National Character Area profile:

102. Teme Valley

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Introduction

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

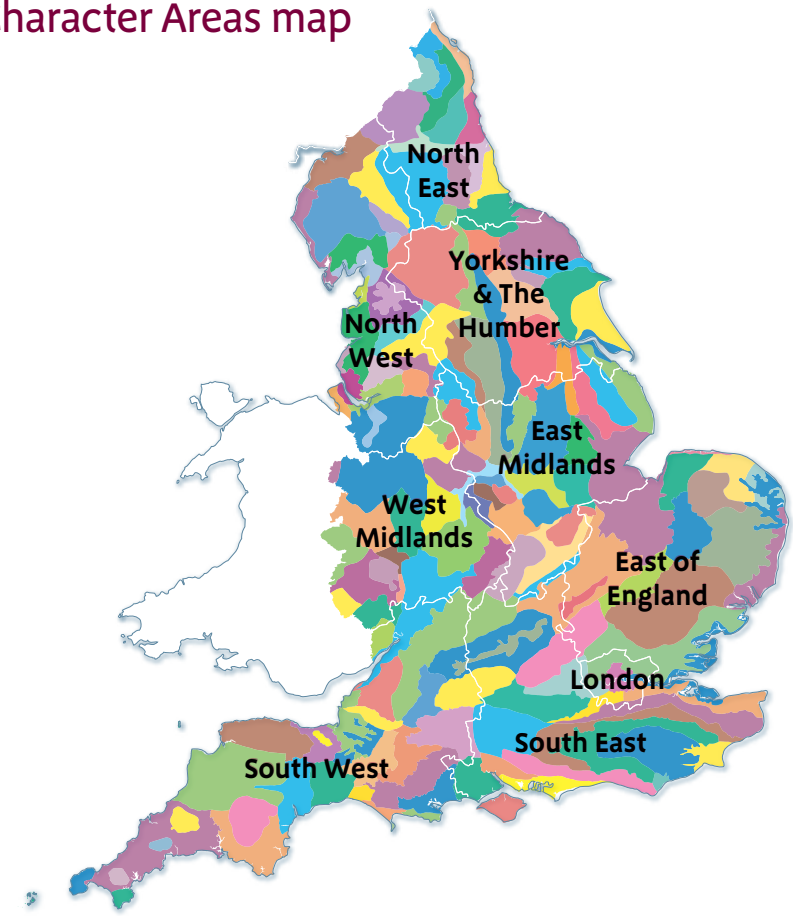
NCA profiles are guidance documents which can help communities to inform their decision-making about the places that they live in and care for. The information they contain will support the planning of conservation initiatives at a landscape scale, inform the delivery of Nature Improvement Areas and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

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

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

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

National Character Areas map



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

Summary

The Teme Valley National Character Area (NCA) lies primarily in north-west Worcestershire, but also extends into the counties of Shropshire and Herefordshire. The River Teme, which gives its name to this NCA, is nationally important for nature conservation. The undulating, deeply tranquil valley formed by the River Teme flows west to south, meandering its way through from the Herefordshire Lowlands and beyond before flowing into the Severn and Avon Vales. The tranquil, rural character pervades the area, which has largely escaped the pressure of modern development and retained much of its historical built character in dispersed settlements, small villages and traditional buildings.

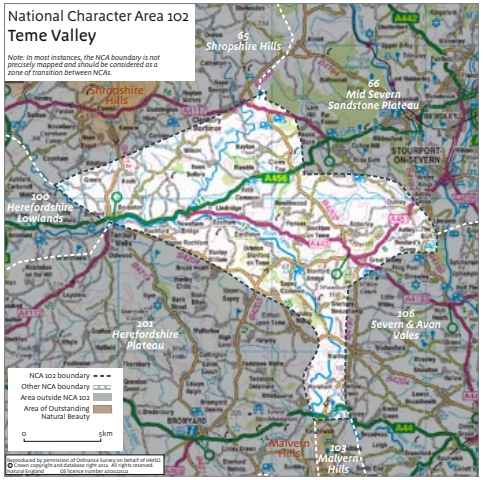
Composed of Silurian limestones and siltstones and capped with Permian Haffield Breccia, the Abberley Hills at 270 m elevation are the most conspicuous landscape feature, forming a visual continuation of the north–south Malvern Hills ridge. The lower land, a complex undulating landscape with rich red soils, gives rise to fertile farmlands dissected by the River Teme. The area is a mosaic of mixed agriculture, cultivated in places but less improved on the steeper slopes. Farmsteads are predominately medium to large scale although higher densities of small-scale farmsteads and smallholdings are associated with areas of enclosed common and woodland. Timber-framed buildings, dating to as early as the 12th century, hop yards, hop kilns and cider houses are characteristic of the area.

Woodlands and particularly ancient woodland characterise the steep valley sides. Occasional blocks of plantation and numerous traditional orchards, including cherry orchards and hop yards, are characteristic of the sloping valleys and lower hillsides in the north and west, forming part of the larger fruit-growing area in Worcestershire, Herefordshire and Gloucestershire.

The orchards support England's main population and concentration of noble chafer beetle and provide an important genetic resource of many fruit varieties. The hop yards are an important supplier to the beer industry. The woodlands of the Teme Valley interconnect with neighbouring woodlands in the Malvern Hills NCA and Wyre Forest in the Mid Severn Sandstone Plateau NCA, and form one of the largest remaining and contiguous areas of ancient semi-natural woodland in England of regional and national importance.

The Silurian rocks of Abberley Hill are in places highly fossiliferous. Fossils of jawless fish are occasionally found. Southstone Rock, a fine example of post-glacial, active tufa deposition, is considered to be one of the largest deposits in England. There is evidence of early Mesolithic, Neolithic and bronze-age archaeology, particularly on higher ground and along the river valley. Woodbury Hill and Berrow Hill, iron-age hill forts, are dominant landscape features. There is a surviving and distinct pattern of dispersed medieval settlement throughout the area.

Future opportunities and challenges include protecting the area's rural and historic character, wealth of species and habitats and strong sense of tranquillity while supporting a working landscape that provides food, homes and recreational opportunities.



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Statements of Environmental Opportunities:

- **SEO 1:** Protect, manage and enhance the nationally important species, habitats and geomorphology of and associated with the River Teme by employing positive management practices in and around the catchment to improve water quality, reduce soil erosion, regulate water flow and minimise the impacts of flooding.

- **SEO 2:** Protect and positively manage the range of habitats associated with the River Teme Valley – ancient woodland, meadows, orchards, hop yards, wood pasture, parkland and enclosed common – to maintain, restore and strengthen their connectivity and landscape character, and to make them more resilient to change in climate and localised development, and maintain viable and appropriate agricultural activity.

- **SEO 3:** Protect, manage and enhance the geodiversity, geomorphology, soils, and cultural and historical features of the Teme Valley, including fine examples such as Woodbury Quarry, Southstone Rock, Shavers End Quarry, and Woodbury Hill and Berrow Hill iron-age hill forts, to reinforce the strong relationship between the landscape, its history of land use, and archaeological and cultural heritage, by encouraging interpretation, understanding, access and recreational opportunities which could increase public understanding of this deeply tranquil rural valley.

- **SEO 4:** Protect and enhance the intrinsic tranquillity and distinctive landscape character of the Teme Valley, conserving and enhancing the settlement pattern and sense of place, and promoting enhanced understanding and enjoyment to reinforce a strong sense of place.

The River Teme.

Description

Physical and functional links to other National Character Areas

This small National Character Area (NCA) nestles between six others, sharing parts of its northerly boundaries with the Oswestry Uplands and Mid Severn Sandstone Plateau NCAs, and its south and south-eastern boundaries with the Malvern Hills and Severn and Avon Vales NCAs. The Herefordshire Plateau NCA is located to the south-west boundary and shares some common characteristics with the Teme Valley, but this is limited to the triangle between Bromyard, Tenbury and the Teme Valley. This NCA overlies a Silurian limestone ridge running north-east to south-west, while the rest of the area is characterised by mudstones, sandstones, siltstones and occasional thin limestones and cornstones of the Lower Old Red Sandstone.

The River Teme lends its name to this area and provides a key feature and physical link with the westerly Herefordshire Lowlands, briefly entering the Shropshire Hills NCA to the north-west. The River Teme is the second largest tributary of the River Severn, rising in the Kerry Hills in Wales and flowing in a south-easterly direction through the towns of Knighton and Ludlow. Its main tributaries include the rivers Onny, Corve and Rea before it joins the River Severn south of the city of Worcester in the Severn and Avon Vales NCA. Large volumes of water flow into the area from higher up the catchment of the River Teme resulting in subsequent flood risk. The main uses of water in the catchment are for public water supply and agriculture.

Ancient woodland is one of the important habitats distributed throughout this NCA. The woodlands of the Teme Valley interconnect with those in the Malvern Hills NCA and into the substantial woodland of the Wyre Forest complex in the Mid Severn Sandstone Plateau NCA, making an extensive and well-connected area of ancient woodlands of regional and national importance.

The undulating landscape restricts views out of the NCA from the valley bottoms. From the higher elevations longer vistas looking out of the NCA can be gained, often with dramatic views towards the Malvern Hills and the contrasting heather-clad high ridge of the Shropshire Hills, particularly Titterstone Clee Hill in the north and far views west to the receding Herefordshire plateau and the mountains of Wales beyond. This creates a contrast to the NCA's intimate landscape features and provides the context for its setting.

The Teme Valley has long provided an important transport corridor from the more settled landscape of central Worcestershire and the West Midlands into Herefordshire and Shropshire – the Welsh Marches.

Capturing the extent and connectivity of ancient woodland.

Key characteristics

- Undulating, tranquil valley formed by the River Teme flowing east and then to the south, the River Rea and many small, steeply incised tributary valleys cutting through a complex geology.
- Prominent Silurian limestone and siltstone ridge, principally the Abberley Hills, bisects the area providing a physical and visually dominant continuation of the north–south Malvern Hills range.
- Shavers End Quarry – limestone was extracted for lime burning and construction, leaving a very prominent 'scar' on the Abberley Hills.
- Mosaic of mixed agriculture with rich red and brown soils forming fertile farmland, cultivated in places, with less pasture on steeper slopes, and fruit and hop growing scattered throughout the area.
- Tranquil ancient oak woodlands characterise the steep valley sides with occasional blocks of coniferous plantation. Wild service tree and small-leaved lime occur in woodlands and hedgerows.
- Traditional orchards, in particular cherry orchards, and bush orchards are characteristic of the sloping valleys and lower hillsides in the north and west of the Teme Valley.
- Ancient wood pasture and parkland are evident in some parts, complementing the dispersed lowland meadows, the mosaic of semi-natural grassland and the woodland resource.
- The landscape is characterised by a predominately re-organised piecemeal enclosure pattern, with a mixture of regular and irregular hedgerows, often planted with damsons and containing numerous mature trees. Hop kilns and cider houses, mainly dating from the 19th century, are distinctive historical features in addition to a high concentration of 16th-century and later timber-framed buildings.
- Distinctive, dispersed settlement pattern is typical, with scattered farmsteads, hamlets and occasionally small villages, with localised wayside settlement. Many of the cowsheds and cider houses are distinguished by double wooden doors; many have now been converted to dwellings, while weatherboarding and wattle are typical.

Shavers End Quarry. One of the 'Champions Sites' set up as part of the Community Earth Heritage Champions project funded by the Heritage Lottery Fund.

Teme Valley today

The Teme Valley lies primarily within north-west Worcestershire, extending into Shropshire and Herefordshire. The unchanging, undisturbed character is one of its defining features. It is a complex, undulating, tranquil landscape, formed by the River Teme and River Rea with small, steeply incised tributaries. The River Teme cuts through Old Red Sandstone upstream of Knightwick, and below this point meanders across marls of the Mercian Mudstone into the neighbouring NCA. Varied geology is reflected in the soils, ranging from thin acidic, through deeper neutral to calcareous soils. Most of the area is characterised by undulating hills, composed of sandstones, alternating with siltstones and occasional thin limestones and cornstones of the Lower Old Red Sandstone, supporting a landscape with deep alluvial soils and fertile farmlands.

A prominent Silurian limestone ridge, principally the Abberley Hills, bisects the area from north to south, providing a physical and visually dominant continuation of the north–south Malvern Hills range.

The River Teme meanders through a narrow flood plain between steep, wooded valleys, retaining many natural characteristics along its course. It is a distinguishing feature of the area, with very strong influences on the way in which the landscape is experienced, from accessibility, evident from the main roads running parallel to it and the restricted movement across the valley, to flooding. However, it is also tranquil and one of the best sandstone and mudstone rivers in Britain, supporting a diverse range of plants, fish, insects and mammals. It is designated a Site of Special Scientific Interest (SSSI) and species include salmon, twaite shad, otter, lamprey, bullhead and important invertebrates – native crayfish and freshwater pearl mussels.

Woodland, one of the most important habitats, covers 17 per cent of the total area. Of this, 40 per cent is ancient semi-natural woodland or plantations on ancient woodland sites. Many of the steeply incised tributary valleys are wrapped in ancient woodland. Limestone ridge woodlands have a rich shrub layer and ground flora. Ancient woodland indicators such as toothwort, nettle-leaved bellflower, butterfly orchid and stinking iris are typical of the richer sites. Steep stream dingles feature ramsoms, male fern, buckler fern and opposite-leaved golden saxifrage. Wild service tree and small-leaved lime are characteristic of woods and hedgerows. Notable bat populations are also supported by the diversity of habitats and features of the area including woodland, pasture, freshwater, buildings, trees and rock exposures.

Ancient wood pasture and parkland, wet grassland and mosaics of semi-natural habitats are scattered throughout the area complementing dispersed, floristically rich, unimproved lowland meadows lying on steeper slopes and known for waxcaps (fungi), indicative of unimproved pasture, where livestock have created open sward structures, with mature trees offering good views of the landscape. Loamy soils between Abberley and Clows Top are important for cereal, oilseed rape and some potato growing.

