National Character Area profile:

157. The Lizard

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Introduction

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

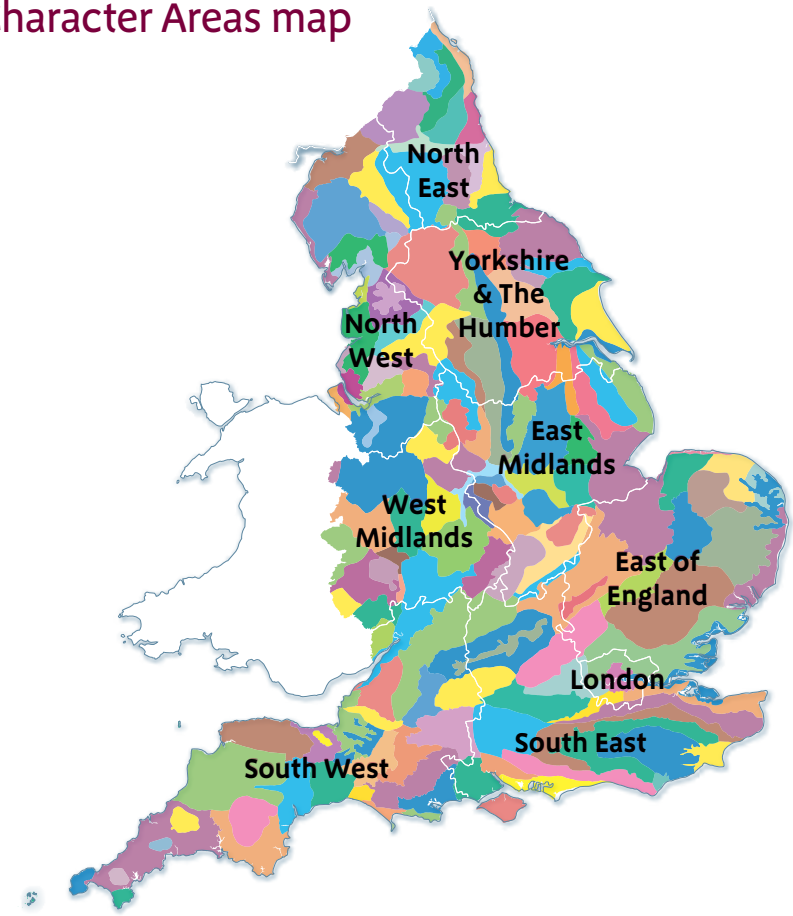
NCA profiles are guidance documents which can help communities to inform their decision-making about the places that they live in and care for. The information they contain will support the planning of conservation initiatives at a landscape scale, inform the delivery of Nature Improvement Areas and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

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

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

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

National Character Areas map



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

Summary

The Lizard peninsula forms the southern-most point of mainland Britain. The area is dominated by a gently undulating exposed heathland plateau cut by narrow river valleys. The surrounding coastline is rugged and geologically complex with caves, enclosed bays and small rocky islands. To the north flows the Helford River which in the summer carries a ferry linking the north and south banks at Helford Passage. There are long uninterrupted views over the plateau, out to sea and along the coast. These factors lead to a strong sense of place and sense of tranquillity.

Ninety-eight per cent of the National Character Area (NCA) is within the Cornwall Area of Outstanding Natural Beauty. The Lizard National Nature Reserve covers 13 per cent of the area, across the centre of the plateau. There are 12 Sites of Special Scientific Interest across 21 per cent of the area and 28 per cent of the area is identified as priority habitat. Twenty per cent of the NCA falls within the Fal and Helford Special Area of Conservation. The NCA also contains 60 km of the South West Coast Path National Trail – popular with both long-distance walkers and day visitors.

Farming has long been an important use of the Lizard's landscape. Dairy farming is predominant, as well as beef and lamb production, but over the past few years arable farming has increased in popularity on the larger and more fertile fields. The field pattern is one of irregular, ancient fields bounded by wildflower-rich Cornish hedgebanks with patches of reorganised enclosure. There are scattered farms and hamlets, mainly on the upper valley heads, linked by deep and narrow winding lanes enclosed by high stone-faced hedgebanks. Patches of rough ground dominated by gorse and heather occur within a patchwork of rough pasture with some areas of arable.

The dispersed settlement pattern, scattered archaeological remains and varied nature of the landscape are all factors which help to make the Lizard a unique place. More recent heritage assets such as the 18th-century lighthouse at Lizard Point also provide points of character and interest in the landscape. Much of this uniqueness stems from the Lizard's unusual and varied geology which includes its famous serpentinite rock as well as, gabbro, schist, gneiss and slate. The area also benefits from its exceptionally rich biodiversity and is recognised as being of great conservation importance. All of these features as well as the sense of tranquillity and remoteness that can so easily be experienced when visiting the Lizard make it a popular visitor destination. In the summer the small villages such as Lizard village become thriving hubs of activity as tourists provide a welcome boost to the local economy.

Unfortunately, this very popularity, alongside changes in farming practice, could threaten the Lizard's special tranquillity. Changes in rainfall period and intensity are likely to have an effect on the species dominance of each semi-natural habitat and thus some of the unique species might be lost with time.

National Character Area 157
The Lizard

Click map to enlarge; click again to reduce

Statements of Environmental Opportunities:

- **SEO 1:** Protect and manage the Lizard's strong sense of history, tranquillity and remoteness, protecting its rich archaeological heritage and retaining the pattern of dispersed settlements, farmsteads and associated field patterns, and open moorland.

- **SEO 2:** Manage, restore and enhance the area's rich mosaic of rare and endangered wildlife habitats, extending their range where appropriate, while encouraging sustainable agricultural practices which contribute to the soil quality, water quality and habitat condition, as well as to the local economy.

- **SEO 3:** Conserve the wealth of geology and geomorphology, the distinctive landscape and settlement character, strong sense of history, high tranquillity levels and views, especially the long coastal views towards the West Penwith area and Dodman Point.

- **SEO 4:** Sustainably manage the visitor pressure associated with this distinctive landscape to ensure that the numerous recreation opportunities such as the South West Coast Path and high-quality beaches continue to be enjoyed by the local community and visitors.

Predannock Downs, The Lizard National Nature Reserve, Cornwall.

Description

Physical and functional links to other National Character Areas

The Lizard peninsula extends into the English Channel, forming the most southerly point of England; it is surrounded on three sides by the sea and provides the deep water shelter for Falmouth Bay. Half of the northern boundary of the National Character Area (NCA) is formed by the Helford River which separates The Lizard NCA from the adjoining Cornish Killas NCA. Functional links to the rest of Cornwall are limited to the A3083 linking Lizard Point with Helston, the area's largest town, which lies within the Cornish Killas NCA. A summer ferry links the north and south banks of the Helford River at Helford Passage. Panoramic views are afforded from the Lizard along the southern coast of Cornwall both west towards the West Penwith area and east towards Dodman Point in the Cornish Killas NCA.

There are also views of the Lizard from the elevated inland Carnmenellis NCA. The lowland, inland parts of the NCA have many features in common with the south-west part of Cornwall immediately to the north of the Helford River, including a network of small fields bounded by Cornish hedgebanks and narrow tree-filled valleys. Views of the Lizard from the coast to the west and east provide a very characteristic profile of what appears to be a flat tableland edged by near vertical cliffs.

Various rivers and streams rise in The Lizard NCA. Most flow straight down to the sea but a few in the north flow into the Helford River which forms the northern boundary of the NCA. Most of the public water supply comes from Stithians Reservoir which is in the Cornish Killas NCA.

The area supports dairy, meat and vegetable production, much of which is exported from the area as high-value local produce.

Black Head from Kennack Sands National Nature Reserve.

Key characteristics

- The landform is a gently undulating, sparsely inhabited, exposed flat plateau leading to incised valleys to the west and sandy beaches to the east. Coastal exposures such as coves and reefs are maintained by the action of the sea.
- The southern half of the Lizard comprises metamorphic and igneous rocks, including serpentinite, schist, gabbro and granite gneiss, which were faulted up against Devonian slates, along a boundary running roughly between Mullion Island and Nare Point. The serpentinite rocks represent the remnants of part of an ancient ocean floor (or ophiolite) into which the other igneous rocks were intruded.
- Stunted patches of broadleaved woodland are found in the steep valleys which dissect the moorland. Small woodlands and copses occupy the more sheltered valleys on the lower lying land. Recent conifer plantations disrupt the generally treeless plateau.
- A mosaic of enclosed pasture with rough grazing fringes the plateau while more productive land is dominated by pasture, with some arable.
- Internationally important heathland sites occur with relatively large areas of Cornish heath Erica vagans. Heathland with heather and moorland grasses dominates the plateau and there is an almost unbroken stretch of species-rich coastal vegetation supporting a mosaic of grassland, scrub and cliff-ledge communities.
- Over 250 species of national or international conservation importance are found here, many restricted to the Lizard or to Cornwall, or to the south-west of England. These include plants such as Cornish heath and invertebrates such as the rare mason wasp.
- Neolithic chambered tombs, ritual monuments, barrows and standing stones from the Bronze Age scatter the downs, across which run ancient trackways to surrounding settlements. Inland there is a scattering of prehistoric defended farming hamlets (rounds). Traditional buildings are simple, constructed of local stone and thatch. Settlement pattern is dispersed and linked by minor lanes, with ancient hamlets and farmsteads concentrated in the valleys and main settlements along the coastline.
- The area's wild and rugged character as well as the outdoor recreational opportunities presented by heathlands and coast, the 240 km of rights of way including the South West Coast Path and 2,450 ha of open access and common land and sandy beaches make it a significant tourist destination.
- The satellite dishes of the Earth Station and wind turbines at Bonython wind farm are dominant features on Goonhilly Downs and key to the character of the area.

The Lizard today

The Lizard peninsula is a small area of only 15,000 ha bounded by the Cornish Killas NCA and the Helford River and estuary to the north. It is also mainland Britain's most southerly point. The wild and remote character of the landscape is reflected in high levels of tranquillity; 90 per cent of the Lizard has been described as 'undisturbed' in recent surveys. Also important are its dark night skies, increasingly rare in an urbanising world.

The Lizard is dominated by a windswept heathland plateau cut by valleys of enclosed broadleaved woodland and farmland. Surrounded by dramatic cliffs, steep-sided coves, exposed reefs and spectacular stacks, the Lizard's coastline is famous for its ruggedness as well as for its sandy beaches. Coastal geological exposures are maintained by the action of the sea. In the east, the landform is undulating and gentle, with small, irregular fields of pasture or arable land enclosed by wildflower-rich hedges, pockets of woodland, farmsteads and scattered hamlets. Cornish hedgebanks, drystone walls filled with soil and covered with varying quantities of vegetation including large trees and shrubs, are an important feature of the Cornish landscape.

