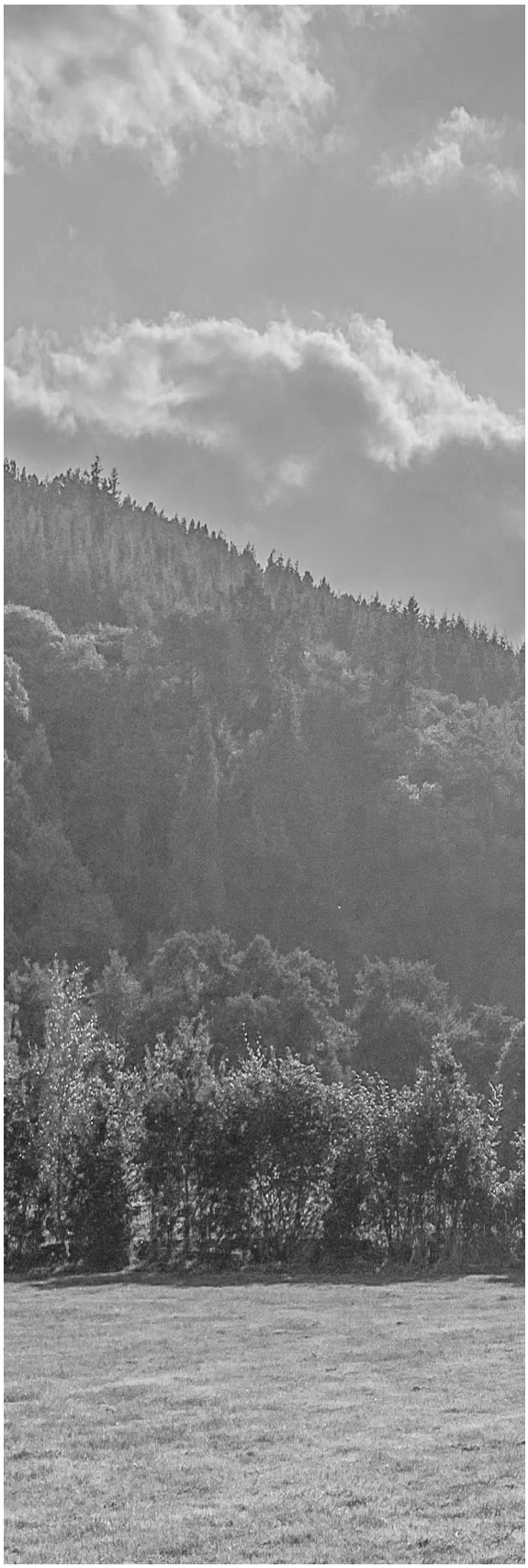
Somerset Tree Strategy

Evidence Document

January 2023



Climate Resilient SOMERSET

Evolving Forests

This strategy has been developed by

Environment Agency

EXMOOR NATIONAL PARK

Forestry Commission

Naturally Somerset
Somerset Local Nature partnership

Quantock Hills
Area of Outstanding Natural Beauty

WOODLAND TRUST

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1. Introduction to the Strategy

Treescapes are undergoing a time of unprecedented change globally, nationally and regionally. Somerset is no different. Its incredibly varied landscape from the Somerset levels to the uplands of Exmoor provide great complexity and great opportunity to respond to these changes. Similarly it has a dispersed demographic that is spread from farmstead to major towns, all of whom view treescapes differently. Where many regions have a homogeneity of character, Somerset has complexity. At one time this may have been viewed as an issue but today can be seen as an opportunity to create resilient treescapes.

Somerset has a deep and rich history in managing its trees. The “Sweet track” and other bronze age structures on the Somerset levels represent the earliest known examples of substantial volumes of timber use in the UK, likely from managed resources. A history of coppicing and willow growing goes back to the middle ages and more recently the volume of orchards in the County can be seen as a pioneer of the new wave of agroforestry systems.

This strategy sets out how treescapes can evolve in the new unitary authority of Somerset. It is backed by an Objectives and Actions document which sets out how the strategy can be delivered.

Rationale

The Strategy has been developed to be Somerset focussed. There are many national initiatives, strategies and regulations that govern the development of treescapes and these have been referenced where necessary but do not form part of this strategy explicitly. This strategy sets out how Somerset and its residents can work with its treescapes to create resilient tree-based systems in its rural and urban areas.

Treescapes have the potential to provide mitigation measures alongside emission cuts from fossil fuels and wider decarbonisation aims. Investment supporting the right kinds of activity can help address the biodiversity crisis, enhance carbon removals, protect existing carbon stocks and support adaptation to climate change while simultaneously offering a host of further reaching socio-economic benefits. From improved soil health, water and air quality, to urban cooling, flood prevention, noise reduction, recreation and amenity. Jobs in ecosystem restoration as well as physical and mental health benefits; investments in nature-based solutions have potential for profound societal returns.

In efforts to expand tree cover and protect existing trees it is vitally important to understand that approaches to management for climate change may also lead to negative trade-offs. **“The right tree in the right place”** is crucial messaging for industry.

Governance

The Strategy has been led by a steering group comprising: Environment Agency; Exmoor National Park; The Forestry Commission; FWAG SW; Mendip District Council; Mendip Hills AONB; Quantock Hills AONB; Sedgemoor District Council; Somerset County Council; Somerset Local Nature Partnership; Somerset West & Taunton District Council; Somerset Wildlife Trust; South Somerset District Council; The Woodland Trust.

It has been prepared on behalf of the Steering Group by Evolving Forests Ltd.

The Strategy has been written at a pivotal time as Somerset’s Local Authorities merge into one unitary authority and has been written with this in mind.

Format

The Strategy is set out as three documents:

- The Strategy. A short document outlining the main themes and objectives of the Strategy. What the situation is, why it needs to be addressed and how it will be addressed.
- Objectives and Actions. The way the Strategy will be taken forward actioned.
- Evidence. This document is a long form paper that sets out the rationale and implications of the evidence gathered for the Strategy. It sets out the main themes of the Strategy and the reason for them.

2. Methodology

The Strategy draws on a number of areas of evidence:

- Consultation with the Steering Group
- Wider consultation with communities in Somerset
- Analysis of national programmes affecting treescapes
- Analysis of past Somerset initiatives
- Geographic analysis of existing tree cover

2.1 Consultation with steering group

The Steering Group met every other week during the Strategy formulation. Given the short length of time for the Strategy to be developed (four months) it proved crucial to have regular informal meetings during which the members could drop in and out for a review of progress and input ideas.

A draft of the Strategy was used to inform a detailed workshop in late November 2022 during which the Action Plan was picked apart and concentrated into key areas. The methodology of the workshop was intended to highlight the complexity of strategising for treescapes and the importance that proper governance was given to the Strategy in the future.

During the workshop a set of 25 objectives were presented to the Steering Group who were divided into 5 groups, each group acting as advocates for the 5 main themes of the Strategy:

- Wood culture
- Resilient and adaptable treescapes
- Expanding tree cover
- Woodland services
- Governance

The advocates were asked to rank priorities for their theme. These priority scores were then amalgamated. Difference in priorities between the themes and collective total prioritisation could then be assessed. A similar exercise was conducted against the eight main character areas that lie within Somerset:

- Blackdown Hills
- Exmoor
- Levels and Moors
- Mendip Hills
- Mid Somerset Hills
- Quantock Hills
- Vale of Taunton
- Yeovil Scarplands

The results of these consultations inform the prioritisation in the Objectives and Actions.

2.2 Online consultation

A survey was sent out as an online consultation to inform the Strategy. The intention was to gain an understanding of what the local people of Somerset's relationship with trees in their environment is, and help understand who the Strategy is for. It proved to be an effective method of consultation receiving 752 responses (Table 1).

Table 1 Survey respondents

Respondent type	No. of respondents	Proportion of quantitative sample
Member of the public	555	75%
Woodland owners/ managers	79	10.7%
Work in part with trees	49	6.6%
Work in ecology / the environment	45	6.1%
Local authority	43	5.8%
Forestry agent / consultant	11	1.5%
Work with urban/ roadside trees	7	0.9%
Contractor in woodlands / forests	6	0.8%
Tree surgeon	5	0.7%
Arboricultural consultant	3	0.4%

The survey was live for six weeks through September and October 2022 and was distributed as widely as possible concentrating on:

- Forestry professionals
- Woodland and forestry owners
- Those whose work relies on woodlands
- Community woodland groups
- Charities & NGOs
- Public sector with responsibility for trees
- Protected landscapes
- Social media
- Via school liaison staff within local authorities

As results came in, ongoing analysis showed a very small number of respondents under 40 years old and no respondents in younger age groups. With this in mind a second survey was put together aimed at school age groups but was too late to make any real impact on the results.

The findings are given in detail in appendix 1, the summary being:

- The majority of respondents were over the age of 50, and were non-professionals/ members of the public.
- Respondents thought that overall Somerset does not have enough trees.
- Ecology and the environment was voted as the most important role of trees and woodlands in Somerset now and in the future.
- There were large amounts of uncertainty over whether Somerset's woodlands are resilient to a changing climate.
- The majority of respondents felt that a County-wide strategy meant planting more trees and increasing tree cover.
- They also thought the Strategy should include increasing tree cover, biodiversity, and maintaining existing trees.
- Education was the most commonly mentioned way to engage people in the vision.
- Professionals envisaged using the Strategy through woodland creation and management schemes.
- Somerset County Council received the highest mentions when considering who should be responsible for the Strategy.

2.3 Woodland cover

To assess the benchmark of current tree cover two main datasets were used:

National Forest Inventory data was used to assess rural tree cover. Its advantages are the accuracy of the resource which uses satellite imagery and a dedicated team of researchers at Forest Research. The national dataset was inputted to a Geographic Information System and the Somerset area extracted. This includes all woodlands as well as gaps/glades in woodland but excludes hedgerows.

Some woodland very recent woodland, for instance Somerset Wood, planted by the Council, may not appear in the mapping as it post dates the last inventory.

For urban assessment the i-Tree system was used. Tree canopy cover (TCC) as measured by the i-Tree Canopy (iTC) tool and also referred to as 'urban canopy cover' or 'urban tree cover', can be defined as the area of leaves, branches, and stems of trees covering the ground when viewed from above. This measure of cover differs somewhat to that reported by NFI which does not cover trees found in hedgerows, parks and gardens, or as small wood features in agricultural and urban landscapes.

Forest Research produce a five-yearly assessment of "Trees Outside Woodland". This was last completed in 2017 and being updated in 2023 using much more robust methodology. The 2023 results could have a significant impact on Somerset's woodland cover estimates.

2.4 Literature review

There are very many strategies and actions plans, white papers and policies on a local, regional, national and international level, all of which could be relevant. A rapid assessment was undertaken of what could be most relevant and these were analysed for data that would be Somerset specific or important to the future of Somerset's trees. These included:

- National Forest Inventory
- Forestry Commission statistics
- National Office of Statistics demographic data
- Met Office climate change modelling
- Past tree strategies for Somerset
- Local Nature Recovery Strategies

These were used to provide an indication of direction and to ensure that this Strategy sits neatly within them. Of significance is the 2010 Woodland Strategy for Somerset. This document provides an excellent base that is still very relevant. It focuses on woodlands rather than the wider treescape and, given it's relevance, can be used in conjunction with this Strategy. It gives a more detailed overview of silvicultural imperatives focussed on managing high-forest and short-rotation forestry in the County.

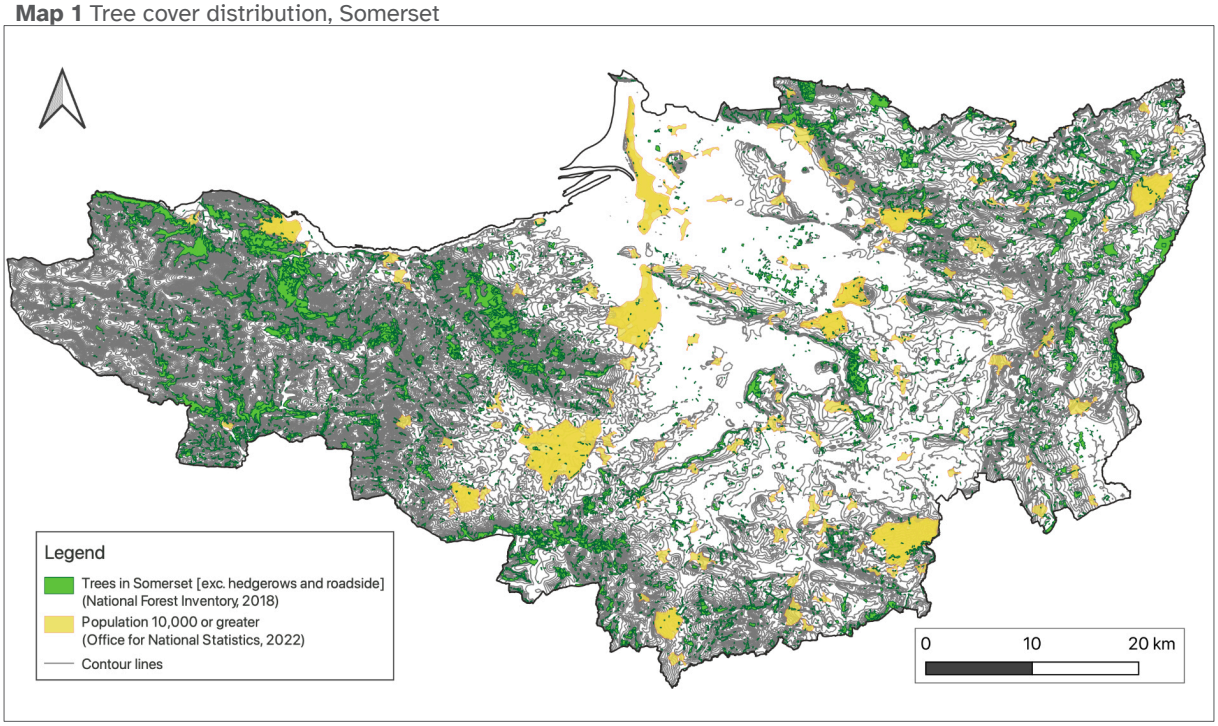
A fuller list of documents is in appendix 3.

