, there is a very strong sense of enclosure created by the tall, thick hedgerows supporting many herbs and wild flowers, with small, lush meadows connected by attractive, fast-flowing streams.

Towards the coast, the hills gradually decrease in height (176 m) and appear more rounded with gentler, convex slopes. The river valleys widen into more open flood plains emphasised by larger fields, low-cut hedgerows or fences and a lack of tree features. Arable dominates on the better, flatter land around the centre of the NCA, although the lower flood plains are generally devoted to permanent pasture. The coast is dominated by striking red cliffs and rocky shores. The sea has eroded to form well-developed wave-cut platforms and spectacular stacks, such as at Ladram Bay. The geological significance of the coast from Exmouth eastwards is such that it forms part of England's only natural World Heritage Site. The rivers Exe, Teign and Otter break through the sandstone cliffs into estuaries of reedbeds and salt and grazing marshes; all are protected at their mouth by sand or pebble spits extending from long beaches. Significant bird populations, including the avocet, use the estuaries over winter. The Exe Estuary is one of the most highly designated sites in south-west England, recognised at international, European and national levels. The entire length of the coast in this NCA is accessible by the South West Coast Path National Trail.

The distinctive red coastline under multiple use.

To the east of the Exe Estuary, the land rises to dry, open heathland with both isolated and clusters of pines forming features. The East Devon Pebblebed Heaths, on infertile, acidic soil, are of European importance, designated as a Special Protection Area and a Special Area of Conservation. They support significant populations of butterflies and birds such as the nightjar and the Dartford warbler, and are a distinctive feature of the area. The heaths are also of national landscape value, forming part of the East Devon Area of Outstanding Natural Beauty (AONB). This designation covers the south- eastern corner of the NCA from the coast, stretching 11 km northwards. The Devon Redlands NCA also includes a small strip, just 33 ha, of the Blackdown Hills AONB on its north-eastern boundary.

To the south-west of Exeter, the Haldon Hills, a ridge of heathland and woodland, dominate the skyline. Long fingers of coniferous plantation and broadleaved woodland follow ridge lines, enclosing steep pasture on both sides of the dramatically rising ridge. Conifer plantations are softened by wide margins of bracken, birch and heath and there are far-reaching views eastwards over the Exe Estuary and beyond to the Blackdowns and westwards to Dartmoor. Both the East Devon Pebblebed Heaths and Haldon provide significant areas of open access. The heaths tend to be frequented by local visitors while Haldon has become a major regional mountain biking centre, with 220,000 visitors in 2011/12.

Much of the Devon Redlands, away from the coast, is relatively sparsely populated, with attractive villages, hamlets and scattered farmsteads. Many settlements are of medieval origin, linked by winding, often deeply sunken lanes. The Permo-Triassic sandstones which dominate the character of the area are also traditionally used as building materials, along with breccias, volcanic rocks and the smooth, rounded pebbles of the East Devon Pebblebed Heaths. Older buildings often have thatched roofs and red-tinged cob walls. Complexes of farmstead buildings, originating from before the 18th century, include linhays – open-fronted shelter sheds for cattle.

Most of the villages have been in existence since the 10th and 11th centuries and have an irregular form and pattern. They usually lie at the heart of the parish and contain the parish church and one or two substantial farms. The predominant pattern of historic settlement, however, is dispersed in the form of hamlets, farmsteads and dwellings. The inland towns – Cullompton, Tiverton and Crediton –have their origins in the wealthy cloth industry of the Middle Ages and continue to be important local towns. Along the coast and around the estuaries settlement is much denser.

Exeter, a regional city, is prominently and strategically located at the head of the Exe Estuary. The city is a hub for major transport links into Devon and Cornwall and its infrastructure now dominates the landscape, particularly to the east and south of the city with the location of the M5 and regional airport. Small historical villages are scattered along the fringes of the Exe and Teign estuaries, and residential growth has changed the form and setting of all these settlements in recent years. Along the coast there are significant towns that evolved because of their maritime connections. Teignmouth and Exmouth began as ports before developing into fashionable seaside resorts, along with Dawlish. The encroachment of large-scale residential development on the hills that form a backdrop to these towns has significantly changed their landscape setting, and this is particularly noticeable from the sea.

The Landscape through time

The geological history of the Devon Redlands is characterised by alternating periods of marine incursion and mountain building. During the Carboniferous Period (359 to 299 million years ago), the area lay in a marine basin; tropical erosion of the surrounding land mass generated large quantities of sediment, which were transported by rivers into the basin and deposited on the seabed, forming thick layers of sandstones, shales and mudstones. Towards the end of the Carboniferous Period, a mountain-building event, known as the Variscan Orogeny, occurred and led to folding and faulting of the older Devonian and Carboniferous rocks and to widespread uplift of Devon. Associated volcanic activity included the intrusion of lavas, known as the Exeter Volcanic Series, and turned the shales into slates. A semi-arid climate dominated the following Permian (299 to 251 million years ago) and Triassic (251 to 200 million years ago) periods, causing rapid erosion of the surrounding mountain ranges and the creation of thick deposits of wind-blown materials and coarse breccias and sandstones that were laid down by

impermanent rivers. After the Triassic, into the Jurassic and Cretaceous periods (146 to 66 million years ago), sea levels rose once more, depositing sands, clays and some chalk and resulted in the formation of the Greensand that now underlays the Haldon Hills. Following the Tertiary Period of mountain building (65 million years ago), erosion removed most of the chalk and left areas of flint gravels; the Haldon Hills are capped by such gravels. They now form a distinctive and prominent range of flat-topped hills in the south-west of the NCA.

The lower-lying softer landscape has been gradually shaped by river erosion over the last 2 million years. It is thought that the ice sheet from the last ice age (around 18,000 years ago) did not reach this NCA; however, the area was subjected to tundra-like periglacial climates and, as ice melted and sea levels rose, river valleys and estuaries were flooded. The landscape has also been shaped by centuries of human activity; Mesolithic and Neolithic sites and finds (10,000 to 4,500 years ago) occur across the NCA. A notable example is the Neolithic causewayed enclosures on Raddon Hill. Bronze- age (4,500 to 2,700 years ago) barrows exist, for example on the Haldon Hills, and iron-age (2,700 to 2,000 years ago) hill forts including Woodbury Castle and Stoke Hill and lesser, enclosed settlements of farmstead scale are all evident across the NCA. This type of small-scale settlement lasted through the Roman period (roughly 43 ad to 400), alongside much less common Roman sites, notably the city of Exeter. By 180 to 200 ad the fortress site had become a well-established civilian town with a new wall enclosing 38 ha, two-thirds of the wall still exists today. Outside Exeter there are Roman camps, forts and fortlets, a few villas and fragments of the imperial road system, most notably the road from Exeter to Dorchester. Both Cullompton and Tiverton have evidence of Roman settlement.

Medieval and post-medieval archaeology is all around and beneath the Redlands as well, as in prominent monuments such as the Norman Tiverton

The extensive pebble beach at Budleigh Salterton with the spit denoting the mouth of the River Otter; part of the Jurrasic Coast World Heritage Site.

Castle and Exeter Cathedral (begun in 1114). Most settlements were in existence by the 10th and 11th centuries; they usually lie at the heart of the parish and contain the parish church. The villages historically contained only one or two substantial farms, and houses of various dates. This has resulted in villages taking an irregular form and plan. Outside the villages there is a medieval pattern of isolated farmhouses or hamlets and small groups of farmhouses and dwellings including a high proportion, by national standards, of 16th-century or earlier date, surrounded by their own buildings and land. This dispersed

settlement pattern resulted in an intricate and extensive network of roads and lanes, with a high number of bridges that still exist today, for example the medieval bridge at Bickleigh. Turnpiking (post-1750) led to road improvements that influenced today's main road system. Some milestones and tollhouses remain, for example at Newton Poppleford. Farmhouses and houses are built in characteristic vernacular styles using locally distinctive materials such as cob, breccias, volcanic rocks or smooth round pebbles and thatch.

From the 16th century a vibrant wool and cloth industry became established across the area, shaping the three main inland towns and generating significant wealth for Exeter. The industry led to the construction of Exeter Quay (1564–66) and the Exeter Ship Canal, with exports to France, Spain and the Netherlands. High-quality woollen and worsted cloth was produced in Cullompton until 1977 and continues in Tiverton today. While the wool trade played a role in Crediton's past, the church was far more significant in its growth; Saint Boniface was probably born in Crediton around 672.

There is a high frequency of designed landscapes in this NCA, including a series of villas and villa landscapes in prominent positions along the east shore of the Exe Estuary; secondary landscape parks such as Pynes (near Cowley Bridge), Downes near Crediton and Oxton on the lower slopes of the Haldon Ridge; and finally the big landscape parks such as Mamhead, Shobrooke, Poltimore, Powderham, Killerton, Haldon and Knightshayes. The frequency of these designed landscapes is given emphasis by their visibility and often their public access. This period also saw the development of the coastal towns within the Redlands. Exmouth, although a fishing port and ferry dock since the post-medieval period, became a notable seaside town in the early 18th century, with day trippers from Exeter. Its significance as a seaside resort grew through the late Georgian and Victorian periods, as did Teignmouth, particularly after the arrival of the railway in 1846. However, Teignmouth has a much longer history as a small seaport, fishing town and market town, with a flourishing trade until the early 19th century in granite (from adjoining Dartmoor), pipe clay, manganese and timber. It is thought that ship building, which continues today, began in at least the 17th century. The port is now important for the export of ball and fire clay, extracted in the adjoining South Devon NCA. Both Exmouth and Teignmouth are characterised by late Georgian and early Victorian architecture, including some notable features such as Exmouth's sea wall, begun by John Smeaton in 1841, which now forms a popular promenade, and the Grand Pier at Teignmouth.

The Victorian influence is apparent across the Redlands, with perhaps Isambard Kingdom Brunel having had the most influence with the development of the main railway line from Bristol to Exeter (opening in 1841) and beyond via Teignmouth, as well as branch lines to Exmouth and Barnstaple, and the Exe Valley line which closed in 1964. The development of new infrastructure since the 1970s has similarly led to enhanced access to the NCA and influenced growth and development. The motorway reached Exeter in 1977, a time when the city started to experience significant areas of residential and light industrial development around its periphery. From the motorway lead the two major trunk roads into Cornwall, the A38 (dualling complete in 1977) which passes over the Haldon Hills and the A30 (dualled in the 1980s) which sweeps around the south of the city before heading north and currently creates a boundary between the city and surrounding mixed farmland.

During the 1970s and 1980s there was large-scale housing development on the fringes of all the key towns, which, in many cases, has changed their shape. There is also evidence of scattered development in the open countryside and around smaller settlements, including a moderately high rate of barn

conversions for accommodation, manufacturing and service industries. The dualling of the A30 eastbound from Exeter to Honiton occurred later (1999) and has opened the area east of Exeter for the most recent large-scale development in the NCA. A new community is under development, as are a SkyPark business park, a science park and an intermodal freight facility, and associated new infrastructure. This area of the NCA also includes the regional airport which has experienced a significant increase in flights over the last decade. This development has significantly changed the tranquillity and character of the landscape and will continue to do so with further predicted increases.

Other changes across the NCA include the implementation of a Heathland Management Plan for the East Devon Pebblebed Heaths, and there has also been quite a significant change of use on the Haldon Hills with the development of a mountain biking centre. Renewable energy technologies are starting to have a cumulative impact and larger developments in adjoining NCAs are influencing the setting of the NCA in places.

One of the historic designed landscapes overlooking the Exe Estuary: Powderham Belvedere.

