FOREST OF DEAN BIOSPHERE

Forest of Dean
DISTRICT COUNCIL

Draft Application form

Man & Biosphere Committee Review

30th April 2026

Part 1

Sections 1 - 12

This document is a draft and has not been subject to proof reading or edits. This nomination form will be subject to further changes and updates as a result of ongoing engagement and feedback prior to formal submission in September 2026.

BIOSPHERE RESERVE NOMINATION FORM

[January 2013]

INTRODUCTION

Biosphere reserves are areas of terrestrial and coastal/marine ecosystems, or a combination thereof, which are internationally recognized within the framework of UNESCO's Programme on Man and the Biosphere (MAB) They are established to promote and demonstrate a balanced relationship between humans and the biosphere. Biosphere reserves are designated by the International Coordinating Council of the MAB Programme at the request of the State concerned. Individual biosphere reserves remain under the sovereign jurisdiction of the State where they are situated. Collectively, all biosphere reserves form a World Network in which participation by States is voluntary.

The World Network is governed by the Statutory Framework adopted by the UNESCO General Conference in 1995 which presents the definition, objectives, criteria and the designation procedure for biosphere reserves. The actions recommended for the implementation of biosphere reserves are set out in the "Seville Strategy" and were further developed in the Madrid Action Plan (2008-2013). These documents should be used as basic references for the completion of this nomination form.

The information presented on this nomination form will be used in a number of ways by UNESCO:

(a) for examination of the site by the International Advisory Committee for Biosphere Reserves and by the Bureau of the MAB International Coordinating Council;
(b) for use in a world-wide accessible information system, notably the UNESCO-MABnet and publications, facilitating communications and interaction amongst persons interested in biosphere reserves throughout the world.

The nomination form consists of three parts:
Part one is a summary indicating how the nominated area responds to the functions and criteria for biosphere reserves set out in the Statutory Framework, and presents the signatures of endorsements for the nomination from the authorities concerned. Part two is more descriptive and detailed, referring to the human, physical and biological characteristics as well as to the institutional aspects. Part three consists of two annexes: the first annex will be used to update the Directory of Biosphere Reserves on the MABnet, once the site has been approved as a biosphere reserve. The second annex will be used to provide promotional and communication materials of the biosphere reserve. Tables, illustrations and maps as appropriate throughout the nomination form are welcomed.

The form should be completed in English, French or Spanish. Two copies should be sent to the Secretariat, as follows:

1. The original hard copy, with the original signatures, letters of endorsement, zonation map and supporting documents. This should be sent to the Secretariat through the Official UNESCO channels, i.e. via the National Commission for UNESCO and/or the Permanent Delegation to UNESCO;
2. An electronic version (on diskette, CD, etc.) of the nomination forms and of maps (especially the zonation map). This can be sent directly to the MAB Secretariat:

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PART I: SUMMARY

Introductory Note

Where the key requirement of a UNESCO Biosphere designation is evidence of a place where people and their landscape live and work together, underlined by long histories of deep knowledge and expertise specific to the heritage and culture of that place, the aim of this application is to illustrate the Forest of Dean District's people's exceptional care for, knowledge of and protection of the diverse and vital environment that is both their home and the source of their economy. Though the Forest of Dean's ecology, history, culture and ongoing community-focused practices, the application outlines the importance of international recognition – and by extension, protection – of the Forest of Dean's unique and vital culture.

Location

The Forest of Dean is a district situated in the western part of Gloucestershire, England, between the River Wye to the west and northwest, Herefordshire to the north, the River Severn to the south, and the city of Gloucester to the east. Within the district lies the statutory Forest of Dean, the core wooded landscape that became a National Forest Park administered by the Forestry Commission in 1938. Together, the district and the statutory Forest form a unique and ecologically rich territory that blends ancient woodlands, river valleys, rural communities, and a deep cultural heritage. This region, shaped by centuries of human interaction with nature, embodies the core principles of a UNESCO biosphere: harmonising conservation, sustainable development, and community engagement.

As one of the oldest surviving forests in England, the statutory Forest supports a remarkable diversity of flora and fauna, including rare and protected species such as horseshoe bats, dormice, eels, Bewick's swans and true service trees. Its varied ecosystems, from dense woodland and limestone gorges to the River Wye and Severn Estuary, create a vibrant natural laboratory for ecological research, education, and innovation. Alongside these environmental assets, the wider district's strong sense of local identity, historic industries, and evolving green economy make it a model region for demonstrating how humans and nature can thrive together.

Protected Landscapes

The Wye Valley is designated as a Category V Protected Landscape under the International Union for Conservation of Nature (IUCN) global protected area framework. The Wye Valley National Landscape Area formerly known as an Area of Outstanding Natural Beauty (AONB) extends into the western edge of the Forest of Dean district and is recognised for its dramatic limestone gorge scenery, ancient woodlands, and rich biodiversity. It follows the path of the River Wye as it winds its way through steep wooded slopes and tranquil valleys.

Key features include:

- Symonds Yat Rock: A striking viewpoint and popular tourist spot overlooking a scenic river bend.
- Lower Wye Gorge woodlands: Largely ancient semi-natural woodlands with a range of nationally and internationally important features, including exceedingly rare varieties of whitebeam.

- Lancaut: An isolated peninsula enclosed by a loop of the Wye, where the ruins of the medieval Church of St James sit within ancient woodland, limestone cliff habitats and species rich grassland. The site is one of the most ecologically and historically significant in the lower gorge.

The area supports rare wildlife like peregrine falcons, lesser horseshoe bats, and dormice. The Wye Valley AONB is noted for its combination of natural beauty, cultural heritage, and recreational opportunities such as walking, canoeing, and birdwatching.
The Forest of Dean district includes the designated AONBs of the Wye Valley and the Malvern Hills. While the district is not entirely designated as a national landscape, the statutory Forest of Dean itself is of outstanding natural value and has a unique character:

- A rich and diverse tapestry of ancient semi natural woodlands, inclosures of historic plantations of oak and beech, and conifer stands, set amongst the lawns and wastes of the Forest. Forest waste — the unfenced and unplanted areas available for common grazing — is a distinctive feature; there is no registered common land within the statutory Forest.
- Rich in industrial heritage, with remnants of mining and ironworks embedded in the landscape.
- Ecologically diverse and a stronghold for nature, home to wild boar, deer, and many rare plant species.
- One of England's largest publicly owned open greenspaces, available for people to explore on foot, by bike and on horseback.
- Popular sites like Puzzlewood, Cannop Ponds, and Speech House reflect the area's diverse landscapes.

The Forest of Dean district is home to forty eight Sites of Special Scientific Interest (SSSIs) and three Special Areas of Conservation (SACs) that reflect its rich biodiversity and geological significance. These protected areas include ancient woodlands, limestone grasslands, and unique cave systems that provide critical habitats for a wide range of species. The Wye Valley and Forest of Dean Bat Sites SAC, for instance, is internationally important for sustaining populations of lesser and greater horseshoe bats, which rely on the area's disused mines, caves, and woodland for roosting and foraging. Sites like The Hudnalls SSSI and Devil's Chapel Scowles are protected for their ecological and geological value, highlighting rare limestone features and ancient woodland ecosystems. As well as these specially protected areas there are also over 335 local wildlife sites within the district.

Conservation efforts in the Forest of Dean aim to preserve these habitats while promoting sustainable public access and education. The designation of SACs under the EU Habitats Directive ensures strict protection of species and habitats of European importance, such as the semi natural beech woodlands and rare mosses and ferns found in the region. SSSIs are designated by Natural England, which acts as the regulator overseeing and monitoring their condition; however, the

management of individual SSSIs is the responsibility of their respective landowners, unless a specific Natural England management agreement is in place. These designations not only protect local wildlife but also contribute to broader ecological networks, helping combat biodiversity loss and climate change.

Within the Forest of Dean district lies part of the Severn Estuary Ramsar site, an internationally important wetland recognised under the Ramsar Convention for its exceptional ecological value. This area is vital for supporting large populations of overwintering and migratory birds, including species such as dunlin, redshank, and shelduck. The estuary's unique combination of tidal mudflats, sandbanks, saltmarshes, and floodplain grazing marshes provides rich feeding and roosting grounds. Walmore Common, a nationally important floodplain grazing marsh within the district, forms part of this wetland complex and is significant for its wintering wildfowl, particularly Bewick's swans. In addition to its birdlife, the site also supports rare and endangered invertebrates and plant species and features one of the largest tidal ranges in the world, which significantly shapes its dynamic habitats. Protection of the Severn Estuary as a Ramsar site reinforces the importance of conserving wetland ecosystems within the Forest of Dean district and beyond.

Rivers

The Forest of Dean is the land between two rivers, the River Wye and River Severn. The stream and river catchments in the Forest are remarkable, varied and diverse. The River Leadon drains the eastern parts of the district, while the River Lyd rises in the heart of the statutory Forest and flows south to Lydney Harbour on the Severn Estuary. Some catchments cross through rich farmland and have been used for both irrigation and drainage, yet still have value for ecology and people. Some arise in the statutory Forest, much more wild but also long changed by man, draining areas for tree planting, channelled and impounded for industry, and lined with stone or concrete to protect mine workings from inundation. Restoring natural water flows across the landscape has been gaining momentum over the last decade.

The River Wye forms part of the district's western boundary and is one of the UK's major rivers. The Wye is renowned for its scenic beauty, flowing through steep wooded valleys and supporting diverse wildlife, including salmon, otters and kingfishers. It also serves as an important corridor for fish migration and is popular for recreational activities like canoeing and fishing.

The River Severn, the longest river in the United Kingdom, runs along the southern edge of the Forest of Dean district, playing a significant role in the area's geography and ecology. As it flows through this region, the Severn creates a dynamic estuarine environment where freshwater mixes with tidal influences from the Bristol Channel. This combination supports a rich mosaic of habitats, including mudflats, saltmarshes and reed beds, which are essential for numerous bird species, fish and other wildlife. The tidal nature of the Severn also shapes the surrounding landscape, influencing floodplain dynamics and nutrient cycling.

Within the Forest of Dean district, the River Severn is vital not only ecologically but also economically and culturally. It has historically served as a key route for trade and transport and continues to support local communities through recreation, fishing and tourism. The river's presence enhances the district's natural

diversity and connects it to wider environmental networks, including the internationally important Severn Estuary Ramsar site, which protects critical wetland habitats along its course.

The Severn Bore is a rare and dramatic natural event that occurs on the River Severn. It happens when the incoming tide from the Bristol Channel surges upstream against the river's current, forming a visible wave that can travel for miles inland. The shape of the river's funnel like estuary amplifies the tidal force, creating waves that can reach several feet in height under the right conditions. The bore attracts surfers and spectators alike, especially near hotspots like Newnham on Severn, where crowds gather to watch or ride the wave. Occurring only on certain high tides, particularly around the spring and autumn equinoxes, the Severn Bore is both a scientific curiosity and a unique spectacle of nature.

The River Leadon meanders through the eastern parts of the district. These rivers and their tributaries sustain a variety of habitats, from wetlands to riparian woodlands, providing essential resources for plants, birds and aquatic species.

The River Lyd rises in the heart of the statutory Forest, draining from the coal measure clays within the dense, historic woodland. The stream builds quickly gathering surface water, as well as outflows from former mine discharge points. Guided and controlled in centuries past to reduce the amount of water lost into the mine workings (all coal here), the water drops through Cannop Bridge Marsh county wildlife site, and into Cannop Ponds. Cannop Ponds are two reservoirs in the Forest, originally built in the 1820s to supply a new waterwheel installed at the Parkend Ironworks. Below Cannop Ponds the brook runs fast through the Nagshead Reserve to the village of Parkend, where the stream disappears into culverts under the village – emerging again at the Giraffe House, to flow on through Parkhill Inclosure before emerging from the statutory Forest. The small river now passes numerous old mills before entering the town of Lydney, where again it passes largely unnoticed (except in times of flood) towards Lydney Harbour on the Severn Estuary. Like so many of our rivers, the Lyd is not in a good ecological condition – historic pollution, industry and canalisation means it is underperforming, but we do intend changing that.

The clean, fast flowing waters of these rivers and their tributaries contribute to the overall health of the local environment and are vital for maintaining the district's rich biodiversity.

Settlements

Human settlement in the Forest of Dean district stretches back millennia. As the glaciers of the last Ice Age retreated, hunter-gatherers followed, leaving traces of their lives in the caves of the Wye Valley alongside the bones of mammoth and other animals they hunted. From those earliest inhabitants, a pattern of settlement grew outward from the Roman city of Gloucester, spreading along the Severn Vale and round the back towards Ross-on-Wye, where a Roman town took root.

Today the district is dotted with a mix of towns, historic villages and smaller settlements whose character reflects that long and layered past.

Cinderford is the largest and newest of the towns, though Lydney may now be edging ahead in population size; Cinderford's actual weight is augmented by very close satellite settlements such as Ruspidge, Drybrook and Christchurch, which add to its clout as a centre. Cinderford is developing rapidly in the nineteenth century on the back of ironworks and coal mining. Its history of water supply is a fascinating story in its own right, and one with modern relevance. Coleford, by contrast, is an established market town and the home of

the district's Council Offices. Newent likely originated as a Roman villa complex that grew into an important Saxon manor. Its significance increased after the Norman Conquest with the founding of a new priory, and it was granted rights for a weekly market in the thirteenth century. Long a local trading centre benefiting from good road connections to Gloucester and, for a time, the canal, Newent has remained of modest size and retained a rural outlook as a traditional market town in an otherwise agricultural part of the district.

Lydney is the largest of the settlements in the Severn Vale, sitting set back from the Estuary. The town has clear Roman origins, lying on the road from Gloucester to Chepstow. A villa, a likely temple and fortlet, and copious evidence of Roman iron smelting have all been unearthed by archaeologists. The importance of the Severn for transport is evidenced by the scale and robustness of the harbour, through which millions of tonnes of coal, stone and timber were shipped in the nineteenth century, served by the Severn and Wye Railway that brought materials down from the Statutory Forest. There is some evidence of Roman wharfs and medieval jetties along this shoreline as well.

Almost ringing the Statutory Forest is a distinctive pattern of nineteenth century squatter settlements — Whitecroft, Pillowell, Ruspidge, Christchurch, to name just a few — each a product of Forest people asserting their right to a home on the margins of the Crown woodland. Parkend, nestled in the heart of the Forest with its own rich industrial story (well told in Ralph Anstis's study of the village), deserves mention in its own right.

These settlements, from ancient market towns to squatter communities barely two centuries old, serve as gateways to the surrounding forest and countryside. The close knit communities and historic depth of these places contribute to the Forest of Dean's unique character and appeal as both a place to live and visit. Together these settlements form a distinctive 'forest ring' that encircles the statutory forest and drives the overall character of much of the district.

Recreational Activities

The Forest of Dean district offers a wide range of recreational activities that take full advantage of its stunning natural landscape and rich heritage. Outdoor enthusiasts can explore miles of walking and cycling trails winding through ancient woodlands, rolling hills and scenic river valleys. The Offa's Dyke Path, the only National Trail to pass through the Forest of Dean, attracts hikers of all levels, while the Peregrine Path, part of the SUSTRANS National Cycling Trail network, offers a celebrated route through the Wye Valley. Downhill mountain biking is well catered for with dedicated trails at the Forest of Dean Cycle Centre. The district is also a hotspot for wildlife watching, with opportunities to see deer, birds and rare bats in their natural habitats.

Water based activities are a draw along the River Wye, where canoeing, kayaking and fishing are popular pastimes on calmer stretches. The Severn Estuary's high tidal range and strong currents make it largely unsuitable for water based recreation, though some boat activity takes place further upstream towards Gloucester where the river is more navigable. For families and visitors looking for more structured fun, the Forest of Dean boasts adventure parks, sculpture trails and heritage attractions like the Dean Heritage Centre and Puzzlewood, an ancient woodland famous for its mystical atmosphere and appearances in films such as Star Wars, Harry Potter and Doctor Who. The WyeDean Tourism Association plays a coordinating role in bringing the district's recreational and tourism offer together. Seasonal events, guided nature walks and local

festivals further enrich the options, making the Forest of Dean a vibrant destination for both relaxation and adventure.

Agriculture

Agriculture in the Forest of Dean district is shaped by its varied landscape and geology, creating a distinct spatial pattern of farming practices that support the local economy and environment. The Forest of Dean is a very rural area, with large tracts of open farmland marked by scattered farmsteads, some of great age. The richest arable farmland is found on the fertile alluvial soils of the Severn Vale, where largely level, large open fields predominate. The base rich soils of the limestone plateau to the west of the district also support arable farming with large open fields. By contrast, the central core of the district, underlain by coal measure clays and dominated by the statutory forest, offers relatively poor agricultural soils. Pockets of very good agricultural land can be found around Newent and Lydney, albeit some has been lost through development over recent decades. On the higher and less fertile ground, often underlain by sandstones and clays, arable gives way to a predominance of livestock farming. Cattle and sheep can be found grazing meadows throughout the district, with sheep more numerous on the rougher and more steeply sloping hillsides. This traditional grazing helps maintain the open landscapes and biodiversity by preventing woodland overgrowth and supporting a range of grassland species. The Forest of Dean Meadows Group brings together owners of traditional meadows with the aim of cooperatively supporting their management for wildlife and sustainable livestock farming.

Small scale, diversified farming is also common, including fruit and vegetable growing, reflecting a growing interest in local, sustainable food production. The close relationship between agriculture and forestry in the district encourages mixed land use, which benefits wildlife habitats and helps preserve the Forest of Dean's distinctive rural character. The Forest of Dean Landscape Character Assessment provides further detail on this spatial distribution of agriculture across the district.

Remnants of traditional orchards can be found throughout the district, though their extent has declined significantly. Apple and pear production, alongside market gardening (notably around Scarr), was once a valued part of the farming economy. These orchards typically consist of widely spaced, mature fruit trees grown on old, well established rootstocks. Unlike modern intensive orchards, traditional ones are managed in a way that promotes biodiversity, with grass or wildflower rich meadows beneath the trees providing habitat for insects, birds and small mammals. Today the orchards are valued for the ecology arising from their meadow and deadwood habitats, as well as a source of traditional varieties of apple and pear cherished by the area's cider makers.

These orchards support the Forest of Dean's cultural identity, with some varieties being unique to the region. They play an important role in conservation efforts by preserving heritage fruit species and offering a refuge for pollinators and other wildlife. Community groups and local farmers sometimes work together to restore and maintain these orchards, recognising their value both ecologically and socially as spaces for education, traditional cider production and seasonal gatherings.

Ecosystem Services

Ecosystem services are the direct and indirect benefits, goods and processes provided by nature that sustain human life and wellbeing. The link between ecosystem services and sustainable development is strong: sustainable development is underpinned by nurturing and safeguarding the area's ecosystem services.

In the Forest of Dean, the ecosystem services that underpin sustainable development include: provision of clean water for drinking to sustain life, notably from the limestone aquifer; provision of timber for construction, furniture and fuel; and provision of food including vegetables, fruit and meat. The district's woodlands, rivers and wetlands regulate and mitigate climate extremes including extreme heat, drought and rainfall, and regulate surface water flows to reduce downstream flood risk. Healthy soils and peatlands support soil formation, peat formation, carbon sequestration and nutrient cycling.

Beyond these provisioning and regulating services, the Forest of Dean's ecosystems support access to nature for exercise and wellbeing, and underpin recreation, tourism and cultural identity. Outdoor activities like hiking, fishing and wildlife watching depend on well preserved natural habitats. The dual role of these ecosystems, both supporting recreation and requiring protection from overuse, underlines the need for careful management. The area's biodiversity contributes to pollination of crops and natural pest control, underpinning agricultural productivity. Sustainable development in the Forest of Dean depends on recognising these ecosystem services and managing them as the foundation on which economic activity, community health and quality of life all rest.

Cultural Heritage

The Forest of Dean is a landscape and a community bound by the sense of Forest, the legacy of a Forest declared after the Norman Conquest of 1066. A land that has been hunted, fished, farmed and exploited for its mineral and timber wealth since long before the Romans through to the present day. This is no wilderness, but it certainly can be wild.

That sense of Forest is ingrained enough that the local people call themselves foresters (or varresters in the local dialect) and debate continues over what it means to be a forester, for example whether one can become a forester, or must be born as such.

As the famous playwright Dennis Potter observed in 1962, "I know of few more fascinating areas, and, entering the Forest of Dean by whichever route you choose, you can sense that you are in a self absorbed community where the inter relation of landscape, work and different generations demands more than the usual flickering attention."

That sense of Forest owes its existence to the Norman Conquest and the application of Forest Law to large parts of England, the wilder, less populated areas. Forest Law was a declaration of conquest: this land now belongs to the new king, William the Conqueror. The vert and the venison (the greenery and animals of the hunt) were protected by Forest Law, and could only be exploited through payments made to the crown. Locally the Warden of the Forest was the king's representative, and through much of history the warden was also Constable of St Briavels Castle. The warden collected the fees owed to the crown and had oversight of the management of the Forest and its resources: fees for collecting firewood and harvesting timber, fees for extracting iron ore from under the ground, and fees for running livestock on the common grazing areas in the Forest. Forest Law was prosecuted through its own judicial system. Each forest had its own local justices, known as verderers, who presided over the Court of Attachment. As the name suggests, the verderers (similar to magistrates today) could only attach the more serious offences and offenders to be heard before the higher court, the Justice Seat in Eyre.

The Verderers of the Forest of Dean are first named in a document from the early 13th century, and today, some 800 years later, they continue to be elected and hold court within the Forest, protecting the vert and venison as they always have done.

The Freeminers have exploited the Forest's rich mineral reserves from "time out of mind." The Book of Dennis (also known as the Miners' Lawes and Privileges) is the earliest surviving record of the ancient customary rights of the Forest of Dean Free Miners. Dating back to at least 1610, it codifies a system of "customes and franchises" believed to have been granted by Edward I in the 13th century. At the time the Book of Dennis was written the only mineral mined from the Dean was iron ore, as coal mining did not take off until much more recently. The Freeminers are still an active community who practise their ancient right and act as custodians of the area.

Largely unnoticed, His Majesty's Inclosure Commissioners meet annually in the Forest of Dean as they have done since they were created through Act of Parliament in 1668. The 1668 Act required that up to 11,000 acres of the Forest of Dean be inclosed for the purposes of growing young trees. Inclosures made under the auspices of the Commissioners would be freed from all rights of common until thrown open again (that is, the fences removed) once the trees had grown to a size they would not be damaged by grazing animals. The Inclosure Commissioners agree Forestry England's annual fencing and fence removal proposals, ensuring the area duly inclosed never exceeds 11,000 acres. The Commissioners' meetings are often attended by the King's Remembrancer, a Senior Master of the King's Bench within the Royal Courts of Justice, again a direct link back to the 17th century and the importance of the statutory Forest for the growing of timber for the crown.

In addition to mining, the Forest of Dean has a strong tradition of commoning, forestry, farming and crafts, all of which have influenced local culture and identity. The distinctive settlement pattern that emerged from centuries of mineral extraction is itself a key part of this heritage and remains vulnerable to change. Many settlements still hold buildings and institutions reflecting nineteenth century and post-war social movements: miners' welfare halls, memorial halls and recreational grounds that speak to the area's strong tradition of collective self-organisation. The district is also steeped in folklore and storytelling, with tales of mysterious woodland creatures, ancient trees and enchanted places like Puzzlewood adding to its mystical reputation. Festivals, local music and arts celebrate this heritage, keeping alive a strong sense of community and connection to the Forest. The cultural heritage stemming from the Severn Estuary also needs to be recognised.

Overall, the cultural heritage of the Forest of Dean is a vibrant blend of history, nature and folklore that continues to inspire residents and visitors alike. Biosphere designation has the potential to help protect this unique heritage and offer recognition of the role that those such as Verderers, Commoners and Freeminers have played throughout time, not only in a custodian role but also shaping the biodiversity of the Forest, and the contribution they will make to our future.

The Forest of Dean Biosphere Vision

The Forest of Dean District Council has developed a vision that integrates environmental sustainability with social equity, aiming to create a resilient and inclusive community. A cornerstone of this vision is the commitment to achieving carbon neutrality by 2030, a goal set following being the first English District to declare a Climate Emergency in 2018. The Council's Climate Emergency Strategy and Action Plan for 2022–2025 has delivered initiatives such as decarbonising public buildings, promoting green transport options, and encouraging energy-efficient retrofitting in homes and businesses.

In addition to environmental goals, the Council has introduced an Ethical Investment Policy, ensuring that public funds are invested in line with social and ecological values. This policy excludes investments in fossil

fuels, oppressive regimes, and factory farming, while favouring renewable energy and social housing projects. Furthermore, the Council's Sustainable Economy Strategy focuses on fostering a green economy by supporting local businesses, enhancing digital and green skills, and promoting sustainable town development. Through these initiatives, the Forest of Dean District Council demonstrates a comprehensive approach to governance that prioritises environmental stewardship, ethical financial practices, and community well-being, all of which could be supported through Biosphere designation.

Designating the Forest of Dean as a Biosphere would recognise and reinforce ongoing efforts to protect the environment, promote sustainable livelihoods, and foster inclusive, nature-based solutions to modern challenges. This vision applies to the whole of the Forest of Dean District and not only to the statutory forest at its core, embracing the orchards, river-related activities and landscape heritage of the wider area including the Wye Valley. It is worth noting that the historical extent of the Forest was very much greater than it is today; much of the proposed biosphere area was once within the forest boundary, reinforcing the deep connections between the statutory forest and its surrounding landscape. It would also strengthen regional collaboration, attract environmental research and inspire future generations to steward this distinctive landscape.

1. PROPOSED NAME OF THE BIOSPHERE RESERVE:

[It is advisable to use a locally accepted geographic, descriptive or symbolic name which allows people to identify themselves with the site concerned (e.g. Rio Platano Biosphere Reserve, Bookmark Biosphere Reserve). Except in unusual circumstances, biosphere reserves should not be named after existing national parks or similar administrative areas.]

Forest of Dean Biosphere

2. NAME OF THE COUNTRY:

United Kingdom

3. FULFILLMENT OF THE THREE FUNCTIONS OF BIOSPHERE RESERVES:

[Article 3 of the Statutory Framework presents the three functions of conservation, development and logistic support. Explain in general terms how the area fulfils these functions.]

3.1 "Conservation - contribute to the conservation of landscapes, ecosystems, species and genetic variation".
(Stress the importance of the site for conservation of biological and cultural diversity at the regional or global scales).

Conservation of Landscapes

The Forest of Dean is a unique place within the United Kingdom. It not only supports species of international importance but possesses a distinctive culture rooted in centuries of customary rights and self governance. Rich and detailed descriptions of the Forest of Dean's distinctive landscape are available through both the National Character Area (NCA) Profiles published by Natural England, and the Forest of Dean Landscape Character Assessment published by the Forest of Dean District Council.

The Forest of Dean district covers the entirety of NCA 105 ‘Forest of Dean and Lower Wye’, and extends into the southeastern part of NCA 104 ‘South Herefordshire and Over Severn’ and NCA 106 ‘Severn and Avon Vales’. Together these describe a richly diverse landscape characterised by a mosaic of ancient woodland, open ground, river valleys, and estuarine lowlands. At its heart lies the statutory forest, which covers 41% of the area and stands as one of England’s most extensive tracts of semi-natural woodland, a remnant of a medieval hunting forest. This unique environment is interwoven with historic features, including Iron Age hillforts, Roman archaeological sites, and vestiges of industrial heritage, all seamlessly integrated into the natural surroundings and contributing to the area’s cultural and ecological significance.

Geology

The Forest of Dean’s character is driven by its underlying geology. There is no single simple description of either the geology or the landscape that derives from it; instead, the story unfolds as one moves from west to east across the district.

The area sits atop a geological structure known as a syncline: a basin where all the geological strata have been pushed down in the centre, outcropping in rings around the outer edges. Formed during the Variscan orogeny around 300 million years ago, Carboniferous limestone, sandstone, and coal measures were laid down in a tropical swamp environment. This structure exposes older rocks at the margins and younger coal measures at the centre, creating a rich tapestry of geological features within a remarkably compact area.

Beginning in the west, the River Wye has cut a deep gorge down through the Carboniferous limestones, exposing the softer Old Red and Tintern sandstones. The limestone scenery includes examples of limestone pavement, ancient caves, and perched river terraces, remnants of the Wye’s path before it eroded further downward.

Moving east from the Wye Gorge, the landscape to the south is the Limestone Plateau and to the north are the Limestone Hills. These are dry rolling landscapes with shallow soils where ancient hedgerows and small copses can give the impression of higher woodland cover than actually exists. The villages are generally well embedded in the landscape, with a scatter of remote farmsteads. The Limestone Hills also capture areas of surface coal measure clay deposits, providing localised differences: water held at the surface and deeper soils supporting more developed and dense woodland. Highmeadow Woods, a large area of mixed woodland, sits within the Limestone Hills capturing dry valleys, spring lines, limestone caves, and outcropping conglomerate and sandstone. At the southern end, the Limestone Plateau changes character where surface sand deposits give rise to the heathland and sandy woods of Tidenham Chase.

The eastern edge of the limestone scenery is perhaps the most geologically significant. The juxtaposition between the Carboniferous limestone and the coal measure clays created the conditions for the formation of iron ore. Water running off the impermeable coal measure clays, slightly acidic and carrying dissolved iron particles, percolated down through cracks and fissures in the limestone, eroding out caverns over hundreds of millions of years. As the water evaporated,

dissolved iron was deposited in a variety of forms, from hard haematite to a soft powdery ore known as brush, and a wet form called ochre. The evocative scowles features found in this narrow landscape belt are believed to be collapsed, naturally occurring caverns subsequently exploited by human mining to extract the iron ore deposits, often following iron leads deep underground. Puzzlewood is the most well known of the scowles, converted into a woodland garden and now a tourist attraction and occasional film set, but several other areas of scowles remain hidden in the woods.

Moving east again into the statutory forest, we reach the landscape character area known as the 'wooded syncline and settled forest margin'. This is almost entirely within the statutory forest boundary: extensive woodland, often wet where water is held at the surface by coal measure clays, and bearing the marks of a long history of coal mining and stone quarrying. A distinctive feature is the almost continuous ring of squatter settlements hugging the statutory forest boundary. The first descent into the Cannop Valley crosses a line of sandstone quarries extracting the valued Pennant sandstone, alongside remnants of drift mines cutting into the valley sides to reach steeply sloping coal seams. Three active colliery sites remain on this valley side, including Hopewell Colliery which is open for visitors. The Forest of Dean Cycle Centre, a national destination for downhill mountain biking, sits on this wooded descent, with its visitor base on the former Cannop Colliery site, one of the Forest's last generation of deep mines, which closed in the 1960s. From the Cannop Valley, the land rises to the coal plateau within the basin, again wet and almost entirely wooded.

The Forest is historically renowned for its abundant mineral resources, iron ore, coal, and limestone, which have been mined since Roman times and underpin the tradition of freemining still practised today. Its limestone areas also host karst landscapes, including caves, sinkholes, and underground streams, which enhance biodiversity and hold archaeological significance. This geological diversity, concentrated within a compact area, supports a wide range of ecosystems from ancient woodlands to limestone grasslands, making the Forest of Dean a geologically and ecologically exceptional landscape.

The Statutory Forest

The statutory forest boundary is more an historical development than a landscape designation, but nevertheless has great significance for the area. The boundary of the Forest of Dean, that area covered by Forest Law, has long ebbed and flowed according to political circumstance. The area originally covered by Forest Law in the Norman period can be deduced from analysis of the Domesday Survey carried out in the 11th Century, suggesting a boundary not dissimilar to the later Hundred of St Briavels. Areas covered by Forest Law were expanded by various kings in the 12th and 13th centuries, and reduced again. The 1217 Charter of the Forest effectively deforested (removed from the jurisdiction of Forest Law) a great area of land that had been added in previous years. At the last recorded Forest Eyre for the Dean, in 1634, the Crown successfully argued for the bounds to be pushed out over much land previously regarded as privately owned. Those well to do private owners then paid handsomely to have their lands disafforested, the whole exercise appearing as a revenue raising scheme for the Crown.

The 1668 Forest of Dean (Reafforestation) Act can be understood as both a scheme to replant the core forest with oak and beech as a national timber reserve, and an effort to reassert control over the wider area to tap revenue from minerals, grazing, and timber. This was largely replaced by the 1808 Dean Forest (Timber) Act, which broadly repeated its provisions but benefitted from greater clarity about the bounds of the forest. Only after the Dean Riots, led by Warren James, of 1831 was a parliamentary commission formed to investigate the grievances of the rioters. The resulting Dean Forest Commissioners arranged for the boundary to be marked with 218 permanent marker stones, and that boundary has been known as the statutory forest boundary ever since.

Today the statutory forest boundary demarks the limits of the traditional privilege of running sheep freely in the forest, the limit of the Verderers' authority, and the Inclosure Commissioners' remit. Unfenced land within the statutory forest is considered waste of the forest and available for common grazing regardless of ownership. The statutory forest boundary has no implication for the tradition of freemining; as codified under the 1838 Dean Forest Mines Act (again following the Dean Riots and Dean Forest Commissioners), the tradition of freemining extends to the mineral wealth below the Hundred of St Briavels, a rather larger area than the statutory forest.

One of the legacies of the Norman Forest, and its unbroken custodianship by the crown (it was never disafforested and enclosed), is that the Forest of Dean contains one of the largest areas of publicly owned and accessible open space in England, second only to the New Forest in extent. Forestry England are the single largest land manager, having stewardship of the majority of the woodlands within the statutory forest and the Wye Valley. The statutory forest comprises extensive areas of ancient and semi natural woodland, many of which are designated as Sites of Special Scientific Interest (SSSIs) due to their high ecological value. These designations help preserve the forest's biodiversity and ensure its continued role as a vital natural habitat within the region.

Landscape Character

NCA 105 'Forest of Dean and Lower Wye' describes a landscape centred around a well wooded, undulating plateau of ridges and valleys sitting over shallow Coal Measures, contained by an outer rim of more open landscape on Carboniferous Limestone and Devonian Old Red Sandstone. The River Wye cuts dramatic gorges with steep, wooded slopes. Views are both picturesque inward and extensive outward: westwards across the Wye Gorge to the Black Mountains of Wales, or eastwards across the Severn Estuary to the Cotswold Hills.

The extensive woodland ranges from managed coniferous plantations to broadleaved woodlands, many of which are ancient (continuously wooded since 1600) or semi-natural, and designated as SSSIs. These form one of the largest remaining areas of broadleaf semi-natural woodland in the country. Ancient semi-natural woodland hugging the steep limestone valley sides of the Wye Gorge is largely typical NVC8 ash and field maple woodland, which includes particularly rare whitebeams, of which some hybrid varieties may be genetically represented by a single tree. Small leafed lime, while not as rare as the whitebeams, appears in unusually high dominance in some Wye gorge woodlands.

The pastoral landscape outside the woodland is used primarily for livestock rearing, with some dairying along the edge of the Severn and Avon Vale. Smallholdings of small to medium sized fields support market gardening, orchards, livestock rearing, and horse grazing. Commons and the statutory forest are used extensively for unrestricted sheep grazing. A notable number of traditional orchards are found particularly to the north and east of the district, important for pollinators and local heritage.

The NCA features rich wildlife habitats including grassland, heathland, traditional orchards, and woodland; nationally important assemblages of woodland birds and butterflies; internationally important woodland, river, and bat sites; and a range of other rare flora and fauna. There is a rich historic environment, including prehistoric settlements and field systems (such as the hillforts on Welshbury Hill and Symonds Yat); Roman sites (such as Lydney Park and the Anglo-Saxon earthwork known as Offa's Dyke); medieval castles (such as St Briavels and Ruardean); and an industrial landscape of iron and coal extraction, quarries, and associated tramways, many of which have been subsumed by the woodland canopy.

Surrounding the edge of the statutory forest is a ring of settlements associated with iron ore and coal deposits, often sprawling and linear in nature, where buildings are interspersed with industry and open grazing land. Traditional building materials include local sandstone toned from dull pinkish greys to warm pink browns, limestone, brick, pebbledash, slate, and tiles.

NCA 104 'South Herefordshire and Over Severn' wraps around the north of NCA 105, representing a continuation of the south Herefordshire Plain including the low ridges and hills described in the Forest of Dean Landscape Character Assessment as the 'Low Hills and Orchards', 'Undulating Hill Farmland', and 'Wooded Hills'. This is an undulating landscape with some prominent rounded Old Red Sandstone hills, lower rolling ground, ridges and valleys, meandering and often deeply incised rivers with narrow floodplains, and Silurian limestone ridges. It has a well wooded character created by larger woodlands on steeper slopes and smaller tree clumps around hilltops, farmsteads, and hamlets. Traditional historic cider apple orchards and commercial bush orchards on steeper valley slopes contribute to the woodland character. The area's historic wild daffodil fields have inspired poets and stimulated tourism.

NCA 106 'Severn and Avon Vales' covers the low lying lands alongside the Severn Estuary. In the Forest of Dean Landscape Character Assessment this zone is divided into the Unwooded Vale and Floodplain Farmland. This is a distinctive, largely low lying landscape under productive farmland. The most productive arable land lies on fertile alluvial soils; where those soils give way to more poorly drained clays, arable land gives way to grassland and livestock. Ancient orchards can be found all the way down to the sea walls bordering land reclaimed from the estuary marshes and mudflats. The lowest lying areas are prone to seasonal flooding, notably when the tide is high on the estuary.

Landscape Designations

National landscape designations in the Forest of Dean are limited but significant. The Wye Valley National Landscape extends through the western edge of the Forest of Dean, recognising the remarkable landscape of the Wye Gorge as it cuts through the Carboniferous limestones on its way to meet the Severn at Sedbury. The designation encompasses striking features such as steep wooded gorges, ancient semi-natural woodlands, and dramatic river landscapes, with particularly iconic scenery found around Symonds Yat and the Wye Gorge. The Malvern Hills National Landscape just tips south into the Forest of Dean, following the sandstone ridge as it drops to a range of low rolling hills before rising sharply to form the 'ridges and valleys' landscape zone at the eastern end of the statutory forest.

The varied and rich landscape character across the Forest of Dean is underpinned by four broad habitat types: woodlands, grasslands, estuary and farmland.

Woodlands

The name Forest of Dean conjures up a picture of a landscape dominated by trees and woodlands, and the district does have well over the national average tree and woodland cover. Those woodlands are by no means uniform, with that variety encompassing several distinct types.

Ancient woodlands in England are defined as those that have continuously existed since 1600. The longevity of those woods means they have special qualities and characteristics that are rare and vulnerable to change. The relationship between those woods, the soils, fauna and flora are complex, and as such ancient woods are deemed to be irreplaceable habitats and worthy of protection. Within these woods can often be found ancient boundary banks, charcoal hearths and other archaeological features, because their longevity and lack of disturbance has allowed those features to survive.

Ancient and semi natural woods are those ancient woods comprised of site native tree species. Some have evolved naturally with only limited interference, but these are few, and in the Forest of Dean largely restricted to pockets on the crags and steepest ground in the Wye Valley. Most ancient semi natural woodland will have been managed for fuel and timber over many thousands of years, which in turn will have changed the species composition, often favouring oak.

In some ancient woodlands, human influence has been more profound, with the natural woodland cleared and replanted with species of more use for construction and other purposes. These plantations on ancient woodland sites still have high conservation value, and in most cases can be reverted to site native species through careful selective silviculture. Archaeology in these sites is generally intact but has a higher likelihood of being damaged through past forestry operations.

Secondary woods are those that have been planted on previously open land. The new woodland creation scheme at Hoarthorns Farm on the edge of the statutory forest is an example of where a long standing mixed farm has been deliberately planted with trees to create a new woodland. A subset of secondary woodlands are successional woods, which have grown up through entirely natural means after an area of open space has been abandoned. These generally comprise native species of trees, initially pioneer species such as silver birch, but will also contain exotic species

where viable seed is nearby. The Forest of Dean has many examples of successional woodland where old pasture and some orchards have been abandoned. Most recently, the outbreak of foot and mouth disease in the Forest decimated the number of free roaming sheep in the statutory forest, and within a decade many of the open spaces had scrubbed up with trees.

Pasture woodland is widely spaced trees within grass or heathland that is normally grazed. Within the statutory forest, pasture woodland was and is ecologically valuable as the trees were often pollarded. Speech House Oaks SSSI is a remnant of pasture woodland of national importance for its collection of lichens surviving on ancient holly, oak and beech trees. Standing and fallen deadwood associated with the veteran trees is also of immense ecological importance. Within the context of the Forest of Dean and Lower Wye Valley Bat SAC, pasture woodlands have particular relevance as the grazed pasture gives rise to a healthy population of dung beetles, a favoured food for the bats, while the veteran trees provide roosts.

Wet woods are those of willows and alders that have grown or evolved naturally on waterlogged or seasonally inundated land. Cannop Bridge Marsh County Wildlife Site in the heart of the statutory forest is an example of where open water originally impounded in 1826 with the creation of the Upper Cannop Reservoir has steadily filled in with silts. First reedbeds, then willows and alder as the site dries out. Wet woodland is a particular habitat with specific assemblages of insects and other flora and fauna.

Traditional and old growth orchards are in many ways similar to pasture woodlands: an ecologically rich tapestry of deadwood, standing deadwood, tree blossom and sweet fruits amongst largely unimproved grasslands.

The main NVC woodland types in the Forest of Dean are ash and field maple woods (W8), probably the most prolific natural woodland stand type, arising naturally on the limestone and calcareous soils. Locally significant within these woods are the whitebeams, which hybridise readily giving rise to a plethora of genetically scarce if not unique varieties, notably in the Wye gorge. Small leafed lime is also locally a common component, being generally rarer elsewhere. Beech woods (W12) are found on parts of the limestone plateau and limestone hills where soils are deeper, though how much of the beech arises naturally against being planted as a timber crop is debatable. Oak woods (W16/W17) are found away from the limestones on the drier and more acidic parts of the coal measures and sandstones. W16 tends to be associated with heathy soils and vegetation, with a tendency to naturally favour sessile oak, while W17 has a more neutral, grassy understorey and tendency to favour pedunculate oak. Dymock Woods, straddling the county boundary with Herefordshire, is classic W16 oak woodland on sandstone, famed for its wild daffodils. The wet woodland components are quite mixed but will generally classify as W1 willow carrs or W5 alder carrs.