2.5 GIS

Use of Geographic Information Systems (GIS) for data analysis and representation has become the norm. It allows fast assessment of data and acts as an easily digestible gateway to understanding complex information. A GIS package was the first task in understanding the context of Somerset's trees. The steering group were asked to submit datasets they owned and these were put against national datasets such as the National Forest Inventory and demographic information.

The biggest issue was the inconsistency of data held between local authorities; however this will be overcome once Somerset becomes a unitary authority. There are, however, discrepancies between areas with some having a great deal of tree-based geographical data and others not.

Map 1 Tree cover distribution, Somerset



3. The wider national and international context

This Strategy sits within a context of growing national and international interest in trees for a wide variety of reasons from ecological through carbon, to construction and landscape services.

3.1 International

Given the wide spread announcements of Climate Emergency plans from the United Nations to local parishes, the idea that treescapes can exist in a "business as usual" way has given rise to rapid strategy making to ensure resilience and adaptability.

Reflected in both the growing scientific literature and in the perception and experiences of people worldwide the United Nations' body for assessing the science related to climate change the 'Intergovernmental Panel on Climate Change' (IPCC) highlights the increasingly apparent, unequivocal, and widespread influence of human activity on the Earth's climate.

The UK has legislated a target to reduce GHG emissions to net zero by 2050 via the communication of its Nationally Determined Contributions (NDCs) in line with Article 4 of the Paris Agreement. The contribution of nature to the net zero target is partially captured by actions within the land use, land-use change and forestry sectors (LUCFC). This sector, unlike many others, is unique in its ability to be both a source and sink for GHG emissions and removals respectively. Sequestering CO_2 drawn down from the atmosphere in vegetation and soil carbon, and releasing it.

Mitigation options in forest and tree-based industries include the increase of tree cover available to absorb CO_2, the extension of carbon retention in harvested wood products, product substitution within industries such as construction, and the production of biomass for bio-energy. Removing carbon from the atmosphere and making it available to meet society's needs via timber, fibre, and energy; trees play a vital role in meeting NDC aims and realising the UK's net-zero target for 2050.

The conservation, protection and restoration of existing 'natural' forest and woodland alongside sustainable forest management, diversification, and adjustment of tree species compositions are all adaptations anticipated by the IPCC and Forest Research (FR) to build resilience, and manage increased risks from threats of drought, pests, diseases, wind, and wildfires. In addition to this the committee note the significance of cooperation, and inclusive decision making, with local communities in such adaptation measures (IPCC, 2022).

Effective ecosystem-based adaptation has the potential to reduce a range of climate change risks to biodiversity, people, and ecosystem services with multiple co-benefits. Urban greening using trees and other vegetation can provide local cooling, natural river systems, wetlands and upstream forest ecosystems reduce flood risk by storing water and slowing water flow; and coastal wetlands can protect against coastal erosion and flooding associated with storms and sea level rise (IPCC, 2022).

3.2 National

In January 2020, the Committee on Climate Change[1] (CCC) published their report 'Land use: Policies for a Net Zero UK'[2]. This report outlined policies and quantified actions that would be necessary for the UK to achieve Net Zero by 2050, and built on the land use scenarios from the Committee's previous Land Use report[3], which described how land use could be improved in order to help meet the climate goals agreed by government and committed to through the UN Climate Change Conference (COP).

Amongst the actions identified in the 2020 report, two related to trees and woodlands:

Afforestation and agroforestry

Increasing UK forestry cover from 13% to at least 17% by 2050 by planting around 30,000 hectares or more of broadleaf and conifer

[1] The Committee on Climate Change (CCC) is an independent statutory body established through the Climate Change Act 2008, with the purpose of advising UK and devolved governments on emission targets. They also report to Parliament on progress made in reducing greenhouse gas emissions and preparations for and adapting to the impacts of climate change.
[2] CCC (2020). Land use: Policies for a Net Zero UK
[3] CCC (2018). Land Use: Reducing emissions and preparing for climate change.

woodland each year. Together with improved woodland management this would deliver annual emissions sequestration by 2050 of 14 $MtCO_2e$ in forests with an additional 14 $MtCO_2e$ from harvested materials. Planting trees on agricultural land, while maintaining their primary use ("agro- forestry"), could deliver a further 6 $MtCO_2e$ savings by 2050. Sustainably managed forests are important for reducing emissions across the economy. They provide a store of carbon in the landscape and harvested wood can be used sustainably for combustion and carbon sequestration in the energy sector (e.g. when used with Carbon Capture and Storage (CCS) technology) and as timber in construction, creating an additional stock of carbon in the built environment.

Bioenergy crops

Expanding the growing of energy crops by around 23,000 hectares each year would deliver 2 $MtCO_2e$ emissions savings in the land sector and an extra 11 $MtCO_2e$ from the harvested biomass (e.g. when used with CCS). Bioenergy crops are faster growing than new woodlands and are needed as part of the overall mix of land-based measures. However, risks of negative impacts of bioenergy crops need to be managed.

At the same time as the CCC were developing their Land Use reports, Government was outlining their response to a proposal from the Natural Capital Committee to provide a 25-year framework to maintain and improve natural capital. The 25 Year Environment Plan was published in 2018 and the Environment Act legislated for in 2021. The Act introduced legally binding environmental targets and requires public bodies to consider environmental principles in policy making.

Both of these initiatives were set against a background of the UK's withdrawal from the European Union, and resulting proposals in England to replace the support for agriculture and rural development with a series of measures, including the Environmental Land Management Scheme, which would replace direct area based payments with payments for public goods.

In 2021, the England Tree Action Plan (ETAP) set out how Government would respond to the twin challenges of biodiversity loss and climate change through the creation and management of trees, woodlands and forests, supported by the Nature for Climate Fund. Government accepted the 30,000ha p.a. new planting target for the UK outlined by the CCC, and also outlined measures to promote the sustainable management of woodland in England.

The ETAP includes a section on 'Expanding and connecting our trees and woodlands' which describes a package of measures to increase tree planting to benefit nature, water, and towns and cities. The Plan also included measures to build tree nursery capacity and support for knowledge and science for trees and woodlands.

Launching the England Tree Action Plan in May 2021, the Secretary of State for the Environment committed to a new target of 7,000ha of new woodland to be created in England by the end of the current Parliament (May 2024), as England's contribution to the UK's woodland creation targets.

Zero Carbon Britain sets out targets for forest area to be doubled to 24% of the land area of the UK – with roughly one third unharvested and two-thirds harvested for timber. These forests, the wood products they produce, and the restoration of 50% of UK peatlands, could result in the capture of around 47 $MtCO_2e$ on average every year. This is required to balance the residual emissions in the scenario and so make the UK net zero carbon. Such changes would also provide more room for biodiversity.

Beyond these, national policy cites a range of documents that must be adhered to for treescapes to be assumed to be resilient and adaptable. These include the UK Forestry Standard which sets out the best approach to a range of management interventions and also the need for approved management plans and felling licences for trees to be considered managed in a legal and sustainable way.

3.3 Recent relevant strategies and targets

On 16th December 2022, DEFRA published legally binding targets relating to the environment. This included a commitment to 'increase total tree and woodland cover from 14.5% of land area now to 16.5% by 2050.' At the same time, it was announced that the Government would publish its Environmental Improvement Plan in January 2023 setting out in more detail how these targets, including interim targets, will be achieved.

In 2024, there are plans to roll out the new Local Nature Recovery (LNR) strategy to replace the Countryside Stewardship scheme, with some additional elements that will help to widen the appeal so it can deliver more and better outcomes, in a less bureaucratic and more supportive way. In August 2020, DEFRA launched five pilots of the scheme across England, and plans are to make an early version of the scheme available to a limited group in 2023, for further testing before the full roll out by the end of 2024. There are multiple themes of the LNR strategy that align with Somerset's Tree Strategy, including 'managing and creating trees and woodlands, including agroforestry, traditional orchards and tree planting on areas of farm' and 'nature-based solutions for water - such as creating and managing in-field vegetation, buffer strips and swales to reduce and filter runoff and contribute to natural flood management'. The payments are open to farmers, foresters and other land managers who can deliver the land management activities the scheme pays for on their land. The roll out of the LNR scheme will therefore be an important way for individuals to contribute to improving Somerset's treescape.

The Somerset Local Nature Partnership (LNP) is a broad multi-sector coalition that represents a range of economic, social, political and environmental interests from across the County. In February 2020 it was relaunched with a Nature Conference, which involved consulting directly on the priorities for the LNP and the Natural Environment work-stream. The LNP is determining strategic priorities for the County to develop an Action Plan that focuses on natural solutions to climate change. The Action Plan will focus on protecting biodiversity, habitats, natural processes and carbon stores and restoring nature at scale to double the amount of land to achieve 30% in positive management for biodiversity and natural processes in Somerset.

The Somerset Tree Strategy is aligned with all six of the proposed Natural Environment work-stream outcomes, which are being delivered by a combination of the Local Nature Partnership and Somerset Wildlife Trust. Some of the proposed actions that will directly contribute to the Somerset Tree Strategy are listed below:

Quick wins (0-1 year)

- Agreed toolkit for community tree planting based on Nature Recovery Network
- Agreed strategic approach to woodland regeneration to mitigate the effects of ash dieback (up to 90% of woodland lost in some areas such as Mendip)
- Hedge motorways: a plan for linking and creating a biodiversity transport network linked to existing beelines and Somerset Pollinator Plan

Long-term

- Agreed woodland regeneration approach including establishing tree nurseries to ensure diseases are not brought into the County
- Deliver a coherent, resilient, NRN across Somerset
  - a. produce and deliver signature projects for different habitats and landscapes in next three to ten years e.g. Levels and Coast wetlands,
- Somerset Forest (ring around the Levels).
  - b. Long-term land acquisition plan and fund to support communities and landowners

4. Climate and future treescape resilience

Global temperatures are predicted to rise by at least a degree over the next two decades, and by the end of the century, they could rise by up to 4 degrees above pre-industrial levels. To ensure Somerset's trees and woodlands are resilient to the uncertain future climate, there is a critical need to plan for both the current climate, and the predicted future climate.

Somerset's trees have developed in a predictable and stable climate, leaving them vulnerable to fast change. Somerset has declared a climate and ecological emergency and so this section will first consider what the predicted changes to the climate and environment are for Somerset. Then it will explore how to reduce the risk associated with such changes, through building a resilient treescape that is able to resist, recover, and adapt to future disturbance and stressors.

Whilst it may seem obvious, if trees die from drought they don't produce timber, fruit or nuts or provide a home for wildlife. As temperatures rise trees provide us shade for free, increased storminess leads to windthrow and disruption to roads and rail networks. Tree species unable to respond to the rapid change in climate (genetically selected for conditions 100 years ago) become more stressed and prone to disease. However we can plant trees fit for both today and the future. Change in woodland structure and management makes trees less likely to succumb to environmental stresses.

4.1 Predicted climate & environment change in Somerset

This section examines how the climate is predicted to change in Somerset over the next 60 years, including the impact of sea level rise, and the areas that have analogous climates to the future projections for Somerset. In order to adapt and be resilient to change, there needs to be a better understanding of the predictions and their potential impacts on Somerset's trees.

Temperature

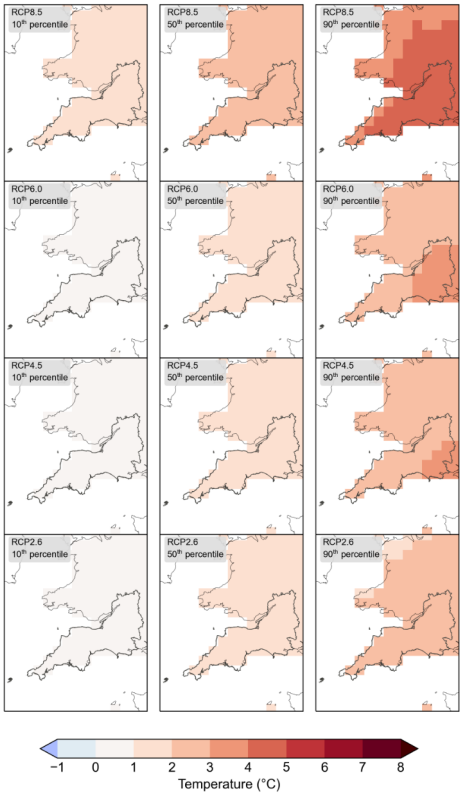
Projected temperature changes for the South West were taken from the UK Climate Projections (UKCP18) Key Results dataset produced by the Met Office. The standard baseline for calculating projected future temperature anomalies used was the period 1981-2000. The emissions scenarios chosen to report on were RCP 6.0 and RCP 8.5, which are medium and high emission scenarios respectively.

The mean annual temperature for South West England is predicted to rise by up to 2.2 degrees by 2050, under the highest emission scenario (RCP 8.5, 50% probability), and up to 1.2 degrees under the lowest emission scenario (RCP 2.6, 50% probability).

Table 2 Projected changes to the South West's climate (based on medium and high emissions scenarios, at 50% probability)

Change compared to 1981 - 2000 baseline	2050's (Medium scenario)	2050's (High scenario)	2080's (Medium scenario)	2080's (High scenario)
Mean annual temperature	1.4°C	2.2°C	2.9°C	4.1°C
Mean summer temperature	1.9°C	2.9°C	4.1°C	5.6°C
Mean winter temperature	1.3°C	1.9°C	2.3°C	3.2°C

Map 2 Predictions for annual mean temperature across South West England, based on the Met Office UKCP18 dataset.