Ecosystem Services

The Devon Redlands 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 Devon Redlands NCA is contained in the 'Analysis' section of this document.

Provisioning services (food, fibre and water supply)

- **Food provision:** The NCA is a major food-producing area for the county and the region. The levels and type of food produced reflect soil productivity, favourable climatic conditions and availability of water. Approximately half of all farm holdings are classified as livestock in terms of their farming type, and the remaining holdings support, dairy, arable, horticulture and mixed farming, with a relatively few specialist pig producers. Between 2000 and 2009 there was an increase in the number of arable and horticultural holdings, 14% in number, and a decrease in the number of all other farming types, possibly in response to market prices. The NCA is also showing a minor resurgence in apple production for ciders and apple juices. The estuaries are also significant for their food production: the Exe Estuary supports three commercial shellfish fisheries and the Teign produced shellfish to the value of £171,000 in 2004. Both estuaries have designated bass nursery areas and are important spawning grounds for salmon.

- **Timber provision:** Commercial timber production is currently focused on the conifer plantations of the Haldon Hills and on the edge of Woodbury Common, covering 3 per cent of the NCA, and the mixed woodlands of Ashclyst Forest. Most extraction from Ashclyst in recent years has been for firewood in response to rising demand.

- **Water availability:** Water is abstracted throughout the catchments of the Exe and Otter, from the rivers and from the Otter Valley Aquifer. Water flows in the Exe are maintained by the release of water from Wimbleball Reservoir in the adjoining Exmoor NCA. Water is used most significantly for public supply and agriculture within the NCA. Apart from some private abstraction there is no other water supply to the area east of the Haldon Hills. West of the Haldon Hills public supply is from the rivers of the Teign catchment.

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

- **Climate regulation:** Limited climate regulation is offered by the shallow but more carbon-rich soils of the East Devon Pebblebed Heaths and the Haldon Heaths (a combined area of less than 10 per cent of the NCA) and by woodland cover and its underlying humus-rich soils, covering 10 per cent of the area. Carbon storage is also provided by the wetlands, notably the grazing marsh (currently covering over 5,000 ha), and the silt-rich muds of the estuaries which are high in organic matter, although subject to high levels of flux.

- **Regulating water quality:** The priority catchments of the Exe and Otter suffer from diffuse water pollution as a result of soil erosion, slurry run-off from intensive dairy farms, and high levels of phosphates and nitrates in rivers, particularly attributable to areas of maize cropping and compacted grassland. River water quality is judged to be of only moderate ecological quality in most of the main rivers (the rivers Exe and Culm) with areas of good quality in the west (the rivers Yeo and Teign) and poor quality in the east (the River Otter). The chemical status of groundwater is also classified as poor.

- **Regulating water flow (flooding):** Steep slopes and high rainfall, especially in the upper catchment of the River Exe, rising on Exmoor, mean that river levels can rise quickly following rainfall and flooding is a frequent characteristic of the lower Exe, Clyst and Otter. This underlines the vital importance of the broad flood plains of the major rivers of the area in storing and regulating flood flows. Exeter is at risk of flooding from the Exe and Clyst rivers, Tiverton is at risk from the Exe and Ottery St Mary is at risk on the Otter. Climate change is likely to exacerbate this problem, and the Exe Catchment Flood Management Plan identifies that further action should be taken to reduce the risks, including through the storage of water and management of run-off in the headwaters of the Exe and Culm, partly outside this NCA, to alleviate downstream flooding at Exeter, Tiverton and Cullompton (on the Culm) while also benefiting Biodiversity Action Plan habitats and species.

- **Regulating soil erosion:** The catchments of the Exe and Otter are priority catchments under the Catchment Sensitive Farming Project. Soil erosion is a specific issue across the area and within these catchments, particularly attributable to areas of maize cropping and the regular cultivation of soils on steeper slopes (arable cropping and to a lesser extent ley grasslands). Run-off and soil wash from improved grassland is also an issue in the Exe and Otter catchments.

- **Coastal flooding:** Localised coastal flooding occurs along the shores of the Exe Estuary and at the mouth of the Teign and Otter, although this does not currently affect property. Nevertheless, settlements to the west of the Exe Estuary (Exminster, Starcross and Cockwood) and the coastal towns of Exmouth, Budleigh Salterton and Sidmouth, as well as Teignmouth and Dawlish and the main London to Penzance railway line which follows the coast west of Exeter, may be subject to increasing inundation, especially in times of storm surge, as a result of an eroding coastline and rising sea levels. Strategies of 'Hold the Line' are still largely identified as the current practical option for much of the coastline, including around Budleigh Salterton, Exmouth and stretches south of Dawlish Warren. Managed realignment options are already being considered for parts of the coastline – including the option for possible extension of intertidal habitats north of Powderham Bank associated with the River Clyst if some defences are allowed to fail at Dawlish Warren (as part of the Exe Estuary Coastal Management Study, 2008).

Extensive flooding across the Exe Valley.

Cultural services (inspiration, education and wellbeing)

- **Sense of place/inspiration:** The landscape has a strong sense of place and an overriding spontaneous affinity with farmland, rolling fields and hedgerows, and a 'rural' look. The underlying red sandstone is a defining characteristic for much of the area, resulting in the prominent red soil, many red-tinged buildings and striking coastal features. The defining characteristics that are valued most strongly include: the dense network of sunken winding lanes with high, flower-covered banks that contribute to a sense of tranquillity; fields of different shapes and sizes surrounded by Devon hedgebanks; rural buildings with thatched roofs, some with cob walls, and some with red building stone; the villages; and a rural lifestyle. The coast with its striking red cliffs and stacks is visually and geologically different from the coastline to the west and east. The geological significance of the area is recognised by World Heritage Site status from Exmouth eastwards. The long sandy beaches and adjoining promenades reflect Victorian tourism that lives on today. The estuaries contribute to the area's sense of place and create a zone of maritime influence inland. The Exe, an estuary of significant size and international importance, extends its influence into the heart of Exeter.

- **Sense of history**: The landscape is clearly rooted in the past with Mesolithic and Neolithic sites across the area, and it is firmly shaped by a medieval pattern of isolated farmhouses, hamlets and enclosed fields. Most settlements were in existence by the 10th and 11th centuries. Roman influence is evident, particularly around Exeter, and the church has played a significant role in the development of the area, especially around Crediton. Designed landscapes feature across the NCA and today often provide considerable recreational opportunities.

- **Tranquillity:** Although the landscape is perceived to have a strongly rural character, it is not seen as particularly tranquil, a perception that is borne out by the Campaign to Protect Rural England Intrusion Map 2007 which identifies 6 per cent of the NCA as urban, 58 per cent as disturbed and 36 per cent as undisturbed. The lowest scores for tranquillity are associated with the urban centres of Exeter, Teignmouth, Crediton and Tiverton, along with the M5 and other major road corridors, while the highest scores for tranquillity are found in the rural areas, particularly in the north of the NCA (bordering the Blackdown Hills) and the countryside north of Budleigh Salterton. These areas of higher tranquillity correlate with the two designated AONB.

- **Recreation:** The landscape has strong associations with recreation, leisure and touring, with good access to facilities, and villages that offer pubs and cream teas. Active recreation is particularly associated with the coast and the South West Coast Path National Trail, and with the estuaries of the Exe and Teign with their extensive shallow water moorings. In recent years there has been significant growth in cycling with a major mountain biking venue on Haldon. In 2006/07 visitor numbers on Haldon were 80,000, but by 2011/12 this had increased to 220,000. The National Cycle Network (Route 2) follows the coast around this NCA, taking in the fringes of the Teign and Exe estuaries. The off-road sections of this route are proving particularly popular for leisure use. The East Devon Pebblebed Heaths provide a significant area (1,100 ha) of open access which is well used by local residents. There are over 700 km of rights of way (at a density of 0.73 km/km2), nearly 4,000 ha of open access/common land and 43 km of the South West Coast Path within this NCA.

- **Biodiversity:** There is a range of habitats, from internationally designated estuaries, sand dunes and lowland heath to nationally designated coniferous forest. Hedgerows, woodlands (both mixed and ancient broadleaved), rivers with associated wet habitats and low-input grassland all contribute to the mosaic of habitats supporting an array of species. Bats, including the greater horseshoe, are known to have strategic flyways across the area and roost in the west of the NCA. Other notable species across the area include breeding populations of nightjar, the Dartford warbler, cirl bunting, southern damselfly and the unique warren crocus.

- **Geodiversity:** The geological significance of the coast is recognised by World Heritage Site status from Exmouth eastwards. The geology and geomorphology across this area allow for the study and interpretation of earth sciences up to the earliest occupation of the landscape by man. The alternating periods of marine incursion and mountain building, including volcanic activity, can be observed in both the topography of the area and the coastal and inland exposures (cliffs, quarries and road cuttings). More recent coastal geomorphological features include sand and shingle spits and beaches.

Recreational use of the internationally designated Exe Estuary.

Statements of Environmental Opportunity

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

For example by:

- Restoring and enhancing estuarine habitats around the Exe Estuary Special Area of Conservation and Teign and Otter estuaries for the benefit of biodiversity, particularly shellfish, assemblages of flora, invertebrates, and passage and wintering waterbirds, such as avocet, Brent goose, teal, wigeon, shelduck and curlew, and further reinforcing coastal landscape character.
- Conserving and enhancing important geological exposures, notably the designated sandstone cliffs at Dawlish, Orcombe Point and Otterton Point; and fulfilling the aspirations and aims of the Dorset and East Devon World Heritage Site (the Jurassic Coast), a geological site recognised by UNESCO for its outstanding universal value.
- Allowing natural processes to continue along the coast which promote the development of estuarine and intertidal elements such as mudflats, sandflats and spits, and resultant salt marsh, marshes and dunes, which contribute to flood risk management, coastal defence, landscape character, biodiversity and recreation, while maximising carbon sequestration and storage in intertidal sediments.
- Maintaining and managing riparian and estuarine natural and semi-natural habitats and natural channels, which currently serve to alleviate coastal flooding, divert nutrient and sedimentation sources and would aid resilience to future sea level rise.
- Identifying and creating areas of new coastal and estuary fringe habitats, particularly flood plain grazing marsh, rush pasture and fen on the lower reaches of the principal rivers – the Exe, Teign, Otter, Culm and Clyst – with the capacity to withstand or absorb coastal and/or riparian flooding and reduce sedimentation.
- Increasing opportunities for people to deepen their understanding of the natural and historic environment and to take action to improve it, particularly where fulfilling the aspirations and aims of the Dorset and East Devon World Heritage Site.
- Managing and sensitively planning future development and land use to maintain a sense of 'wildness', tranquillity and a close association with the maritime environment, and in locations that do not impair or inhibit the landward migration of coastal and estuarine fringe habitats.
- Creating reedbeds and buffer strips in the upper reaches of the principal rivers and their tributaries, particularly in association with intensive agricultural and livestock activities to act as silt and nutrient traps.

SEO 2: Manage, enhance and where necessary protect the diversity of land use and activity which gives the Devon Redlands its distinctive character. Increase the connectivity of key habitats for the benefit of landscape, biodiversity and ecosystem services.