Field patterns are characterised by predominately re-organised piecemeal enclosure, mixtures of regular and irregular hedgerows and mature trees. Damson hedgerows are a striking feature in some parts in spring when hedgerows come alive with stunning displays of white blossom. Hop yards and traditional orchards, particularly cherry, are characteristic of the sloping valleys and lower hillsides in the north and west, remaining important for fruit growing, including cider apples. This and the surrounding NCAs are important for mistletoe which thrives on old fruit trees, lime and poplar.

Mistletoe, annual orchard blossom and fruit displays provide striking seasonal features with strong cultural associations within the area.

Significant rights of way dominate with recreation assets including the Worcestershire Way, networks of paths running through the area (but little used), passing over the Abberley Hills to the Mid Severn Sandstone Plateau NCA, creating important links to the Malvern Hills and north-east Herefordshire. The Abberley and Malvern Hills Geopark (one of three UK geoparks which are not members of the European Geoparks Network) links outstanding geology across the area. The Geopark Way, a long-distance trail, passes through stunning countryside, exploring 700 million years of geological history. The Shelsley Hill climb, the oldest motorsport venue in the world, takes advantage of steep slopes on the south of the Teme Valley.

This is a tranquil rural area with high-density dispersed settlements intermixed with small villages and hamlets set within an anciently enclosed landscape, interspersed with woodland and relic common. Secluded wooded valleys offer high levels of tranquillity set within a gentle and intimate landscape. Views to higher ground in neighbouring areas such as the Malvern Hills to the south or the Shropshire Hills to the north can be dramatic and contrasting. Nucleated settlement and large-scale farmsteads, resulting from piecemeal enclosure of open fields around shrunken medieval settlement nuclei, are concentrated along the river valley. High-status manorial centres, including moated sites, dating from the 12th–14th centuries lie at the heart of many villages, hamlets and isolated farmsteads. There is good survival of historic farmsteads retaining working agricultural buildings, cider houses and cowsheds, distinguished by double wooden doors, many converted into dwellings. Weatherboarding is typical with wattle infill to upper panels. Field barns were a distinctive part of the post-medieval landscape but are becoming increasingly rare.

Settlement is generally sparse – valley-side hamlets and farmsteads linked by narrow, commonly single-track lanes. Tenbury Wells, an important local centre in the west of the area, has one of the few crossings over the River Teme. Abberley is one of the larger villages (Abberley Hall clock tower is a notable landmark). There is a high concentration of timber-framed, red, pink and grey sandstone buildings. Red brick was increasingly used from the mid-to-late 18th century. Weatherboarding is a common form of cladding for timber-framed buildings including a high proportion from the 16th century or earlier. Many are associated with medieval manors and home farms. Isolated churches, associated with manorial sites, are a distinctive feature. The increased gentrification of estates during the 18th and 19th centuries brought large-scale re-organisation of the partially enclosed landscape and redevelopment of manorial sites into large country houses with landscaped parks and model farms. Some manor houses lie near medieval mottes, although less so than in other parts of the Marches.

Ramsons (wild garlic) and bluebells, both indicative of ancient woodland.

The landscape through time

Composed of limestones and siltstones, the Abberley Hills form the most conspicuous landscape feature with sediments deposited during the Silurian (428–416 million years ago) in a tropical marine environment containing abundant fossil assemblages including corals. In the Abberley Hills, limestone was extracted for agricultural lime and the construction industry, Shavers End Quarry leaving a prominent scar.

Resting on Silurian marine rocks is a succession of sandstones and siltstones forming Old Red Sandstone, representing the transition from a marine to continental terrestrial environment during the latest Silurian and early Devonian. The sediments represent a coastal plain that, with uplift of land to the west, developed into an arid alluvial plain in which calcareous soil horizons developed, forming thin limestones or cornstones, giving rise to small scarp features. Fossils of jawless fish are occasionally found. The sandstones, which vary from red to green and grey, have been used locally in dwellings and churches.

Late Carboniferous rocks occur in the east, formed of sandstones and mudstones with thin coals and limestones resting unconformably on the Devonian sediments, which are represented by alluvial plains bounded by uplands to the south. Extensive collieries and mineshafts which worked coal from the 18th to 20th centuries are recorded north-west of Abberley and in the Mamble area. Small outcrops of breccias of Permian age probably represent debris fans formed at the margins of a semi-arid basin aligned with the complex fault system associated with the Malvern and Abberley Hills and the Severn Valley. During the Late Carboniferous and Early Permian, Variscan mountain-building resulted in the folding and faulting of the Silurian rocks, forming the Abberley Hills. The north-eastern part of the NCA is underlain by early Triassic sandstones and conglomerates deposited by northward flowing rivers on a semi-arid plain. In the most south-eastern extremity the late Triassic Mercia Mudstone Group rests on earlier Triassic sandstones.

The varied geology is reflected in the soils, ranging from thin acidic to deeper neutral and calcareous soils associated with the limestones. The rich red soils derived from the underlying mudstones give rise to fertile farmlands.

The course of the River Teme Valley was originally southwards towards the River Wye. Ponding of meltwater trapped between upland and glaciers led to the re-routing of the Teme, cutting the gorge at Downton near Ludlow. East of Tenbury Wells, on either side of the River Teme, are river terrace deposits, remnants of the former valley floor which was at a higher level during the last interglacial period.

The River Teme, with steep sides and wooded dingle valleys, has a fertile narrow flood plain supporting arable and pasture land. There are few drift deposits of glacio-fluvial origin but alluvium and terrace deposits are found along the flood plain and its major tributaries. Tufa, a deposition of calcium carbonate dissolved from limestone rocks, occurs. Southstone Rock is a fine example of active tufa depositions and is considered to be one of the largest deposits in England.

Extensive evidence of human settlement is evident from prehistoric sites and finds along the top of the valley sides, with gradual Roman and Anglo-Saxon influence. The medieval landscape, with its manorial and moated sites, churches, open fields and common pasture, forms the foundation of settlements. The landscape retains the small-scale, piecemeal enclosures of open field, common and woodland despite later re-organisation and

improvement. The Victorian influence is visible in the area, for example Abberley Hall, Tenbury Wells and the railway (which strongly influenced the viability of fruit growing), and numerous large houses and rectories.

Food shortages during and after the Second World War led to intensive farming practices and areas of unimproved, wet valley-bottom grassland were ploughed up. Following the adoption of the Common Agricultural Policy, this trend continued, resulting in changes to the landscape and a decline in biodiversity value including the loss of traditional hedgerows, traditional orchards and unmanaged woodlands. However, agricultural stewardship is now being successfully used as a means of addressing these issues. Many traditional orchards survive, of cider apples and cherry, characteristic of the sloping valleys to the north and west and retaining an important genetic resource. Though commercially superseded by bush orchards, traditional orchards are rich in wildlife, providing the UK stronghold for the noble chafer beetle, nest sites and rot holes for birds and bats. This and surrounding NCAs are renowned for mistletoe thriving on old fruit trees, lime and poplar. Mistletoe, annual orchard blossom and fruit displays provide striking seasonal features with strong cultural associations within the area. The Tenbury mistletoe festival and auction is an important event. Historically the Teme Valley was a relatively poor farming area, supplemented by fruit and hop growing. There was a long tradition of planting damsons, apples and pears into hedgerows, maximising potential growing capacity. Damson hedgerows remain a distinctive feature of the area.

There are over 600 km of rights of way, probably one of the highest densities in England; the Worcestershire Way passes over the Abberley Hills to the Mid Severn Sandstone Plateau, creating important links to the Malvern Hills and Herefordshire plateau, and enabling public access and enjoyment of the natural environment. The Geopark Way runs north to south along the length of Abberley and Malvern Hills Geopark (one of three UK geoparks which are not members of the European Geoparks Network), linking outstanding geology across the area.

Some redundant farm buildings have been abandoned, or converted to permanent residences or holiday homes, possibly due to the amalgamation of farms and financial incentives. Up until 1990 there was very little development in the area and little disturbance and intrusion into its tranquil character. Impacts of development are currently minimal and limited to specific places (Tenbury Wells, Cleobury Mortimer, Clows Top, Dunley and a little at Abberley). By 2007 there was development around the boundary of the NCA, particularly around Tenbury Wells and the eastern boundary bordering Stourport-on-Severn, and at the southern boundary due to the development of the A44 near Knightwick. However, more recently locals may argue that the area is quieter than it was in the 1980s due to less agricultural activity and more commuters leaving the area.

Traditional apple orchard in Alfrick, on ridge and furow and laden with mistletoe. A noble chafer site with recent new planting.

Ecosystem services

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

Provisioning services (food, fibre and water supply)

- **Food provision**: The Teme Valley NCA supports a mixture of farming, from predominantly grazed livestock (primarily sheep) to cereals. Grassland and cereals have remained static for a long time. Traditional cherry orchards and heritage apple varieties are particularly numerous in the west of the NCA.

- **Water availability:** The NCA is characterised by the River Teme and its tributary the River Rea. The main uses of water in the area are for public water supply and agriculture, with very little industrial use. Surface and groundwater resources in this NCA have been assessed as having 'water available'; however, due to the requirement to protect flows within the River Severn (into which the Teme and Rea flow), surface and groundwater resources in this NCA are classed as having 'no water available' for further abstractions. There is a large lake at Stanford Court.

- **Genetic diversity:** Traditional orchards, of cider apples and particularly cherry, with old trees are numerous in the north and west of the NCA, forming part of the larger fruit-growing area within Worcestershire and the adjacent counties of Herefordshire and Gloucestershire. They hold a wide range of local varieties cultivated over hundreds of years.

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

- **Climate regulation:** The woodland, over 2,000 ha, in this area plays an important role in carbon storage and carbon sequestration. Undisturbed woodland soils also have higher levels of stored carbon than adjacent cultivated land. In addition, the large number of traditional orchards (450 ha), lowland grassland, other semi-natural habitats and ancient hedgerows, with high numbers of mature oaks, also store and sequester carbon.

- **Regulating soil erosion:** Soil erosion is recognised as a concern in the River Teme catchment due to the steep-sided nature of the river valley and the sandy or muddy nature of many soils.

- **Regulating soil quality:** The amount of semi-natural habitat, tree cover and long-ley pasture in this NCA means that much of the soil is maintained in good condition. However, where the soils are under arable use and frequent cultivation, maintaining and improving the soil quality will safeguard and retain productive food provision in the long term and increase the soil's resilience to climatic change and extreme weather events, particularly flooding and intense rainfall.

- **Regulating water quality:** The ecological status of the River Teme is 'good' and of the River Rea 'poor'. The chemical status of the River Teme is 'failing to achieve good' status; the chemical status of the remainder of surface waterbodies in the NCA 'does not require assessment'. The chemical status of groundwater resources in the NCA is 'good'. Good water quality is essential for maintaining the wealth of biodiversity associated with the River Teme.

- **Regulating water flow:** This NCA falls mainly within the River Severn catchment. The River Severn Catchment Flood Management Plan classifies this NCA as having a 'moderate' level of fluvial flood risk. This is due to the nature of the steep river banks. Water levels in the River Teme are highly variable, and it has in recent times often bursts its banks, resulting in serious floods affecting a number of areas, including Tenbury Wells and numerous roads, for example the A44 at Knightwick.

- **Pollination:** Pollination services are particularly important in this NCA as there are a significant number of orchards requiring and supporting insect pollination.

- **Pest regulation:** There is a good range and spread of interconnected semi-natural habitats throughout the NCA which will support species that aid pest regulation.

Traditional cherry orchard near Alfrick, managed for the crop until recently.

Cultural services (inspiration, education and wellbeing)

- **Sense of place/inspiration:** Sense of place is provided by the intricate rural landscapes packed into the often steep-sided confines of the Teme Valley and its tributaries. Senses of inspiration and escapism are likely to be associated with much of the intimate valley landscape, distinctive views of traditional and landmark buildings, including a number of notable churches and the clock tower at Abberley Hall, traditional orchards and hop yards, woodland and the presence of running water.

- **Sense of history:** The area contains a wealth of history and heritage assets including many features that relate to the tradition of fruit and hop growing, namely the distinctive old orchards along the valley floor and the local types of hop kiln, as well as other traditional buildings of red, pink and grey sandstone and the use of timber framing, wattle and daub and weatherboarding. There was a castle in Abberley and there is evidence of Roman vine terraces on the Great Witley side of Abberley Hill.

- **Tranquillity:** The secluded wooded valleys offer high levels of tranquillity, set within a gentle and intimate landscape. The area is rated as one of the most 'undisturbed' NCAs – 92 per cent of the area being classified as 'undisturbed' – and has seen no change since the 1960s, perhaps the only NCA where this can be claimed to be the case.

- **Recreation:** Recreation is supported by the waterways, part of the Worcestershire Way, the Abberley and Malvern Hills Geopark, woodlands, Environmental Stewardship permissive conservation walks and rides, and over 600 km of rights of way, perhaps one of the highest densities in England, but much under-used.

- **Biodiversity:** There are 10 SSSI covering 2 per cent of the NCA, including the River Teme and parts of the Wyre Forest SSSI. The NCA contains important areas of priority habitats that include broadleaved woodland – ancient semi-natural woodland forms 40 per cent of the woodland resource – lowland grassland and traditional orchards that form part of the larger fruit-growing area in the counties of Worcestershire, Herefordshire and Gloucestershire, supporting England's main population and concentration of noble chafer beetle, currently classified as vulnerable in the UK.

- **Geodiversity:** There is one geological SSSI – Woodbury Quarry, a highly fossiliferous locality with Silurian Ludlow Siltstones and Aymestry Limestone (both formed in a marine environment). The rock which was laid down in horizontal layers has been folded so severely that it is now vertical. There are 37 Local Geological Sites. Southstone Rock is a fine example of active tufa deposition, formed by the precipitation of spring water containing large amounts of dissolved calcium carbonate and it is considered to be one of the largest deposits in England. Other geodiversity interests include the prominent Silurian limestones, for example the Abberley Hills, the most conspicuous landscape feature forming a visual continuation of the north–south Malvern Hills range. Fossil jawless fish occur sporadically through the Late Silurian and Early Devonian succession.