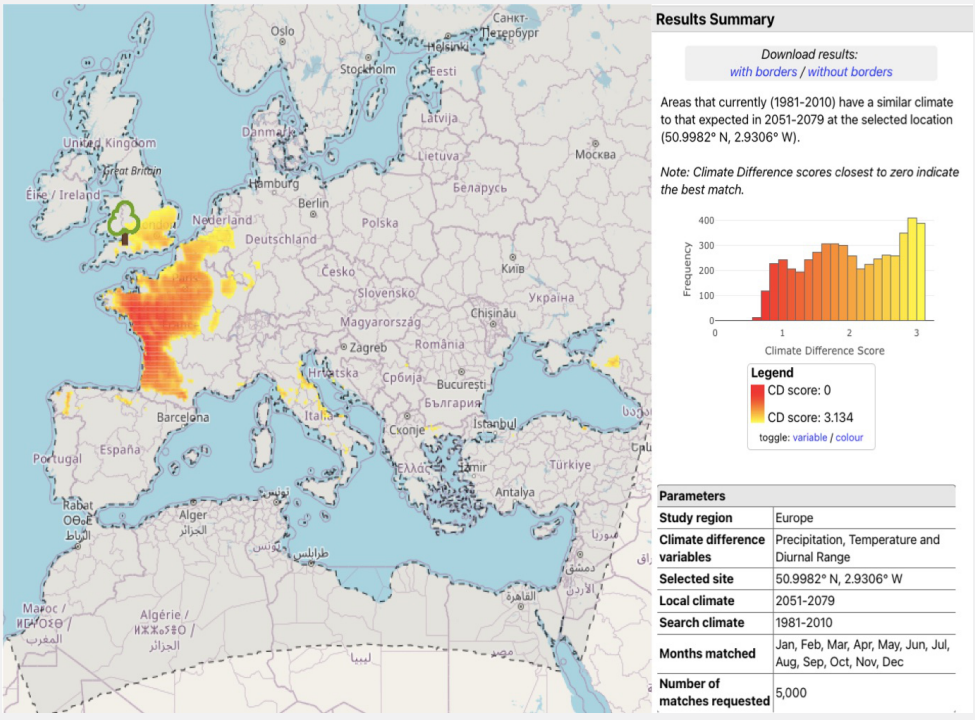


Climate analogues

Climate analogues show areas with current climates similar to the predicted climates for a chosen area. This gives an indication of the climate that trees are likely to experience in the future.

Forest Research's climate matching tool was used to demonstrate what the projected climate of a chosen site in Somerset will be in the future, by suggesting similar analogue areas in the current climate. The tool is designed as complementary to the Ecological Site Classification (ESC) tree selection tool (which does not take into account adaptation). The concept behind the need for a climate matching tool is that by sourcing seeds from future climate analogues future forest resilience under climate change may benefit. The tool is underpinned by UKCP18 climate data at a 12km resolution, using RCP 8.5 pathway in future projections, and similar sites are identified based on mean monthly temperature, diurnal temperature range and rainfall.

Map 3 Climate matching tool predictions for Somerset 2051-79



The example results shown in Map 3 demonstrate the climate difference score for areas in Europe, compared to the chosen location in Somerset. Areas of dark red are predicted to be the most similar to the average climate of the selected site between 2051-2079. In this example, the baseline comparison is the climate across Europe during 1981 - 2010. This baseline was compared with the average predicted climate of a point in Somerset (50.9982 °N, 2.9306 °W) in 2051-2079, matched across all months. The climate difference variables used to determine the results were precipitation, temperature and diurnal range.

Sea level rise

Somerset is particularly at risk from sea level rise, with some of the lowest ground levels in the UK. Areas such as the Somerset Levels are often below sea level at spring tides, and rivers are required to carry high levels of rainfall. Sea level rise is important to consider in the Tree Strategy as it will additionally affect the species that are suitable. The tree species will need to be resilient to high levels of salinity in some areas.

Trees will play a part in mitigating and adapting to the impacts of climate change, such as taking up water and preventing flooding. The Risk Zone Map (Map 4) by Climate Central shows the projected impact of sea level rise for Somerset in 100 years, under an emission scenario of unchecked pollution.

Extreme weather

As the planet warms, extreme weather events are predicted to become more intense and frequent. It is often through the increase in extreme weather events that climate change impacts first affect us, with such events causing the greatest stress to environmental systems.

For Somerset, the greatest damage is likely to be related to heavy rain and flooding events, heatwaves and droughts. The UN IPCC report predicts the UK to receive 10% more rainfall on average per year by 2100 compared to 1986-2005 (IPCC 5th Assessment Report Summary for Policymakers, p20). Heavier rainfall events are also predicted to increase in frequency, which when combined with sea level rise increases the likelihood of storm surges breaching coastal defences. With the increase in frequency of unavoidable flood events, there is a need to adapt to the effects of flooding so the treescape can be more resilient. Heatwaves and droughts will also become more frequent and intense during summer periods. With temperatures frequently varying by large amounts, trees become vulnerable to cellular damage, drought stress, and a reduced ability to take up nutrients.

These conditions, alongside increasing globalisation will also increase the threat of disease and pests. In the period 1992 - 2019, tree imports have risen by 700% and at the same time 267 non-native plant pests have become established. The changing climate

Table 3 Predicted sea-level rise baseline to 2100

Climate Scenario	Mean sea level rise at 2100 (m) - Cardiff
RCP2.6	+ 0.27 - 0.69
RCP4.5	+ 0.35 - 0.81
RCP8.5	+ 0.51 - 1.13

Source: *UKCP18 Marine Report (2018)*

Map 4 Projected impact sea level rise in 100 years

conditions may be suited to new pests that arrive with imported trees. Furthermore mild winters, along with increased heavy rainfall and flooding will increase suitability for the establishment of new pests and diseases, as well as susceptibility to existing pests and diseases. For example, the spread of ash dieback has been driven/exacerbated by the climate crisis, as more mild and wet winters provide ideal conditions for the disease to spread, and drought and flooding also leaves trees more stressed.

In the Mendips, the impact of ash dieback is predicted to lead to the loss of up to 90% of some woodlands, so approaches such as that of Somerset's Climate Emergency to agree on a strategic method for woodland regeneration to mitigate the effects of ash dieback will be essential alongside considering which tree species can replace ash contributing to existing Special Area of Conservation goals. Projections of the climate hazards and extreme weather events from the National Trust Climate Hazard tool for Somerset are shown in Map 5.

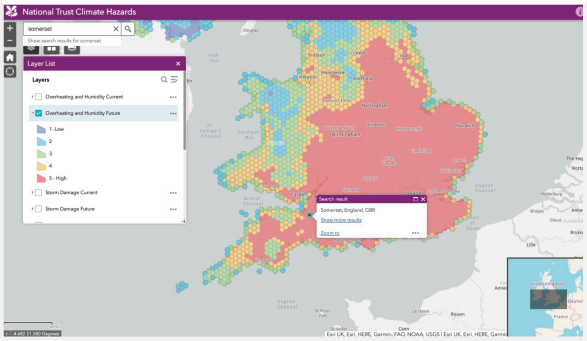
Reducing future risk

What does a resilient treescape for Somerset look like?

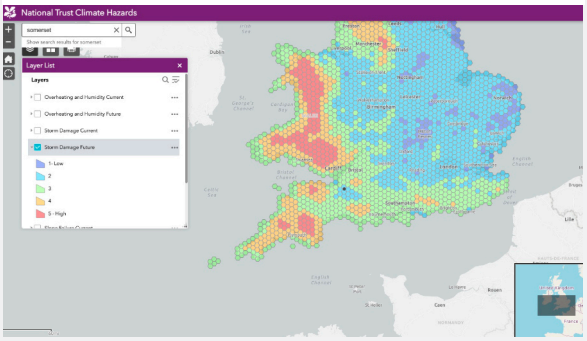
A resilient treescape is one that is able to readily adapt to, and absorb a range of disturbances and remain healthy into the future. Building resilience involves both managing risk, but also exploiting potential benefits of climate change. Resilience is key to helping Somerset's trees cope with the predicted increasing frequency and intensity of shocks and stressors, such as increased flooding risk and periods of drought.

The approach to building a resilient treescape also needs to be resilient itself. Key to creating a resilient treescape for Somerset is being able to observe, respond and adapt to changing conditions. There needs to be flexibility in the diversity of species being planted, and a range of management practices that improve woodland quality through increasing heterogeneity, including forward-thinking silvicultural systems. At a landscape level, woodland size and connectivity need to be increased. This will enable Somerset's trees and woodlands to be resilient to increasing temperature, sea level rise, disease and pests, and to competing land use demand.

Map 5 Overheating and humidity risk for Somerset



Map 6 Storm damage failure



4.2 Adapting Somerset's trees

In the climate and ecological emergency that Somerset is facing, Somerset's treescapes need to be resilient and adaptable. This includes their structure and ecology. On a national level this is set out in Forest Research's Adapting Forest and Woodland Management to the Changing Climate paper.

Biodiversity

The UK is in the midst of a worsening biodiversity crisis, where almost half of its biodiversity has been lost since the 1970's (State of Nature 2016). Woodland wildlife in particular is at risk, with one of the lowest woodland covers in Europe, 1 in 10 woodland wildlife species are at risk of extinction in the UK.

Biodiversity and resilience of ecosystems are heavily linked. Increasing the species diversity in the treescape will improve resilience to increasing stresses resulting from extreme weather, pests & disease and societal needs. For example, if a disease spreads that affects a specific species, the more diverse the

network of trees, the less significant impact this will have on the wider population. Beyond resilience, improving tree species diversity can be expected to increase the range of timber and non-wood products that can be harvested, and improve recreational opportunities. There is also substantial evidence showing more diverse forests to have a greater positive impact on the mental health of recreational users (Methorst et al, 2021). These factors are as true in urban as in rural contexts.

While increasing the diversity of tree species planted across Somerset, consideration needs to be made for the tree species historically not widespread, that may become more suitable under predicted climatic change. A resilient treescape for Somerset must therefore involve careful consideration of the tree species that will be best adapted to climate change.

Beyond species diversity, it is additionally important to consider genetic diversity. Greater genetic diversity increases the likelihood of disease resistant individuals that can survive stressors, and provides treescapes with greater potential to adapt to new environmental conditions, through natural selection. Maintaining and increasing genetic diversity is a vital part of enabling adaptation, and subsequently improving resilience. Simple ways to increase gene flow include linking and expanding native woods through natural regeneration, and planting with stock that is well-adapted. With predicted climate change, assisted migration, where seed is sourced from better matched varieties from southerly provenances, will improve woodland resilience.

It is likely that the current genetic stock taken from local seedlings will survive, though perhaps not necessarily thrive in future climates. While different origins of stock of existing species may offer alternatives or even, in limited circumstances, new species that provide focussed benefits to carbon, or other products.

Species suitability study

The Forestry Commission (FC) Ecological Site Classification (ESC) tool was used to predict tree species that will be best suited to planting in forestry sites under predicted climate change. The ESC is a predictive tool that is designed to aid forestry decision making, through the provision of a quick assessment of site character, with the ability to explore the effects of predicted climate change to a site. It rates the suitability of tree species to the selected site conditions, with options to contextualise site conditions such as soil moisture, soil nutrients such as phosphate content, wind and climate.

The climate scenario used to model the data here is the Medium-high 2080 Available Water Capacity (AWC) model. The model was run for 60 tree species, including both broadleaves and conifers. **It is important to note that the ESC is not suited to urban tree planting or urban forestry, and is not a substitute for forestry best practice, knowledge and experience.** It is purely an indicative tool that may help managers on a site by site basis.

Four sites were selected to provide a wide ranging basis across Somerset. The selected sites were in South Somerset, the Mendip Hills (AONB), the Somerset Levels and on Exmoor National Park. It is important to note that the tool is highly sensitive, and the sites selected here are used as examples of how the tool can be used. The species selected are specific to the sites inputted, and should not be applied to other sites within Somerset.

The tool scores tree species based on suitability, which describes the likely success of a tree species growing to maturity at a given site. Suitability is grouped into four categories: Unsuitable (ESC score 0 - 0.29), Marginal (0.3-0.49), Suitable (0.5-0.74) and Very Suitable (0.75+). Higher values mean that a particular factor such as accumulated temperature, or soil moisture regime, is unlikely to prevent tree growth. Species with a score equal to or greater than 0.5 (Suitable) were chosen as the cut off for species selection. All species that were shown to be suitable or very suitable at each location were counted, and totalled to give a number of occurrences across the four sites.

Table 4 is extracted from ESC results produced by the Forest Research Ecological Classification Tool.

Table 4 Example of predicted ecological site classification for selected sites

Site region	Site grid reference	Site class	Soil moisture regime	Soil Nutrient Regime
South Somerset	ST390189	Very warm - Sheltered - Slightly dry	3.0 (Very moist)	3.0 (Medium)
Mendip Hills	ST549525	Very warm - Moderately exposed - Slightly dry	5.0 (Fresh)	5.0 (Very rich)
Exmoor National Park	SS810418	Very warm - Highly exposed - Moist	5.0 (Fresh)	2.0(Poor)
Somerset Levels	ST375442	Very warm - Moderately exposed - Slightly dry	3.0 (Very moist)	5.0 (Very rich)

Only four tree species were predicted to be suitable at all four sites in 2080, three of which are conifer species, and one broadleaf. Eighteen species were suitable at three of the four sites, and seven species were suitable for just two sites. Twenty-one tree species were only suitable on one of the four sites tested. Species only suitable to one site included species commonly found across Somerset, such as Beech, Sweet chestnut, Silver birch, Sessile oak, Alder, and Wych elm.

Again, it should be noted that this is an example of a tool that should be carried out only in a forestry specific context. The results from any ESC model must be taken into account alongside guidance from experienced foresters, and alongside ecological guidance, such as that provided by DEFRA and organisations such as Bee Happy Plants & Seeds, to plant native species that will simultaneously improve biodiversity levels in managed forests.