On the plateau, the poorly draining serpentinite and gabbro rocks give rise to heath and wetland vegetation. The heathland is dominated by moorland grasses such as purple moor grass as well as by heather species. The land is gently undulating and generally treeless apart from recent conifer plantations. The plateau can be bleak and desolate and the skyline is broken only by the Bonython wind farm, the Satellite Earth Station at Goonhilly Downs, the control tower of Predannack airfield and the serpentinite windmill stump at Windmill Farm. Although these features do not make up a significant part of the land cover, they are the plateau's most prominent vertical features. Predannack and nearby Culdrose airfields are actively used so aircraft sometimes cause extra noise and visual disturbance.

This is a landscape of rich and varied colour and texture, with a variety of vegetation types that are of outstanding interest for conservation. Plants such as Cornish heath, pygmy rush, land quillwort and prostrate asparagus are among the significant number of rarities. There is a deep sense of history apparent in the landscape due to the many Neolithic and bronze-age sites such as barrows and standing stones. The outstanding scenic qualities and natural beauty of the area is reflected in the fact that 98 per cent of the Lizard falls within the Cornwall Area of Outstanding Natural Beauty (AONB) and 13 per cent of the area is designated as the Lizard National Nature Reserve (NNR).

Heathland near Lizard Point.

In sharp contrast to the plateau, the coastline has ever-changing views formed from the complex geology and the multi-coloured serpentinite rock. Its wild and rugged appearance is emphasised by the broken pattern of rocks extending out to sea and by the high, stark cliffs. The South West Coast Path National Trail wends its way along the coast and is a popular destination for tourists.

On the sea-battered west coast, there is only the village of Mullion but, east of Lizard Point, there are several fishing villages such as Porthallow, which mostly retain their old character of white-washed stone and slate or thatched roofs. Although fishing has been replaced by tourism as the main industry in these villages, a small number of boats still catch the local edible crabs and lobsters which are sold in the area.

Most of the farmsteads and hamlets are located in the narrow valleys that dissect the plateau on their way to the sea. Many of the settlements within the NCA follow this linear pattern along valleys or along the coast. Stunted patches of wind-sculpted broadleaved woodland occur, such as the elms at Cadgwith. The valley land is generally enclosed within small, irregular, ancient fields which contrast with the larger, regular, much more recent fields that extend to the edges of the downs and heaths – the latter result from attempts, mainly in the early-mid 19th century, to increase agricultural productivity.

Farming is a major land use in the NCA and has helped to shape the landscape. At the edges of the plateau there is enclosed pasture with rough grazing and some improved land for dairy and beef farming. In the east, most of the land is pasture, with a mixture of agriculturally improved grazing and rough grassland but there is an increasing proportion of arable and large-scale vegetable production. There is also some commercial bulb production in the NCA which provides fields of bright colours during the spring.

In the east, towards the north of the area, there are small woodlands and copses which become larger as they get closer to the more sheltered Helford River. The woodlands consist of areas of oak, ash and beech as well as mixed deciduous and willow carr in damper areas. There are scattered farms and hamlets mainly on the upper valley heads, linked by deep, sometimes sunken, narrow winding lanes enclosed by high stone-faced hedges. There is still some small-scale mineral extraction which provides the serpentinite used in the local craft industry but the available supply of good quality stone for turning is now very limited and not expected to last for many more years.

The smaller fields of mixed use around Lanarth.

The landscape through time

The unusual geology of The Lizard NCA is thought to derive from a time of intense tectonic activity during the Devonian Period, around 375 million years ago. The southern half of the Lizard comprises metamorphic and igneous rocks including serpentinite, schist, gabbro and granite gneiss. The serpentinite rocks represent the remnants of part of an ancient ocean floor (or ophiolite) into which the other igneous rocks were intruded. The northern part is chiefly composed of highly deformed sedimentary rocks and slates of Devonian age, which are overlain by the ophiolite in the south.

During the Quaternary Period, the ice sheets that covered most of Britain did not reach as far south as Cornwall. However, the area was subject to Arctic-like conditions during the glacial periods and the repeated changes in sea level have left their mark, such as raised beach deposits around the coast. The Arctic conditions also led to the formation of large amounts of shattered rock, known as head, which now occupies valley bottoms and can be seen at the top of many coastal cliffs. Areas of fine wind-blown silt, known as loess, occur in the west of the Lizard. Over time, the stone of the plateau has been carved by the action of water to form a radial series of steep valleys leading down to the sea.

There is extensive evidence of prehistoric settlement especially on the downs of such as St Helena Barrow and Moyle's Burrow. Extensive woodland clearance during the Bronze Age led to the expansion of the heathland of the plateau which provided a source of fuel, both vegetation and peat, until the early 20th century. Trackways thread across the plateau from the surrounding settlements, many of which are of ancient origin and were used as routes to move goods and stock.

In the east, around places like Lowland Point, there are prehistoric fields. Inland there is a scattering of prehistoric defended farming hamlets (rounds). Many of the farmsteads in this eastern area have names commencing with Tre, indicating that they probably originated well before the Norman Conquest, and although the farmsteads may have their origins later than this, they are surrounded by the small irregular fields of these early settlements.

Agricultural activity was carried out on a small scale until the Middle Ages, when large areas of heathland were enclosed and reclaimed to feed the growing population. During and after the 14thcentury, and as a consequence of the Black Death in the late 1340s, agriculture was focused on more productive areas and the poorest holdings reverted to heathland. In the second half of the 16th century, agricultural activity revived in tandem with an increase in population, and some of the heathland was again taken into production. This cycle of temporary cultivation of heathland was repeated during the Napoleonic Wars when much land was ploughed for crops. Cattle rearing formed the major element in the agricultural economy of the area, the moors providing abundant rough grazing. The dominance of livestock production by the early 19thcentury involved a majority of the land being laid to grass, and turnips and other fodder crops were grown on arable to feed cattle which, in turn, enriched the land with their manure. This is the origin of most of the larger, more regular fields found on the Lizard.

Throughout the centuries, unenclosed heathland was used for rough grazing and this in combination with temporary reclamation has also influenced the development of secondary vegetation communities.

The Lizard has a long history of minerals extraction. Serpentinite, gabbro and

copper have all been extracted, leaving behind shallow water-filled scrapes and quarries which subsequently flooded to become landscape features that are important habitats for insects. The nearby coinage town of Helston was a major centre for tin during the Middle Ages, and required fuel for smelting. This was obtained by cutting and burning turf and peat, and, between the 16th and 19th centuries, by coppicing the woods around the Helford estuary to make charcoal. Turf cutting had a profound effect on the vegetation of the NCA, as most of its soil and peat deposits were removed during the Middle Ages.

The historic market town of Helston has long been an important link between the Lizard and the rest of Cornwall. It was one of the most important medieval markets in Cornwall. With the rise of the tin industry in the area, Helston became a stannary town from the early 14th century. Helston retained its role as a market centre for the surrounding areas into the 20th century.

Fishing villages expanded during the 19th century with the growth of the pilchard industry.

Wrecks, wrecking and smuggling have a particularly strong association with the Lizard: when a lighthouse was built in 1619 the locals complained that they could no longer derive an income from wrecking. A more substantial lighthouse has existed since the 18th century and a long history of shipwrecks, such as that of HMS Royal Anne in 1721, has been associated with the area. Smuggling persisted into the early 19th century.

In 1901 Marconi started experiments at the Lizard Station where he hoped to bridge the Atlantic by wireless. He received the first signals from the Isle of Wight on 23 January of that year. The building survives to this day (in close proximity to the earlier signal station and lighthouse - a unique grouping), restored to its original state after being used as a holiday home and as an RAF officers' mess during the Second World War.

Goonhilly Downs saw some major changes during the Second World War. In 1940, construction started on Predannack airfield which was opened in the following year as an RAF advanced night fighter base to protect the nearby ports at Falmouth and Penzance. Due to this, the flat land of Goonhilly Downs was thought to be under threat of troop-carrying aircraft landing so rows of pits and up-cast mounds were dug across the moorland. Many of these mounds still survive. The Lizard was also protected by other defences such as networks of pillboxes, anti-tank obstructions, anti-tank ditches and roadblocks along the coast as well as some inland defences. Towards the end of the Second World War and into the Cold War, substantial radar stations and support services were developed on the Lizard and many remnants of buildings, mast anchors and other structures survive, often hidden in woodlands and scrub.

In 1962, Goonhilly Downs saw further changes with the building of the first satellite receiver dish at the Goonhilly Satellite Earth Station and there are now several large and small antennas, associated buildings and substantial security fencing occupying the site.

Since the Second World War, agricultural practices have intensified, with more land being made more fertile by the application of fertilisers. Over 1,000 ha of habitat on the Lizard, including wet and dry heathland and mire, have been lost since 1906, most of it to agriculture. Agricultural intensification has also led to a reduction in species and habitat diversity on farmland. At the same time, grazing of coastal grassland and unenclosed heaths has

decreased dramatically; this has also led to a reduction in species diversity and to an increase in the likelihood of accidental summer fires. The latter influence the structure of heathland vegetation and can lead to a decrease in the number of species present.

Some heathland has been lost to forestry, telecommunications and military use since the 1940s. Most of the remaining Lizard heathland is given over to nature conservation, where the priorities are to restore traditional management by low intensity grazing, supplemented by winter burning or mowing where appropriate, and to protecting against accidental summer fires.

In 1959 the Cornwall AONB was designated under the National Parks and Access to the Countryside Act 1949.

A more recent change to the plateau was the construction of the Bonython wind farm in 1993 when 14 turbines were installed. These were later replaced with six larger turbines, the last of which was installed in 2010.

Tourism and recreation have resulted in eroded footpaths in localised 'honeypot' areas. New tourist developments have been built in many of the villages but the buildings have not always been in keeping with the local vernacular style of slate and granite, cob, white-wash and thatch. Caravan parks also stand out in the landscape but views of them are often partially obscured by the tall Cornish hedgebanks.

Towns such as Lizard village are now focused on tourism, with many places to stay, eat and buy gifts made of the famous Lizard serpentinite. Minerals extraction activities continue to have an influence on the nature conservation interest. Quarrying exposes geological formations of interest and flooded disused quarries are quickly colonised by dragonflies and damselflies.

The area also has strong associations with the writings of Daphne du Maurier, particularly her evocative descriptions of the Helford River in her novel Frenchman's Creek. The clear air and scenic views have been and continue to be an inspiration to visual artists, whose work can often be seen in small galleries in the traditional fishing villages.

Goonhilly Earth station from the surrounding heathland.

Ecosystem services

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

Provisioning services (food, fibre and water supply)

- **Food provision**: This area is a producer of milk, beef and lamb from livestock grazing the farmland and some sections of heathland. On the more productive land, particularly in the east of the NCA, some vegetables and cereals are grown. There is still some fishing industry along the coast where crabs and lobsters are the main catch. The area is also home to some small, speciality food producers such as Roskilly ice cream.

- **Water availability:** The NCA overlies formations of impermeable rock and there is no significant groundwater resource. Most of the public water supply comes from Stithians Reservoir, which is outside the NCA. Small groundwater abstractions of water in the NCA are mainly for local domestic supplies.

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

- **Climate regulation:** The peaty nature of the soil and the areas of heath and mire contribute to carbon sequestration and storage. This will be needed to be taken into consideration when planning any land use change in these vulnerable areas.