Woodbury Quarry SSSI soon after quarrying ceased. The rocks on the right are stained red by water percolating down from adjacent Triassic sandstones and glacial deposits.

Statements of Environmental Opportunity

SEO 1: Protect, manage and enhance the nationally important species, habitats and geomorphology of and associated with the River Teme by employing positive management practices in and around the catchment to improve water quality, reduce soil erosion, regulate water flow and minimise the impacts of flooding.

For example, by:

- Supporting the Severn Rivers Trust, who lead the Teme Catchment Partnership, co-ordinating a group comprising partners, individuals, communities, organisations, companies and land managers to solve some of the problems, and to improve water quality, wildlife and habitats in and around the Teme catchment as part of the second cycle of river basin management plans, under the Water Framework Directive.
- Supporting the Severn Rivers Trust, through the mechanism of the Teme Catchment Partnership, to deliver a range of projects on the Teme that contribute to implementation of the River Teme Site of Special Scientific Interest (SSSI) restoration plan, such as overseeing the delivery of practical schemes outlined within the River Restoration Strategy; preparing detailed proposals for future delivery projects; liaising with key interest groups including anglers and landowners; securing funds for actions at key structures; and increasing public awareness and engagement in the river system.
- On slopes near the River Teme, maintaining and extending low-input permanent pasture, hedgerows and woodland across slopes and valley bottoms to reduce soil erosion, and improve water quality and biodiversity.
- Restoring natural river geomorphology where this is viable and where it is of particular benefit to biodiversity, including to fish populations.
- Bringing rivers back into continuity with their flood plains, and re-establishing backwaters as a refuge for aquatic species in times of drought.
- Allowing the seasonal inundation of wetlands and flood plain pastures as part of flood alleviation measures. This reflects the policies of the Catchment Flood Management Plans, as well as being essential to sustaining wetland habitats.
- Working with landowners to identify suitable locations to realise opportunities for creating winter water storage areas and new wetland habitats, where possible.
- Managing woodland on hillsides and bankside trees where it is appropriate by coppicing to minimise land slippage and soil erosion.
- Managing livestock grazing close to the river to minimise soil compaction, soil erosion and diffuse pollution while addressing the need for the provision of water for livestock that does not have an impact on water quality.
- Retaining, restoring and protecting bankside vegetation and the natural flood plain function of the River Teme and its tributaries by appropriately managing, restoring and creating wetland habitats such as flood plain wetlands (where appropriate), increasing floodwater storage capacity, reducing the rate of surface water run-off and soil erosion, minimising the negative impacts of flooding, and improving resilience to climate change, water quality and biodiversity.
- Creating grassland buffer strips adjacent to the river to reduce soil erosion and improve water quality.
- Providing educational and recreational opportunities to increase awareness and understanding of the special qualities of the River Teme and its geomorphology.
- Encouraging sustainable water use – both within and outside the boundaries of the National Character Area, and across sectors – to protect the Cotswold aquifer from over-abstraction and to mitigate the negative impacts of low river flows on biodiversity, while improving resilience to climate change.

SEO 2: Protect and positively manage the range of habitats associated with the River Teme Valley – ancient woodland, meadows, orchards, hop yards, wood pasture, parkland and enclosed common – to maintain, restore and strengthen their connectivity and landscape character, and to make them more resilient to change in climate and localised development, and maintain viable and appropriate agricultural activity.

For example, by:

- Maintaining, restoring and enhancing semi-natural and ancient woodlands (for example, the north-east section of the Wyre Forest SSSI), with their associated biodiversity, landscape character, recreation opportunities, and for the benefits this can bring to soil quality and long-term carbon storage.
- Increasing the extent of native woodland and managing existing woodlands to improve connectivity with fragmented small woodlands and other habitats, re-introducing coppicing and other traditional sustainable woodland management techniques, promoting responsible recreation where appropriate and increasing carbon storage for climate regulation. Refer to the Forestry Commission's Woodland Opportunity Map – Priority for Planting for creating links to the smaller woodland fragments to secure and enhance them, and also the Ancient Woodland Landscape Map.
- Protecting species-rich grasslands and meadows, managing, creating and restoring unimproved grassland where appropriate and traditional orchard habitat to provide an interconnected grassland habitat network.
- Retaining, restoring and enhancing existing traditional cherry and cider apple orchards, protecting and managing their associated biodiversity and local genetic varieties and historic buildings, for example cider houses and hop kilns and their associated cultural heritage, through local and community events, creating new recreation and education resources.
- Maintaining, restoring and enhancing wood pasture and parkland. Maintaining standing dead trees and fallen trees within wood pasture and parkland (where it is safe to do so) to provide habitats for a range of species including invertebrates, roosting bats and birds, and replanting to replace, where appropriate, fallen and decayed ancient, veteran and mature trees to maintain landscape character and sense of place and enhance biodiversity.
- Protecting and promoting the 'common landscape' including common-edge smallholdings (squatter settlements) and small farms (associated with commons and areas of wood clearance).
- Protecting and managing the inherent small-to-medium-scale piecemeal enclosure pattern by retaining, restoring, managing and planting new hedgerows in traditional local style; and where planting new hedgerows, ensuring that, where damsons and mature trees are a distinctive feature, replacements are planted where appropriate to enhance landscape character and improve habitat connectivity, particularly where this can assist in regulating soil erosion.

SEO 3: Protect, manage and enhance the geodiversity, geomorphology, soils, and cultural and historical features of the Teme Valley, including fine examples such as Woodbury Quarry, Southstone Rock, Shavers End Quarry, and Woodbury Hill and Berrow Hill iron-age hill forts, to reinforce the strong relationship between the landscape, its history of land use, and archaeological and cultural heritage, by encouraging interpretation, understanding, access and recreational opportunities which could increase public understanding of this deeply tranquil rural valley.

For example, by:

- Conserving and enhancing geological sites where appropriate, by retaining and managing important exposures and deposition. Facilitating and promoting access to such sites to help to improve the understanding of the role that geodiversity plays and its connection with biodiversity and landscape character, as well as industrial and cultural heritage. Supporting local geological groups and initiatives related to recording, interpretation and outreach.
- Through geodiversity partnerships, encouraging volunteering and training of volunteers in surveying techniques and geoconservation methods, to improve the quality of sites and to retain the knowledge and skills required for their future management.
- Supporting and encouraging the opening or re-opening of old building stone quarries in the area subject to such quarries being of appropriate small scale, location and environmental acceptability.
- Promoting and encouraging the use of local building stone to conserve the integrity of the rural area through the use of characteristic local materials such as the sandstones that have been traditionally used for building.
- Managing former extraction sites for their range of mutually beneficial heritage interests including geodiversity, biodiversity and industrial archaeology. Working in partnership with sand and gravel quarry operators to develop restoration plans to preserve geological features when extraction ceases and to improve access to cuttings, quarries and other geological features by improving footpaths and providing signage and interpretation.
- Raising awareness of Local Biodiversity and Geodiversity Action Plans in the planning phase of developments in relation to the importance of Local Sites (biological and geological) to heritage and for the unique habitats that they provide and the contribution that they can make to the sense of place, history and cultural associations of the area.
- Working with the local geodiversity partnership to designate further Local Geological Sites in order to assist with the understanding and enjoyment of geodiversity and to provide opportunities for recreation and volunteering.
- Working with local authorities, consultants and developers to ensure that important geological exposures (Local Geological Sites) are protected and that their integrity is maintained and is not obscured by development.
- Protecting the prehistoric archaeology on the higher ground alongside the River Teme, as well as the dispersed medieval settlement pattern and the inherent small-to-medium-scale piecemeal field pattern associated with the enclosure of open fields, woodland and commons, and the re-organisation of the partially enclosed, piecemeal landscape of the 18th and 19th centuries.

SEO 3 continued on next page

SEO 3 continued from previous page

- Conserving and enhancing archaeological interests and providing opportunities to increase people's understanding and enjoyment of archaeological heritage through improved interpretation and education.
- Improving the condition of heritage assets across the Teme Valley using appropriate measures while promoting and supporting opportunities arising from agri-environment schemes and seeking to reduce conflicting or unsympathetic management regimes.
- Maintaining and enhancing the diverse, undulating and distinctive landscape character of the Teme Valley with its north–south Silurian limestone ridge of the Abberley Hills and the incised river valleys of the Teme and its tributaries. Working with the farming community to promote and maintain the pastoral character of the lower hills and river valleys by encouraging good land, water and soil management practices and sustainable grazing regimes, to maintain a sustainable mixed farming sector, minimising run-off rates and reducing diffuse pollution.
- Retaining, managing and replanting traditional orchards and conserving old fruit varieties, building on the developing market for fruit grown locally and awareness of this as local, high-quality produce.
- Conserving and protecting historic parks and gardens, medieval settlement patterns and sunken lanes which all contribute to the tranquillity and sense of place of the area.

Southstone Rock - a fine example of active tufa deposition and considered to be one of the largest deposits in England.

SEO 4: Protect and enhance the intrinsic tranquillity and distinctive landscape character of the Teme Valley, conserving and enhancing the settlement pattern, and promoting better understanding and enjoyment to reinforce a strong sense of place.

For example, by:

- Maintaining the sense of tranquillity and intimacy within the landscape by protecting the expansive views toward the Malvern Hills and the Shropshire Hills, particularly Titterstone Clee Hill in the north and far views west to the receding Herefordshire plateau and the mountains of Wales beyond to maintain and reinforce the sense of place.
- Maintaining the sense of inspiration and escapism likely to be associated with much of the intimate valley landscape, distinctive views of traditional and landmark buildings, including a number of notable churches and the clock tower at Abberley Hall, traditional orchards and hop yards, woodland and the presence of running water.
- Protecting the distinctive dispersed settlement pattern from inappropriate development and infrastructure that would detract from the sense of remoteness and tranquillity of the area.
- Conserving and enhancing the local building tradition of red, pink and grey sandstone, red brick and timber framing in the oldest buildings and manor houses, and strong field and settlement patterns defined by hedgerows and damson hedgerows and mature trees, by promoting the maintenance and restoration of traditional farmsteads, listed buildings and field boundaries, and respecting the local building tradition, using traditional materials and local stone. Managing development within the built environment to retain the distinctive character of the area's settlements and landscape character, while ensuring that new developments provide biodiversity enhancement rather than just mitigation.
- Promoting the use of measures that reduce noise and light pollution and visual intrusion in new and existing developments.
- Exploring opportunities to improve and promote the rights of way network and for sustainable tourism initiatives that will increase visitors' environmental awareness and improve profitability of local businesses, while protecting the special qualities of the area.
- Encouraging appropriate local development that is accessible to local people.
- Protecting the area's rural nature, lack of intrusion and tranquillity while supporting a working landscape that provides essential food, homes and recreational opportunities.
- Maximising opportunities to integrate the delivery of green infrastructure into new developments, where appropriate.
- Planning for future community needs that will have landscape impacts, for example the need to provide affordable homes and jobs within a working landscape. Planning for economic development that supports local jobs and landscape objectives, for example low-key tourism and recreation, high-quality products, energy crops and the green economy.

Supporting document 1: Key facts and data

Teme Valley National Character Area (NCA): 19,298 ha

1. Landscape and nature conservation designations

There are no designated landscapes within the Teme Valley NCA.

Source: Natural England (2011)

1.1 Designated nature conservation sites

The NCA includes the following statutory nature conservation designations:

Tier	Designation	Designated site(s)	Area (ha)	% of NCA
International	n/a	n/a	0	0
European	Special Protection Area (SPA)	n/a	0	0
	Special Area of Conservation (SAC)	n/a	0	0
National	National Nature Reserve (NNR)	Wyre Valley NNR	9	<1
National	Site of Special Scientific Interest (SSSI)	A total of 10 sites wholly or partly within the NCA	328	2

Source: Natural England (2011)

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

There are 45 local sites in Teme Valley NCA covering 1,500 ha, which is 8 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	0	0
Favourable	105	32
Unfavourable no change	0	0
Unfavourable recovering	223	68

Source: Natural England (March 2011)

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

2. Landform, geology and soils

2.1 Elevation

Elevation ranges from 20 m above sea level to a maximum of 270 m. The highest point is Abberley Hill.

Source: Natural England 2010

2.2 Landform and process

A Silurian limestone ridge runs north to south across the area forming the Abberley Hills. The rolling countryside is cut by the incised river valleys of the Teme and its tributaries.

Source: Teme Valley Countryside Character Area Description

2.3 Bedrock geology

Composed of Silurian age limestones, the Abberley Hills are the most conspicuous landscape feature forming a visual continuation of the north/south Malvern range but separated from them by the Teme Valley where the river has cut through the gap at Knightwick before proceeding to join the River Severn. The rocks are highly folded and inverted in places and yield a typical middle Silurian shell fauna. The rest of the area is characterised by undulating country of alternating sandstones, siltstones and occasional thin limestones and cornstones of the Lower Old Red Sandstone (popular term denoting the transition zone between the Silurian and Devonian Periods). The sediments represent flood plain deposits laid down in semi-desert conditions. The limestones and cornstones (calcareous pellet rock composed of scour fragments) give rise to small scarp features.

Source: Geological Narrative West Midlands Geodiversity Partnership, Teme Valley Countryside Character Area Description

2.4 Superficial deposits

Tufa deposition, following leaching of calcium carbonate from limestone rocks, occurs along the Teme Valley. Southstone Rock is a fine example of active tufa deposition and is considered to be one of the largest deposits in England. Fossils are rare but lenses of dried up pools containing fragmentary early fish are found throughout the sequence.

Source: Geological Narrative West Midlands Geodiversity Partnership, Teme Valley Countryside Character Area Description

2.5 Designated geological sites

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

There are 37 Local Geological Sites within the NCA.

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

2.6 Soils and Agricultural Land Classification

The River Teme cuts through Old Red Sandstone upstream of Knightwick and below this point it meanders across Keuper Marls. Deeper, neutral soils occur over the Old Red Sandstone to calcareous soils on the limestone ridges. The River Teme, with its steep sides and wooded dingle valleys, has a fertile, if narrow flood plain supporting arable and pasture land.