Grasslands

Lowland meadows and unimproved pastures are typified by small enclosures and small field patterns. The Forest of Dean has a widespread network of these across many landscape types,

mostly concentrated on the woodland fringes around the statutory forest, Dymock Woods and the limestone hills. The Dean Meadows Group is a small local cooperative providing mutual support to owners of small meadows to share knowledge, equipment and flocks. As well as the floristic value, the range of invertebrates including butterflies and moths is highly valued. Remnant ponds and wet flushes emerging in those meadows add to the ecological interest.

There are extensive areas of calcareous grasslands across the limestone plateau, and to a lesser extent in the limestone hills. Shallow, base rich soils which are freely drained provide for lush all year round grazing of livestock. Grazing produces animal dung which supports healthy populations of dung beetles, of importance for the area's bat colonies. Defined field boundaries are generally hedges and some stone walling, giving a farmed aesthetic rather than open downland.

Where the meadows lie on the sandstones the soils tend to the acid, and an acid grassland develops in contrast to the calcareous meadows. These are prone to invasion from bracken, bramble and birch, often compounded by their location on more steeply sloping terrain such as in the ridges and valleys landscape character area.

Lowland wet grasslands, purple moor grass and rush pastures are typified by poorly drained clay soils, often associated with spring lines on the higher ground or fen habitat in the Severn Vale. These are occasionally grazed by cattle but often too wet to sustain grazing all year round.

The Forest of Dean has pockets of lowland heath on the outcropping sandstones of the Old Red and coal measures. These are distinctive habitats that are continually trying to revert to successional woodland and need to be actively managed with scrub cutting and grazing pressures. Recent endeavours to restore lowland heath at Woorgreen and Edgehills within the statutory forest have delivered very positive ecological and landscape gains. The more extensive remnants of lowland heath can be found at the western extremity of the Forest of Dean on Tidenham Chase.

Estuary

The Severn Estuary has the second highest tidal range of any estuary in the world. Even accounting for eighteenth and nineteenth century land drainage, reclamation and associated flood defences, that still provides an immense area of estuary salt marsh and intertidal mudflats and sandbanks that supports an internationally valued assemblage of wild birds, waders and geese. The ecological value of the estuary is recognised by the Ramsar designation and full coverage of coastal and shore management plans.

Farmland

The Forest of Dean is a very rural area, and whilst the name conjures up an image of extensive woodlands, the land area taken up by active farming is greater. Large areas of the Forest of Dean's farmland are categorised as ALC 3 (a and b), with more productive areas of ALC 2 on the unwooded vale. ALC 2 tends to be used for arable and vegetable production (mainly potatoes) on the better, fertile and light alluvial soils. ALC 3b and 4 are more restricted to livestock.

The productive farmland is of great importance for local food, its primary ecosystem service, but certainly not the only one provided by farms and farmers. Well managed farms will have a long term view on soil health and productivity, controlled use of fertilisers and nitrate run off, protection and improvement of natural water resources, streams, mires and ponds on their land. The importance of hedgerow maintenance and spinneys and wooded copses will also be part of the management regimes for well managed farms in the Dean.

Conservation of Ecosystems, Species, and Genetic Variation

Several small rivers drain most of the plateau to the south and southeast, while other small rivers feed into the Wye to the north and west. The River Wye Special Area of Conservation (SAC) is recognised for its international importance for species including white clawed crayfish, otter, salmon, twait and allis shad. Tidal influence on the Wye occurs as far as Bigsweir. Brooks drain eastwards to the Severn.

Adjacent to the Forest of Dean, the Severn Estuary is recognised as a Ramsar Site and Special Protection Area, highlighting its international importance as a wetland ecosystem. It supports extensive intertidal habitats such as mudflats, sandflats, saltmarshes, and biogenic reefs, and is home to important migratory fish species including sea lamprey, river lamprey, and twaite shad. The estuary provides critical feeding and roosting grounds for internationally significant populations of wildfowl and waders, especially during winter and migration periods. The Forest of Dean District Council implements Habitat Regulations Assessments (HRAs) to mitigate the impacts of recreational activities and development.

The Forest of Dean is home to internationally important bat populations, including the lesser and greater horseshoe bats, protected under the Forest of Dean and Lower Wye Valley Bat Special Area of Conservation (SAC). The region also includes the Wye Valley Woodlands SAC, known for its rare whitebeam species and ancient woodland flora, and the River Wye SAC, which supports key species like otters, salmon, white clawed crayfish, and shad.

To further safeguard biodiversity, the district enforces Biodiversity Net Gain (BNG) policies and conducts ecological assessments, ensuring that development activities contribute positively to local ecosystems and protect species such as the great crested newt.

The Forest of Dean's rich mosaic of habitats, including ancient woodlands, traditional orchards, and other semi natural environments, supports a wide range of genetic variation within species, which is essential for long term ecological health. The whitebeam (Sorbus aria), a native tree that thrives on limestone soils, hybridises readily, giving rise to an extraordinary genetic diversity and range of subspecies. The Symonds Yat Whitebeam (Sorbus saxicola) is one such subspecies, thought to be limited to around 20 specimens, all growing within a small area on both sides of the River Wye. Other named subspecies may be represented by just a single known example, making the genetic conservation of these trees extremely important. Conservation efforts in the district focus on

maintaining connectivity between habitats, a strategy that promotes gene flow and enhances adaptive resilience. Many of the area's most important species depend directly on the man-made legacy of the forest and its mines: horseshoe bats roosting in disused mine workings, saproxylic beetles thriving in old orchard trees, and woodland ground flora persisting in historically managed coppice. Biosphere designation can help safeguard these interdependencies while supporting future habitat creation and the interconnection of natural areas, with ecological connections running north and south being especially valuable. This connectivity is especially important in helping species respond to challenges such as climate change, habitat fragmentation, and other environmental pressures.

The Forest of Dean Designation Map

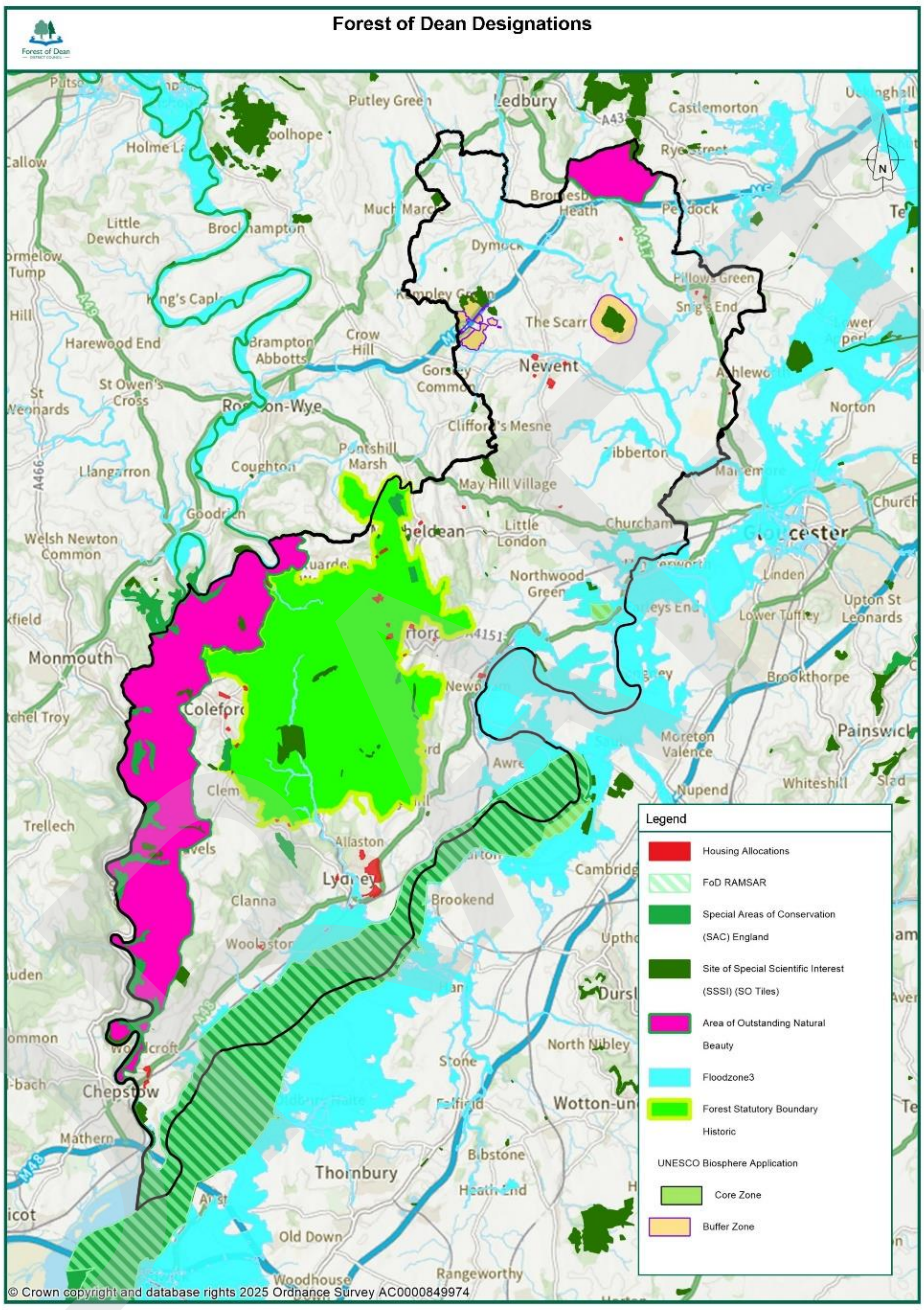


Figure 1 Environmental Designation Map

The Forest of Dean District is recognised as one of the most ecologically important areas in England, reflected in the wide range of conservation designations applied across the landscape. These designations operate at international, national, and local levels, creating a layered system of

protection for habitats such as ancient woodland, river systems, wetlands, and species including bats and migratory birds.

At the international level, Special Areas of Conservation (SACs) are designated under the Habitats Directive to protect rare habitats and species of European importance. In the Forest of Dean, key SACs include the River Wye, which is important for migratory fish and aquatic ecosystems, the Wye Valley Woodlands, which protect ancient semi-natural woodland, and the Wye Valley and Forest of Dean Bat Sites, which support internationally significant populations of greater and lesser horseshoe bats. The Severn Estuary is also designated as an SAC due to its extensive mudflats, saltmarshes, and estuarine habitats. These sites are strictly protected, and any development must ensure that their ecological integrity is not harmed.

Special Protection Areas (SPAs), designated under the Birds Directive, focus on the conservation of rare and migratory bird species. Within and around the district, the Severn Estuary SPA is particularly important for overwintering and migratory birds, while Walmore Common SPA supports large populations of wintering wildfowl. Closely linked to SPAs are Ramsar sites, which are wetlands of international importance designated under the Ramsar Convention. In the Forest of Dean, both the Severn Estuary and Walmore Common are also Ramsar sites, recognising their value as vital wetland ecosystems that support bird populations and act as important feeding and breeding grounds.

At the national level, Sites of Special Scientific Interest (SSSIs) form the backbone of conservation protection in the UK. There are around 47 SSSIs in the Forest of Dean District, covering a wide range of habitats including woodlands, river corridors, grasslands, and geological formations. SSSIs are designated for their important flora, fauna, or geological features and are legally protected. Many internationally designated sites, such as SACs and SPAs, are underpinned by SSSI status, meaning that SSSI designation provides the fundamental layer of legal protection.

In addition to SSSIs, the district also contains National Nature Reserves (NNRs), which represent some of the best examples of natural habitats in England and are managed for conservation and scientific research. Examples such as Lady Park Wood and Highbury Wood highlight the importance of ancient woodland ecosystems in the area. At a more local scale, non-statutory designations such as Local Wildlife Sites (LWS) or Key Wildlife Sites recognise areas of local ecological importance. Although these do not have the same legal protection as SSSIs, they are still significant in the planning process and contribute to maintaining biodiversity across the district.

Overall, the Forest of Dean demonstrates a highly interconnected system of environmental protection, where multiple designations often overlap within the same area. For example, the Severn Estuary is simultaneously designated as an SSSI, SAC, SPA, and Ramsar site, reflecting its exceptional ecological value. This layered approach ensures that habitats and species are protected at different scales, from local to global, and plays a crucial role in guiding land use planning and sustainable development within the district.

3.2 "Development - foster economic and human development which is socio-culturally and ecologically sustainable".

(Indicate current activities and the potential of the proposed biosphere reserve in fulfilling the objective of fostering sustainable economic and socio-cultural development, including by securing flows of ecosystem services from the biosphere reserve).

The Forest of Dean district is located in the South West of England. We are bounded by the River Severn, Gloucester and Cheltenham to the East and the River Wye and South Wales to the West, and Herefordshire, Worcestershire and the Malvern Hills to the North. Our border location with Wales means that we share very close ties with Welsh towns such as Chepstow and Monmouth, as well as with nearby population centres such as Gloucester, Bristol and Ross-on-Wye. At the heart of the district is the statutory forest, one of the largest surviving medieval hunting forests in England, never disafforested and enclosed, and now containing one of the largest areas of publicly owned and accessible open space in England, second only to the New Forest in extent. Forestry England are the single largest land manager, having stewardship of the majority of the woodlands within the statutory forest and the Wye Valley. The forest is a tremendous visitor destination, attracting many walkers, cyclists and others looking to explore the area and its natural beauty..

In the 2021 census the population of the district stood at 87,000, an increase of 6.1% from 2011. This is slightly lower than the national growth for the same period. The district ranks 278 out of 309 councils for population size and is the smallest in Gloucestershire.

The area also has a strong industrial heritage, with mining both coal and iron ore, with most of the main settlements having been built up around the industry over many centuries. The Romans initially sought the resources from the area and in the 19th century mining was expanding significantly. In 1945, half the male working population worked in the coal industry, it was therefore at the very core of the local community. Mining declined post-war and the last large colliery closed in 1965, marking a significant change to the area. The district historically had a notably high proportion of its workforce employed in manufacturing and industry, setting it apart from much of the South West. Some of the legacy of mining's decline can be traced through subsequent waves of industry: companies such as Xerox established operations in the area, and although that presence has since been lost, a traceable element of higher-technology business activity persists. As such, this strong and enduring industrial heritage remains, both within the landscape and in the nature and character of our communities.

The district has a predominantly rural based economy. According to the 2021 census data the most common industry of employment in Forest of Dean was the wholesale and retail trade which employed 14.6% of people, this was closely followed by 11.1% employed in construction. The wholesale and retail trade also accounted for the largest proportion of employment at county level, employing 15.4% of the total.

Our employment rate was higher than across the South West as a whole for the year ending December 2023. For residents aged 16 to 64 years living in Forest of Dean, 84.1% were employed. This is an increase compared with the year ending December 2022 when the local rate was 70.6%.

Around 1,000 people were unemployed in the year ending December 2023. This is a rate of 2.2%, which compares favourably to 2.5% in the South West and 3.7% nationally. Based on national data from March 2023, in terms of professions the district has a higher number of people working in the following areas compared to England:

• Elementary occupations.

• Process, plant and machine operatives.

• Associate professional occupations.

• Professional occupations.

It was lower than the national average in:

• Caring, leisure and other service occupations.

• Managers, directors and senior officials.

• Skilled trade occupations.

• Sales and customer service occupations.

The £12.3m proposal for the Five Acres site will create a new leisure and community hub, bringing a derelict site back into use providing modern leisure, community and business facilities for the area, a new sports hall and an artificial all-weather sports pitch. The leisure and community hub will house a satellite site for Hartpury University and Hartpury College, bringing specialist education opportunities for young people to the Forest. Demolition of the former college and leisure centre has taken place with only the building to be renovated still standing. A design and build contractor has been appointed through the Southern Construction Framework (SCF). The planning application was approved December 2025. The contractual agreements were finalised Apr 2026, with construction expected to begin on 27th Apr 2026.

The Flagship University Innovation, Careers and Enterprise Learning Centre, had £10m contributed towards it from Hartpury University and Hartpury College site. It will support growth in student numbers, providing new opportunities to over 16s in the Forest. The Centre would focus on encouraging and supporting local young people to stay in education or start their own business in the area. It will also deliver a new Environmental Laboratory, aiming to support new companies focused on environmental technology based in the Forest of Dean.

In Cinderford town centre, regenerating a number of key buildings and bringing them back into use to provide modern co-working spaces for start-up businesses and new community facilities, arts and events space has been completed, with the final project completed in March 2026. The former

HSBC bank, Rheola House and the Methodist Church, which is a Listed Building have been transformed into a community and creative hub, primarily serving as the Forest of Dean music hub for the charity The Music Works. Key features and uses of this repurposed space include: Music and Creative Industries: The hub features a state-of-the-art recording studio, production suite, and rehearsal rooms aimed at engaging young people and supporting those in challenging circumstances. They also continue to generate more match funding to continue the great work that they have started. Overall, the Council has drawdown around 60% of the total Levelling Up funding since the bid was approved in October 2021. Cinderford has spent all of their £800000 that they were awarded.

Regenerating the Forest and Economic Development as an ambitious prosperity-focused Council, there are many examples of place-based partnership working in respect of economic development and regeneration, and some of these are highlighted later on. However, at the core of our work around economy and regeneration is the Sustainable Economic Strategy currently in development. It will cover a four-year period from 2024-2028 this is reviewed annually with a new action plan developed each year. The Strategy dovetails neatly with the Council Plan and touches all three plan priorities. Through a programme of engagement with local businesses and networking through the Forest Economic Partnership is a voluntary, business-led group launched in 2018 by the Forest of Dean District Council to drive sustainable economic growth, support local businesses, and boost education in the region, it is clear there is naturally a degree of uncertainty around the economy, finding the next generation of employees and the cost of living day-to-day in our community. In response, we are choosing to take a bold path with our new strategy, and our intention is to embed the principles of Doughnut Economics in decision making at Cabinet level. We are learning from other Councils who are well advanced in using this way of thinking to balance the boundaries of a thriving community with those of a thriving planet. Our ambition is to explore new opportunities for community wealth creation and find the middle ground where community and planet can both thrive. The strategy is currently due to be reviewed and approved by the end of the year. Sustainable towns is one of the key strands that features in the strategy and working collaboratively with the town councils to develop a market town regeneration framework, which explores cross town regeneration opportunities, will build on the recommendations from a recent piece of work the Council commissioned. This strategy is currently in place and being delivered by a newly appointed Market Towns Officer. The Forest of Dean is a stunning place to visit and stay. Supporting the marketing and promotion of slow tourism to encourage more and longer overnight stays through our partnership with The Forest of Dean and Wye Valley Tourism is a good example of how we use co-creation, collaboration and reciprocity to strengthen our community partnerships and work with a spirit of trust.

The biosphere should also play a formative role in the emerging Local Plan, where shared aims around sustainable development can support both a more robust economy and better long-term protection of the district's character. The biosphere framework can help identify key characteristics of settlements and protect them while allowing for change, highlight zones of influence around protected natural areas, promote conservation of built form and local building styles to inform

design guidance, and provide the evidence base to strengthen direct policies on energy conservation and biodiversity net gain.

The Council was successful in a £20m bid as part of the previous government's Levelling Up Fund. This project, which is part way through delivery, funded much needed regeneration in Cinderford Town Centre, a new educational hub at Hartpury University and proposed investment in a leisure and community hub at Five Acres. The Council continues to support and be an active partner in the Forest Economic Partnership (FEP) which it launched in 2018. Its mission is to deliver a thriving economy in the Forest of Dean District by connecting business, councils, people, ideas and resources. Over 300 organisations/individuals participate in their quarterly Stakeholder Group or two sub-group meetings, Education and Skills and Climate and Net Zero. The stakeholder group is open to anyone who lives, works, plays or studies in the Forest of Dean District or is interested in participating in FEP's activities. The Council recently completed a regeneration project at the historic Lydney Harbour. Working in partnership, the Council secured over £2m in funding to deliver a new cafe, visitor information hub, public toilets, improved transport, new signage and a public arts trail. The work has been nominated for and won multiple awards.

Forest of Dean was the first district council in England to declare a climate and ecological emergency, doing so in December 2018. As the Council we have a local leadership role in guiding the district to work together to tackle the climate emergency. This includes leading by example to reduce our own carbon footprint and also taking more interventionist actions to change behaviour.

With regards to our reducing our own carbon footprint, over recent years we have:

• Installed solar PV on Council buildings and we have a wider rollout programme to get more PV installed across our estate.

• Brought in electric vehicles. In August the first fully electric recycling trucks were introduced into our fleet - a Gloucestershire first.

• Contributed to the Fast Followers scheme introducing training for staff to make climate action a key aspect of all roles in the Council and an increase in community action.

• Managing our investments – we took the decision to make sure no Council investments were in companies that don't align with our social and ecological commitments. We have also made good progress working with our communities. Some of the work is listed below and we have many other projects planned in the Council Plan Delivery Plan.

• Net zero carbon toolkit – working in partnership with other Publica councils we created a toolkit to help house builders, architects and others plan a net zero housing project. The toolkit was award nominated and has been replicated across the country.

• Aurora project – Aurora project - the Council participated as a UK partner in this Horizon Europe-funded climate action project, working with regional partners across Europe. The project supported rooftop solar PV rollout in the district and produced a residents' carbon-footprint app.

• Climathons – we held the first 'Climathon' in 2024, bringing together representatives from across the community to discuss how we tackle the climate emergency. It was the first in a series of events we will be running on specific topics.

• We are exploring Biosphere status as a way of protecting and managing the environment within the district.

• EV charging - we were successful in securing funding to install additional EV charging points in our public car parks which is due to take place early next year.

• In 2025 Forest of Dean & Wye Valley Tourism, the destination management organisation for the area adopted the UN SDGs, joined the Global Compact to help support 150 travel, tourism and hospitality businesses to invest in sustainable practices.

3.3 "Logistic support - support for demonstration projects, environmental education and training, research and monitoring related to local, regional, national and global issues of conservation and sustainable development".
(Please indicate current or planned activities).

Conservation Projects
The Forest of Dean benefits from a range of conservation initiatives, notably through the *Foresters' Forest* programme a major landscape partnership funded by the National Lottery Heritage Fund. This programme delivered 38 projects across five thematic areas. Under *Stronghold for Nature*, efforts focused on habitat restoration, species surveys, and biodiversity monitoring. *Exploring our Forest* enhanced public access and introduced digital tools such as heritage apps. *Revealing our Past* involved archaeological digs, oral history collection, and the development of heritage skills. *Celebrating our Forest* brought communities together through events and cultural heritage activities. Finally, *Securing our Future* engaged young people through outdoor learning and school-based programmes.
Complementing this is the *Dean Green Team*, a dedicated volunteer group that supports habitat management, pond maintenance, and wildlife conservation. Their seasonal fieldwork plays a vital role in sustaining the local environment.

The Dean Trail Volunteers play a vital role in conserving the natural environment of the Forest of Dean by maintaining and preserving its extensive network of mountain bike trails. Their work helps to minimise the environmental impact of trail use by preventing erosion, managing water runoff, and ensuring that riders stay on designated paths. This not only protects sensitive habitats and wildlife but also reduces the need for more invasive repairs in the future. By keeping trails safe, sustainable, and enjoyable for all users, the volunteers support responsible recreation while safeguarding the forest's ecological integrity. Their efforts exemplify how community-led stewardship can harmonise outdoor adventure with environmental conservation.

Environmental Education and Training
The Wilderness Centre, located in the heart of the Forest of Dean, plays a significant role in delivering education and training through immersive outdoor experiences. Set within 30 acres of

ancient woodland and wildflower meadows, the centre offers exceptional day and residential programmes for schools across all age groups. Recognised as a Gold Standard Centre by the Association of Heads of Outdoor Education Centres, it provides a rich learning environment where young people can explore, connect with nature, and develop essential life skills. Activities are designed to foster curiosity, resilience, and environmental awareness, making the outdoors a powerful classroom. In addition to school programmes, the centre also hosts corporate training, leadership development, and a variety of retreats focused on wellbeing, arts, and sustainability. Through its diverse offerings, the Wilderness Centre supports lifelong learning and helps individuals of all ages reconnect with nature while building skills for personal and professional growth.
The *Dean Heritage Centre* offers a wide range of lifelong learning opportunities, with workshops tailored for both school groups and the public. Educational topics include immersive experiences such as the Victorian Schoolroom, WWII Experience, Forest Mining, and Prehistoric and Anglo-Saxon Days. Nature walks and habitat studies further enrich the curriculum. The Centre also provides handling boxes and classroom resources to support curriculum-linked learning.
In Cinderford, the *AccXel Construction School* stands out as the UK's first industry-led construction school. It offers apprenticeships (Levels 2–4) in groundworks, bricklaying, plant operations, and construction support. The Skill STEPS programme supports upskilling and career progression. Notably, AccXel has been rated "Outstanding" by Ofsted for its apprenticeship delivery in partnership with The JCB Academy.

Skills Development and Higher Education Links
Beyond apprenticeships, the *AccXel Centre* is expanding its role as a leading provider of vocational education, integrating advanced technology and fostering strong industry partnerships. Academic collaboration is also evident in the *Foresters' Forest* programme, which was evaluated by the University of Gloucestershire's Countryside and Community Research Institute. This partnership highlighted the importance of academic involvement in monitoring and impact assessment.
Hartpury University contributes to sustainability efforts in the region through initiatives like the Climathon, which promotes sustainable food systems and environmental awareness within the Forest of Dean. Hartpury is also part of the network of Students Organising for Sustainability (SOS). This contributes to soil and biodiversity monitoring across UK University farms. Students learn field survey skills and then results are being used to compare soil and biodiversity health across partner sites.[1]

Research and Monitoring
Ongoing research activities in the Forest of Dean include biodiversity monitoring through volunteer-led surveys. Community climate action planning is also underway, supported by the Centre for Sustainable Energy. This includes emissions mapping and conducting sustainability audits for local organisations.
Looking ahead, the Forest of Dean District Council is exploring the potential for a UNESCO Biosphere designation. This would enhance the region's capacity for ecological and socio-economic

[1] https://sos-uk.org/programme/food-and-farming/farming-for-carbon-and-nature/

research and monitoring. Additionally, the council has committed to the application of Doughnut Economics principles in its decision-making processes, opening the door for academic collaboration and innovative policy development.

The University of the West of England (UWE Bristol) is leading a £1 million, DEFRA- and Welsh Government-funded research project, in partnership with Hartpury University, to tackle agricultural pollution in the River Wye catchment. The three-year programme brings together researchers, farmers and local stakeholders to investigate the sources and impacts of diffuse agricultural pollution particularly nutrients such as phosphates and to co-design practical, farm-based solutions through "living labs" on working farms. By combining scientific expertise in water quality, soil health and nutrient management with on-the-ground agricultural knowledge, the project aims to develop evidence-based interventions and governance approaches that can improve river health while supporting sustainable farming, with potential to inform wider catchment management strategies across the UK. [2]

An Innovate UK / UK Research and Innovation BridgeAI-funded programme led by Hartpury University is supporting the development of advanced bioacoustic bird-monitoring solutions by UK nature-tech companies Wilder Sensing and Carbon Rewild. Delivered through the High Growth AI Accelerator in partnership with Digital Catapult, the initiative brings together academic expertise and industry innovators to tackle biodiversity monitoring challenges within the agrifood sector. By applying AI to analyse wildlife sound data, these companies are refining tools for bird classification and habitat validation, enabling more accurate, scalable, and non-invasive monitoring of ecosystems. The programme exemplifies how collaboration between research institutions and startups can accelerate the adoption of cutting-edge technologies, supporting sustainable agriculture, improving environmental reporting, and strengthening the UK's leadership in bioacoustic and agritech innovation.[3]

4. CRITERIA FOR DESIGNATION AS A BIOSPHERE RESERVE:

[Article 4 of the Statutory Framework presents 7 general criteria for an area to be qualified for designation as a biosphere reserve which are given in order below.]

4.1 "Encompass a mosaic of ecological systems representative of major biogeographic region(s), including a gradation of human interventions".

(The term "major biogeographic region" is not strictly defined but it would be useful to refer to the Udvardy classification system (http://www.unep-wcmc.org/udvardys-biogeographical-provinces-1975_745.html)).

[2] https://www.uwe.ac.uk/news/river-wye

[3] https://pure.hartpury.ac.uk/en/projects/high-growth-ai-accelerator-innovate-uk-bridgeai-agrifood/

https://www.digicatapult.org.uk/about/press-releases/post/new-ai-solutions-to-accelerate-the-uks-agrifood-achievements/

The proposed Forest of Dean biosphere sits within the Temperate broad-leaf forests biome of the British Islands province of the Western Palearctic realm (based on the Udvardy 1975 classification system).

Climatically the area experiences a temperate maritime climate due to proximity to the Atlantic Ocean and gulf stream. The attitudinal change from the Severn Estuary to the highest point at 296m, and undulating plateau of ridges and valleys, results in a range of microclimates.
The Forest of Dean lies between the Rivers Severn and Wye, and its complex geology has greatly influenced the landscape, ecology, history, culture and economy of the area. Its appearance is that of a steep-sided, deeply dissected plateau, formed of a fractured, asymmetrical, synclinal basin and is composed of Upper Palaeozoic rocks from the Silurian, Devonian and Carboniferous periods[4], including the Forest of Dean Coalfield, which is unusual in that it is almost entirely exposed at the surface. This easily accessible coal together with woodland, iron ore and ochre has resulted in exploitation of these deposits by man, through the ages, leaving a network of many mines and caves throughout the area.

Though, in Palaeolithic times, the predominant vegetation cover would have been temperate broadleaf woodland. The present woodland, though extensive has been through a long history of felling and replanting.
The core areas of the proposed biosphere are representative of the most comprehensive ancient woodland ecosystems. The buffer zones encompass the wider woodland and open habitat matrix of the Statutory Forest and Wye Valley. The transition zone includes the areas of farmland and settlement that have experienced greater levels of human intervention.

4.2 "Be of significance for biological diversity conservation".
(This should refer not only to the numbers of endemic or rare species, but may also refer to species on the IUCN Red List or CITES appendices, at the local, regional or global levels, and also to species of global importance, rare habitat types or habitats with unique land use practices (for example traditional grazing or artisanal fishing) favouring the conservation of biological diversity).

The Forest of Dean biosphere has a rich wildlife resource, including a number of nationally and internationally rare species. The standard IUCN red list codes, where relevant, are given in parenthesis below.

The complex and diverse geology combined with a long history of changing agricultural, forestry and industrial land use results in a wide range of semi-natural and manmade habitats supporting a wealth of species. The importance of the wildlife resource is reflected in the abundance of designated sites which include sites of international (Ramsar), European (Special Protection Area

[4] http://www.glosgeotrust.org.uk/fod_geology.shtml

[SPA] and Special Area of Conservation [SAC], National (Site of Special Scientific Interest [SSSI], National Nature Reserves [NNR], National Landscapes [AONB]), and County (Local Wildlife Site) importance.

The main features include: Extensive woodland habitats of both native and nonnative types include some of the most natural and important woodland in the country (for example rich ash, lime, beech and yew woods of the Wye Valley and oak, alder and birch woods of the Dean); Species rich grassland habitats of varied character (acid, basic, neutral, floodplain and estuarine) supporting important plant, invertebrate and bird populations; Rivers, which included the second highest tidal range in the world, and streams and associated wetlands with important populations of over wintering and migratory birds, water vole, otter, crayfish and migratory fish including the rare allis shad, twait shad and European eel; Remnant heathlands and associated fen and bog wetland habitats supporting important populations of birds, invertebrates, amphibians and reptiles; Ancient hedgerow networks of vital importance for the movement of wildlife through the landscape; and extensive manmade underground mine systems supporting greater and lesser horseshoe bat populations of European importance.

Figure 2 Statutory and non-statutory wildlife sites within the biosphere area.

Type of Site	**Name**	**Notified Features (in brief) or features of interest**
Ramsar (International (global) Importance)	Severn Estuary	Estuarine habitats and species including fish and waterbirds cited in SAC and SPA below, plus European eel (*Anguilla anguilla*)
SAC (European Importance) (4 in part)	Forest of Dean and Lower Wye Valley Bat	Maternity roosts and hibernacula of Greater and Lesser Horseshoe Bats
	Wye Valley Woodlands	*Asperulo-Fagetum* beech forests; *Tilio-Acerion* forests of slopes, screes and ravines; *Taxus baccata* woods of the British Isles (lesser horseshoe bats are a secondary feature)
	Severn Estuary	Estuaries; Mudflats and sandflats not covered by seawater at low tide; Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*); Sandbanks which are slightly covered by sea water all the time; Reefs; Sea lamprey (*Petromyzon marinus*); River lamprey (*Lampetra fluviatilis*); Twaite shad (*Alosa fallax*)
	River Wye	Water courses of plain to montane levels with: White-clawed (or Atlantic stream) crayfish (*Austropotamobius pallipes*); Sea lamprey (*Petromyzon marinus*); Brook lamprey (*Lampetra planeri*); River lamprey (*Lampetra fluviatilis*);

		Twaite shad (*Alosa fallax*); Atlantic salmon (*Salmo salar*); Bullhead (*Cottus gobio*);Otter (*Lutra lutra*); Allis shad (*Alosa alosa*)
SPA (European Importance) (2 whole or part)	Severn Estuary	Overwintering and migratory waterbirds.
	Walmore Common	Over wintering Bewick's swan
SSSI (Nationally important) (49 whole or part)	Astridge Wood	Woodland
	Bigsweir Woods	Woodland
	Blaisdon Hall	Bats
	Brooks Head Grove	Woodland
	Buckshraft Mine and Bradley Hill Railway Tunnel	Bats
	Caerwood & Ashberry Goose House	Bats
	Clarke's Pool Meadow	Lowland meadow/Neutral Grassland
	Collinpark Wood	Woodland
	Dean Hall Coach House and Cellar	Bats
	Devil's Chapel Scowles	Bats
	Dingle Wood	Woodland
	Dymock Woods	Woodland
	Edgehills Quarry	Geology
	Garden Cliff	Geology
	Highbury Wood	Woodland
	Hobb's Quarry	Geology
	Kempley Daffodil Meadow	Daffodil Meadow
	Land Grove Quarry, Mitcheldean	Geology
	Longhope Hill	Geology
	Lower Wye Gorge	Woodland; Endemic Whitebeams, Large Leaved Lime and Ground Flora
	Lydney Cliff	Geology
	May Hill	Acid Grassland and Heath
	Meezy Hurst	Geology
	Nagshead	Woodland and Assemblage of Breeding Birds
	Oakenhill Railway Cutting	Geology
	Old Bow and Old Ham Mines	Bats
	Oridge Street Meadows	Lowland Meadow

	Pennsylvania Fields, Sedbury	Brackish Pasture and Ditches; Vascular Plant Assemblage
	Poor's Allotment	Heath; Acid Grassland; Lowland Meadow/Neutral Grassland
	Puddlebrook Quarry	Geology
	River Wye	River Associated Plant and Animal communities; Geology
	Scully Grove Quarry	Geology
	Severn Estuary	Intertidal Habitats; Migratory Fish; Overwintering Waterbirds
	Shorn Cliffs and Caswell Woods	Woodland
	Slade Brook	Geology (Tufa)
	Soudley Ponds	Native Crayfish; Invertebrate Assemblage; Outstanding Dragonfly Assemblage; Woodland
	Speech House oaks	Woodland; Bryophytes; Lichens
	Stenders Quarry	Geology
	Swanpool Wood and Furnace Grove	Woodland
	Sylvan House Barn	Bats
	The Hudnalls	Woodland
	The Malvern Hills	Woodland; Heathland and Acid Grassland; Butterflies; Breeding Birds; Geology
	Tudor Farm Bank	Calcareous grassland
	Upper Severn Estuary	Intertidal Habitats; Saltmarsh and Neutral Floodplain Grassland; Overwintering Waterbirds; Reedbeds; Breeding birds
	Upper Wye gorge	Woodland; Geology
	Walmore Common	Neutral Floodplain Grassland; Ditches; Wintering Waterbirds
	Westbury Brook Ironstone Mine	Bats
	Wigpool Ironstone Mine	Bats
	Wood Green Quarry & Railway Cutting	Geology
National Nature Reserves (2)	Highbury Wood	Woodland
	The Hudnalls	Woodland
Additional Non-statutory Nature Reserves and Wildlife Sites		
Gloucestershire Wildlife Trust (GWT) Nature Reserves	Cannop Bridge Marsh	Marshland; butterflies, dragonflies and damselflies
	Clarke's Pool Meadows	Lowland Meadow; Green-winged Orchid, Adder's-tongue Fern, Cowslip, Barn Owl
	East Wood	Ancient woodland; greater butterfly orchid, and the rare martagon lily

	Edgenhills Bog	Relic of Wet Heath; Heather, Large Red Damselfly, Emperor Dragonfly, locally important for bryophytes
	Foxes bridge Bog	Acid Bog; only site for Marsh St-Johns Wort within the County, birds, butterflies, dragonflies and damselflies including the small pearl-bordered fritillary, locally important for bryophytes
	Laymoor Quag	Last remaining relic of Cinderford's Wet Heathland
	Mitcheldean Meend Marsh	Marsh, Quaking Bog, Wet Heath; bog asphodel, common cotton-grass, few-flowered spike-rush and tawny sedge
	Oakenhill	Heathland; Nightjar, Adder, Common Lizard, Turtle Dove
	Spion Kop Quarry	Rock face; Many ferns and plants grow in the rock crevices including maidenhair spleenwort, lady-fern, scaly male-fern and hard fern. The boulders support a variety of mosses.
	The Park	Heathland restoration
	Wigpool	Acidic bog and heathland; acidic-marshland plants, wildfowl, common frogs, palmate and smooth newts
	Wimberry Quarries	Grassland, Woodland, Rock Face; Oak fern, common wintergreen, bilberry and heather, locally important for bryophytes
	Woorgreens	Fen, lake, ponds and heath plus heathland and wood pasture restoration; Damselfly, Dragonfly, Great Crested Newt, Common Lizard, Slow worm, Grass Snake, Adder
National Trust	May Hill	Acid/Neutral grassland
Royal Society for the Protection of Birds (RSPB) Nature Reserves	Highnam woods	Woodland and Assemblage of Breeding Birds
Woodland Trust Nature Reserves	Cadora Woods (including Bigswier Woods)	Woodland
	Highbury Fields	Wood Pasture; Lowland Meadow
	Morses Grove	Woodland
Local Wildlife Sites	343 Local Sites (Local Wildlife Sites (LWS), Conservation Road Verges (CRV) and Regionally Important	LWS locally selected by the LWS Panel which is managed by GWT, covering a range of habitats from ancient and wet woodland to grassland, lowland heath, marsh and bog. Also species interest including nationally

	Geological Sites (RIGS)) intersecting the biosphere area	rare plant species, invertebrates and dormice. CRVs notified by Gloucestershire County Council, RIGS locally notified by the Gloucestershire Geology Trust.

Figure 3 Area (ha) and percentage cover of proposed biosphere priority habitats

Priority habitat	Area (ha)	Percentage
Broadleaved mixed & yew woodland - Broad habitat (of which is Ancient Semi Natural Woodland (ASNW)*)	7635 ha (2776 ha)	13.6 % (4.9%)
Traditional orchard	744 ha	1.3 %
Wood pasture and parkland	190 ha	0.3%
Lowland meadows	319 ha	0.6%
Lowland dry acid grassland	167 ha	0.3 %
Lowland calcareous grassland	35 ha	0.1%
Mudflats	369 ha	0.7%
Lowland fen and bog	2.12 ha	0.01 %
Lowland heathland	51 ha	0.1%
Purple moor grass & rush pastures 11	5 ha	0.01%

Source: Gloucestershire Wildlife Trust (2024)

* There remains debate over whether some of the Statutory forest is ASNW (i.e., continuously wooded since 1600) or not due to the long history of timber growth and clearance. Some areas may not have been continuously wooded. The figure reflects this, but some believe the areas of ASNW should be much higher.

Some 4469 ha of the biosphere (8 % of its total area) are designated as SSSI (including part of the Severn Estuary), and there are parts of four SACs and two SPAs and two RAMSAR sites. Woodlands dominate the biosphere area, covering 24.4% (13693 ha) of the area, including over 7,500 ha of broadleaved woodland (lowland mixed deciduous, upland oakwoods and wet woodland). Together, the Wye Valley and Forest of Dean woodlands (statutory forest) form one of the largest remaining areas of broadleaf semi-natural woodland in the country, and support important populations of deadwood invertebrates, woodland butterflies and moths; a wide range of breeding woodland birds; breeding populations of dormouse; woodland plants; and an outstanding bat fauna.

Woodland (and the surrounding farmland) forms part of the essential feeding area for internationally significant populations of lesser and greater horseshoe bats (*Rhinolophus hipposideros* (LC) and *R. ferrumequinum* (nationally LC but globally NT) at 26% and 6% of the national population respectively). The Wye Valley and Forest of Dean Bat Sites SAC, underpinned by the component SSSIs within the biosphere area of: Blaisdon Hall, Buckshraft Mine & Bradley Hill Railway Tunnel, Caerwood and Ashberry Goose House, Dean Hall Coach House & Cellar, Devil's Chapel Scowles, Old Bow and Old Ham Mines, Westbury Brook Ironstone Mine and Wigpool Ironstone Mine, protect the larger maternity roosts and hibernacula. Hedgerows provide important flight lines, and numerous other old caves, mines, tunnels, cellars, and buildings with suitable roof spaces provide the bats with suitable additional hibernacula, roosts and breeding sites. While grazed pasture and

woodland edge provide feeding areas. Other rare woodland bats such as Barbastelle (*Barbastella barbastellus* (NT), Bechstein's bat (*Myotis bechsteinii*) (NT) also utilize the woodland and trees to feed and roost. In fact at least 12 of the 17 species of native bat are found here.