- **Regulating soil erosion:** The slowly permeable clayey soils covering 38 per cent of the NCA have a low risk of soil erosion. The freely draining slightly acid but base-rich soils may be susceptible to capping and slaking, increasing the risk of soil erosion. To reduce this risk, these soils need to be managed carefully when timing cultivation and maintaining vegetation cover. The freely draining slightly acid loamy soils have an enhanced risk of soil erosion on moderately or steeply sloping land where cultivated or bare soil is exposed; this is exacerbated where organic matter levels are low after continuous arable cultivation or where soils are compacted. There is the potential for wind erosion on some coarse textured soils planted with cultivated variants. The freely draining acid loamy soils over rock are often found on steep land and are therefore extra-susceptible to pluvial erosion. The Helford River, which forms the northern boundary of this NCA, falls into a Department for Environment, Food and Rural Affairs (Defra) priority catchment – the West Cornwall Catchment. It suffers from sedimentation resulting from soil erosion where soils on steep slopes are left bare under vegetable production.

- **Regulating soil quality:** There are four main soil types in this NCA. Soils are easily damaged when wet and therefore it is important to minimise compaction and/or capping risk which will tend to exacerbate run-off problems. These soils may have limited potential for increasing organic matter levels by management interventions.

- **Regulating water quality:** Areas of semi-natural habitat, including valley mire, wet heath and pools, help to regulate water quality as water drains into the NCA's streams. Rivers and streams in the east tend to be of good ecological quality, while the other minor streams in the west are of

moderate ecological quality. The groundwater quality is poor throughout the area, reflecting the acidic nature of some of the bedrock and the presence of metals that have been mined in the past. The Helford River suffers from sediment and nutrient loss, especially associated with soils on steep slopes that are left bare under bulb and horticultural production.

- **Pollination:** The network of Cornish hedgebanks, heathland, species-rich grassland and meadows supports a diverse range of pollinating insects important for the area's vegetable and crop pollination.

- **Regulating coastal flooding and erosion:** The hard geology of the area has resulted in a coastline that is resilient to coastal erosion. However, rises in sea level will increase flooding risks in small coves such as Mullion.

Cultural services (inspiration, education and wellbeing)

- **Sense of place/inspiration**: The Lizard NCA consists of a prominent headland with a strong maritime influence, dominated by a windswept plateau and a dramatic coastline of cliffs and sheltered coves topped by heath and maritime grasslands. The exposure of the plateau and coast contrasts with the more intimate landscape in the east – with undulating mixed farmland set within an irregular pattern of ancient Cornish hedgebank-bound fields, small woodlands, farmsteads and scattered granite hamlets – ending at the southern banks of the peaceful Helford River. This all combines to create a landscape with a strong and distinctive sense of place and rich cultural heritage: 98 per cent of The Lizard NCA is within the Cornwall AONB and 4,531 ha (31 per cent of the NCA) are recognised as Heritage Coast.

- **Sense of history**: The Lizard has a wealth of archaeological remains, including bronze-age barrows, iron-age cliff castles, ancient trackways, prehistoric defended farmsteads and ancient field systems. There is also a rich maritime history evidenced by the ancient fishing villages, such as Cadgwith and Coverack, scattered along the rugged coastline. Other important historical features within the landscape include the small-scale, irregular, ancient fields enclosed with traditional Cornish hedgebanks to the south of St Keverne and around Lowland Point, and the use of vernacular building materials such as serpentinite, slate and granite, cob, white-wash and some thatch.

- **Tranquillity:** The wild, remote and varied character of the landscape is reflected in high levels of tranquillity. Some 90 per cent of the Lizard is classed as 'undisturbed', representing only a 2 per cent decline since the 1960s; this makes the area an important unchanging oasis of tranquillity. The only major intrusions into the landscape are the Satellite Earth Station and the wind turbines at Bonython on Goonhilly Downs, and Predannack airfield; these, along with tourism development, have led to the slight decline in tranquillity.

- **Recreation:** The area is a popular tourist destination, particularly for walking and visiting historical villages such as Lizard. Opportunities are provided by tracts of open access and common land on the open plateau and coast, covering 17 per cent of the NCA; these are supplemented by a strong rights of way network, including 60 km of the South West Coast Path National Trail. Other recreational activities include camping, horse riding, sea kayaking, sailing and rock climbing. Local food and produce, culture and tradition complement the overall experience of the landscape. The popularity of certain destinations has led to high visitor pressure which requires careful management.

- **Biodiversity:** The Lizard is recognised as being of outstanding conservation importance. Its range of semi-natural habitats supports a high diversity of plants and animals. Over 250 species of national or international conservation importance are found here, many of which are restricted to the Lizard or to the south-west of England, for example fringed rupturewort and twin-headed clover. It is home to nearly 75 nationally rare or scarce flowering plants, many of which are found in the heathland, maritime grassland, mire and cliff habitats. A key component of these is Cornish heath, a species of heather which, although rare in a national context, is locally abundant. The Lizard also supports nationally important communities of lower plants. Over 200 species of lichen are recorded in the serpentinite area alone.

  There are at least seven species of bat, including the endangered greater and lesser horseshoe bats. One of the world's rarest seals, the grey seal, breeds in small numbers on the Lizard coast. There are nearly 70 nationally rare or scarce insect species found on the Lizard, and coastal heath and grassland is also an important habitat for spiders. The number and diversity of plants and invertebrates present support regionally important breeding populations of heathland specialist birds such as the nightjar and the Dartford warbler. Small birds and mammals provide food for birds of prey, many of which are rare or declining. The cliffs are now home again to a small breeding population of choughs. This abundance of biodiversity is reflected in the fact that 20 per cent of the area lies within a Special Area of Conservation (SAC). There are also 12 Sites of Special Scientific Interest (SSSI) wholly or partly within the NCA, covering 3,052 ha (21 per cent) of the area, and 13 per cent of the NCA is designated as the Lizard NNR.

- **Geodiversity:** The NCA has a complex and unusual geology comprising mainly igneous and metamorphic rocks, with Devonian slate and sandstone in the north. The multi-coloured serpentinite and gneisses are the main underlying rocks. It is the serpentinite rock which makes the geology of the Lizard peninsula special; it contains nearly 52 km2 of serpentinite rock which is the largest outcrop of such rock in mainland Britain. There is some small-scale quarrying of gabbro for coastal defence and some very small-scale digging for serpentinite for a local industry making ornaments. Once abandoned, the quarries become valuable for the study of geology and as wildlife habitats. Within the NCA there are two geological SSSI, seven mixed interest SSSI and ten Local Geological Sites.

Cornish heath and ling.

Statements of Environmental Opportunity

SEO 1: Protect and manage the Lizard's strong sense of history, tranquillity and remoteness, its rich archaeological heritage and retaining the pattern of dispersed settlements, farmsteads and associated field patterns and open moorland.

For example, by:

- Maintaining the uncluttered and timeless quality of the network of sunken lanes enclosed by Cornish hedgebanks by, for example, preventing intrusive road engineering works and signage.
- Managing the impact of visitor and tourism-based businesses within the area, for example by resisting further tourism-related development along the A3083, including car parks and caravan sites. Retaining an understanding of the significance of cultural heritage to this industry, and its importance for the local economy.
- Conserving and interpreting archaeological earthworks and sub-surface archaeology, while recognising the high potential for undiscovered remains of prehistoric and later land use and settlement especially across downland and anciently enclosed land.
- Ensuring that future development, particularly associated with settlements, enhances and makes a positive contribution to local character, for example by using local building techniques and materials.
- Instigating a programme of scrub and secondary woodland removal on important historic features to enhance their settings, especially for Scheduled Ancient Monuments.
- Protecting and increasing understanding of the cultural and biodiversity importance of the ancient field systems and Cornish hedgebanks, which along with other forms of connected habitat reflect millennia of changes. They are also important wildlife corridors connecting habitat areas.
- Consider the cumulative impacts of development and land use change on the landscape. It is important that any proposals do not have a detrimental impact on the local character and tranquillity.

A typical fishing village of the eastern Lizard located immediately behind the beach.

SEO 2: Manage, restore and enhance the area's rich mosaic of rare and endangered wildlife habitats, extending their range where appropriate, while encouraging sustainable agricultural practices which contribute to the soil quality, water quality and habitat condition, as well as to the local economy.

For example, by:

- Conserving the moorland, heathland, coastal and rough acid grassland and linking remnant areas of mire, bog and open moorland to strengthen, and expand if appropriate, the valuable habitats in the area.
- Expanding the links provided by semi-natural habitats and Cornish hedgebanks, walls and valley woodlands to form a connected and resilient network of habitat that can allow species and habitats space to adapt to changes in climate.
- Managing, establishing and sustaining appropriate grazing levels on the central plateau and along coastal heath to maintain the existing balance of open habitats, for example by establishing viable populations of hardy livestock breeds suited to the conditions of the landscape and the requirements of the heathland habitat.
- Encouraging sustainable grazing regimes on permanent pasture and rough land, particularly in areas with peaty soils within moorland habitats, thus positively managing the carbon storage capacity of the soils.
- Restoring lost hedges, particularly where they impede water flows within stream valley fields, to help reduce soil erosion, agricultural run-off and enhance water infiltration to prevent flooding.
- Protecting and increasing understanding of the cultural and biodiversity importance of the ancient field systems and Cornish hedgebanks, and how with other forms of interconnected habitats they reflect millennia of change and make biodiversity stepping stones and corridors.
- Discouraging further forestry plantation of conifers on the heathland and promoting removal of existing plantations to allow reversion to previous heathland habitats.
- Managing areas of broadleaved and ancient semi-natural woodland associated with stream valleys and the southern banks of the Helford estuary – reinstating coppice management and undertaking new planting to link fragmented sites thereby increasing adaptation to climate change, helping regulate cross-land flows and providing a community source of wood fuel.
- Continuing to produce high-quality food and supporting farming at a sustainable level with grazing and cultivation regimes that lead to improved soil quality, reduced soil erosion and benefits to biodiversity.
- Encouraging the use of local products, for example locally caught edible crabs and rare breed beef from the heathland, within suitable businesses, for example pubs, restaurants and tourist markets, and ensuring that links are made to the landscape from which the product is sourced.
- Using the existing AONB management plan, the Cornwall Biodiversity Initiative and emerging local and parish plans to ensure that local priorities are better integrated.

SEO 3: Conserve the wealth of geology and geomorphology, the distinctive landscape and settlement character, strong sense of history, high tranquillity levels and views, especially the long coastal views towards the West Penwith area and Dodman Point.