For example by:

- Managing and encouraging the creation of areas of low-input grassland to, for example, provide sustenance zones and strategic flyways for bats and to meet wider objectives, especially where located over sandstone aquifers and on steeper slopes in order to help to prevent soil erosion and nutrient leaching.
- Restoring and managing existing woodland and encouraging new woodland planting, particularly in the priority catchment areas of the rivers Exe and Otter, in order to prevent soil erosion, slow nutrient run-off, increase water infiltration and reduce the risk of flooding, and to act as a buffer to intensive agricultural activities.
- Supporting and re-introducing sustainable traditional woodland management techniques and the skills needed to maintain these practices, such as selective felling and coppicing, particularly on the steeper valley sides, providing a sustainable source of local wood fuel and biomass close to areas of demand.
- Restoring and managing existing wet and riparian habitats and encouraging new wetland habitat creation, which would serve to enhance biodiversity, improve water quality by reducing sedimentation and nutrient leaching, and reduce flooding.
- Restoring, managing and planting new 'traditional' orchards for the benefit of the landscape and sense of place, biodiversity and retention of genetic diversity found in old varieties.
- Managing and restoring existing hedgebanks and hedgerows and where appropriate creating new ones to reinforce landscape character and sense of place, to enhance wildlife networks, and to control soil erosion and encourage water infiltration, especially within the priority catchment areas of the rivers Exe and Otter, and across the main flood plains of the area.
- Preserving and managing ancient, veteran and hedgerow trees and encouraging a new generation through planting and selective management, benefiting landscape character, sense of place, history and biodiversity.
- Reinforcing field patterns by the creation of wide grass buffer strips adjacent to boundaries protecting wetlands and watercourses from nutrient enrichment and sedimentation.
- Supporting environmentally sound arable farming measures such as low-input winter stubbles and conservation headlands to benefit farmland birds, including the cirl bunting, and arable plants.
- Restructuring existing conifer plantations as they reach maturity, to allow for reversion to lowland heath and associated mire habitats, and enhancment of the setting of historic assets, while maintaining the wildlife interest of Haldon Forest and balancing recreational demand.
- Positively managing the lowland heath on the East Devon Pebblebed Heaths to ensure continuing contribution to landscape character, improved condition of historic assets, biodiversity, sense of place and tranquillity.
- Promoting best practice soil management and agriculture to maintain a healthy agricultural landscape and improve water quality.

SEO 3: Protect and manage the distinctive character of the landscape, the natural beauty, scenic quality, historic environment and geological features. Enhance recreational resources, access to nature and heritage assets, particularly along the coast, to ensure public benefit and enjoyment.

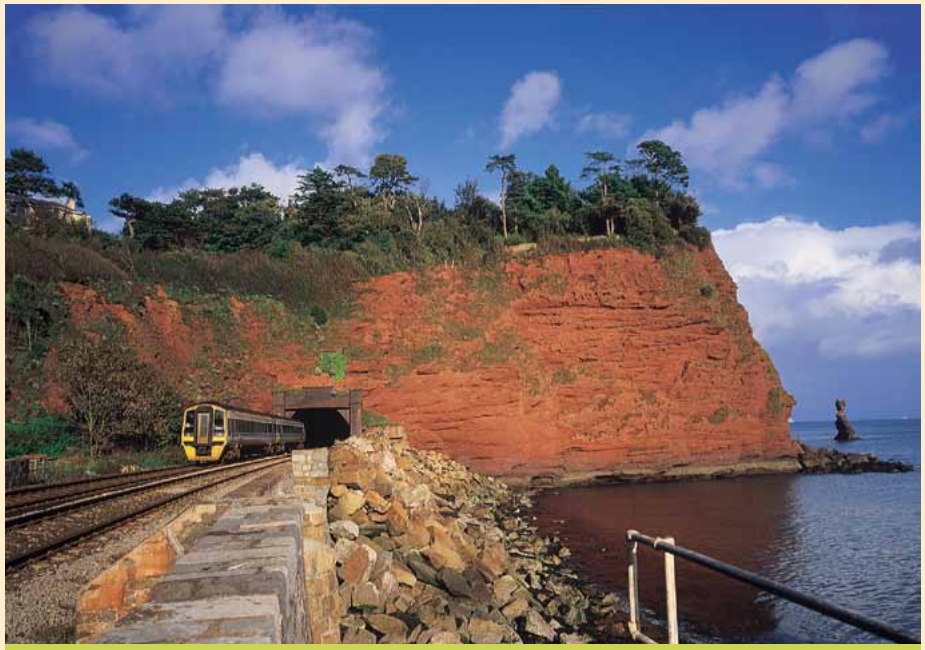
For example by:

- Encouraging landscape restoration, creation and enhancement activities informed by the special qualities of the East Devon Area of Outstanding Natural Beauty (AONB) and the Blackdown Hills AONB.
- Maintaining landscape character, 'iconic' views, tranquillity, a sense of 'wildness' and connection to the maritime environment by sensitive, responsive planning of future land use and offshore developments, for example large-scale photovoltaic farms and offshore wind farms.
- Improving access along and connecting with the South West Coast Path National Trail, the National Cycle Network, promoted routes including the East Devon Way and Exe Valley Way, and throughout the rights of way network. Promoting enjoyment, awareness and understanding of the National Character Area, particularly less well-known sites and features, to relieve pressure on busier destinations in order to maintain existing levels of tranquillity, remoteness and landscape character.
- Improving the number, quality and accessibility of green spaces and recreational opportunities near to where people live and stay, and around areas of planned development. Protecting and managing the use of fragile habitats, particularly those in close proximity to areas of significant development.
- Ensuring that the network of existing sunken lanes and their character remain intact and promoting their use for non-motorised transport and quiet recreation.
- Managing, by extensive grazing and scrub removal where current land cover and use threatens, and protecting, by planning the location of new development, the integrity of sites of heritage significance and value, particularly in areas of high sensitivity, for example iron-age hill forts at Stoke Hill and Woodbury Castle, and providing opportunities for understanding and awareness of these assets.
- Conserving and managing historic parklands, including the planting of trees that are sensitive to historic character. Encouraging appropriate management of ancient and veteran trees and the retention of deadwood.
- Encouraging practices that conserve, manage and replant traditional orchards, particularly where they include local varieties that may be of genetic interest.

SEO 4: Plan and manage for a strong landscape framework to support and integrate the expansion of Exeter, Exmouth, Teignmouth, Tiverton, Crediton and Cullompton, and the road and rail network throughout the area. Conserve and enhance the existing character, form and pattern of the area's historic settlement, from single farmsteads to larger villages.

For example by:

- Maintaining and managing the dispersed settlement pattern and form, in particular the relationship between farmsteads, hamlets and 'parish' villages linked by a network of winding sunken lanes that lack modern engineered features.
- Planning and managing the introduction of new vertical elements and renewable energy technologies in the landscape to maintain character and setting.
- Using understanding of the area's traditional and historic architecture, including materials (cob, stone, thatch and pebble) and the distinct patterns of settlement, to inform appropriate conservation and use of historic buildings and the integration of renewable energy technologies, and to plan for and inspire new development which makes a positive contribution to local character.
- Seeking and realising opportunities, such as woodland planting, to mitigate the impacts and effects of existing and new development and infrastructure at the edges of settlements and along main transport routes, as on the fringes of Exeter and along the M5 corridor.
- Creating new accessible and natural green spaces and links to help to integrate new areas of development with exisiting ones, particularly around the significant development east of Exeter, and providing a range of natural and cultural benefits through the implementation of the various green infrastructure delivery plans.
- Supporting sustainable transport options to major existing visitor destinations, notably along the coast.
- 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.



The London to Penzance train line cutting through and along the coast.

Supporting document 1: Key facts and data

Total area: 97,403 ha

1. Landscape and nature conservation designations

Seven per cent of the NCA is designated Area of Outstanding Natural Beauty (AONB); 6,733 ha within the East Devon AONB and 33 ha within the Blackdown Hills AONB. Less than 1 per cent of the NCA is within the East Devon Heritage Coast. A portion of the coast is also nominated a Natural World Heritage Site, the Jurassic Coast.

Management plans for the protected landscape(s) can be found at:

- http://www.eastdevonaonb.org.uk/
- http://www.blackdownhillsaonb.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	Exe Estuary	493	1
European	Special Protection Area (SPA)	East Devon Heaths SPA; Exe Estuary SPA	1,621	2
	Special Area of Conservation (SAC)	East Devon Pebblebed Heaths SAC; Dawlish Warren SAC; South Hams SAC (partially in NCA)	1,202	1
National	National Nature Reserve (NNR)	Dawlish Warren NNR	35	<1
National	Site of Special Scientific Interest (SSSI)	A total of 27 sites wholly or partly within the NCA	3,180	3

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.

The Exe Estuary is one of the most highly designated sites in the South West recognised at an international, European and national level. Many of the designations overlap either wholly or partially; the Exe Estuary SPA and Exe Estuary Ramsar site cover the same area. The whole of the SPA/ Ramsar site is SSSI designated. The majority of Dawlish Warren NNR is SSSI designated. Part of Dawlish Warren SAC lies within Dawlish Warren NNR. Dawlish Warren SAC lies within the Exe Estuary SPA and Ramsar site. East Devon Heaths SPA and East Devon Pebblebed Heaths SAC cover the same area and are within the SSSI designated area. South Hams SAC is also SSSI designated.

There are 203 local sites in Devon Redlands covering 3,954 ha, which is 4 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: 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

A breakdown of SSSI condition as of March 2011 is as follows:

SSSI condition category	Area (ha)	% of SSSI land in category condition
Unfavourable declining	125	4
Favourable	1,591	50
Unfavourable no change	17	<1
Unfavourable recovering	1,447	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 (0 m) at the Exe Estuary to a maximum of 284 m on the edge of the Culm. The flat-topped Haldon Hills rise to some 250 m in the west of the area. The average elevation of the landscape is 90 m above sea level.

Source: Devon Redlands Natural Area Profile, Devon Redlands Countryside Character Area description

2.2 Landform and process

The landscape of this NCA has gradually been created by river erosion over the last two million years. The River Exe and its tributaries including the Rivers Culm, Clyst, Yeo and Creedy, dominate, flowing north to south through the entire NCA, entering the sea through a broad estuary encompassing a series of sand and mudflats. The steeply rolling landscape in the north of the NCA is dissected by incised tributaries of the River Exe. Further south the landscape gives way to rounded medium scale hills (rising to 250 m) with convex valley sides falling gently towards major river valley floors characterised by hydrological features.

The south-west of the NCA is dominated by the Haldon Ridge (between 200 and 250 m above sea level). The Haldon Ridge is a major landmark and signifies a fundamental change in geology. It reflects the national line of transition between lowland and highland Britain, traditionally said to run from the Exe to the Tees. The slopes of this ridge are dissected by a series of smaller streams and associated narrow, steep-sided valleys, which are tributaries of the Rivers Teign and Exe. The Teign Estuary flows eastwards to join the sea between Shaldon and Teignmouth. To the south of the Teign Estuary is a landscape of undulating hills and small valleys which fall steeply to the estuary and coast in the east and rise in elevation towards the mass of Dartmoor in the west. The landform varies from sometimes steeply folded with prominent individual hills to more gently flowing series of hills and valleys.

The eastern side of this NCA is bordered by higher ground. In the north, the land form is characterised by broad-scale slopes rising from the River Culm to the adjacent ridge, plateaux and tableland. The slopes drop steeply from the edge of the Blackdown Plateau, where the clay and cherts have been undercut through the erosion of softer underlying greensand. Further south there is a high, level to gently undulating plateau forming a long north-south 'finger' running north from Budleigh Salterton. This landform reflects its unusual geological formation. The Bunter Pebble Beds influence vegetation and land use and provide building materials for adjoining areas.

The coast is dominated by steep red sandstone cliffs, with headlands interspersed with long beaches and coves and includes sand spits at the mouths of the Exe and Teign. The beaches are predominantly sandy in the west and pebble and shingle in the east.