The statutory forest at the heart of the biosphere area contains a mixture of semi-natural woodland, native broadleaf and conifer plantation. Ancient hollies and oaks at Speech House, in the heart of the forest, are designated for the range of lichens they support (53 lichens and 15 epiphytic bryophyte) such as: *Parmelia caperata*, which is more luxuriant here than in many English woodlands. Other, nationally uncommon, lichens found at this site include *Pertusaria hemisphaerica*, *P. flavida, Thelotrema lepadinum, Haematomma elatinum* and *Normandina pulchella*.

Nagshead SSSI (and RSPB reserve), a 200yr old Napoleonic oak plantation supports ground flora such as ivy leaved bellfower (*Wahlenbergia hederacea*) (NT), heath spotted orchid (*Dactylorhiza maculata*) (LC) and broad-leaved helleborine (*Epipactis helleborine*) (LC). Nagshead is also of importance for its bird life and supports good populations of breeding pied flycatcher (*Ficedula hypoleuca*) (LC but UK amber listed), wood warbler (*Phylloscopus sibilatrix*) (LC but UK red listed) and redstart (*Phoenicurus phoenicurus*) (LC but UK amber listed) as well as abundant great tits (*Parus major*) (LC) and blue tits (*P. caeruleus*) (LC). Hawfinches (*Coccothraustes coccothraustes*) (LC but UK red listed) nest occasionally. On occasion, groups of Crossbills (*Loxia Curvirostra*) (LC) and all three British woodpeckers can be seen (green woodpecker, *Picus viridis* (LC); greater spotted woodpecker, *Dendrocopos major* (LC); lesser spotted woodpecker, *Dryobates minor* (LC but UK red listed).

Stands of old beech plantation are underlain with fantastic spring displays of bluebells. Ground flora characteristic of ancient woodland, such as wood anemone (*Anemone nemorosa*) and herb Paris (*Paris quadrifolia*) (LC), can be found.

The Wye Valley Woodland SAC is underpinned by the Upper Wye Gorge, Swanpool Wood & Furnace Grove, Highbury Wood, Astridge Wood, Bigsweir Wood, The Hudnalls, Short Cliff & Caswell Woods and Lower Wye Gorge SSSIs. Additional Ancient Semi-Natural Woodland (ASNW) SSSIs in the Wye Valley are Brooks head Grove, Dingle Wood and an additional part of The Hudnalls. These all fall within the Wye Valley National Landscape (WVNL) Area of Outstanding Natural Beauty. Thickly wooded slopes drop steeply down to the winding river, forming vertical cliffs and gorges of up to 200 m at Symonds Yat. Here the broad river makes a series of meanders through the rocks, and then flows south down through a narrow, twisting and steep-sided valley, the slopes covered with broadleaved, ancient semi-natural woodland. These are some of the most diverse woodlands in Britain, and many have had a long history of active traditional management, including extensive historical coppicing to supply charcoal for the blast furnaces of the local iron industry. Abandonment of traditional practices, however, has resulted in a large proportion of the resource being unmanaged for the last 50 to 100 years. Endemic Sorbus are found here such as the critically endangered *Sorbus domestica,* nationally scarce *Sorbus porrigentiformis* and *S. rupicola,* scarce large leaved lime, and trees close to the edge of their European range, e.g., hornbeam and beech. Ancient woodland indicator ground flora and other rare vascular plants such as sword leaved helleborine (*Cephalanthera longifolia*) (VU), bird's-nest orchid (*Neottia nidus-avis*) (NT), greater butterfly-orchid (*Platanthera chlorantha*) (NT), narrow-leaved bitter-cress (*Cardamine impatiens*) (NT), wood horsetail (*Equisetum sylvaticum*) and nationally scarce fingered sedge (*Carex digitata*), also occur. The old wood stands in the Wye

Valley woodlands are particularly important for saproxylic species such as Cosnard's net winged beetle (NT).

Ancient hedgerows, important for many species, connect the woodlands to the more open countryside. A number of sizeable manmade ponds are scattered through the forest. For example, Cannop Pond, created in 1826 as reservoir for Parkend Ironworks and is a particularly popular picnic site, while Soudley Ponds, also created in the 19th century to provide water for local industry, were designated as an SSSI for their native crayfish (*Austropotamobius pallipes*) (EN), freshwater invertebrates and outstanding dragonfly assemblage. However, a recent outbreak of crayfish plague in the Soudley brook has put this crayfish population at risk.

In the southwest of the area, around St Briavels and Hewelsfield Commons, narrow lanes wind their way between tiny fields, bounded by distinctive local drystone walls or dense hedgerows with hedgerow trees. This area supports notable amounts of species-rich neutral grassland and priority lowland meadow. Small patches of lowland calcareous grassland tends to be found in a ring around the central plateaux overlaying the Carboniferous Limestone. The influence of the underlying geology, historic land uses and industry is reflected in the mosaic of heathland, and acid, calcareous and neutral grassland which can be found in places. Only fragments of the once widespread heathlands of the Dean plateau survive today, many having been lost to agricultural improvement and afforestation. Remnants of heath supporting bilberry, ling and cross-leaved heath are still found within parts of the forested areas of the Forest of Dean and Tidenham Chase, such as at Poor's Allotment SSSI a historic heathland site and the neighbouring The Park Nature Reserve where the conifer plantation has given way to a heathland restoration programme. Poor's Allotment supports a nationally scarce water beetle, and at least eight species of dragonfly. Nationally scarce butterflies and moths have in the past included the pearl-bordered fritillary (*Boloria Euphrosyne*) (VU), now extinct for the Dean, and the scarce forester (*Adscita statices*). A further 15 species of invertebrate of local interest have been recorded. Together with the adjacent heathland restoration on The Park these site also support all four of the widespread British reptile species, slow worm (*Anguis fragilis*) (LC), adder (*Vipera berus*) (NT), grass snake (*Natrix natrix*) (LC) and common lizard (*Zootoca vivipara*) (LC), amphibians as well as a small number of breeding nightjar (*Caprimulgus europaeus*) (LC).

Clarke's pool meadow SSSI, near Blakeney, consists of a species-rich traditionally managed lowland meadow. Locally uncommon species frequent in the sward include green-winged orchid (*Orchis morio*) (NT), twayblade (*Listera ovata*) (LC), adder's-tongue fern (*Ophioglossum vulgatum*) and meadow saffron (*Colchicum autumnale*) (LC).

Smallholdings retaining traditional orchards, or, in some cases, just a few remnant, but habitat rich, trees, are found across the agricultural areas of the transition zone, although they are more concentrated on the fringe of the Forest to the north, around Cinderford (Flaxley and Blaisdon), and in the east (around Blakeney and Woolaston), where they form a continuation of the larger resource in adjacent Herefordshire and Worcestershire. These traditional orchards are a national stronghold for the noble chafer (*Gnorimus nobilis*) (VU), a saproxylic beetle which, in the three counties are exclusively found in fruit wood, but are more usually found in oak and beech in continental Europe, so may have differentiated genetically. Other rare species such as lesser spotted woodpecker (*Dryobates minor*) (globally LC but UK red listed) and the nationally scarce mistletoe marble moth

(*Celypha woodiana*) make use of the old orchards. Local heritage fruit varieties are a valuable genetic resource.

International designations:

Wye Valley and Forest of Dean Bat Sites SAC

This complex of sites on the border between England and Wales contains by far the greatest concentration of lesser horseshoe bats (*Rhinolophus hipposideros*) in the UK (at 26% of the population at designation). In addition, the site also supports large numbers of greater horseshoe bats (*Rhinolophus ferrumequinum*) (6% of the population at designation). The entire site supports an exceptional breeding population of both species as the majority of sites within the complex are maternity roosts. The site also includes several disused mines which are used as hibernation roosts. Though not included within the designation the many other roosts, hibernacula, flightlines and feeding grounds provide functionally linked sites and the supporting habitat for these species.

Wye Valley Woodlands SAC

The Wye Valley contains abundant and near-continuous semi-natural woodland along the gorge. Beech stands occur as part of a mosaic with a wide range of other woodland types and represent the western range of *Asperulo-Fagetum* beech forests. Such a variety of woodland types is rare within the UK. In places lime (*Tilia*) sp., elm (*Ulmus*) sp. and oak (*Quercus*) sp. share dominance with the beech. It also provides the most extensive examples of *Tilio-Acerion* forest in the west of its range. A wide range of ecological variation is associated with slope, aspect and landform. The woodland occurs here as a mosaic with other types, including beech (*Fagus sylvatica*) and pedunculate oak (*Quercus robur*) stands. Uncommon trees, including large-leaved lime (*Tilia platyphyllos*) and rare whitebeams such as *Sorbus porrigentiformis* and *S. rupicola* are found here, as well as locally uncommon herbs, including wood barley (*Hordelymus europaeus*), stinking hellebore (*Helleborus foetidus*), narrow-leaved bitter-cress (*Cardamine impatiens*) and wood fescue (*Festuca altissima*). Wye Valley is representative of yew (*Taxus baccata*) woods in the south-west of the habitat's range. It lies on the southern Carboniferous limestone, and yew occurs both as an understorey to other woodland trees and as major yew-dominated groves, particularly on the more stony slopes and crags. Lesser horseshoe bats are a secondary feature due to the importance swarming sites, woodland edge feeding opportunities and of caves providing hibernacula.

River Wye SAC

The River Wye Special Area of Conservation (SAC) is recognised for its international importance for species including white-clawed crayfish, otter, lamprey, salmon, twait and allis shad. Tidal influence on the Wye occurs as far as Bigsweir. The river channel is largely unmodified and includes some excellent gorges, as well as significant areas of associated woodland.

Severn Estuary SAC

The immense tidal range (the second highest in the world) and classic funnel shape make the Severn Estuary unique in Britain and very rare worldwide. This tidal range creates strong tidal streams and high turbidity, producing communities characteristic of the extreme physical conditions of liquid mud and tide-swept sand and rocks. The Severn Estuary SAC hosts the following habitats: estuaries, mudflats and sandflats not covered by seawater at low tide, Atlantic salt meadows (*Glauco Puccinellietalia maritimae*), sandbanks which are slightly covered by sea water all the time, and reefs. The site also supports sea lamprey (*Petromyzon marinus*), river lamprey (*Lampetra fluviatilis*) and twaite shad (*Alosa fallax*).

Severn Estuary SPA
The Severn Estuary SPA supports internationally important numbers of overwintering Bewick's swan (*Cygnus columbianus bewickii*); on passage ringed plover (*Charadrius hiaticula*) and overwintering curlew (*Numenius arquata*), dunlin (*Calidris alpina alpine*), pintail (*Anas acuta*), redshank (*Tringa tetanus*), and shelduck (*Tadorna tadorna*), plus nationally important overwintering populations of a further 10 species. It also regularly supports at least 20,000 waterfowl. The SPA is functionally supported by surrounding fields which provide resting and roosting sites at high tide.

Walmore Common SPA
Walmore Common is designated as internationally important for over wintering Bewick's swans (*Cygnus columbianus*) (LC globally but CR in European context), However, numbers of Bewick's using the site have severely declined in recent years. It occupies a low-lying area in the Severn Vale, which is subject to winter flooding. The site is a wetland overlying peat providing a variety of habitats including neutral grassland, unimproved marshy grassland and open water ditches. The common is part of a series of sites within the Severn Vale which, in winter, form an important refuge and feeding area for wildfowl. The highest bird numbers are seen during the harshest winters, when Walmore Common provides an essential feeding and roosting area. The ditches have a fairly rich flora including species such as yellow iris *(Iris pseudacorus*), purple loosestrife *(Lythrum salicaria*) and flowering rush *(Butomus umbellatus*).
These internation designations are supported by other functionally linked sites within the wider Forest of Dean biosphere area.

Severn Estuary RAMSAR and Walmore Common RAMSAR
The Severn Estuary and Walmore Common are also both internationally important RAMSAR sites for the habitats and species mentioned above. The RAMSAR designation for the Severn Estuary additionally for European Eel as the Estuary funnels eels up the River Severn and its tributaries as they return from the Sargasso Sea. The watercourses of the Dean and the floodplain rhines and ditches should provide eel habitat; however, barriers remain on some watercourses preventing upstream migration.

4.3 "Provide an opportunity to explore and demonstrate approaches to sustainable development on a regional scale".
(Describe in general terms the potential of the area to serve as a site of excellence for promoting the sustainable development of its region (or "eco-region")).

The Forest of Dean is a distinctive and historic area in the west of England. Covering around 110 square kilometres, it lies between the rivers Severn and Wye, close to the border with Wales, and is connected to surrounding towns and cities such as Gloucester, Monmouth and Chepstow by a network of rural roads.

The Forest of Dean has a strong local identity, shaped by its ancient woodland, industrial heritage and close-knit communities. The area features a rich mix of natural landscapes, including dense forest, open heathland and river valleys, alongside small villages and market towns. The Forest also has a deep sense of place, often associated with its long history of mining and forestry, and the unique traditions of the people who have lived and worked there for generations.

Sustainable Agriculture

Sustainable farming practices in the Forest of Dean district play an important role in preserving the area's natural environment while supporting local livelihoods. Farmers operate within a landscape of ancient woodland, rolling hills and river valleys, which requires careful management to protect soil quality, biodiversity and water resources. By adopting sustainable methods, agriculture in the Forest of Dean can continue to thrive without damaging the landscape that makes the area so distinctive. The local geology has also played a significant role in shaping agriculture in the area. The Forest of Dean sits on a mix of sandstone, limestone and clay soils, which influence what crops can be grown and how land is managed. Fertile soils in some areas are well suited to orchards and pasture, while heavier or poorer soils are often used for grazing, encouraging a diverse and sustainable pattern of land use.

One key aspect of sustainable farming in the district is soil conservation. Farmers increasingly use techniques such as crop rotation, reduced tillage and the planting of cover crops to maintain soil health. These practices help to prevent erosion, improve soil structure and retain nutrients, which is especially important in an area where rainfall can be high. Healthy soils also reduce the need for artificial fertilisers, making farming more environmentally friendly in the long term. A research partnership between Hartpury and UWE is exploring an integrated field and earth observation-based approach to soil monitoring. This includes development and validation of a low-cost embedded soil-gas sensing platform for real-time monitoring of agricultural soil processes. This collaborative approach could continue under a biosphere designation.

Another important focus is biodiversity. Many farms in the Forest of Dean maintain hedgerows, woodlands and wildflower margins to create habitats for wildlife. These features support pollinators such as bees and butterflies, as well as birds and small mammals. Encouraging biodiversity helps to create balanced ecosystems, which can naturally control pests and reduce the need for chemical pesticides.

Water management is also essential in sustainable farming across the district. With major rivers such as the Severn and Wye nearby, it is important to limit agricultural pollution. Farmers use buffer strips, careful fertiliser application and improved drainage systems to prevent runoff entering watercourses. These measures help protect water quality and ensure farming practices meet environmental standards.

Traditional orchards are another important feature of the Forest of Dean's agricultural landscape, particularly for growing apples used in cider production. These orchards are often managed in low-intensity ways, allowing grasses and wildflowers to grow beneath the trees, which supports a wide range of wildlife.

Finally, sustainable farming in the Forest of Dean often involves supporting the local community and economy. Many farmers sell produce locally, reducing food miles and strengthening connections between producers and consumers. There is also increasing interest in organic farming,

agroforestry and diversification, such as farm shops and eco-tourism. These approaches help to create a resilient rural economy while protecting the natural environment for future generations.

Local Plan

Sustainable development is at the heart of spatial planning for the region. The emerging Local Plan (Revised Draft February 2026 Revised Draft Local Plan - February 2026)[5] embeds Sustainable Development from the outset though its Vison:

- The district is actively engaged in pursuing a low carbon future and new development is designed to enable this while being able to adapt to climate change.
- In 2045 younger people are more likely to want to stay in the district with good access to education, employment and housing.
- The needs of an ageing population have also been incorporated into the design of new development.
- It is a place where healthy lifestyles are an everyday part of living and working in the district.
- The implementation of sustainable development enhances the quality of life for residents and visitors alike.
- The diverse landscapes and heritage of the area is so distinctive that it is nationally and internationally recognised.
- A thriving tourism market is underpinned by a high quality natural and built environment.
- The lack of affordable housing has been addressed through imaginative and sustainable ways providing an appropriate range of tenures which support local communities, services and facilities.
- The area has resilient and diverse employment opportunities with strong links to good local schools embracing, in particular, industries of the future.
- The district is better connected through improved transport, digital and mobile data connections which reduce the need to travel and provide a distinctive local offer.
- The Forest of Dean is known as a special place to start and grow business.

[5] https://www.fdean.gov.uk/media/sqvjqjti/revised-draft-local-plan-february-2026.pdf

The emerging plan also draws particular attention to the integration of Biosphere objectives within the Local plan. The local plan has been drafted to reflect and support a Biosphere designation supporting at its core the three functions of a biosphere:

- Conservation: Protecting landscapes, habitats, and species.
- Development: Fostering sustainable economic and social growth.
- Learning: Supporting research, education, and awareness

The plan is developed, supported and accompanied by a Sustainability Appraisal nts-of-sa-revised-draft-local-plan.pdf that helps shape and check the plan is on a firm Sustainable development pathway.

The role of the Forest of Dean Biosphere is also highlighted in the Gloucestershire Local Growth Plan as an opportunity of promoting a model of sustainable development for the region.

Forest of Dean Sustainable Economy Strategy

The Forest of Dean District Council Sustainable Economy Strategy (2024–2028) sets out a plan to achieve long-term economic prosperity while protecting the environment and supporting community wellbeing. [6]It aligns with the Council's broader priorities of creating thriving communities, addressing climate change, and building a sustainable local economy. The strategy is influenced by the concept of "Doughnut Economics," aiming to balance economic growth with social and environmental limits.

The strategy identifies six key focus areas: workforce skills, infrastructure, circular economy, business support, natural capital preservation, and sustainable towns. These areas are intended to guide investment and action across the district. A strong emphasis is placed on collaboration between the council, businesses, and communities to deliver shared outcomes and strengthen local networks.

A major priority is improving skills and employment opportunities, including training in digital and green industries to enhance employability and support emerging sectors. Alongside this, the strategy promotes business growth through funding, advice, and partnerships, recognising the importance of supporting local enterprises especially independent and rural businesses to remain competitive and resilient.

Environmental sustainability is central throughout the strategy. It promotes a circular economy, reducing waste and encouraging resource efficiency, while also protecting the district's natural

[6] https://www.fdean.gov.uk/media/1subviq5/forest-of-dean-district-council-sustainable-economy-strategy.pdf

assets such as biodiversity and landscapes. Economic development is expected to contribute to wider goals like reducing pollution, achieving net zero emissions, and improving public health and resilience.

Finally, the strategy emphasises ongoing monitoring and adaptability**,** with quarterly reviews and annual updates to respond to changing circumstances and opportunities. It is closely linked with other council policies (such as climate, transport, and planning strategies), ensuring a coordinated approach to sustainable development across the Forest of Dean.

AONB National Landscapes Plan the Wye Valley

The strategy for the Wye Valley Area of Outstanding Natural Beauty, set out in its Management Plan (2021–2026)[7], plays a key role in making the area more sustainable by taking an integrated, long-term approach to environmental, social, and economic management. At its core, the strategy prioritises conserving and enhancing the natural beauty of the landscape such as its woodlands, river ecosystems, and biodiversity while ensuring that development and land use remain within the "capacity" of the landscape, meaning that any change must not damage its essential character. This helps protect ecosystems and encourages practices like sustainable farming, forestry, and habitat restoration, which support biodiversity and resilience to environmental change. At the same time, the plan promotes sustainable economic activity by supporting local industries such as tourism and agriculture in ways that benefit, rather than degrade, the environment, for example, encouraging eco-tourism and local food production. Another key aspect is its strong emphasis on community involvement and partnerships, bringing together local authorities, landowners, businesses, and residents to collaboratively manage the landscape, which helps ensure that sustainability is embedded in everyday decision-making and reflects local needs. The strategy also promotes sustainable transport, energy use, and recreation, aiming to reduce environmental impact while still allowing people to enjoy the area responsibly. Overall, by balancing environmental protection with economic viability and community wellbeing, the Wye Valley AONB strategy creates a holistic framework that supports long-term sustainability for both the landscape and the people who live in and visit it.

Education

There has been a strong focus on developing local skills through investment in education, training, and apprenticeship programmes to support a resilient and sustainable workforce. For example, local colleges and training providers work closely with employers in sectors such as forestry, tourism, advanced manufacturing, and environmental management to deliver targeted qualifications and hands-on experience.

Initiatives have been introduced to ensure that the skills of the local population match the needs of regional industries, helping businesses remain competitive while providing long-term employment opportunities for residents. Employers and training centres collaborate to identify key skills gaps and respond to changing economic demands, particularly in sustainable industries and land-based sectors.

[7] https://www.wyevalley-nl.org.uk/caring-for-wye-valley-aonb/management-plans/

A key development supporting this approach is the AccXel Construction School, a state-of-the-art training facility focused on modern construction skills. The centre was established to address regional skills shortages in the construction industry by providing specialist training in areas such as sustainable building techniques, digital construction, and retrofit skills. Developed in partnership with industry leaders, AccXel helps create a highly skilled local workforce equipped to meet current and future demands, particularly in environmentally sustainable construction.

Ongoing regeneration efforts in the Forest of Dean are informed by detailed assessments of local economic, social, and environmental needs, alongside consultation with businesses and the community. At the heart of these programmes is a commitment to balancing economic growth with environmental sustainability and social wellbeing, ensuring the long-term prosperity of the area and its residents.

Environmental Responsibility

A proportion of the Forest of Dean lies within a nationally protected landscape, recognised for its exceptional natural beauty, rich biodiversity, and cultural heritage. Designated as an Area of Outstanding Natural Beauty (AONB), it reflects a landscape shaped by centuries of interaction between people and nature. This designation aligns with the International Union for the Conservation of Nature (IUCN) Category V Protected Landscape classification, highlighting its importance not only in conserving wildlife but also in supporting sustainable land use and local communities. The continued recognition of AONBs by the IUCN UK Committee reinforces their vital role in protecting the UK's natural environment.

In addition to its AONB designation, the Forest of Dean contains a number of sites recognised for their international and national ecological importance. Several wetlands are protected under the Ramsar Convention as Ramsar sites, highlighting their value for waterfowl habitats and biodiversity on a global scale. The area also includes multiple Sites of Special Scientific Interest (SSSIs), designated by Natural England to protect rare species, geological features, and important habitats such as ancient woodland and limestone grassland. Furthermore, parts of the Forest of Dean form Special Areas of Conservation (SACs), contributing to the UK's network of protected sites under the Habitats Directive. These SACs are particularly important for safeguarding species like bats and protecting unique habitats including old-growth forests and cave systems. Together, these overlapping designations underline the Forest of Dean's significance as a landscape of exceptional environmental value, requiring careful management and long-term conservation.

Sustainability is also a key focus for many organisations operating within and around the Forest of Dean. Local utilities and businesses are increasingly committed to reducing environmental impact by preventing pollution, improving operational efficiency, and adapting to strict environmental regulations. This includes careful management of sites to protect surrounding ecosystems, investment in renewable energy solutions, and the responsible reuse of resources such as recycling treated wastewater by-products for agricultural use as a sustainable alternative to chemical fertilisers.

In addition, there is a strong emphasis on working collaboratively with local communities to improve resource efficiency, particularly in water usage. With water resources under growing pressure, sustainable sourcing and consumption are critical priorities. Efforts are also made to

minimise disruption to wildlife and natural habitats when planning and constructing new developments, ensuring that economic activity remains balanced with environmental stewardship.

Energy

The combined impact of the UK Energy system is responsible for over 80% of UK greenhouse gas emissions. Reducing demand through energy efficiency remains a priority and there is also more scope for renewable energy generation throughout our district. This includes the support and growth of Community Energy, which allows residents, organisations and communities to get more involved in their energy future by understanding, generating, using, owning, and saving energy. FoDDC has been working alongside Gloucestershire Councils and key stakeholders to develop a Local Area Energy Plan which assesses the Gloucestershire energy system and maps out an effective path for decarbonisation by identifying infrastructure needs, a pipeline of projects for investment and coordinated action. Significant progress has been made throughout the district to progress action on energy, including the establishment of Forest Community Energy, the district's first community energy organisation, community solar projects delivered in partnership as part of the Forest of Dean AURORA Project; FoDDC grant funding to help community organisations and businesses install renewable energy and heating systems.

Via our Future Energy Landscapes project in partnership with CSE, FODCAP and FCE, we are identifying potential land for wind turbines and solar farms. There is an opportunity to ensure biodiversity net gain and ensure that solar farms are also sites of habitat creation. There is also potential for agri-photovoltaics, where grazing and crop production can form part of the solar site. We are also focusing on improvements to grid capacity, and deploying smart local energy systems and networks, working at micro and small scale to power communities directly. The university at Hartpury is a local rural demonstrator for decarbonisation and sustainable energy. The Severn Estuary has potential for tidal power generation also.

As part of our draft Nature and Climate Emergency Strategy 2026-2040, we have identified opportunities under the energy theme and specific actions as follows, that will target a reduction in energy demand, an acceleration in the deployment of renewable energy and low carbon heating and support the community energy sector as part of this transition:

Aim: A reduction in energy consumption, decarbonisation of heat and power throughout the district including the FoDDC Estate.

- Support a feasibility study and pilot of a low carbon rural renewable heat network and assess the district wide potential application.

Aim: Improved community engagement to enable residents, communities and businesses to reduce energy demand and participate in a local renewable energy transition.

- Work with local communities to identify local energy needs and potential suitable renewable energy generation sites.

- Explore the provision of low-cost finance for homeowners and businesses to invest in renewable energy and heat.
- Accelerate the delivery of renewable energy generation across the district and enable an evidence-led planning framework to support this.

Aim: Strengthen the capacity and reach of Community Energy (CE) organisations and enable new community-led renewable energy projects.

- Establish a framework for partnership working with Community Energy groups to support growth in capacity, skills and project delivery.
- Assess all council assets for renewable energy opportunities and identify potential for Community Energy led projects.

Sustainable Transport Initiatives

The rural and often hilly nature of our district presents significant challenges in term of getting around, with extreme weather often disrupting travel, especially in winter months. There is a reliance on the road network in the absence of rail connectivity between towns, and the low population density when compared to urban centres in Gloucestershire results in a lack of public transport options for many. The lack of transport connections within the area can further exasperate rural isolation and opportunity issues in the district.

Recent local progress on sustainable transport includes building stronger working relationships with the Gloucestershire County Council Transport Teams to influence transport operators and access central government funding, developing an Active Transport Strategy with our Towns and Parishes which identifies and tests feasibility over 120 active travel routes for walking wheeling and cycling, supporting the growth of community transport to include on demand bus services (the Robin) and electric minibuses, piloting a EV car club and installing electric car chargers throughout public car parks.

Our draft Nature and Climate Emergency Strategy 2026-2040, identifies further opportunities under the mobility and transport theme to prioritise more sustainable transport solutions which improve mobility with the additional benefits off helping to create green skills and jobs, improved physical and mental health, and reduced pollution. Aims include

Aim: Further collaboration at a county-level to deliver significantly improved mobility and sustainable transport options for residents and businesses.

- Work with community partners and organisations (e.g. FODCAP and GCRP) to represent transport users in key forums, ensuring the needs of the district are represented.
- Collaborate with Councils and Local transport groups to lobby Central Government and Transport Providers to provide better public transport.

- Support the Gloucestershire Green Skills Programme and identify opportunities for employment, training and skills in the Forest of Dean to meet local transport needs (e.g. E Bike, EV Maintenance and infrastructure).

Aim: Enhanced infrastructure and local facilities/amenities reduce the need for residents to travel for work, shopping or leisure pursuits.

- Establish a Forest of Dean Active Travel Forum to help ensure a cohesive community view of active travel needs are presented to county and regional transport bodies.

- Support the provision of low carbon business workspace, commercial development and co-working space to help reduce the need for commuting.

Aim: Local resident and visitor journeys are made using lower carbon options.

- Promote rail travel, bus travel and demand responsive bus services for residents and visitors.

- Maintain an up-to-date Electric Vehicle Charge Point (EVCP) strategy that ensures suitable infrastructure provision, responding to the growth in electric vehicle use in the district.

- Expand and improve community transport and the delivery of integrated transport hubs to connect services and provide more sustainable travel choices.

- Piloting and promoting the use of Shared Mobility schemes including Car Clubs, E Bike Cycle Hire and Lift share including integrated access to public, community transport and booking systems (e.g. Apps and multi-use tickets).

- Supporting and promoting “slow tourism" to encourage more overnight/longer stays, connecting our towns and destinations including active travel, public and on demand transport.

Heat and Power Strategy – Built Environment

The emissions arising from the construction and operation of buildings in the the Forest of Dean impacts all sectors and presents a significant opportunity to reduce greenhouse emissions and provide warmer, more comfortable, resilient and safer homes. Heating our homes is also an increasingly significant proportion of the cost of living and is often impacted by international events which increase fuel and energy costs.
The Forest of Dean has a high dependency on heating oil with approximately 40% of homes which are not connected to the gas grid, the district also has a high proportion of heritage buildings which are of solid stone construction making energy efficiency and retrofit often more difficult and costly many urban areas.

Despite these challenges FoDDC and its partners have already been working together to improve the efficiency and comfort of homes and buildings through action including; the Warm and Well Programme, providing home energy advice, support with grants and installation including a focus on low income households; significant investment in social housing retrofit including Two Rivers Housing who are upgrading over 750 homes in the district; Furbnow a county wide one stop shop for home energy efficiency for self-financing domestic retrofit, and a Thermal Imaging Camera Loan Scheme to help residents assess the thermal efficiency of their homes. Further work is also under way to explore the potential for small scale rural heat networks connecting 30 – 50 homes to a shared ground source heating system, a system that will be widely replicable across rural areas with land that can be used for both shallow and deep bore holes to extract thermal energy, whist also continuing to be used or crops, grazing and additional renewable energy generation (e.g. wind and solar).

The Forest of Dean is working with Gloucestershire partners to create a spatial, costed Local Area Energy Plan, identifying where new local generation, heat networks, and energy efficiency improvements should be prioritised. This will help to identify further potential for community owner energy and heat

There are additional opportunities which will be explored as part of a new Nature and Climate Emergency Strategy this year to include;

- Net-zero housing standards for new developments and retrofitted homes (e.g. fabric-first, heat pumps, EV charging).
- Scaling up retrofit, coordinating local installers, training and bulk purchasing to support household in the most need.
- Nature-positive development, with integrated sustainable drainage systems, tree planting, biodiversity gain and active travel built into our communities.
- Innovation zones for sustainable building methods and circular economy (e.g., timber construction using local forestry assets and traditional skills).

Health and Wellbeing

The development of health, wellbeing, and sustainability initiatives in the Forest of Dean District has emerged from a collaborative effort to build on existing nature-based programmes rather than duplicate them. Originating from discussions within a biosphere education subgroup, stakeholders identified a strong foundation already in place through organisations like Wild Earth Journeys and projects linked to the Gloucestershire Health Care NHS Trust. These initiatives emphasise the powerful role of nature connection in improving mental health, supported by structured programmes such as wellbeing walks, mindful gardening, and an evidence-based eight-week mental health course demonstrating positive social return on investment. Complementary efforts, including habitat development and volunteering pathways at the Wilderness Centre, aim to build eco-literacy and provide meaningful long-term engagement for participants beyond initial interventions. NHS-linked

green space projects, including forest and allotment sites, further reinforce the integration of therapeutic environments within healthcare settings, although challenges such as access restrictions to proposed hospital garden spaces highlight the need for systemic alignment. A key focus moving forward is the creation of clear pathways from wellbeing programmes into education, volunteering, and employment, potentially supported by mechanisms like the NHS Apprenticeship Levy and alternative qualifications such as ASDAN. Overall, the shared vision centres on a joined-up, sustainable approach that connects health, community resilience, and environmental stewardship, while ensuring accessibility, collaboration, and long-term impact across the district.

In the Forest of Dean District, social prescribing is increasingly being used as a way to connect people with nature-based activities that support both personal wellbeing and environmental sustainability. Through partnerships with organisations such as Gloucestershire Health Care NHS Trust and community groups like Wild Earth Journeys, individuals can be signposted to programmes including woodland walks, conservation volunteering, and community gardening. These initiatives not only improve mental and physical health but also foster a deeper connection to the local environment, encouraging sustainable behaviours and stewardship of natural spaces. By aligning health outcomes with ecological awareness, social prescribing in the district plays a key role in building resilient communities and a more sustainable future.

4.4 "Have an appropriate size to serve the three functions of biosphere reserves"
(This refers more particularly to (a) the surface area required to meet the long term conservation objectives of the core area(s) and the buffer zone(s) and (b) the availability of areas suitable for working with local communities in testing and demonstrating sustainable uses of natural resources).

Total biosphere area is 74717.68ha with 70333.51 ha terrestrial and 4384.17 ha Marine. The core area is a total of 628.03 ha with only terrestrial and no marine areas. The buffer is a total of 17946.66 ha with 14262.68 ha terrestrial and 3683.98 ha marine. And finally, the transition area is a total of 56142.99 ha with 55442.8 ha terrestrial and 700.19ha marine.

There are eleven core sites allocated across the district, these are for the protection of the biodiversity. The core zones will all be sites of special scientific interest (SSSI) which already have been designated and most of these will be in a favourable status. These are strictly protected by the Department of Food and Rural Affairs. In addition to the SSSI status the core zones in six areas will also be recognised as special areas of conservation (SAC). The Forest of Dean has the west side designated as an area of outstanding natural beauty through National Landscapes and seven of the core zones lie within this designation. A large area of the district is designated statutory forest and two of these core sites lie within this area. Dymock Wood one of the core sites is a countryside and rights of way designated area (CROW) site.

There are twenty-two buffer zones allocated. The buffer zones all contain areas which are SSSIs except Collinpark Wood which is classified as a SSSI impact risk zone. Within the allocated buffer

area there are ten sites designated as SACs. Two sites along the Severn Estuary are also allocated as flood zones. Five of the buffer zones lie within the AONB. Two of the buffer areas lie within the statutory forest. Two sites are RAMSAR sites and contain wetlands of international importance. The buffer zone is also extended to consider the roosts of the Greater and Lesser Horseshoe bats.
The remaining areas are transition areas which will be used by residents for living and working in a sustainable way and are areas which are urban or other areas without any of the special designations as above.

4.5 Through appropriate zonation:
"(a) a legally constituted core area or areas devoted to long term protection, according to the conservation objectives of the biosphere reserve, and of sufficient size to meet these objectives".
(Describe the core area(s) briefly, indicating their legal status, their size, the main conservation objectives).

Within the Forest of Dean, core areas are legally protected through multiple national and international designations, including Special Areas of Conservation (SACs), Special Protection Areas (SPAs), and Sites of Special Scientific Interest (SSSIs). These designations provide the highest level of protection for biodiversity and geodiversity, ensuring long-term conservation in line with UK and international environmental legislation.

Key core sites include the Wye Valley and Forest of Dean Bat Sites SAC, designated for its internationally important bat populations, and the Wye Valley Woodlands SAC, recognised for its ancient semi-natural woodlands. In addition, extensive areas such as The Forest of Dean SSSI contribute to the core network, supporting priority habitats including mixed deciduous woodland, heathland, and species-rich grassland.

The principal conservation objective across these core areas is to maintain or restore habitats and species to “favourable conservation status,” as defined by national biodiversity strategies and statutory agencies such as Natural England. This includes protecting key species (notably rare bats, birds, and woodland flora), preserving ancient woodland structure, and safeguarding geological features.

Condition monitoring indicates that a substantial proportion of SSSI land within the Forest of Dean is in favourable or recovering condition, demonstrating positive management outcomes. While some units remain in unfavourable condition, ongoing conservation efforts aim to improve these trends. Overall, the extent and legal protection of these core areas are considered sufficient to support long-term ecological resilience and biodiversity conservation objectives.

"(b) a buffer zone or zones clearly identified and surrounding or contiguous to the core area or areas, where only activities compatible with the conservation objectives can take place".
(Describe briefly the buffer zones(s), their legal status, their size, and the activities which are ongoing and planned there).
The buffer zones surrounding the core areas of the proposed Forest of Dean Biosphere are clearly defined and form a continuous transition between the strictly protected core sites and the wider

landscape. These zones include a mixture of publicly and privately managed woodlands, river corridors, and traditionally farmed landscapes that support biodiversity while allowing sustainable human activity.

The majority of core areas, including key Sites of Special Scientific Interest (SSSIs) and ancient woodland habitats, are embedded within a broader mosaic of protected and managed land. The buffer zones extend across much of the statutory Forest of Dean, areas designated under landscape and conservation frameworks, and adjoining riverine environments such as the Wye Valley.
In terms of legal status, the buffer zones include land covered by national and international designations such as Areas of Outstanding Natural Beauty (AONB), Special Areas of Conservation (SACs), and other locally protected sites. These designations ensure that land use within the buffer zones remains compatible with conservation objectives while supporting local livelihoods.
The size of the buffer zone is substantial, forming a significant proportion of the biosphere area and providing ecological connectivity between core habitats. Activities within the buffer zones include sustainable forestry, low-intensity agriculture, recreation, eco-tourism, and environmental education. These activities are managed to maintain and enhance biodiversity, landscape character, and cultural heritage.

"(c) an outer transition area where sustainable resource management practices are promoted and developed".
(The Seville Strategy gave increased emphasis to the transition area since this is the area where the key issues on environment and development of a given region are to be addressed. Describe briefly the transition area(s), the types of questions to be addressed there in the near and the longer terms. The Madrid Action Plan states that the outer boundary should be defined through stakeholder consultation).

In the Forest of Dean Biosphere, the transition area forms the outer zone where communities, businesses, and organisations work together to promote sustainable economic development alongside environmental stewardship. This area includes settlements, farmland, working forests, and river catchments, where people live and actively shape the landscape. The outer edge is the district boundary as it is a clear administrative area and a good way to include all of the local people of the area in the biosphere.

In line with the principles of the UNESCO Man and the Biosphere Programme and the Seville Strategy, the transition area is central to addressing key challenges around climate resilience, sustainable land use, biodiversity recovery, and local livelihoods. In the short term, priorities include strengthening partnerships between local authorities, land managers, community groups, and businesses; supporting sustainable tourism; and promoting low-impact forestry and agriculture. Over the longer term, the transition area will focus on climate adaptation, nature recovery at a landscape scale, green economic development, and enhancing community wellbeing.

The outer boundary of the transition area was defined through stakeholder consultation, it reflects functional social, economic, and ecological connections across the region, in accordance with the Madrid Action Plan.

No new overarching organisation is proposed to manage the biosphere at this stage. Instead, delivery will be coordinated through existing partnerships and governance structures within the Forest of Dean, with a lead partnership body working collaboratively with local authorities and key stakeholders. This will include utilising ancient traditions for forest management such as the Verderers, Freeminers and Commoners.

Implementation of the biosphere programme will be achieved through partnership working and embedded within existing plans and strategies. A detailed strategy will be developed following formal designation to guide project delivery and attract external funding. Key partners will be encouraged to align their own organisational plans with biosphere objectives.

Delivery will primarily utilise existing mechanisms to achieve practical outcomes on the ground, including:

- Local Authority plans and strategies (e.g. Local Development Frameworks, climate and sustainability strategies, transport plans, biodiversity action plans)
- AONB and landscape-scale management plans where relevant
- Forestry and land management plans across the working forest landscape
- River catchment and water management plans led by agencies such as the Environment Agency
- Protected site management plans (e.g. SSSI and nature reserve strategies led by statutory bodies and NGOs)
- Community-led initiatives such as neighbourhood plans and local sustainability projects
- Regional and sectoral partnerships supporting nature recovery, green infrastructure, and sustainable enterprise

Through these coordinated approaches, the transition area of the Forest of Dean biosphere will act as a living model of sustainable development, where environmental, economic, and social objectives are integrated and tested in practice.

(d) Please provide some additional information about the interaction between the three areas.

In the Forest of Dean Biosphere, the three zones core, buffer, and transition are closely interconnected and function as a single, integrated system rather than separate areas.

The core areas, which are designated for their high biodiversity and conservation value, depend on the surrounding buffer zones to maintain ecological stability. Species do not remain confined to core areas; instead, they move between zones for feeding, breeding, and migration, bats are a particular example of this. The buffer zones therefore act as protective layers, reducing external pressures while supporting important ecological processes such as pollination, seed dispersal, and water regulation.

The transition zone links directly to the buffer zone and is where most human activity takes place, including settlements, transport routes, and economic activities. Infrastructure such as roads and public rights of way passes through both Transition and buffer zones, physically connecting communities with natural areas. This allows people to access green spaces easily, encouraging recreation, education, and a stronger relationship with the environment.

Natural resources are distributed across all three zones, meaning that sustainability depends on their interaction. The zones are not only interconnected but interdependent. Much of the settlement pattern, for example, facilitates easy physical connection to the surrounding accessible green areas, and customs such as common grazing support the character of settlement fringes across the district. Changes to one zone, whether through development pressure, loss of grazing or fragmentation of open space, have direct consequences for the functioning of the others. Forests, rivers, and soils in the core and buffer zones support biodiversity and ecosystem services, while the transition zone relies on these for resources like timber, water, and food production. In turn, human management practices in the transition zone such as farming or urban development directly affect the health of ecosystems in the other zones.

There is also a strong environmental connection between land and water systems across the proposed biosphere. Activities in the transition and buffer zones can lead to issues such as diffuse pollution, where nutrients from agriculture or waste enter rivers and streams, eventually impacting aquatic ecosystems in core areas. Managing these impacts requires coordinated action across all zones.

Overall, the interaction between the core, buffer, and transition zones is essential for achieving the proposed biosphere's goals. Conservation, sustainable development, and community engagement are interdependent, with each zone supporting and influencing the others to create a balanced and resilient environment.

4.6 "Organizational arrangements should be provided for the involvement and participation of a suitable range of inter alia public authorities, local communities and private interests in the design and the carrying out of the functions of a biosphere reserve".

4.6.1 Describe arrangements in place or foreseen.
(Describe involvement of public and/or private stakeholders in support of the activities of the biosphere reserve in core, buffer and transition areas (such as agreements, protocols, letters of intent, protected area(s) plans)).

It is proposed, the Forest of Dean District Council will oversee and deliver project development and be accountable for the day-to-day delivery of the partnership, project governance, implementation and finances.