Source: Teme Valley Countryside Character Area Description, Malvern Hills and Teme Valley Natural Area Profile

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	496	3
Grade 2	6,239	32
Grade 3	11,004	57
Grade 4	1,195	6
Grade 5	0	0
Non-agricultural	365	2
Urban	0	0

Source: Natural England (2010)

- Maps showing locations of statutory sites can be found at: **http://magic.defra.gov.uk/website/magic/** - Select 'Landscape' (shows ALC classification and 27 types of soils)

Traditional hopfield.

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)
River Teme	33
River Rea	14

Source: Natural England (2010)

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

The River Teme has been notified as a Site of Special Scientific Interest as part of the national series of rivers. It is recognised as one of the best examples of a Type VI river – a large river over sandstones, mudstones and hard limestone – and is botanically rich with aquatic flora and fauna. Many small deep-cut streams drain into the Teme but only the Leigh Brook reaches any size. The River Teme flows in a south-easterly direction across the NCA from Burford in the west to Knightwick in the south. The River Rea joins the Teme south of Newnham Bridge; it flows from Lower Forge in the north of the NCA in a south-westerly direction.

3.2 Water quality

The total area of Nitrate Vulnerable Zone is 4,061ha or 21 per cent of the NCA.

Source: Natural England (2010)

3.3 Water Framework Directive

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

4. Trees and woodlands

4.1 Total woodland cover

The NCA contains over 3,234 ha of woodland, 17 per cent of NCA, of which 1,248 ha is ancient woodland.

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

4.2 Distribution and size of woodland and trees in the landscape

Around half of the woodland occurs on ancient woodland sites, either as broadleaved or mixed woodland, with a small proportion subject to replanting as conifer plantations, particularly on the Abberley Hills. Woodlands occur mainly on the steep slopes of the valley and hills within the NCA. These steep slopes and the valley sides of the River Teme have retained most of their woodlands and are an important area for woodland biodiversity. Old parkland is evident at Abberley with the typical open structure with mature trees, little under-storey and a modified ground flora. Traditional standard orchards, in particular cherry orchards, are characteristic of the sloping valleys and lower hillsides in the north and west sections of the Teme Valley.

Source: Malvern Hills and Teme Valley Natural Area Profile, Teme Valley 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	2,422	13
Coniferous	398	2
Mixed	223	1
Shrub/young trees	191	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	678	3
Ancient re-planted woodland (PAWS)	570	3

Source: Natural England (2004)

5. Boundary features and patterns

5.1 Boundary features

The main field boundaries in this NCA are dominated by hedgerows with mature oak trees as a distinctive characteristic. Hedgerow trees are numerous within the NCA, the hedgerows themselves often showing neglect. However environmental stewardship data (Natural England 31/3/11) demonstrates that a significant proportion of hedgerows (161 km) in the Teme Valley NCA are under positive management.

Source: Teme Valley Countryside Character Area description; Countryside Quality Counts (2003)

5.2 Field patterns

The field pattern is typically of irregular, small, hedged fields. An ancient assarted and intact field pattern can be found in the Abberley Hills.

Source: Teme Valley Countryside Character Area description; Countryside Quality Counts (2003)

6. Agriculture

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

6.1 Farm type

Holdings are predominantly based on grazing livestock (37 per cent in 2009) while specialist poultry (2 per cent) and dairy are at the lower end of the spectrum (3 per cent). Trends from 2000 to 2009 show an increase in cereals of 37 per cent, 50 per cent decrease in horticulture, and 38 per cent decrease in dairy. The number of grazing units remained the same.

Source: Agricultural Census, Defra (2010)

6.2 Farm size

Larger farm holdings (>100 ha) tend to dominate the NCA with more than 8,693 ha held by 45 farms in 2009 accounting for 55 per cent of the total farmed area in the NCA. In addition holdings between 50 and 100 ha are the second most dominant with 2,945 ha held by 44 farms, accounting for 19 per cent of the farmed area within the NCA. Trends show that between 2000 and 2009 there was a decrease in the numbers of holdings ranging in size from less than 5 ha to less than 100 ha.

Source: Agricultural Census, Defra (2010)

6.3 Farm ownership

2009: Total farmed area = 15,672; owned land = 11,168 ha. (71 per cent of farmed area is owned)

2000: Total farm area = 15,777 ha; owned land = 12,311 ha

Source: Agricultural Census, Defra (2010)

6.4 Land use

The dominant land use is grassland, accounting for 9,073 ha (59 per cent of farmed area). This is followed by cereals (3,206 ha or 20 per cent). Other arable crops, oilseed and cash roots account for much of the remainder (approximately 3 per cent each). There is a small amount of fruit (1 per cent). Between 2000 and 2009 there was an increase in the area of oilseeds of 319 ha.

Source: Agricultural Census, Defra (2010)

6.5 Livestock numbers

Sheep are the most numerous livestock type (a total of 45,100 animals) followed by cattle (8,000) and pigs (500). In every case there has been a significant decrease in overall numbers between 2000 and 2009.

Source: Agricultural Census, Defra (2010)

6.6 Farm labour

The figures suggest that the total workforce has decreased by 12 per cent between 2000 (670) and 2009 (584). There has been a decrease of 38 per cent in the number of full-time employees, and an increase of 58 per cent in the number of part-time employees, between 2000 and 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.

7. Key habitats and species

7.1 Habitat distribution/coverage

Broadleaved woodland is the most dominant habitat type covering 17 per cent of the NCA. The NCA supports part of the Wyre Forest SSSI - one of the largest remaining areas of ancient semi-natural woodland in England. Ancient woodland forms more than 60 per cent of the broadleaved woodland resource. Traditional orchards, in particular cherry orchards, are characteristic of the sloping valleys and lower hillsides in the north and west sections of the Teme Valley, forming part of the larger fruit growing area of the Severn Vale and the Herefordshire Plateau. Lowland neutral hay meadows are dispersed throughout the NCA and important concentrations are known in the Teme valley.* The River Teme SSSI extends from western to the southern boundaries of the NCA. It is the second largest tributary of the River Severn. Sand martin colonies can be found in many of the eroding river banks. The fish community has long been recognised as being important, with salmon, grayling and brown trout and records occurring of the rare twaite shad.

Source: Malvern Hills and Teme Valley Natural Area Profile

*An estimated 460 ha of "Traditional Orchards" occur in The Teme Valley NCA, representing 2 per cent of the NCA area. This data is found on MAGIC. Detailed information may be obtained from Worcester Biological Records Centre or Herefordshire Local Record Centre.

7.2 Priority habitats

The Government's new strategy for biodiversity in England, Biodiversity 2020, replaces the previous Biodiversity Action Plan (BAP) led approach. Priority habitats and species are identified in Biodiversity 2020, but references to BAP priority habitats and species, and previous national targets have been removed. Biodiversity Action Plans remain a useful source of guidance and information. More information about Biodiversity 2020 can be found at; http://www.naturalengland.org.uk/ourwork/conservation/biodiversity/protectandmanage/englandsbiodiversitystrategy2011.aspx

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

Priority habitat	Area (ha)	% of NCA
Broadleaved mixed and yew woodland (broad habitat)	1,056	5
Lowland heathland	64	<1

Source: Natural England (2011)

Maps showing locations of priority habitats are available at

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

7.3 Key species and assemblages of species

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

8. Settlement and development patterns

8.1 Settlement pattern

There are no major urban areas within the NCA and larger settlements such as Tenbury Wells, Ludlow and Stourport-upon-Severn lie beyond the boundary. Less than 1 per cent of the area is urban. A dispersed settlement pattern is typical, inter-mixed with some small villages set within anciently enclosed fields interspersed with woodland. There are scattered farmsteads, hamlets and occasionally small villages. There is a generally high density of farmsteads, intermixed with large numbers of historic houses which were associated with farming in the past. Away from the valleys there are areas of small-scale irregular enclosure and small farms resulting from woodland clearance in the medieval period.

Source: Teme Valley Countryside Character Area description; Countryside Quality Counts (2003)

8.2 Main settlements

Cleobury Mortimer lies on the northern boundary and has the largest population of 1,962. Larger villages include Abberley – population 800, and Burford – population 356. The total estimated population for this NCA (derived from ONS 2001 census data) is: 9,724.

Source: Teme Valley Countryside Character Area description; Countryside Quality Counts (2003)

8.3 Local vernacular and building materials

Timber-framed threshing barns, weather boarded with wattle infill to upper panels are a feature of the area. Weatherboarding is a common form of cladding for timber-framed buildings, particularly barns, and is often associated with tall, stone plinths and gable walls. Brick and Old Red Sandstone largely replaced timber-framing from the mid-/late 18th century. There are rare surviving examples of 18th century or earlier single-storey and two-storey cow houses. Hop kilns, mainly dating from the 19th century, are a distinctive feature. Cider houses, distinguished by wide doors, incorporated into 18th century and later combination ranges which can include hop kilns – some of these buildings with earlier timber-frame cores. There is a high concentration of timber-framed buildings, including a high proportion of 16th century or earlier date. Plain clay tile and Welsh slate are the predominant roofing materials.

Source: Teme Valley Countryside Character Area description; Countryside Quality Counts (2003)

A good example of restored square-topped hopkilns.

9. Key historic sites and features

9.1 Origin of historic features

Some of the Norman manors developed into park estates and the mounds forming park pales can still be seen. The hamlets and isolated farmsteads may have been of earlier origin. Small clusters of open fields probably surrounded the hamlets, and common meadows lay in the valley bottoms. The open fields were gradually enclosed in a sub-rectangular fashion creating a landscape pattern which has remained to the present day.

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

9.2 Designated historic assets

This NCA has the following historic designations:

- 2 Registered Parks and Gardens covering 143 ha
- No Registered Battlefields
- 15 Scheduled Monuments
- 560 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

- 0.1 per cent of the NCA, 19 ha, is classified as being publically accessible.
- There are 604 km of public rights of way at a density of 3 km per km2.
- There are no National Trails within the NCA.

Source: Natural England (2010)

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

Access designation	Area (ha)	% of NCA
National Trust (Accessible all year)	0	0
Common Land	20	<1
Country Parks	0	0
CROW Access Land (Section 4 and 16)	19	<1
CROW Section 15	0	0
Village Greens	0	0
Doorstep Greens	<1	<1
Forestry Commission Walkers Welcome Grants	57	<1
Local Nature Reserves (LNR)	7	<1
Millennium Greens	9	<1
Accessible National Nature Reserves (NNR)	9	<1
Agri-environment Scheme Access	10	<1
Woods for People	65	<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.

11. Experiential qualities

11.1 Tranquillity

Based on the CPRE map of tranquillity (2006) the Teme Valley has an intricate landscape where there are pockets of higher tranquillity in an area that is fairly tranquil overall. The least tranquil area is at the eastern boundary, close to Stourport-upon-Severn.

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

Category of tranquillity	Score
Highest	35
Lowest	-32
Mean	5

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 a similar picture to the tranquillity scores. There is a high percentage of disturbed area in the east of the NCA around Stourport-upon-Severn. A breakdown of intrusion values for this NCA is detailed in the following table.

Intrusion category	1960s (%)	1990s (%)	2007 (%)	Percentage change (1960s-2007)
Disturbed	n/a	2	8	8
Undisturbed	100	98	92	-8
Urban	n/a	n/a	<1	<1

Sources: CPRE (2007)

Notable trends from the 1960s to 2007 are that there has been a slight decrease in the proportion of undisturbed land during the 1960s to 2007 period, most of which has occurred between 2000 and 2007.

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

Enjoying the rights of way and tranquillity of the Teme Valley.

12. Data sources

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

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

Supporting document 2: Landscape change

Recent changes and trends

Trees and woodlands

- Evidence from Countryside Quality Counts (CQC) survey indicates that during the period from 1999 to 2003, 86 ha of new woodland was planted; a 4 per cent increase from the 1999 resource.
- In 1999 about 31 per cent of the established eligible National Inventory of Woodlands and Trees stock was covered by a Woodland Grant Scheme (WGS).
- In 2003 established woodland and trees stock appears to have fallen to about 22 per cent.
- About 40 per cent of the woodland cover is on ancient woodland sites, and the proportion of these sites covered by a WGS has also fallen since 1999 from 40 per cent to 29 per cent.
- Although the extent of management of woodland overall has fallen, its extent remains intact and overall wooded character is maintained.
- The total amount of woodland under the Woodland Grant Scheme fell from 40 per cent in 1999 to 29 per cent in 2003. CQC data suggests that new planting is negligible in this well-wooded landscape.

Boundary features

- Neglect and over-cutting is evident with many of hedgerow trees in poor condition (CQC). Only 3 per cent of field boundaries were managed as part of environmental stewardship agreements in the period between 1999 and 2003.
- Agricultural improvement, and conversion to cereal cultivation, has led to the removal of hedgerows, overcutting and loss of hedgerow trees.
- The countryside survey 2000 suggests that these types of landscape are dominated by fencing and hedgerows, but while hedgerows are stable in extent, fencing has increased. CQC data suggests that there is some hedgerow management within Countryside Stewardship, but, uptake rates are low with scope for improved management high.
- There has been loss of hedgerow trees and failure to nurture new generations of hedgerow trees particularly in the Clows Top plateau, Dunley and Dick Brook areas.
- Currently only 161 km of hedgerows are managed through environmental stewardship in addition to 15 km of woodland boundaries.
- The main field boundaries in this NCA are dominated by mix-species hedgerows with mature oak trees as a distinctive characteristic.

Agriculture

- Grassland loss has been reversed, and mix of farm types has remained steady.
- Between 2000 and 2009 there was a decrease in the total number of holdings as well as a 30 per cent reduction in cattle and 25 per cent reduction in sheep numbers.
- In the last 10 years uptake for annual area features has been consistently above the national average since 1999. Most extensive annual agreements in 2003 were for lowland pastures on neutral/acid soils (215 ha) and lowland hay meadows (68 ha).