For example, by:

- Identifying and realising opportunities to conserve and enhance the outstanding natural beauty of the area in line with the aims and aspirations of the Cornwall Area of Outstanding Natural Beauty management plan, for example through the Linking the Lizard project.
- Managing and enhancing nationally important and locally characteristic metamorphic and igneous rocks, including serpentinite, schist, gabbro and granite, for geodiversity, especially the inland outcrops and coastal exposures, and improving access and interpretation where possible.
- Conserving the landscape's local distinctiveness with its exposed open plateau, spectacular coastline, ancient pasture fields, mixed agriculture and historic mining and fishing settlements, ensuring that it remains in good condition and available for public enjoyment.
- Conserving the cultural heritage, coastal views and undisturbed character of the Lizard, while ensuring that visitor pressure does not have a negative impact.
- Maintaining and enhancing the distinctive settlement pattern of small villages and dispersed and common-edge settlements, and their diverse architectural styles, ensuring that future development recognises and retains the value of the area's biodiversity, access and heritage and contributes positively to its character.

Thrift flowering on serpentine rocks, Caethillian Cove, The Lizard National Nature Reserve.

SEO4: Sustainably manage the visitor pressure associated with this distinctive landscape to ensure that the numerous recreation opportunities such as the South West Coast Path and high-quality beaches continue to be enjoyed by the local community and visitors.

For example, by:

- Conserving the cultural heritage, coastal views and undisturbed character of the Lizard to ensure that public enjoyment continues, while also ensuring that visitor pressure does not have a negative impact on its character.
- Maximising the opportunities for visitors and the community to benefit from the inspiration that the area provides for artists, writers and photographers who are drawn by the quality and character, drama and intense light of the landscape and coast.
- Ensuring that the sense of tranquillity is maintained by encouraging only appropriate levels of development in appropriate locations, and ensuring that the traditional character of the small fishing settlements and mining villages is retained through the use of local building materials and styles.
- Promoting the more traditional beach holidays which remain an important component of the recreational and economic opportunities of the area, while ensuring that local heritage assets and character are not eroded.
- Exploring working with partners and organisations that support volunteering in the natural environment which provides opportunities for people to increase their knowledge and understanding of biodiversity while also benefiting habitats and species.
- Educating members of the public and local communities about coastal change and seeking opportunities to reduce pressure on sites most at risk from coastal erosion such as through allowing roll back of the South West Coast Path National Trail.

Children building sand castles on Kennack Sands, Cornwall.

Supporting document 1: Key facts and data

The Lizard National Character Area (NCA): 14,738 ha

1. Landscape and nature conservation designations

The NCA contains 14,379 ha of the Cornwall Area of Outstanding Natural Beauty, 98 per cent of the NCA area, and 4,531 ha of Heritage Coast, 31 per cent of NCA.

Management Plans for the protected landscape can be found at:

- www.cornwall-aonb.gov.uk/

Source: Natural England (2011)

1.1 Designated nature conservation sites

The NCA includes the following statutory nature conservation designations:

Tier	Designation	Site(s)	Area (ha)	% of NCA
International	n/a	n/a	0	0
European	Special Protection Area (SPA)	n/a	0	0
	Special Area of Conservation (SAC)	The Lizard, Fal and Helford SAC	2,932	20
National	National Nature Reserve (NNR)	The Lizard NNR	1,927	13
National	Site of Special Scientific Interest (SSSI)	A total of 12 sites wholly or partly within the NCA	3,052	21

Source: Natural England (2011)

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

There are 25 local sites in The Lizard NCA covering 536 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 at: http://www.lnr.naturalengland.org.uk/Special/lnr/lnr_search.asp
- Maps showing locations of Statutory sites can be found at: http://magic.defra.gov.uk/website/magic/ – select 'Rural Designations Statutory'

1.1.1 Condition of designated sites

Condition category	Area (ha)	% of SSSI land in category condition
Unfavourable declining	1	<1
Favourable	2,639	87
Unfavourable no change	59	11
Unfavourable recovering	340	2

Source: Natural England (March 2011)

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

2. Landform, geology and soils

2.1 Elevation

The highest point within the Lizard NCA is Goonhilly Down at an elevation of 111m.

Source: Natural England 2010; The Lizard Countryside Character Area description

2.2 Landform and process

The landform is a gently undulating, sparsely inhabited, exposed plateau leading to a combination of incised valleys to the west and sandy beaches to the east. Coastal exposures are maintained by the action of the sea.

Source: The Lizard Countryside Character Area description, The Lizard Natural Area Profile

2.3 Bedrock geology

Mainly igneous and metamorphic Devonian rocks, with the multi-coloured serpentine and gneisses for which the Lizard is famous as the main underlying rocks. Slate and sandstone from the same period are present in the north.

Source: The Lizard Countryside Character Area description, The Lizard Natural Area Profile, British Geological Survey maps

2.4 Superficial deposits

The scattered gravel deposits on the plateau indicate that it may have been cut by marine erosion but they may also represent periglacial deposits. There is a small area of blown sand near Mullion.

Source: The Lizard Countryside Character Area description, The Lizard Natural Area Profile, British Geological Survey maps

2.5 Designated geological sites

Designation	Number
Geological Site of Special Scientific Interest (SSSI)	2
Mixed interest SSSI	7

There are 10 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

Freely draining, slightly acid but base-rich soils with patches of slowly permeable seasonally wet acid loamy soils and pockets of clayey stagnogley soils are most common. This is due to the flat landform and absence of drainage over the majority of the Lizard, relieved by patches of wind-blown loess soil. More freely-draining, loamy soils are found in the north of the Lizard.

Source: The Lizard 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	0	0
Grade 2	2,047	14
Grade 3	8,059	55
Grade 4	1,041	7
Grade 5	1,778	12
Non-agricultural	1,707	12
Urban	0	0

Source: Natural England (2010)

Maps showing locations of Statutory sites can be found at: **http://magic.defra.gov.uk/website/magic/** – select 'Landscape' (shows ALC 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.

Name	Length in NCA (km)
n/a	n/a

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.

From the highest point, Goonhilly Down, there is a radial drainage pattern. Streams find their way to the sea by narrow valleys opening to small coves.

3.2 Water quality

The total area of Nitrate Vulnerable Zone is 5,199 ha or 35 per cent of the NCA.

Source: Natural England (2010)

3.3 Water Framework Directive

Maps are available from the Environment Agency showing current and projected future status of water bodies at: http://maps.environment-agency.gov.uk/wiyby/wiybyController?ep=maptopics&lang=_e

Goonhilly heath.

4. Trees and woodlands

4.1 Total woodland cover

The NCA contains 1,284 ha of woodland, 9 per cent of the total area, of which 111 ha is ancient woodland.

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

4.2 Distribution and size of woodland and trees in the landscape

The area was generally cleared of its woodland cover by the Iron Age. Stunted patches of woodland occur, such as the elms at Cadgwith. Small woodlands and copses to east become larger towards the more sheltered Helford River.

Source: The Lizard 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	1,061	7
Coniferous	111	1
Mixed	53	<1
Other	59	<1

Source: Forestry Commission (2011)

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

Type	Area (ha)	% of NCA
Ancient semi-natural woodland	52	<1
Ancient re-planted woodland (PAWS)	59	<1

Source: Natural England (2004)

5. Boundary features and patterns

5.1 Boundary features

The dominant boundary feature in the Lizard NCA is the Cornish hedgebank.

Source: The Lizard Countryside Character Area description; Countryside Quality Counts (2003)

5.2 Field patterns

Small-scale and irregular patterns of prehistoric fields, for example to south of St Keverne and around Lowland Point. There is evidence from at least the 14th century for piecemeal enclosure, concentrated on the valley land and lower areas. These characteristically retain the curved shapes of medieval strips to at least one of the longer sides. Some of these enclosures are quite large in size, the result of acquisition of many strips prior to enclosure. Larger-scale and more regular post-medieval enclosures extend to the edges of the downs and heaths.

Source: The Lizard Countryside Character Area description; Countryside Quality Counts (2003)

Recently exposed Second World War bunker at Lanarth.

6. Agriculture

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

6.1 Farm type

Although in 2009 dairy and grazing still formed the largest percentage of farms within the NCA, between 2000 and 2009 there was a significant switch to cereal and other crop growing with livestock farms dropping in number by about a third.

Source: Agricultural Census, Defra (2010)

6.2 Farm size

Small farms, under 5 ha in size, decreased significantly in number between 2000 and 2009 as did those between 20 and 50 ha. Large farms, those over 100 ha, increased by nearly a quarter.

Source: Agricultural Census, Defra (2010)

6.3 Farm ownership

2009: Total farm area = 11,697 ha; owned land = 8,152 ha
2000: Total farm area = 10,898 ha; owned land = 8,558 ha

Source: Agricultural Census, Defra (2010)

6.4 Land use

All crop growing increased between 2000 and 2009, particularly vegetables; however, the hectarage classed as "grass and uncropped land" fell by just less than 300 ha and remains 75 per cent of the agricultural land in the NCA.

Source: Agricultural Census, Defra (2010)

6.5 Livestock numbers

Although the number of dairy and grazing farms declined between 2000 and 2009, the number of cattle fell by only around 300 and is now a proportionally greater total, 75 per cent, of total livestock. Sheep numbers fell significantly during the same period, but the greatest reduction was in the numbers of pigs which went from over 3,000 in 2000 to around 700 in 2009.

Source: Agricultural Census, Defra (2010)

6.6 Farm labour

Numbers of farm workers remained relatively stable between 2000 and 2009 with the exception of casual/gang workers which have declined dramatically, dropping from a figure of 534 in 2000 to 159 in 2009.

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.

Spring bulb field at Trenoweth.

7. Key habitats and species

7.1 Habitat distribution/coverage

Gently undulating, sparsely inhabited, exposed plateau dominated by heather, grass, heath, pools and marshes. Internationally important heathland sites occur.

Source: North Pennines Natural Area Profile

Wildflowers on the cliffside at Mullion.

7.2 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
Lowland heathland	2,296	16
Maritime cliff and slope	1,223	8
Fens	315	15
Reedbeds	28	<1
Coastal sand dunes	46	<1
Mudflats	2	<1

Source: Natural England (2011)

Maps showing locations of UK BAP priority habitats are available at

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

7.3 Key species and assemblages of species

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

8. Settlement and development patterns

8.1 Settlement pattern

Settlement pattern is dispersed and linked by minor lanes, with ancient hamlets and farmsteads concentrated in the sheltered valleys and main settlements along the coastline. Tourism-led development around the coastline and main roads is now occurring.

Source: The Lizard Countryside Character Area description; Countryside Quality Counts (2003)

8.2 Main settlements

The main settlements within the Lizard NCA are: Mullion, Lizard, Coverack and St Keverne. The total estimated population for this NCA (derived from ONS 2001 census data) is 9,144.

Source: The Lizard Countryside Character Area description; Countryside Quality Counts (2003), Natural England (2012)

8.3 Local vernacular and building materials

Traditional building in local slate and granite, including some use of cob and of thin render coats and lime-wash; some thatch. Recent tourist development is often out of keeping with the local vernacular style.