Management

Woodlands across the UK, including Somerset, are declining in ecological condition and quality, and this is largely due to neglect and a lack of management. Despite a gradual increase in woodland cover, woodland wildlife has simultaneously decreased. **Therefore where woodland cover is extensive, the management of Somerset's woodlands should be a priority over establishing new woodland.**

As deforestation occurred across the UK, reaching its zenith in the 1920s, much structure was lost in Somerset's woodlands and street trees. Only those areas unmanageable tended to remain and for many agriculture areas and townscapes this meant a reduction in the structure and diversity of trees in the landscape. From the 1920s a fashion for conifer monoculture developed and from the 1980s this was overtaken by a fashion for mixed broadleaf planting. The resulting Somerset woodland landscape is lacking in structural heterogeneity, where woodlands have low species diversity, and a limited range of age classes. This has detrimental effects on biodiversity, and leaves woodlands with limited resilience and adaptation potential. The complex ecosystem interactions that maintain ecosystem function start to degrade when species are removed from ecosystem networks, and woodlands that have greater biodiversity are better able to withstand and adapt to changing conditions and disturbances. Woodland management is therefore an essential part of the tree strategy, and management strategies need to be able to readily adapt to changing conditions.

Bringing woodland into management allows for monitoring regimes to be put in place to monitor influx of pest & disease and react quickly. Management needs to include protecting newly planted woodland from pest damage, such as squirrel and deer damage to natural regeneration, as this presents a

Table 5 Species 'very suitable' - 'suitable' across the sites studied
(species in **bold** are 'very suitable')

South Somerset	Mendip Hills	Exmoor	Somerset Levels
Corsican pine	**Corsican pine**	**Grey alder**	**Corsican pine**
Macedonian pine	**Lodgepole pine**	**Rowan**	**Macedonian pine**
Western red cedar	**Macedonian pine**	Lodgepole pine	**Western red cedar**
Coast redwood	**Scots pine**	Macedonian pine	**Coast redwood**
Hornbeam	**Nordman fir**	Scots pine	**Hornbeam**
Lodgepole pine	**Sycamore**	Sitka spruce	Lodgepole pine
Monterey/Radiata pine	**Rowan**	Sitka spruce (Imp.)	Monterey/Radiata pine
Scots pine	**White willow**	Pacific fir	Scots pine
Oriental spruce	Maritime pine	Downy birch	Oriental spruce
Serbian spruce	Monterey/Radiata pine	Sycamore	Serbian spruce
Grand fir	Weymouth pine	Wild service tree	Grand fir
Lawson's cypress	Norway spruce		Lawson's cypress
Sycamore	Oriental spruce		Sycamore
Pedunculate oak	Serbian spruce		Ash
Red oak	Sitka spruce		Pedunculate oak
Black poplar	Sitka spruce (Imp.)		Red oak
Common alder	European larch		Black poplar
Italian alder	Western red cedar		Common alder
Shining gum	European silver fir		Italian alder
Wild cherry	Grand fir		Wild cherry
White willow	Pacific fir		White willow
Holly	Leyland cypress		Holly
Willow (SRC)	Giant redwood		Willow (SRC)
Eucalyptus glaucescens (SRF)	Coast redwood		Eucalyptus glaucescens (SRF)
	Silver birch		
	Norway maple		
	Beech		
	Roble beech		
	Ash		
	Pedunculate oak		
	Sessile oak		
	Aspen		
	Black poplar		
	Rauli beech		
	Common alder		
	Grey alder		
	Italian alder		
	Cider gum		
	Wild service tree		
	Black walnut		
	Common walnut		
	Hornbeam		
	Small-leaved lime		
	Wych elm		
	Wild cherry		
	Sweet chestnut		
	Holly		
	Willow (SRC)		
	Eucalyptus glaucescens (SRF)		

serious issue in establishing new woodland.

Grey squirrels negatively impact trees and woods through bark stripping, which causes wounds and stress, eventually leading to tree death. They target mostly young broadleaved trees, between 10-40 years in age. Species that are more susceptible to squirrel damage include biodiverse species such as oak, hornbeam, beech and sweet chestnut. Therefore along with management of the trees themselves, Somerset must include actions to actively reduce squirrel numbers in woodlands to protect the treescape.

It is important to recognise there is no silver bullet silvicultural approach that should be followed, and future silviculture needs to be part of management plans that are able to adapt and respond to changes in conditions. Innovation on a county scale will be essential, with consideration of processes such as assisted migration and dispersal, in order to provide future generations with the knowledge that allows a continuous adaptation to the changing climatic conditions.

The types of woodland management strategies used need to be varied and have clear goals of improving biodiversity, and increasing woodland structural diversity. Silvicultural techniques such as continuous cover forestry promote a more uneven age structure in woodland, which is accompanied by increased structural complexity and heterogeneity. It is likely that the more complex a forest system, the more resilient it is going to be. This is due to the greater number of interactions between species, and increased likelihood of species replacing those that are removed to keep the ecosystem in equilibrium. Techniques such as natural regeneration, coppicing and hedge-laying are all important in increasing the structural complexity of woodland ecosystems, and should be considered and applied where suitable.

Connectivity

Trees play an important role in connecting a range of habitats across the landscape. A successful tree strategy involves considering the planting of trees not just on a tree by tree basis, but on a landscape scale. Hedgerows, and trees planted to connect a range of treescapes provide corridors connecting urban and rural landscapes, enabling wildlife to travel between habitats.

However, Somerset woodlands are experiencing an increasing amount of habitat fragmentation. To improve connectivity, trees outside of woodlands need to be given more consideration, ensuring the right trees are planted in the right place, and that they are managed to maintain the value of the services they provide. Trees that connect up woodland ecosystems will directly contribute to improving the health of the woodland ecosystems themselves, through providing corridors for biodiversity to move between habitats and maximising their ecosystem service contributions.

Connectivity will be increasingly important under climate change. Species will need to disperse across landscapes, adjusting their distributions to match the changing climate. Through increasing the connectivity between woodlands, and using trees to support habitat corridors, it enables species to adapt to climate change through dispersal. Improving quality, size, and connections of woodland habitats at a local level is considered to be essential in buffering the predicted effects of climate change (Hopkins et al., 2007).

As prioritised by the Somerset Local Nature Partnership, it is essential to determine where woodland, hedgerow and orchard regeneration is beneficial, through the Nature Recovery Network spatial map, before determining where the additional tree planting or natural regeneration of woodlands is required. This again refers back to the ‘right tree in the right place’ approach.

Woodland cover

Previous woodland cover aims and previous work

The County Council’s ‘Local Agenda 21’ document set a target to increase broadleaved woodland in the county by 70% between 1999-2015. A bold but somewhat unrealistic aim, this target was ultimately unachievable due to a lack of government funding able to provide enough aid to support such a vast increase of planting rates. Recognising the flaws of prior aims, a revised

woodland cover target set by the 2010 'Somerset Tree Strategy' put forward aspirations to increase woodland area in Somerset (South Somerset, Mendip, Sedgemoor, Taunton Deane, and West Somerset) from 7% to 8% by 2030.

Data available from the National Forest Inventory (NFI, 2018) indicates that this aim was achieved within 8 years. The current woodland cover for the district authorities of Somerset West & Taunton Council, Mendip, Sedgemoor, and South Somerset District Council is estimated to be 8%, 29,951 ha of a total ~375,230 ha land available. It is unlikely that this figure has drastically changed in the past four years.

Contrary to overly-ambitious aims of the 1999-2015 document, the 2010 strategy demonstrates an acutely more conservative approach to increasing woodland area. Alongside this it offers a comprehensive analysis of Somerset's woodland resource, a thorough review of the various activities of organisations involved with woodland management, and also identifies gaps in policy. The document serves as an excellent place to build a bolder, more resilient, adaptable and experimental tree strategy for Somerset.

Rural tree cover, Somerset

Woodland cover in England recorded March 2021 was 1.32 million hectares or 10.1% of land area (DEFRA, 2022). Although woodland cover has doubled over the past century it is still significantly lower than in Wales (15%), and Scotland (19%) and the EU which has an average of 40% cover. During periods of previous woodland planting in the UK the highest rate of woodland expansion since 1924 was seen in 1971, with 6,500 ha achieved in a year.

An average of approximately 5,000 ha/yr cover increase was maintained across the UK between 1993 and 2006 but planting rates have very much declined since 2005, with an average of just 1,720 ha planted in England (DEFRA, 2022). If woods less than 0.5 ha in area, groups of trees, individual trees and linear features (TOW - trees outside woodland) are included in tree cover numbers the figure potentially rises up to 14.5%, however for the purposes of this strategy and analysis the most recognised figures from the National Forest Inventory and Forestry Commission statistics have been used.

An ambitious target of creating 30,000 ha of new woodland a year across the UK has been set; 7,500 ha of which are targeted in England (England Trees Action Plan, 2021). Based on the current estimates for woodland cover in Somerset a 1% increase in woodland cover would equate to approximately 3750 ha of land planted (as blocks, linear features, or other systems). To bring Somerset to the UK national average of 13% would require 7,500 ha of new planting or 750 ha/yr over ten years. Based on the percentage of land area Somerset makes up of England (3.2%), the county's contribution to a proportion of the 7,500 ha/year target of new planting would require 240 ha/yr new planting.

Urban tree cover

Average canopy cover according to the citizen science-led i-Tree Canopy (iTC) for England has been recorded at 15.8% (Forest Research, 2016). The paper published from the 'Trees, People and the Built Environment 3 (TPBE3, 2017) Conference' hosted by the Institute of Chartered Foresters (ICF) and Urban Forestry & Woodland Advisory Committee (FWAC) recommend a minimum target of 20% canopy cover for UK towns and cities; acknowledging a cover target of 15% for coastal locations (Doick et al., 2017). Towns and cities already recording at least 20% canopy cover have been recommended to set targets to increase cover by at least 5%.

The average ward canopy cover, calculated using the iTC for Somerset, is 7.2%. Some of the best performing wards already near or bettering the 20% target include:

- Coleford and Holcombe, Mendip - 19.6%
- Cheddar and Shipham, Sedgemoor - 19.8%
- Neroche, Taunton Deane - 23.1%

Some of the lower performing wards include:

- Huntspill and Pawlett, Sedgemoor - 2%
- Wincanton, South Somerset - 4%

- Glastonbury St Benedict's, Mendip - 5.7%

To bring the Huntspill and Pawlett ward (5994 ha) up to the 20% canopy cover target would require an additional 1,078ha canopy coverage. Whereas Wincanton standing considerably smaller at 1149 ha would only require additional coverage of 184 ha to reach said target. And Glastonbury St. Benedict's (219 ha) would require just 31.3 ha increase.

To remain ambitious with planting targets the example ward of Neroche, Taunton Deane (283 ha) could strive for 25% canopy cover (using iTC tool) by increasing cover by just 5.35 ha. Scale of wards and tools used for assessment have a significant impact on interpretation of results and targets to be set and aimed for.

Much work has been undertaken nationally on urban tree canopy cover, for instance in Torbay in Devon and the South Somerset Tree Canopy Cover study. These, along with tools such as i-tree assessments provide methodologies for monitoring what are complex silvicultural systems of urban forestry with multiple issues around species, underground infrastructure, competing objectives and Health & Safety for instance. They are often more complex than traditional forestry. Specialist knowledge is required of arboriculturalists to manage these and the competing interests of communities, councils, highways etc. The Council and Steering Group need to ensure that urban forestry is fully integrated into the Strategy. Most importantly the Strategy needs to bring together groups with a vested in interest and groups which should have more of an interest, to grasp what are often seen as "issues" of trees in urban settings, finding ways to create solutions and opportunities for increasing urban canopy cover.

5. People

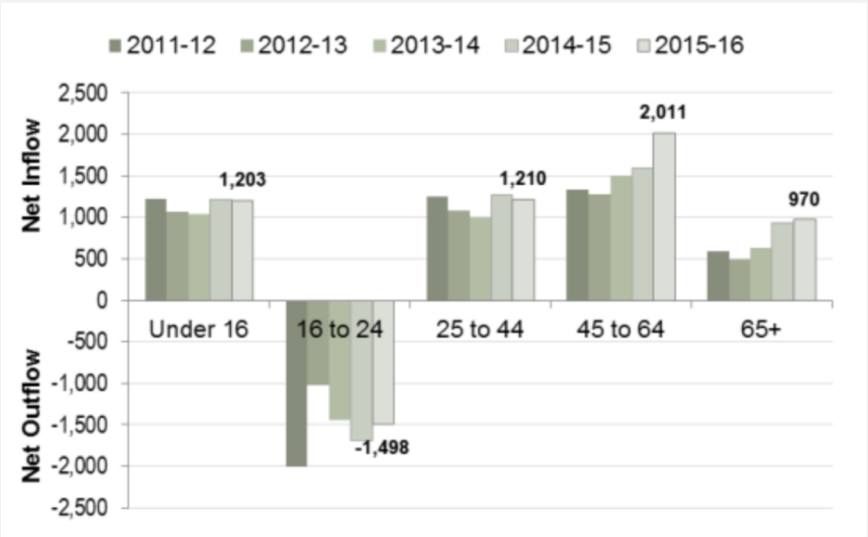
Understanding the demographic of the population of Somerset, and their interaction with trees, is crucial to developing a tree strategy that reflects the needs and wants of Somerset, alongside the needs of the trees themselves. Around 48% of Somerset's population live in areas classified as "rural" against an England average of 18%. Despite this it is the younger population, based largely in urban areas, that will be responsible for managing Somerset's trees of the future. This section will explore current opportunities for people to interact with trees in Somerset, and provide evidence for the actions that are required to create a wood culture for Somerset.

Current and future age demographic

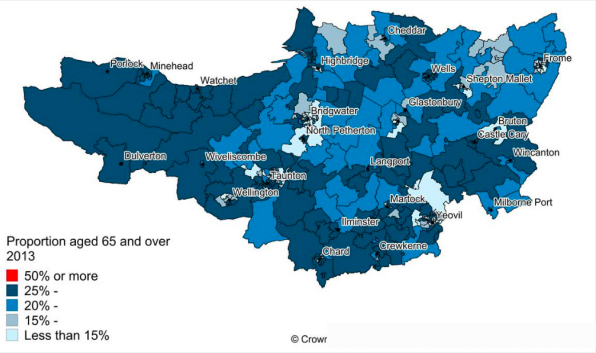
Somerset has a population of around 560,000 (ONS data, 2019) relatively evenly spread between age groups, 20% being below 15 and 25% being over 65. Despite this, West Somerset has the highest percentage of people aged over 65 in the UK (33%), and the average age of Somerset's population in 2020 was estimated at 43.4. At the same time, Somerset has a below average proportion of 20-39 age groups than England as a whole. Somerset's population is predicted to rise by a further 12% over the next 20 years, to 624,800. Within this predicted growth the 75+ group is greatest, predicted to double to almost 117,500 by 2041. Additionally, most of Somerset is likely to have at least 25% of the population over 65 by 2033, demonstrated visually by the figure below. This increasingly ageing population is predicted to result in there being a similar number of those in their 20s as in their 80s. A large contribution to the ageing population is the net migration of younger age groups out of the County for education, and work. The only age group with a net outflow is 16-24, largely a result of the 18-20 age group leaving for University, of which 2100 are leaving annually. This is likely driven initially by the County's lack of universities, and then following this, limited numbers returning to Somerset post-university.