Source: Devon Redlands Natural Area Profile, Devon Redlands Countryside Character Area description

2.3 Bedrock geology

The major geology of the Devon Redlands is the easterly dipping New Red Sandstone which is visible in red coastal cliffs at Teignmouth, Dawlish and between Exmouth and Budleigh Salterton, and along road cuttings. The flat-topped Haldon Hills in the west are defined by Cretaceous Upper Greensand topped by Tertiary flint gravels. To the east Triassic Budleigh Salterton Pebble Beds and Otter Sandstone have contributed to the formation of heathland, including at Needbury Common on the edge of the Blackdowns. Culm Measures (sandstones, silts and shales) extend into the NCA from the north and west (The Culm NCA). Outcrops of volcanic rocks are found around Exeter, with a volcanic plug in the city centre.

Source: Devon Redlands Countryside Character area description, Devon Redlands Natural Area Profile, British Geological Survey maps

2.4 Superficial deposits

Alluvium and river terrace deposits along watercourses; some small areas of blown sand and brickearth - wind-blown dust which was deposited under cold, dry tundra-like conditions.

Source: Devon Redlands Countryside Character area description, Devon Redlands Natural Area Profile, British Geological Survey maps

2.5 Designated geological sites

Designation	Number of Sites
Geological Site of Special Scientific Interest (SSSI)	14
Mixed interest SSSI	4

There are 37 Local Geological Sites within the NCA.

Source: Natural England (2011)

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

2.6 Soils and Agricultural Land Classification

The unifying factor of a significant part of this NCA is the distinctive red sandstone which has produced good, fertile, well drained soils. This combined with the relatively level topography has resulted in an intensive agricultural 'heartland' for the county of Devon. This 'heartland' contrasts with the prominent ridges of the Haldon Hills and Bunter Pebble Beds whose geology gives rise to poor, shallow infertile soils.

Source: Devon Redlands Natural Area Profile, Devon Redlands Countryside Character Area description

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

Agricultural Land Classification	Area (ha)	% of NCA
Grade 1	10,728	11
Grade 2	15,129	15
Grade 3	50,827	52
Grade 4	10,251	10
Grade 5	130	<1
Non-agricultural	4,662	5
Urban	5,511	5

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 classification 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 Name	Length (km)
River Exe	39
River Culm	27
River Clyst	22
River Yeo	21
Grand Western Canal	17
River Otter	15
River Kenn	12
River Tale	8
Exeter Ship Canal	5
River Teign	1

Source: Natural England (2010)

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

The area is centred on the River Exe and its tributaries the Rivers Clyst, Culm, Creedy and Yeo, with the River Teign running to the sea to the west and the River Otter to the east via Budleigh Salterton. The inland areas of the Redlands are cut by steep-sided valleys, while towards the coast the valleys widen out and rivers meander across extensive, well developed flood plains. The area is also crossed by the Grand Western Canal.

3.2 Water quality

The total area of Nitrate Vulnerable Zone (NVZ) is 74,739 ha, or 77 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 http://maps.environment-agency.gov.uk/wiyby/wiybyController?ep=maptopics&lang=_e

4. Trees and woodlands

4.1 Total Woodland Cover

The NCA contains 9,669 ha of woodland, 10 per cent of the total area, of which 1,214 ha is ancient woodland.

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

4.2 Distribution and size of woodland and trees in the landscape

Large woodlands are found on the steep valley sides, particularly mixed and broadleaved woodlands, the latter often dominated by oak. Ashclyst Forest on the slopes of the Clyst Valley comprises nearly 300 ha of mixed woodland. The largest broadleaved woodlands are between 100 and 200 ha, including those found on the northern fringes of Exmouth, part of the Haldon Hills, and the slopes of the northern section of the River Exe. Small broadleaved woodlands and copses are dispersed throughout, particularly in the upper valleys. Typically farm woodlands and copses are no larger than 5 ha in size. Frequent hedgerow trees define much of the landscape; although the open flood plain has little tree cover (including due to widespread loss through Dutch elm disease) with closely trimmed hedgerows surrounding grazing marsh. The open heathland landscape in the east has sparse woodland cover, with gorse, scattered pine, wind-trimmed beech and some wooded ridges. Conifer plantations are a feature of the Haldon Hills in the west of the area. This part of the landscape is the most heavily wooded; mixed woodland and coniferous

plantations on the Hills include blocks of up to 600 ha in size. These wooded hills provide the characteristic western skyline to Exeter and a backdrop to much of the surrounding area. Some remnant farm orchards remain across the heart of the NCA.

Source: Devon Redlands Natural Area Profile, Devon Redlands 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	5,374	6
Coniferous	2,973	3
Mixed	584	<1
Other	738	<1

Source: Forestry Commission (2011)

Area and proportion of Ancient Woodland and Planted Ancient Woodland within the NCA.

Woodland type	Area (ha)	% of NCA
Ancient semi-natural woodland	533	<1
Ancient re-planted woodland (PAWS)	681	<1

Source: Natural England (2004)

5. Boundary features and patterns

5.1 Boundary features

Varied hedgebanks are features of the inland landscape, often rich in wildflowers. Low trimmed hedgerows define open fields in the flood plain and coastal areas.

Source: Devon Redlands Countryside Character Area description; Countryside Quality Counts (2003)

5.2 Field patterns

Medium-scale, medieval fields of irregular shape are found across much of the area. There are some more regular strip fields from the same period, with curving boundaries (including 'Barton Fields'). Post-medieval, regular fields – including open, large scale fields – are found along the flood plains associated with intensive arable cultivation. Regular and large-scale enclosure of late-18th and 19th century is evident on Bampton and Beer Downs.

Source: Devon Redlands 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 total farmed area in 2009 was 71,804 ha comprised of 1,341 holdings and 70,312 ha comprised of 1,444 holdings in 2000. The number of mixed farms within the NCA fell from 160 to 110 between 2000 and 2009. There were 258 arable or horticultural holdings in 2000 and 293 in 2009; a 14 per cent increase. Livestock holdings declined in number by 16 per cent from 743 in 2000 to 622 in 2009, but still account for the majority of holdings in the area; 46 per cent of holdings are predominantly livestock holdings. There was a 38 per cent decrease in the number of dairy farms within the same period, dropping from 248 to 154 holdings. The number of specialist pig holdings fell from 28 to 19; a 32 per cent reduction.

Source: Agricultural Census, DEFRA (2010)

6.2 Farm size

In 2009 there were 235 units (41,766 ha) of more than 100 hectares in the NCA; 58 per cent of the farmed area. These figures represent a 15 per cent increase from 2000 numbers of 205 holdings covering 36,168 ha. In 2009 there were 207 holdings of 5 hectares or less covering just 284 ha. There were 385 holdings of greater than 5 ha and less than 20ha covering 4,140 ha or 6 per cent of the farmed area, 295 holdings of greater than 20 ha and less than 50 ha accounting for 10,033 ha or 14 per cent of the area and 219 holdings of greater than 50 ha and less than 100 ha accounting for 15,581 ha or 22 per cent of the area. All holdings of less than 100 ha size declined in number by around 10 per cent from 2000 to 2009.

Source: Agricultural Census, DEFRA (2010)

6.3 Farm ownership

2009: Total farm area = 71,804 ha; owned land = 44,624 ha
2000: Total farm area = 70,312 ha; owned land = 46,495 ha

Source: Agricultural Census, DEFRA (2010)

6.4 Land use

The predominant land use is grassland with 46,947 ha, or 65 per cent of the area under grass in 2009; 4 per cent increase in hectarage since 2000. Cereals accounted for 12,849 ha of the farmed area, the second most prevalent land use, covering 18 per cent of the area. Cereals reduced in area by 1,880 ha, or 13 per cent, between 2000 and 2009.

Source: Agricultural Census, DEFRA (2010)

6.5 Livestock numbers

In 2009 there were 81,815 cattle reduced from 84,036 in 2000, 107,009 sheep also reduced in number from 131,168 in 2000 and 42,562 pigs, again reduced in number from 71,708 in 2000.

Source: Agricultural Census, Defra (2010)

6.6 Farm labour

The number of principal farmers dropped from 2,121 in 2009 to 1,943 in 2000; a reduction by 8 per cent. The number of salaried managers remained constant over the same period at 56.The number of full-time workers dropped by 23 per cent from 560 to 432 in the same period. The numbers of part-time workers increased by 2 per cent from 288 to 293 and the number of causal/gang workers dropped by 13 per cent.

Source: Agricultural Census, Defra (2010)

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

7. Key habitats and species

7.1 Habitat distribution/coverage

The Teign, Otter and Exe Estuaries are fringed by extensive grazing marsh, saltmarsh, reedbeds and mudflats. The Exe and Otter estuaries in particular support important numbers of wintering and passage waterbirds. Important sand dune habitats are found at Dawlish Warren, at the mouth of the Exe, with the main vegetation types including sand sedge, marram grass and red fescue and supporting a rich dune flora including several scarce and rare plant species. The wetland habitats of the River Exe and its tributaries, the Culm, Creedy and Yeo, and the River Otter and tributary the River Tale, include rush pasture and fen defining river edges. The rivers themselves form invaluable wildlife corridors supporting a range of invertebrates, fish, birds and plants. Heathland, purple moor grass and rush pastures are found to the north of Budleigh Salterton, on the fringes of the Blackdown Hills, forming the largest block of lowland heath in Devon. It is also found on the Haldon Hills to the south-west of Exeter. Small areas of lowland calcareous grassland in the north of the NCA are associated with limestone outcrops.

Source: Trent Valley and Rises Natural Area Profile

7.2 UK Biodiversity Action Plan (BAP) 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; www.naturalengland.org.uk/ourwork/conservation/biodiversity/protectandmanage/englandsbiodiversitystrategy2011.aspx.

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

UK BAP priority habitat	Area (ha)	% of NCA
Coastal and flood plain grazing marsh	3,940	4
Broadleaved mixed and yew woodland (road habitat)	3,136	3
Lowland heathland	1,544	2
Reedbeds	453	<1
Lowland meadows	137	<1
Maritime cliff and slope	116	<1
Lowland dry acid grassland	59	<1
Coastal sand dunes	49	<1
Purple moor grass	25	<1
Lowland calcareous grassland	24	<1
Mudflats	14	<1

Source: Natural England (2011)

7.3 Key species and assemblages of species

- Maps showing locations of UK BAP Priority Habitats are available at: http://magic.defra.gov.uk/website/magic/ – select 'Habitat Inventories'
- Maps showing locations of S41 species are available at: http://data.nbn.org.uk/

8. Settlement and development patterns

8.1 Settlement pattern

An historical pattern of dispersed farmsteads and hamlets linked to the medieval field patterns. Many villages are characterised by long and narrow burgage plots at right angles to the streets, reflecting the medieval organisation of the landscape. Large nucleated villages are located along the Exe Estuary with small resorts extending along the coast.

Source: Devon Redlands Countryside Character Area description; Countryside Quality Counts (2003)

8.2 Main settlements

This NCA includes the historic county city of Exeter which is also one of the major regional centres and the hub of all transportation within the region. The area also includes the market towns of Cullumpton, Crediton and Tiverton; their origins are linked to the medieval wool and cloth industries. The M5 motorway and major trunk roads into the Devon and Cornwall dissect the landscape; all converging just outside Exeter. The main train line out of Devon and Cornwall also crosses the entire NCA from north-east to south-west, leaving via the scenically beautiful but exposed coastal stretch. The expanding regional airport, Exeter Airport, is also a significant element in the landscape. The total estimated population for this NCA (derived from ONS 2001 census data) is: 321,934.