The Forest of Dean Biosphere Action Group was formed in 2018 and has evolved into the Biosphere Steering Group which will evolve with the new proposed governance arrangements. It is a broad-based independent organisation with representatives from many local, regional and national organisations and individuals.

The purpose of the Partnership is to ensure a coordinated approach to the conservation and enhancement of the biosphere.

Key organisations who have been involved in the process are National Landscapes, Natural England, the Environment Agency, The Forest of Dean District Council, Gloucestershire County Council, local NGO's as well as other partners. The history and traditions of the Forest of Dean are embedded within certain groups who have been custodians of the area over centuries, and they are the Verderers, The Freeminers and the Commoners and all have been consulted regarding the nomination form.

Letters of support have been received from.

- Bird and Wildlife Conservation Charity - RSPB
- Common Nature
- Countryside Charity Gloucestershire - CPREG
- Dean Heritage Centre
- Environment Agency
- Forest Economic Partnership - FEP
- Forest of Dean Climate Action Partnership - FoDCAP
- Forest of Dean Local History Society
- Forest of Dean and Wye Valley Tourism
- Forestry England
- Forestry Volunteer Action Forum - FVAF
- Gloucestershire Nature Partnership
- Gloucestershire Wildlife Trust
- Hartpury University
- National Landscapes
- Natural England
- Severn Estuary Partnership – SEP
- Wilde Earth Journey
- Wylderne

Biosphere Engagement Timeline
Pre 2019

Previous National Designation Attempts

Pre 2019 Extensive debate on the special qualities of the Forest of Dean dating back to1938 1st National Forest Park &1947 Hobhouse report. Unsuccessful attempts to seek various designations such as Area of Outstanding Natural Beauty made, now known as National Landscapes.

2019-2021

Forest Economic Partnership

Forest Economic Partnership with assistance from the Office for National Statistics produced a report setting out an economic case for Biosphere designation 2019.

The Forest We Want known now as Our Forest

Forest Economic Partnership conducted a public survey (Oct – Dec 2021) entitled "The Forest We Want" to get feedback on the idea of becoming a Biosphere, 600 people and 40 businesses responded.

Glover Review

National Landscape review (Glover Review) "[FoD]…considerable local support that national designation would be good. There is a collaborative National Lottery Heritage Fund-supported project (the Foresters' Forest) which would appear to provide an excellent jumping-off point for a new designation. We support it."

Note: While the Glover Review's support was clear, the government's subsequent response did not result in any new designation or protection for the Forest of Dean, despite the review's recognition of its suitability for such recognition. The biosphere application represents the realisation of the aspiration that the Glover Review identified but that was not carried forward through that process.

2024

UNESCO Candidate Biosphere Status

Council Officers present to UNESCO UK Man and Biosphere (MAB) Committee who subsequently gave Biosphere 'candidate status' to the Forest of Dean. (Candidate status is an expression of interest to UK MAB in applying for UNESCO Biosphere status in the future)

2025

Primary School Poster Competition April 2025

Tibberton Primary School were selected as the winners of the local primary school poster competition. Students were asked to design a poster which highlights what makes the Forest of Dean special and unique. The winning school received £500 to spend on climate action project of their choice which was agreed with the Council. The project selected by the winning student focused on improving biodiversity within the school grounds and even involved creating a hedgehog house.

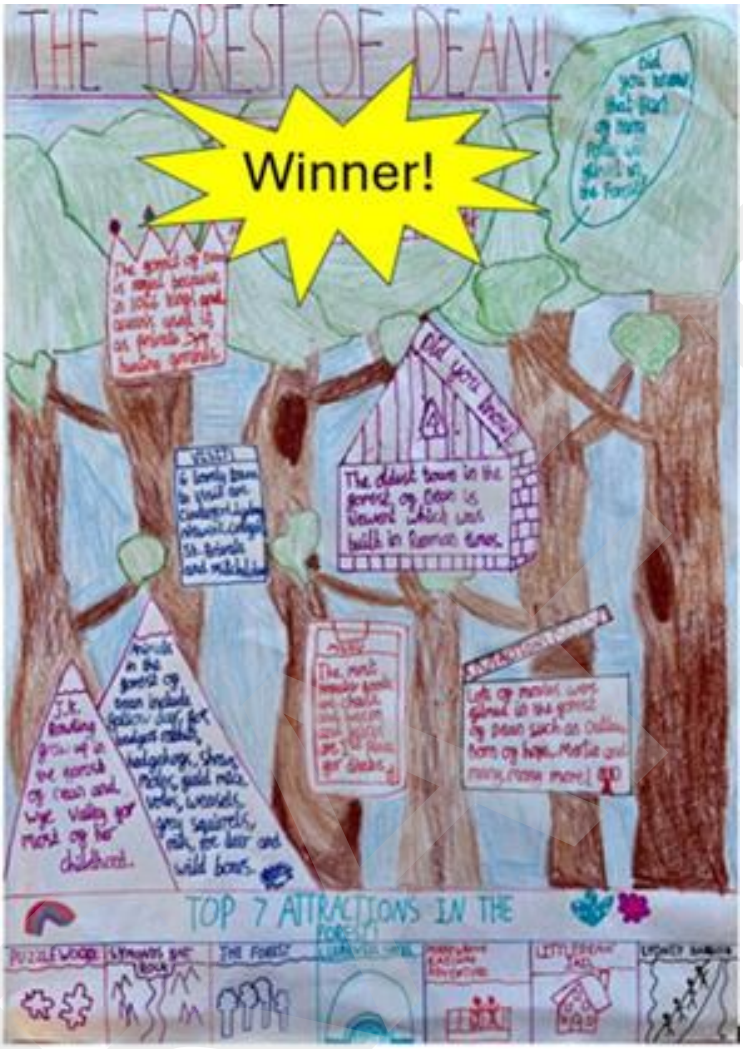


Figure 4 – Winning Primary School Poster

The Forest of Dean District Council Vote Unanimously

A Unanimous vote at the Forest of Dean District Council finalised the decision to support an application for UNESCO Biosphere Designation for FOD

Business Survey

A business survey was conducted

Gloucestershire County Council

followed by later support from Gloucestershire County Council.

Young Planners Presentation

Officers from the Forest of Dean District Council led a talk for the Young Planners on promoting tourism and protecting the environment. They had the opportunity to hear more about how the Council is working hard to have the Forest of Dean District designated as a UNESCO Biosphere in recognition of its natural spaces and sustainable practices, and what that designation would mean both economically and socially. Twenty Young Planners attended the talk before heading off to explore the heights of Go Ape.

The talk firstly gave in depth information about what a UNESCO Biosphere is and why it has the potential to create so many opportunities for the district. There was then a chance to consider how planning interacts with the protection of the environment and some of the specific considerations for developments within protected woodlands, to explore how good planning can promote health and wellbeing, as well as how planning can deliver economic benefits through increased tourism and how that is managed against environmental protection aims.

Receiving Biosphere status offers an internationally recognised designation for our local area to celebrate the people and the environment however it will not impact on planning decisions.

Figure 5 – Image of officers presenting to the Young Planners Group

Biosphere Stakeholder Conference
Partners from across the country gathered at the Wilderness Centre in Mitcheldean to pledge their support for the Forest of Dean's journey toward Biosphere designation.

Inspiring voices from Biosffer Dyfi Biosphere and North Devon UNESCO Biosphere shared how their communities have flourished since achieving biosphere status, with presentations detailing thriving wildlife and sustainable tourism that enables local businesses to grow.

During these discussions, a powerful theme became apparent throughout the day: we must all work together to protect what makes the Forest so unique.

Key supporters and partners of the application bid were also awarded certificates in recognition of their support.

Figure 6 – A summary infographic highlighting key information about the stakeholder conference 2025

The Verderers Court Briefing

The Verderers Court welcomed officers from the Forest of Dean District Council to brief them on the nomination for UNESCO Biosphere designation. The officers spoke about what a biosphere is and how it has the potential to provide so many opportunities for our district and help to protect it and provide a legacy with local government reform coming soon. The role of the Verderers would make them an essential element of the nomination due to their cultural significance and pivotal role that they play within the Forest of Dean.

Figure 7 – The Verderers Court Speech House the Forest of Dean

Freemining an Ancient Tradition

The Freeminers welcomed officers to Hopewell Colliery to learn more about the ancient tradition and the role which this cultural aspect of the Forest of Dean will play in our UNESCO Biosphere nomination. The Freeminers are passionate to protect this ancient right for future generations and to educate local young people to help promote the ancient practice and raise awareness. Protecting cultural heritage is a key objective of becoming a UNESCO Biosphere.

Figure 8 – Hopewell Colliery Freemine

2026

Nature and Climate Strategy Meeting

It was a busy and productive workshop run by the Forest of Dean District Council and FoDCAP on developing the council's new "Nature and Climate Strategy" plus considering themes of Climate Change Adaptation, the application for UNESCO Biosphere status, Community and Knowledge, and Skills and Experience. There were local voices from many different organisations in the mix.

- We each chose three of the main topics to engage with, ranking our top five of a long list of different strategic options at both County and District level. We then discussed the benefits, challenges and practicalities of the 'top' options. The topics were:
- Buildings
- Energy
- Food, Farming and Land-use
- Nature Recovery and Biodiversity
- Mobility and Transport
- Resources and Waste
- Sustainable Economy
- Governance, Planning and Decision Making
- Finance and Offsetting
- The afternoon was dedicated to an 'OpenSpace' session where the audience suggested the topics that they wanted to discuss. One of these was the benefits of Community Energy. All-in-all a very interesting day! We even had the opportunity to speak about the upcoming biosphere nomination to help our local people know more.

University of the West of England Collaboration

A member of the climate team visited the University of the West of England in Bristol to deliver a presentation on the district's nomination to become a UNESCO Biosphere.

Students at the University will be undertaking project-based work, using their Geographical Information Systems expertise, to support and strengthen the nomination process.

As part of their undergraduate projects, the students will explore how their skills can be used to map the vital information required by UNESCO from cultural heritage assets to key species.

Education and research form one of the three core pillars of Biosphere status, and it was inspiring to see the enthusiasm students showed for the nomination.

Once completed, the students hope to make their projects accessible to the local community.

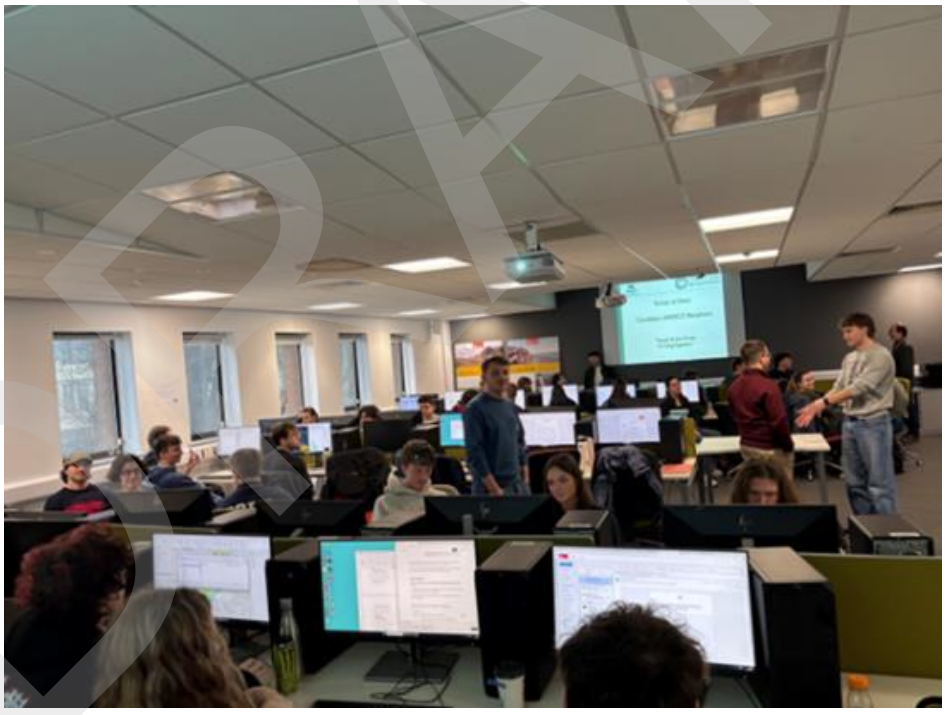


Figure 9 – Students at UWE prepering their end of year projects assisting the Biosphere nomination

FVAF and Wylderne Engagement Piece

Wylderne, the community business that bought back the Wilderness Centre last summer, and the Forest Voluntary Action Forum with its wide networks across the Forest community, have been asked by FODDC to invite people in the Forest to tell the story of the future of this beautiful area. Since late January we have been visiting drop-in centres, youth groups, and held group sessions in: Newent - The Chill out Zone, Coleford - Café sixteen, Blakeny YOUTH Workshop, Lydney - Victoria Centre, Staunton & Corse - The Swan Community Hub, Ruardean YOUTH Workshop, Cinderford - Hilltop Families Centre, Cinderford - Ow Bist, Newent YOUTH session, Sedbury - One Stop Café, LBTQ+ Workshop – Coleford

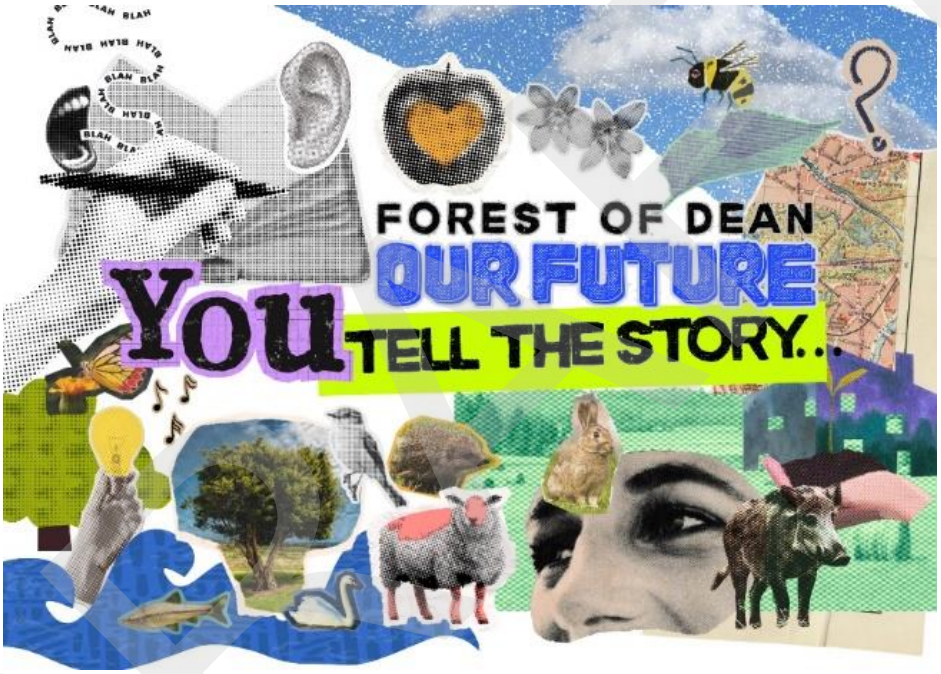


Figure 10 – FVAF poster to encourage people to join the conversation

Young and old, people are affirming that the Forest is a unique area of the country. People describe its distinct qualities as freedom; easy access to nature; resilience; resistance; self-reliance; knowledge of healing plants; and ancient customs. And that its enduring culture can be summed up as arising from being a 'working Forest'. Visions for the future include being much more self-sufficient in food production, reviving traditional forest skills; and establishing a circular economy including using local timber for constructing the new houses that are planned. There are questions about how the different zones that have been proposed for the biosphere have been decided, how these zones may impact on commoners' rights, and even some who fear that a future biosphere will be funded through further enclosures of land and the extraction of carbon credits. We hope to reach as many people across the Forest as possible, so we have developed two online options, one text-based, the other a video chat room.

Online and Video Chat Room Engagement

An AI platform called Polis was used to collect opinions from people across the district. The outputs from this online platform are very interesting and have drawn in the widest range of views from across the community, but because the algorithm is expressly intended to enable a community to witness its division of opinion and its so-called 'uncommon ground'. Namely it both values difference, and highlights areas of agreement between different opinion groups despite their disagreement with many, if not most of, the other groups' statements.

The invitation was to vote on short statements that participants submit agree; disagree; pass. And if you wish to, submit your own statement. The platform was continually moderated for duplicated statements. Out of 69 statements, one was rejected.

The preamble to the voting included a question, a video, and a link to further resources on the Biosphere page on the FODDC website.

Video chat rooms were also used as an additional form of engagement however take up was poor and this was not a successful approach.

Biosphere Features on BBC Radio Sounds Gloucestershire Radio

https://www.bbc.co.uk/sounds/play/m002qjgx
Check out this Gloucestershire Radio show for more information on the Forest of Dean becoming a UNESCO Biosphere. Our mention can be heard at 2:26:14 into show.

Town and Parish Council Event

The Wilderness Centre was the host to a special meeting on the 7th February. Town and Parish Councillors were invited to a workshop to look at the future of the Forest and how UNESCO Biosphere designation could help connect people and nature and thereby protect its natural heritage.

A wide-ranging discussion helped draw out different perspectives and further support the understanding that those that have kept alive for centuries the ancient traditions of Commoning and Freemining, would be best placed at the heart of a future Forest of Dean Biosphere.

Figure 11 – Town and Parish Councillors attending an event to learn more about the Biosphere nomination

UK Biosphere Webinars

Thank you to the Isle of Man, Isle of Wight, North Devon and Living Coast Biospheres for running four informative and inspiring webinars over the last five months for those involved in codesigning our biosphere to help work towards a more sustainable future. This was a joint project with Doncaster Humberhead who will also be nominating their local area to become a UNESCO Biosphere.

A5 District Wide Leaflet Drop

Every household has received a biosphere information leaflet during March 2026 which directs them to the biosphere website for more information. The leaflet can be accessed using the link below.

https://www.fdean.gov.uk/media/tzbm5tu2/biosphere-leaflet.pdf

Local History Society

An officer attended the Local History Society AGM at their request to discuss the biosphere nomination and the local history contributions at their request.

West Dean Parish Council Meeting

Officers attended a special bespoke meeting at the West Dean Parish Council to present the biosphere and answer questions at the request of the Parish Council.

Cinderford Town Council Meeting

Officers attended a special bespoke meeting at the Cinderford Town Council to present the biosphere and answer questions at the request of the Town Council.

Visit Dean Wye AGM

Officers from both the Biosphere Team and the Sustainable Economy Team attended the Visit Dean Wye AGM at their request to present the biosphere nomination as well as answer questions and make key connections through Visit Dean Wye.

Westbury Parish Council Meeting

Officers attended a special bespoke meeting at the Westbury Parish Council to present the biosphere and answer questions at the request of the Parish Council.

4.6.2 Have any cultural and social impact assessments been conducted, or similar tools and guidelines been used?
(e.g. Convention on Biological Diversity (CBD)'s Akwé: Kon guidelines; Free, Prior, and Informed Consent guidelines, Biocultural Community Protocols, etc.). *(UNESCO's Programme on Man and the Biosphere (MAB) encourages biosphere reserves to consider and respect indigenous and customary rights through programmes or tools, in accordance with the United Nations Declaration on the Rights of Indigenous Peoples*
(*http://www.un.org/esa/socdev/unpfii/documents/DRIPS_en.pdf when relevant and appropriate)).*

No standalone assessment has been carried out for this application. Nevertheless, all Partnership members are bound by the UK Government's Equalities Act 2010. This legislation requires that, in the course of their strategic decision-making, they give proper consideration to reducing socio-economic disadvantage, preventing discrimination, harassment and victimisation, and advancing equality of opportunity. It also establishes expectations around transparency in pay, equitable employment practices, and the responsible delivery of public functions, including procurement. Taken together, these duties ensure that principles of equality, diversity and inclusion are embedded within the Partnership's governance and decision-making processes.

4.7 Mechanisms for implementation:

Does the proposed biosphere reserve have:
"(a) mechanisms to manage human use and activities in the buffer zone or zones"?
If yes, describe. If not, describe what is planned.

Management of the proposed Core Areas will continue to be according to the controls and objectives of the statutory nature conservation designations (SSSI and SAC) which are overseen by Natural England on behalf of the UK Government department of DEFRA.

The terrestrial Buffer Zone is partly covered by the Wye Valley AONB management plan 2021-2026, which will soon be replaced. This has been the subject of formal consultation prior to being adopted.

This Management Plan, under Section 89 of the Countryside and Rights of Way Act 2000, formulates local authority policy and action in relation to the management of the Wye Valley AONB. Regard will be given to this Management Plan which is a material consideration in the respective Core Strategies and Local Development Plans / Local Development Frameworks of the constituent local authorities, under National Planning Policy Framework and Planning Policy Wales.

The AONB Management Plan is a place-based plan derived through local consensus. It seeks to define the approach to conserving and enhancing the natural beauty of the AONB through the application of local solutions to local challenges that also respect the national and international importance of the AONB. It is a plan for the AONB, the landscape and the people who live in, work in and visit it - not just the AONB Joint Advisory Committee (JAC) and AONB staff Unit. Like its predecessors, this Management Plan provides guidance and strategic objectives, giving support and direction to help steer positive landscape change, particularly to those bodies that make up the Wye Valley AONB Joint Advisory Committee and the wider AONB Partnership. It also provides guidance to the local communities and many landowners, residents and visitors in the area. The Management Plan is thus for all the bodies and individuals whose actions affect the AONB and who can play an important part in helping to conserve and enhance the outstanding landscape of the lower Wye Valley, for the benefit of both current and future generations. However, this Plan does not provide all the answers for the next five years. It addresses the implications for the conservation

and enhancement of the natural beauty of the area. Meanwhile it complements a range of plans, strategies and programmes that cover other aspects in the administrative areas covering the Wye Valley AONB. In this context it articulates the value of the landscape and the added value brought by the designation and the role of the partners in the AONB in supporting society's needs through an integrated approach to land management.

The management and responsibility for the RAMSAR site in the Severn Estuary are shared among several organisations across both England and Wales, reflecting the estuary's cross-border nature. Key responsibility lies with statutory conservation bodies such as Natural England and Natural Resources Wales, which oversee the protection of habitats and species. They work alongside other authorities including the Environment Agency and local councils bordering the estuary. Management is guided by international obligations under the RAMSAR Convention, as well as UK and EU-derived conservation laws. In practice, the site is not managed by a single body but through coordinated partnerships that balance conservation, flood defence, industry, and navigation interests.

The Severn Estuary Partnership plays a coordinating and advisory role in the management of the Severn Estuary rather than having direct legal authority. Its main purpose is to bring together different stakeholders such as government bodies, local authorities, businesses, conservation groups, and community organisations to promote a more integrated and sustainable approach to managing the estuary.

The Partnership helps share information, supports research, and raises awareness about environmental issues affecting the estuary, including those linked to its designation under the RAMSAR Convention. It also contributes to planning and policy discussions, helping ensure that decisions consider both conservation and economic interests. Overall, its role is to act as a bridge between organisations, improving communication and encouraging collaborative management of the estuary.

"(b) a management policy or plan for the area as a biosphere reserve"?
If yes, describe. If not, state how such a plan or policy will be developed, and the timeframe. (If the proposed area coincides with one or more existing protected natural area(s), describe how the management plan of the proposed biosphere reserve will be complementary to the management plan of the protected area(s)).

The proposed biosphere will be administered by the Forest of Dean Partnership and delivered in partnership. It is proposed a strategy be developed to compliment the incumbent the current management plans which already exist in the Forest of Dean to encourage collaboration. The work will be undertaken in partnership with key decision maker and stakeholders across Forest of Dean District and set out practical implementation priorities according to the distinct objectives, geographical environments and Biosphere zones.

The Forest of Dean Biosphere Strategy will describe the elements of the Biosphere and work in terms of their characteristics, information resources, and current policy and practice.

The partnership will utilise existing custodians such as the Verderers, Freeminers and Commoners to help ensure the traditions of the district are protected and recognised and the voice of the local people is heard. A stewardship assembly will ensure that the voices of the local people is heard. The biosphere champion will provide a vision for the biosphere whilst delivery is conducted by the biosphere delivery partnership. An image can be seen below.

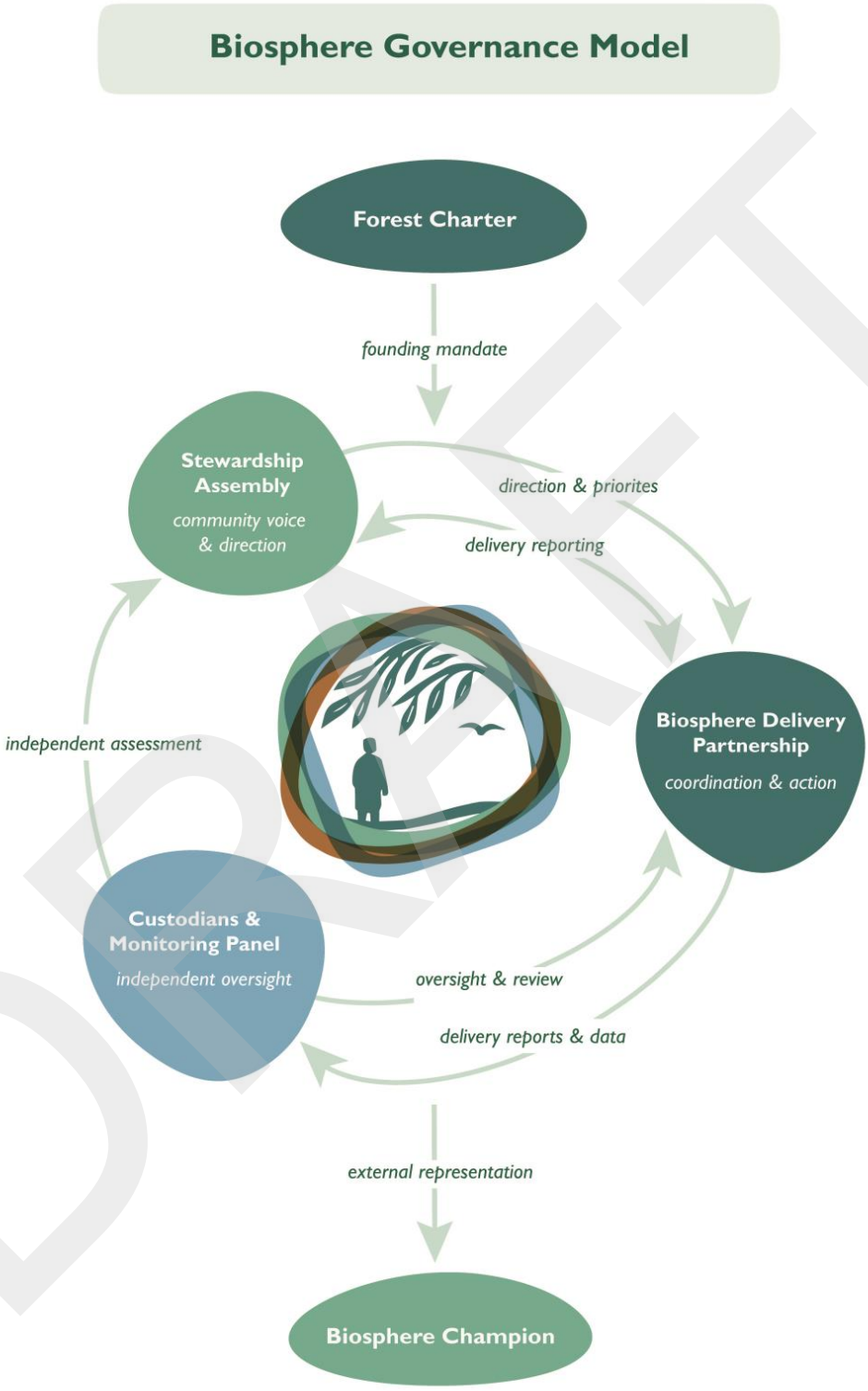


Figure 12 – A visual representation of the proposed Forest of Dean Biosphere Governance Structure

"(c) a designated authority or mechanism to implement this policy or plan"?

The Forest of Dean District Council will be the responsible body for the final design and implementation of the Biosphere Strategy as well as the officer leading on this. This responsibility will then be passed to the unitary authority which is established after local government reform takes place for example Gloucestershire County Council. This will be in combination with the Forest Economic Partnership who will assist with governance through the subgroup for biosphere and chairing the Biosphere Steering Group.

Figure 12 demonstrates a visual representation of the groups who will make up the governance structure. There will be a Stewardship Assembly, a Biosphere Delivery Group, a Custodians and Monitoring Panel and a Biosphere Champion. The Biosphere Delivery Partnership would assist in delivering the Biosphere Strategy. Further detail of this will be given in section 17.

“(d) programmes for research, monitoring, education and training"?
If yes, describe. If not, describe what is planned.

Monitoring of Nature Conservation Designations
Article 11 of the Habitats Directive (Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora) requires European Union Member States to undertake surveillance of the conservation status of habitats and species listed in its annexes, with a particular regard to priority habitat types and priority species. Natural England, the Government agency for wildlife conservation, undertake a 6-year rolling monitoring programme of Sites of Importance for Nature Conservation (SSSI). The Habitats Directive, through Article 12.4, also requires Member States to establish monitoring of incidental (accidental) capture and killing of the animal species listed on Annex IV of the Directive, and to undertake research or conservation measures to ensure that capture and killing does not have a significant negative impact on species concerned. The UK uses surveillance and monitoring of habitat types and species of community interest as a fundamental tool for ensuring the effectiveness of the conservation mechanisms used to achieve and maintain favourable conservation status. The conservation status of the habitat types and species within the UK was reported under Article 17 of the Directive in early 2008. For many years the UK government, devolved administrations, their respective nature conservation agencies, Non-Government Organisations (NGOs) and volunteers have undertaken relevant surveillance and monitoring to assess conservation status, trends and threats.

The Severn Estuary is designated as a RAMSAR site, meaning it is a wetland of international importance due to its extensive intertidal habitats such as mudflats, sandbanks and saltmarsh, which support large populations of migratory birds, fish and other wildlife. It is particularly important for wintering waterfowl and wading birds, with tens of thousands using the estuary as a feeding and resting area each year. The site is carefully monitored through coordinated management schemes involving organisations such as Natural England, Natural Resources Wales and the Association of Severn Estuary Relevant Authorities (ASERA). Monitoring includes regular bird counts (such as Wetland Bird Surveys), tracking of habitats and species, and research into features like bird roosting sites and fish populations to detect any changes or threats. In addition, authorities assess human impacts like recreation and development, ensuring activities are managed to maintain the estuary in a favourable conservation condition and prevent deterioration of this protected wetland.

Research Projects

Dog Walkers and Wildlife Interaction

Research led by Hartpury University has explored the interactions between dog walkers and wild boar in the Forest of Dean. Findings show that 45% of participants reported negative experiences, often while walking dogs. These interactions have influenced perceptions of safety and media

narratives, with local media tending to portray wild boar negatively. The study recommends community-based management and education to reduce conflict and promote coexistence.

Pond Conservation Network

The Newt Conservation Partnership, supported by Amphibian and Reptile Conservation and Freshwater Habitats Trust, has created and restored ponds across the Forest of Dean. These efforts have led to great crested newts successfully colonising over 84% of sites. The project uses eDNA monitoring and traditional surveys and emphasises landscape-scale conservation to support amphibians and rare aquatic plants.

Pine Marten Monitoring – VWT & Hartpury

The Vincent Wildlife Trust (VWT) is running the Martens on the Move project, which includes a National Pine Marten Monitoring Programme. Volunteers, including a lecturer from Hartpury, use trail cameras and thermal imagers to monitor den boxes and bait stations. Data is shared via a GIS-based system to track pine marten recovery across Britain.

Noble Chafer Research – Wildlife Trust

At Woorgreens Nature Reserve, managed by Gloucestershire Wildlife Trust, conservation efforts focus on heathland restoration through grazing by Highland cattle and other livestock. The site supports species like great crested newts, dragonflies, and wild boar, and is part of a broader initiative to protect threatened habitats in the Forest of Dean.

Local Nature Recovery Strategy (LNRS)

The LNRS framework is being developed to guide habitat restoration and biodiversity enhancement across Gloucestershire, including the Forest of Dean. It involves collaboration between local authorities, landowners, and conservation groups to identify priority areas and actions for nature recovery.

Wetland Bird Survey (WeBS) Counts

The British Trust for Ornithology (BTO) provides detailed bird count data through the WeBS programme. This includes monthly and annual peak counts for waterbirds in the Forest of Dean, supporting conservation planning and ecological research.

Nature Reserve Forestry Data

Sites like Woorgreens and Nagshead are monitored for biodiversity and habitat health. These reserves host species such as stonechats, cuckoos, and adders, and are managed through partnerships between Forestry England, RSPB, and Gloucestershire Wildlife Trust.

Forest Historic Group App

The Hidden Heritage of the Dean app, developed by Foresters' Forest, allows users to explore the Forest's industrial and cultural history via a GPS-guided trail. It features 27 points of interest with historical imagery and interactive content.

Local History Society Groups

The Forest of Dean Local History Society, one of the oldest in Gloucestershire, runs talks, walks, and publishes research through its journal The New Regard. It plays a key role in preserving and sharing the region's rich heritage."

5. ENDORSEMENTS:

(If a large number of Authorities are involved, please enclose the additional endorsement letters as a separate Annex).

5.1 Signed by the authority/authorities in charge of the management of the core area(s):

Full name and title: National Landscape - Area of Outstanding Natural Beauty - Andrew Blake Manager

Date: 18th March 2026

Address, email, phone number: Wye Valley National Landscape Team, Wye Valley AONB Office, Hadnock Road, Hadnock, Monmouth NP25 3NG aonb.officer@wyevalleyaonb.org.uk 01600 710842 / 07947 856773

Full name and title: Natural England - Emma Johnson
Deputy Director, West Midlands Area Team

Date: 16th March 2026

Address, email, phone number: Customer Services Hornbeam House Crewe Business Park Electra Way Crewe Cheshire CW1 6GJ emma.johnson@naturalengland.org.uk 0300 060 3900

5.2 Signed by the authority/authorities in charge of the management of the buffer zone(s):

Full name and title: Forest of Dean District Council – Leader of the Council – Adrian Birch

Date: 20th March 2025

Address, email, phone number: The Forest of Dean District Council High Street, Coleford, Glos, GL16 8HG, Adrian.Birch@fdean.gov.uk 01594 810000

5.3 Signed as appropriate by the National (or State or Provincial) administration responsible for the management of the core area(s) and the buffer zone(s):

Full name and title:

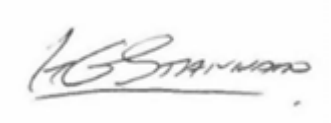
Date: _____

Address, email, phone number: _____

Full name and title: Forestry England – Kevin Stannard Deputy Surveyor Forest of Dean

Date: 28th February 2025

Address, email, phone number: West England Forest District, Bank House, Bank Street, Coleford, Gloucestershire, GL16 8BA, westengland@forestryengland.uk, 0300 067 4800



5.4 Signed by the authority/authorities, elected local government recognized authority or spokesperson representative of the communities located in the transition area(s).

Full name and title:

Date:

Address, email, phone number:

Full name and title: Gloucestershire County Council – Director of Economy and Environment - David Owen

Date: 10th September 2025

Address, email, phone number: Shire Hall, Westgate St, Gloucester GL1 2TG
david.owen@gloucestershire.gov.uk 01452 425000

Date: _____

Address, email, phone number: _____

5.5 Signed on behalf of the MAB National Committee or focal point:

Full name and title: _____

Date: _____

Address, email, phone number: _____

Further Endorsements to follow with the full application.

PART II: DESCRIPTION

6. LOCATION (COORDINATES AND MAP(S)):

6.1 Provide the biosphere reserve's standard geographical coordinates (all projected under WGS 84):

Cardinal points:	Latitude	Longitude
Most central point:	51.8283	-2.49012
Northernmost point:	52.02392	-2.47195
Southernmost point:	51.59418	-2.66609
Westernmost point:	51.66294	-2.68651
Easternmost point:	51.95318	-2.26755

6.2 Provide a map(s) on a topographic layer of the precise location and delimitation of the three zones of the biosphere reserve (Map(s) shall be provided in both paper and electronic copies). Shapefiles (also in WGS 84 projection system) used to produce the map must be attached to the electronic copy of the form.

The link below provides access to our online map.

https://fdeandc.maps.arcgis.com/apps/instant/basic/index.html?appid=035e20a03616494ebe0c9678f539ed85

If possible, also provide a link to access this map on the internet (e.g. Google map, website…).

7. AREA (see map):

Total: (ha)

	Terrestrial	Marine (if applicable)	Total
7.1 Area of Core Area(s):	628.03 ha	0 ha	628.03 ha
7.2 Area of Buffer Zone(s):	14262.68 ha	3683.98 ha	17946.66 ha
7.3 Area of Transition Area(s):	55442.8 ha	700.19ha	56142.99 ha
TOTAL:	70333.51 ha	4384.17 ha	74717.68ha

7.4 Brief rationale of this zonation in terms of the respective functions of the biosphere reserve. If a different type of zonation also exists indicate how it can coexist with the requirements of the biosphere reserve zonation.

(e.g., if national criteria exist for the definition of the area or zones, please provide brief information about these).

There are eleven core sites allocated across the district, these are for the protection of the biodiversity. The core zones will all be sites of special scientific interest (SSSI) which already have been designated and most of these will be in a favourable status. These are strictly protected by the Department of Food and Rural Affairs. In addition to the SSSI status the core zones in six areas will also be recognised as special areas of conservation (SAC). The Forest of Dean has the west side designated as an area of outstanding natural beauty through National Landscapes and seven of the core zones lie within this designation. A large area of the district is designated statutory forest and two of these core sites lie within this area. Dymock Wood one of the core sites is a countryside and rights of way designated area (CROW) site.

There are twenty-two buffer zones allocated. The buffer zones all contain areas which are SSSIs except Collinpark Wood which is classified as a SSSI impact risk zone. Within the allocated buffer area there are ten sites designates as SACs. Two sites along the Severn Estuary are also allocated as flood zones. Five of the buffer zones lie within the AONB. Two of the buffer areas lie within the statutory forest. Two sites are RAMSAR sites and contain wetlands of international importance. The buffer zone is also extended to consider the roosts of the Greater and Lesser Horseshoe bats.

The remaining areas are transition areas which will be used by residents for living and working in a sustainable way and are areas which are urban or other areas without any of the special designations as above.

8. BIOGEOGRAPHICAL REGION:

[Indicate the generally accepted name of the biogeographical region in which the proposed biosphere reserve is located.] (The term "major biogeographic region" is not strictly defined but you may wish to refer to the Udvardy classification system (http://www.unep-wcmc.org/udvardys-biogeographical-provinces-1975_745.html)).

The proposed Forest of Dean Biosphere is located in the Palearctic biogeographic realm, specifically within the Temperate Broadleaf Forests region. (based on the Udvardy 1975 classification system)

The district has a similar bioclimatic to other British Isles Biosphere Reserves most specifically North Devon. The area can be described as a temperate maritime climate typical of much of the southwest of the UK as it has mild temperatures all year round with frequent rainfall well distributed throughout the year and high humidity due to the dense woodland and close proximity to the Severn Estuary and River Wye.

The Forest of Dean has some of the most significant and extensive ancient woodland in the UK. The unique geology of the area has significantly impacted the ecosystems with many fauna and flora relying on the unique environment for their existence. The geology has also influenced settlement patterns as well as the industrial revolution relied heavily on the local geology leading to mining.

The core areas in the proposed Biosphere have significance in terms of their unique environments and notable species, they are all full existing ecosystems. They have local, regional and international significance.

9. LAND USE:

9.1 Historical:
(If known, give a brief summary of past/historical land use(s), resource uses and landscape dynamics of each zone of the proposed biosphere reserve).

From medieval times through the early modern era, the Forest of Dean was designated as a royal forest, primarily preserved for hunting and regulated under forest law, extending between the rivers Severn and Wye. The area originally covered by Forest Law was very much greater than the present statutory forest boundary. Analysis of the Domesday Survey suggests a boundary not dissimilar to the later Hundred of St Briavels, and successive expansions and contractions of the Forest's legal extent mean that much of the wider district proposed as the biosphere area was once within the forest boundary. This historical reach helps explain the deep cultural and ecological connections between the statutory forest and its surrounding landscape. While much of the land was Crown-owned woodland (demesne), small, cleared areas (assarts), meadows, and waste lands provided grazing for deer and commoning animals. Timber extraction—particularly oak for shipbuilding, iron smelting using charcoal, and oak bark for tanning—was central to the forest's economy for centuries.

By the 16th and 17th centuries, rising demand for ironwork led to extensive woodland clearance to fuel charcoal-burning, prompting the Dean Forest Act of 1667 which mandated reafforestation policies to preserve timber supplies. Industrial expansion in the 18th and 19th centuries transformed the land yet again with the construction of deep coal and iron mines, tramroads, foundries, and quarries. Villages and hamlets grew rapidly, especially on the forest fringes, to accommodate miners, quarrymen, and smallholders cultivating potatoes, oats, and keeping livestock on subsistence plots and orchard land.

In the 20th century, following the decline of heavy industry (coal and iron closures by the 1960s), much of the forest returned to mixed use under Forestry England. Timber production, nature conservation, and public recreation became key land-use priorities, alongside continued small-scale agriculture on the periphery. Today, the forest landscape is a mosaic of ancient woodland, conifer and broadleaf plantations, recreational trails, scattered settlements, residual mining sites, and rural smallholdings. The forest has also embraced ecologically focused developments, such as the restoration of wetlands on the Severn Estuary fringe for carbon capture, flood resilience, and biodiversity.

This evolution from royal hunting ground to industrial resource hub and now to a multifunctional landscape for timber, nature, heritage, and leisure reflects the layered and changing uses of land across the history of the Forest of Dean district.

9.2 Who are the main users of the biosphere reserve? (for each zone, and main resources used). If applicable, describe the level of involvement of indigenous people taking into account the "United Nations Declaration on the Rights of Indigenous Peoples". (http://www.un.org/esa/socdev/unpfii/documents/DRIPS_en.pdf).