Somerset's ageing workforce is important to consider in the tree strategy as it demonstrates the challenges in creating a young workforce that are driven to protect and maintain Somerset's treescape.

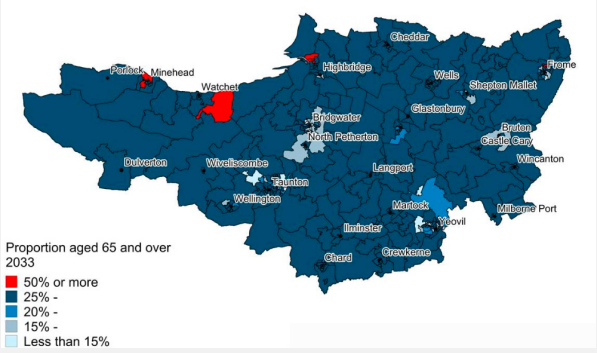
Figure 1: Graph extracted from Somerset Intelligence.org.uk demonstrating the internal Somerset migration by age group (2016)



Map 7 Proportion of population aged 65 and over, 2013



Map 8 Proportion of population aged 65 and over, 2033



These population statistics are mirrored in the survey that was undertaken and are a critical part of a strategy for trees in the County. Most critically whilst at least half the population are under 40, very few of this age group responded to the survey (10% response). **Somerset's engagement with trees is majority ageing, but Somerset's trees rely on younger generations to take an active part in their future and likewise, younger generations will be impacted most if the Somerset's trees are not managed in a resilient way.**

Education and future generations

The future of Somerset's treescape lies in the hands of future generations. At the same time, it is the younger generations that are decreasingly connected to trees. To engage the people of Somerset in the strategy's vision, education needs to play a significant role. The survey results demonstrate this, where the most popular suggestions for how to engage more people in the strategy / vision were education, through schooling initiatives (20%) and educating across all age groups (13%).

Figure 2 Pie chart showing the proportion of different age groups that responded to the consultation survey

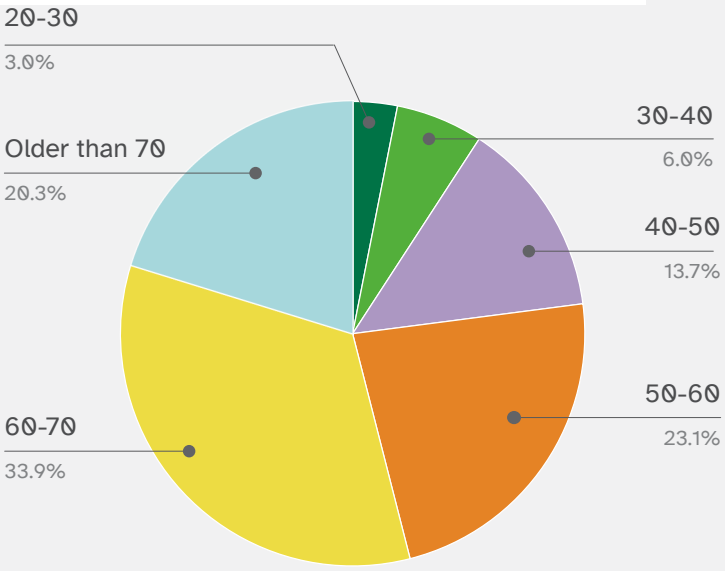
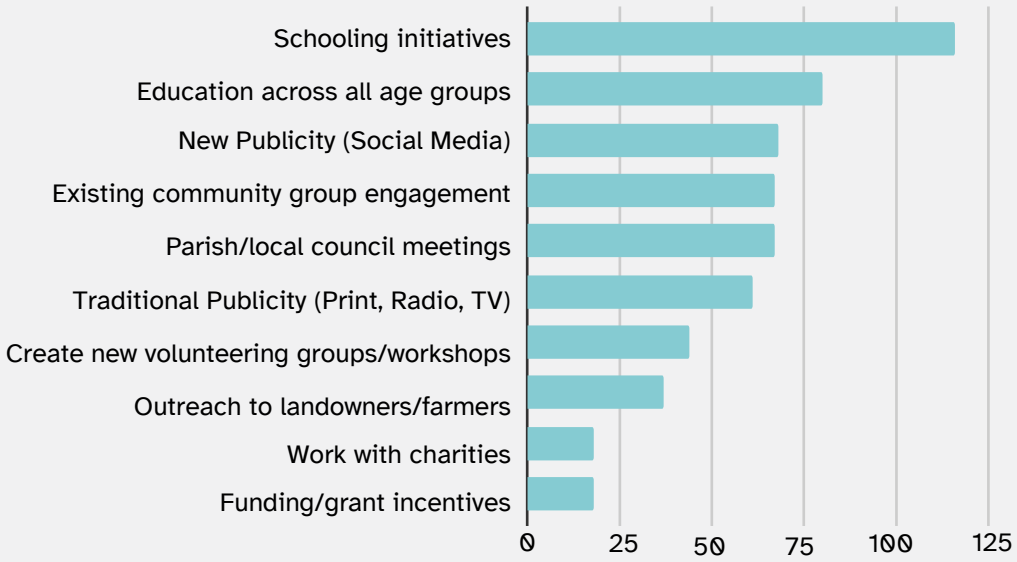


Figure 3 Responses to the survey question asking how to engage more people in the vision of Somerset's tree strategy



Currently, within the National Curriculum, there is limited content related to trees, beyond discussion of plant biology, and carbon sequestration. Young people therefore finish school with little understanding of the importance of trees on a range of levels. This poses a significant problem to the care of Somerset's current and future trees. There is also a level of tree literacy that is required for people to experience the extended range of benefits of being exposed to trees. Without an understanding of the ecology, as well as cultural importance of trees, people are unlikely to venture out into woods and experience such benefits.

Beyond the classroom, Forest Schools offer young people the opportunity to develop a lifelong relationship with the natural world through time spent learning in woodlands. Through several hours learning in woods spread out across the seasons, it enables students to develop a strong positive relationship with the environment that they can continue to explore into adulthood. The Forest School organisation in the UK originated in Somerset, when in 1993 nursery nurses at Bridgwater College learnt of the open air culture in Denmark and how essential early years education is, inspiring them to set up the first forest school for children. From this a BTech in Forest School was also initiated. Despite being once at the forefront of forest school education, there are limited opportunities for school age students to experience forest school education in Somerset. With over 300 schools (primary, secondary and private), there are only 3 Forest Schools registered with the Forest School Association in Somerset, and 19 within the first three pages of a Google search. An expansion of Forest School groups could provide students with important easy access to an education that integrates care for the natural world with discovery and play in natural environments.

For those finishing school, clear and direct education pathways are essential to improve the skills force working with trees. Further and Higher education courses ensure skills can be developed and students sent in the right directions to pursue careers that will aid in making Somerset's treescape healthy and productive, for many years into the future. There are four main colleges in Somerset, the largest of which is Bridgewater and Taunton College, which also operates the University Centre Somerset. Although there are a range of courses offered in agriculture, including a BSc in Agricultural Management, there is just one Forestry and Arboriculture course at the Bridgewater and Taunton College, at Diploma level 3. There does not appear to be any HE

provision in forestry, or woodland management. With 40% of woodland unmanaged in England, and ambitious plans to expand Somerset's treescape by 240ha/yr, Somerset would benefit from introducing a higher education course and/or apprenticeship (level 5 and above) in Forestry / Arboriculture. Such targets are unachievable without a stronger workforce and education supporting people to both work and spend their time volunteering with trees.

There is a new Level 3 qualification commencing in 2023 called T-Levels. A T-Level is a two year programme equivalent to three A-Levels, for students who have recently completed their GCSEs. T-Levels cover a variety of vocational skills, with aims to help students into skilled employment, higher study or apprenticeships. From September 2023, there will be a T-Level course in 'Agriculture, Land Management and Production', which will support students into a variety of related careers including becoming a Forestry Worker, Arboricultural Officer and Tree Surgeon. However, when searching for local T-Level schools or colleges in Somerset, there are no colleges planning to offer this course for either September 2023, or 2024, and the closest colleges are in Dorset and Wiltshire. Somerset and its treescape would therefore benefit from its colleges, potentially the Bridgwater and Taunton College, transitioning to being able to deliver the T-Level course in the near future.

Education for all

It is important that education and awareness of the importance of trees has a more extensive reach beyond school leavers. With education programmes currently directed mainly at school leavers, in addition to more degree level forestry and arboriculture education, there needs to be pathways to enable people to switch careers to work with trees, and education alongside related jobs, in order to bring about the planned ambitious changes to Somerset's treescape.

The survey revealed that respondents' opinions on the way Somerset should manage its tree strategy reflect a need for further education of the general public. For example a large proportion of respondents commented that they were against the inclusion of any commercial forestry in the strategy. This demonstrates a gap in education related to Somerset's trees, potentially linked to a lack of understanding of the importance of wood as a sustainable building material. There was also evidence that communities and individuals don't understand the concept of woodland resilience, as 50.7% of respondents stated they were unsure as to whether Somerset's trees are resilient to a changing climate. Developing a wider understanding of the carbon and biodiversity debates around the growth of forests, and use of wood as a sustainable building material will be essential to promote behaviour change. Additionally, where people engage in sustainable consumption through using wood products, it will support the development of local skills, enterprise and innovation of wood.

Within forestry education, there needs to be consideration of the content, and types of forestry approaches that are taught. The only available forestry and arboriculture course focuses on traditional methods of tree felling techniques, and timber processing etc. There is an opportunity for new forestry education courses that are innovative and teach new progressive approaches to tree management, including digital skills.

Additionally, to ensure that material use in construction is aligned with the materials available, it is important to connect the professionals who use trees with those who grow them. Currently the professional woodland community in Somerset is widely dispersed, and there are limited opportunities for sharing knowledge and expertise. There needs to be a network for those who work in forestry, woodlands and wood products to connect, to enable collaboration and build a more sustainable wood culture. Developers, architects and landscape architects need to take treescapes seriously, understanding the impacts of their design choices on the treescape and its natural environment. Part of this involves increasing the understanding of the opportunities and issues of treescapes in developments beyond just the aesthetics.

Community

Community involvement in woodlands and urban forestry is essential to generate a wood culture amongst a population, especially

getting young people involved in trees and tree care. There are various kinds of community woodland, from urban regeneration, to a community resource, which accompany a variety of ecological and socioeconomic benefits as a result. In a review by Lawrence & Ambrose-Oji (2015) they found the majority of community woodlands to be urban regeneration programmes which are often on public land. A common feature of community woodland projects is that despite not always meeting planting targets, they are consistently achieving improvements in woodland management.

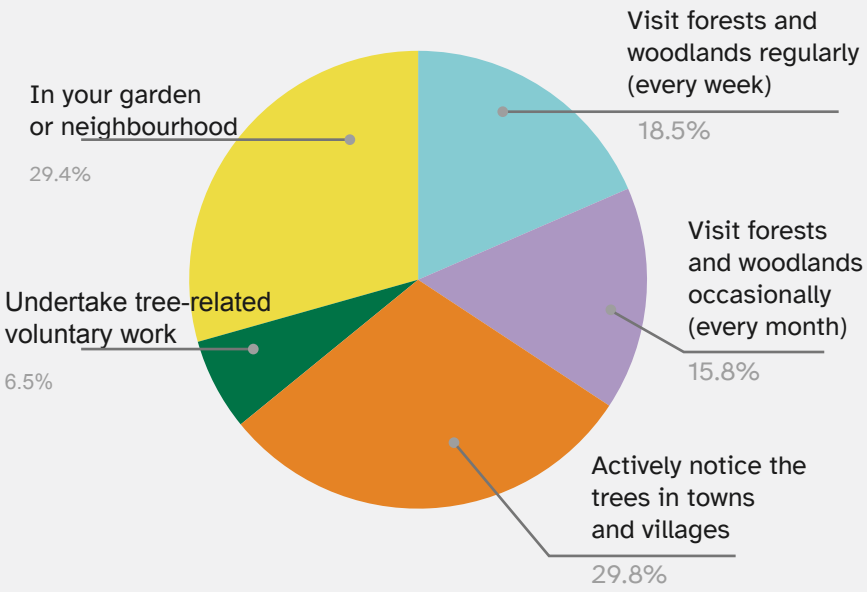
Community woodlands will be an important part of improving the overall quality of Somerset's treescape. Beyond the biophysical impacts, evidence from case studies in England and Wales (Morris and Doick, 2011; Owen et al., 2008) also showed community woodland members felt more relaxed as a result, and that the woodlands brought the community together. Interestingly, in Scotland, frequency of visits to local woodlands managed by communities increased by up to 20%, with a strong increase for those located in deprived areas.

Within Somerset County however, there are only 3 community woodlands that appear when conducting a Google search (see next paragraph). Increasing the number of woodlands in management for biodiversity is a central part in improving woodland quality. Increasing the number of community woodlands across the county will enable this to go hand in hand with improving access to woodlands. This is key to a wood culture where there is stewardship of woodland and use of forest produce for a sustainable future.

It is important to note that whilst only three community woodlands appear in a Google search there are a number of "hidden" community woodlands and orchards including Herne Hill, Longrun Meadow, North Curry and others. There is a need to make these existing community initiatives more public and by doing so accessible to a wider community.