Settlement and development

- Although development is limited overall, there are some concentrations, especially in the Clows Top area, at Cleobury Mortimer and Tenbury Wells, and to some extent throughout the valley of the Teme.
- In some places 20th century infill development has undermined the character of dispersed settlement. This is particularly notable near Clows Top.
- Redundant farm buildings have been abandoned or have been converted to permanent residential use or holiday homes. But the number of barn conversions is relatively small, in terms of the density per unit area.

Semi-natural habitat

- There are 10 SSSI in this NCA and approximately 32 per cent are in favourable condition and 68 per cent are unfavourable recovering condition.
- The surviving areas of wet, valley-bottom grassland, unimproved grassland and semi-improved grassland have been lost or damaged as a result of increases in arable cultivation and fertiliser application. Many are fragmented and isolated particularly in the River Teme flood plain, Abberley Hills and Clows Top plateau areas.
- The Teme Valley is a stronghold for traditional cherry orchards particularly in the north and west of the NCA. There has been a decline in older orchards with the loss of variety of tree forms, with considerable declines over the last 50 to 60 years. Fruit trees are not often replaced resulting in the loss of local varieties. Some orchards have been restored in recent years and some new orchards created.
- In 1918 about 4 per cent of the NCA was historic parkland. By 1995 it is estimated that 42 per cent had been lost. About 10 per cent of the remaining parkland was covered by an Historic Parkland Grant, and about 4 per cent is included within an agri-environmental scheme.
- The most extensive annual agri environmental agreements in 2003 were for lowland pastures on neutral/acid soils (215 ha) and lowland hay meadows (68 ha). Extent of management agreements is limited and, given past losses, evidence therefore suggests resource remains weakened.

Historic features

- There is limited uptake of agri-environmental schemes for the management of historic landscape (~20 ha). About 10 per cent of the remaining parkland is covered by a Historic Parkland Grant, and about 4 per cent is included within an environmental stewardship scheme.

- Barn conversions appear to be limited, with about 72 per cent of listed historic farm buildings remaining unconverted. About 89 per cent are intact structurally (Countryside Quality Counts data).

Rivers

- There is limited evidence of the uptake of management agreements to promote riparian habitats and features; this suggests neglect of the resource. However, the biological water quality and chemical water quality of the River Teme in 1995 was predominantly excellent and it has been maintained.

- Under the Water Framework Directive analysis the majority of rivers in the area are of good or moderate ecological status.

- The River Teme SSSI is classified as "Unfavourable No Change". This is due largely to physical modifications to the channel, in addition to siltation and diffuse pollution that affects the optimal functioning, as habitats for characteristic wildlife communities.

- Partnership working is ongoing to deliver positive benefits to the Teme catchment, engaging with people and organisations at a catchment level to encourage greater local participation and achieve more for communities and the water environment.

Minerals

- Shavers End Quarry was formerly where limestone was extracted for aggregates and for use in lime kilns.

Grade II listed 17th-century barn and stables with 19th century alterations. Timber frame with some wattle and daub, brick infill and weatherboarding.

Drivers of change

Climate change

- Increased intensity of rainfall causing more frequent and rapid flood events, resulting in increased sediment loads and nutrient run-off from agricultural land into ditches and rivers. Flood risk to properties also becomes less predictable as a result.

- Potential risks of drought and availability of water for irrigating crops. An increase in abstraction is likely due to arable expansion and may become a greater problem with hotter and drier summers.

- Likely impact of climate change on orchards, both traditional and commercial bush orchards, needs to be monitored and managed. It is important to retain variability of genetic resource to allow adaptability to changing climate. A changing climate, in particular summer droughts, is likely to increase the vulnerability of the woodlands particularly the ancient semi-natural woodland of Wyre Forest , with ancient and veteran trees increasingly vulnerable to damage, pest and disease.[4]

- A changing climate, that may affect our woodlands and thereby timber resources has the potential to impact upon the future maintenance of historic/traditional 'timber' framed buildings, which play an important part in the overall character of the NCA.

[4] Climate Change and British Woodland: Information note 'Forestry Commission - Forest Research' 2005 and Combating climate change (2009) – a role for UK forests. An assessment of the potential of the UK's trees and woodlands to mitigate and adapt to climate change.

Other key drivers

- Increased pressure for food security may result in further pasture 'improvement' and arable expansion threatening areas of semi-natural grassland and meadow resulting in fragmentation and loss of ecological valuable habitats, networks and species movement/adaptation and species loss and impacts on landscape character. Agri-environment schemes can offer opportunities to work with land managers to incorporate management of farmland habitats, develop and create networks of new habitats and enhance the rural character of this landscape.

- Likely impact of climate change on orchards, both traditional and commercial bush orchards, needs to be monitored and managed. It is important to retain variability of genetic resource to allow adaptability to changing climate.[5]

- Pasture improvement and arable expansion threaten areas of semi-natural grassland and meadow-land resulting in fragmentation and loss of this habitat.

- Tree diseases such as Phytophthora is widespread in the area and could have a significant impact on alder trees; Ash dieback caused by the fungus Chalara fraxinea could potentially have a significant impact on some of the mixed woodland of the NCA.

- Development pressure, traffic and light pollution both inside and on the fringes of the NCA.

- Allow economic and social growth while protect the rural and tranquil character of the area.

[5] Ibid

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.

Large-scale farmstead with early 18th-century grade II listed courthouse, square hopkilns and dovecote.

Statement of Environmental Opportunity	Ecosystem Service																		
	Food provision	Timber provision	Water availability	Genetic diversity	Biomass provision	Climate regulation	Regulating water quality	Regulating water flow	Regulating soil quality	Regulating soil erosion	Pollination	Pest regulation	Regulating coastal erosion	Sense of place / Inspiration	Sense of history	Tranquillity	Recreation	Biodiversity	Geodiversity
SEO 1: Protect, manage and enhance the nationally important species, habitats and geomorphology of and associated with the River Teme by employing positive management practices in and around the catchment to improve water quality, reduce soil erosion, regulate water flow and minimise the impacts of flooding.	O	↔ ***	↗ ***	O	O	↗ *	↑ **	↑ **	↗ **	↑ ***	↗ **	O	N/A	↗ *	↗ ***	↗ **	↗ ***	↑ ***	↗ *
SEO 2: Protect and positively manage the range of habitats associated with the River Teme Valley – ancient woodland, meadows, orchards, hop yards, wood pasture, parkland and enclosed common – to maintain, restore and strengthen their connectivity and landscape character, and to make them more resilient to change in climate and localised development, and maintain viable and appropriate agricultural activity.	↗ *	↗ **	↗ *	↗ **	O *	↗ *	↗ *	↗ *	↑ ***	↑ ***	↑ ***	↑ ***	N/A	↗ ***	↗ ***	↗ ***	↗ ***	↗ ***	↗ ***
SEO 3: Protect, manage and enhance the geodiversity, geomorphology, soils and cultural and historical features of the Teme Valley, including fine examples such as Woodbury Quarry, Southstone Rock, Shavers End Quarry, and Woodbury Hill and Berrow Hill iron-age hill forts, to reinforce the strong relationship between the landscape, its history of land use, and archaeological and cultural heritage, by encouraging interpretation, understanding, access and recreational opportunities which could increase public understanding of this deeply tranquil rural valley.	↔ ***	↔ ***	↔ ***	↔ ***	↗ *	↗ ***	↗ ***	↗ **	↗ **	↗ **	↗ **	↗ *	N/A	↑ ***	↑ ***	↗ *	↗ *	↑ ***	↗ *
SEO 4: Protect and enhance the intrinsic tranquillity and distinctive landscape character of the Teme Valley, conserving and enhancing the settlement pattern and sense of place, and promoting a better understanding and enjoyment to reinforce a strong sense of place.	↔ ***	↔ ***	↔ ***	↔ ***	↗ *	↗ ***	↗ ***	↗ **	↗ **	↗ **	↗ **	↗ *	N/A	↑ ***	↑ ***	↗ *	↗ *	↑ ***	↗ *

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

National Importance; Regional Importance; Local Importance

Landscape attributes

Natural/ cultural attribute	Justification for selection
A complex undulating landscape with fertile soils, steep and incised valley sides, with the meandering, ecologically rich River Teme at its centre.	■ A distinctive and most conspicuous landscape feature carved through the landscape of the Teme Valley. ■ The River Teme has been notified as a SSSI and is recognised as one of the best examples of a large river over sandstones, mudstones and hard limestones. ■ The Teme is important for migratory fish including salmon and eel as well as resident game fish such as brown trout and grayling. ■ Botanically rich with aquatic plants including long-leaved water crowfoot, spiked water-milfoil, fennel pondweed and flowering rush, that bring colour and texture to the river landscape. ■ Silurian age limestones, for example in the Abberley Hills, forming a visual continuation of the north-south Malvern range and a stark contrast to the deeply incised River Teme. ■ Tufa deposition, following leaching of calcium carbonate from limestone rocks, also occurs along the Teme Valley. Southstone Rock is a fine example of active tufa deposition and is considered to be one of the largest deposits in England. ■ Woodbury Quarry SSSI is the only geological SSSI in the NCA, an impressive, highly fossiliferous locality with Silurian Ludlow Siltstones and Aymestry Limestone (both formed in a marine environment).The rock which was laid down in horizontal layers has been folded so severely that it is now vertical.
Ancient woodlands cloak the steep valley sides.	■ Ancient woodland is a key historical landscape element which forms over 40 per cent of the broadleaved woodland resource in this area. ■ These limestone ridge woodlands have a rich shrub layer and ground flora with ancient woodland indicators such as toothwort, nettle-leaved bellflower, butterfly orchid and stinking iris typical of the richer sites.
Historical, cultural remnants of traditional orchards, in particular cherry, are characteristic of the lower valley slopes and lower hillsides in the north and west.	■ Traditional orchards within the Teme Valley form part of a larger fruit growing area of the Severn Vale and central Herefordshire. Cherry orchards are a surviving feature from the areas heyday. Some of the recorded varieties grown were: Bigarreau, Bigarreau Napoleon, Black Eagle, Early Rivers, Elton, Governor Wood, Imperatrice Ugenie, Knight's Early Black, May Duke, Mumford (or Mountford), Oliver's Black, Ox Heart, Smokey Dun, Waterloo, White Heart. ■ Traditional apple orchards, including Scotch Bridget. ■ Traditional orchards are a priority habitat and host important lichen communities and invertebrate populations, for example a strong population of noble chafer beetle, classified as vulnerable in the UK, a species which is virtually confined to old orchards. Woodpecker holes in orchard trees also provide roosts for rare bats such as the lesser horseshoe and Bechstein's. ■ The longstanding cultivation of fruit and hops provides a strong identity to the area helping to retain the historical and cultural identity of the area.

Natural/ cultural attribute	Justification for selection
Tranquil rural character dominates with a high density of dispersed settlement inter-mixed with some small villages.	■ It is classified as one of the most 'undisturbed' NCAs with 92 per cent of the area classified as 'undisturbed' and having seen no change since the 1960s; potentially the only NCA in England where this can claim to be the case. ■ Less than 1 per cent of the area identified as urban. ■ Secluded wooded valleys offer high levels of tranquillity set within a gentle and intimate landscape. ■ Scattered farmsteads, hamlets and occasionally small villages often marked by elegant church spires or squat towers. ■ High density of farmsteads intermixed with large numbers of historic houses which were associated with farming in the past.
Small, hedged fields bound by species-rich hedgerows with mature oak trees.	■ Retaining the historical small-scale irregular enclosure and small farms resulting from woodland clearance in the medieval period. ■ Remnant hedgerow trees – veteran oak trees with obvious cavities, splits or holes may provide important habitats for invertebrates, roost sites for bats such as Soprano pipistrelle and potential nest sites for birds. ■ The field pattern creates a strong unifying aspect of the landscape across the whole area.
A landscape rich in historical and cultural elements and features.	■ The history of this landscape is evident in Mesolithic, Neolithic and Bronze Age archaeology on the higher ground alongside the River Teme, as well as in the dispersed medieval settlement pattern and the generally irregular or sub-rectangular field patterns. ■ Hop kilns, mainly dating from the 19th century, are a distinctive feature. The longstanding cultivation of fruit and hops provides a strong identity to the area. ■ 19th-century farmsteads. ■ There is a high concentration of timber-framed buildings, including a high proportion of 16th century or earlier date. ■ Rare surviving examples of 18th century or earlier single-storey and two-storey cow houses. ■ 560 Listed Buildings. ■ 15 Scheduled Monuments. ■ 604 km of public rights of way representing a density of over 3 km per km2, potentially one of the highest densities in England, contributing to sense of history and place. ■ Distinctive old orchards along the valley floor and the local types of oast house, as well as other traditional buildings of red, pink and grey sandstone and the use of timber framing in the oldest buildings.

Landscape opportunities

- Protect and enhance the intimate rural character and deeply tranquillity area, the rural settlement pattern of dispersed farmsteads and hamlets and some nucleated villages and the distinctive sunken lane network.

- Conserve ancient and veteran trees within historic parkland and woodpasture and in the wider landscape for the benefit of fauna and flora that depend upon them and for their heritage value. Replant and replace fallen/decayed ancient/mature trees to maintain landscape character, sense of place and enhance biodiversity.

- Protect and manage the ancient semi-natural woodlands and associated habitats occurring on the Silurian ridges and steep valley sides to conserve the unimproved and calcareous grassland habitats, particularly in the area around the river corridor and steep sided valleys to maintain locally distinct flora and fauna while providing links to other areas. Plan for the expansion, buffer zones and greater connectivity of woodland, unimproved and calcareous grassland habitats.

- Manage, enhance and expand the native woodland, and improve connectivity with fragmented small woodlands and other habitats, re-introducing traditional coppice management where appropriate as a source of wood fuel, short rotation coppice or bio fuel, increasing recreational opportunities, increasing carbon storage for climate regulation.

- Manage restore and enhance traditional orchards to ensure and maintain biodiversity value, continuity of deadwood and rot holes, protect local genetic varieties, increase the variability of age structure of orchard trees and improve the condition of the underlying grassland to enhance the lowland meadow resource.