Source: Office for National Statistics census data 2001 Countryside Character Area description; Countryside Quality Counts (2003), Natural England (2012)

8.3 Local vernacular and building materials

Cob and thatch buildings are closely associated with this classic Devon landscape. Linhays, open-fronted shelter sheds for animals built of timber framing or stone, are a particular feature of the area. Local volcanic rocks, sandstone and breccias are also widely used as building materials. Pebbles, linked to the local geology, are used in walls and buildings in the east of the area.

Source: Devon Redlands Countryside Character Area description; Countryside Quality Counts (2003)

9. Key historic sites and features

9.1 Origin of historic features

Bronze Age barrows are found on the Haldon Hills and there are a number of Iron Age hill forts, such as at Stoke Hill. Historic parks and gardens around small manor houses, often located close to the towns in and around the Exe Valley.

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

9.2 Designated historic assets

This NCA has the following historic designations:

- 17 Registered Parks and Gardens covering 1,766 ha
- 0 Registered Battlefields
- 125 Scheduled Monuments
- 4,818 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

- 4% of the NCA 3,825 ha is classified as being publically accessible.
- There are 726 km of public rights of way at a density of 0.8km per km2.
- There is 1 National Trail, the South West Coastal Path extending over 43 km

Sources: Natural England (2010)

The coastal stretch of this NCA has unrestricted public access and supports the South West Coast Path national trail. Both the Exe and Otter Estuaries have near-continuous pedestrian or cycle access along their fringes inland to the first crossing point.

The major urban centres of Exeter and Exmouth are well provided for with coastal access and areas of open access, including the East Devon Pebblebed Heaths, the National Trust's Killerton Estate and the Forestry Commission's land on Haldon Hill; the latter providing a significant regional mountain biking hub.

Tiverton and the north of the NCA is less well provided for in terms of open access although the national cycle route passes through Tiverton and follows the Grand Western Canal towpath across the NCA.

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)	0	0
Common Land	42	<1
Country Parks	47	<1
CROW Access Land (Section 4 and 16)	102	<1
CROW Section 15	17	<1
Village Greens	2	<1
Doorstep Greens	1	<1

Access designation	Area (ha)	% of NCA
Forestry Commission Walkers Welcome Grants	7	<1
Local Nature Reserves (LNR)	6	<1
Millennium Greens	3	<1
Accessible National Nature Reserves (NNR)	0	0
Agri-environment Scheme Access	5	<1
Woods for People	596	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), much of the NCA experiences significant disturbance, especially around Exeter and Exeter Airport. All major transport links to the south-west, road and rail, pass through this NCA. The NCA is most tranquil to the north of Tiverton

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

Tranquillity	Tranquillity Score
Highest value within NCA	36
Lowest value within NCA	-83
Mean value within NCA	-7

Sources: CPRE (2006)

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

11.2 Intrusion

The 2007 Intrusion Map (CPRE) shows the extent to which rural landscapes are 'intruded on' from urban development, noise (primarily traffic noise), and other sources of visual and auditory intrusion. This shows that most of the NCA suffers considerable intrusion. A breakdown of intrusion values for this NCA is detailed in the table below.

Intrusion category	1960s (%)	1990s (%)	2007 (%)	Percentage change (1960s-2007)
Disturbed	20	47	58	38
Undisturbed	76	49	36	-40
Urban	3	3	6	3

Sources: CPRE (2007)

Notable trends from the 1960s to 2007 are the great increase in the area experiencing disturbance, by over a third, and the doubling of the urban area. The M5 motorway was constructed through this area in the period up to 1977.

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

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 Inventory of Woodland & Trees, Forestry Commission (2003)
- Countryside Quality Counts Draft Historic Profiles, English Heritage (2004)*
- Ancient Woodland Inventory, Natural England (2003)
- BAP 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)Detailed River Network, Environment Agency (2008)

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.

The River Exe meanders through the mixed farmed fertile flood plain.

Supporting document 2: Landscape change

Recent changes and trends

Trees and woodlands

- Evidence from Countryside Quality Counts for the period from 1999 to 2003 suggests that woodland character is probably not being maintained. While new planting and uptake of management agreements for established stock has increased, there is a significant amount of woodland that is not under agreement. In 1999 uptake of management agreements for established stock, was about 5 per cent of eligible stock identified on the National Inventory of Woodland and Trees, by 2003 this had risen to 14 per cent.

Boundary features

- Evidence from Countryside Quality Counts for the period from 1999 – 2003 suggests that boundary features have probably been neglected. Between 1999-2003 Countryside Stewardship capital agreements for linear features included fencing (88 km), hedge management (38 km), hedge planting and restoration (88 km) and restored boundary protection (107 km). The estimated boundary length for the NCA is about 8,426 km, the total length of boundaries under agreement, between 1999 and 2003, was equivalent to about 4 per cent of this total.

- The need for hedgerows for stock management is likely to have declined in recent years with the decline in dairy and mixed agriculture and increase in cereal production and horticulture. An increase in cereal cultivation has also resulted in larger fields, particularly on the valley floors and some larger or double gateways.

Agriculture

- Countryside Quality Counts data for the period from 1999 – 2003 shows Countryside Stewardship uptake for annual area features to be consistently above national average.

- The predominant land use is grassland, with approximately half of all farm holdings classified as livestock in terms of their farming type. However, between 2000 and 2009 there was an increase in the number of arable and horticultural holdings, 14% in number, and a decrease in the number of all other farming types, possibly in response to market prices.

- There was a 15 per cent increase in farm holdings over 100 ha between 2000 and 2009 (58 per cent of the farmed area) and all holdings of less than 100 ha size declined in number by around 10 per cent.

Settlement and development

- Major development is underway at the Exeter and East Devon Growth Point. It includes establishment of the Exeter Science Park, a SkyPark business park, an intermodal rail freight terminaland a new community. Significant infrastructure is also being constructed to service these area. Development pressure is also significant at a local level. The rate of change to urban areas is moderately high, and there is evidence of expansion to the urban fringes areas into the peri-urban zones around Exeter, Exmouth, Budleigh Salterton, Cullompton and Teignmouth. There is also evidence of scattered development in the open countryside and around smaller settlements, including a moderately high rate of barn conversions.

Floristically rich sunken lanes.

Semi-natural habitat

- The most extensive habitat designated as SSSI is lowland heath, most of which is in favourable condition and under Higher level stewardship.

- Changes in agricultural practices have meant a decline in the number of mixed farming practises in the area. This has had an impact on a number of extensively managed habitats and dependent species, particularly grassland sites and hedgerows.

- Coastal and flood plain grazing marsh is the most extensive BAP habitat in the area, in recent years development and more wide spread flooding has impacted on these areas.

Historic features

- In 1918 about 4 per cent of the NCA was historic parkland. By 1995 it is estimated that 45 per cent of the 1918 area had been lost. About 51 per cent of the remaining parkland is covered by an Historic Parkland Grant, and 29 per cent is included in an agri-environmental scheme. Thus opportunities for managing this important aspect of the historic landscape remain. It should also be noted that about 64% of historic farm buildings remain unconverted. About 96% are intact structurally.

- Remnant traditional orchards are scattered across the NCA, providing significant cultural associations in some neighbourhoods, for example around Whimple. Many orchards are now under environmental stewardship.

Coast and rivers

- Storm surges, coupled with high tides have led to a higher incidence of flooding, particularly of the railway line and coastal properties near Dawlish.

- The occurrence of flooding has been more frequent in recent years, impacting on the railway line crossing the Exe valley and the branch line to Barnstaple.

Minerals

- Restoration of the Black Hill Quarry on the edge of the the Pebblebed heaths is now complete; however the site is still used as a storage area and processing plant for sands and gravels transported from Venn Ottery and Marshbroadmoor. The site is within the East Devon AONB.

Drivers of change

Climate change

- The main issues of predicted climate change, away from the coast, include soil erosion, run off and flooding due to heavy rainfall events, impacting on the region's mainline railway as well as property.

- Coastal properties and infrastructure may be particularly vulnerable to flooding and damage with a predicted increased 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, including the iconic avocets on the Exe.

- 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. Such changes may be particularly significant to the internationally designated Pebblebed Heaths.

- Conversely, 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. Other non-native plants such as montbretia and pampas grass are becoming better established and more prominent across the area.

Other key drivers

- The area east of Exeter is currently undergoing major development and this is planned to continue for the next 15 to 20 years presenting many challenges and opportunities. It is envisaged that 26,600 jobs could potentially be established and 20,000 new homes built. This development will result in a change to the character and tranquillity of this part of the NCA and will present challenges relating to increased traffic, both by road and air, as well as a significant change to the water catchment with flooding, water quality and abstraction issues to consider. Plans to integrate green infrastructure throughout the development will potentially provide numerous new recreational opportunities for residents, provide ecological corridors and could help shape a new landscape with its own distinctive character.

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

- 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.

- Existing consents for sand and gravel extraction around the nationally and internationally important East Devon Pebblebed Heaths presents many challenges while the restoration that has occurred will continue into future years provides both biodiversity and recreation opportunities.

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.

Far reaching views across the Devon Redlands from the west.

Statement of Environmental Opportunity	Ecosystem service: Food provision	Timber provision	Water availability	Genetic diversity	Biomass provision	Climate regulation	Regulating water quality	Regulating water flow	Regulating soil quality	Regulating soil erosion	Pollination	Pest regulation	Regulating coastal erosion	Sense of place / Inspiration	Sense of history	Tranquillity	Recreation	Biodiversity	Geodiversity
SEO 1: Protect and manage the value and integrity of the coastal and estuarine landscape with its diversity of cliffs, geology, geomorphology, historic features, habitats and associated wildlife, contributing to the livelihoods, enjoyment and education of people.	↗ *	○	○	○	○	↗ *	↗ *	↗ *	↗ *	↗ *	↑ *		↑ **	↑ *	↑ **	↑ ***	↑ **	↗ *	↗ **
SEO 2: Manage, enhance and where necessary protect the diversity of land use and activity which gives the Devon Redlands its distinctive character. Increase the connectivity of key habitats for the benefit of landscape, biodiversity and ecosystem services.	↗ *	↗ *	↗ *	○	↗ *	↗ *	↗ *	↗ *	○	↗ *	↑ *		○	↗ **	↗ **	↑ ***	○	↗ *	↗ *
SEO 3: Protect and manage the distinctive character of the landscape, the natural beauty, scenic quality, historic environment and geological features. Enhance recreational resources, access to nature and heritage assets, particularly along the coast, to ensure public benefit and enjoyment.	○	○	○	○	○	○	○	○	○	○	○		○	↑ ***	↑ *	↗ *	↑ *	↗ *	↑ ***
SEO 4: Plan and manage for a strong landscape framework to support and integrate the expansion of Exeter, Exmouth, Teignmouth, Tiverton, Crediton and Cullompton, and the road and rail network throughout the area. Conserve and enhance the existing character, form and pattern of the area's historic settlement, from single farmsteads to larger villages.	○	○	○	○	○	○	○	○	○	○	○		○	↑ ***	↗ *	↗ *	↑ *	○	↑ ***

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
A rolling mixed farmed landscape, based on distinctive red soils defined by underlying Devonian sandstones, with a mosaic of regular and irregularly shaped fields bounded by often wildflower-rich hedgebanks. A rich mosaic of land cover with a clear expression of fertility and productivity.	■ The NCA is a strongly rural, agricultural landscape. The varying field shapes and hedgebank boundaries, many of medieval origin, are highly valued by local residents. The landscape has been and continues to be an inspiration for poetry and painting. ■ Many hedgebanks are species-rich formed from hawthorn, blackthorn, hazel, oak, ash and holly, while at ground level there is often a rich flora including primrose, bluebell, red campion, navelwort, polypody, and shining cranesbill. Ancient hedgerows are generally more diverse and support more wildlife species, though appropriate management is crucial in sustaining biodiversity. ■ Field size and land use varies across the area illustrating a history of enclosure and expansion, adaptability and fertility, and supporting a wealth of biodiversity. Fragments of calcareous grassland occur on the Westleigh Limestone outcrops at the northern edge of the area. ■ The geology and landforms of the area are of considerable importance, with 20 sites recognised as nationalyl importance (included in the Geological Conservation Review). ■ The Permo-Triassic 'New Red Sandstones' group forms the characteristic red rocks and soil. Fossils are rare and thus of great importance where they are found,such as at the Otter Estuary SSSI. ■ Other important geological features within the area include the Carboniferous basin deposits or 'Culm Measures' extending from the neighbouring area to the west, the Exeter lavas, remnants of once extensive lava flows, and the Cretaceous marine deposits, such as the Haldon Hills.