With Somerset Authorities declaring a climate and ecological emergency, there is an increased awareness from individuals of the importance of tree planting. One way to increase the likelihood of community woodland formation is through initially increasing opportunities for volunteer tree planting programmes. Enabling volunteers to

Figure 4 Pie chart showing survey respondents' interaction with trees outside of work



get involved with tree planting provides opportunities for concerned communities to contribute to combating climate change. Through such programmes, there are the added advantages of educating volunteers about trees, enabling healthy lifestyles and improving mental health. Once individuals within communities have learnt the steps to planting and maintaining trees, volunteers will then be able to initiate their own community planting schemes, enabling treescape expansion through a bottom-up method as opposed to top-down. This will be aided by the Natural Environment plan actions, as part of the Somerset Local Nature Partnership, to create a toolkit for community tree planting based on the Nature recovery Network.

An example of a previously successful community project in Somerset working with schools and orchards is the Fruit-full schools outdoor learning project: Learning through Landscapes. The charity taught pupils about their local apple heritage, how to graft their own apple trees, and invited the local community to share the orchards in a community event. At the end of the project, at least 11 schools, across primary and secondary, had established orchards in their school grounds. This project was active 10 years ago, but shows potential for the success of community orchard projects to connect students and the community with trees.

Urban treescape

Urban tree cover plays an important role in providing people with access to trees. The urban forest includes all trees from individual street trees, to riparian, hedgerows and parks and woods. Despite being one of the ten most rural authorities in England, Somerset still has over half of its population in urban areas (52.8% - ONS 2011 census). To mirror this in terms of access to trees, about half of the trees planted / addressed in the strategy should be within urban areas. In addition to this, the survey results show that urban areas are simultaneously where Somerset is most in need of trees, and where the majority of people are interacting with trees. For example, outside of work, respondents most commonly interact with trees in urban areas, when noticing them in towns or villages (30%), and in their garden and neighbourhoods (30%). Then, when asked whether Somerset needs more trees, the area that received the highest number of votes was in villages, towns and cities, which was voted for by 89% of respondents.

Woodland access

An essential part of connecting more people with trees is through increasing access to trees. In considering where trees are being planted, it is vital to ensure their proximity to people, and their accessibility. Access to woodlands enables people to gain the recreational benefits associated, including improved physical health, and mental wellbeing, alongside an overall increased quality of life. The ability to access woodland also contributes to a wood culture, as people become more aware of the woodland environment and interested in the prospect of maintaining these ecosystems.

In England, 397,149 ha of woodland is considered 'accessible woodland'. The Woodland Trust's Woodland Access Standard aspires that no person should live more than 500m from at least one area of accessible woodland of no less than 2ha in size. Currently in England, just 16.2% of the population is considered to have access to a 2ha+ wood within 500m (Woodland Trust, 2020). The average for Somerset is significantly lower, with just 6.4% meeting the Woodland Access Standard goals. West Somerset[4] has the greatest access to woodlands, but this is still just 25% with access to a 2 ha+ wood within 500m, and Taunton Deane has the least woodland access, at 3.4%. 71% of the Somerset population require new woodland in order to be able to access a 20 ha+ wood within 4km, compared to just 11.8% for the England average. Again there is evidence here to show the importance of a focus on trees in urban areas, as the district with least access to trees is one of the most urban in Somerset (Maps 9 and 10).

Additionally, woodlands that are outside of urban areas are often more remote, and can only be accessed with a car, further disconnecting and detaching people from the treescape. The survey results showed that those who responded, who are likely to engage with woodlands more than the average person, still rarely visited woodlands. 19% of respondents visited woodlands every

[4] Note this data is from 2016, and so it is prior to the merging of West Somerset and Taunton Deane to become Somerset West and Taunton.

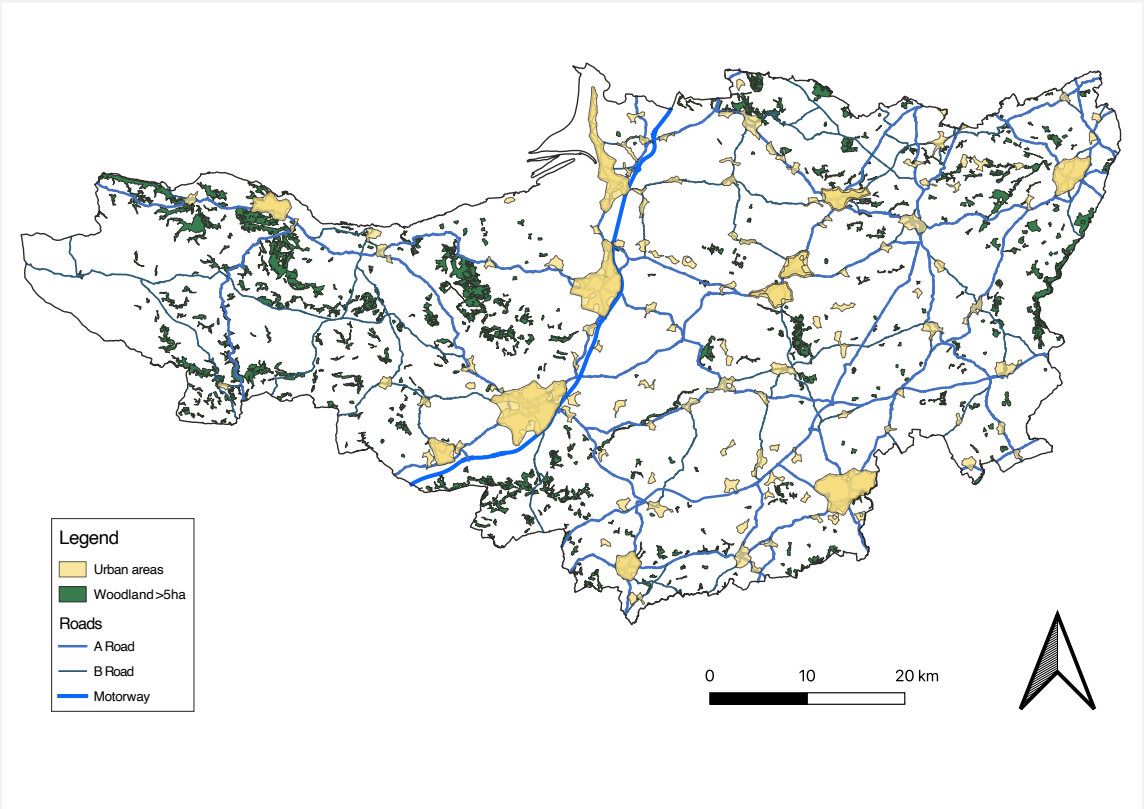
week, whilst 16% said they visited woodland at least once a month. Focussing on maintaining and increasing urban woodland cover, already considered important by survey respondents, also offers an efficient way to connect more people, and on a wider scale with trees. In particular it is essential to increasing the equality of access to woodlands, offering spaces where people from disadvantaged areas can access woodlands by foot.

Communities also play an important role in the protection of urban trees. Trees planted within urban spaces enable people to be able to engage constructively with the planning and management of urban trees. Tree planting programmes within urban spaces will enable a greater integration of the community, and enable the implementation of ongoing management more effectively.

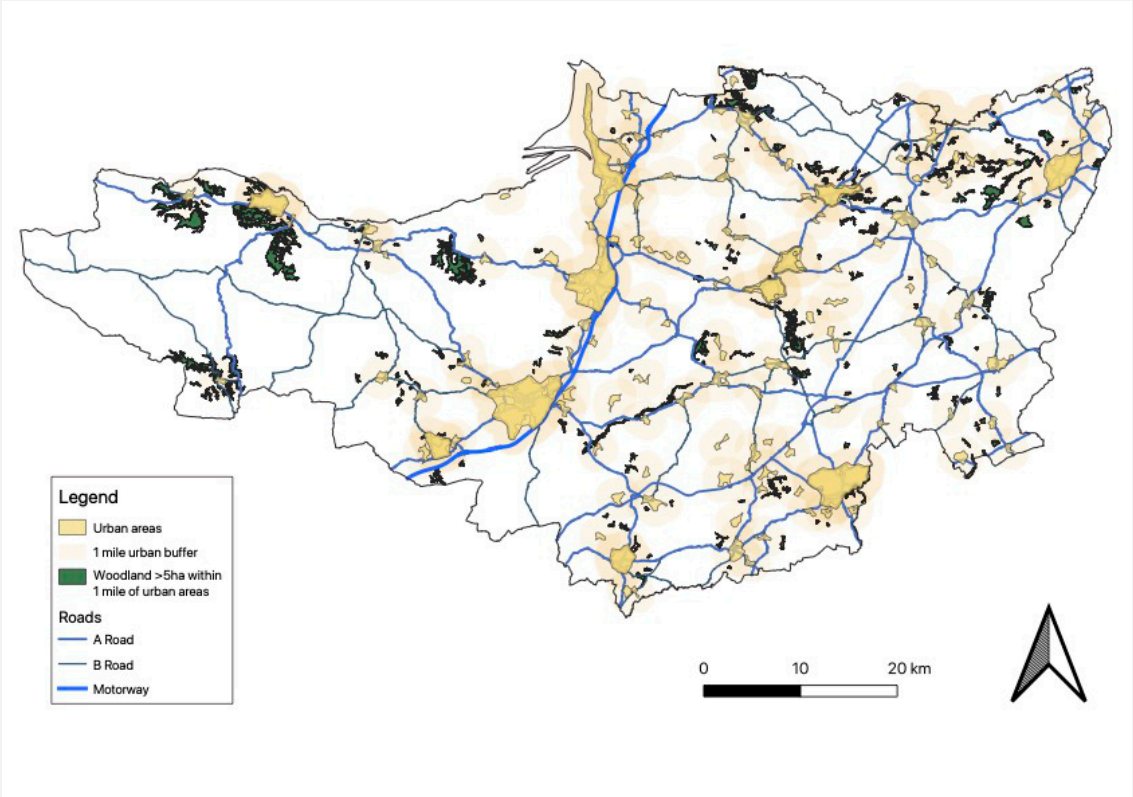
Taunton, the county town of Somerset, has also been selected to be the 'Garden Town' of Somerset. This presents an opportunity for the council's garden town vision to be aligned with the tree strategy, and become a flagship for urban tree planting. One of the core needs required to deliver the vision for the garden town is to 'grow our town greener, transforming the open spaces and streets'. Plans to create a garden grid network of green corridors and greener streets Taunton, will enable green spaces to be highly connected forming a network that is accessible to all. Trees will play a core part in connecting such networks, alongside bringing the community together through the planting of mini-orchards, supporting Somerset's identity as 'County of Orchards'.

Furthermore, trees along streets make an important contribution to the character and quality of urban environments. The National Planning Policy Framework states that 'Planning policies and decisions should ensure that new streets are tree lined, that opportunities are taken to incorporate trees elsewhere in developments, that appropriate measures are in place to secure the long-term maintenance of newly-planted trees, and that existing trees are retained wherever possible'. The strategy will support this through plans to ensure all new streets are tree-lined, and that these trees are maintained, in order to provide both aesthetic and climate controlling benefits to Somerset's urban spaces. Trees in urban areas, including street trees, need provisions to ensure that they have the best opportunity to thrive in urban environments. This includes adequate provision of tree pits, pavement support systems to extend root areas, and irrigation during hotter and drier weather periods.

Map 9 Woodland >5ha within the Somerset boundary



Map 10 Woodland >5ha within 1 mile of major urban centres in Somerset



6. Services

6.1 Carbon

Carbon storage potential of timber

As pressure around global emissions tighten in line with climate change mitigation commitments, harvested biomass will be utilised most productively where it maximises the removal and minimises the release of carbon into the atmosphere. This can be realised through the enhancement of sequestration in woodland and soils combined with harvested biomass in large-scale permanent or long-lasting stores, such as wood in construction (Committee on Climate Change, 2018). With current commitments striving for an increase to 16% woodland cover by 2050 the CCC new land-use scenarios explore the possibility of pushing this up to 19% by 2050. The delivery of which would be undertaken while maintaining food production and multiple other services required of land. Achieving these higher levels of afforestation could remove and store an additional 21 $MtCO_2e$ per year against current levels - equivalent to approximately 5% of the UK's current Green House Gas (GHG) emissions.

With its ability to create multi-decade stores of carbon, increased timber use and substitution of more carbon-intensive materials can contribute to net zero aims. Timber-framed houses and engineered wood systems currently make up around 15-28% of total construction materials in UK new homes. In the 'Sixth Carbon Budget' scenarios produced by the CCC GHG emissions savings from increased use of timber in construction could reach 40% by 2050, removing 0.25 $MtCO_2$/year by 2035 and 0.44 $MtCO_2$/year by 2050 (CCC, 2020).

The timber frame construction market continues to grow with an annual average increase of just over 7% since 2016. 2026 forecasts are for the total timber frame construction market to reach just over £1billion in the UK reflecting growth of approximately 26% in the next 4 years (MTW Research, 2022). Offsite timber frame construction continues to rise with the market benefitting from advanced building technologies that lend themselves to construction techniques focussed on speed of build, faster completions, design flexibility, reduced onsite time and cost, as well as enhanced environmental credentials, quality control, and energy efficiency. These benefits have been identified as potential key drivers by the Government as a means to boost productivity, increase environmental credentials and efficiencies whilst simultaneously boosting the housebuilding sector.

Somerset's Housing Strategy 2019-2023 sets out bold initiatives aimed at "a local Economy that provides opportunity for all". Priority 4 'Upskill the local labour force' and priority 5 'Creating sustainable homes and places in Somerset' strive for the introduction of off-site/ modular construction (MMC) as well as low carbon design. This is something that increased tree cover and well-managed forests could complement, providing Somerset the opportunity to be at the forefront of MMC/ offsite training and delivery of buildings utilising local timber.

Carbon sequestration

Typically growing faster in their early life, conifers absorb more carbon dioxide much earlier compared to broadleaf woodlands. However, broadleaf woodlands have the ability to store much larger amounts of carbon over an extended period time, as these forests commonly stand for longer. Even larger amounts of carbon have the potential to be stored when managing a woodland to provide continuous canopy cover. Within these systems young, fast-growing trees will capture carbon dioxide at a faster rate, while mature trees can act as carbon stores for hundreds of years. Selection of appropriate tree species and sustainable woodland management techniques are imperative to realising carbon benefits.