- Restore and maintain traditional orchard buildings such as cider houses which contribute to the history and cultural associations of orchards and hops across this area and help to maintain a sense of place.

- Plan for the restoration of generally irregular or sub-rectangular field patterns and hedgerows, improving habitat connectivity and biodiversity and ensuring the unity of materials and styles and traditional building techniques enhances landscape character, retaining medieval settlement pattern maintaining a sense of place, including areas of new development.

- Protect, manage and enhance the River Teme and its tributaries the River Rea as a characteristic riverine landscape rich and diverse in riparian habitat that supports a wide range of flora and fauna. Conserving and protecting the quality and quantity of surface waters through partnership working at the catchment scale, supporting existing catchment initiatives and encouraging the implementation of land management practices to improve the quality of water and help meet the objectives of the Water Framework Directive.

- Plan for the anticipated higher frequency of flood events and higher levels of winter rainfall through expansion of riparian habitats around the river corridors to include wet grassland for breeding waders and other flood plain habitat including wet woodland.
- Plan for the restoration of traditional or historic buildings, barns and farmsteads.
- Plan for the increase in demand for wood fuel and the growth of renewable energy in a way that is in keeping with intrinsic character.
- Protect the area's rural nature, lack of intrusion and tranquillity while supporting a working landscape that provides essential food, homes and recreational opportunities. Plan for reduced carbon affordable housing that enhance landscape and biodiversity, using local materials built to high ecological standards.
- Plan to remove conifer from plantation on ancient woodland sites and restore to native broadleaf woodland.
- Manage the existing access network of rights of ways and cycle routes and plan new links, particularly between urban areas on the boundary of the NCA and the wider countryside linking to public transport.
- Protect and conserve archaeological and historic features and other heritage assets, enable public access, understanding and enjoyment.

St Andrews Church (12th century altered 13th century and restored 1859) in Shelsley Walsh with tufa blocks and timber bell turret.

Ecosystem service analysis

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Food provision	Mixed livestock Pasture Naturally fertile soils (32 per cent Grade 2 and more than 50 per cent grade 3.) Mixed arable Traditional orchards	The Teme Valley NCA supports a mixture of farming and food producing activities. The area is predominantly pastoral (59 per cent) grazed by livestock – primarily sheep. Food provision is an important service within this rural NCA with livestock farming, particularly sheep, and cattle, making a significant contribution to local and regional food resources. The Teme Valley plays host to a strong and thriving local farmers market. The Teme Valley is particularly noted for its cherry orchards, many of which have been lost over recent years, but on the undulating northern side many acres remain, often attached to smallholdings. Traditional orchards with old trees are particularly numerous in the west of the NCA forming part of the larger fruit growing area of the Severn Vale and the Herefordshire Plateau.	Regional	There has been a move away from mixed farms and dairy to cereal production, leading to a loss of pasture. Livestock numbers saw a 30 per cent reduction in cattle and 25 per cent reduction in sheep. There has been a shift in farm type from mixed to solely cereals. The area of cereals and grass has remained constant. There has been a move away from fruit and hop production. Fruit trees are often not replaced resulting in the loss of local varieties. While some have been restored there is a need to do more, restoring and where possible creating new orchards. Traditional orchards are in decline: between 70 per cent and 80 per cent of traditional orchards in Worcestershire have been destroyed over the last 50–60 years. The sensitive restoration of traditional orchards and hop yards could benefit biodiversity, local food production, tourism and improve the understanding of our cultural heritage.	Work with farmers and land managers to support the long tradition of mixed farmed landscape, promoting positive land management interventions thereby securing a sustainable future for farming while protecting and enhancing the natural, built and historic environment within the Teme Valley and supporting the supply of other ecosystem services. Promote opportunities for neglected traditional orchards to be restored and appropriately managed to bring them back into use. Maximise the opportunities to utilise the local and regional markets, developing stronger branding for locally produced food thus maintaining and strengthening farming and its associated cultural landscapes and wildlife it supports. Create links with tourism initiatives such as: tasting events, seasonal celebrations, orchard history, and walking routes to link with other traditional orchards. Ensure that traditional local varieties are preserved and the variety of species is enhanced.	**Food provision** **Pollination** **Genetic diversity** **Regulating soil erosion** **Regulating soil quality** **Biodiversity** **Climate regulation** **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	Area of existing woodland Conifer and poplar plantations	Seventeen per cent of the NCA is woodland. Of which conifer plantations make up 2 per cent, broadleaved 13 per cent, and the remainder is mixed or other forms of woodland. The majority of woods occur on the very steep slopes of the southern side of the Teme Valley (a near continuous six mile long stretch), over the Abberley Hills and along the steep slopes of the tributary valleys.	Local	Many of the woods are actively managed to produce timber and wood for fuel, however the opportunity for commercial timber production is limited. Accessibility is extremely limited due to topography. Much of the broadleaved woodland is of high biodiversity value with 40 per cent being ancient semi-natural woodland or plantations on ancient woodland sites. Conifer plantations have the potential to release a single crop of timber allowing reversion to broadleaved woodland. Poplar plantations will provide a single crop of timber on felling. Reinstatement of traditional management techniques in broadleaved woodlands has the potential to release small quantities of timber for local use, most likely providing a source of wood fuel.	Seek opportunities to harvest existing poplars and conifer plantations where possible, replanting or encouraging natural regeneration where possible to enable reversion to broadleaved woodland. Seek opportunities to increase timber production from existing broadleaved woodlands through active management, while maintaining their biodiversity, landscape value, and regulation of soils and water. New or improved opportunities for recreation may result from active management of existing woodlands.	**Timber provision** **Biodiversity** **Sense of place / inspiration** **Regulating soil erosion** **Climate regulation** **Regulating water flow** **Biomass energy**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Water availability	The River Teme High rainfall area	The main rivers in this NCA are the River Teme and its tributary the River Rea, which joins the Teme at Rochford. The River Teme is the second largest tributary of the River Severn. The main uses of water in the catchment are for public water supply and agriculture, with very little industrial use. There is adequate supply of surface water in the catchment during the winter months. In the summer the Teme often experiences low flows. Abstraction mainly provides water for irrigation for agriculture. There isn't a major aquifer underlying the area. But there is a large lake at Stanford Court.	Regional	Surface and groundwater resources have been assessed as 'water available';[6] however, due to the requirement to protect flows within the River Severn (into which the Teme flows), surface and groundwater resources in this NCA are classed as having 'no water available' for further abstractions. The Environment Agency has postulated in its assessment that summer river flows by 2050 will be 20 per cent less than at present in the Severn River Basin. Water availability is very likely to be 20 per cent less for all licenses in order to offset climate change impacts on ecological river flow objectives. A corresponding increase in potable water consumption and agricultural water use is likely. This NCA does not overlay any major aquifer, and overall, there is a 'low risk' to groundwater levels from abstractions in the NCA. Trickle irrigation has increased and is presently exempt from the need for an abstraction licence this will be required following the implementation of parts of the Water Act 2003.	Work with existing abstraction licence holders and the Environment Agency to manage abstraction so as to avoid over abstraction resulting in low flow levels. Identify suitable locations and work with landowners to realise opportunities for creating winter water storage areas and new wetland habitats where possible. Support measures to maintain and improve soil structure to increase permeability and water retention potential. Slow the flow of water across the landscape to maintain more constant river levels through the use of ponds, scrapes and more naturalised drainage within the NCA and across the Teme catchment. Identify opportunities to reinstate hedgerows across steeper slopes that will help to slow the cross-land flow of water. Support measures that harvest and conserve water, protect watercourses, and prevent water quality deterioration caused by diffuse pollution and rapid runoff (although it is recognised that many land managers already operate using environmentally sensitive practices).	**Water availability** **Biomass energy** **Climate regulation** **Regulating water quality** **Regulating water flow** **Regulating soil erosion** **Food provision** **Biodiversity** **Geodiversity**

[6] Teme Catchment Abstraction Management Strategy, Environment Agency (September 2005)

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Genetic diversity	Traditional orchards	Traditional orchards are particularly numerous throughout the NCA forming part of the larger fruit growing area of the Severn Vale and central Herefordshire. They contain a vast bank of genetic material including many historical and scarce varieties and cultivars of apple, pear, cherry and damson.	National	Traditional orchards are in decline; between 70 and 80 per cent of traditional orchards in Worcestershire have been destroyed over the last 50 to 60 years. Genetic diversity of orchard fruit varieties are important to maintain in order to safeguard food provision and afford increased resilience to the effects of climate change and disease. An attempt is being made to find and propagate what remains of this dwindling heritage of genetic cherry varieties, to rejuvenate old orchards and restock with traditional varieties, many characteristic of the West Midlands.[7]	Maintain orchard variety collections such as the cherries that are known to have a stronghold in the Teme Valley. Raise awareness of local varieties and link owners with suppliers. Encourage regeneration and planting of local orchards with local varieties to ensure that the variety of species is enhanced and over all age structure of orchards is maintained.	**Genetic diversity** **Food provision** **Pollination** **Climate regulation** **Biodiversity** **Sense of place / inspiration** **Sense of history**
Biomass provision	Small woodlands	Existing woodlands cover over 2,000 ha of the NCA or 17 per cent of the area. There is a medium potential for miscanthus and short rotation coppice.	Local	Many of the woodlands are actively managed to produce timber and wood for fuel. However there are existing woodland that may offers potential for the provision of biomass by bringing unmanaged woodland under management and as a by product of commercial timber production.[8] Biomass production is currently low; however the area has medium potential for SRC and miscanthus. SRC could add to the wooded character of the area, but potentially impact on the patchwork pattern of traditional orchards, pasture and hop yards. Any major planting could affect the sense of place.	There is an opportunity to increase biomass by bringing unmanaged woodland under traditional management and as a by product of commercial timber production. Traditional coppice for small scale wood fuel production provides benefits to biodiversity. The undulating landscape may provide opportunities for planting SRC and miscanthus on the lower slopes and valley bottoms.	**Biomass provision** **Biodiversity** **Climate regulation** **Regulating soil erosion** **Regulating water quality**

[7] Traditional Orchards, Factsheet 3, Biodiversity in Worcestershire (URL: www.worcestershire.gov.uk/cms/pdf/Orchards.pdf)

[8] Potential landscape impacts of biomass within the NCA, Natural England website (URL: www.naturalengland.org.uk/ourwork/farming/funding/ecs/sitings/default.aspx)

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Climate regulation	Existing woodlands Permanent pasture Hedgerow network, hedgerow trees and orchards Parkland Soils	Existing woodlands cover over 2,000 ha of the NCA or 17 per cent of the area contributing to the sequestration and storage of carbon, especially where the woodland is under management. Orchard trees, ancient hedgerows with mature oaks in addition to the small amount of parkland present in this NCA also contribute. The soils in this NCA generally have a low carbon content of between 0 and 5 per cent[9]. However the concentration of permanent pasture and ancient woodland contributes through soil carbon storage which would otherwise be released by aerobic microbial activity on exposure of the soil to air through activity such as ploughing.	Local	Carbon storage in the existing woodland plays an important part, but may be increased by the planting of additional woodland, on appropriate sites, and through appropriate management. The rapid loss of traditional orchards (now recorded at just 2 per cent cover that has been seen over the last few decades will have reduced the carbon storage capacity of this landscape. High concentrations of permanent pasture. Ancient woodland sites also result in higher levels of soil carbon storage, an increased proportion of which would be released through microbial action if the soil was disturbed and cultivated and exposed to air. Production of inorganic fertilizer is particularly energy intensive and large volumes of greenhouse gases emitted during production. Soil testing enables the calculation of optimal fertilise application rates, so reducing excess use of fertiliser, saving energy, money and benefiting water quality.	There is an opportunity to increase the carbon storage potential of the area through the planting of new woodland in appropriate locations Maintain, reinstate and create new traditional orchards, hedgerow networks and a succession of hedgerow trees, which all store carbon both through the trees and undisturbed soils beneath. Support the restoration and creation of new wetland habitats and expand winter water storage capacity where possible, as well as limiting flood risk creating areas with high carbon storage potential. Work with the farming community to ensure they have adequate access to soil analysis to enable the calculation of appropriate levels of fertilizer inputs to reduce energy wastage and benefit water quality.	**Climate regulation** **Regulating water quality** **Regulating water flow** **Biodiversity** **Sense of place / inspiration** **Sense of history**

[9] NSRI National Soils Map for England and Wales, Environment Agency (January 2009).