Landscape attribute	Justification for selection
A dramatic coastline of distinctive red sandstone cliffs and stacks, with long shingle and sandy beaches, backed by dunes at the centre of the area. The mouth of the Exe Estuary and the spit at Dawlish Warren are notable features.	■ The coast is of considerable importance for its geological and geomorphological features, including cliffs, wave-cut platforms, stacks, as at Ladram Bay, and sand spits, including the rare double spit at Dawlish Warren SSSI. ■ The coast and marine environment supports a range of important wildlife, including brown seaweed at Ladram Bay, royal fern in Teignbridge, the nationally scarce rock sea lavender, and peregrine falcon at several sea cliff sites. ■ Beaches and illustrations of beach-morphology are of national significance, as at Exmouth and Budleigh Salterton. These beaches have long made the coast popular as a summer tourist destination. ■ Part of the coast is within the Dorset and East Devon Coast (the Jurassic Coast) World Heritage Site and English Riviera Global Geopark.
Steep-sided river valleys widening to broad flood plains, estuaries and grazing marsh as they approach the coast. Fast flowing along much of their length, the principle rivers have cut deeply into soft sandstone in their upper reaches forming river 'cliffs' and steep banks.	■ The rivers Exe, Clyst, Culm, Otter and Teign and their tributaries provide valued wildlife corridors through the farmed landscape, frequently with woodland, wetland and grassland along their banks, and are valued features identified by local residents. ■ The rivers support a range of flora and fauna, including water starwort, kingfisher, sand martin, otter, and significant numbers of salmon and freshwater white-clawed crayfish. Rush pasture and rich fen are found in a few locations along riversides. ■ The Exe Estuary SPA and Ramsar site comprises a complex of coastal habitats that support internationally important numbers of wintering and passage water-birds, while Dawlish Warren SAC / NNR includes internationally important sand dunes, and supports a wealth of biodiversity, including the sand crocus.

Landscape attribute	Justification for selection
Extensive woodland areas of predominantly mixed broadleaves with occasional conifer blocks, often cloak the steep valley sides of the upper reaches. Scattered copse, farm woodlands and remnant traditional orchards are found across the landscape. A significant block of coniferous plantation dominates the ridge of the Haldon Hills. Hedgerow trees add further to the sylvan character.	■ Woodlands cover 9,669 ha, 10 per cent of the NCA. ■ Woodland rides in Ashclyst Forest provide habitat for rare butterflies and moths. ■ Haldon Forest, a significant block of coniferous plantation, provides a wooded skyline for the area west of Exeter. It was the first 'man-made' forest to be designated a SSSI, and is nationally important for its breeding population of nightjar, its range of butterfly and moth species, and an array of birds of prey. ■ The NCA is identified as a 'medium' priority area for woodland management and as having 'some potential' for new woodland creation.[4] The South West Nature Map targets areas on upper valley slopes as being suitable for woodland expansion.
Internationally important areas of open, lowland heath extend across high ground north of Budleigh Salterton – the East Devon Pebblebed Heaths SAC – and across the Haldon ridge south-west of Exeter.	■ The East Devon Pebblebed Heaths form a contrasting 'wilder' open landscape to the predominantly farmed scene at the centre of the area. Lowland heath is comprised of both dry and wet heath, with areas of mire, Rhôs pasture and pools, with plant species of considerable national significance. ■ The remnant or restored patches of heath on the Haldon ridge lie on the plateau and are predominantly enclosed by woodland.There is opportunity for the expansion of this heath area, particularly through reduction in the extent of the conifer plantation. ■ The East Devon Pebblebed Heaths SAC and SPA forms the largest block of lowland heath in Devon and support breeding nightjar and Dartford warbler, both dependent upon continuity of open heath with fringing scrub. Nightjar are also important within the Haldon Heaths complex as are Dartford warbler and woodlark, while other key species supported by the heaths include the silver-studded blue butterflies and southern damselfly. The wealth of biodiversity is a major attribute of these prominent landscape areas.

[4] *Preliminary nature conservation objectives for Natural Areas – Woodland and Forestry*, Reid, C.M. and Kirby, K.J. (1997) English Nature Research Report 239, Peterborough

Landscape attribute	Justification for selection
Dispersed, ancient settlement pattern of scattered farmsteads and hamlets linked by sunken winding lanes, and larger historic commercial centres at Exeter, Tiverton, Cullompton, Crediton, Exmouth and Teignmouth.	■ The regional capital and county town of Exeter dominates the centre of the NCA. The inland towns of Tiverton, Cullompton and Crediton exhibit settlement and architecture illustrative of long and continued occupation, as do the coastal settlements of Exmouth, Teignmouth and Dawlish while reflecting coastal influence. ■ Historic settlements are valued by local residents for their cultural heritage. Notable central features include numerous early ecclesiastical buildings – Crediton's church and Exeter Cathedral, manorial buildings, medieval bridges and mills. ■ An acute sense of history is formed by the scattering and location of farmsteads and hamlets linked by lanes and packhorse routes cut deeply into the soft, underlying rock. ■ The railway line from Exeter to Plymouth provides stunning views as it runs in close proximity to the Exe estuary and the coast, while the line north-east from Exeter, coupled with the motorway creates a major artery to the rest of the country.
A local vernacular of cob and thatch, and the occasional use of red stone create a unified style, but generally building is eclectic.	■ Where they exist, distinctive rural buildings contribute to a traditional sense of place; quintessential Devon. Traditional building materials and styles are highly valued attributes identified by local residents. ■ Brick and slate, stucco and white-wash can all be found throughout the area, but with increasing occurrence in proximity to major towns and settlements. ■ Linhays – open fronted animal shelters – are an occasional remaining historic feature in the rural landscape.
Bronze-age barrows and iron-age hillforts occupy prominent hill-top positions. Historic parks and gardens around small manor houses often mark the edge of towns and in the Exe Valley.	■ Designed landscapes feature across the area with 18 Registered Parks and Gardens. Follies, in particular the Haldon Belvedere, form distinct landmarks across the entire NCA. ■ Archaeological sites and features are widely dispersed across the NCA with 125 Scheduled Ancient Monuments representing the most significant.
A sense of tranquillity pervades much of the area clearly associated with the predominantly pastoral character and enhanced by strong rivers and closely enclosed valleys. The coast can, at times, be both tranquil and exhilarating.	■ Only 36 per cent of the NCA is now classified as undisturbed, falling from 75 per cent in the 1960s, (based on the CPRE Intrusion Maps). The M5, from Somerset to Devon was built between 1967 and 1977. Much of the tranquil character is derived from the remaining pastoral, wooded and riverine elements of the landscape.

Landscape opportunities

- Preserve the distinctive and productive mixed agricultural landscape of rolling fields and small woodlands with a strong rural and tranquil feel, devoid of large modern intrusions.
- Protect the distinctive coastline of dramatic red sandstone cliffs, stacks and spits, including stretches recognised as of international importance and designated as a World Heritage Site; also important inland exposures of Devon Red Sandstone that help underline the distinctive geology of the NCA.
- Conserve the dispersed pattern of medieval historic settlements and, where it remains, the recognisable vernacular of cob, thatch and stone buildings in hamlets and farmsteads, linked by sunken winding rural lanes retaining a timeless quality devoid of modern engineered 'road improvements'.
- Manage and strengthen the rich cultural heritage of the area, including bronze-age barrows and iron-age hillforts on hills and ridges, and historic parks and gardens around the main settlements and along the Exe Valley.
- Manage the semi-natural woodlands of the area and enhance and create links between woodland blocks to create a resilient and productive network of woodland, incorporating copses, farm woods and more extensive areas of broadleaved woodland on river valley sides and upper hill slopes, and the sylvan character and content of traditional hedgebanks.
- Strengthen the pattern of wildflower-rich hedgebanks with frequent hedgerow trees, realising opportunities to create new hedgebanks and plant a new generation of hedgerow trees.
- Manage remnant traditional orchards and areas of unimproved grassland to reinforce landscape character and connections between settlements and rural, productive landscapes, creating new traditional orchards and areas of species-rich grassland where appropriate.
- Manage and significantly expand the wetland habitats along the rivers Exe, Culm, Clyst, Teign and Otter and their tributaries, and particularly flood plain grazing marsh, rush pasture and fen at the lower reaches of river valleys.
- Enhance and restore areas of lowland heath on the Haldon Hills and across the internationally important Pebblebed Heaths seeking opportunities to build links between existing areas of heath (including through the restructuring of conifer plantations as they reach maturity).
- Plan for coastal change as a result of erosion and climate change induced sea level rise, maintaining the overall extent and quality of estuarine and coastal habitats, notably saltmarsh, mudflats, reedbeds and sand dunes (including the internationally important Exe Estuary and Dawlish Warren SAC) and identifying options for future adaptation and managed realignment.
- Create new landscapes around the fringes of new developments, in particular at Cranbrook, making the most of existing landscape features and supporting the diverse landscape character and biodiversity.
- Plan for the expansion of coastal and flood plain grazing marsh habitats.