Recent studies have highlighted the importance of trees outside forests (TOF) for their carbon sequestration and storage potential noting that 21% and 17% respectively are from TOF (Zellweger et al., 2022). Particularly high contributions were found to be in England (higher than Wales and Scotland combined). Such findings point to

the significant contributions trees found in field margins and hedgerows might make toward net zero ambitions. Indication that the relative contribution of below ground root carbon storage of TOF may be larger compared to forests. TOF in particular, are closely related to a range of ecosystem services such as increased biodiversity and connectivity, as well as other regulating, cultural and provisioning services (Rouquette and Holt, 2017).

The Somerset Local Nature Partnership (LNP) supports Somerset's Climate Emergency by acting as the Natural Environment work-stream. The LNP recognises that while not the panacea for all our immediate climate change challenges, especially as newly planted trees cannot mature quickly enough to mitigate the carbon in the crucial time before 2030, it is important that we continue to plant where appropriate in the hope that we get past 2030 without any climate tipping points.

The role of woodland management

Considered and conscious forest management has a pivotal role to play in efficient and effective carbon sequestration and has the potential to increase the overall amount of carbon being removed from the atmosphere. Upon reaching their full growth potential forests begin to saturate, reaching the limit of their ability to absorb carbon. Whereas poorly planned and executed tree planting has the potential to actually increase CO_2 emissions and have long-term detrimental impacts on landscapes, biodiversity, and livelihoods (Di Sacco et al., 2021). Nature-Based Solutions Initiative (2020) note that declining removals from UK woodlands and forests resultant from changes to age-class structure are partially responsible for increases noted in LULUCF emissions in 2017.

Combining growth with selected harvesting allows for carbon to be stored in long-term stores such as timber, while new planting and/or natural regeneration allows for ongoing carbon sequestration within the forest. Such an approach can also help mitigate risks that standing forests (carbon stocks) carry by increasing their resilience to climate change through diversity of age. Bringing degraded forests under management has both biodiversity and GHG benefits and can help enhance resilience to a changing climate and increased pests and diseases (CCC, 2018). Part of CCC 'Biomass in a low-carbon economy' recommendations for building carbon stores includes the commitment to bringing 67% of England's forests back under active management (from 59% currently), with ambition to extend this target further where the evidence supports this.

6.2 Water management

Trees are integral to water management across the Somerset landscape, from mitigating flooding risk, to regulating water courses, and maintaining lower river temperatures.

Flood mitigation

Flooding is one of the greatest extreme weather risks for Somerset, now and in the future under predicted climate change and sea level rise, and from major river flooding. The Somerset floods of 2013-2014 are estimated to have cost over £147 million, and with 18% of Somerset below average tide level, and some of the lowest land in the UK, Somerset's trees will play an essential role in reducing flood risk, when the right tree is planted in the right place. Flood mitigation is therefore a key role for tree and hedge planting in Somerset.

Trees, whether within a woodland, planted along rivers or as hedgerows, offer a multitude of benefits when it comes to mitigating and reducing the effects of flooding:

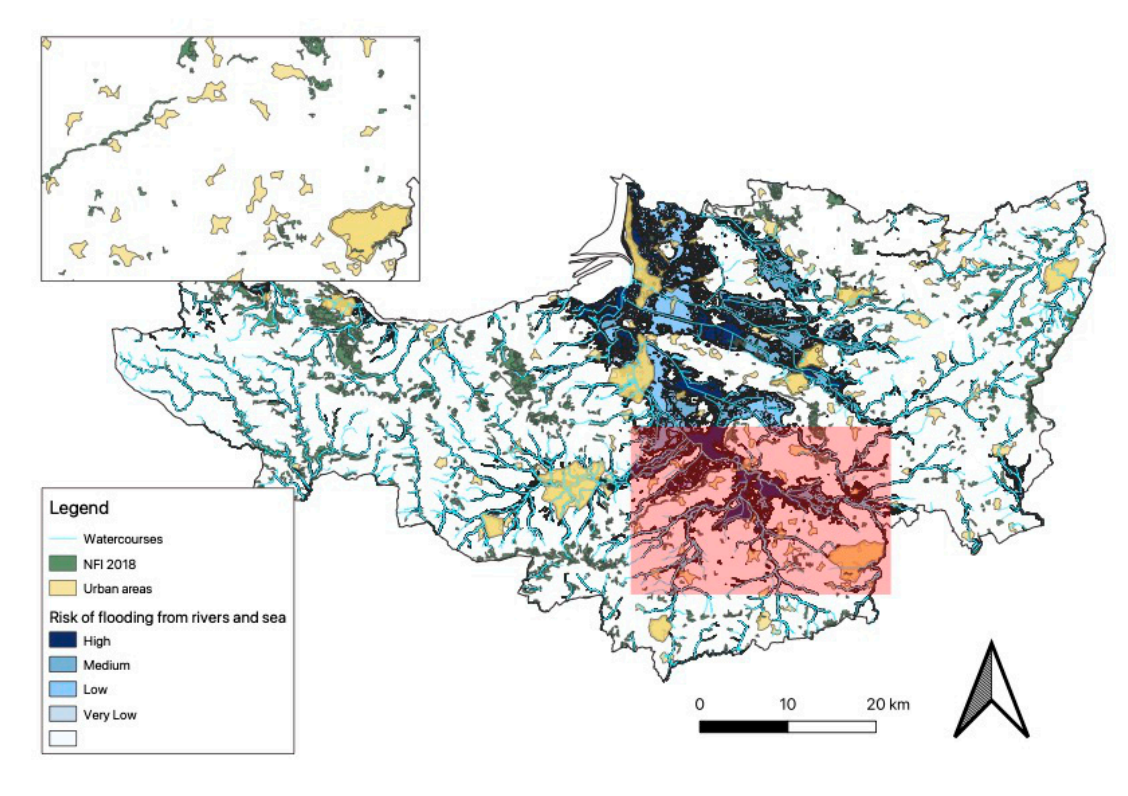
1. Direct interception of rainfall
Under high levels of rainfall, trees are important in intercepting rain. This has two important effects, firstly the effect of heavy rain will be spread out over a longer period, as the water takes longer to reach the ground. Additionally, whilst rain collects on leaves, some of the water is able to evaporate back into the atmosphere, and hence reducing the total amount that reaches the ground.

2. Higher soil infiltration rates
At the ground level, trees' extensive root systems speed up the penetration of water deep into the soil. The roots create channels that heavy rain water can flow through instead of over surfaces leading to floods. This

absorption is additionally important for absorbing run-off from agricultural land, of which Somerset has 275,000 hectares of (Mendip.gov.uk). Surface water run-off is also a problem in urban areas, where the increase in impermeable surfaces such as concrete and tarmac, leads to greater surface run-off. For example in the severe UK-wide flooding in 2007, around two-thirds was identified as resulting from surface water run off. Planting trees, even as single street trees with bare ground surrounding them could significantly reduce the runoff in such built up areas. In some urban areas, there is asphalt surrounding street trees. Here, asphalt removal provides a quick and easy solution to increasing the absorption of more rainwater and again reducing surface runoff.

There is strong evidence to demonstrate that trees are significantly more powerful at both speeding up soil infiltration and reducing surface runoff volumes than alternative green space such as grassland. Soil infiltration rates have been found to be 67x faster, and surface runoff volumes reduced by 78%, where trees are planted compared with grassland (Marshall et al, 2014). Interestingly, the report by Marshall et al 2014, found that it is likely that tree age is an important factor in improving soil hydraulic properties. Although further work is needed, initial results suggest that mature trees, and certain tree species, will enable greater speeds of infiltration.

Map 11 Proximity of woodland to flood risk area



Right tree right place to reduce flooding

The ability of trees to mitigate flood risk relies heavily on their location, and the species of the tree that is planted. Different tree species have different root structures. Some trees have deeper, and more extensive root systems, and so are better at stabilising the soil and reducing the risk of erosion. For example beech trees have shallow root systems and actually increase the risk of landslides, whereas oaks and birches are deep rooted so aid in reducing soil erosion. However at the same time, some trees are more resilient to flooding, and so in areas that are naturally more riparian, or more likely to be regularly covered in floodwater, this must also be taken into consideration. In these cases species such as alder and willow may be more suitable (Forestry Commission, 2022).

In terms of where to plant trees, there are several areas that will provide the greatest flood mitigation. The Somerset levels extend across 60,000 ha, and is composed of mostly floodplains. Planting trees in floodplains has been studied by both the Environment Agency and Forestry Commission in its use as a soft-engineered aid to control flooding. Woodland in floodplains is able to absorb and delay the progression of floods downstream. Not only does planting trees in floodplains significantly reduce flooding and improve water storage, but it has the added improvements of better water quality, and nature conservation. Planting along upper and middle river catchments is also important in ameliorating downstream flooding.

There is research to suggest that targeted tree planting in the upper catchment can reduce peak flood flows by up to 40 percent (Woodland Trust, Pontbren Project). Additionally, planting trees in urban areas will create permeable surfaces, and reduce the flood risk that arises as a result of new development. By strategically planning tree planting within and alongside areas at high risk of flooding, joining upstream sites to downstream floodplains, it will provide a natural solution to aid in alleviating major flooding incidents.

Currently, Reimagining the Levels are leading an initiative in Partnership with Somerset River Authority, to slow the flow, and reduce local floods through planting more trees.

Again the question of the right tree in the right place comes into mind, and the Reimagining the Levels team are offering expert advice on which planting will be most impactful and beneficial for each landscape.

On a UK wide scale, the first ever UK woodland natural flood management guide has just been published by Forest Research, which outlines how our forests and woodlands can reduce the damaging effects as well as financial impact of flooding on vulnerable communities. The guide includes detailed advice on how to modify woodland design to enhance flood benefit, and amend the scale and timing of woodland operations to minimise flood risk, as well as the use of leaky dams to slow flood flows.

Regulation of water courses

Beyond flood control, trees are also important in water management when planted along water courses, especially in regulating river temperature. River fish are highly sensitive to river temperature, with temperatures above 23 degrees celsius causing thermal stress to some species (Jackson et al, 2018). Planting trees alongside rivers reduces river temperature through shading, reflecting solar radiation, and helps to maintain high oxygen levels in the water. Deadwood and fallen trees also play an important part in creating a dynamic river, by trapping sediment, slowing and altering the flow, creating new habitats for river wildlife such as otters and brown trout.

Agricultural runoff

Trees have an increasingly important role to play in ameliorating agricultural runoff, especially phosphates and nitrates, by acting as sediment collecting barriers in the soil profile that may impede and trap contaminated runoff. The formation and positive impacts of tree-based buffers to trap agricultural sediment is dealt with in more detail in the Woodland Trust report “ Planting Trees to Protect Water”.

6.3 Agroforestry

Agroforestry is the combination of trees and farming in a landscape. It includes traditional forms such as wood pasture, hedges and orchards as well as newer forms of silvo-arable and silvo-pasture systems. It also includes the little used concept of forest-gardens and of growing crops within wooded environments.

Somerset is a leader in agroforestry by way of its extensive network of orchards and the income they generate through apples and pears. As a density map, Somerset is only surpassed by Gloucestershire and Kent in its area of orchards. These orchards have a long tradition, however little seems known of their size or condition. The Natural England orchard dataset shows 2766 traditional orchards covering 1700ha however this was last updated in 2016 and many records date from much earlier. The England in Particular website (supported by research from Common Ground) suggests orchards cover 0.4% of Somerset and that 50% have disappeared in the last 50 years. There is also a legacy and existing network of willow withy beds making use of the Somerset Levels that can also be considered an agroforestry system.

There seems to be a danger of this legacy being lost or Somerset failing to build on its history as agroforestry becomes more widespread and there is a case for building a baseline of extent and condition of orchards in the County. This could be via the 15-20 community orchards in the Orchard Network and a business survey of the many cider producers in the County.

Looking beyond traditional orchards, agroforestry is becoming increasingly important within whole-farm plans and regenerative agriculture. It can provide a number of critical benefits that are otherwise provided by mechanical or chemical input such as:

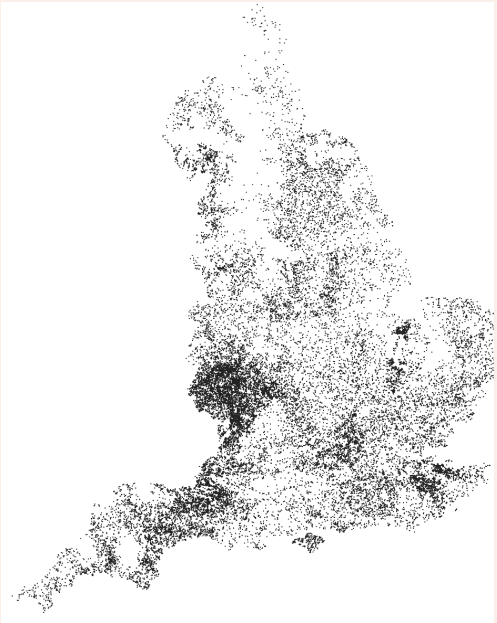
- Shading for shade tolerant agriculture (i.e. most herbs, pigs, poultry etc).
- Wind breaks.
- Soil health through, for instance, nitrate fixing.
- Host predators (typically bird populations) of insects feeding off arable crops.
- Enhance ecological corridors.
- Grow specific tree based crops such as nuts that also need wide avenues for harvesting machinery to access.
- Grow a timber crop.
- Provide flood mitigation and water retention in soil.
- Stop soil erosion on sloped sites.

The Agroforestry Handbook produced by the Soil Association provides a comprehensive guide to agroforestry, establishment, economics and advantages. It gives a breakdown of gross margins for agroforestry systems in a wide variety of types, most of which can be found within Somerset.

When asked to prioritise the development of woodland typologies in the Somerset Character Areas, agroforestry came in the top third of priorities in all areas of the County except the Levels and Vale of Taunton.