Source: The Lizard Countryside Character Area description; Countryside Quality Counts (2003)

9. Key historic sites and features

9.1 Origin of historic features

Neolithic chambered tombs, ritual monuments, barrows and standing stones, dating from the Bronze Age, on the downs, across which are ancient trackways to surrounding settlements. Inland there is a scattering of prehistoric defended farming hamlets, known as 'rounds'. Fishing villages were expanded in the 19th century for the pilchard fishing industry. There are also some quarries for modest industry in polished serpentine and promontory forts such as Little Dennis Head (also supposed Civil War battery). There is a remarkable group of communications structures on the Lizard, comprising a lighthouse, Lloyd's Signal Station of the 1880s and the hut from which Marconi made his first over-the-horizon radio transmissions. The wind farm and BT Earth station on Goonhilly Down break up the skyline and are dominant features in an otherwise remote and wild landscape.

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

9.2 Designated historic assets

This NCA has the following historic designations:

- 1 Registered Park and Garden covering 350 ha
- No Registered Battlefields
- 108 Scheduled Monuments
- 380 Listed Buildings

Source: Natural England (2010)

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

10. Recreation and access

10.1 Public access

- Nineteen per cent of the NCA, 2,779 ha, is classified as being publically accessible.
- There are 241 km of public rights of way at a density of 1.6 km per km2.
- There is 1 national trails, the South West Coast Path, extending along 59 km of the NCA.

Sources: Natural England (2010)

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

Access designation	Area (ha)	% of NCA
National Trust (accessible all year)	270	11
Common Land	133	1
Country parks	0	0
CROW Access Land (Section 4 and 16)	2,452	17
CROW Section 15	102	1
Village greens	<1	<1
Doorstep Greens	0	0
Forestry Commission Walkers Welcome Grants	4	<1
Local Nature Reserves (LNR)	0	0
Millennium Greens	0	0
Accessible National Nature Reserves (NNR)	1,927	13
Agri-environment Scheme Access	82	<1
Woods for People	66	<1

Sources: Natural England (2011)

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

Kennack Sands part of the Lizard National Nature Reserve.

11. Experiential qualities

11.1 Tranquillity

Based on the CPRE map of Tranquillity (2006) The Lizard has a high level of tranquillity for most of its area, save a strip of medium tranquillity along the path of the main road south through the area.

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

Category of tranquillity	Score
Highest	49
Lowest	-33
Mean	14

Sources: CPRE (2006)

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

11.2 Intrusion

The 2007 Intrusion Map (CPRE) shows the extent to which rural landscapes are 'intruded on' from urban development, noise (primarily traffic noise), and other sources of visual and auditory intrusion. This shows that there is very little disturbed land within the NCA and most of that is concentrated around the urban settlement of Helston which touches on the north-west boundary of the area. A breakdown of intrusion values for this NCA is detailed in the table below.

Intrusion category	1960s (%)	1990s (%)	2007 (%)	Percentage change (1960s-2007)
Disturbed	3	6	10	7
Undisturbed	92	90	90	-2
Urban	0	0	0	0

Sources: CPRE (2007)

Notable trends from the 1960s to 2007 are very little change compared to most NCAs. Land classed as disturbed did increase since the 1960s but undisturbed land actually increased slightly after 1990. Some of the changes may be attributed to the inclusion of land for which there was previously no data.

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

Mullion Cove.

12. Data sources

- British Geological Survey (2006)
- Natural Area Profiles, Natural England (published by English Nature 1993-1998)
- Countryside Character Descriptions, Natural England (regional volumes published by Countryside Commission/Countryside Agency 1998/1999)
- Joint Character Area GIS boundaries, Natural England (data created 2001)
- National Parks and AONBs GIS boundaries, Natural England (2006)
- Heritage Coast Boundaries, Natural England (2006)
- Agricultural Census June Survey, Defra (2000,2009)
- National Forest Inventory, Forestry Commission (2011)
- Countryside Quality Counts Draft Historic Profiles, English Heritage (2004)*
- Ancient Woodland Inventory, Natural England (2003)
- 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)

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

Supporting document 2: Landscape change

Recent changes

Trees and woodlands

- Woodland covers 9 per cent of the NCA, some 7 per cent being broadleaved, mostly in the northern part of the area. Conifer plantations have occasionally been planted on heathland sites making them prominent on the plateau. Uptake of woodland grants schemes is only 4 per cent in the area with many areas of neglected ancient woodland.

Boundary features

- Cornish hedges and hedgebanks typically enclose the agricultural land; these are generally being maintained and reflect closely the differences in geology leading to fascinating variations in appearance. A Cornish hedge is a vegetation covered hybrid between a stone wall and an earth bank. Wire fencing is starting to become a feature of some of the moor areas as a necessity of the introduction of grazing.

Agriculture

- While the variety of agriculture in the area has remained a consistent mix of livestock and horticulture, since 2000 the number and area of dairy farms has decreased with a significant switch to cereal and other crop growing. However, farm size has also increased over this period with more farms of a size greater than 50 ha.

- In recent years some farmers have taken up organic farming or diversified into novel crops such as vines, fruit and bulbs, as well as renting out renovated farm buildings as holiday cottages.

Settlement and development

- Development pressure is low, on average, with tourism being the main driving factor. There has been limited development scattered through the open countryside, associated with villages and smaller settlement. In the wider countryside barn conversions remain the main developments, although increased development pressure on the small market towns in the future is expected as part of the social and economic regeneration of the area.

- Emerging planning policy suggests an increase in the number of new homes over the next 20 years across the area with a proportion of these being located in the existing small towns and villages, with some linked to small business development opportunities.

- Bonython wind farm on Goonhilly Downs has changed in the past 20 years as the original 14 turbines were replaced by 6 taller units.

Semi-natural habitat

- Designated sites, SSSI and NNR make up 34 per cent of the area and 20 per cent of the area is designated as a SAC. Some 87 per cent of the SSSI are in favourable condition, 2 per cent are classed as in unfavourable recovering condition and less than 1 per cent is classed as being in unfavourable declining condition.

- The Lizard National Nature Reserve takes up 13 per cent of the NCA. Many of the areas outside of designated sites are in the ownership of the National Trust or Cornwall Wildlife Trust and these habitats have received sympathetic management providing important linkage to other existing high value sites. These areas are constantly requiring management to ensure continued survival and expansion of species and this has been funded through a combination of land ownership and management through agri-environment schemes.

Historic features

- The rich archaeological features on the peninsula reflect the human use of the area from the Neolithic through to the very modern communications stations and wind farms. The area can lay claim to a total of 108 scheduled monuments and 380 listed buildings.

- Many sites have remained unaltered for centuries but in some places they are starting to suffer from scrub encroachment which decreases their visibility in the landscape. Some of this has been halted through the application of agri-environment schemes and site management plans.

Rivers

- The biological river water quality in 1995 was predominantly excellent and it has been maintained. Likewise the chemical water quality in 1995 was predominantly excellent and it has been maintained.

- The hard cliffs of the majority of the NCA mean that little change has occurred to the coastline with only some minor coastal defence work associated with protecting fishing villages. The shoreline management plan for this stretch of coast identifies major areas of 'do nothing' with a few areas of 'hold the line' associated with small fishing villages and holiday destinations.

- The coast of the NCA has several sites of European designated bathing water which shows that the quality of the bathing water is generally good.

- In relation to the area's minor rivers, the water quality has remained good and is expected to remain at a high level.

Minerals

- There is a history of small-scale mineral extraction which carries on to this day. Gabbro is quarried for road-stone and small quantities of serpentinite are quarried for a local industry making ornaments.

Chamomile in wildflower meadow.

Drivers of change

Climate change

- Potential sea level rise may affect low-lying beaches and coves and a number of the coastal villages, for example Mullion.

- An increase in carbon dioxide and nitrogen levels and a decrease in summer precipitation could favour grassland species over heather, affecting the SAC-designated heathland of the main plateau and coast. This trend may also lead to the drying out of associated areas of wet heath, seasonal pools, reedbeds and mire. The mire habitat may potentially release carbon dioxide into the atmosphere, while all may see a reduced ability to store and filter water. Increased fire risk and the drying out of wetlands may also lead to damage to important archaeological sites and features.

- Maritime and calcareous grasslands associated with the coast may deteriorate through the spread of invasive and woody species as a result of higher temperatures, along with a reduction in species diversity as a result of warmer winters and more frequent drought conditions. Warmer winters could also promote increased tree growth impacting on the open character of the coast and plateau.

- An increased prevalence of pests and diseases and spread of non-native species might change the composition of the valley woodlands. A spread of heather beetle and other pests and diseases due to milder conditions may also have an impact on areas of lowland and coastal heath.

- New crops currently grown in southern Europe may appear in the landscape, while enhanced growing conditions might lead to a further expansion and intensification of existing areas of arable cropping and vegetable production in the east of the NCA.

- Changes in precipitation cycles, such as increased autumn and winter precipitation and decreased summer precipitation, will potentially alter the flow regimes of the streams draining from the Lizard; increase the flashiness of flows with potential for more frequent downstream winter flooding and summer drought; and increase rates of soil erosion.

- Sea level rise may lead to the loss of internationally important estuarine habitats associated with the Helford estuary, part of the Fal and Helford SAC, at the northern boundary of the NCA, including saltmarsh, mudflats and lagoons.

Other key drivers

- Maintaining and reintroducing traditional grazing patterns on the downs, heaths and cliff tops to secure the Lizard's outstanding wildlife interest.
- The long-term management of the young plantations needs to be given particular consideration in order to minimise damage to or loss of former heathland.
- Sustained and increased numbers of visitors present both a challenge to limited and restricted resources, but also an opportunity to engage a wider range of communities and support the local economy. Making valued habitats, geological features and heritage assets available to a wider audience may need to be balanced against increased rates of erosion, consumption of local resources – principally water and energy – and economic benefits.
- Retaining the existing diversity of geological and geomorphological features on the Lizard, ensuring their accessibility for study.
- Maintaining and enhancing the characteristic semi-natural habitats including where possible increasing populations of rare species through good habitat management or re-establishment, and to maintain populations of commoner species characteristic to the Lizard.
- Educating members of the public and local communities about coastal preparing for a possible future increase in storm events by making pre-emptive flood defence measures.
- By ensuring that future development for tourism fits into the local vernacular, impacting the landscape as little as possible. The popularity of the Lizard as a holiday destination should remain or maybe even increase as holidaying within Britain becomes more popular due to monetary and environmental concerns.
- Preparing for the possibility of increased rainfall by restoring lost Cornish hedges particularly where they impeded water flows within stream valleys fields to help reduce soil erosion, agricultural run-off and enhance water infiltration to prevent flooding.

Wild chives.

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.

Kennack Sands at high tide.