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 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, some specialist Cereal crops Horticulture Shell fish	The predominant land use is grassland, with approximately half of all farm holdings classified as livestock in terms of their farming type. However, between 2000 and 2009 there was an increase in the number of arable and horticultural holdings, 14% in number, and a decrease in the number of all other farming types. There was a 15 per cent increase in farm holdings over 100 ha between 2000 and 2009 (58 per cent of the farmed area) and all holdings of less than 100 ha size declined in number by around 10 per cent. An area also showing a minor resurgence in apple production for ciders and apple juices. Both the Teign and Exe Estuaries support significant shell fish industries. The 3 commercial shell fish companies on the Exe cannot fulfil the demand for mussels and the industry on the Teign had a value of £171,000 in 2004. **Continued over...**	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. The shellfish producers are facing several constraints to shellfish cultivation. The environmental sensitivity of the estuaries, especially as regards wildfowl and the conservation designations, places restrictions on where shellfish cultivation can take place. **Continued over...**	Work with the local farming and fishing communities to consider how to safeguard food provision while enhancing a range of key ecosystem services regulating soil quality, biodiversity, regulating soil erosion, water quality, regulating water and the historic environment.	**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
Food provision continued		**...continued from previous.** Both estuaries have designated bass nursery areas and are important spawning grounds for Salmon, with Salmon Action plans in place. Codes of conduct for crab tiling also exist.		**...continued from previous.** Any activity has to minimise disturbance to bird feeding cycles which can be up to 20 hours each day for many species. In addition the lack of mussel spat to replenish the inter-tidal areas is a continuous problem. Food provision is intrinsically linked to the cultural services of the Devon Redlands underpinning a strong sense of place and the range of biodiversity in this area.		
Timber provision	Areas of existing commercial plantation and accessible broadleaved woodland	Commercial timber production is currently focused on the conifer plantations of the Haldon Hills and on the edge of Woodbury Common, (covering 2 per cent of the NCA) and the mixed woodlands of Ashclyst Forest. Most extraction from Ashclyst in recent years has been for firewood in response to rising demand.	Local	The high value agricultural land limits opportunities for commercial timber production and much of the broadleaved woodland is either of high nature conservation value or of limited accessibility. Traditional management of broadleaved woods, and particularly ancient semi-natural woodlands may produce small quantities of timber for specialist local use.	Plan the future management of the commercial areas of woodland, particularly the visual impact of felling and balance the need for replanting against the regeneration of semi-natural habitats and mass recreation.	**Regulating soil erosion** **Biodiversity** **Regulating water flow** **Sense of place** **Tranquillity** **Recreation**

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Water availability	Rivers	Water is abstracted throughout the catchments of the Exe and Otter (and the Teign, though this mostly falls outside the NCA), predominantly from the area's rivers, and is used for many purposes, including public water supply, agriculture and industry. Water is released from the Wimbleball Reservoir (lying outside this NCA) into the River Exe when river flows are low to allow the continuation of surface water abstractions. There are also several local sandstone aquifers abstractedpredominantly for public water supply (the Crediton East Aquifer and Duckaller Aquifer in the Exe catchment, and the Otter Sandstone Aquifer). According to the Environment Agency (Catchment Abstraction Management Plans) all these rivers and aquifers have limited water resource availability beyond existing licences.	Local	Relatively high levels of rainfall and soils with reasonable water-retention properties results in little water being required for irrigation; however, climate change, new crops and cropping patterns may place higher demands on water resources. Maintaining adequate river flows and avoiding over-abstraction is also essential for wild salmon, sea and brown trout populations, requiring adequate flows to reach their spawning grounds. High water tables are also needed to maintain nationally and internationally important water-dependent habitats.	Seek opportunities to maximise the availability of water by reducing the rate that water flows through the area through the reinstatement of natural, meandering drainage patterns and channels and reinstating functional flood meadows adjacent to main water courses. Encourage good environmental management of semi-natural habitats, and in particular unimproved permanent grasslands, increasing the capacity of habitats to retain water.	**Water availability** **Water quality** **Regulating water flow** **Food provision** **Biodiversity**

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Genetic diversity	Estuaries Orchards	Both the Teign and Exe Estuaries support significant shellfish industries. The 3 commercial shellfish companies on the Exe cannot fulfil the demand for mussels and the industry on the Teign had a value of £171,000 in 2004. Both estuaries have designated bass nursery areas and are important spawning grounds for salmon. The NCA also contains some traditional orchards along river valleys (also a BAP priority habitat).	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 shell fisheries in the estuaries. Continue to manage the bass nursery areas and promote the salmon action plans and crab tiling codes of conduct. Expand areas of traditional orchards, especially those of traditional Devon varieties.	**Biodiversity** **Food production** **Regulating water flow** **Sense of place / inspiration** **Sense of history**
Biomass energy	Woodland Existing short rotation coppice (SRC) Miscanthus plantations	Generally offers medium potential yield for SRC except to the west of the Exe Estuary, where yields may be low, and high potential yields for miscanthus throughout the area.	Local	Carefully located miscanthus and SRC can provide potential climate change regulation benefits without significant impact on other services. and (in the case of SRC) can also help improve connectivity between woodland areas helping woodland biodiversity. However, inappropriately sited both miscanthus and SRC can have negative impacts on sense of place and biodiversity. Woodland areas also offer potential biomass but would require additional infrastructure to utilise its potential.2 Biomass plantings may be appropriate in lower-lying arable areas. Large-scale SRC plantations in areas of small woodlands and copses should be avoided as they would be out of character and would disrupt local patterns of woodland cover.[5]	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] www.naturalengland.org.uk/ourwork/farming/funding/ecs/sitings/areas/151.aspx

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Climate regulation	Soils Flood meadows Estuarine habitats Low input crops / grassland Woodland	The soils generally have a carbon content of 0 to 5 per cent. Limited climate regulation is offered by the shallow but more carbon-rich soils of the East Devon Pebblebed Heaths and the Haldon Heaths (combined covering less than 10 per cent of the area) and by woodland cover and its underlying humus-rich soils (covering 10 per cent of the area) where soil carbon content may rise to 10 per cent. Added to this will be the carbon locked up in the flood plain grazing meadows. Estuarine mud and silt and fringe habitats, particularly reed beds and marsh, have high carbon content. There are 3 estuaries within the NCA, including the significantly sized Exe Estuary.	Local	Most of the soils in the Devon Redlands 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 mud flats, reed beds and marsh, have 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 (where achievable) and will in turn help improve water quality and aquatic biodiversity services if located correctly.	Increase sequestration of CO_2 through increased woodland area, and encouraging sustanable management of woodlands; the management and restoration of heathland and associated mire habitats and the expansion of wetland habitats in the river valleys. Encourage sustainable and extensive grazing regimes on permnant pasture, particularly areas of floodplain 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 soil erosion	Cross-field hedgerows Buffer strips Uncultivated areas Woodland	The catchments of the Exe and Otter are priority catchments under the England Catchment Sensitive Farming Initiative (ECSFDI). Soil erosion is a specific issue within these catchments, particularly attributable to areas of maize cropping and the regular cultivation of soils on steeper slopes (arable cropping and to a lesser extent ley grasslands).[7]	Regional	Efforts to increase vegetation cover on cultivated or bare soil on steep slopes, for example by reverting to grassland or through afforestation, will help to increase the regulation of soil erosion. Where this is not possible hedgerows also provide potential to help impede flows and subsequent erosion, whilst 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, hedgerows and create grass buffer strips running at right angles to the slope across steeper slopes under arable [particularly maize] cultivation to prevent soil erosion, especially in the Exe and Otter priority catchments. Strengthen the hedgerow network and increase the population of hedgerow trees across the flood plains of the Exe, Otter and Teign 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 reed beds adjacent to river banks to act as silt traps, preventing livestock access to the water's edge. Plant areas of wet woodland and expand/interlink existing valley woodlands to further minimise soil erosion.	**Regulating soil erosion** **Regulating water quality** **Water availability** **Soil quality** **Sense of place** **Biodiversity**

[7] England Catchment Sensitive Farming Delivery Initiative: http://www.naturalengland.org.uk/ourwork/farming/csf/default.aspx

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Regulating soil quality	Unimproved pastures Hedgerows and banks	Deep, fertile and freely draining soils define much of the NCA, with the river valleys being particularly fertile and accounting for the NCA's 11 per cent coverage of Grade 1 land. Organic matter may be being lost through frequent tillage. Lack of organic matter makes soils more susceptible to compaction and erosion.	Regional	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	Encourage better sword management to increase laying down of organic matter. Manage with extensive grazing regimes to reduce stocking densities to reduce or minimise soil compaction and poaching. Promote good management of weak top soils; minimum tillage to maintain good soil structure Where organic matter is low, increase organic matter inputs to improve soil structure.	**Regulating soil quality** **Regulating soil erosion** **Regulating water quality** **Regulating water flow**
Regulating water quality	Watercourse fencing Wooded valleys Uncultivated areas on steep slopes Cross-field hedgerows (in arable)	As already noted, the catchments of the Exe and Otter are priority catchments under the ECSFDI. Issues relate to soil erosion, slurry run-off from intensive dairy units and high levels of phosphates and nitrates in rivers, particularly attributable to areas of maize cropping.[8] River water quality is judged to be of only moderate ecological quality in most of the main rivers (the rivers Exe and Culm) with areas of good quality in the west (rivers Yeo and Teign) and poor quality in the east (River Otter). The chemical status of groundwater is also classified as poor.	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 water courses, reducing pollution pathways and run-off of both soil and nutrients could have significant impacts on regulating erosion, biodiversity and soil quality. Additionally these changes could lead to improvements in the status of bathing water with a positive impact on recreational useof the waters.	Increase the amount of farmland managed under principles established under the Catchment Sensitive Farming Initiative. Increase the amount of reed beds and wetlands to act as silt traps. Fencing watercourse and introducing cross-field hedgerows and tree planting, where appropriate, will reduce sedimentation and nutrient loading. (See also measures under soil erosion).	**Regulating water quality - freshwater and coastal** **Regulating soil erosion** **Regulating soil quality** **Biodiversity** **Recreation**

[8] England Catchment Sensitive Farming Delivery Initiative: http://www.naturalengland.org.uk/ourwork/farming/csf/default.aspx

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	Steep slopes and high rainfall, especially in the upper catchment of the Rivers Exe (rising on Exmoor), mean that river levels can rise rapidly following rainfall and flooding is a frequent characteristic of the lower Exe, Clyst and Otter, underlining the vital importance of the broad flood plains of the major rivers for storing and regulating flood flows. Exeter is at risk of flooding from the Exe and Clyst rivers, while flooding at Tiverton, on the Exe, is also an issue. Railway lines, including the main line to Exeter and branch line to Barnstaple via Crediton regularly flood. Climate change is likely to exacerbate this problem, and the Exe Catchment Flood Management Plan identifies that further action should be taken to reduce the risks, including through the storage of water and management of run-off in the headwaters of the Exe and Culm (outside this NCA) to alleviate downstream flooding at Exeter, Tiverton and Cullompton while also benefiting Biodiversity Action Plan habitats and species. Further action to reduce flood risks at Exeter would also help protect the Exe Estuary SPA / Ramsar site from flood related pollution. **Continued over...**	Regional	Increase the permeability of soils within the wider catchment through extensive grazing regimes to reduce soil compaction and expand and re-link woodlands on valley sides, linked to the hedgebank network, where this will aid water infiltration and reduce overland flows, especially around Ottery St Mary. Significantly increase the area of wetland habitats, including grazing marsh in the river valleys to provide areas for the storage of flood waters upstream of major settlements, including upstream of Exeter and Tiverton on the Exe, as identified in the Exe Catchment Flood Management Plan and on the Clyst. Further explore habitat creation and enhancement along the Teign Estuary to contribute to flood alleviation between Newton Abbot and Shaldon.	Follow the principles described in the Catchment Flood Management Plans for the area – reconnect rivers and estuaries to natural flood plains to utilise natural flood storage and enhance wetland habitats. Change land management practices to 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. Increase areas of wetland habitat where possible.	**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 water flow continued		**...continued from previous.** Localised flood risk also occurs between Newton Abbot and Shaldon along the Teign Estuary due to a combination of tidal and fluvial flooding – this may be reduced by habitat creation or enhancement also contributing to Devon's Biodiversity Action Plan targets. The East Devon Catchment Flood Management Plan proposes the investigation of opportunities to enhance the water carrying capacity of the East Devon Pebblebeds SAC / SPA in consultation with Natural England, East Devon District Council and the RSPB as one of the actions to reduce flooding at Budleigh Salterton Storage of flood waters and management of run-off is further identified along the Otter, including management of direct run-off at Ottery St Mary, for both flood alleviation as well as environmental benefits.[9]				

[9] *Exe, South Devon & East Devon Catchment Flood Management Plans*, Environment Agency (December 2009; accessed from: www.environment-agency.gov.uk/research/planning/33586.aspx)