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Regulating water quality	Hedgerows and buffer strips across steeper slopes Fast flowing streams and rivers Extensive areas of semi-natural habitats: Woodlands Permanent grassland Hedgerows Soils High areas of rainfall	The majority of this NCA lies within Defra's 'River Teme' Priority Catchment where priorities, in addition to reducing soil erosion, are to minimise the impact on watercourses of point source pollution within farmyards; and to reduce nutrient run-off from intensive grassland and cultivated fields.[10] The ecological status of the River Teme is 'good' and of the River Rea 'poor'. The chemical status of the River Teme is 'failing to achieve good' status; the chemical status of the remainder of surface waterbodies in the NCA 'does not require assessment'. The chemical status of groundwater resources in the NCA is 'good'. Water quality in the lower reaches of the catchment is affected by diffuse pollution, mainly by nutrients and sediment. The Teme catchment provides a vital role in receiving the treated discharges from rural sewage treatment works (STW) and larger treatment centres at Tenbury Wells within the NCA, and Craven Arms, Church Stretton, Ludlow and Knighton upstream of the area. River Teme is designated as Sensitive Waters[12] (susceptible to eutrophication) under the Urban Wastewater Treatment Directive. Phosphate pollution of rivers from point Sewage Treatment Works and diffuse (farming) sources threatens eco-status.	Regional	Problems with water quality are currently thought to derive from agricultural sources contributing to approximately 60 per cent of nitrates, 25 per cent of phosphates and 70 per cent of sediments entering surface waters, among other pollutants[11] and are currently having a significant detrimental effect on water quality. Other threats to water quality include; sedimentation as a result of erosion and damage to the soils both in and outside of the area; diffuse water pollution from agriculture, particularly run-off of manure, fertiliser, poor stock management infrastructure and chemicals; soil erosion due to overgrazing and excessive stock access to watercourses resulting in severe bankside erosion, natural changes to river morphology and erosion caused by die back of invasive species such as Himalayan balsam and Japanese knotweed. Surface water run-off from roads can contain a wide range of pollutants, for example, oil, organic matter and toxic metals. A recent study "opportunity mapping" showed where woodlands could actively contribute towards the objectives of the Water Framework Directive, by improving water quality and helping to reduce flood risk in the Midlands.	Work with farmers and landowners to raise awareness, supporting and maintaining best practice in water quality management including; grazing regimes and stocking rates; applications of organic matter and fertilizer; maintenance of farm infrastructure; and cultivation and cropping activity. Work in partnership and across sectors to deliver Water Framework Directive objectives, supporting existing catchment based initiatives. Work with landowners in the River Teme Priority Catchment, to reduce point source pollution emanating from poor and failing farm infrastructure and access of livestock to watercourses. Work with water companies and private sewage treatment works to identify and replace failing infrastructure and research and implement innovative approaches to waste management, – for example creation of reed beds to filter waste. Maintain flow levels in watercourses by managing abstraction so as to avoid over abstraction. Encourage and support opportunities for woodlands to contribute to reducing soil erosion, improving water quality and reducing flood risk.Expand the network of semi-natural wetland habitats adjacent to watercourses including; flood plain grazing marsh, fen and reedbeds, creation of grassland buffer strips, restoration of hedgerows across slopes within river catchments, particularly the River Teme Priority Catchment to reduce the amount of soil entering the rivers through runoff. Support actions to reduce the impacts on water quality arising from pesticides including metaldehyde (slug pellets). Control invasive non- native species particularly along the riverbanks to reduce soil exposure and erosion of the bank. Support other measures identified in the diffuse water pollution plan. [12] Manage riverside trees to prevent collapse of pollards and coppice stools, plus replace lost riverside trees where appropriate (avoid creating heavy shade along long sections of water courses).	**Regulating water quality** **Water availability** **Biodiversity** **Regulating soil erosion** **Regulating soil quality** **Recreation**

[10] Capital Grant Scheme – Funding Priority Statement 2010/11, Catchment 28: River Teme, Natural England
[11] Herefordshire Local Development Framework, Outline water cycle study, Technical Report (URL: www.herefordshire.gov.uk/docs/wcs_redacted_text_only(1).pdf)
[12] River Teme SSSI Diffuse Water Pollution Plan, Natural England and Environment Agency (2010)

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Regulating water flow	Natural meandering river and stream channels Fast flowing rivers and streams within narrow valleys with narrow flood plains Wooded steep-sided valleys Flood plain and flood meadows High rainfall across a large catchment	This NCA falls mainly within the River Severn Catchment. The River Severn Catchment Flood Management Plan classifies this NCA as having a 'moderate' level of fluvial flood risk.[13] This is largely associated with the River Teme which has a narrow flood plain with steep sides, supporting arable and pasture. However, water levels in the Teme are highly variable. The River Teme has been modified over time. In places the physical form of the river has been altered by in-channel structures (weirs), flood banks, straightening and bank protection, such modifications tend to disengage the river from its floodplain.[14] The Teme has in recent times often bursts its banks and has seen serious floods in a number of areas, most notably Tenbury Wells and Knightwick. According to the Severn catchment flood management plan there are approximately 500 properties at risk of fluvial flooding in Tenbury Wells. There is no significant flood risk from the River Rea.[15]	Regional	This area has a big upstream catchment entering a narrow steep sided valley in an area of high rainfall. There is limited flood storage capacity within the narrow flood plain further exacerbated by modifications to the river channel, disconnecting it from the flood plain. Settlements, usually at river crossing points (natural constrictions in the channel), are at risk of flooding. Conversely in summer months, low flows are experienced, exacerbated by licensed abstractions. This can impact on the ecological quality of the river and associated habitats. A recent study "opportunity mapping" showed where woodlands could actively contribute towards the objectives of the Water Framework Directive, by improving water quality and helping to reduce flood risk in the Midlands.[16] Improvement of soil structure and management of good vegetation cover would enhance rainwater infiltration, reduce run-off rates and increase rates of groundwater recharge through permeable soils. The sensitivity of the local riverine ecology to flow variations (that is their vulnerability to abstraction impacts) in the River Rea is 'very high', and in the River Teme is 'high' within this NCA. While there is an adequate supply of surface water resources in the Teme catchment during the winter period, in the summer the River Teme often experiences low flows. There is, therefore, a need to limit the volume of water abstracted during periods of low flows. This is achieved by imposing flow restriction conditions so that abstraction must reduce or cease during low flow periods. The presence of obstacles such as weirs alters the natural flow of the water within the river catchment. The Environment Agency Severn Flood Management plan[17] policy states: "Areas of low to moderate flood risk where we are generally managing existing flood risk effectively." and we "Continue with existing or alternative actions to manage flood risk at the current level". Development and redevelopment must be managed to minimise flood risks such as restoring access for floodwater onto key strips of flood plain. This requires redevelopment to be limited to flood-compatible land-uses e.g. In the flood plain of the Teme there is potential for restoration to wet grassland.[18]	Encourage best practices in land-use and in land-management to restore more sustainable natural flood plains and to reduce run-off. Encourage and support opportunities for woodlands to contribute to reducing soil erosion, improving water quality and reducing flood risk'. Encourage the use of river valleys for flood storage[17] and develop a framework to identify projects which have benefits for biodiversity and flooding. Divert excess winter rainfall into reservoirs for summer use and combine flood risk management with improving biodiversity.[18] Implement the advice provided by flood storage area design guides that have been developed, including a model to estimate costs. Use a scheme appraisal process with a 'design decision flowchart' for identifying both impounded and non- impounded flood storage areas. These can be used to introduce biodiversity design into both new and existing flood storage areas. Work with landowners to reduce dependence on abstracted water for irrigation. Slow run-off by encouraging the planting of strategically located deciduous woodland, repairing eroded channels and tracks and cross-slope cultivation. Seek opportunities to restore, create, or increase semi-natural flood plain habitats such as flood meadows, wet woodland, reedbeds and boundary features that impair cross land flow rates. Seek opportunities to adopt innovative water management solutions in new and existing buildings and settlements, such as sustainable drainage systems (SuDS) and green roofs given scarce water resources and the challenges of climate change. Encourage the retro-fitting of SuDS where surface water flooding is already a problem.	**Regulating water flow** **Regulating water quality** **Regulating soil quality** **Regulating soil erosion** **Biodiversity** **Sense of place / inspiration**

[13] River Severn Catchment Flood Management Plan, Summary Report, Environment Agency, December 2009

[14] River Teme Restoration Plan Newsletter, Natural England, Environment Agency and Countryside Council for Wales (November 2012)

[15] Environment Agency Flood Map, 2010

[16] Midlands woodlands for water project, Phase1, Final Report, Forestry Commission (2013; URL: www.forestry.gov.uk/website/forestresearch.nsf/ByUnique/INFD-97XGXX, http://www.forestry.gov.uk/pdf/MidlandsReport.pdf/$FILE/MidlandsReport.pdf)

[17] Working with natural processes to manage flood and coastal erosion risk: A guidance document, Environment Agency (March 2010)

[18] Achieving more operational flood storage areas and biodiversity, Final Report, Environment Agency (2009; URL: http://a0768b4a8a31e106d8b0-50dc802554eb38a24458b98ff72d550b.r19.cf3.rackcdn.com/geho0610bsoa-e-e.pdf)

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Regulating soil quality	Soils Deciduous woodland cover Unimproved pastures Semi-natural habitats	This NCA has four main soilscape types: ■ Slightly acid loamy and clayey soils with impeded drainage (59 per cent). ■ Freely draining slightly acid loamy soils (22 per cent). ■ Slowly permeable seasonally wet acid loamy and clayey soils (11 per cent) ■ Freely draining floodplain soils (7 per cent). Seventeen per cent of the area is covered by woodland, 40 per cent of which is ancient and likely to result in soils with high levels of flora, fauna and organic matter and good structure. Unimproved grassland with low levels of disturbance, deep root penetration and good structure, and higher levels of soil flora and fauna. Other semi-natural habitats are also likely to support soils with good structure and higher levels of soil flora, fauna and organic matter.	Regional	The majority of this NCA lies within Defra's 'River Teme' Priority Catchment where priorities, in addition to reducing soil erosion, are to minimise the impact on watercourses of point source pollution within farmyards; and to reduce nutrient run-off from intensive grassland and cultivated fields. The slightly acid loamy and clayey soils with impeded drainage (59 per cent) may have weak topsoil structure and are easily poached by livestock and compacted by machinery when wet. Careful timing of activities is required to reduce the likelihood of soil compaction. Equally, the slowly permeable seasonally wet acid loamy and clayey soils (11 per cent) are easily damaged / compacted when wet and are at risk of diffuse pollution and flooding as a result of poor water infiltration. These soils may have limited potential for increasing organic matter levels by management interventions. The freely draining floodplain soils (7 per cent) are likely to have good flood storage potential (depending on local conditions) but may be prone to diffuse pollution (from applied manures and sediments) as a result of local flooding. Organic matter levels may be increased through management interventions. The freely draining slightly acid loamy soils (14 per cent) have potential for increased organic matter levels through management interventions. They may be valuable for groundwater recharge requiring the maintenance of good soil structure and the matching of nutrients to needs to prevent groundwater pollution. The amount of semi-natural habitat and tree cover in this NCA means that much of the soil is maintained in good condition. However, where the soil is under agricultural use, maintaining and improving the soil quality will safeguard and retain productive food provision in the long term and increase the soils resilience to climatic change and extreme weather events.	There are opportunities to ensure that soil management plans are in place to ensure good soil structure that reduces the risk of erosion and leaching of nutrients which will also result in improvements to water quality. Work with the farming community to achieve appropriate stocking regimes which avoid poaching and reduce erosion. Support measures which increase the volume of organic matter within worked soil to improve soil structure and conditions for soil fauna, increasing water infiltration. Changing management practices to reduce damage to soil quality could provide increases in food production in the long term. Increases in soil quality will reduce negative impacts from farming on the natural environment through reduction in run-off pollution; this will improve water quality and biodiversity.	**Regulating soil quality** **Regulating water quality** **Biodiversity** **Food provision** **Sense of place / inspiration**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Regulating soil erosion	Soils less susceptible to erosion Hedgerows and buffer strips across steeper slopes Woodlands and woodland copses Scrub Semi-natural and permanent grassland	The majority of this NCA lies within Defra's River Teme Priority Catchment where priorities include reducing soil erosion resulting from run-off from more intensively managed grassland (with over-wintering livestock) and cultivated fields. Soil erosion is a particular problem due to the steep sided nature of the river valley.	Regional	On steep slopes soil erosion from intensively managed grassland can result from the overwintering of livestock and associated poaching of soils, inappropriate cultivation techniques, timing and upslope cultivation. Permanent grassland, following best practice cultivation techniques, and reduced poaching, will all help to reduce soil exposure and vulnerability to run off. Increases in soil quality will reduce negative impacts from land management on the natural environment through reduction in run-off pollution; this will not only improve water quality but biodiversity.[16] Woodlands, dense hedgerows and buffer strips across slopes and alongside watercourses reduce the velocity of water as it flows across farmland, reducing soil erosion and safeguarding soil quality.	Work with landowners to produce sustainable systems of arable cultivation and well managed livestock to reduce poaching and soil exposure, particularly on the steeper slopes, using measures such as expanding areas of permanent grassland, woodland, dense hedgerows and buffer strips across steeper slopes. Support opportunities to strengthen the hedgerow network and increase the population of hedgerow trees across the flood plain of the River Teme helping to filter out soils in time of flood. Support measures which increase the volume of organic matter within the soil to improve soil structure and conditions for soil fauna, increasing water infiltration.	**Regulating soil erosion** **Water availability** **Biodiversity** **Food provision** **Regulating water quality** **Regulating water flow**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Pollination	Lowland meadows Flower-rich hedgerows Traditional orchards Wood pasture and parkland Flower rich roadside verges Hops	Pollination of crops in this NCA is required for orchard fruit and some arable crops which require insect pollination. Semi-natural habitats such as lowland meadows and flower rich hedgerows and uncut roadside verges are scattered throughout the NCA providing a range of nectar sources for pollinating insects. This is further enhanced by a significant number (460 ha) of traditional orchards to the west of the NCA - a strong hold for cherries. [19, 20] The blossom and the underlying flora in the grassland act as an important nectar source for pollinating insects throughout the NCA. Hops, although un-pollinated and male flowers are preferred for brewing purposes, still attract a larger number of pollinating invertebrates.	Local	Although there is a fair proportion of lowland meadows, wood pasture and parkland, flower-rich hedgerows and flower-rich road-side verges, there is still scope to improve the condition of these habitats and to expand areas where appropriate to do so. Incorporation of flower rich headlands, hedgerows and buffer strips into agricultural systems maintains a network of nectar sources throughout the farmed landscape, sympathetic management of road verges can be a beneficial addition to this network and also are aesthetically pleasing instilling a sense of place in people. Traditional orchards, while benefitting from pollinators themselves, also provide nectar rich blossom which helps to maintain pollinator densities in areas where commercial orchards also benefit.	Increase the area of semi-natural habitats with particular emphasis on traditional orchards, calcareous and unimproved grassland, wood pasture and parkland and species rich hedgerows. Mechanisms to achieve this may be through agri-environmental grants. Work with the local authorities and parishes to create multi-functional green spaces incorporating sympathetic management for pollination including appropriate management of road verges, adding to the network of nectar sources close to pollinated food crops. Secure the economic viability of traditional orchards by promoting local varieties, and raising awareness of the cultural value of orchards and the important role they play in providing a bank of pollinating insects to support mainstream commercial food production. In addition, through mechanisms such as agri-environment schemes, encourage the use of field margins, beetle banks and headlands in arable land, to encourage pest regulating species in close proximity to food crops requiring pollination.	**Pollination** **Food provision** **Biodiversity** **A sense of place / inspiration** **Sense of history**