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	Regulating coastal erosion	Sense of place / Inspiration	Sense of history	Tranquillity	Recreation	Biodiversity	Geodiversity
SEO 1: Protect and manage the Lizard's strong sense of history, tranquillity and remoteness, protecting its rich archaeological heritage and retaining the pattern of dispersed settlements, farmsteads and associated field patterns, and open moorland.	↔ ***	↔ **	↔ ***	↔ ***	↔ **	↔ ***	↔ ***	↗ **	↔ **	↗ **	↔ **	↔ **	↗ ***	↑ ***	↑ ***	↗ ***	↗ **	↔ ***
SEO 2: Manage, restore and enhance the area's rich mosaic of rare and endangered wildlife habitats, extending their range where appropriate, while encouraging sustainable agricultural practices which contribute to the soil quality, water quality and habitat condition, as well as to the local economy.	↗ **	↗ ***	↔ **	↑ ***	↘ *	↗ **	↗ *	↗ **	↗ **	↗ ***	↗ **	↔ ***	↑ ***	↗ **	↗ ***	↔ ***	↑ ***	↔ ***
SEO 3: Conserve the wealth of geology and geomorphology, the distinctive landscape and settlement character, strong sense of history, high tranquillity levels and views, especially the long coastal views towards the West Penwith area and Dodman Point.	↔ ***	↔ ***	↔ ***	↔ ***	↔ ***	↔ ***	↔ ***	↔ ***	↔ ***	↔ ***	↔ ***	↑ ***	↗ **	↑ ***	↗ **	↗ **	↗ **	↑ ***
SEO 4: Sustainably manage the visitor pressure associated with this distinctive landscape to ensure that the numerous recreation opportunities such as the South West Coast Path and high-quality beaches continue to be enjoyed by the local community and visitors.	↘ *	↔ **	↔ ***	↗ ***	↔ ***	↗ **	↔ ***	↗ **	↔ ***	↔ ***	↔ ***	↑ ***	↑ ***	↔ ***	↔ ***	↔ ***	↗ ***	↔ ***

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

Landscape attributes

Landscape attribute	Justification for selection
A complex and dramatic coastline of small headlands, with deeply incised steep-sided coves, many reefs and spectacular stacks formed from the Lizard's famous serpentinite rock.	■ The coast is dramatic and wild in appearance with few visible impacts from human occupation and use. ■ The special and outstanding qualities of the coast and the Lizard peninsula are highlighted by all of the area falling within one part of the Cornwall AONB. ■ The 27 km stretch of coast to the west of Lizard Point has many features of historical and natural interest which are reflected by the Heritage Coast designation.
An open, mainly treeless moorland plateau at the heart of the area, with extensive tracts of heathland and wetland traditionally grazed by cattle.	■ A landscape of rich and varied colour and texture with a wide variety of both common and rare plant species. ■ The openness of the area enables long views across the land and out to sea and creates a sense of elevation, remote freedom and removal from modern hustle and bustle.
Steep-wooded river valleys, supporting many ancient woodland sites dominated by oak and ash, with alder and hazel in the damper valley floors.	■ Seven per cent of the NCA is defined as broadleaved woodland, some of which is ancient woodland, nestled in the deep river valleys running down to the coast. Total woodland area is 9 per cent of the NCA. ■ In contrast and reinforcing the significance of the wooded valleys, tree cover is sparse on the exposed plateau. ■ The mature, often wind-sculpted and knarled trees topping many of the Cornish hedges create visual interest and wildlife corridors between woodlands.
Long and continuous occupation of the landscape and close relationship with the sea evident in settlements, military defences and access along and to the coast. This area is important for tourism, providing opportunities for recreation offshore, along the coast and inland.	■ Distinctive coastal settlements, such as Porthallow, mark a long and close relationship with the sea, coastal trading and transportation. Many coastal settlements remain vibrant and industrious locations, some with active ports with small fishing fleets. ■ The coastline of the NCA provides a rich variety of tourist destinations and activities which appeal to a wide audience. ■ Public rights of way and open access land provide for quiet contact with the inland landscape of the NCA.

Landscape attribute	Justification for selection
A long history of human occupation is evident in the numerous heritage assets to be found across the landscape.	■ The pattern of settlement is distinctive with nucleated villages, farmsteads and the occasional gentry house sheltering in valley locations. ■ Local building resources such as granite and slate are prevalent. ■ There are many heritage assets such as bronze-age barrows, standing stones, Neolithic chambered tombs and Second World War defences. ■ The pattern of early field systems is still in evidence with small fields delineated by often ancient Cornish hedges. ■ The Goonhilly earth satellite station, which includes the listed receiver dishes 'Arthur' and 'Guinevere', is a prominent feature closely linked with recent technological advances.
A landscape of great tranquillity and calm, located in the far south-west and sparsely inhabited it also has dark night skies.	■ The Lizard's location at the end of mainland Britain provides a deep sense of remoteness. ■ Thrust into the Atlantic, at the beginning of the English Channel, the peninsula can often feel exposed and wild. ■ Some 90 per cent of the area is classified as undisturbed on CPRE's Intrusion Map.
An extensive network of rights of way, open access land and the South West Coast Path National Trail.	■ The South West Coast Path National Trail allows continuous access along the coastline. ■ Walks around the peninsula, across the central plateau and along sheltered wooded valleys are popular with day visitors, tourists and more adventurous explorers alike.

Landscape opportunities

- Preserve the characteristic pattern of farmsteads, hamlets and small settlements, the historic pattern of field enclosure, linked by sunken lanes and flower-rich Cornish hedges forming a rural predominantly pastoral landscape.
- Conserve the landscape's local distinctiveness, including the exposed heathland plateau, ancient pasture fields, ancient trackways and cliff top grassland.
- Protect from damage and appropriately manage the area's rich cultural heritage paying particular attention to the prehistoric and bronze-age remains as well as more recent human influences and strong cultural associations.
- Manage through use of grazing and swaling, when appropriate, the areas of open ground paying particular attention to the heathland plateau and the clifftop grassland which should be managed appropriately for the continuing success of the species closely associated with them, such as Cornish heath and chough.
- Actively manage and expand areas of semi-natural habitat including mires, bog and open moorland communities to maintain the complex pattern and texture of the landscape as well as for the contribution to biodiversity.
- Actively engage with local business and communities to sustainably develop the area's tourist industry to maintain the existing high quality landscape and wildlife assets. Consider opportunities for developing techniques to enhance the understanding of the area through provision of both physical and virtual information.
- Manage the broadleaved woodlands, and particularly ancient woodlands, on the steep river valley sides.
- Maintain levels of tranquillity and the remote nature of the NCA, and seek to protect dark night skies, and coastal and inland views.

Rolling surf at Kennack Sands.