Forestry England manages the Forest of Dean as a multi-purpose working forest, carefully balancing timber production, wildlife conservation, recreation, and community engagement. As a source of sustainably harvested timber, the forest contributes to the UK market under strict environmental standards such as the UK Woodland Assurance Standard, using traditional methods like coppicing to promote regrowth and long-term sustainability. Ecologically, the Forest of Dean is a biodiversity hotspot, home to species including Greater and Lesser Horseshoe Bats, reintroduced Pine Martens, Beavers, Wild Boar, and a variety of woodland birds and rare invertebrates. Wildlife management efforts focus on population control and habitat restoration to protect the forest's ecological integrity. Recreationally, the forest has been a popular destination since its designation as the first National Forest Park in 1938, offering waymarked trails, sculpture walks, and visitor hubs like Beechenhurst and Symonds Yat Rock, all designed to encourage public enjoyment while safeguarding sensitive habitats. Community engagement is fostered through initiatives like the Foresters' Forest programme, which involves the public in conservation activities, educational outreach, and youth employment schemes such as New Leaf, aimed at training young people in sustainable forestry practices.

The other main users of the Forest of Dean are a diverse mix of local residents, tourists, and outdoor enthusiasts. Residents use the forest daily for recreation, such as walking, cycling, and dog walking, as well as for activities tied to their livelihoods, including forestry, agriculture, and small-scale businesses. Tourists are a major user group, attracted by the forest's natural beauty, wildlife, and heritage sites. They engage in hiking, mountain biking, canoeing on the River Wye, visiting attractions like Puzzlewood, and attending local festivals. Additionally, outdoor sports enthusiasts including mountain bikers, runners, and anglers frequent the forest for its extensive trails and waterways. Other important users include educational groups and researchers who study the forest's ecology, history, and conservation efforts. Community groups and volunteers also play a key role, participating in habitat restoration, cultural events, and heritage preservation. Overall, the Forest of Dean serves as a vital resource for a broad spectrum of users, each benefiting from its natural, cultural, and recreational offerings.

9.3 What are the rules (including customary or traditional) of land use in and access to each zone of the biosphere reserve?

The Forest of Dean district has a unique history of customary and traditional rules of land use, many of which date back centuries and are rooted in the forest's status as a royal forest. These rules have

shaped how land is used and managed, especially within the statutory forest area overseen by Forestry England. Some of the most notable traditional land-use customs include:

Verderers
The Verderers of the Forest of Dean are a historic body responsible for protecting and regulating the common rights and natural resources of the forest, with origins dating back to medieval times under the English Crown. Their role combines judicial and administrative functions, particularly through the Verderers' Court, where they oversee issues such as grazing rights, timber use, and encroachments. Traditional practices remain central to their work, including the management of "freeminers'" rights unique to the Forest of Dean and the supervision of commoners who are entitled to pasture animals on the land. The Verderers also enforce strict rules to preserve the forest's ecological balance, ensuring that ancient customs coexist with modern conservation needs, maintaining a careful stewardship that reflects centuries-old legal traditions.

Free Mining Rights
One of the most distinctive customs is the Free Miners' Rights, which allow qualified local men (born within the Hundred of St Briavels, aged over 21, and having worked in a mine for a year and a day) to mine for coal, iron ore, and stone within the Forest. This right, formally recognised by royal charter, reflects the long-standing importance of extractive industries in the region and is still claimed today, although in a limited way.

Commoning and Grazing Rights
Historically, residents also had common rights, such as pannage (grazing pigs in woodland), estover (collecting wood for fuel), and pasture (grazing livestock). While many of these rights have diminished or been regulated, sheep badging is a notable surviving custom, where local graziers mark their sheep and graze them on common land such as the Forest Waste. These rights are closely tied to traditional land tenure and local identity.The Commoners' Association in the Forest of Dean plays a central role in managing and protecting the traditional rights and practices of local people known as commoners. These individuals hold ancient rights, such as grazing livestock, collecting firewood, and using the forest's natural resources, which date back centuries. The association works alongside bodies like Forestry England to ensure that these rights are exercised responsibly and sustainably. It helps coordinate grazing levels, resolves disputes among commoners, and represents their interests in decisions about land management, conservation, and development. By balancing heritage traditions with modern environmental concerns, the association helps maintain the unique cultural and ecological character of the forest.

Sites of Special Scientific Interest
In the UK, Sites of Special Scientific Interest (SSSIs) are protected areas designated for their important wildlife, habitats, or geological features, and they are mainly governed by the Wildlife and Countryside Act 1981 and managed in England by Natural England. Within these sites, activities that could damage the environment are restricted, such as disturbing wildlife, picking plants, dumping waste, lighting fires, or driving off-road vehicles, while landowners must obtain permission before carrying out certain operations like changing farming practices, planting or removing trees, or altering water systems. Visitors are usually allowed to access SSSIs responsibly by staying on public paths, observing nature, and following local guidance, avoid causing damage, and take litter home. Failure to follow these rules can result in fines or legal action, as the aim is to preserve these areas for their scientific and environmental importance.

Special Areas of Conservation
Special Areas of Conservation (SACs) are protected sites designated under the Habitats Directive to conserve important habitats and species across Europe. The rules governing these areas are strict: any plan or project that might significantly affect the site must undergo an "appropriate assessment" to evaluate its impact on the environment. Activities that could damage the natural habitats, disturb protected species, or degrade the ecological integrity of the site are generally prohibited unless there are imperative reasons of overriding public interest and no viable alternatives. Even in such exceptional cases, compensatory measures must be put in place to maintain the overall network of protected sites, known as Natura 2000. Additionally, landowners and authorities are required to manage SACs sustainably, ensuring that conservation objectives such as preserving biodiversity and restoring habitats are consistently met.

RAMSAR site
The Severn Estuary Ramsar Site, which borders parts of the Forest of Dean, is protected under international agreements to conserve its unique wetlands, habitats, and wildlife. The rules focus on preventing damage to sensitive environments such as mudflats, saltmarshes, and tidal waters, which are vital for migratory birds and rare species. Activities like construction, pollution, dredging, or unsustainable fishing are strictly controlled or require special permission, while visitors must avoid disturbing wildlife, especially during breeding and wintering seasons. Local authorities and conservation bodies monitor the area to ensure that any land use or development does not negatively impact the ecological character of the estuary, maintaining its importance as a globally significant wetland.

Vermin Control and Woodland Stewardship
Traditionally, certain individuals held responsibilities for managing game and vermin, especially during the time the Forest was a royal hunting ground. Although the royal forest system no longer functions as it once did, modern forestry practices in the district continue to be influenced by these older systems, especially in maintaining biodiversity, timber production, and public access.

Charcoal Burning and Small-Scale Forest Use
Small-scale, customary uses of the forest such as charcoal burning, coppicing, and foraging were once widespread and are still occasionally practiced, especially as part of educational or heritage events. These practices reflect sustainable, traditional forest use and are part of the intangible cultural heritage of the district.

Today, while many of these traditional land-use rights have been formalised, limited, or replaced by modern legislation, they still influence local attitudes toward land, conservation, and ownership. The Forestry Commission (now Forestry England) manages the forest with an emphasis on balancing conservation, recreation, and economic use, often in consultation with local communities that have a deep-rooted historical connection to the land.

9.4 Describe women's and men's different levels of access to and control over resources.
(Do men and women use the same resources differently (e.g., for subsistence, market, religious/ritual purposes) or use different resources?).

Traditional and legal rights

Freemining in the Forest of Dean; Freeminer rights the historic privilege allowing residents to mine coal or iron ore were established by the Dean Forest (Mines) Act 1838. Originally, only men born or living within the "Hundred of St Briavels" could qualify. In 2010, following a legal challenge by a woman miner, the Forestry Commission formally opened the freeminer register to women. Since then, women have been eligible to hold mining "gales". Despite eligibility, as of the latest data, only one female freeminer is reported. Resource difference: Men historically dominated mineral extraction rights; women were excluded until recently, and uptake remains minimal.

Within the Commoning Association most members are men with limited representation by woman. Women are not restricted and can be Commoners however are not well represented as a group currently within the association.

Use and knowledge of forest-based products

Although there is no specific Forest of Dean gender study, general findings on forests and gender give useful insight: Across many rural and forest-dependent communities globally, women take primary responsibility for collecting non-timber forest products (NTFPs) such as fuelwood, medicinal plants, and edible forest items especially for subsistence and household food security. Studies from contexts like Nepal, Mali, Laos, and West Africa consistently show women spending far more time and often having higher knowledge or skill in identifying, gathering, and preserving NTFPs. Men are more active in tasks requiring concentrated capital investment or technical skills such as commercial timber extraction, risk management, or mining and frequently dominate decision-making and planning roles in forest management. Applied to Forest of Dean: Women likely carry most of the subsistence forest gathering (e.g. firewood for home heating, wild foods, herbal remedies) and may have stronger tacit knowledge of such resources. Men, especially those with freeminer status or involved in timber operations, have historically had greater access to commercial/mining rights, involvement in forest governance, and representation in planning and risk-management roles.

Decision-making and governance

In many forestry systems, men dominate forest governance institutions and strategic decisions on forest policy, planning, risk-management, and sustainable exploitation even where women are active users of forest subsistence resources. Women are less represented in leadership roles or organised forest co-management bodies, limiting their ability to influence rules about resource use and benefit sharing. The appointment of the first female Verderer Sue Middelton in 2022 who is still in post represents a meaningful shift, signalling greater gender equity in decision-making and formal stewardship of the Forest's resources.

Different purposes for resource use; Subsistence vs. market vs. cultural/ritual: Women: focused on subsistence needs, household provisioning, fuel gathering, and possibly gathering wild fruits, nuts, herbs for family nutrition or traditional uses. The economic value is indirect (saving household costs), and control tends to stay within the household or female domain. Men: tend to access resources for commercial or market purposes (e.g. mining rights, timber sales) and may also engage in traditional mineral extraction cultural identity (e.g. Freeminer heritage). Men historically had greater access for market income from resource extraction; cultural/ritual use may also align with male-dominated mining traditions.

Complementarity and overlap
While roles differ, they are complementary rather than entirely segregated. In traditional forest societies, women and men may share knowledge, and both groups contribute to family provisioning in different ways. Women's forest use is steady and sustained (daily gathering), while men's extraction (mining, timber) can provide sporadic but higher-value harvests.

Literature
Female writers from the Forest of Dean have demonstrated a different but equally vital form of access and control: through literature, they interpret, preserve, and reframe the cultural and environmental significance of the Forest. Their work often highlights how resources are experienced in everyday life, including for sustenance, cultural identity, and memory, rather than purely economic purposes. Together, these developments illustrate both historical differences and ongoing changes in how men and women engage with, manage, and derive meaning from the Forest's natural and cultural resources. For example, Winifred Foley, in her memoir A Child in the Forest, documents working-class life and the everyday use of forest resources for subsistence, while Catherine Drew captures the rhythms of forest communities and their relationship with place through poetry. More recently, Joanne Rush has explored local identity and environmental themes in contemporary writing. These women demonstrate how literary expression provides an alternative form of access and control one that interprets, preserves, and communicates the cultural and ecological value of the Forest beyond purely economic uses, complementing the increasing role of women in formal governance.

Spiritual, ritual and wellbeing use

Women in and around the Forest are more likely than men to engage with forest resources for spiritual, ritual and restorative purposes. This includes gathering herbs and plants for traditional remedies, observing seasonal cycles, maintaining folk practices connected to the land, and using forest spaces for contemplative and wellbeing activity. The Forest of Dean has documented traditions of cunning folk and folk healing, including figures such as Ellen Hayward, recorded as the last witch of Gloucestershire, and material evidence of ritual practice such as the inscribed lead curse tablet found at Dymock. These traditions sit within a broader pattern in which women have historically carried tacit knowledge of medicinal and edible plants, seasonal rhythms and the healing properties of forest environments. Contemporary evidence suggests this pattern is strengthening nature-based spirituality and forest-based wellbeing practice are growing across the UK, and participation is disproportionately female. Women's ritual and restorative use of forest resources represents a distinct form of access and control, one that is neither subsistence nor market oriented but rooted in cultural memory, ecological knowledge and an ongoing relationship with place. Like literature, it interprets and transmits the Forest's significance in ways that complement formal governance and economic use.

Wassailing in the orchards of the Forest of Dean is a centuries-old spiritual winter tradition that blends folklore, community, and a touch of magic. On cold January nights, villagers gather among the apple trees, carrying lanterns, cider, and noise-making instruments to "wake" the orchard from its winter slumber. They sing to the trees, pour cider at their roots, and sometimes hang toast soaked in drink among the branches as an offering to the spirits believed to protect the harvest. The crackle of bonfires and the echo of songs through the dark woodland create an atmosphere that feels both festive and ancient, as if the boundary between past and present briefly fades. Rooted in hopes for a

fruitful harvest, wassailing in this region remains a vivid reminder of how closely rural life has long been tied to the rhythms of nature.

10. HUMAN POPULATION OF PROPOSED BIOSPHERE RESERVE:

[Approximate number of people living within the proposed biosphere reserve]

	Permanently	Seasonally
10.1 Core Area(s)	0	0
10.2 Buffer Zone(s)	30164	370
10.3 Transition Area(s)	59589	399
Total:	**89753**	**769**

10.4 Brief description of local communities living within or near the proposed biosphere reserve.
(Indicate ethnic origin and composition, minorities etc., main economic activities (e.g. pastoralism, tourism) and the location of their main areas of concentration, with reference to the map (section 6.2)).

Local Communities within the Forest of Dean
Ethnic Origin and Composition
The Forest of Dean district is predominantly White British, with over 95% of the population identifying as such according to recent census data. Minority ethnic groups, including Asian, Black, Mixed, and other ethnicities, make up a small proportion of the community, generally below 5%. The ethnic diversity is lower compared to urban areas, reflecting the district's rural character.

Minorities
The small minority populations are mainly concentrated in larger towns such as Cinderford, Lydney, and Coleford, where there are more employment opportunities and amenities. These communities include people of South Asian, Eastern European, and other backgrounds, though overall, ethnic minorities form a relatively small part of the district's population.

Economic Activity
Economic activity in the Forest of Dean includes a mix of traditional and modern sectors. Historically dependent on mining and forestry, the economy has diversified into manufacturing, retail, tourism, and public services. Employment rates are generally consistent with national averages, with many residents commuting to nearby urban centres for work. Agriculture remains important in rural areas. There is also a growing focus on green industries and local entrepreneurship, supported by district initiatives.

Location
The population is mainly spread across the market towns of Cinderford, Lydney, Coleford, Newent, and surrounding villages such as Newnham-on-Severn, Drybrook, and Parkend. Rural communities are smaller and more dispersed, with agriculture and forestry forming key parts of their economies. The district's location near the Welsh border and major transport routes influences commuting patterns and demographic trends.

Overall, the Forest of Dean district is characterised by predominantly White rural communities with pockets of ethnic diversity in its main towns, supported by a mixed economy transitioning from traditional industries to a broader range of services.

10.5 Name(s) of the major settlement(s) within and near the proposed biosphere reserve with reference to the map (section 6.2):

The major settlements in the Forest of Dean district

Cinderford

The largest town in the Forest of Dean, Cinderford developed primarily during the 19th-century coal mining boom. It serves as a commercial and administrative centre with shopping facilities, schools, and community services. The town has a mix of industrial heritage and modern amenities, acting as a key hub for residents in the northern part of the district.

Lydney

Located on the banks of the River Severn, Lydney has a strong industrial and maritime history, once known for its port and timber industries. Today, it remains an important local centre with shops, schools, and recreational facilities. Its riverside setting makes it a gateway to the Severn Estuary and nearby natural attractions.

Coleford

Coleford is a historic market town situated near the centre of the Forest of Dean. It has roots in ironworking and mining and retains a traditional market square, local shops, and cultural venues. The town acts as a base for exploring the forest's natural and heritage sites.

Newent Although slightly on the edge of the district, Newent is an important small market town with a rural character. It provides services to surrounding villages and hosts weekly markets, reflecting its agricultural surroundings.

Parkend A smaller village with a rich mining and forestry history, Parkend is popular with visitors due to its heritage railway and access to forest trails. Parkend is unusual in being situated within the statutory forest itself rather than on its fringe, nestled in the heart of the Forest with its own rich industrial story. It combines traditional rural charm with outdoor leisure opportunities.

Drybrook

A residential village near Cinderford, Drybrook has a mix of modern housing and older buildings. It serves as a community hub with local schools, shops, and community facilities, closely linked to the forest environment.

Much of the district's population lives within the distinctive ring of settlements encircling the statutory forest, and the main villages which support the market towns sit within this arc. The pattern is a very strong feature around Coleford and its arc of related but separate settlements, and around Cinderford with its satellites. The informal character of these settlement edges, the open green areas within and between them, and the community institutions they contain (chapels and former chapels, welfare halls, memorial halls, recreational grounds) are all vulnerable to change. Modern development has already affected the informality of some settlement edges. Existing designations and protections do not provide the coherent and comprehensive approach needed to safeguard these sometimes subtle features of physical form and community life. Biosphere

designation offers a framework within which these characteristics can be recognised and supported in a way that previous efforts to secure 'special status' for the Forest of Dean, whether through the 1996 concerns about quarrying impacts or the subsequent lack of follow-through on the Glover Review's recommendations, did not achieve.

10.6 Cultural significance:

(Briefly describe the proposed biosphere reserve's importance in terms of past and current cultural values (religious, historical, political, social, ethnological) and others, if possible with distinction between material and intangible heritage (c.f. UNESCO Convention concerning the Protection of the World Cultural and Natural Heritage 1972 and UNESCO Convention for the Safeguard of the Intangible Cultural Heritage 2003 (http://portal.unesco.org/en/ev.php-URL_ID=13055&URL_DO=DO_TOPIC&URL_SECTION=201.html and http://portal.unesco.org/en/ev.php-URL_ID=17716&URL_DO=DO_TOPIC&URL_SECTION=201.html)).

The Forest of Dean district holds significant cultural importance, both historically and in contemporary times, encompassing a rich blend of material and intangible heritage. Historically, the area is renowned for its industrial legacy, particularly coal mining, ironworking, and forestry, which shaped local communities and the landscape. This material heritage includes ancient mining sites, historic buildings, and traditional industries that tell the story of the region's economic and social development. Politically, the Forest has a unique identity with traditions like the "Free Miners" local men granted ancient rights to mine the land highlighting distinctive legal and social customs.

The Chartist Movement found support even in small rural communities like Staunton in the Forest of Dean district during the 1830s and 1840s. Although often associated with industrial towns, Chartism also resonated with agricultural labourers and miners in areas such as Staunton, where economic hardship, low wages, and limited political representation fuelled discontent. Local meetings and the circulation of petitions reflected the movement's core demands universal male suffrage, secret ballots, and fair parliamentary representation. In the Forest of Dean, where mining communities already had traditions of collective organization, Chartist ideas blended with existing grievances, making even small villages like Staunton part of a broader national push for democratic reform.

Intangible heritage in the Forest of Dean is equally rich, encompassing folklore, dialect, and community customs that reflect the district's deep connection to nature and its people. Socially, the forest has fostered close-knit communities with strong ties to the land and collective memory, expressed through storytelling, festivals, and traditional crafts. Religious heritage is visible in historic churches and sacred sites, while ethnologically, the area reflects a blend of rural English customs shaped by centuries of interaction with the forest environment. Today, these cultural values continue to influence local identity, conservation efforts, and tourism, ensuring that both the material remnants and living traditions of the Forest of Dean remain vital to its character.

The Dean Heritage Centre, located in Soudley, Gloucestershire, serves as the primary institution dedicated to preserving and showcasing the rich history and culture of the Forest of Dean. Housed in a historic mill building set amidst five acres of woodland, the Centre offers visitors a comprehensive experience that spans from prehistoric times to the present day. Its five galleries delve into various aspects of the region's heritage, including coal and iron mining, forestry, timber, stone working, and clock making. Notable exhibits feature an 1830s Lightmoor Colliery beam engine and Thomas Sopwith's 1838 geological model of the Dean Forest.

Beyond its museum collections, the Centre actively engages the community through educational

programs and events. Collaborations with local schools and volunteers have led to projects like the Forest of Dean Writers Collection, which preserves and shares literary works from the region, some written in local dialect. The Centre also hosts the Gruffalo woodland trail, a charcoal burner's camp, and various art and craft workshops, making it a dynamic hub for both learning and recreation. In recognition of its importance, the Centre has received funding from the National Lottery Heritage Fund to further enhance its offerings and secure its future

10.7 Specify the number of spoken and written languages (including ethnic, minority and endangered languages) in the biosphere reserve.
(Refer, for instance, to the UNESCO Atlas of Endangered languages (http://www.unesco.org/culture/languages-atlas/index.php)).

Census data for Gloucestershire, the county that includes the Forest of Dean, shows that while English is overwhelmingly the main language, languages such as Polish, Punjabi, Urdu, and other European and South Asian languages are also present in smaller communities. So, while English is the primary language, the Forest of Dean likely reflects this broader regional linguistic diversity with several languages spoken among residents.

The Forest of Dean does also have its own distinct dialect, often called the “Forester” dialect. It’s a variation of the West Country English dialects spoken in Gloucestershire and surrounding areas, but it has unique features shaped by the region’s history and relative isolation. The dialect includes distinctive vocabulary, pronunciation, and expressions that can be quite different from standard English or even other West Country accents.

11. BIOPHYSICAL CHARACTERISTICS:

11.1 General description of site characteristics and topography of area:
(Briefly describe the major topographic features (wetlands, marshes, mountain ranges, dunes etc.) which most typically characterize the landscape of the area).

Taken from the FoD landscape character assessment 2002 (Landscape Design Associates)
1 WOODED VALLEYS – of the lower Wye. Steep sided river valleys and dramatic bare rock faces. Densely wooded valley sides along main river channel and its tributaries. Narrow floodplain pastures on the valley floor.

2 LIMESTONE HILLS - Rolling landscape of interlocking convex hills and dry valleys formed from Carboniferous Limestone and Coal Measures. Generally poor soils and hilly landform well suited to pasture. Fields defined by well-maintained hedgerows. Hedgerow trees, copses on steeper slopes and large areas of mixed and coniferous woodland.

3 LIMESTONE PLATEAU - The high Limestone Plateau is generally characterised by a level or gently rolling landform although they may include slightly steeper relief fringing the neighbouring river valley systems that drain it. Land cover is predominantly improved pasture and arable land with woodland generally being absent although some significant plantations such as Oakhill Wood do exist in the south. Complex geology results in Heathland landscapes at Poor's Allotment, and semi-natural, unimproved grasslands associated with settlements on former commons.

4 WOODED SCARP AND LOWER SCARP SLOPES - The Wooded Scarp and Lower Scarp Slopes form a major landscape feature and represent a transitional landscape between the open and exposed limestone plateau and the more intimate lowland landscapes bordering the Severn. The distinctive scarp and gentler, more intimate lower scarp slopes are part of a single geological feature; the Beachley-Clanna pericline. Land cover on the steeper slopes consists predominantly of semi-improved grassland and broadleaved woodland although areas of unimproved grassland and rough, scrubby pasture are also visible on the steeper slopes. Small coniferous plantations are also present and are particularly sizeable approaching Lydney. Hedgerows, often of great antiquity and containing hedgerow oaks, define the majority of field boundaries. Lower slopes, arable fields and improved pasture dominating. Designed parkland and scowels at Lydney Park Estate.

5 WOODED SYCLINE AND SETTLED FOREST MARGIN - Extensive areas of coniferous plantations and deciduous woodlands occupy a syncline or basin feature which itself has been moulded by rivers and streams into numerous valleys. The grain of the landscape is generally north south. Deciduous woodlands which occupy approximately half of the forested areas are characteristically oak, grown as dense standards although Birch, Sweet Chestnut and Sycamore are also prevalent. These are often remnant areas of ancient semi natural woodland or replanted ancient semi natural woodland. Linear ponds and lakes along streams bordered by verdant lawns and riparian habitats. The area was managed as a Royal hunting forest from the Norman period. Mining has its origins in prehistory although from the Medieval period this had an ever-greater impact on the landscape. Remnants of forest industries are often hard to discern in the landscape as scrub encroachment and colonisation by woodland species quickly cover any remains.

6 UNWOODED VALE - Soft rolling landscape formed from the district's youngest rocks and thick deposits of drift geology. Well maintained and often ancient hedgerows, contain ageing oaks, of nature conservation value, forming an extensive network throughout the vale. Numerous mature field and hedgerow oaks and small copses and shelter belts. Good quality agricultural soils result arable fields and improved pasture dominating. Tributary streams of the River Severn weave through the vale. These are often only made visible by the occurrence of alder and willow trees which are typical of wetland habitats although softer topography and wet, rushy meadows are also characteristic features.

7 DRAINED RIVERINE FARMLAND AND GRAZED SALT MARSH - Low lying, windswept and generally treeless flat landscape of productive improved cattle pastures. Distinctive pattern of hedgerows dividing the landscape up into large geometric fields. Inundation grasslands and drainage ditches sometimes lined with pollarded willows. Remote and largely inaccessible landscape. The Drained Riverine Farmland and Grazed Salt Marsh landscape is extremely flat and comprised of deposits of silty clay. The landscape is low lying and sits between the mean high-water mark and the 10 m contour. These areas were formerly extensive tidal flats and inlets extending inland and have since been reclaimed and managed as improved pastures for dairy cattle and some arable farming. It is possible that some of these areas have been subject to drainage and farming for many hundreds of years and may cover extensive archaeological remains dating as far back as the Mesolithic. Beyond the drained farmland is often a narrow strip of salt marsh which is typically backed by a sea wall.

8 LITTORAL SANDS AND ROCK OUTCROPS - Broad landscape of open water, sandbanks, mudflats and rock outcrops. Temporal and open landscape. Cliffs and mud flats bordering the river

along many stretches. Riverine and estuarine habitats are rich in wildlife, particularly important for waterbirds. Severn Bore is a well-known feature of the river.

9 UNDULATING FARMLAND - Convex hills with broad rounded tops and often steep sides. Hills are generally orientated southwest - northeast. Strong pattern created by neat, often ancient, hawthorn hedges. Deciduous woodlands and copses restricted to narrow, steep sided streams. Relatively inaccessible landscape. Mixed arable and pasture farming are the prominent land uses. Farmland is generally mixed pasture and arable contained by well-maintained hedgerows, many of which are ancient. Neutral and acidic grasslands do, however, occur on some steeper slopes.

10 RIDGES AND VALLEYS - Distinctive rounded ridge profiles rising above the neighbouring vale landscapes and bordering the wooded syncline. The ridges are orientated north south which is emphasised by the orientation of hedgerow patterns and small woodland copses clinging to steeper slopes. Mosaic of mixed farmland and woodland cloaks the ridges. Extensive coniferous plantations are evident on the ridges. Range of species rich grassland habitats, heath and bog, old orchards and ancient semi natural woodlands. Several redundant quarries are located throughout the landscape.

11 WOODED HILLS – Varied, often steeply sloping, hilly landform rising above the neighbouring vale landscapes. Individual hills form distinctive and recognisable silhouettes when viewed from the neighbouring lowlands. Wooded valleys contain quick flowing streams. Large, often interconnecting, areas of deciduous woodland and coniferous plantations. Assarted hedged fields form interlocking pattern with broadleaf woodlands. Areas of rough unimproved and semi-improved grassland and scrub evident, particularly on steeper slopes.

12 FLOODPLAIN FARMLAND - Flat floodplains subject to annual winter flooding. Steep landform defines the outer edge of the floodplain. Range of habitats including unimproved grassland, improved neutral grassland and inundation grassland. Floodplain features such as drainage ditches and areas of standing water. Mature spreading trees are a distinctive element of the floodplain. Pastures overlie the most significant area of peat in the county.

13 VALE HILLOCKS - The Vale Hillocks is a diverse, small-scale landscape of distinctive rolling hills, scrub and broadleaved woodland. The hills are in the northeast of the study area and define the boundary with Tewkesbury Borough. Indeed, only the western face of a much larger complex of hills lies within the Forest of Dean district. Distinct limestone hills and ridges rising above the surrounding landscape. Mosaic of pasture, scrub and covers the hillocks. Extensive area of former common or waste land enclosed to form patchwork of regular geometric fields. Historic associations with sheep farming, cider production and pear orchards.

14 LOW HILLS AND ORCHARDS - Underlying soft sandstone geology has been eroded to form a discrete domed unit of low, convex, interlocking hills. Wide views over farmland possible from the hills on the periphery of the landscape. Fertile sandy soils are prevalent and used primarily for market gardening and orchards. Unimproved and semi-improved neutral grasslands. Regular pattern of large, hedged fields. Extensive areas covered in glasshouses, vineyards and poly tunnels. Commercial coniferous plantations and large woodlands are evident. Elsewhere woodlands tend to be small coverts and shelter belts around farms. When combined with often extensive orchards, the area has the appearance of a well treed landscape. The winding and deeply incised course of the River Leadon is a distinctive landscape feature.

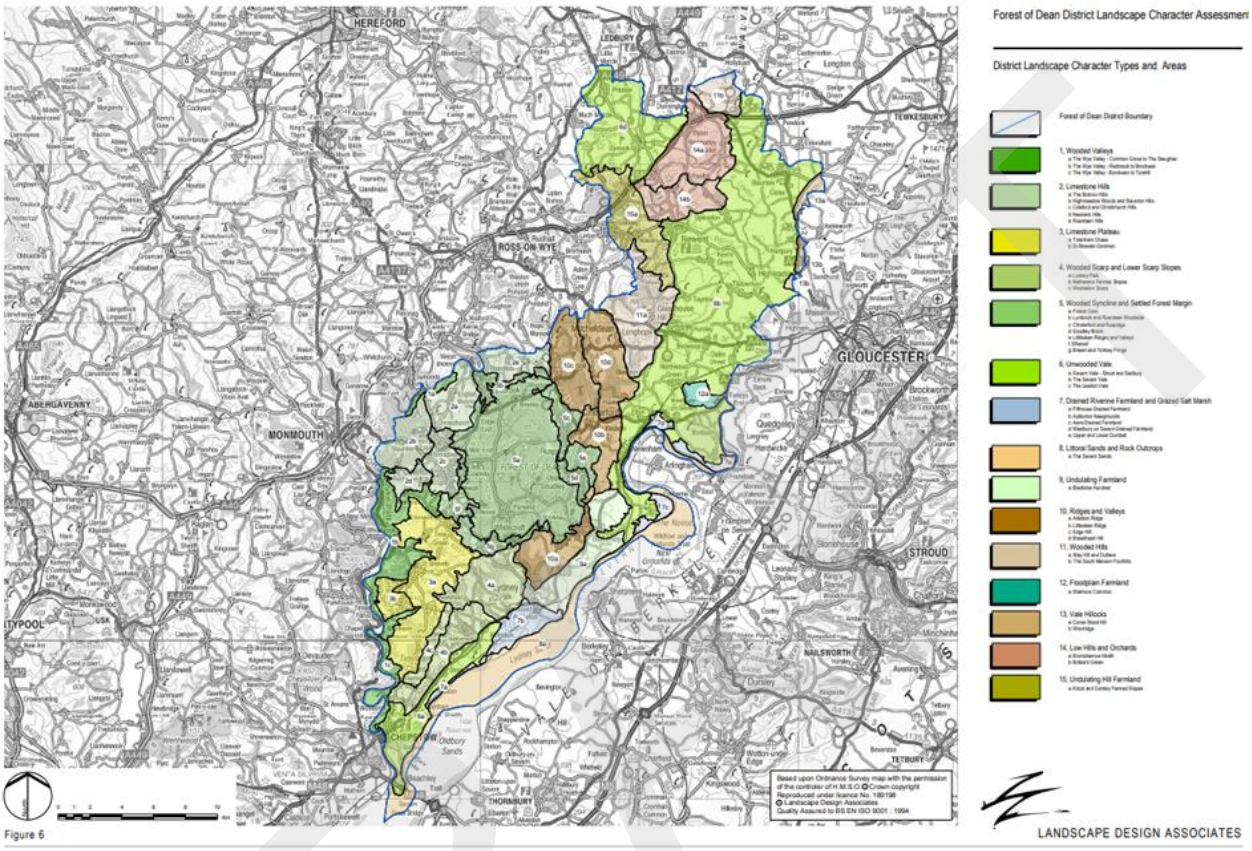


Figure 12 – Forest of Dean Landscape Overview Assessment

11.2 Altitudinal range:

11.2.1 Highest elevation above sea level:_____296_____ metres

11.2.2 Lowest elevation above sea level: _____0_____metres

11.2.3 For coastal/marine areas, maximum depth below mean sea level: _____-4.02____metres

11.3 Climate:
(Briefly describe the climate of the area, you may wish to use the regional climate classification by Köppen as suggested by WMO (http://www.wmo.int/pages/themes/climate/understanding_climate.php)).

11.3.1 Average temperature of the warmest month: _____14.77_____ °C

11.3.2 Average temperature of the coldest month: _____6.82_____ °C

11.3.3 Mean annual precipitation:__764.3_____ mm, recorded at an elevation of ___41____ metres

11.3.4 Is there a meteorological station in or near the proposed biosphere reserve? If so, what is its name and location and how long has it been operating?

Met office weather stations

Within biosphere area	Hartpury College	England	51.904, -2.311	Manual
Near biosphere area	Ross-on-wye	England	51.911, -2.584	Automatic

11.4 Geology, geomorphology, soils:
(Briefly describe important formations and conditions, including bedrock geology, sedimentary deposits, and important soil types).

The Forest of Dean biosphere is a steep-sided, deeply dissected plateau, formed of a fractured, asymmetrical, synclinal basin and is composed of Upper Palaeozoic rocks from the Silurian, Devonian and Carboniferous periods. This results in a complex mixture of acid and calcareous geology, which can change over very small areas in some places, e.g. Poor's Allotment SSSI, where a strip of calcicoles runs through the otherwise acid grassland and heathland.

The oldest, Silurian, rocks are focussed around May Hill and the southern end of the Malverns. They consist of coarse gritty sandstones at the base, overlain by mainly silty or calcareous mudstones and flaggy limestones. The limestones were deposited in a relatively shallow shelf sea. The rocks of the Middle Old Red Sandstone and base of the Upper Old Red Sandstone are missing in this region, the result of uplift during the final phase of the Caledonian earth movements and resulted in the gentle folding and erosion of the Old Red Sandstone. This period of erosion represents a break in the stratigraphic record and is referred to as the intra-Old Red Sandstone unconformity. Towards the end of the Devonian, sedimentation recommenced with the deposition of the Upper Old Red Sandstone, lying unconformably on the eroded Lower Old Red Sandstone.

The predominantly fluvial deposition of the Old Red Sandstone was terminated with the initiation of an extensive rise in sea level, marking the start of the Carboniferous Period. The warm early Carboniferous Sea supported a diverse range of marine organisms, leading to deposition of the Carboniferous Limestone Series and a gradual change from fluvial to marine sedimentation. Another period of tectonic uplift towards the middle Carboniferous, the Hercynian orogeny, elevated the

area, folded the strata and formed the main syncline of the Forest of Dean Basin. This was followed by a period of erosion, resulting in virtually the whole of the Lower and Middle Coal Measures being absent from the Forest of Dean area. A notable exception to this is the Edgehills Sandstone, the lowest formation in the Coal Measures, which rests conformably on the Drybrook Sandstone. It has one thin coal seam within it but is mainly made up of coarse sandstones and conglomerates. The sequence of rocks continues with the sandstones, shales and coal seams of the Upper Coal Measures. During Upper Carboniferous times the area that is now the Forest of Dean was a nearshore-intertidal environment of semi-marine estuaries and swamps in which the Coal Measures were deposited. The unusual feature of the Forest of Dean Coalfield is that is almost entirely exposed at the surface. It occurs in a raised asymmetrical syncline with a steeper eastern limb that surfaces in the area of Staple Edge and the Soudley Valley producing the steeply dipping strata observable in this area. This easily accessible coal together with woodland, iron ore and ochre has resulted in exploitation of these deposits by man, through the ages, leaving a network of many mines and caves throughout the area. The freely draining red sandstone soils are considered higher grade agricultural land and tend to be used more intensively for arable and temporary pasture.

The steep sided dramatic Wye Gorge cuts through the limestone. The course of the Wye and its tributaries, shows virtually no adjustment to the underlying geology or relief present today. This suggests that the river evolved on a higher strata of more recent rocks than are visible today, which have been removed by erosion, and the drainage pattern has been superimposed on the underlying strata[8]. A recent alternative glacial theory has been put forward that suggests spillways from proglacial lakes could have been responsible for the dramatic downcutting of the river[9]. Spectacular features of the limestone include entrenched meanders, solution caves, water worn high cliffs, tufa springs and streams, small areas of limestone pavement and river terraces.

The diversity of geology across the area and the high number and long history of small quarry and mines, makes the Forest of Dean biosphere an exceptional area for the study of geology. This is reflected in the number of designated geological sites: 12 geological SSSIs and 66 regionally important geological sites (RIGS). New cave systems are still being discovered including a 10km stretch recently revealed near English Bicknor[10].

[8] Miller, A.A. (1935) The entrenched meanders of the Herefordshire Wye. Geographical Journal LXXXV (2) pp. 158-178.

[9] Harris, E., (2000) The formation of the Lower Wye Valley between Hereford and Chepstow and modification to the drainage patterns of the area during the Pleistocene era. Proceedings of the Cotteswold naturalists' Field Club pp. 341-371.

[10] https://www.bbc.co.uk/news/articles/cz6g4eg41wlo

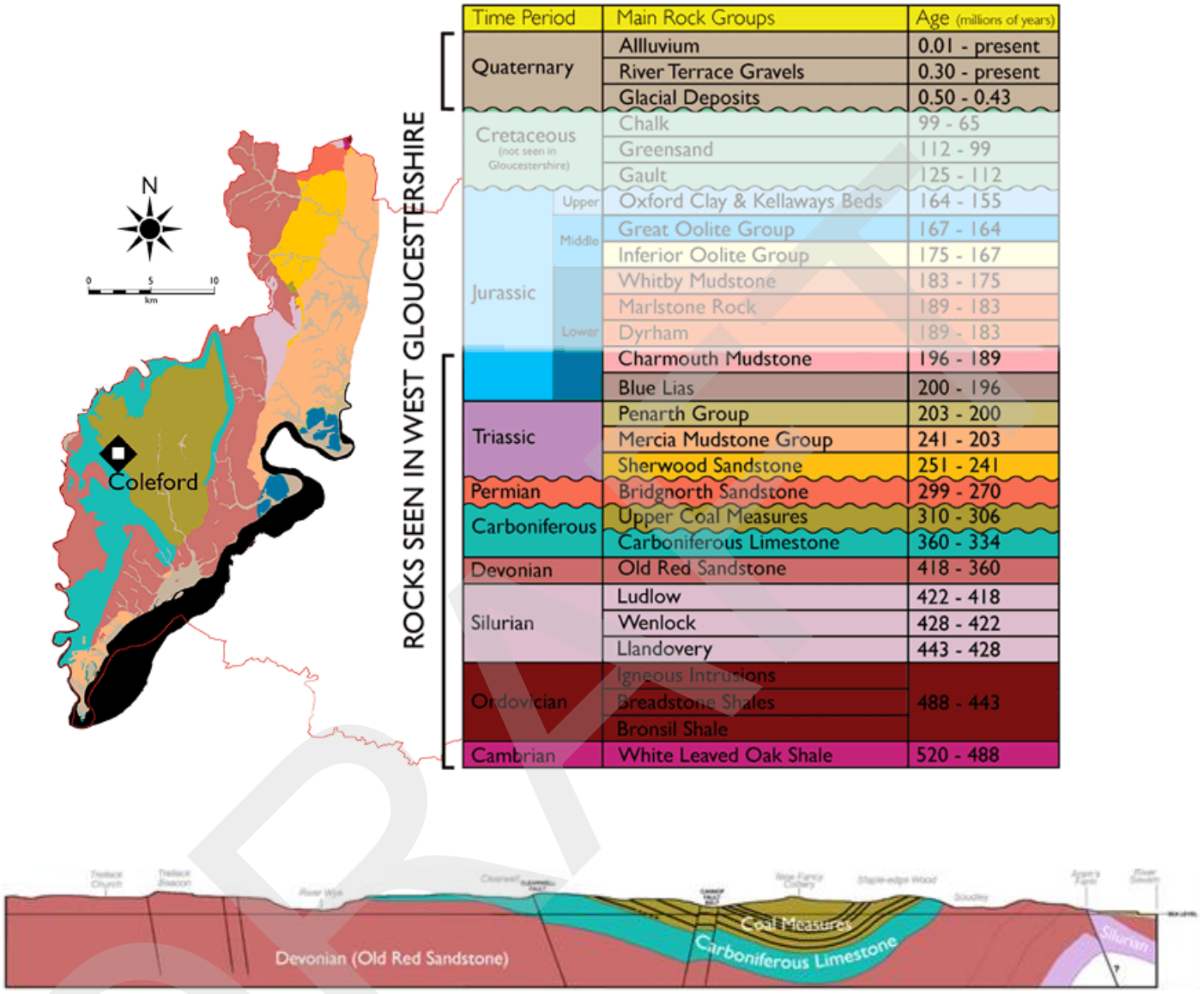


Figure 14 – Rocks seen in West Gloucestershire

11.5 Bioclimatic zone:

(Indicate the bioclimatic region in which the proposed biosphere reserve is located, refer to the table below and tick the appropriate box for each area of the biosphere reserve).

Areas	Average annual rainfall/mm	Aridity index		Core area(s)	Buffer zone(s)	Transition area(s)
		Penman	(UNEP index)			
Hyper-arid	P<100	<0.05	<0.05			

Arid	100-400	0.05-0.28	0.05-0.20			
Semi-arid	400-600	0.28-0.43	0.21-0.50			
Dry Sub-humid	600-800	0.43-0.60	0.51-0.65	✓	✓	✓
Moist Sub-humid	800-1200	0.60-0.90	>0.65			
Per-humid	P>1200	>0.90				

Table 1: Aridity index resulting from the use of P/ETP
*Mean annual precipitation (**P**)/mean annual potential evapotranspiration (**ETP**)*

11.6 Biological characteristics:

List main habitat types (e.g. tropical evergreen forest, savanna woodland, alpine tundra, coral reef, kelp beds) and land cover types (e.g. residential areas, agricultural land, pastoral land, cultivated areas, rangeland).