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Regulating coastal flooding and erosion	Shingle ridges, spits and beaches Estuaries and estuarine habitats Cliffs	Dawlish Warren has been increasingly affected by coastal erosion, with more frequent storms leading to a shift in the sand spit, increasing the risk of flooding to properties around the Exe Estuary and the main railway line. (see also below) Strategies of 'Hold the Line' are still largely identified as the current practical option for much of the coastline, including around Buddleigh Salterton, Exmouth and stretches south of Dawlish Warren.[10] It is acknowledged that some existing flood defences and natural barriers to the sea will be topped by future sea level rise (particularly Exmouth beach and Dawlish Warren). Future options are already being considered for parts of the coastline – including the option for possible extension of intertidal habitats as part of the ongoing Exe Estuary Strategy.	National Regional	The coastline is relatively soft and is consequently always moving and vulnerable to erosion. This impacts on marine recreation and the fishing industry, particularly in the Exe Estuary with shifting sand banks. Significant changes could impact on the fishing industry, particularly the shell fishing within the estuaries. Severe storms already cause disruption to the main railway line along the coast, any future sea level rise and more frequent occurrence of storms will exacerbate the issue and potentially cause problems on the stretches along the Exe and Teign estuaries.	Provide space for natural coastal processes where identified by the Shoreline Management Plan[11] and the Estuary Strategies, compensating for loss of habitats by creating new areas of coastal habitat. Protect and manage natural habitats backing the coast and estuaries, expanding and re-linking (including through managed realignment) to build resilience to future sea level rise.	**Regulatng coastal flooding and erosion** **Biodiversity** **Sense of place / inspiration** **Recreation**
Pollination	Heathland Hedgebanks	Areas of lowland heath (Haldon Hills and the East Devon East Devon Pebblebed Heaths) are important nectar sources for pollinating insects, as are the often wildflower-rich Devon hedgebanks.	Local	The contribution of pollination services to food production in this NCA is currently limited. An increase in pollination may be required in order to provide greater options for future cropping, and allow for consideration of a greater range of crops given a change in climate. Increases in the number and range of pollinators are also likely to be associated with an increase in biodiversity.	Increase the area under semi-natural habitats, especially lowland heathland, coastal saltmarsh, fen and woodland with a diverse ground flora, as well as dense flowering hedgebanks to increase the diversity of flowering plants, and increase the area and range of habitat mosaics where different habitats lie in close proximity.	**Biodiversity** **Pollination** **Food provision**

[10] [11] *Durlston Head to Rame Head Shoreline Management Plan*, Environment Agency (November 2008; accessed from: www.environment-agency.gov.uk/research/planning/105014.aspx)

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Sense of place / inspiration	Hedgerows Rolling farmed landscapes Soils Buildings, villages, coastal and market towns, a Roman city Estuaries, coast and beaches	A landscape with a strong sense of place and an overriding spontaneous affinity with farmland, rolling fields and hedgerows. The underlying red sandstone is a defining characteristic for much of the area, resulting in the prominent red soil, many of the red tinged buildings and striking coastal features. The defining characteristics that are valued most strongly include: the dense network of sunken winding lanes with high flower-covered banks that contribute to sense of tranquility; fields of different shapes and sizes surrounded by Devon hedgebanks; rural buildings with thatched roofs, some with cob walls and some with red buildings stone; the Devon villages and a rural way of life. The coast with its striking red cliffs and stacks is visually and geologically different from the coastline to the west and east. The geological significance of the area is recognised by World Heritage Site status from Exmouth eastwards. The long sandy beaches and adjoining promenades reflect Victorian tourism that lives on today. The estuaries contribute to the area's sense of place and create a zone of maritime influence inland. The Exe, an estuary of significant size and international importance, extends its influence into the heart of Exeter.	National	The area has a strong and clear sense of identity and place, that stems from the underlying geology; it is evident in the productive red soils, in the buildings, at the coast and other geological exposures. The agricultural landscape is clearly framed by wildlife- rich hedgerows that often hide the winding country lanes connecting the dispersed hamlets, farmsteads and villages. Parish churches still remain at the heart of villages and often provide a noticeable vertical element in the landscape. The northern part of the area has an unspoilt nature however, around Exeter and along the coast there has been significant change and intrusion into the rural landscape, with the loss of locally distinct building styles and materials. The area continues to be a significant tourist and visitor attraction, particularly to the south of the area, adding pressure to an already pressured area.	Maintain the historic pattern of irregular fields across much of the landscape, enclosed by a strong network of Devon hedgebanks – with winding rural lanes linking medieval settlements. Maintain the historic settlement pattern with a strong cob, thatch and stone vernacular and promote the use of local materials in new build. Protect the dynamic coastline including distinctive red sandstone cliffs and the estuaries.	**Sense of place / inspiration** **Biodiversity** **Sense of history** **Tranquillity** **Recreation**

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
A sense of history	Historic settlements and buildings Vernacular architecture Range of heritage assets Long established farming culture and tradition.	A landscape clearly rooted in the past with Mesolithic and Neolithic sites across the area. A landscape firmly shaped by a medieval pattern of isolated farmsteads and hamlets. Most villages were in existence by the 10th and 11th centuries. Roman influence is evident, particularly around Exeter, and the church has played a significant role in the development of the area, especially around Crediton. Two of the county's most significant houses and landscaped parks are located within this NCA and today provide considerable recreational opportunities. Maritime associations and important historic ports, harbours and seaside resorts at Exmouth, Exeter and Teignmouth.	National	Many heritage assets are fragile and highly susceptible to loss and damage due to direct impacts or inappropriate management. Emphasis should be placed on the need to continue to protect and interpret the wealth of heritage present. The historic settlement pattern and associated roads and byways provide a strong structure to the area, they also provide a tourist asset.	Increase protection and appropriate management of above and below ground archaeology and designed parkland. Protect and manage the historic settlement pattern and utilise local materials including cob for the restoration and conversion of vernacular buildings to maintain and enhance local distinctiveness.	**Sense of history** **Sense of place** **Recreation**

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Tranquillity	Farmed landscape Hedgerows Lowland heath Woodland	Although the landscape is perceived to have a strongly rural character, it is not seen as particularly tranquil, a perception that is borne out by the CPRE Intrusion Map 2007 which identifies 6 per cent of the NCA as urban, 58 per cent of the area as disturbed and only 36 per cent as undisturbed. The lowest scores for tranquillity are associated with the urban centres of Exeter, Teignmouth, Crediton and Tiverton, along with the M5 and other major road corridors while the highest scores for tranquillity are found in the rural areas, particularly in the north of the NCA, bordering Exmoor andthe Blackdown Hills and the countryside north of Budleigh Salterton. These latter areas of higher tranquillity correlate with the designated AONBs.	Regional	The area has experienced significant intrusion since the opening of the M5 to Exeter with major growth around the city, which is partly attributable to improved accessibility. The scale and form of some of the development has changed the character of parts of the NCA. An increase in 'cheap' air travel has also had a significant impact with a 3 fold increase of air traffic planned at Exeter's International airport.	Maintain the current settlement pattern and develop significant woodland buffers to either side of the M5 and other major road corridors, seek to minimise the impact arising from lighting schemes along these routes. Soften the edges of urban areas to iIncorporate development into its landscape setting and provide a network of greenspaces and routes. Support sustainable transport options to visitor destinations.	**Tranquillity** **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 Haldon Forest Pebblebed Heaths South West Coast Path Cycle trails Public rights of way network	A landscape that has strong associations with recreation, leisure and touring, with good access to facilities, and villages that offer pubs and cream teas. Active recreation is particularly associated with the coast and the South West Coast Path National Trail and with the estuaries of the Exe and Teign with their extensive shallow-water moorings. In recent years there has been significant growth in cycling with a major mountain biking venue on Haldon. In 2006/07 visitor numbers on Haldon were 80,000 by 2011/12 this had increased to 220,000. The National Cycle network (route 2) follows the coast around this NCA, taking in the fringes of the Teign and Exe Estuaries. The off-road sections of this route are particularly popular for leisure use. The East Devon Pebblebed Heaths provide a significant area (1,130 ha) of open access which is well used by local residents. There are over 700 km of rights of way (at a density of 0.73 km per km^2), and nearly 4,000 ha of open access/ common land and 43 km of the South West Coastal Path within this NCA.	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, particularly on the Exe. The presence of a train line to Exmouth and Teignmouth via Dawlish means that access to this area of coast can be sustainable. The off-road cycle trail from Exeter to Exmouth provides both recreational and sustainable travel opportunities. Significant new growth areas under development east of Exeter will place greater pressure on these existing recreational assets, causing concern for some areas, such as the East Devon Pebblebed Heaths. New green infrastructure, particularly around new growth areas will be essential to ensure the natural assets people come to enjoy are not over-exploited.	Maintain and improve the quality of recreational assets, including the South West Coast Path National Trail, and other quiet recreational routes along rivers and coast 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, to give more opportunities to more people to access the natural environment. Support proposals in the Devon Rights of Way Improvement Plan and in the various Green Infrastructure Delivery Plans. Water-borne recreation in the estuaries and along the coast can provide close access to natural environment assets, both biodiversity and geodiversity, reducing the need for land-based infrastructure and vehicle movements. Balancing an increasing demand for water-based leisure with any potential resulting disturbance should be given careful consideration. **Continued over...**	**Recreation** **Sense of place / inspiration** **Tranquillity**

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Recreation continued					**...continued from previous.** Consider opportunities to develop sustainable transport links to key recreation sites, in particular Haldon with bike carrying capacity. Explore opportunities to work with partners and organisations supporting volunteering in the natural environment; to both increase people's understanding of the natural environment and foster health and a sense of well being.	

Service	Assets/ attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Biodiversity	Internationally and nationally designated sites andhabitats	International designations cover less than 1 per cent of the area. The Exe Estuary is designated as a Ramsar site, SPA, and SAC. The East Devon Pebblebed heaths are also designated as a SPA and SAC. Other SAC include Dawlish Warren, also a National Nature Reserve, and part of the South Hams. National designations currently cover 3 per cent of the NCA, with a further 4 per cent of the area designated as local wildlife sites. At present 50 per cent of the designated resource is in favourable condition and a further 46 per cent is in unfavourable but recovering condition. A wide range of important species are found throughout the area. Important assemblages of species are also found, reflecting the coastal climate and range of opportunities. Of particular note is the population of greater horseshoe bat. Lowland heath and species-rich grassland support a wide range of plant species, and a number of uncommon plants.	National	Improvement in the condition of designated sites, principallySSSI, 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 CO_2. 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.	Concerted action should be taken to maintain and where necessary improve the condition of all important sites and habitats. Further action should be taken to increase the area of important habitats where possible, increase the connectivity of sites and habitats, and create more habitats where appropriate and possible.	**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	Cliffs and geological exposures Coastal geomorphology Permian and Triassic Red Sandstones Soils	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. Its importance is recognised internationally with much of the coastline defined as the East Devon and Dorset World Heritage Site (Jurassic Coast). The alternating periods of marine incursion and mountain building, including volcanic activity 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.	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, breccias, greensand and flint gravels have influenced the biodiversity, agriculture, industry, culture and traditions across the area.	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.	**Geodiversity** **Regulating coastal flooding and erosion** **Food provision** **Biodiversity** **Regulating soil quality** **Sense of place / inspiration** **Sense of history**

Photo credits

Front cover: The Haldon Ridge with the prominant St Lawerence Tower creating a backdrop to rolling mixed farmland. © Teignbridge District Council

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