Ecosystem service analysis

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

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

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Food provision	Dairy, meat and fish products Some arable crops particularly vegetables 55 per cent of the NCA is Grade 3 agriculture land Local fishing industry	There are 11,697 ha of total farm area, 75 per cent of which is classed as 'grass and un-cropped land.' Although the number of dairy and grazing farms declined between the years 2000 and 2009, the number of cattle fell by only around 300 and is now a proportionally greater total (75 per cent) of total livestock. Sheep numbers fell significantly during the same period. Pigs only represent 3 per cent of stock numbers. The remaining 35 per cent of farmland consists of cereal crops and vegetables. There is a local fishing industry where crabs and lobsters make up a large proportion of the catch.	Local	Food production from a rough pastoral farming landscape is a fundamental part of the ecological network in this area. The levels, type and quality of food produced intrinsically reflect the area. The favourable climatic conditions and latitude allow the early production of vegetables. 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. Climate change may also affect the marine environment important to determining fishing quotas, ensuring they are balanced accordingly to ensure sustainable fishing. Food provision is intrinsically linked to the cultural and some tourist services of the Lizard, underpinning and promoting a strong sense of place and the range of biodiversity in this area.	Working with the local farming community to consider how to safeguard food provision while maintaining the key character of the area and enhancing a range of key ecosystems. There is an opportunity for generally enhancing local markets. Working with the local farming community to maintain grazing of rough grassland, heath and coastal grassland to prevent scrub encroachment, particularly non-native invasive scrub species. Continuing to support a sustainable local fishing industry which maintains biodiversity while providing income and ongoing cultural identity for the local population.	**Food provision** **Biodiversity** **Regulating soil erosion** **Regulating soil quality** **Regulating water quality** **Regulating water flow** **Sense of place / inspiration** **Sense of history**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Timber provision	Small areas of existing commercial plantation and broadleaved woodland	Existing woodland covers 9 per cent of the area. Timber resources exist in the form of approximately 111 ha of coniferous plantation, mainly on the plateau. There are 53 ha of mixed woodland and 1,061 ha of broadleaved woodland of which 11 ha is ancient woodland.	Local	Provision of timber is currently low. Commercial extraction is not a major feature of this area because few sites are suitable for growing timber and much of the area is difficult to access due to steep valleys and a remote location resulting in high overhead costs and little financial return. Much of the broadleaved woodland is either of high nature conservation value or of limited accessibility. Broad-leaved woodland provides some potential for medium value 'artisan timber' products.	Some areas of broadleaved woodland have potential for well-managed coppicing to provide timber for local use. Identify areas where localised woodland planting could help reduce soil erosion, for example on steeper slopes and reduce the speed of water run-off without having an adverse effect on open habitats Encourage the use of timber arising from hedgerow restoration and maintenance work	**Timber provision** **Regulating water flow** **Sense of place / inspiration** **Tranquillity** **Regulation of soil erosion** **Biodiversity**
Water availability	Small rivers and streams leading to the sea or the Helford River. Atlantic climate and high levels of precipitation	Within the NCA there are many hydrologically independent watercourses that flow in a radial pattern directly from the highest point of Goonhilly Down in steep narrow valleys, to the coast. Those that flow north, flow into the Helford River. The majority of public water supply comes from Stithians Reservoir, outside the NCA. Abstractions of water in the NCA are used for industry, aquaculture and some public water supply and are largely from surface waters. The NCA overlies formations of impermeable rock and there is no significant groundwater resource.	Local	This NCA currently, has water available for additional abstraction throughout, although a lack of significant groundwater reserves gives a low base-flow index and can result in naturally low flow conditions in periods of low rainfall. Climate change and increased water use for crops or industry may place higher demands on future water resources. This could negatively affect water-dependent habitats and fish populations in the Helford River, notably trout which rely on sufficient water flows to survive and reproduce. Areas of valley mire, when combined with areas of wet heath and pools, are important in holding water which is released slowly into water courses. The Lizard Point Special Area of Conservation (SAC) includes water-dependent habitats.	Encourage good environmental management and enlargement of semi-natural habitats, such as wet moorland and particularly unimproved permanent grasslands, increasing their capacity to retain water. Seek opportunities to demonstrate and promote water conservation and sustainable water use across the area.	**Water availability** **Biodiversity** **Regulating water quality** **Regulating water flow** **Regulating soil erosion**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Genetic diversity	Crop wild relatives, such as wild carrot and wild chives, grow within the NCA	There are several species of crop wild relatives found in the NCA. The relatively extensive nature of agriculture, areas of semi-natural habitat and Cornish hedges combine to provide conditions that are favourable for crop wild relatives such as prostate asparagus.	National	The crop wild relatives growing in the NCA are an important store of genetic diversity which could help with the development of new food plant varieties.	Ensure the protection of habitats important for crop wild relatives and work with local communities to maintain and extend habitats suitable for crop wild relatives. Realise opportunities to educate the public, especially landowners about the importance of crop wild relatives and encourage further research into future use of these plant species.	**Genetic diversity** **Biodiversity** **Sense of place / inspiration** **Food provision**.
Biomass energy	Miscanthus plantings Cornish hedgebanks, scrub and woodland.	There is currently a small area of miscanthus planting. There is little standing accessible biomass in the NCA due to the inaccessible nature of most of the woodland. Numerous and dense hedgebanks and areas of developing scrub provide an occasional source of local wood fuel.	Local	There is some potential for the provision of biomass by bringing unmanaged woodland back under appropriate management and as a by-product of commercial timber production. Clearance of scrub and the management of hedgebanks may generate material suitable for local wood fuel and would enhance the structure of ecological networks and connectivity within the area. The opportunities for biomass planting are mainly restricted to areas of mixed farming and arable cropping towards the east of the area. Short rotation coppice may be accommodated in the sheltered valleys on gentler slopes although these sites are generally not well served by vehicular access. Discrete plantings of miscanthus may be accommodated within the existing pattern of arable crops on the low ridges between valleys off the skylines and where public views of the wider landscape are not obscured.	Seek opportunities to promote the clearance of scrubbed areas to increase the semi-natural habitat and actively encourage the use of woodland thinnings and brash as a source of local wood fuel. Attention should be given to the removal of scrub that coincides with scheduled monuments and other heritage assets. Identify opportunities for planting short rotation coppice and miscanthus, appropriately sited within the existing pattern of woodland, Cornish hedges and semi-natural habitats in the eastern part of the NCA. Particular care should be taken to avoid areas with high potential for or known buried archaeology. The effects of damaging soil structure through the use of heavy machinery during planting and harvesting should also be taken into account.	**Biomass energy** **Biodiversity** **Sense of place / inspiration** **Sense of history**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Climate regulation	Woodland Areas of high carbon soils Low-input crops / grassland	Extensive peat cutting in the 14th and 15th centuries as a fuel source for tin smelting led to the removal of much of the topsoil of the Lizard, which would previously have stored significant amounts of carbon. Remaining areas of valley mire provide an important function in sequestering and storing carbon as do the areas of woodland. The small areas of freely draining acid loamy soils over rock (3 per cent of the NCA) have organic topsoils which will be important to conserve as a store of carbon.	Local	The slowly permeable and freely draining mineral soils that cover the majority of the NCA and are generally low in organic matter, which is likely to be particularly low in areas under continuous cultivation. On areas of continuous cultivation carbon sequestration can be enhanced by management to enhance the organic matter in the soil and by reducing the frequency and area of cultivation. Maintaining high water levels in valley mires may become more difficult in drought scenarios.	Encourage sustainable grazing regimes on permanent pasture and rough land. Increase management of areas with a low input of artificial fertiliser, increasing soil carbon levels and the ability to sequester carbon. Encourage the sustainable management of woodland and the expansion of areas of valley mire.	**Climate regulation** **Regulating soil erosion** **Regulating soil quality** **Water availability** **Biodiversity**
Regulating water quality	Wooded valleys Uncultivated areas on steep slopes, particularly areas of heath. Cross-field hedgebanks (in arable)	Areas of valley mire, wet heath and pools, help regulate water quality holding water before it drains into the NCA's streams. Rivers and streams in the east tend to be of good ecological quality, while the other minor streams in the west are of moderate ecological quality. The groundwater quality is poor throughout the area generally reflecting the acidic nature of the bedrock, the presence of metals and mineral and past mining activity. The Helford River suffers from sediment and nutrient loading associated with soils on steep slopes that are left bare under bulb and horticultural production.	Regional	Water quality is particularly important in this NCA due to the biologically significant wetland sites and 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 additional beneficial impacts on regulating soil erosion, biodiversity and soil quality.	Work with farmers and land managers to 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 upstream of main rivers. Encourage, where appropriate, the fencing of watercourses and introduce cross-field hedgerows and tree planting, to reduce the migration of soils and subsequent sedimentation and nutrient loading.	**Regulating water quality** **Regulating soil erosion** **Regulating soil quality** **Biodiversity** **Food provision**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Regulating water flow	Wooded river valleys Vegetated steep slopes Heathland Geodiversity	Minor streams radiate from the highest point at Goonhilly Down, cutting through narrow valleys to reach the sea via small coves. Their low water capacity means that flood risk is generally not an issue in the NCA. However, they can be 'flashy' in nature in periods of high rainfall.	Local	Changes in precipitation cycles linked to climate change, such as increased autumn and winter precipitation and decreased summer precipitation, will potentially alter the flow regimes of the streams draining from the Lizard. Increased flashiness of flows may result during periods of intense rainfall, particularly in summer. There is generally increased potential for more frequent downstream winter flooding and summer drought. Climate change could also lead to an increased risk of flooding from outside the NCA, for example from the River Cober which sometimes floods around Loe Pool just across the north-western boundary.	Follow the principles described in the catchment flood management plans for the area. This includes enhancing and expanding areas of wetland habitats and changing land management practices to reduce soil compaction to reduce flood risk. Expand areas of semi-natural woodland on steep slopes and extend the network of hedgebanks to reduce cross land flows. Increase areas and water-holding capacity of wetland habitats where possible.	**Regulating water flow** **Biodiversity** **Water availability** **Food provision** **Geodiversity**
Regulating soil quality	Unimproved pastures Semi-natural habitats	There are 4 main soils types in this NCA; slowly permeable seasonally wet acid loamy and clayey soils, covering 38 per cent of the NCA; freely draining slightly acid but base-rich soils, 30 per cent; freely draining slightly acid loamy soils, 28 per cent; and freely draining acid loamy soils over rock, 3 per cent. Fifty-five per cent of the land is classified as Grade 3, only 14 per cent Grade 2 and the remainder Grades 4, 5 or non-agricultural land	Local	With the slowly permeable seasonally wet acid loamy and clayey soils (38 per cent), there is a risk of diffuse pollution and flooding as a result of poor water infiltration. Soils are easily damaged when wet and therefore it is important to minimise compaction and/or capping risk which will tend to exacerbate run-off problems. These soils may have limited potential for increasing organic matter levels by management interventions. In the case of the freely draining slightly acid but base-rich soils (30 per cent), where calcareous layers are near the surface these help provide some natural resilience and enhanced workability. Some component soils are at risk from topsoil compaction and poaching. Careful management, such as minimum tillage of weak topsoils will help to maintain a good soil structure. Development of iron pans can occur in some soils. The freely draining slightly acid loamy soils (28 per cent) can be valuable in allowing water to pass into groundwater resources requiring the maintenance of good soil structure to aid water infiltration.	Increase sward diversity to increase laying down of organic matter. Manage grazing regimes by reducing stocking densities to reduce or minimise soil compaction and poaching. Promote good management of weak top soils for example minimising tillage to maintain good soil structure. Where organic matter is low, increase organic matter inputs to improve soil structure by applying the principles of catchment sensitive farming. Where organic matter is low increasing organic matter inputs can help improve soil structure. Maintain areas of permanent pasture woodland and semi-natural habitats.	**Regulating soil Quality** **Food provision** **Biodiversity** **Regulating soil erosion** **Regulating water quality** **Regulating water flow**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Regulating soil erosion	Wooded valleys Uncultivated areas on steep slopes Cross-field hedgebanks (in arable)	The slowly permeable clayey soils, covering 38 per cent of the NCA have a low risk of soil erosion. Such soils are more likely to be used as permanent pasture which tends to have a well established turf of grass and herbs, which help to reduce the rate of soil erosion compared with other farmland. However, the other soils of the NCA are susceptible to erosion. The freely draining slightly acid but base-rich soils may be susceptible to capping and slaking, increasing the risk of soil erosion. These soils are more likely to be under arable or vegetable production, which carries an associated increased risk of erosion. The Helford River which forms the northern boundary of this NCA falls into a Defra priority catchment – the West Cornwall Streams catchment. This suffers from soil erosion where soils on steep slopes are left bare under bulb and horticultural production, leading to sedimentation of water courses. The semi-natural habitats of the Lizard such as heathland tend to be very resistant to soil erosion.	Local	Soil erosion from intensive cultivation can result in high rates of sedimentation and nutrient loss which impacts on adjacent watercourses and the overall reduction in soil quality. The selection of less well suited crop types, cropping patterns, and direction of cultivation can markedly increase the risk of soil erosion. The intensive management of stock (dairy and beef) leads to soil compaction which provides an enhanced surface for soil erosion to occur. Improving soil quality through increasing organic matter will have potential benefits in regulating soil erosion by increasing the particle size making it more stable There is still a strong pattern of hedgebanks in the NCA. Many of these are cross-field hedgebanks which impede water flow, helping to reduce soil erosion.	Where appropriate, encourage new woodland planting to impede cross land flows. Encourage change from cultivation on steep slopes to permanent grassland and semi-natural habitats with extensive grazing. Manage grazing regimes to reduce or minimise soil compaction and poaching. Also, manage the timing and frequency of grazing to allow; longer growing periods between grazing, increased root depth penetration, increased carbon storage and biological activity deeper in the soil, improving structure and stability. Build new Cornish hedgebanks, particularly to replace previously removed hedgebanks and retain the current Cornish hedgebanks which impede cross land flows. The placement of gates in these hedgebanks also requires careful consideration to ensure that they do not provide a route for water to carry away soil.	**Regulating soil erosion** **Regulating soil quality** **Food provision** **Regulating water quality** **Regulating water flow** **Sense of place / inspiration**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Pollination	Heathland and moorland Meadows and other species-rich grassland Cornish hedges	There are areas of heathland (over 2,000 ha), species-rich grassland and meadows scattered across the area that provide an important nectar source for pollinating insects. The network of flower-rich Cornish hedges and hedgebanks extending across the area also provides a valuable nectar source for pollinating insects.	Local	The contribution of pollination services to food production in this NCA is currently limited as there are only a few orchards and no large areas of vegetables that require pollination. 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 and connect semi-natural habitats, including woodland, hedgebanks and hedgebanks, and grasslands to increase the diversity and number of flowering plants and increase the area and range of habitat mosaics where different habitats lie in close proximity.	**Pollination** **Biodiversity** **Food provision**