For each type, indicate:
- REGIONAL if the habitat or land cover type is widely distributed within the biogeographical region within which the proposed biosphere reserve is located, to assess the habitat's or land cover type's representativeness;

- LOCAL if the habitat or land cover type is of limited distribution within the proposed biosphere reserve, to assess the habitat's or land cover type's uniqueness.

For each habitat or land cover type, list characteristic species and describe important natural processes (e.g. tides, sedimentation, glacial retreat, natural fire) or human impacts (e.g. grazing, selective cutting, agricultural practices) affecting the system. As appropriate, refer to the vegetation or land cover map provided as supporting documentation.

Breakdown by UKHab level 2 Broad habitats	ha	%	UKHab Level 3 (and above)	ha	%
Cropland c*	11241	20.0			
Wetland f*	24	0.0			
Grassland g*	21504	38.3	Acid grassland g1*	415	0.7
			Calcareous grassland g2*	38	0.1
			Neutral grassland g3*	4226	7.5
			Modified grassland g4*	15263	27.2

			Unclassified grassland g	1557	2.8
Shrub and heath h*	212	0.4	Dwarf shrub heath h1*	87	0.2
Rivers and lakes r*	1057	1.9			
Inland rock (and scree) t*	157	0.3			
Littoral rock (and sediments) s*	2991	5.3			
Urban u*	5307	9.4			
Woodland w*	13693	24.4	Broadleaved woodland w1* (excluding w1h6)	7635	13.6
			Coniferous woodland w2* (including w1h6)	4921	8.8
			Unclassified woodland w	1137	2.0
Total FoD area calc from OS boundryline district_borough_unitary_region	**56186**	100			
Traditional orchard	744	1.3			
Wood pasture and parkland	190	0.3			
Ancient semi-natural woodland	2776	4.9			

Figure 15 - Habitats across the Forest of Dean biosphere using UK Habitats Classification
Broad habitats shown at UKHab Level 2, a select subset of those broad habitats are broken down to the finer scale of UKHab level 3. * Indicates that the figure includes everything from Level 2 to Level 4. Letter without * indicate figure is just for that specific category.

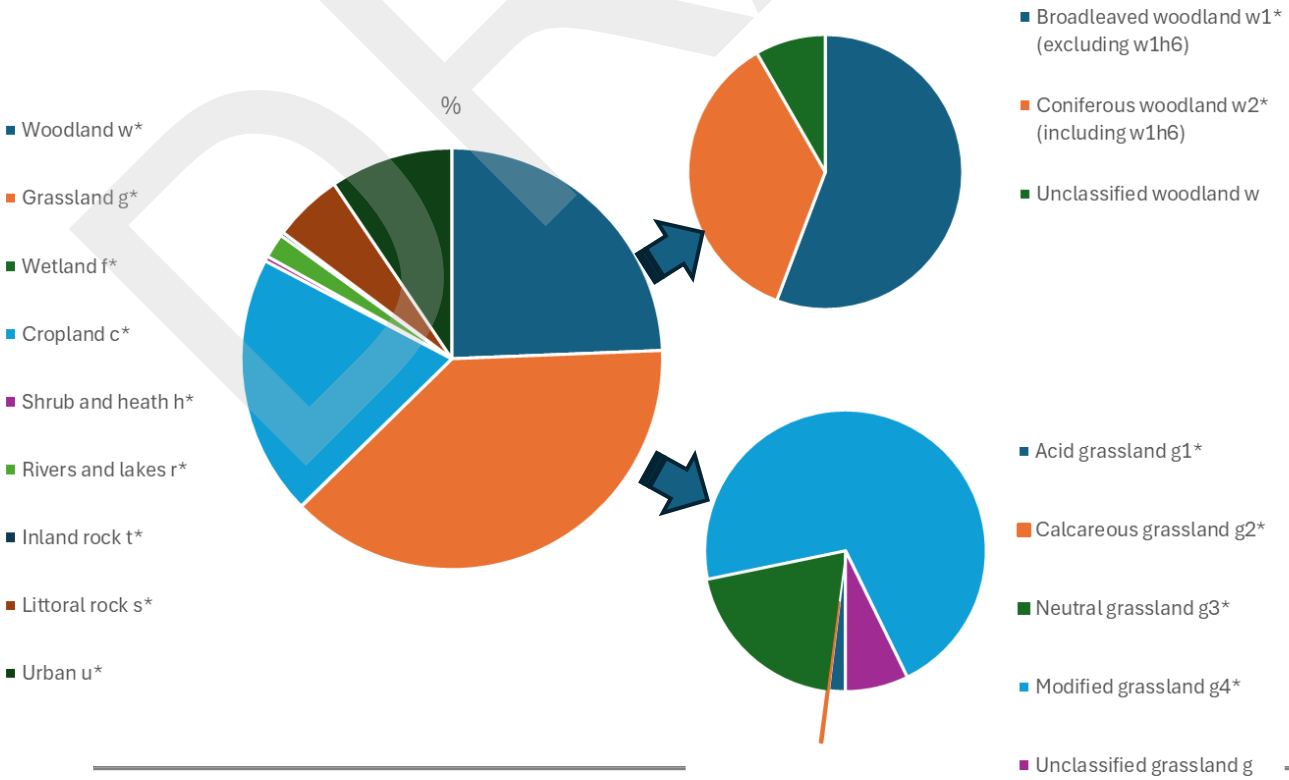


Figure 16 - Percentage of proposed biosphere area as broad habitats identified through UK Habitats Classification system. Woodland and Grassland are further broken down into their constituent more detailed habitat types in the smaller charts. Unclassified means that the data did not distinguish which grassland or woodland type was present.

Habitats and key species

Local - Acid grassland and heathland

Poor's Allotment SSSI is a historic remnant of the once greater area of heathland that was found in the Forest of Dean biosphere. Here the complex underlying geology gives rise to a mosaic of acidic grassland/heathland, calcareous grassland, bracken, broadleaved woodland, open water and streams. The site of interest for its invertebrates. The ponds support a nationally scarce water beetle, and at least eight species of dragonfly. Nationally scarce butterflies and moths have included the pearl-bordered fritillary, *Boloria euphrosyne* and the scarce forester, *Adscita statices*. A further 15 species of invertebrate of local interest have been recorded. Together with the adjacent heathland restoration on The Park these sites also support all four of the widespread British reptile species, Slow worm, adder, grass snake and common lizard, amphibians as well as a small number of breeding night jar. Other heathand/acid grassland restoration is occurring on Edgehills, Wigpool, and Woorgreens across the Dean. These too support small, but growing, numbers of nightjar. Similarly, woodcock benefit from these open areas which are used for feeding. They are often seen roding around the edge of nightjar habitat. The Forest of Dean is the only part of Gloucestershire in which they breed. The wetter areas of Woorgreens are supporting expanding areas of sphagnum. These nature reserves are managed by Gloucestershire Wildlife Trust through conservation grazing.

Other areas of "forest waste" (areas of the Statutory Forest not used for trees), rides and glades, where over acid geology, create areas of acid grassland and bracken habitat that are particularly important for woodland and grassland butterflies such as the small pearl-bordered fritillary, wood white, wall and small heath. The Forest of Dean area holds recent (2000-2014) records for seven of the butterflies listed under Section 41 (NERC Act 2006) Species of Principle Importance. Local extinction of S41 priority butterflies from the Dean has occurred in recent history. The high brown and pearl-bordered fritillaries are two of Britain's most rapidly declining butterflies and many.

Local – Limestone pavement and tufa

Due to the limestone geology around the edge, very small areas of limestone pavement are present in the Dean. Some areas in the past were afforested, but recently clearance and restoration has begun on some sites. The limestone geology is again responsible for some stunning examples of tufa formation such as the Slade brook geological SSSI which has formed a series of magnificent tufa dams and plunge pools. This system of tufa dams of around 700m, forms the longest series of actively forming tufa dams in Britain. Other examples of tufa springs can also be found along the Wye valley limestone. Tufa is put at risk if the local hydrology is altered, for example through quarrying. Or if visitor pressure is too great.

Local - Mines, caves and the batscape

The Forest of Dean is of European importance for its population of horseshoe bats. Although on the northern edge of the range of greater horseshoe bats, (*Rhinolophus ferrumequinum*) holds a maternity roost which is the 10th largest in UK. The area also has a number of very large maternity roosts of lesser horseshoe bats (*Rh. hipposideros*). These roosts are not only very big, compared with much of Europe, but are closer together; the Dean holds 26% of the national population of

lesser horseshoes, by far the largest number of lesser horseshoe bats in the UK at the time of designation, and around 6% of the greater horseshoe bat's national population[11].

In addition to these maternity sites, the many disused ironstone mines provide hibernacula for both resident horseshoe bat species, attracting, in winter, bats from neighbouring maternity roosts across the rivers Wye and Severn, as well as "swarming sites" for Myotis and other bats, including rare Bechstein's and Barbastelle bats. The major maternity roosts and complexes of mine hibernacula are SSSI's which have been linked together with some Monmouthshire sites to form the "Wye Valley and Forest of Dean Bat SAC" (Special Area of Conservation) under the Habitats Regulations and Europa 2000.

The farmland network of hedgerows, woodland, ponds and grazed pastures are also critical for the survival of these species, providing a network of flight lines and feeding grounds. Surveys, radiotracking and ringing studies have shown the extent of feeding areas and the interrelationships between the various roosts.

Human activities such as building renovation, caving, and light spill from development can negatively impact roosts. However, in the Forest of Dean District, the statutory protections and a Bats and Development Strategy help to reduce impacts, while the local caving groups are well trained by members who are also part of the local bat group and who help to monitor the hibernacula in mines and caves.

Intensive farming has created issues with flightlines and feeding grounds, e.g., loss of, or gappyness of, hedgerow, and the use of wormers such as ivermectins which have reduced dung invertebrates, a significant source of food for greater horseshoe bats in particular. There has in the past been national funding for bat advice to farmers, though this is not currently available.

Local - Traditional orchards, wood pasture and parkland, ancient and veteran trees:
Due to the long history of timber production, much of the tree cover in the statutory Forest of Dean is within plantations of young or similarly aged trees including the 200 year of Napoleonic oak stands; however, scattered throughout the Forest and wider biosphere area are notable individual trees, some very old, large or otherwise conspicuous. The include solitary 'giants of the Forest', clusters of ancient trees, for example alongside watercourses or parish boundaries, and younger but notable large, older trees destined, with care, to become the ancients of the future. The biggest and oldest specimens house a unique ecology with specific management needs to ensure their long-term future. The Woodland Trust's Ancient Tree Inventory lists 926 veteran, ancient and notable trees within the biosphere area, including 86 Trees of National Special Interest (TNSI) such as The King Yew.

[11] https://sac.jncc.gov.uk/site/UK0014794

Veteran trees are particularly important for saproxylic invertebrates and due to areas of "old growth woodland" habitat are an important feature of the Wye Valley. In the last two years, the rare Cosnard's net winged beetle (*Erotides cosnardi*) has been recorded at two locations immediately adjacent to the biosphere area, the Doward and Piercefield Park, and, where suitable habitat occurs, is likely to be within the Wye Valley woodlands in the biosphere area too. In fact, the first British record of Cosnard's originated from the Wye Valley in 1944. If the Wye Gorge Woodlands between Chepstow and Goodrich are considered as a single site, they score 90 in the Index of Ecological Continuity for specialist beetle fauna associated with old growth woodlands, making it internationally important, while the Forest of Dean Statutory Forest scores 34 of national importance[12]. While survey effort has been concentrated on the Welsh Wye Valley Gorge sites, similar conditions exist on the Forest of Dean side of the Gorge too.

Bats such as barbastelle and Bechstein's and birds such as lesser spotted woodpecker and little owl also utilise the rot hole habitat of the area's veteran trees. While Gloucestershire's only known population of greater stag beetle, which makes use of buried dead wood such as old tree stumps, are found in Newent.

In the UK as a whole, we are far too 'tidy' when it comes to deadwood, often felling and clearing it away or burning it. This has left a lack of sufficient large girth dead wood and management practices need to change to leave dead wood in situ. There needs to be a better understanding of heart rot fungi and when it is safe to leave standing a tree with heart rot.

Traditional orchards – Gloucestershire, together with Worcestershire and Herefordshire (The Three Counties), is a stronghold for traditional orchards, having seen an explosion in cider/perry and fruit production during the 17th and 18th century. In the last century 75% or more of the traditional orchards have been lost nationally, due to grubbing up for more profitable crops. Without a market for the produce, we are likely to lose many more.

Traditional orchards are a wildlife haven, acting like mini wood pasture with the fruit trees veteranizing more rapidly. The UK population of the rare saproxylic noble chafer beetle is concentrated in the Three Counties orchard area, and within the biosphere area there is a particular concentration between the northeast edge of the Forest and the A40 (Flaxley-Blaisdon area). Lesser spotted woodpecker (*Dendrocopos minor*) records since 2000 have been primarily in this same area and within the statutory Forest itself. While the nearest records of mistletoe marble moth (*Celypha woodiana*), also on the England priority species list and requiring sensitive management of mistletoe, are a few miles outside the boundary of the proposed biosphere, it is likely that orchards and other mistletoe stands within the area would support the species. The same is true for the apple wood utilising orchard tooth crust fungus (*Sarcodontia crocea*) which has been found on the opposite side of the Severn near Berkeley.

[12] The Wye Gorge: an internationally important site for saproxylic invertebrates Mike Howe, Keith Alexander & Rob Bacon, Aug 2022, British Wildlife.

Local fruit varieties are also found within the Dean's traditional orchards, such as Streaked Blakeney apple, Blaisdon red plum and the Blakeney red pear. Tradition says that perry pear trees only flourish if planted within sight of May Hill (the highest point in the Forest of Dean).
Like woodland, management of traditional orchards often clears up the dead wood. Again, we need to find ways to keep it, even if that means removing it to an orchard corner and stacking it, rather than leaving it under the trees, to enable easier harvesting of the fruit.

Regional – Woodland
Forming one of the largest remaining areas of broadleaf semi-natural woodland in the country, the Wye Valley and Forest of Dean woodlands support an outstanding bat fauna and important populations of deadwood invertebrates, woodland butterflies and moths, a wide range of breeding woodland birds, breeding populations of dormouse, rare woodland plants including nationally important bryophyte populations, and fungi. The Forest of Dean and Lower Wye Valley National Character Area (NCA)[13] covering about two thirds of the biosphere area, is one of the top 12 NCAs (there being 159 in total) in the country for bats, containing 12 of the 17 endemic species. In 2011 work from the South West Woodland Wildlife Initiative using Bat Conservation Trust, Plantlife, Butterfly Conservation and Royal Society for the protection of Birds data highlighted the Forest of Dean as a hotspot for woodland birds, butterflies and plants.

The Statutory Forest contains a mixture of semi-natural woodland, native broadleaf and conifer plantation largely planted for timber production. Ancient hollies and oaks at Speech House, in the heart of the forest, are designated an SSSI for the rare lichens they support. Much of the broadleaf semi-natural woodland is plantation, following the Reafforestation Act of 1668, sessile oak and beech were favoured for planting. Extensive areas of oak were also planted in the late 19th century for future shipbuilding requirements but were never used for this purpose. The result is woodland of rather uniform age structure where historic overgrazing by livestock and browsing by deer has prevented natural regeneration which would have increased the age structure and physical structure of the woodland.

Following WWII, the Statutory Forest became more densely planted than at any other time in its history, and the woodland density was further exacerbated following the almost total loss of livestock grazing from the forest following foot and mouth disease in 2001. The once open spaces of forest waste have become covered in dense scrub, thick bracken and tree regeneration, causing the decline of butterflies and reptiles. Good quality open habitat now has to be maintained through targeted management by the Forestry Commission or eNGOs.

The illegal release of feral wild boar into the Forest in the 1990s and 2000s reintroduced ground rooting disturbance into the woodland ecosystem. Ecologically speaking, at low densities the rooting

[13] https://nationalcharacterareas.co.uk/

behaviour and wallows have added complexity into the woodland ground flora and fauna, breaking up solid carpets of bluebells and allowing an increased range of plants and invertebrates to grow. However, at high densities negative ecological impacts and human conflicts can be a problem. Forestry England manage the population levels of both the boar and deer in the Statutory Forest. The Wye Valley Woodlands, a European Special Area of Conservation, on the other hand, are one of the most diverse mixtures of stands types in Britain and are thought to be similar in composition to the original natural woods of the valley. Rare and very localised lime-sessile oak stands on limestone, beech stands on both acid and alkaline soils in which lime, elm (*Ulmus spp*), oak and other species share dominance. Lime and ash, and yew woodland types are also features of the site. The Wye Valley woodlands also support a number of rare endemic whitebeams (*Sorbus spp*) including include the nationally rare *Sorbus porrigentiformis* and *S. rupicola,* the rare large leaved lime, and trees close to the edge of their European range, e.g., hornbeam and beech. Ancient woodland indicator ground flora and other rare vascular plants such as sword leaved helleborine (*Cephalanthera longifolia*), bird's-nest orchid (*Neottia nidus-avis*), greater butterfly-orchid (*Platanthera chlorantha*), narrow-leaved bitter-cress (*Cardamine impatiens*), wood horsetail (*Equisetum sylvaticum*) and fingered sedge (*Carex digitata*), also occur.
Stands of mature, non-intervention woodland, due to the lack of change in management, combined with high humidity, are among the most important in the county for bryophytes and support nationally important populations of many species, including *Anomodon longifolius, Cololejeunea rossettiana, Jubula hutchinsiae, Lepidozia cupressina* and *Oroweisia bruntonii* at the eastern limits of their UK range[14] .

Across the biosphere area, stands of old beech plantation are underlain with fantastic spring displays of bluebells or wild garlic. Ground flora characteristic of ancient woodland, such as wood anemone (*Anemonoides nemorosa*) and herb Paris (*Paris quadrifolia*), can be found. The variability in the underlying geology results in a variety of ground flora types some acid loving (calcifuges), others lime loving (calcicoles). Ancient hedgerows, important for many species, connect the woodlands to the more open countryside, providing connectivity for dormice, and which forms part of the essential feeding area for the internationally significant populations of lesser and greater horseshoe bats.

Post World War II conifer plantations now contain stands of old trees that provide nesting habitat for an increasing population of goshawks, as well as crossbills, siskins and firecrests. It is, however, for the western oak woodland species that the Forest of Dean is renowned and so important; hawfinch, redstart, wood warbler, willow tit, lesser spotted woodpecker and pied flycatcher are all characteristic of the Dean[15] .

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[14] **Lansdown, R.V.** A provisional red data book of bryophytes in Gloucestershire. *The Gloucestershire Naturalist, Gloucestershire Naturalist's Society, Gloucester.* 2014, Vol. 25, Special Issue.

[15] **Kirk, Gordon and Phillips, John.** *The Birds of Gloucestershire.* s.l. : Liverpool University Press, 2013. ISBN 978-1-84631-808-5.

Worryingly, all of these species remain listed as either red (highest) or amber as on the latest UK list of Birds of Conservation Concern[16]. In fact, wood warbler, hawfinch, willow tit, lesser-spotted woodpecker, turtle dove and woodcock are among the top 20 species showing the greatest range contraction in Britain[17].

Although the Statutory Forest is still managed for timber, it is shifting from a clearfell approach to continuous cover management. This will impact the number of areas of open early growth that species such as nightjar and adder use, which is why maintaining the areas of permanent open habitat within the Forest, through conservation grazing, is particularly important. Management of private woodlands across the area tends to be lacking, though there are some non-Forestry Commission conifer plantations that are commercially managed for timber. Broadleaved private woodland tends to be lacking management and coppicing is very rare meaning that this early successional habitat is now very restricted, resulting in declines of associated species.
Dormouse, harvest mouse, polecat and otter are key mammals in the Forest of Dean. All are protected by domestic and European legislation and are Section 41 (NERC ACT 2006) priority species. The dormouse is an indicator of high quality habitat, requiring a wide range of food types to sustain it through the year. South West England is a stronghold for the species; they are widespread in the Dean but are threatened by habitat degradation and fragmentation. The Forest of Dean and Wye Valley NCA is one of the national top 10 NCAs for Dormouse.

The harvest mouse is known to occur in the Dean, but its exact status is uncertain. They are known to be in decline nationally with the decline attributed to changes in habitat management. Loss of tufted grass, reedbeds and well-structured grassland are all factors.

The polecat is a secretive nocturnal carnivore that has undergone persecution since the 19th Century, leaving populations isolated. Their stronghold is in Wales, but they are found in the Dean in small numbers.

Pine marten were reintroduced to the Dean in 2020/2021 and have been observed successfully breeding each year since then.

The Forest currently houses two European beaver enclosures and there has been a feasibility study into a future wild release programme by Gloucestershire Wildlife Trust and Forestry England.

Regional - Calcareous grassland
Tudor Farm Bank, in Clearwell, is believed to be the largest remaining site of its type in west Gloucestershire. It is recognised for its nationally scarce calcareous grassland community characterised by abundant upright brome *Bromus erectus*. The grassland supports many other

[16] Birds of Conservation Concern 5, the population status of birds in the UK, Channel Islands and the Isle of Man (2021)

[17] Balmer et. al. . *Bird Atlas.* s.l. : BTO, 2013.

species of grass and sedge with a wide range of lime-loving plants including rock rose (*Helianthemum nummularium)*, restharrow (*Ononis repens)*, carmine thistle (*Carlina vulgaris)*, common milkwort (*Polygala vulgaris)*, dwarf thistle (*Cirsium acaule)*, yellow-wort (*Blackstonia perfoliate)*, fairy flax (*Linum catharticum)*, wild thyme (*Thymus praeco)x* and its uncommon relative, large thyme (*T. Pulegioides)*[18]. Appropriate grazing management is critical to the condition of calcareous grasslands. Some other small calcareous meadows occur along the limestone strip. While small remnants of calcareous grassland occur on rocky outcrops along the wye gorge where trees and scrub can be cleared from them.

Local – Limestone cliff
Lower wye gorge carboniferous limestone cliff ledges and rock debris provide habitats for scrub vegetation including rare endemic cliff whitebeams, such as *Sorbus domestica (CR),* and an assortment of rare and uncommon plants such as soft-leaved sedge (*Carex montana)*, fingered sedge (*C. digitata)*, lesser calamint (*Calamintha nepeta)*, bloody crane's-bill (*Geranium sanguineum)* and mountain melick (*Melica nutans)* (occurring here at its most southernly station in Britain)[19].
The steep cliffs of the gorge, for example, opposite Chepstow and at Wintour's Leap, are a breeding site for peregrine (*Falco peregrinus)* and raven (*Corvus corax)*. Old quarries in the area also provide suitable nest sites for these species.

Invasive not native species are an issue on many of the cliffs, e.g. cotoneaster and Holme oak. These are removed where possible, but access is not easy. Many of the cliff faces are used as rock climbing routes, and agreements are in place with local climbing groups to close off routes where nesting peregrines etc. are identified. Removal of native flora by climbers is also discouraged.

Regional - Neutral grassland - Lowland meadows and floodplain meadows
Important concentrations of lowland meadow and floodplain grazing marsh support a range of priority species from green winged orchid and brown hairstreak butterfly to a wide range of waterfowl.

Clarke's pool meadow (SSSI), near Blakeney, consists of a species-rich traditionally managed lowland meadow, a habitat that both nationally and locally has seen immense decline since the 1950's[20]. Locally uncommon species frequent in the sward include green-winged orchid (*Orchis morio)*, twayblade (*Listera ovata)*, adder's-tongue fern (*Ophioglossum vulgatum)* and meadow saffron (*Colchicum autumnale)*[21]. Clarke' s pool meadow is traditionally hay cut and aftermath grazed by Gloucestershire Wildlife Trust. It also lies close to other priority habitat inventory

[18] SSSI Citations - Tudor Farm Bank.

[19] SSSI Citations – Lower Wye Gorge.

[20] **J.M. Bullock *et al.,*** Semi-natural Grasslands. *Technical Report: The UK National Ecosystem Assessment, pp162-195.* s.l. : Cambridge, UK, UNEP-WCMC., 2011.

[21] SSSI Citation – Clarke's pool meadow

lowland meadow sites and a cluster of traditional orchard sites that form part of smallholdings around Blakeney. The established Dean Meadow group shares knowledge and helps local landowners to manage both their meadows and orchards, helping to arrange hay cutting and grazing animals.

Around Hewelsfield Common and St Briavels, the pattern of historic small holdings gives rise to a significant portion of the remaining species rich lowland meadows in the area, interspersed with lower quality meadows of UKHabs "other neutral grassland" where the traditional management has lapsed. The remaining meadows here are largely small parcels of land, often enclosed by stone walls and handed down from one generation to another. They have mostly been historically managed as hay meadows, but their small size makes it difficult to access with modern equipment. The Parish Grasslands project, which stared in 2001, is still helping meadow owners to manage the grasslands appropriately today, linking owners with appropriate contractors and graziers. Further south, as Tidenham chase falls away down to the Severn, Ridley bottom GWT nature reserve is an exquisite suite of tiny species rich hay meadows edged by woodland and substantial lime hedges, making it more of a large woodland glade, than classic open meadow, absolutely stuffed full of common spotted, heath spotted and lesser butterfly orchids. Cowslips, field scabious and yellow-wort can also be found, as well as wildflowers associated with woodlands such as wood anemone, sanicle and primrose.

To the north of the area, Dymock, Kempley and Oxenhall form the culturally significant golden triangle, so named for the profusion of wild daffodil meadows.

Regional - Agricultural land crops and modified grassland
Agricultural crops and modified grassland (i.e. intensive grassland that has had nutrients and/or pesticides added) are primarily focussed along the richer soils of the Severn Vale and Leadon Vale and together cover 47% of the wider biosphere area. Maise and rye cropping has rapidly increased along the Severn Vale between Lydney and Chepstow in recent years due to the Biogas digester plant, and intensive dairy farming is particularly prevalent in the Leadon Vale. Both land uses can cause issues with polluting run off and soil erosion. Localised flooding of roads with field run off during heavy rain is a problem due to the combination of land use and climate change increasing intensity of rainfall.

Regional - Wetland
The Walmore Common Special Protection Area (SPA) is a seasonally inundated area of costal and floodplain grazing marsh. It's of international importance for wintering waterbirds, such as Bewick's swan (*Cygnus columbianus bewickii*) and is also the only significant area of peat in Gloucestershire. Traditionally cut for hay and then aftermath grazed, this form of management becomes ever harder to maintain due to a preference for multiple silage cuts from ryegrass, and a lack of wiliness by graziers to move animals around due to animal health risks.

Wetland is not otherwise extensive in the proposed biosphere area due to the gorge geology, Severn floodbanks and constraints created by the farmed landscape. However, the Wildfowl and Wetlands Trust have recently purchased a large area of low-lying land at Awre peninsula for extensive wetland restoration.

Once more widespread across the Forest, due to the drainage of wetlands, now only small areas of fen (sometimes referred to as bog) occur such as Foxes Bridge Bog, Laymore Quag, Edgehills Bog and as part of the habitat matrix at the heathland restoration sites where sphagnum colonisation is occurring. The scare plant bog myrtle (*Myrica ga*le) has long been established at and is still recorded at Wigpool. However, that historic drainage resulted in the loss of three species of carnivorous sundews that were in the past recorded across the wetland of the Dean. English sundew or great sundew (*Drosera anglica*) is listed by Riddelsdell *et al.* (1948)[22] from a single site, 'Heaths near Mitcheldean" from 1864 and is described as "very rare and now probably extinct". Intermediate sundew (*D. intermedia*) was listed from six sites by Riddelsdell up until the last recorded sighting at Wigpool in 1949. While round-leaved sundew (*D. rotundifolia*) was recorded at Wigpool, Edgehills and Tidenham chase (Poor's Allotment) but has not been seen since 1966. The nearest extant population of sundew is just across the Monmouthshire border at Cleddon bog, Trelleck. With habitat restoration, reintroduction is a possibility.

Some restoration work has been undertaken by Forestry England and GWT to rewet the above sites and futher work is planned.

Regional – Rivers, ponds and lakes

Britain's longest and 4th longest rivers, the Severn and the Wye, border two sides of the triangle of the Dean, while the other major river, the Leadon, flows out from Herefordshire to meet the Severn at Gloucester just above the Maisemore weir, crossing the north section of the biosphere. Several small rivers drain most of the Forest plateau to the south and south-east into the Severn, while other small rivers feed into the Wye to the north and west. The River Wye SAC is recognised for its international importance for species including white-clawed crayfish (*Austropotamobius pallipes*), otter (*Lutra lutra*), salmon (*Salmo salar*), twaite shad (*Alosa fallax*) and allis shad (*Alosa alosa*). While the Severn Estuary SAC includes invertebrate populations of importance (especially as a food resource for a wide range of bird and fish species), internationally important populations of waterfowl; and large populations of migratory fish, including sea lamprey *Petromyzon marinus*, river lamprey (*Lampetra fluviatilis*) (both of which spawn in freshwater but complete part of their life cycle in the sea), twaite shad (*Alosa fallax*) and the nationally rare and endangered allis Shad *Alosa alosa*). Both the Severn and Wye and their tributaries and floodplain wetlands are important for European eel (*Anguilla anguilla*). Tidal influence on the Wye occurs as far as Bigsweir, and on the Severn to Maisemore, just outside of the biosphere area.

The small brooks and rivers emanating from the Dean plateau tend to be narrow and steep sided and prone to downstream flash flooding. These fast-flowing streams are a county stronghold for breeding dippers (*Cinclus cinclus)* and grey wagtails (*Motacilla cinerea)*. Dippers make extensive use of man-made features for nesting, especially around existing and former industrial sites, and are near the eastern edge of their shrinking UK range here. Slower flowing waters support breeding

[22] 1948 Flora of Gloucestershire, HJ Riddelsdell, GW Hedley & WR Price

kingfisher (*Alcedo atthis)*, such as those of the Leadon Vale which have more room to overflow laterally during flood. In some cases, these streams have been straightened for farming as can been see by the route of some of the old parish boundaries which follow the original path of the watercourse such as the north edge of Gorsley and Kilcot Parish.

Intensive farming both withing and upstream from the biosphere areas is causing problems with siltation and nutrient pollution. Particularly prominent an issue is the pollution of the Wye by chicken farm waste spread on fields further upstream in Herefordshire and beyond and the siltation due to soil erosion form the potato farms of Herefordshire and Shropshire. The Leadon suffers its own pollution from the intensive dairy farming that surround it.

The Forest of Dean supports five of the seven species of British amphibian: common toad (*Bufo bufo*), common frog (*Rana temporaria*), common newt (*Lissotriton vulgaris*), palmate newt (*Lissotriton helveticus*) and great crested newt (*Triturus cristatus*). This represents the total possible number of UK species (excluding 2 additional and very rare species which have very specific habitat requirements). Of these, the great crested newt has a high level of protection under European and UK law.

Natural ponds are not widespread across the Forest of Dean due to the geology and topography, though the spring fed pond at Poor's Allotment SSSI supports a nationally scarce water beetle, and at least eight species of dragonfly.

The larger waterbodies in the Statutory Forest, Cannop ponds, Woorgreens Lake, Soudley ponds and Mallards pike, among others are man made relics of the industrial past, though they in some cases provide good habitat for great crested newts and a range of dragonflies, damsel flies and other species. Soudley Ponds SSSI supports populations of locally uncommon aquatic plant species such as water whorl-grass (*Catabrosa aquatica*) and fan-leaved water-crowfoot (*Ranunculus circinatus*). The natural pools in the area are generally characterised by Sphagnum species and support a range of wetland plants including small skullcap (*Scutellaria minor*) which are very local in Gloucestershire[23].

The larger ponds and lakes attract wintering wildfowl, and Woorgreens Lake is a regular site for Goosander (*Mergus merganser*) in the winter. They also provide a valuable water resource for the bat population. The Dean area as a whole regularly records the largest winter concentration of the non-native Mandarin Ducks in the UK, with over 200 birds present, and is likely a breeding stronghold too.

Some sites such as Woorgreens lake have suffered from carp releases which have negatively impacted the native invertebrate, fish and amphibian fauna. Purpose built scrapes and ponds have

[23] SSSI Citation – Soudley Ponds

been provided on some of the nature reserves to increase pond habitat for native wildlife. In the wider landscape there are some small farm ponds though many of these are unmanaged and silted up. Analysis of the old OS maps – 1888-1913 has show the loss of a huge number of farm ponds and mill ponds from the landscape due to changes in farming practices such as piped water troughs removing the need for regular watering ponds. Roughly 300 ponds have been lost from each 10km square of the Leadon vale in the Forest of Dean district.

Dayhouse Quarry at the southern end of the area is a flooded limestone quarry with water almost pure enough to drink. It provides an important freshwater resource for the adjacent bat SAC and functionally linked roosts in an area where the rivers are estuarine and there are few other freshwater sources.

Otters, having shown recovery from serious population declines in the 1950s and 60s, now use the forest extensively, making use of the tree dominated, quiet riparian habitat. Otters are on most of the watercourses in the Dean and have been found in novel environments such as mines and caves. Recreation pressure, particularly disturbance of birds and erosion of banks from dogs off lead can be a problem and will only increase with the Government directed increase in housing numbers.

Local - Littoral (Intertidal habitats) – mudflats
Intertidal mudflats are submerged at high tide and exposed at low tide. Extensive mudflats have formed around the Severn estuary where the fine silts and clay carried down by the rivers have deposited. As a whole, the Severn estuary represents approximately 7% of the total UK resource of intertidal mudflats and sandflats and much of the Dean's border with the Severn is edged by these. The mudflats are rich in organic material, making them ideal habitat for hosts of filter feeding and scavenging invertebrates, which in turn provide important food source for a diverse range and large numbers of fish and benthic predators. More obviously, the mudflats also provide a valuable feeding, roosting and resting area for a wide range of wading birds and waterfowl. As the ebb tide exposes the mudflats, thousands of birds, such as oystercatchers, curlew, and dunlin, come to feed, making the Severn Estuary one of the top wetlands in the UK and internationally important for waterbirds.

Along the landward edge of the Severn there are small areas of saltmarsh, though these are restricted by the limit imposed by the sea wall embankment. Along the Lower Wye Gorge, of particular interest is the transition from saltmarsh to valley woodland bordering the tidal River Wye. Traditional eel fishing on the Severn Estuary involved basket traps (putchers) for adult eels and hand-held nets (lave-nets) for elvers (young eels), with elver fishing a culturally significant practice of hand-gathering them from the riverbanks during their spring migration. These methods, now primarily for conservation and cultural heritage, have deep historical roots in the region. However, the Severn Estuary is one of the few locations where Elver fishing is still allowed under carefully regulated licence by skilled local fishermen.

Regional – Urban
9.4% of the wider biosphere area is urban, i.e. under roads or buildings. The larger settlements are Coleford, Cinderford, Newent and Lydney. Some of the older building in the area provide roost sites for bats. There are also populations of house martins (*Delichon urbicum)*, swifts (*Apus apus)* and swallows (*Hirundo rustica*) that make use of the build environment across the area. Swifts using a mix of older building with roof access, or newer building with purpose-built boxes and bricks. Or

overhanging roofs or shelves that form suitable nesting opportunities for mud nests of house martins and swallows to be built.

Gardens provide an important refuge and feeding area for hedgehogs and a range of birds and bats. However, the trend towards conversion of front gardens to parking hardstanding, replacement of garden hedges with fencing for ease of management, and the popularity of more hard landscaping has resulted in garden habitat loss. Initiatives such as no mow May, have seen a local increase in grass patches being left long for wildlife.

12. ECOSYSTEM SERVICES:

12.1 If possible, identify the ecosystem services provided by each ecosystem of the biosphere reserve and the beneficiaries of these services.
(Please refer to the Millennium Ecosystem Assessment Framework and The Economics of Ecosystems and Biodiversity (TEEB) Framework (http://millenniumassessment.org/en/Framework.html and http://www.teebweb.org/publications/teeb-study-reports/foundations/)).

http://www.teebweb.org/publications/teeb-study-reports/foundations/)).

While we give attention to the three headings of provisioning, regulating and cultural headings derived from MEA and TEEB, we are aware that the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) has introduced the new 18 category framework "Nature's Contributions to People" (NCP) to better incorporate the non-material and cultural aspects of the relationship between humans and nature. These were less prominent in the original MEA framework. NCP also expands on TEEB's acknowledging of and advocating for the use of both monetary and non-monetary valuation of ecosystem services by providing detailed guidance on a wide range of valuation methods. NCPs interdependent and overlapping categories also emphasise that availability of Material NCPs (like food and clean water) rely heavily on Regulating NCPs (like soil fertility, water purification, and pollination), which in turn contribute to human well-being, including non-material NCPs like health and a sense of place.

NCP is acknowledged to have its own limitations. While expanding beyond just instrumental values, NCP struggles to fully capture intrinsic values and the *reciprocal* nature of relational values often defaulting to a human-centric, one-way flow. We hope to address its limitations (for example reinforcing anthropocentrism, neglecting nature's agency, and difficulties in fully integrating diverse, non-material, and cultural dimensions of value beyond instrumental use or relationship *to* humans) in the metrics we design for the management plan to guide development of the biosphere (see 12.2)

Geology

Provisioning services

- Mineral resources e.g. building materials
- Soil provision through erosion
- Education sites - Gloucestershire is one of the most geologically varied parts of Britain within the Forest of Dean there are 12 geological SSSIs consisting of quarries, cuttings and mines associated with the historical extraction of mineral wealth and building materials. There are also 66 Local Geological Sites.

Regulating Services

- Erosion (positive and negative)
- Water purification through filtration and neutralisation
- Water availability, groundwater within all bedrock strata and drift deposits provides important baseflow support to surface water features especially during dry periods.

Cultural services

- Gloucestershire is one of the most geologically varied parts of Britain and within the Forest of Dean there are 12 geological SSSIs consisting of quarries, cuttings and mines associated with the historical extraction of mineral wealth and building materials. There are also 66 Local Geological Sites.
- Recreation - caving

Quality Indicators

- SSSI Geological features in good condition
- Number of local geological sites

Beneficiaries of service

- Local People
- Local businesses (e.g. construction, tourism, education)
- National businesses (e.g. construction)
- Geological science

Heathland and acid grassland matrix

Provisioning services

- Water quality – filtration
- Food (grazing)

Regulating services

- Water availability - slows the flow
- Carbon storage and sequestration in woody material and slow decomposition in acidic soils

Cultural services

- Recreation on nature reserves
- Sense of tranquillity

- Experiencing wildlife

Supporting services
- Small scale peat formation

Quality indicators
- Heathland extent
- Heathland condition (SSSI and nature reserve monitoring)

Beneficiaries
- Local people
- Local business (tourism)
- Biodiversity

Semi-natural grassland
Provisioning services
- Food – grazing animals (sheep and beef cattle)
- Genetic diversity – many of or crops have wild types within natural systems; maintain diversity of plants for future crop security.

Regulating services
- Water availability - slows the flow
- Groundwater within all bedrock strata and drift deposits provides important baseflow support to surface water features especially during dry periods.

Cultural services
- Tranquillity - a strong sense of tranquillity remains associated with the extensive areas of semi-natural woodland largely located within the Wye Valley and statutory forest, the small-scale pastoral landscape around St Briavels and Hewelsfield Commons, and the intricate network of small lanes.

Supporting services
- Primary production through photosynthesis
- Soil formation, retention and nutrient cycling

Quality indicators
- Livestock densities
- Area and quality of hay meadows
- Area of semi-natural grassland
- SSSI condition
- Number of local wildlife sites

Beneficiaries
- Local people

- Local business (e.g. tourism and farming)
- Biodiversity

Enclosed farmland/agriculture

Provisioning services

- Energy crops for biogas plant.
- Food provision through naturally fertile soils
- Food provision through animals (sheep, beef, dairy, poultry)
- Water availability
- Genetic diversity – retention of local varieties of orchard fruit, cultivated over hundreds of years (for example Evans' Kernel – a general-purpose apple variety from Ruardean).

Regulating services

- Cycling of water, nutrients and carbon. Positive or negative impact varies by agricultural use, e.g. traditional orchard stores carbon, intensive agriculture releases carbon.

Cultural services

- Orchard history and culture
- Field patterns, hedgerow and field boundaries creating sense of place, e.g., small walled fields around Hewelsfield and St Briavels. More open field pattern of the Severn vale or ridge and furrow and rhines of the floodplain.
- Daffodil walks
- Sense of history, the history of the landscape is seen in the rich historic environment, including prehistoric settlements and field systems (such as the hill forts on Welshbury Hill and Symonds Yat); Roman sites such as Lydney Park; the Anglo-Saxon earthwork known as Offa's Dyke
- Parts of the Wye Valley and Malvern Hills National Landscapes

Supporting services

- Soil formation and nutrient cycling, though this varies across the biosphere as to whether the contribution if negative or positive.

Quality indicators

- Number of farms
- Size of farms
- Productivity/profitability
- Crop types
- Livestock densities

Beneficiaries

- Local people
- Local business (tourism)

- Biodiversity

Woodland

Provisioning services

- Water availability – trees slow water flow and increase water infiltration
- Timber provision – approximately 13000 ha of woodland, a large proportion of which, is managed for timber production.
- Biomass energy - good potential for the production of biomass as a byproduct of commercial timber operations, and by bringing unmanaged and under-managed woodland back into appropriate management (for example through coppicing).
- Food production – wild game and foraged foods

Regulating services

- Regulating climate change - the high amount of woodland cover plays an important role in carbon sequestration and storage, shade and cooling.
- Flood alleviation – slows the flow and increases water infiltration.
- Water quality – through soil stability due to root structure and slowing the flow. Tree mycorrhizal associations also enhance nutrient cycling and retention.
- Air quality – tree leaves benefit air quality by removing particulates.
- Microclimate regulation - humidity

Cultural services

- Include traditions of Commoning, small scale freemining and Forest Law.
- Sense of place/Inspiration – the area is edged by the Severn escarpment to the east and the steep-sided gorge of the Wye Valley to the west, creating a strong sense of remoteness. This is further enhanced by the sense of seclusion created by the heavily wooded nature of the area. For over 250 years, tourists, artists, writers and poets have visited the area as part of the Wye Tour. Both Dennis Potter and J K Rowling were brought up in the district, the Forest inspiring their works.
- Frequently used as filming locations e.g., puzzle wood (Harry potter, Star Wars)
- Heritage sites embedded within the woodland- former royal hunting forest; farming; woodland management; and mineral extraction and its associated industries. Iron and coal have been exploited since pre-Roman times, with a wealth of tips; shallow, small-scale iron workings or scowles; quarry faces; horse-drawn tram roads; and disused railway lines hidden within the woodland.
- Recreation is supported by the Offa's Dyke National Trail, the Wye Valley Walk, the Gloucestershire Way, the Wysis Way, Forestry Commission access trails, the National Cycle Network and an extensive network of smaller rights of way. The whole of the Statutory forest and other areas of Forestry Commission land are open access.