[19] Orchards in Worcestershire, Fact sheet No. 1, Worcestershire Country Council (URL: www.worcestershire.gov.uk/cms/pdf/Orchards.pdf)

[20] A history of cherry growing in Worcestershire, Brian M Stephens (June 2012; URL: www.worcestershireorchards.co.uk/10.html)

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Pest regulation	Existing semi-natural habitat Agricultural field margins Species-rich hedgerows Woodland	As described under pollination, there is a good range and spread of semi -natural habitats throughout the NCA which will support species that will aid pest regulation. There is known to be a good bat population in the area contributing to the regulation of airborne insect pests.	Local	Although there is a reasonable spread of rich semi-natural habitats across the NCA there is scope to improve the condition and connectivity of these habitats through appropriate management and to extend their range where possible.	Maintain and expand the area of semi-natural habitats, throughout the NCA to provide a range of niches to support pest regulating species including invertebrates, birds and mammals.	**Pest regulation** **Pollination** **Biodiversity** **Food provision**
Sense of place/ inspiration	Steep sided valleys of the River Teme and its tributaries Deeply tranquil rural undulating landscape Woodland cloaking steep slopes Dominant north south limestone ridge Hop growing tradition Traditional orchards on valley sides Dispersed settlement of small villages and hamlets	Strong isolated secluded character. Sense of place is provided by the intricate rural landscapes packed into the often steep-sided confines of the Teme Valley and its tributaries. Ancient woodlands offer high levels of tranquillity and contrast with the orchards on lower slopes and mixed farming found along the valley floor. The longstanding cultivation of fruit and hops provides the area with a strong identity. Numerous oast houses (many now converted) providing a visual reminder of the cultural link to the hop growing tradition. Quiet valley-side hamlets and farmsteads are typically linked by narrow, deeply sunken lanes. A sense of inspiration and escapism is likely to be associated with much of the intimate valley landscape, with distinctive views of traditional buildings, traditional orchards and woodland and the presence of running water.	Regional	The landscape of the Teme Valley continues to provide inspiration for many people particularly as a place steeped in history with a wealth of wildlife and peaceful tranquil places. Development and change has been relatively low in the Teme Valley. However the landscape can be affected by small cumulative changes, for example modern development pressures, increased transport on the few main roads that cross the area and the move away from fruit and hop growing and dairy farming have all had an effect on the dynamics of this distinctive rural landscape.	Maintain and restore the characteristic ancient woodland along the steep valley sides. Work with land managers to find opportunities to maintain and restore distinctive traditional orchards and hops where practical and work to find markets for produce to ensure their future viability and sustainability. Maintain and restore wood pasture and parkland and hedgerow trees that provide a wooded feel, and unimproved grasslands along river valleys. Explore opportunities for sustainable tourism initiatives that will increase visitors' environmental awareness and improve profitability of local businesses, while protecting the special qualities of the area. Encourage appropriate local development that is accessible to local people. Promote and encourage the use of local materials and traditional techniques where possible.	**Sense of place / inspiration** **Sense of history** **Geodiversity** **Recreation** **Biodiversity**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Sense of history	Mesolithic, Neolithic and bronze-age and archaeological features throughout the landscape Scheduled Ancient Monuments Registered Parks and Gardens Remnants of traditional fruit growing areas –orchards and oast Houses Medieval settlement patterns Traditional buildings and structures, particularly bridges across the River Teme	The history of this landscape is evident in Mesolithic, Neolithic and bronze-age archaeology on the higher ground alongside the River Teme, as well as in the dispersed medieval settlement pattern and the generally irregular or sub-rectangular field patterns. There are a range of designated historic assets including 15 Scheduled Ancient Monuments, 2 registered parks and gardens – part of Witley Court (an example of Victorian influences on the landscape) and Abberley Hall. Aspects of history that are likely to be particularly evident to the general public are those features that relate to the tradition of fruit and hop growing, namely the distinctive old orchards along the valley floor and the local types of oast house, as well as other traditional buildings of red, pink and grey sandstone and the use of timber framing in the oldest buildings.	Regional	Maintaining, conserving and enhancing the sense of history, through promoting the links between geological sites, archaeological evidence of human activity and the biological interest of these areas would achieve a wider understanding of the importance of the NCA. The loss of orchards and hop yards is having a negative impact on the sense of history in the NCA. There is some erosion of settlement pattern and infilling within villages that may also be having a negative impact on sense of history. However the maintenance of woodland cover and some key heritage assets such as the Abberley Hall, churches along the valley, notable buildings in Tenbury and elsewhere are all having a positive effect on sense of history.	Provide interpretation of heritage assets and the development of the landscape to purvey the importance of historical land use in shaping the current landscape. Provide high-quality recreational and tourism opportunities such as circular trails and themed local and community events linked to the sensitive management and conservation of historical and cultural features to aid understanding, enjoyment and sense of well-being. Restore and replant traditional orchards and hop fields. Promote the use of traditional building materials and architecture in new developments to maintain the distinctive historical style of the area. Protect and restore traditional/historic buildings using sympathetic restoration techniques and materials.	**Sense of history** **Sense of place / inspiration** **Geodiversity** **Biodiversity** **Recreation**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Tranquillity	Riverside walks Ancient woodland Topography Traditional orchards and hops	Tranquillity is a significant feature of the NCA, with 92 per cent of the area classified as 'undisturbed' according to the CPRE Intrusion Map 2007. Having shown no change since the 1960s – potentially the only NCA in England where this can claim to be the case. Tranquillity is particularly associated with the valley away from the main roads and the ancient woodland that cloaks the valley sides.	Regional	The topography and the influence of the River Teme in the area are important contributors to the high levels of tranquillity in that they limit the opportunities for development and any major transport routes. Changes in agricultural practices also have little impact on the landscape and levels of tranquillity, again the scale of farm businesses often limited by the confines of the valleys. The loss of orchards and hop yards is having a negative impact on the sense of tranquillity, removing one of the most distinctive elements of landscape and the 'filtering' effect on views and noise and light pollution they can have. The deep, steep-sided valley also limits significantly levels of light pollution originating from larger settlements outside of the area; Bewdley, Stourport-on-Severn, Worcester, Bromyard and Leominster.	Protect the area from inappropriate development and infrastructure that would detract from the sense of remoteness and tranquillity of the area. Promote the use of measures that reduce noise and light pollution and visual intrusion in new and existing developments.	**Tranquillity** **Sense of place / inspiration** **Biodiversity**
Recreation	Ancient woodland Rivers and other waterways Historical and geological features Tranquil landscape	Recreation is supported by over 600 km of rights of way, representing a density of over 3 km per km^2, potentially one of the highest densities in England. In addition to a range of other opportunities such as woods for people, common land, access land, Forestry Commission walker welcome grants. The waterways offer a range of recreational opportunities from fishing, river walks to more sedate pastimes such as painting, drawing and photography. The vast amount of woodlands in the NCA offers other opportunities for recreation.	Regional	Despite the vast amount of rights of way they are little used. Many are difficult to access and the topography is not always conducive to a wide range of users. The river and road network also have a limiting effect on the opportunities to access rights of way network. There is very little open access land; just 20 ha of common land and 19 ha of CROW access land. 'Recreational' opportunities do also exist in the local towns and villages and are quite a draw to the area Recreation reconnects or maintains people connection with the landscape and ecosystems that support them and encourages a valuing of their surroundings.	Ensure that access balances recreational enjoyment with the protection of biodiversity, geodiversity and historic features. Increase understanding and enjoyment through education and interpretation materials. Continue to implement the findings of the Rights of Way Improvement Plans for Worcestershire, Shropshire and develop the draft for Herefordshire.	**Recreation** **Sense of place / inspiration** **Sense of history** **Biodiversity**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Biodiversity	The River Teme and tributaries Traditional orchards Deciduous woodland and wet woodland, particularly ancient woodland Lowland grassland Wood pasture and parkland	Nine per cent of the NCA area is identified as 'priority habitat', including wet and lowland mixed deciduous woodlands, lowland meadows and traditional orchards. There are no internationally designated sites within the NCA but there are 10 SSSI totalling 2 per cent of the NCA area, including the River Teme and the Wyre Forest SSSI and NNR. The River Teme is the second largest tributary of the River Severn. It is considered to be a nationally outstanding example of a large river with rich and varied plant, invertebrate, Atlantic salmon, and eel as well as resident game fish such as brown trout and grayling. Ancient woodland forms 40 per cent of the woodland resource. In addition to traditional orchards that form part of the larger fruit growing area in Worcestershire, Herefordshire and Gloucestershire, supporting England's main population and concentration of noble chafer beetle currently classified as vulnerable in the UK. Traditional orchards with old trees are particularly numerous in the west of the NCA.	Regional	River Teme is one of the best sandstone and mudstone rivers in Britain, supporting a diverse range of plants, fish, insects and mammals. It is designated a SSSI. Species of interest include salmon, twaite shad, otter, lampreys, bullhead important invertebrates such as native crayfish, and fresh water pearl mussels. The presence of obstacles, such as weirs, limits the distribution of salmon and other fish within the catchment. Grayling can be particularly vulnerable to low flows but have recently staged an excellent recovery within the Teme catchment. Traditional orchards are characteristic of the sloping valleys and lower hillsides in the north and west of the Teme Valley NCA (460ha). The condition of traditional orchards is varied and many are in danger of being lost. Threats to old orchards include neglect, intensification of agriculture and pressure from land development. There is a need for these traditional orchards to be restored back into good condition. Ancient woodland is one of the many important habitats distributed throughout this NCA. There a number of threats to woodland, disease climate change lack of management and could have a significant impact. Ash dieback could potentially have a significant impact as ash is a common and characteristic tree species of the NCA. Although there is a good proportion of lowland meadows, some have been lost and are under threat from agricultural improvement and ploughing.	Support the Teme Catchment Partnership as the mechanism to begin implementing the River Teme SSSI Restoration Plan, delivering positive restoration measures, helping to improve the condition of the SSSI. There is a need to restore and improve management on existing orchards and where possible create new traditional orchards. Improve connectivity of traditional orchards and ancient woodland using associated woody habitats such as hedgerows and wood pasture and parkland. Maintain the current extent of semi-natural and ancient woodlands and introduce active management where appropriate, to enhance landscape character, recreation opportunities and biodiversity and the benefits it can bring to soil quality and long term carbon storage. Consider opportunities for expansion and linking of woodland where appropriate.[21] Manage and enhance the woodlands in the valley floor and where possible explore opportunities create wet woodlands. Manage calcareous and unimproved grassland to ensure it retains its biodiversity value and seek opportunities to restore and create new habitat that reduce fragmentation, increase buffer zones and increase connectivity. Improve connectivity of traditional orchards and ancient woodland using associated woody habitats such as hedgerows and woodpasture and parkland. Manage and restore and where possible create new areas of wood pasture and parkland, and lowland meadows. Manage and restore where possible flower-rich hedgerows and flower-rich road-side verges, and expand and create habitats where appropriate. Create and where possible Incorporate flower-rich headlands, hedgerows and buffer strips into arable systems maintains a network of nectar sources throughout the farmed landscape, sympathetic management of road verges can be a beneficial addition to this network and also are aesthetically pleasing instilling a sense of place in people. Use local work on opportunity mapping and priority areas available for Herefordshire, Gloucestershire, and Warwickshire, to inform landscape scale projects and local development plans/decisions.	**Biodiversity** **Climate regulation** **Pollination** **Recreation** **Sense of place / inspiration** **Tranquillity**

[21] Woodland opportunities – Ancient Woodland Landscape Map, Forestry Commission

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Geodiversity	Geology Tufa deposition Limestone rocks Quarries Local stone used in historical and vernacular buildings	Woodbury Quarry SSSI is the only geological SSSI in the NCA, a highly fossiliferous locality with Silurian Ludlow Siltstones and Aymestry Limestone (both formed in a marine environment).The rock which was laid down in horizontal layers has been folded so severely that it is now vertical. There are 37 Local Geological Sites. Southstone Rock is one fine example of post-glacial, active tufa deposition found in the area, formed by the precipitation of spring water containing large amounts of dissolved calcium, and it is considered to be one of the largest deposits in England. Shaver's End Quarry (marine Silurian Ludlow Siltstones and Aymestry Limestone) is also a good fossiliferous locality. Rare fossil fish of the Old Red Sandstone (Silurian period- Pridoli Formation and Devonian Period – Dittonian Formation) are occasionally found. North–south Silurian limestone ridge of the Abberley Hills. Rolling undulating countryside cut by incised river valleys of the Teme and tributaries. The sandstones of the Old Red Sandstone which vary in colour from red to grey have been used for dwellings and churches locally. Quarries are prominent around the Abberley Hills, especially Shavers End quarry. The underlying rocks also give rise to the distinctive colour of soils and their fertility and versatility.	Regional	Many of the geological sites provide access to geodiversity, enabling the interpretation, understanding and continued research into the geological processes associated with the NCA. Exposure of these features, particularly Southstone Rock, makes a positive contribution toward geo-tourism, a sense of place and a sense of history. Geomorphological processes of the rivers are impaired in places by the flood defences.	Some of the measures identified below will assist in helping to meet the Geodiversity Action Plan targets for the UK and the counties within this NCA. Improving the knowledge base by collecting data on geological sites. Utilising interested experienced volunteer to carry out geoconservation work to restore rock faces and habitats. Designate additional local geological sites where appropriate. Conserving, enhancing and making accessible the network of geological sites where appropriate to help improve the understanding of the role geodiversity plays in particular its connection with biodiversity, landscape character, industrial and cultural heritage. Enable opportunities for natural geomorphological processes, particularly along rivers that contribute to the regulation of flooding. Working collaboratively with the Teme catchment partnership, landowners, angling clubs and other key stakeholders to assist in delivering the actions of River Teme SSSI restoration plan. Encourage the use of distinctive local building stone in the repair and restoration of buildings and in new developments in sensitive locations.	**Geodiversity** **Biodiversity** **Sense of place / inspiration** **Sense of history** **Regulating water flow**

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