Regulating coastal flooding and erosion	Hard granite and serpentinite geology and high cliffs Beaches and other coastal geomorphological features	This coastline largely comprises rugged, hard rock sea cliffs, and lengths of narrow shingle beach and pocket beaches. The west-facing coast is exposed to the open Atlantic and extremely energetic waves. As elsewhere along the south Cornish coast, the predominant features are cliffs fronted by rock platforms. The peninsula is notable for the small islands and rocks that have become disconnected from the mainland due to cliff erosion and rising sea levels.	Local	As set out in the shoreline management plan, the overarching management principle for this coast is to allow the natural evolution of the coast, while supporting the viability of the coastal communities and their adaptation to coastal change where necessary (particularly at Coverack). Introducing a management policy which allows the establishment of a more sustainable long-term shoreline position for the pocket beaches and coves is an important aspect of coastal management within this area.	Work with communities and agencies to ensure the impact of increased flood events are realised and planned for.	**Regulating coastal flooding and erosion** **Sense of place / inspiration** **Biodiversity** **Geodiversity**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Sense of place / inspiration	Open and expansive area of undeveloped and farmed land Dramatic and varied coast of cliffs, coves, woodland and grassland Uninterrupted views	98 per cent of the Lizard NCA is within the Cornwall AONB and it has 4,531 ha (31 per cent of the NCA) of Heritage Coast. Sense of place is provided by a windswept plateau of internationally important heathland surrounded on three sides by a dramatic coastline of cliffs and sheltered coves topped by biodiversity-rich heath and maritime grasslands (recognised as a Heritage Coast and part of The Lizard Point SAC). A combination of simplicity and wildness, intimacy, drama, terrestrial and maritime connections and cultural connections. The remote and isolated character and Atlantic influence makes this area highly distinctive. A wealth of heritage assets scatters the intensely rural landscape. The Lizard has a long association with smuggling, wrecking and notorious ship wrecks which adds to the mystique of the area. Kynance Cove, managed by the National Trust, has become one of the 'chocolate box' images of the English coast. The area also has strong associations with the writings of Daphne du Maurier and her evocative descriptions of the Helford River in her novel Frenchman's Creek. The Lizard is the most southerly point of mainland Britain.	National.	The coastal scenery of the Lizard remains almost completely undisturbed, the one main intrusion being the cafe on the headland at Lizard Point. Caravan sites near the coast are often visually intrusive due to location, layout, site design and poor mitigation for example near Kennack Sands. The sense of place evoked by some of the small villages has, in some cases been lessened by new housing development which does not fit the local vernacular. However more recent buildings are being designed in a more sympathetic manner. More development requires more infrastructure such as electricity cables and road signs. These subtle changes can greatly reduce the feeling of remoteness in the landscape. The growth of an artisan food industry encourages links between people and the landscape, thus helping to cement a feeling of sense of place.	Ensure that the important aspects and features that make up the unique character of the place are conserved and enhanced, while maintaining a vibrant, viable future use and occupation of the landscape. Work with the AONB and local partners to deliver the aims and objectives of the Cornwall AONB Management Plan Seek reduction in the visual impact of overhead cables by undergrounding in affected villages for example Porthleven, Mullion, St Keverne, Lizard, Gweek and Cury. Support local initiatives to protect roadside heritage assets that contribute to local character such as milestones, fingerposts, memorials and locally distinctive stiles. Support the continuation of small-scale sustainable fisheries in order to maintain community vibrancy providing that this conserves and enhances local character and natural assets for example at local coves such as at Porthleven, Mullion, Cadgwith, Coverack, Porthoustock, Porthallow and within the creeks of the Helford estuary. Encourage the retention of the nucleated pattern of small villages and hamlets by sitting any new development within them. Protect the local vernacular of local stone, white-wash, slate and thatch, using the same materials and building styles whenever possible in a new development.	**Sense of place / inspiration** **Biodiversity** **Sense of history** **Tranquillity** **Recreation** **Food provision**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Sense of history	A range of heritage assets including bronze-age barrows, ancient trackways, standing stones and prehistoric defended farmsteads Ancient fields enclosed by Cornish hedges Medieval settlements The Goonhilly Down Earth Station Second World War installations	Across the Lizard's landscape there are numerous archaeological sites and remains, such as bronze-age barrows, iron-age cliff castles, ancient trackways linking settlements, standing stones and prehistoric defended farmsteads. Other important historical features within the landscape include the small-scale, irregular, ancient fields enclosed with traditional Cornish hedges (to the south of St Keverne and around Lowland Point) and the use of vernacular building materials such as slate and granite, cob, white-wash and some thatch. Aspects of history that are particularly evident include the medieval fishing villages, such as Cadgwith, and hamlets, older buildings constructed from local stone and thatch, and the Goonhilly Down Earth Station that plots the development in telecommunications over the last century. A history of pastoral farming and fishing.	National	Many heritage assets are fragile and highly susceptible to loss or damage due to direct impacts or inappropriate management. The range of features present in the area allows for concentrated study of past human activity. Emphasis should be placed on the need to continue to protect and interpret the wealth of heritage present. Maritime and coastal heritage assets are at particular risk from erosion and natural coastal realignment. Assets likely to be lost due to changes in the coastline need timely and accurate recording. The heritage assets within the area contribute significantly to the visitor and tourism-based business within the area. Continued protection and enhanced interpretation of the wealth of heritage present is essential.	Protect the extensive archaeological remains both exposed and buried remains, including the prehistoric field systems, drovers' tracks , ridgeways and ancient Cornish hedges. The protection of heritage assets should be ensured at every opportunity. Also, opportunities to enhance the setting, interpretation and legibility of heritage assets should be identified and realised. The restoration and conversion of vernacular buildings should be sympathetic, use local materials and preserve local distinctiveness. Protect the features such as stone built jetties and quays which reflect the coastal villages' fishing heritage. The history of pastoral farming and fishing needs to be more clearly articulated.	**Sense of history** **Sense of place / inspiration** **Recreation**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Tranquillity	A remote and isolated place free from major development and infrastructure Dark skies and uninterrupted views	Tranquillity is a significant feature of this sparsely-settled landscape, with 90 per cent of The Lizard classified as 'undisturbed' (a decline of only 2 per cent since the 1960s) in the CPRE Intrusion Map. Some evidence of more recent human influence in the landscape; the Predannack airfield, the large modern dishes of the Earth Satellite Station, and Bonython wind farm which form prominent features on the plateau and may interrupt perceptions of tranquillity.	National	The remoteness of the NCA ensures a high level of tranquillity enhanced by the heathland plateau, rugged coastline and dominant sea views. Principally the greatest impact on tranquillity results from the attractiveness of the area and the subsequent numbers of visitors to a comparatively small area.	Maintain the uncluttered and timeless quality of the network of sunken lanes enclosed by Cornish hedges by preventing intrusive road engineering works and signage. Maintain the low levels of light pollution by encouraging the use of street lighting only when necessary, discouraging the exterior illumination of buildings such as churches and the lighting of long driveways with bright lights. Manage the impact of tourism by dispersing activity across the NCA by, for example, by advertising suggested routes for walking.	**Tranquillity** **Sense of place/ inspiration** **Sense of history**
Recreation	240 km of rights of way 60 km of the South West Coast Path National Trail 2,450 ha of open access and common land Scattered sheltered sandy coves along the coastline	The area has an extensive network of tracks and lanes which provide access between settlements and the farming communities and the coast and moorland areas. There is a significant amount of open access land and 60 km of the South West Coast Path National Trail. The area is well used for walking, horse riding, mountain biking, birdwatching and nature studies. The coves, beaches and settlements throughout the area, as well as the wealth of historical features, provide for more traditional visitor recreation.	Regional	The area is accessed for recreation within the NCA by people from across the south-west and as a holiday destination from across the UK. Public rights of way, the rivers, cliffwalks, beaches and the sea are the main recreational attractions. More dynamic and active recreation includes, cliff climbing and sea kayaking. Local food and produce, culture and tradition complement and add to the overall experience of the landscape. There is a risk that the most popular tourist sites will begin to suffer erosion which could have a negative impact on footpaths, heritage assets and biodiversity. Some sports such as horse riding can have a particularly high impact on well-used routes. The NNR has increased access to nature for members of the public, throughout the NCA. Well publicised nature conservation efforts such as the protection of the nesting Cornish choughs, also helps to involve the public with nature.	Maintain and improve the quality of recreational assets, including the South West Coast Path National Trail and other quiet recreational routes by supporting opportunities to connect and link with new multi-user routes, and sustainable transport schemes, particularly in areas close to where people live, to give more opportunities to more people to access the environment. Work with the farming community to help them to diversify core business thus helping the local economy and helping to disperse visitor activity. Provide education through recreation opportunities.	**Recreation** **Sense of place/ inspiration** **Tranquillity**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Biodiversity	A mosaic of habitats including: Wet and dry heathland Coastal heath Maritime cliffs and slopes Unimproved and semi-improved grassland Woodlands Cornish hedges	2,932 ha (20 per cent) of the area is within the Fal and Helford Special Area of Conservation. 1,927 ha (13 per cent) of the area is within the Lizard National Nature Reserve. There are 12 Sites of Special Scientific Interest (SSSI) wholly or partly within the NCA, covering 3,052 ha (21 per cent) of the area. The condition of 87 per cent of the SSSI is described as being in a favourable condition. Only 1 per cent is described as being in unfavourable declining condition. The range of semi-natural habitats on the Lizard supports a high diversity of plants and animals. Over 250 species of national or international conservation importance are to be found here, many of which are restricted to the Lizard, to Cornwall, or to the south-west of England. Of particular note are the colonies of greater and lesser horseshoe bats, heathland birds such as the nightjar and Dartford warbler, a small population of cirl bunting, insects such as the marsh fritillary butterfly and plants such as Cornish heath.	International	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. The deciduous woodlands of the Lizard have quite large proportions of sycamore in some areas which reduces their biodiversity. There is a constant threat from invasive alien species such as rhododendron and the Hottentot fig, a non-native from South Africa. It grows 50 cm per year and large mats of the plant have invaded the area to the west of the Lizard Point lighthouse smothering the important native species in this area. This invasive species is managed by staff from the National Trust and it will not grow on serpentinite soils, which creates a natural check to its spread.	Concerted action should be taken to 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. Opportunities should be taken to work with landowners in order to encourage the preservation and creation of good semi -natural habitats. Manage woodlands to provide a good mix of native species by doing targeted felling of some sycamore and all rhododendron. Ensure that there is ongoing work to identify current and new alien species and where appropriate take action to prevent their spread.	**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	Serpentinite geology unique in England Cliffs, caves and geological exposures Coastal geomorphology	The area has a complex and unusual geology. It comprises mainly igneous and metamorphic rocks, with Devonian slate and sandstone in the north. The multi-coloured serpentinite and gneisses are the main underlying rocks. It is the serpentinite rock which makes the geology of the Lizard peninsula special; the area contains 20 square miles of serpentinite, the largest outcrop in mainland Britain. There is some small -scale mineral extraction of gabbro, quarried for roadstone and serpentinite which is used as a raw material for a local industry making ornaments. Once abandoned the quarries become valuable habitats. Within the NCA there are 2 geological SSSI, 7 mixed interest SSSI and 10 Local Geological Sites	National	The range and variety of geology and geodiversity across the area allows for the study and interpretation of earth sciences. The area provides a record of the earliest occupation of the landscape by man and notably the use of and response to natural resources, particularly mineral deposits, stone and soils. The continued quarrying of serpentinite stone supports a local stone-working industry making ornaments but the available supply of good quality stone for turning is now very limited and not expected to last for many more years.	Identify and realise opportunities for enhanced access to, and the study and understanding of the internationally important geodiversity across the area. Coastal geomorphology – support the shore-line policy of no intervention. Encourage and support the observation and study of geological and geomorphological processes.	**Geodiversity** **Regulating coastal flooding and erosion** **Food provision** **Biodiversity** **Regulating soil quality** **Sense of place / inspiration** **Sense of history**

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