Supporting services

- Soil formation and nutrient cycling
- Soil erosion prevention
- Primary production through photosynthesis

Quality indicators

- Total area of woodland
- Area of Ancient semi-natural woodland
- Area of plantation on ancient woodland site restored to semi-natural broadleaved woodland.
- SSSI and SAC condition
- Index of Ecological Continuity score for dead wood coleoptera (Saproxylic invertebrate score)
- Woodland bird population trends and status
- Woodland indicator plant population trends and status
- Woodland indicator fungi population trends and status
- Boar and deer population trends

Beneficiaries

- Local people
- Local and national businesses
- Biodiversity

Rivers and standing water and wetland

Provisioning services

- Water availability – manmade larger ponds and lakes, small streams a few small farm ponds. Licenced water abstraction from rivers.

Regulating services

- Climate regulation – carbon sequestration and storage in plants and sediments
- Nutrient cycling
- Microclimate regulation – humidity
- Flood regulation – holding water in the landscape to release more slowly into rivers.

Cultural services

- Recreation - There is a public right of navigation along the Wye, although access to the river for water sports is limited to designated launch points.
- Pondside picnic sites in the Forest are popular with locals and tourists.

Supporting services

- Primary production through photosynthesis

Quality indicators

- Water framework directive ecological status
- Local river water quality sampling
- Riverfly monitoring
- SSSI condition
- SAC condition

Beneficiaries

- Local people
- Local business (tourism)
- Biodiversity

Urban

Provisioning services

- Shelter

Regulating services

- Carbon sequestration and storage by green infrastructure such as street trees
- Air quality regulation by trees on streets, in gardens and parks

Cultural services

- Local historic buildings and vernacular architecture
- Interaction with nature through parks and gardens
- Recreation
- Education

Supporting services

- Primary production through photosynthesis in green infrastructure

Quality indicators

- Nature conservation areas
- Design plans
- Green Infrastructure plans
- Use of Building with Nature or similar principles

Beneficiaries

- Local people
- Local business (tourism)

Coastal

Provisioning services

- Food Provision (fish)
- Water use

Regulating services

- Climate regulation, e.g. saltmarsh and mud flats/sediments carbon storage
- Regulating water - tidal flooding presents a potential risk from the estuarine waters of the Severn and Wye. Low lying land along the Severn protected from tidal flooding by sea wall and sluices. Some small areas of natural protection from saltmarsh and WWT plan for bigger area at Awre.
- Nutrient and sediment cycling

Cultural services

- Severn bore – natural phenomenon attracts visitors to the area
- Sense of place, history, inspiration and tranquillity

Supporting services

- Primary production through photosynthesis
- Nutrient cycling
- Sediment formation and stabilisation

Quality indicators

- Flood monitoring
- Fish stocks
- WEBS bird counts

Beneficiaries

- Local people
- Visitors
- Local business (tourism, fishing)
- Biodiversity

Nature's Contributions to People			
Habitat Creation & Maintenance			Rivers and standing water; Woodland; Heathland, acid and natural g/land; Rivers and s/Water; Coastal; Urban
Pollination + seed dispersal			Woodland; Heathland, acid and natural g/land
Reg. Air Quality			Woodland; Urban
Reg. Climate			Geology; Heathland, acid and natural g/land; Woodland; Coastal; Rivers and s/Water; Urban
Reg. Ocean Acidification			Woodland
Reg. Fresh Water Quantity			Geology; Rivers and s/Water; Woodland; Heathland, acid and natural g/land; Encl. farmland/agriculture
Reg. Fresh Water Quality			Geology; Woodland; Heathland, acid and natural g/land; Enclosed farmland/agriculture
Formation & Maintenance of Soils			Geology; Heathland, acid and natural g/lan; Woodland; Encl. farmland/agriculture
Reg. Hazards and Extreme Events			Rivers and s/Water; Woodland; Heathland, acid and natural g/land; Encl. farmland/agriculture; Coastal
Reg. Detrimental Organisms			
Energy (biomass)	Woodland; Enclosed farmland/agriculture		
Food and Feed	Heathland, acid and natural g/land; Encl. farmland/agriculture; Woodland; Coastal		
Materials and Assistance	Geology; Woodland		
Medicinal and Genetic Resources		Woodland; Heathland, acid and natural g/land; Coastal; Enclosed farmland/agriculture; Rivers and s/Water	
Learning and Inspiration		Geology: Heathland, acid and natural g/land; Woodland; Heathland, acid and natural g/land; Rivers and s/Water; Coastal	
Physical and		Geology; Heathland, acid and	

Psychological Experiences		natural g/land; Woodland; Rivers and s/Water; Coastal	
Supporting Identities		Geology: Encl. farmland/agriculture; Woodland	
Maintenance of nature's capacity to keep open options for potential future benefit		Woodland; Heathland, acid and natural g/land; Coastal; Rivers and s/Water	
	Material	Non-Material	Regulating

Figure 17 – A table to show natures contributions to people

Note regarding table 17

1. Where aspects of the region have been coloured purple this indicates *potential* contributions to people.
2. The NCP framework highlights additional overlaps between the three categories
3. NCP NM4 (Maintenance of Options) is a build on the MEA and TEEB frameworks
4. Because NCP offers an organising structure linked to a particular context rather than a prescriptive list of metrics applied in a uniform way globally, quality indicators and metrics will be developed within the management plan. In this way the framework can weave in a diversity of general and local knowledge systems.

12.2 Specify whether indicators of ecosystem services are used to evaluate the three functions (conservation, development and logistic) of biosphere reserves. If yes, which ones and give details.

The IPBES values assessment encourages a shift in how the three core functions of biosphere reserves are planned, managed, and evaluated. (For more see the graphic below):

- **Conservation Function:** Evaluation of this function should move beyond solely focusing on the existence value or scientific metrics of biodiversity. The IPBES framework suggests incorporating intrinsic values (nature's right to exist independently of human needs) and relational values (sense of place, cultural identity, stewardship, and responsibility toward nature). This means evaluating success not just by species counts, but also by the strength of the cultural and spiritual connections local communities maintain with conserved areas and their involvement in co-management.
- **Development Function:** This function is typically associated with sustainable livelihoods and economic progress. The IPBES assessment challenges the prioritisation of short-term profit and economic growth that often overlooks non-market values. Evaluation should incorporate a broader understanding of a "good quality of life" that balances economic dimensions with social and environmental well-being. This includes assessing progress through inclusive, participatory processes that ensure equitable distribution of benefits and burdens and recognising the value of nature's material contributions to local livelihoods and non-material contributions like climate regulation and clean water.

- **Logistics Function (Research, Monitoring, Education, and Information Exchange):** The assessment provides a framework for designing and implementing valuation methods that are more inclusive and effective. It guides this function by:
    - **Integrating knowledge systems:** Recommending the integration of Indigenous and (in our case) local knowledge systems with scientific knowledge to foster a broader common understanding and more robust outcomes.
    - **Using diverse methods:** Promoting the use of a wide range of valuation methods (socio-cultural, biophysical, and economic) that reflect different worldviews, rather than relying on a narrow set of approaches.
    - **Informing policy:** Ensuring that research and monitoring efforts produce evidence and options about embedding all of nature's values into decision-making, helping to bridge the gap between science and policy

UNESCO Biosphere Reserves, by their nature as "learning places for sustainable development" that involve local communities, are ideal sites for applying and documenting these integrated approaches. See the table below which includes examples of value indicators: the quantitative measures and qualitative descriptors used to denote nature's importance in terms of biophysical, monetary or sociocultural metrics.

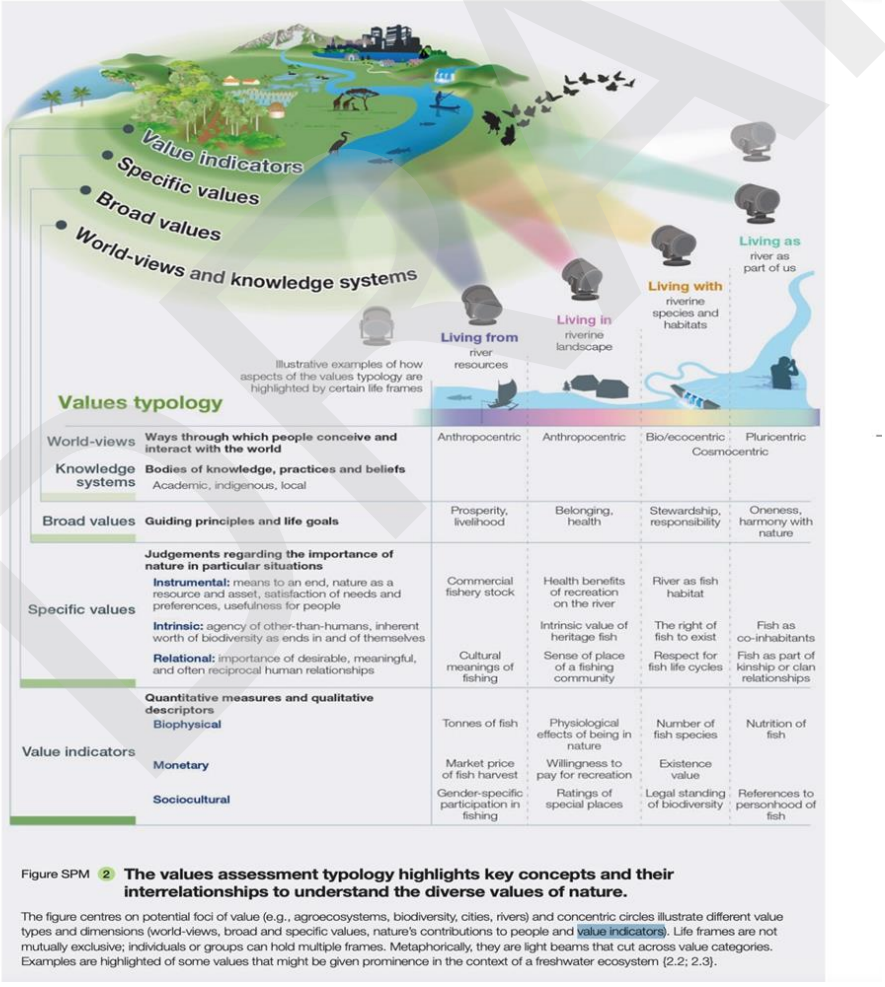

Figure SPM 2 **The values assessment typology highlights key concepts and their interrelationships to understand the diverse values of nature.**

The figure centres on potential foci of value (e.g., agroecosystems, biodiversity, cities, rivers) and concentric circles illustrate different value types and dimensions (world-views, broad and specific values, nature's contributions to people and value indicators). Life frames are not mutually exclusive; individuals or groups can hold multiple frames. Metaphorically, they are light beams that cut across value categories. Examples are highlighted of some values that might be given prominence in the context of a freshwater ecosystem {2.2; 2.3}.

Figure 18 – Illustrative examples of how aspects of the value of typology are highlighted by certain life frame

12.3 Describe biodiversity involved in the provision of ecosystems services in the biosphere reserve (e.g. species or groups of species involved).

Biodiversity underpins all ecosystem services. The following gives a sample of the ecosystem services provided by different species or assemblages in the biosphere.

Predator species including mammals, invertebrates, birds, fish. A balanced food web is essential to avoid outbreaks of pest species. Natural predators in the biosphere include bats – controlling flying invertebrate pests such as mosquitos and gnats. Birds either feeding on invertebrates, e.g. aphids, or Predatory birds controlling other birds and small mammal numbers. Foxes and owls controlling rodent numbers. Otter helping to control nonnative species such as mink numbers and carp. The recently reintroduced pine marten helping to reduce grey squirrel populations. We, however, lack large predators to control boar or deer and therefore, humans have taken on this role.

Tree and scrub species provide timber, shade/cooling for humans and other plants and animals. They provide many habitats for other species, supporting biodiversity. They can help to ameliorate air quality but removing particulates from the atmosphere. Flood alleviation, soil stabilization through root soil stabilisation, roughening the land surface and slowing rain reaching the ground and increasing infiltration through deep root systems and interrelations with fungi. Carbon storage and sequestration.

Wild game, fish and fruit providing additional food resources and income generation.
Wildflowers and Pollinating insect – both are needed to support pollination services for both wild plant species and crops. In terms of crops, particularly pollination of oil seed rape and fruit trees and locally grown vegetables.

Woodland and iconic species bringing in tourism to support the local economy.
Reedbeds and aquatic vegetation absorbing excess nutrients, contaminants and sediments helping to purify water.

12.4 Specify whether any ecosystem services assessment has been done for the proposed biosphere reserve. If yes, is this assessment used to develop the management plan?

Figure 19 below - Approximate Forest of Dean Annual Ecosystem Service Value by habitat in £ (habitat 2024 estimate, values based on 2023 prices). Adjusted for Forest of Dean habitat area estimates from the ONS UK natural capital accounts: 2024.

Ecosystem service	Coastal margins	Enclosed farmland	Freshwater, wetlands, and floodplains	Mountains, moorland, and heath	Semi-natural grassland	Urban	Woodland
Agricultural biomass provisioning		£21,882,786					
Renewable electricity provisioning		£738,659	£0	£6,532	£80,128	£166,510	
Timber provisioning							£935,138
Woodfuel provisioning							£519,521
Water provisioning			£11,673,831				
Air pollution regulating	£282,126	£1,292,654	£65,217	£13,063	£320,510	£2,730,769	£11,948,988
Greenhouse gas regulating		-£2,739,195	-£5,739,090		£7,852,503	-£1,332,082	£24,001,880
Noise regulating						£66,604	
Urban heat regulating						£2,597,561	

Recreation (health benefits)	£11,285,036	£3,293,190	£2,608,677	£202,479		£6,960,131	£9,455,286
Recreation and tourism (expenditure)	£11,426,099	£2,769,973	£1,793,466	£130,632		£17,350,374	£7,792,818
Total £ (2023 prices)	**£22,993,260**	**£27,238,067**	**£10,402,101**	**£352,705**	**£8,253,141**	**£28,539,867**	**£54,653,632**
Total £152,432,773							

Ecosystem services mapping was carried out for the whole of Gloucestershire in 2022 for the following suite of ecosystem services. The methodology used habitats (reframed as natural capital assets) as a proxy for a potential area to produce ecosystem services. Extracts for the Forest of Dean are provided below. The assessment will be used to help develop a Biosphere Strategy plan.

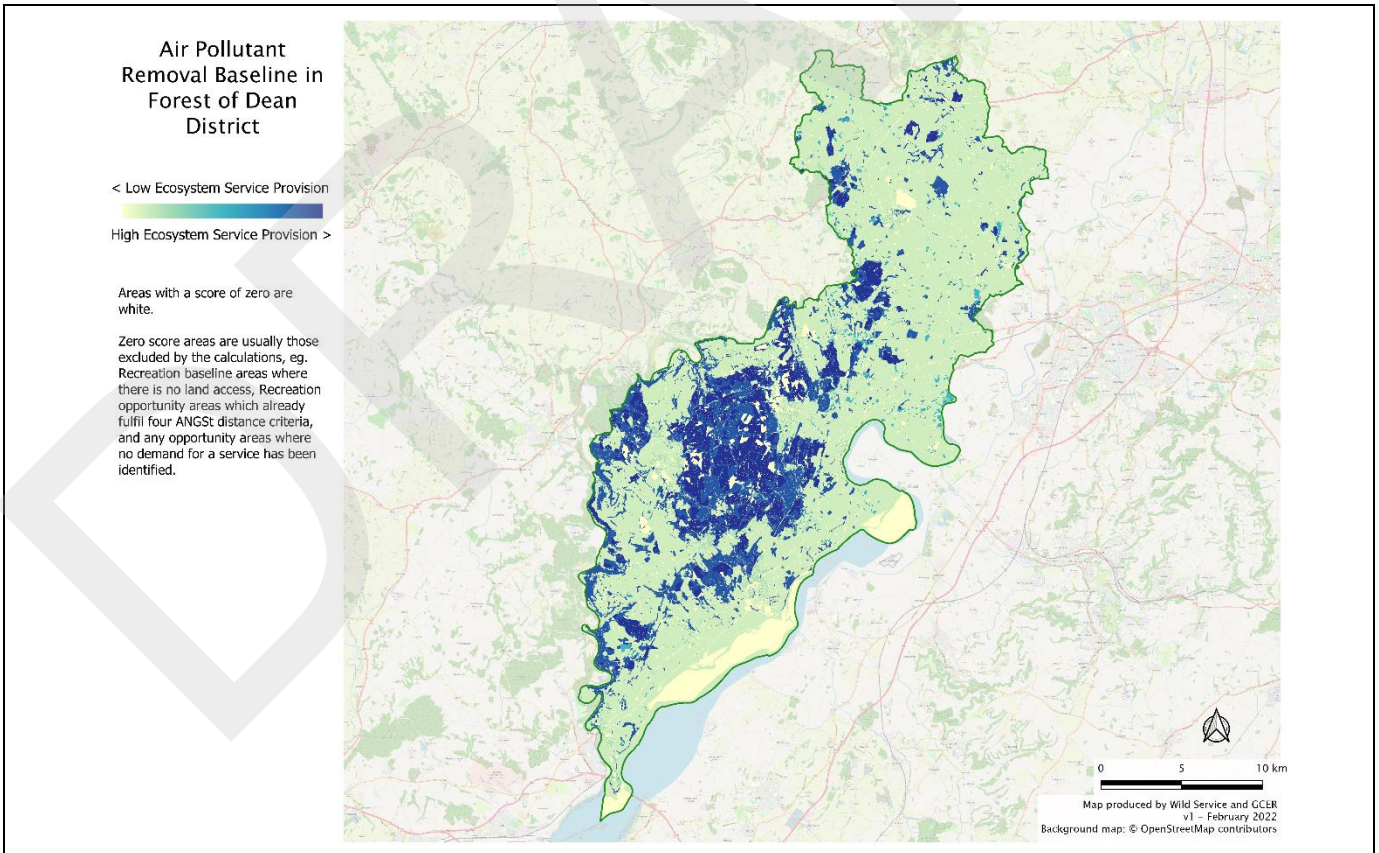

Figure 20 - Air Pollutant Removal Baseline: The air pollutant removal ecosystem service covers the effect of vegetation on concentrations of air pollutants through mechanisms including deposition, absorption, and chemical breakdown. In particular hedgerow, tree and woodland habitats provide air pollutant removal through the capture of particulates on leaf surfaces.

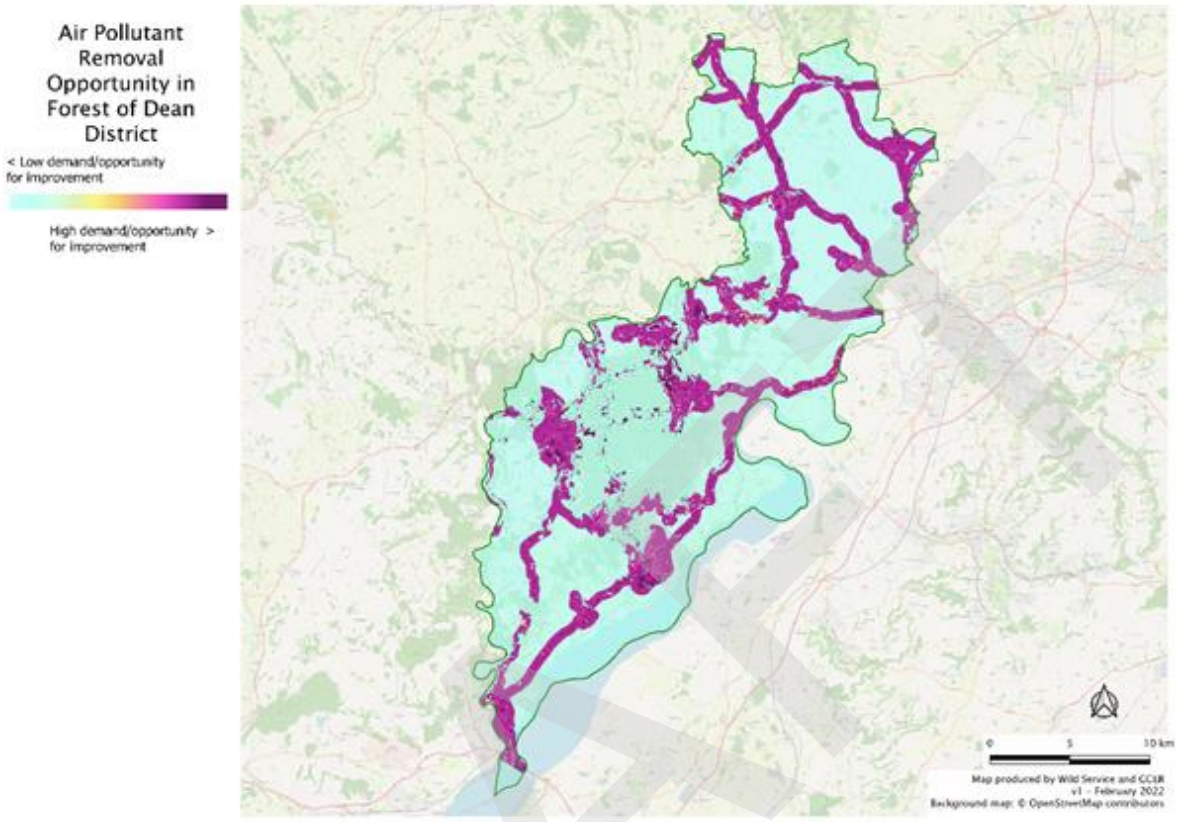

Figure 21 - Air pollutant removal opportunities: These are focussed on incorporating tree planting around urban areas and main roads.

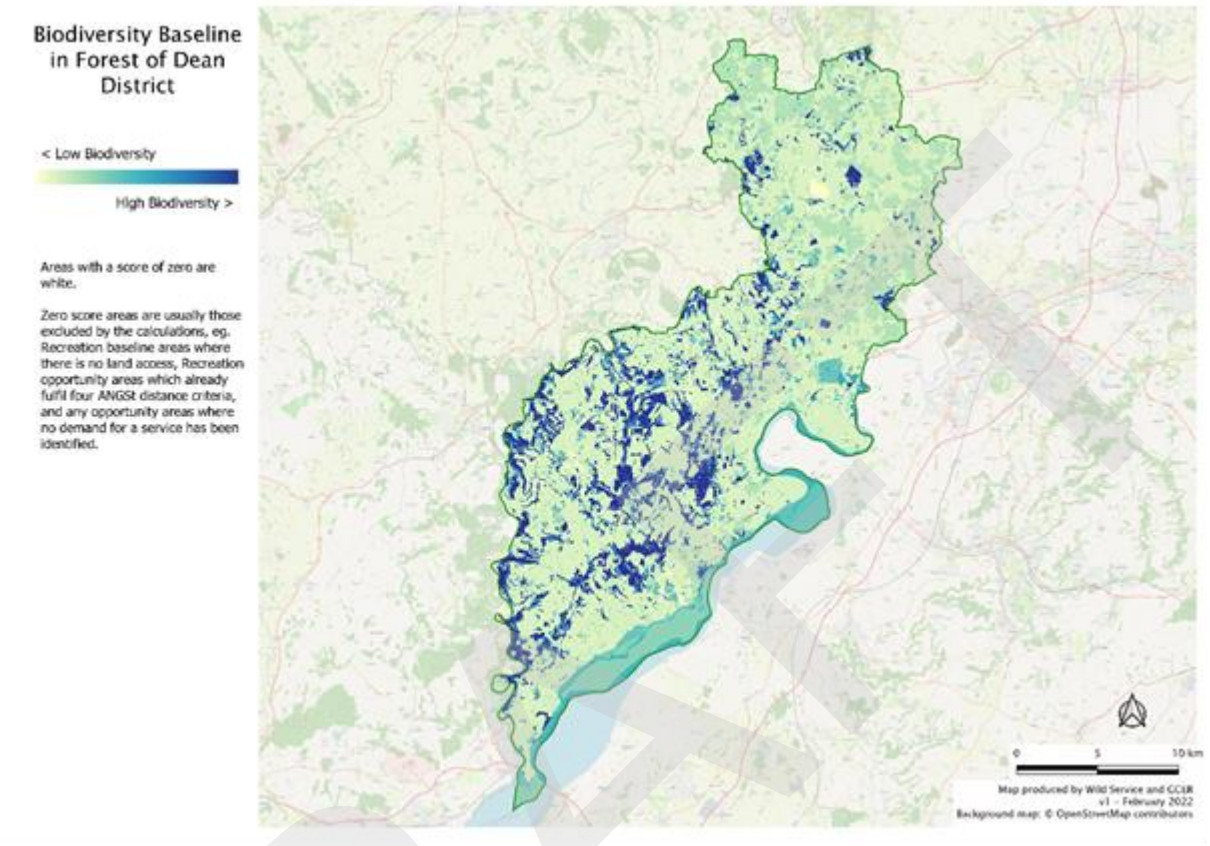

Figure 22 - Biodiversity baseline: this is a score based upon semi-naturalness and habitat complexity.

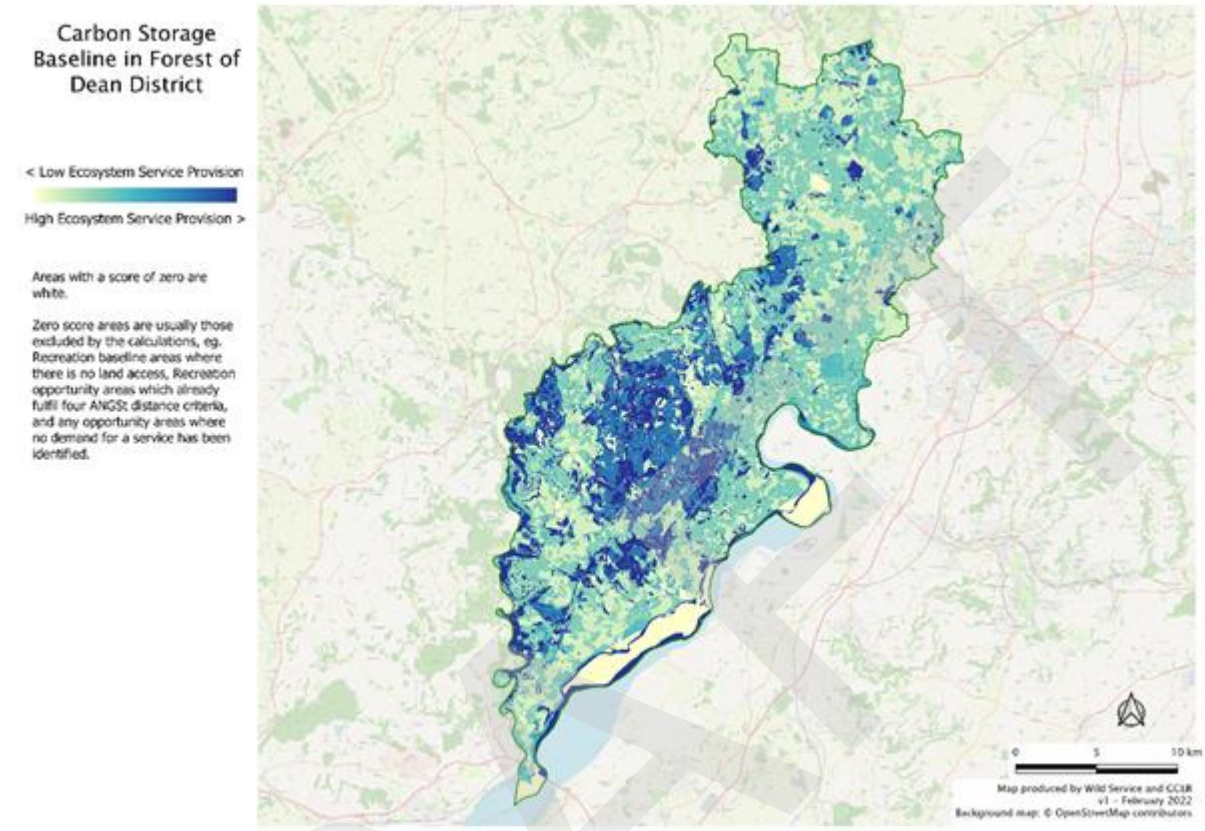

Figure 23 - Carbon storage baseline: based upon habitat type/land use. Woody habitats, peat and wetland/intertidal habitats have highest provision of this service. Knowledge of wetland and soil carbon storage is currently less developed than is the case with woodlands and as a result, these habitat classes may be underscored.

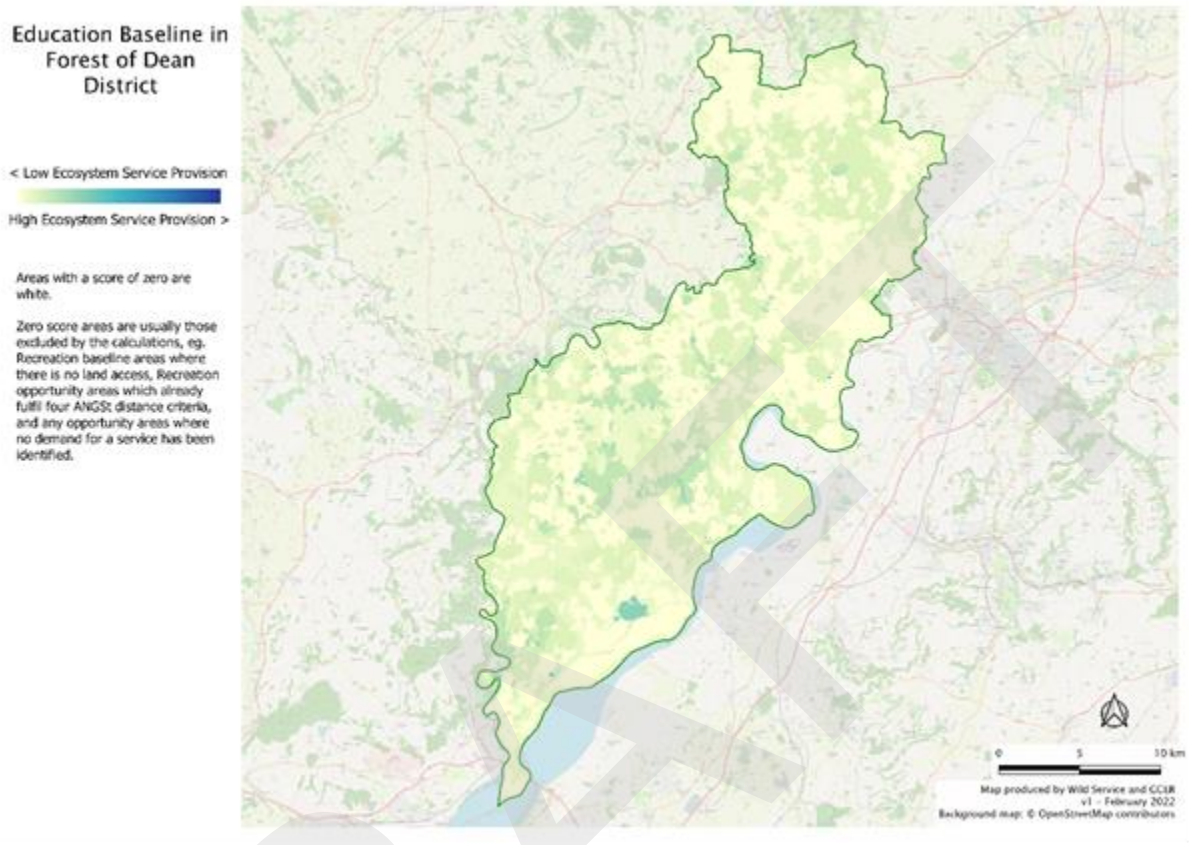

Figure 24 - Education Baseline: Provision of natural green and blue spaces that can provide educational benefit. The locations of natural visitor sites were then analysed in conjunction with road and footpath infrastructure to identify areas within a 10-minute (0.8km) walk and 10-minute drive (4km) from site. This analysis aimed to quantify natural visitor centres' accessibility and identify where access is most limited.

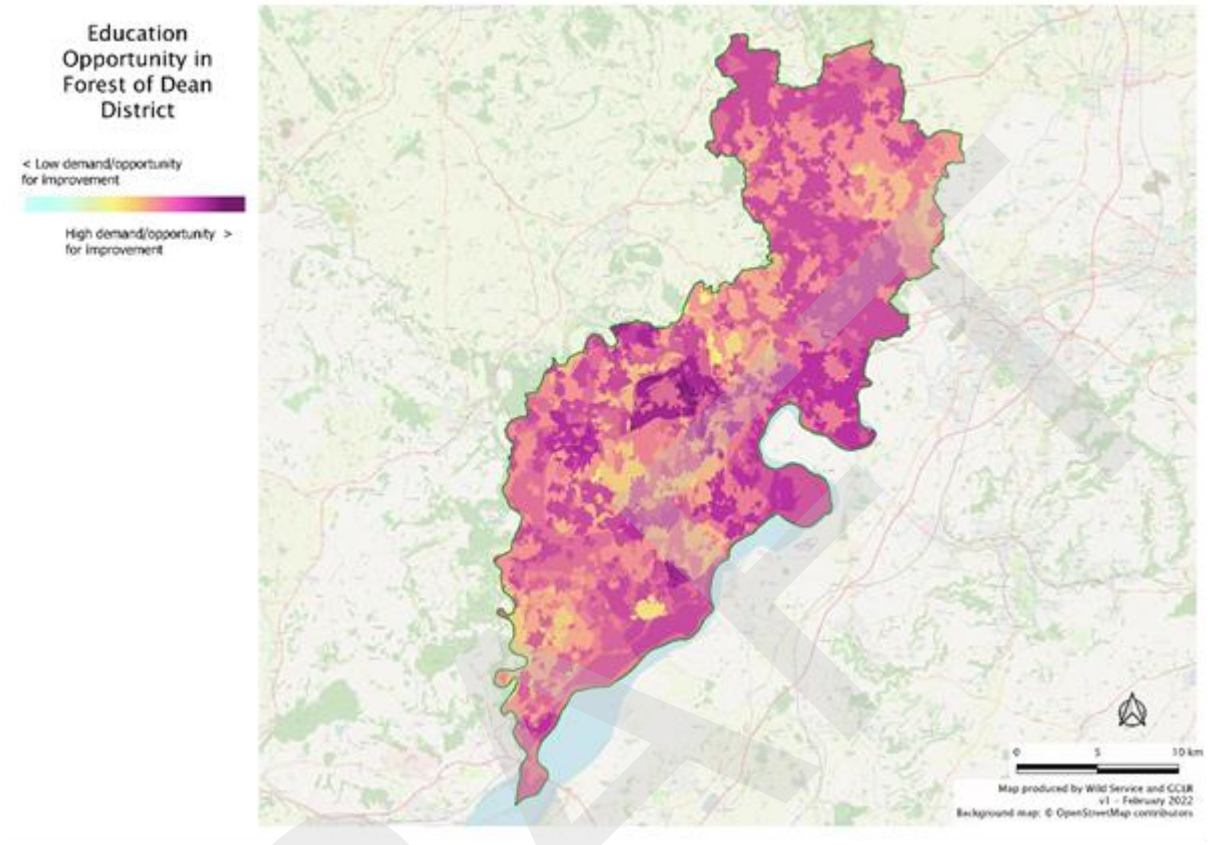

Figure 25 - Education opportunity: Demand an opportunity for improvement in education opportunity.

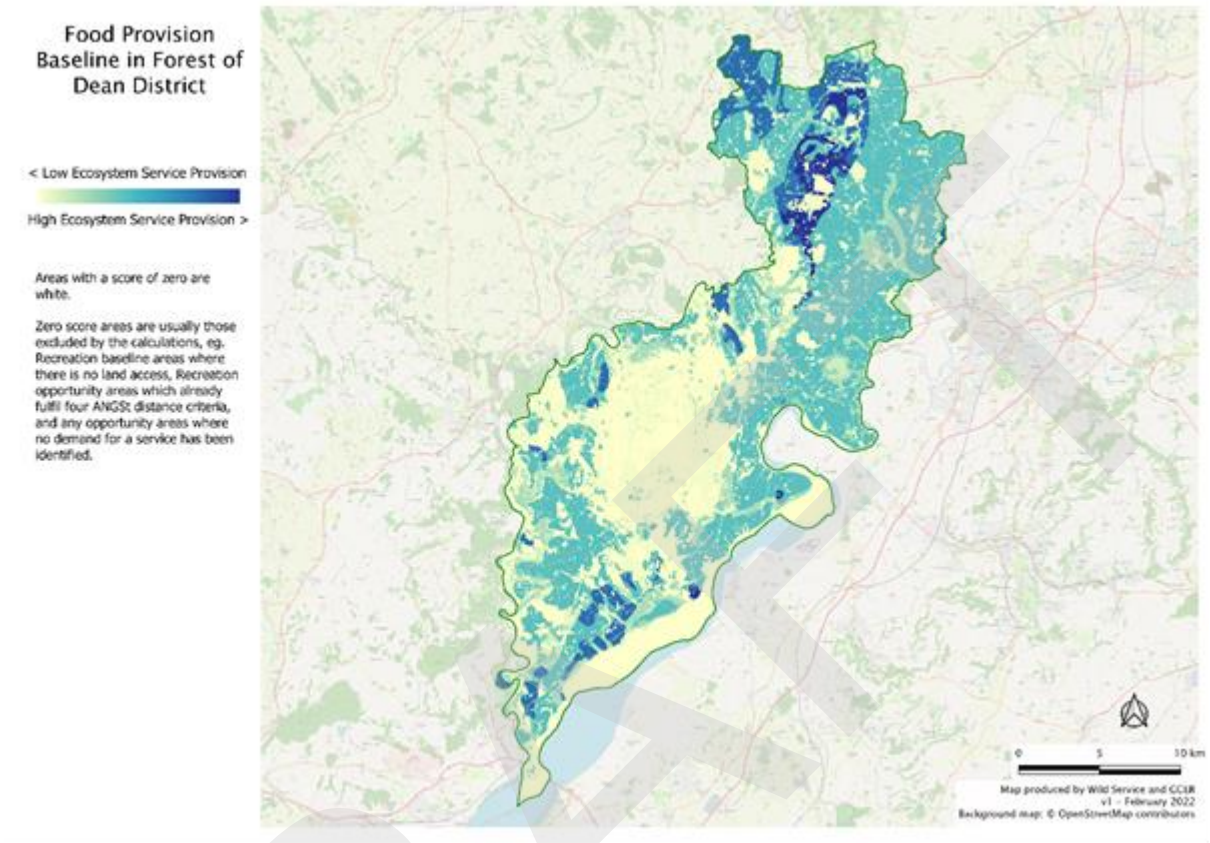

Figure 26 - Food provision baseline: Is a fairly high level analysis based on a combination of farming land use, wild food opportunities and agricultural land grade.

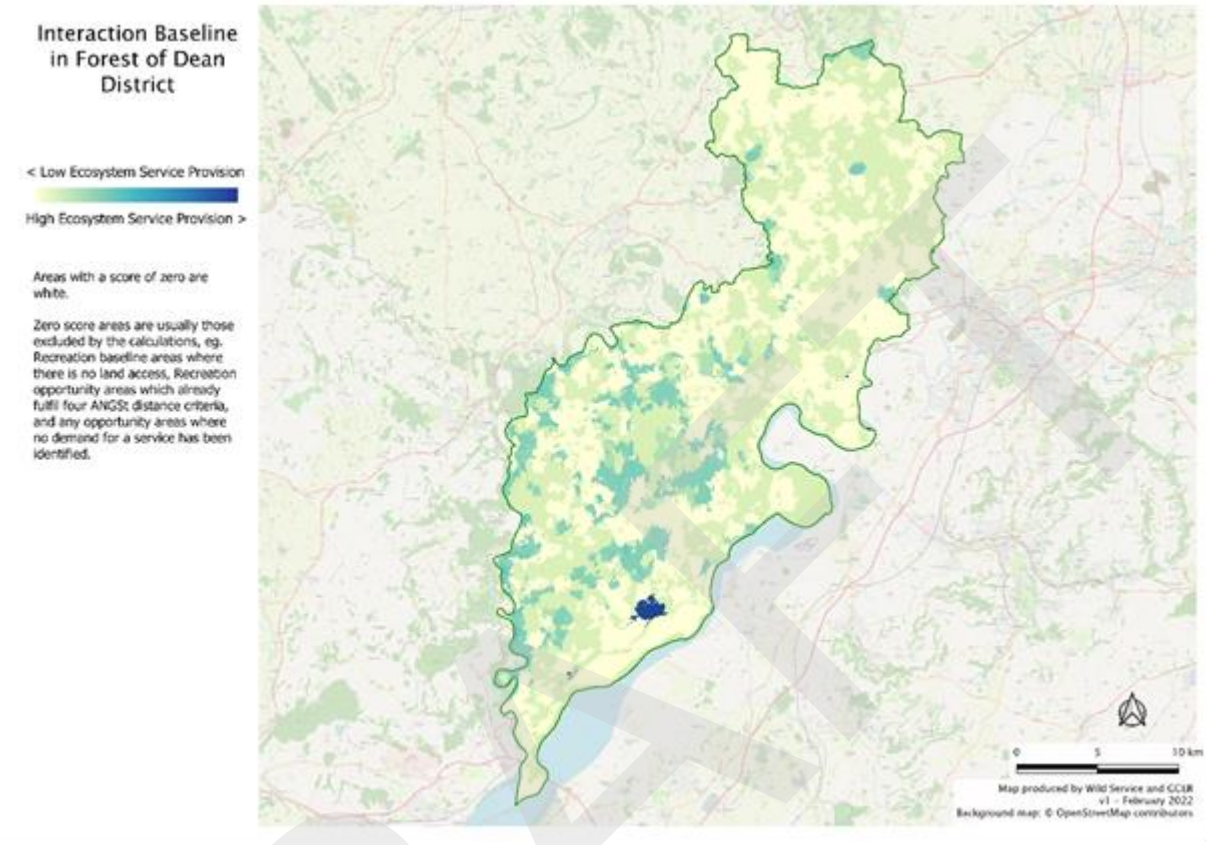

Figure 27 - Interaction with nature baseline: The interaction ecosystem service is here calculated according to opportunities for formal or informal nature-related activities, (e.g. birdwatching, random encounters with wildlife, or feeling 'connected with nature'). There is some overlap with biodiversity, but access by people can have negative impacts on some wildlife habitats. Excludes recreational fishing, hunting, shooting, or intrinsic value of nature.

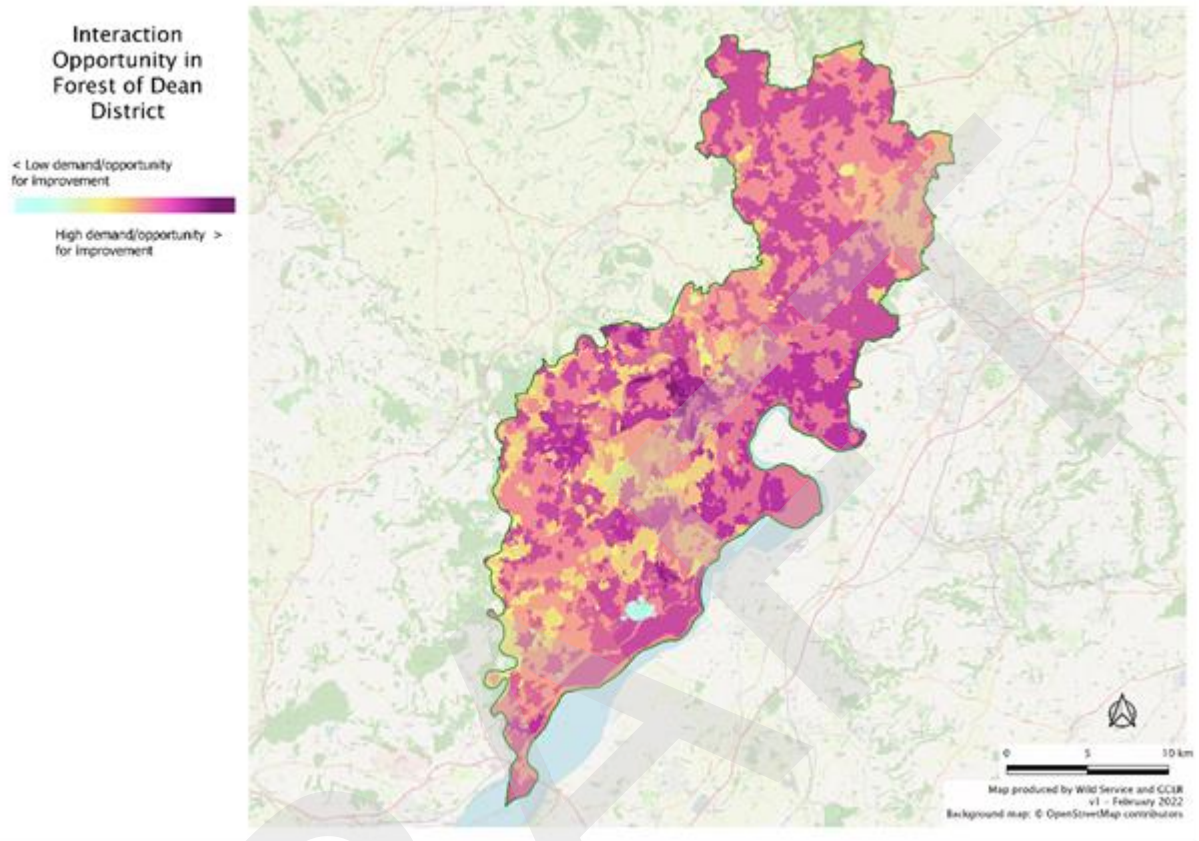

Figure 28 - Interaction with nature opportunity: opportunity for people to interact with nature.

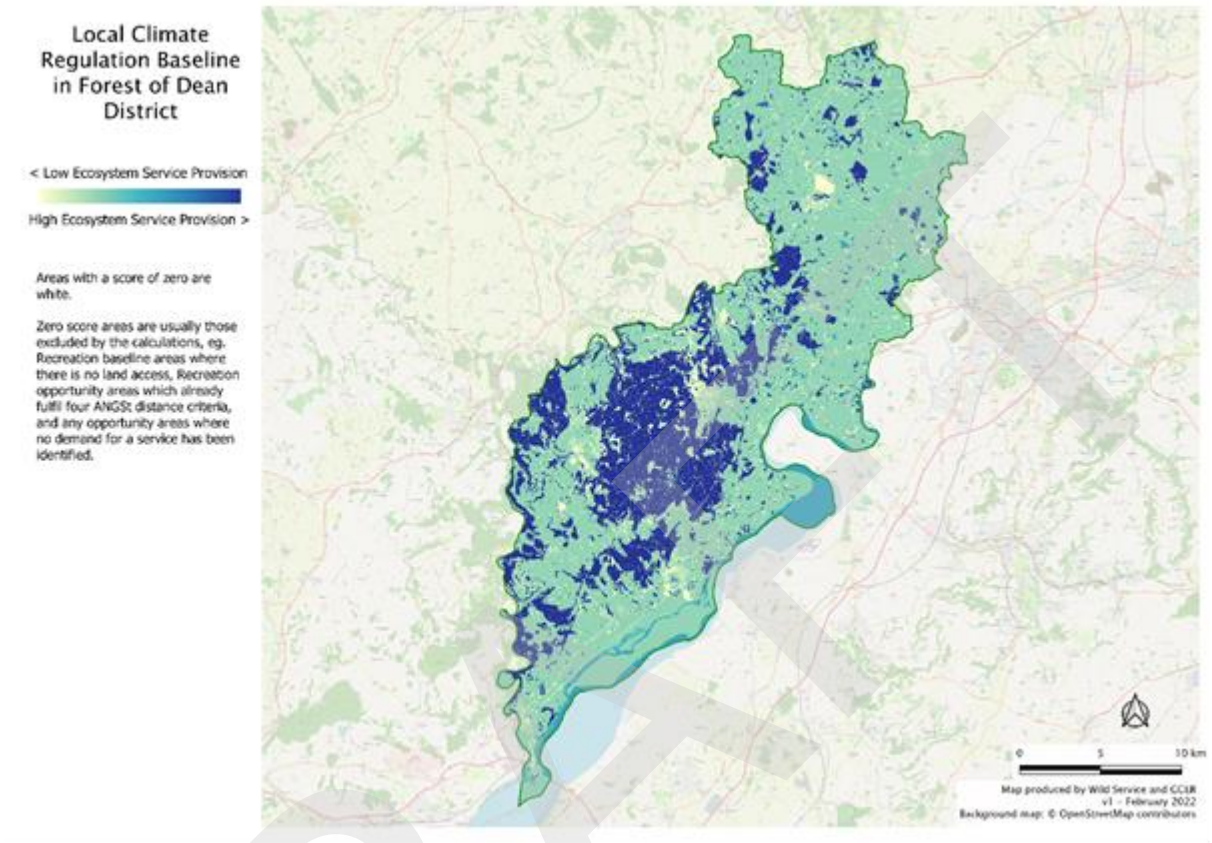

Figure 29 - Local climate regulation baseline: habitats were scored based on the cooling effects of vegetation and water, in particular in urban areas where these can reduce heating and cooling costs and provide areas of shade.

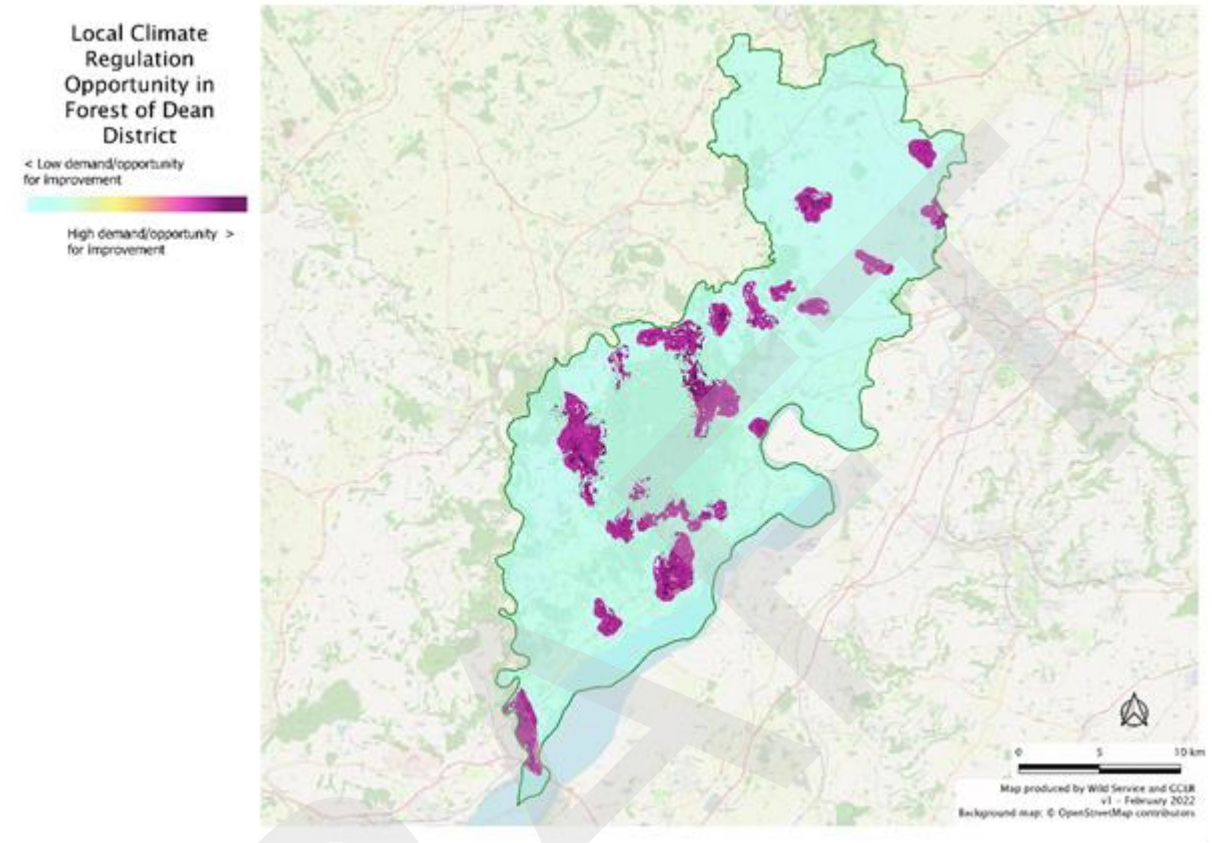

Figure 30 - Local climate regulation opportunity: shows the lowest baseline areas that are urban or within 0.25km of urban areas.

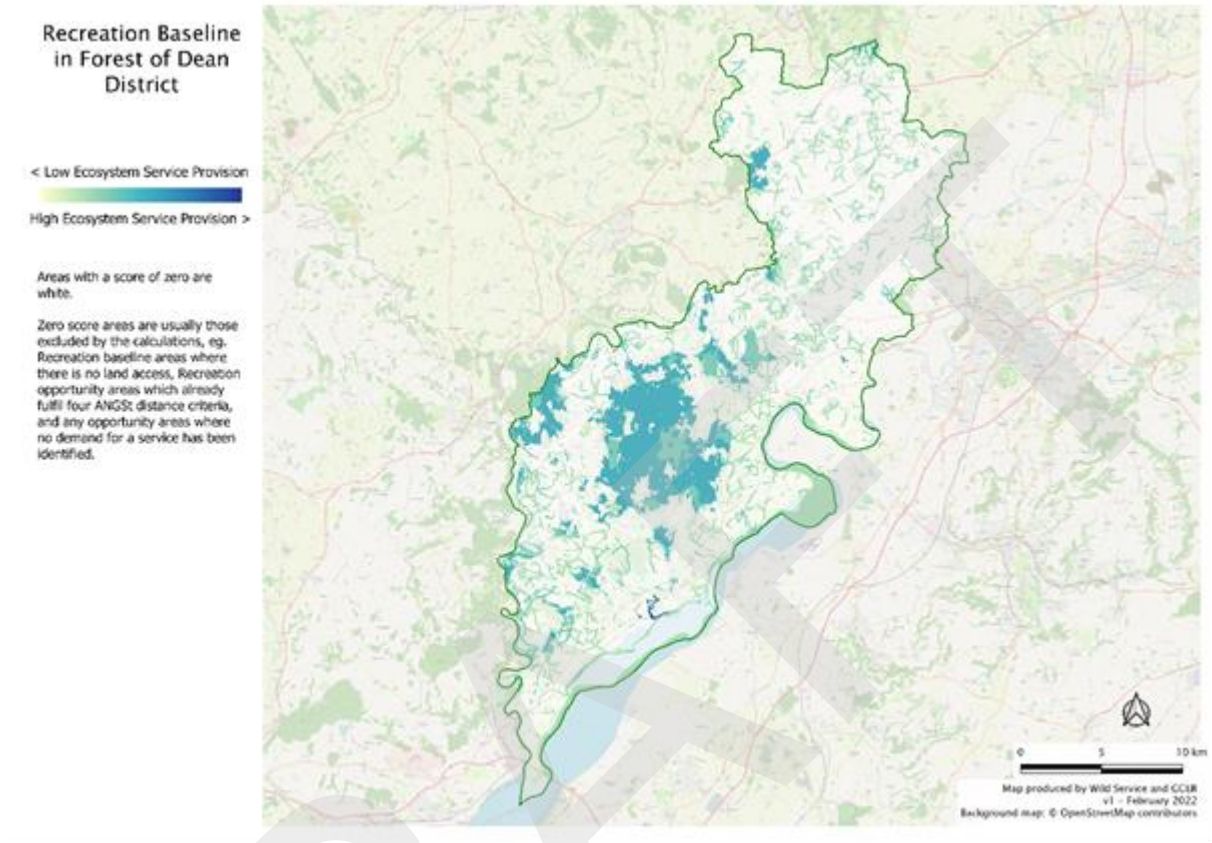

Figure 31 - Recreation baseline: Provision of green and blue spaces that can be used for any recreational leisure activity e.g., walking, cycling, running, picnicking, camping, boating, games or relaxing. This was combined with whether land was classed as open access, semi-restricted, restricted or other.

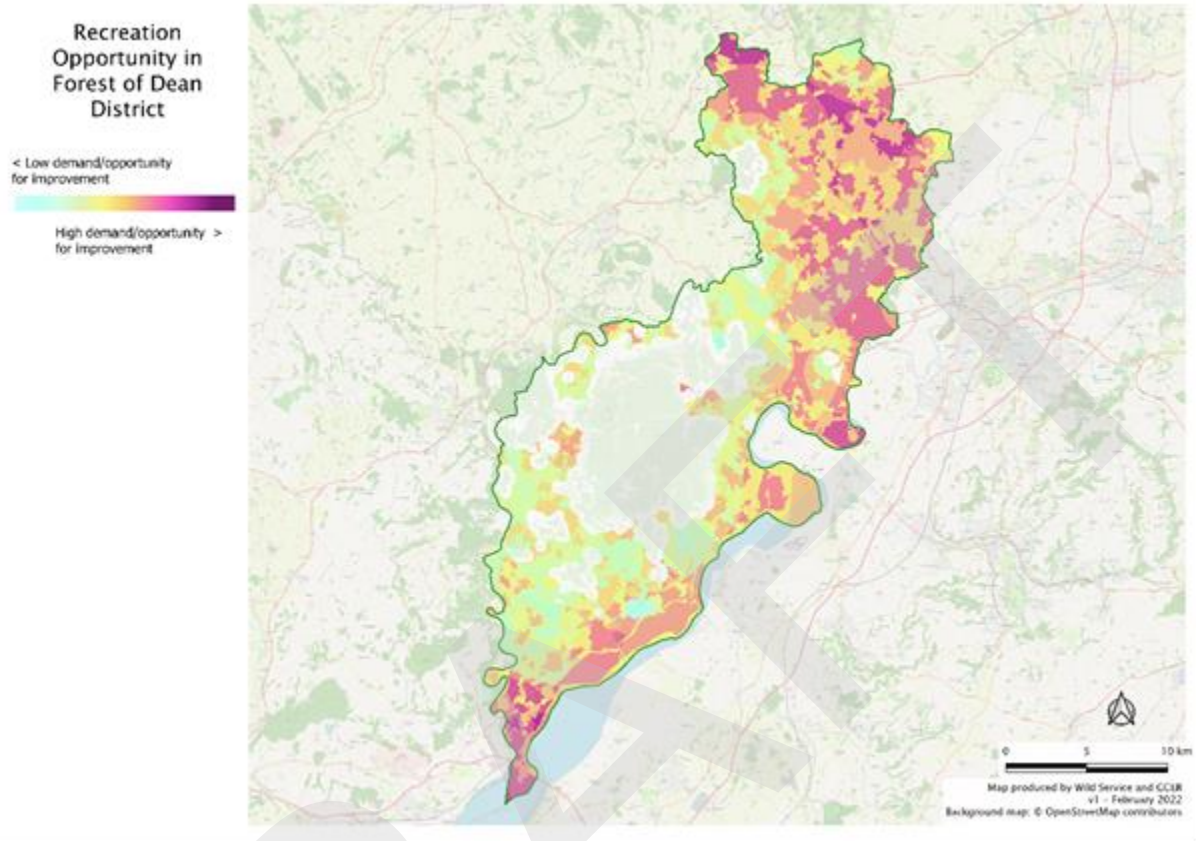

Figure 32 - Recreation opportunity: Opportunity for improvement - the inverse of the baseline dataset was modified by index of multiple deprivation (IMD) data at the lower-layer super output area (LSOA) level. The rationale for using IMD data is that in areas of high deprivation individuals are likely to be less able to travel to access areas where the interaction with nature ecosystem service is provided.

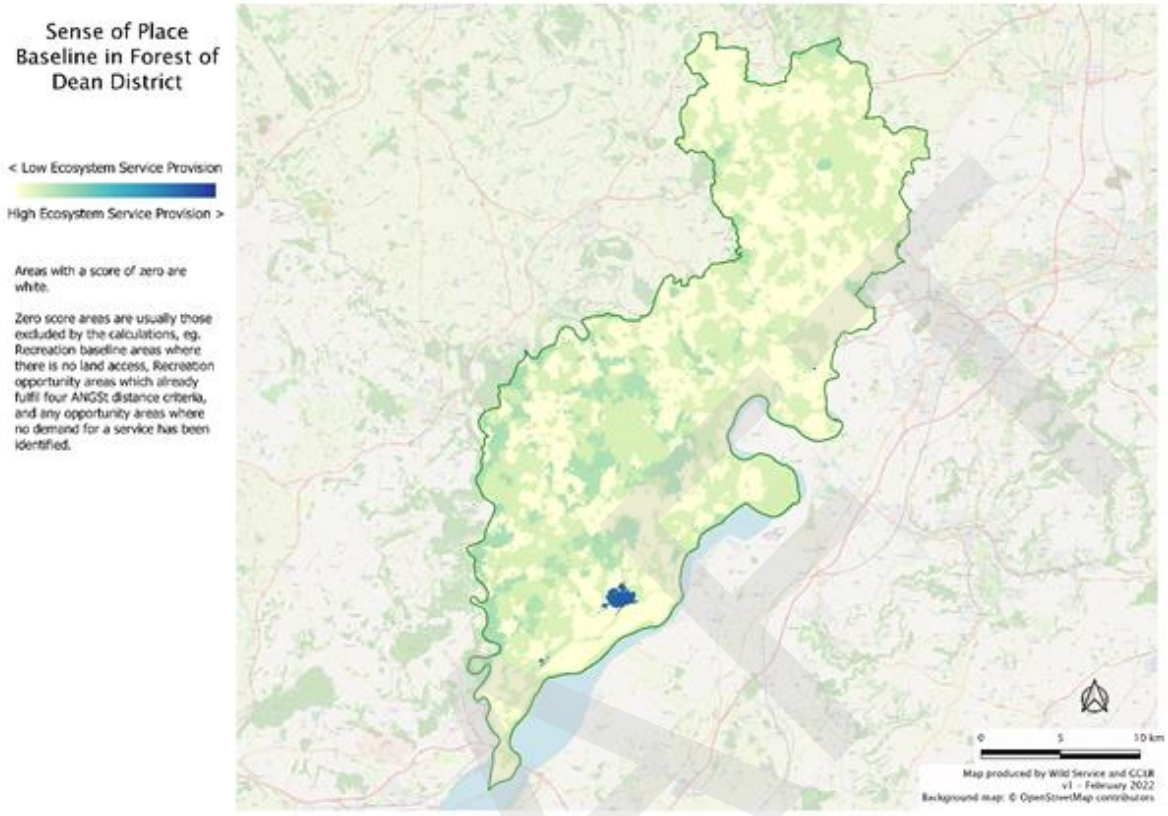

Figure 33 - Sense of place baseline: The aspects of a place that make it special and distinctive – this could include locally characteristic species, habitats, landscapes, or features; places related to historic and cultural events, or places important to people for spiritual or emotional reasons. The 'interaction with nature' ecosystem service baseline was combined with the locations of designated sites.

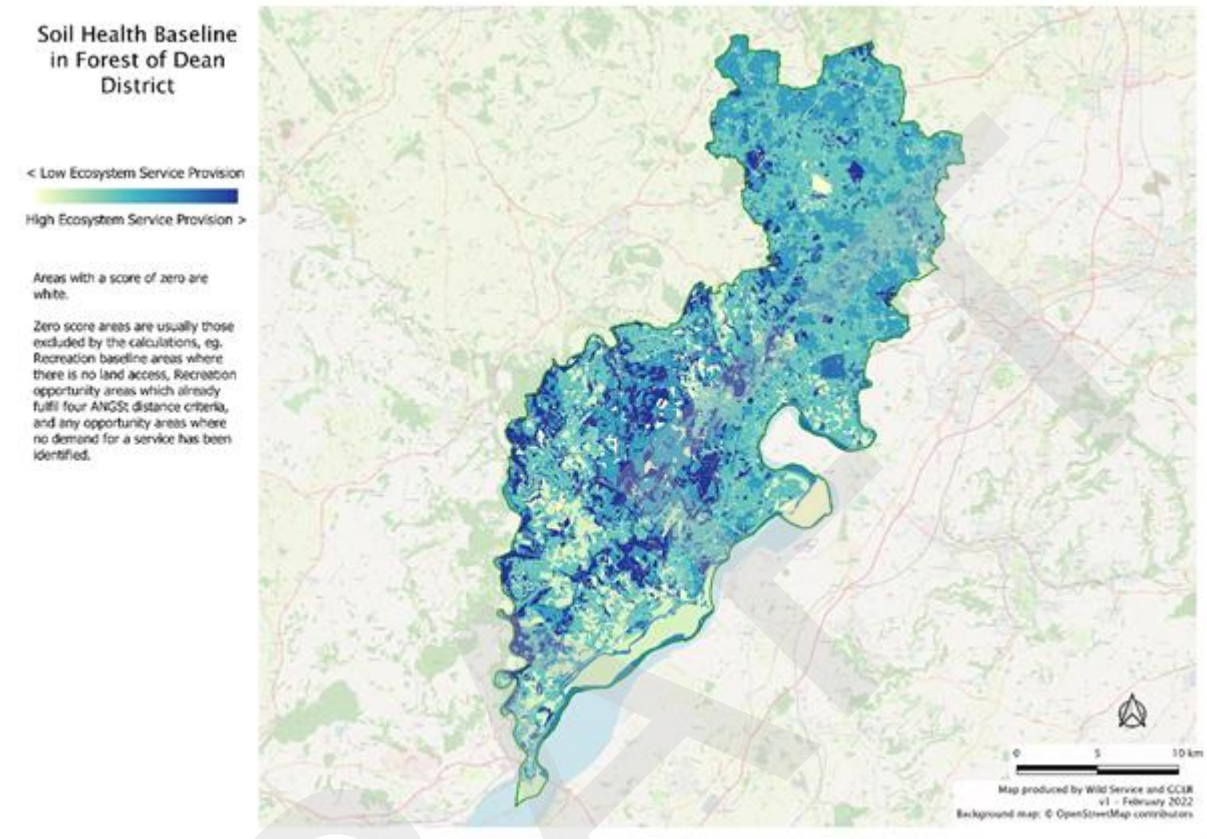

Figure 34 - Soil health baseline: seminatural habitats are coinsidered to have better soil heath as they are less disturbed and therefore have a more complete and stable soil fauna, flora and funga community.

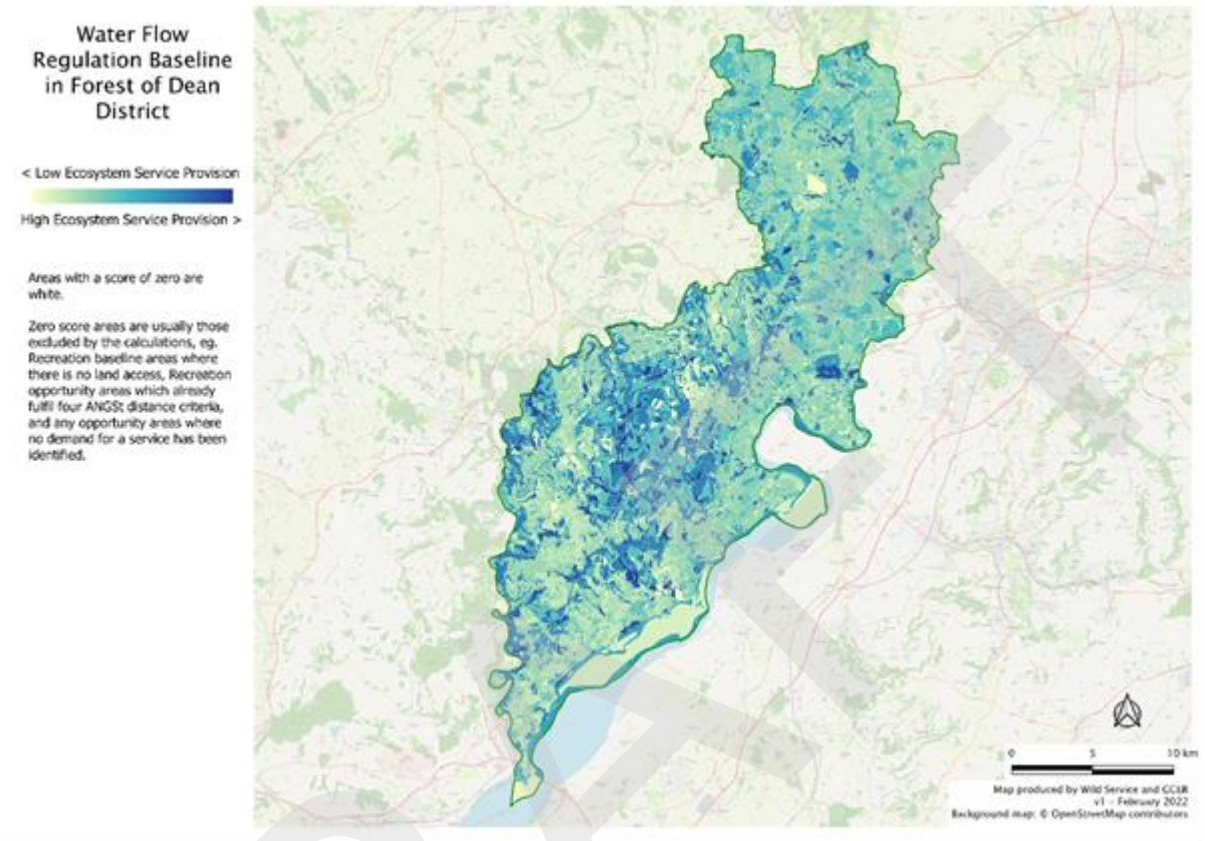

Figure 35 - Water flow regulation baseline: Impact of soil and vegetation on reducing surface run-off, peak flow, and flood extent and depth. Mechanisms include interception, evapotranspiration, infiltration, and physical water flow slowing. The baseline was created by combining the intersection of habitats from the Gloucestershire Habitat Inventory with flow pathways.

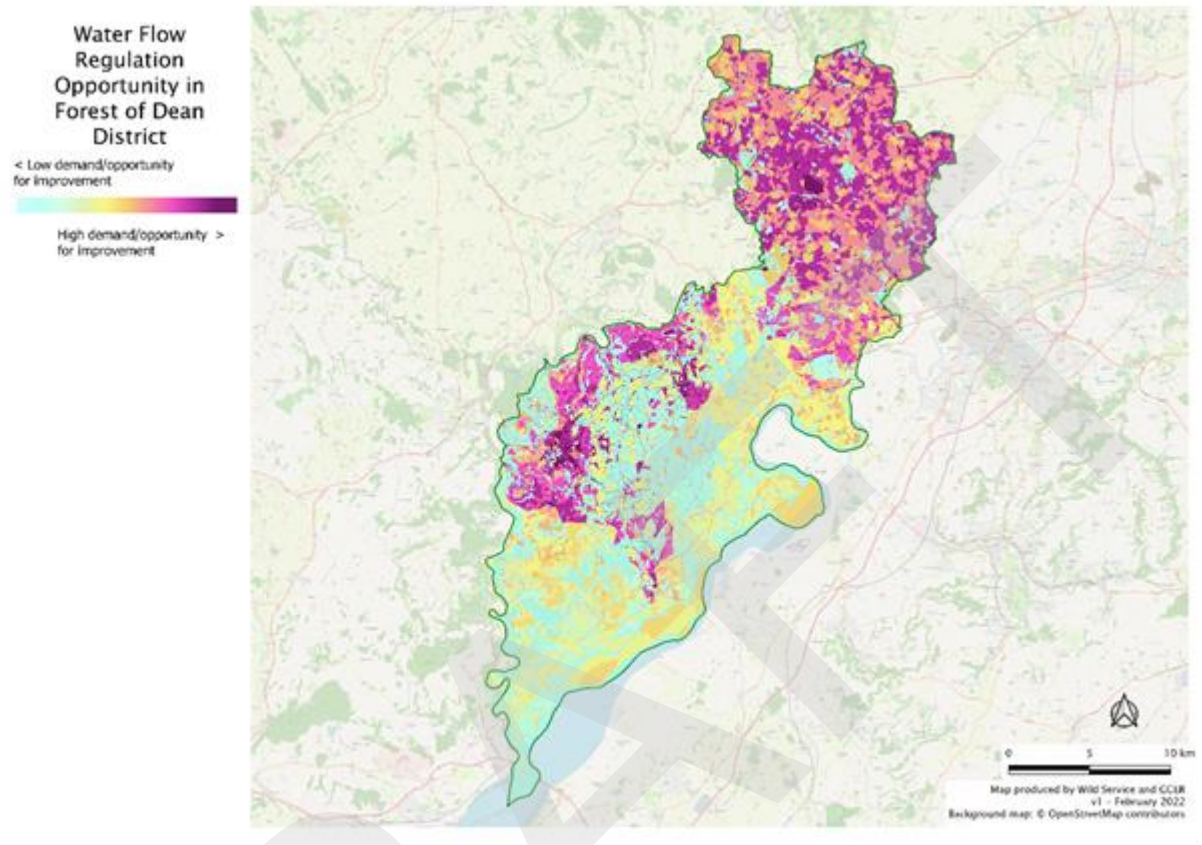

Figure 36 - Water flow regulation opportunity: inverted baseline combined with cumulative flood risk along a flow pathway.

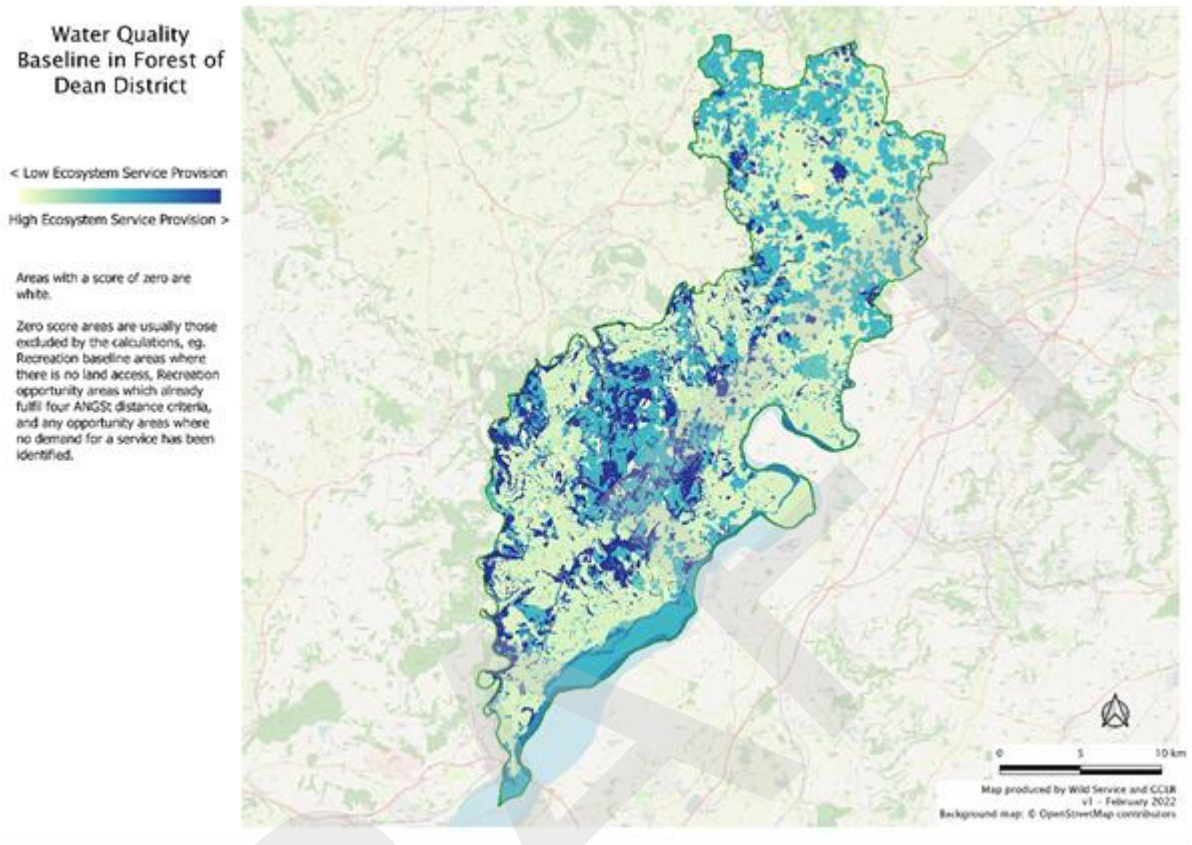

Figure 37 - Water quality: Ecosystem Service Provision.

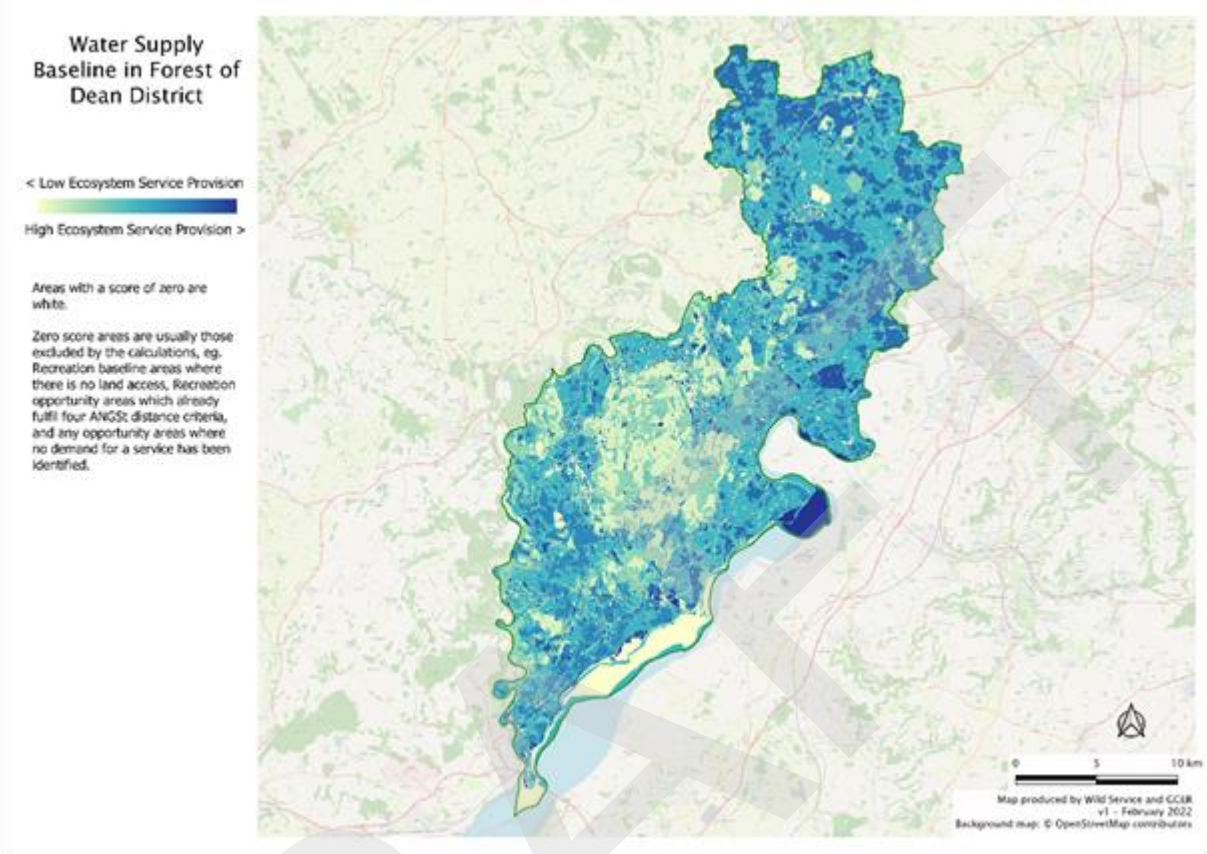

Figure 38 - Water supply baseline: this shows ecosystem service provision.

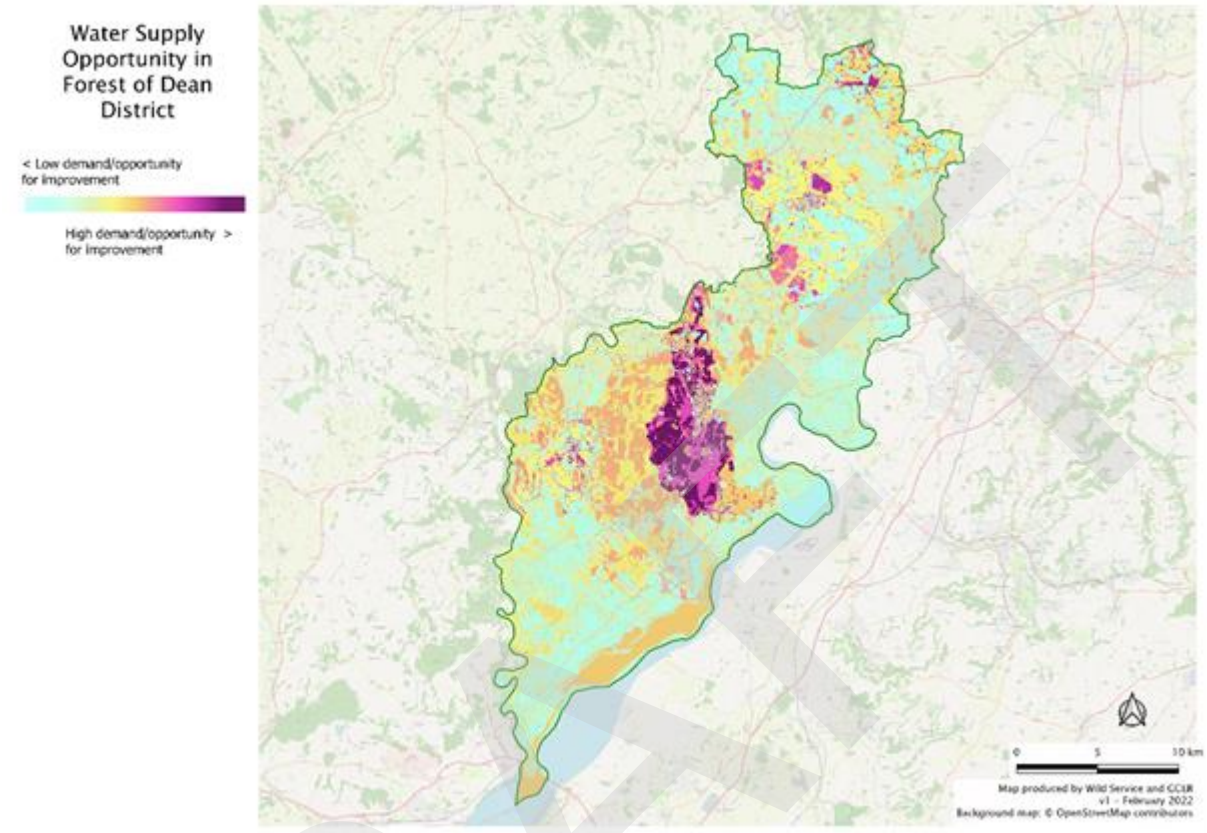

Figure 39 - Water supply opportunity: demand/ opportunity for improvement.