With an existing legacy, an interest today and the diverse landscape character areas of Somerset there appears to be a clear opportunity for the County to place itself as a leader in protecting existing traditional systems and developing new systems.

Map 12 Density of traditional orchards in England



Source: Natural England Open Data (2017)

6.4 Biodiversity

Biodiversity is the variety of plant and animal life, measured by the variation at the genetic, species and ecosystem level. High levels of biodiversity are crucial to the provision of ecosystem services, boosting ecosystem productivity and stability, and increasing ecosystem resilience under predicted climate change. Biodiverse ecosystems also act as a nature based solution to the increasing extreme weather risk, buffering natural disasters such as floods and storms. Biodiversity lies at the heart of all woodland ecosystem services, as it underpins species interactions, affecting species functional characteristics, and is therefore integral to overall ecosystem functioning.

Woodland ecosystem biodiversity

Biodiversity is an important ecosystem service provided by woodlands. Global declines in biodiversity are reflected in the UK, where biodiversity indices such as woodland bird populations have declined by 29% between 1970 and 2018 (BTO, RSPB). It is important to understand the causes of such biodiversity loss in order to make changes that will curb the loss and improve biodiversity in years to come. Woodland and forest ecosystems harbour the greatest biodiversity levels, in comparison with individual trees. There has been significant research to show that woodland biodiversity tends to increase with stand age, where mature woodlands harbour greater diversity of species.

The ecological basis of ancient woodlands harbouring greater biodiversity is based on the effects of woodland ageing, woodland structure and heterogeneity. As woodlands age, they naturally become more complex and heterogeneous in structure, as older trees die and open up areas of the canopy for younger growth, as well as providing deadwood habitats. These structural changes provide more habitats for woodland species to forage and nest in, and are especially important to woodland specialist species. For example, woodland specialist birds, which rely on woodland specific conditions, have declined by 41% since 1970, partly as a result of poor woodland management and quality.

Somerset's ancient woodland and woodland of high conservation value also includes the very rare Temperate rainforest habitat, which is often mainly attributed to Devon and Cornwall in the South-West. Horner Wood, for example, on Exmoor, is an ancient temperate rainforest that is recognised as part of the Lost Rainforests of Britain campaign. It contains rare and unique elements of woodland biodiversity, with lichen covered ancient oaks, including being considered the most important woodland for fungi after the New Forest.

Protecting what is left of Somerset's ancient woodland is therefore essential to maintaining biodiversity services, but there are also ways to improve biodiversity levels of younger woodland systems, through woodland management. Woodland management, such as coppicing, or promoting deadwood can offer a way to speed up the natural ageing process that contributes to increased biodiversity levels. Woodland management needs to focus on increasing woodland diversity in order to be effective at improving diversity levels. For example, 'cleaning-up' management that might involve removing deadwood in an attempt to make a woodland will act to reduce habitat diversity.

Meanwhile thinning, when done in consideration of the species and woodland type, creates varied light levels that allow growth of understory, and natural regeneration of species that provide habitats for woodland specialists. Understory and ground vegetation play a particularly important part in habitat creation for woodland species, hence improving woodland biodiversity levels, with understory vegetation often making up the greatest part of plant diversity in woodland ecosystems. In woodlands that are composed of a single age class and limited species diversity, the canopy is often too regular and closed to allow development of important understory growth, hence why thinning and other silvicultural techniques that open the canopy, and increase the diversity of tree age classes is an effective way of improving woodland biodiversity.

Biodiversity net gain opportunities

As woodland and forest ecosystems harbour high levels of biodiversity, they provide an easy way to reach biodiversity targets such as Biodiversity Net Gain (BNG). BNG is an approach to development, where the natural environment is left in a measurably better state than before the development took place. BNG can be achieved through enhancing biodiversity on the development site, or in some cases, through creating new habitats off

site. Although currently not mandatory in England, the Environment Act has set out the key components of mandatory biodiversity gain to include a minimum of 10% gain required which is calculated using the Biodiversity Metric, and that the habitat is secured for at least 30 years (Environmental Act, 2021).

The mandatory requirement is set to come into effect in winter 2023/24. Even the planting of an individual tree can provide a habitat and resources for a wide range of species, and therefore improve biodiversity. For example one oak tree alone can host 280 different species of insect. Mature oaks also host 716 different types of lichen which offer nesting material, food and shelter (Woodland Trust). Therefore planting trees as part of reaching BNG goals is an effective way to increase the numbers of trees in Somerset, whilst contributing to increasing overall biodiversity and ecosystem health. It will act as a significant incentive for tree planting.

Connected landscapes

Ecological networks of connected habitats provide the basic infrastructure that allows biodiversity to recover and become resilient to climate change, delivering important social, environmental and economic ecosystem services (Localism Bill, 2011). Trees outside of woods, such as copses, hedgerows and street trees make important contributions to forming ecological networks through connecting biodiverse habitats across the landscape. Trees act as stepping stones for species, allowing them to disperse, and counteracting the effects of habitat fragmentation. Using trees to expand existing ecological networks is therefore an effective way to maintain functional connectivity for woodland species across multi-functional landscapes like the variety of habitats present across Somerset. This is particularly important for woodland specialists, who rely heavily on specific woodland characteristics and so require connected woodland habitats in order to disperse. Under predicted climate change, connected habitats allow species to adapt by shifting their range, for example to cooler areas higher up such as the Exmoor uplands. Ecological networks can provide a connected collection of refuges for wildlife when managed in the appropriate manner. This improves the resilience of woodland species, reducing the chance of population collapse and extinctions, therefore improving biodiversity levels.

Urban biodiversity

Urbanisation is contributing to rapid biodiversity loss. As a result, there is an increasing demand for urban biodiversity, which is often addressed through tree planting. Urban tree species themselves are an important part of floristic diversity, but have been criticised due to the high levels of non-native species being planted. In general, cities which have a higher diversity of tree species show higher levels of biodiversity. However, native tree species provide the most biodiversity-friendly environments for urban areas, and the selection of street tree species is generally based on their aesthetic, economic cost and ability to reduce air pollution, without considering the role that street trees play in increasing local biodiversity (Liu & Slik, Landscape and Urban Planning, 2022).

Non-native and native trees can have similar contributions to regulating services, and in some cases non-native trees generate greater cultural services than native, but when it comes to biodiversity, native trees support significantly greater numbers of native animals such as birds and insects, through providing foraging and habitat resources. In some cases, non-natives can be carefully selected so they do contribute to urban biodiversity, but this must be controlled and monitored, to reduce the risk of invasion to non-urban areas.

7. Governance

With the Strategy comes a need for action. The themes of the strategy need objectives and these need a mechanism for prioritisation and monitoring. The key delivery mechanism will be via Somerset Council which will need to not only sustainably manage the Councils own trees and those it manages by agreement but also to raise awareness of trees being a vital community asset, through promoting continued research, through education via the provision of advice and through partnership working. It will need to foster a resilient tree population that responds to the impacts of climate change and urban expansion and to make efficient and strategic use of the Council's regulatory powers for the protection of trees of current and future value.

7.1 Objectives

These objectives in Table 7 were presented to the Steering Group and ranked across the main themes of the Strategy:

- Wood culture
- Resilient and adaptable treescapes
- Expanding tree cover
- Woodland services
- Governance

An exercise was undertaken to explore where there may be core priorities across all themes and where complexity of decision making may lie:

- There is a core priority across all the themes of engagement and of a people centred strategy that aims to create a wood culture.
- Following this were the objectives around increasing tree cover and bringing woodland into management.

The scores were analysed for the difference in priority given by each theme. For instance if one theme gave a highest priority score of 1 and another theme gave a lowest priority score of 25, the objective would score a 24. This helps identify where there is consistency or where there may be conflicts between objectives in meeting a theme:

- The lowest scores were in the people and engagement category showing that across all 5 themes this is seen as a critical area.
- Objectives around new planting, though coming out as relatively important objectives, had large differences between groups (some scoring very high and some very low). This acknowledges the fact that Somerset has a high landscape variability and there is cause for concern in some geographic areas around new planting. This was also reflected in the wider survey.
- 'Bringing woodland into management' though scoring in the lower third of the priorities, also had a low difference score showing that there is consistency across themes in bringing woodland into management. The role of agroforestry in Somerset was scored in a similar way.

The Steering Group was asked to score a range of tree focussed actions across the landscape character areas of Somerset (see Table 8).

This was to get a sense of relative importance as it became quite clear that the different areas may require different approaches to management and new planting. Each area received between 4-6 responses with Vale of Taunton and Exmoor receiving the most. This particular exercise may be skewed by a number of factors:

- Limited responses for some areas
- Not being clear in some areas. For instance we suspect "increase in diversity" which we meant to mean structural diversity may have been interpreted as species diversity.
- The composition of the steering group.

Table 6 Set of objectives developed from evidence presented

Objectives	Ranking by priority score	Ranking by difference in theme groups
Engage communities	1	1
Recognise the need for the 'tree strategy' to be a living document. Do not let it stagnate	2	9
Engage young people	3	8
Encourage increasing structural diversity on a woodland scale	4	10
Any new combined authority Strategic planning documents must recognise the roles of trees	5	6
Create linear features to allow connectivity and movement of biodiversity	6	11
Increase the understanding of the opportunities and issues of treescapes in developments beyond just the aesthetics	7	5
Bring people in the profession together regularly	8	9
Rationalise documents and remove (as much as possible) relic documents	9	3
Create a contract with the steering group and the CC to outline roles and responsibilities	10	5
Increase urban tree cover in parks and on roadside	11	11
Aim to plant 210ha/ year in Somerset	12	12
Identify unmanaged woodland and encourage owners	13	4
Identify areas where more radical carbon planting may take place	14	15
Become a centre of excellence for agroforestry practice	15	2
Be open minded about species origin and provenance	16	7
Increase diversity of woodland types on catchment scale	17	16
Engage FE and HE colleges and apprenticeship opportunities	18	14
Ensure increased tree cover is monitored	19	2
Encourage thinking on the origin and provenance of stock	20	9
Be flexible and responsive to emerging opportunities. Use this action plan as a basis for funding bids	21	7
Create a Somerset First policy for timber use in developments	22	8
Ensure woodland product and services are ecologically sensitive	added after workshop, not scored	
Ensure support mechanisms for interested parties	added after workshop, not scored	
Trees adapted for shading for people and animals	added after workshop, not scored	
Recognise decline of old orchards & orchard creation in orchards	added after workshop, not scored	
Challenge status quo, an open discussion for new ideas on woodland management	added after workshop, not scored	

Table 7 Trees and woodland priorities by Steering Group scoring (1 = highest)

Objectives	Levels and Moors	Mendip Hills	Yeovil S'plands	Exmoor	Vale of Taunton	B'down Hills	Q'tocks	Mid S'set Hills
Diversify woodland types	5	2	4	3	5	3	4	3
Increase tree cover	5	3	2	2	3	3	5	2
Create linear features	5	3	2	4	1	5	3	2
Be open minded about species and origin	2	1	1	2	1	2	1	1
Opportunity for agroforestry	4	1	3	2	5	2	2	2
Increase urban tree cover	3	4	5	5	2	7	7	4
Trees in urban developments	4	3	6	4	3	6	6	5
Ensure all woodlands are in management	1	1	2	1	3	1	1	2
Increase tree based carbon stocks	6	2	3	2	4	2	2	3
Contribute to home-grown timber	2	2	3	1	3	4	4	2

Achieving the objectives: Putting in place the mechanisms for change

The objectives and actions of this strategy are set out in their own document. Whilst it is easy to create objectives and actions, achievement will need to be a balance of budget, human resources and buy-in from the all stakeholders. There will be a hierarchical structure to oversight that will see Somerset Council taking overall budgetary control and responsibility. The Council will delegate to a Steering Group (see next section) the responsibility for delivery.

This Strategy has not attempted to budget the objectives and actions as this will need to be reviewed on an ongoing basis. The Strategy is produced at a time of rising inflation and economic uncertainty making 10-year budgeting a highly speculative task. There will be, however, a number of key funds to draw upon or consider:

- Land management schemes as they come to full functionality, including ELMs, new planting schemes and woodland management grants that will be open to private and public parties.
- The local authority specific Treescape Fund and Forestry Innovation Fund may provide funding for more innovative parts of the Strategy, especially around wood culture and connectivity.
- Any further rounds of the Treescapes funding would allow links to be made with academic institutions.

The funding from the Woodland Creation Accelerator Fund of £300,000 in late 2022 will be a key part of delivering the strategy and the project officers it supports will be an instrumental link between the Steering Group and ensuring tree planting components of the Strategy.

The objectives around wood culture will require more than the ten years of the Strategy's life to come to fruition. To create a deeply embedded culture within a society is a long-term ambition however the actions outlined in the Objectives and Actions document are aimed at delivering the start of this and making significant moves towards establishing this culture.

The Tree Strategy is not a standalone document and needs to be seen as working in partnership with other local, regional and national groups. Amongst these the Climate Strategy for Somerset which this strategy has been closely aligned to and the Local Nature Recovery Partnership which already exists and shares many of the aims of this strategy.

7.2 Steering Group

In the survey and within the Steering Group there is a presumption that the actions of the Strategy will be led by the Council, using the Steering Group as a delivery mechanism. How this will be translated into practicalities will need to be determined as the new combined Council is put together and begins operating.

Somerset's strategy is different from many others in how it has prioritised the development of a wood culture. This has come out of the survey and the Steering Group but presents challenges in delivery. Working with communities to develop wood culture is a largely qualitative benchmark compared to simpler metrics of say, woodland creation and the Steering Group will have to be aware of this. It may be that the Steering Group is bolstered with social scientists to help the delivery of this part of the Strategy.

The Steering Group is currently made up of around thirty members and we would recommend these numbers be reduced down, possibly by first identifying the skills needed and then forming a revised group based on those needs. Ideally a core high-level Steering Group is formed who can meet regularly and have the full support of the Council. They will create a wider group of experts that cover all aspects of tree management, ecology and community, from which it can draw, including but not restricted to:

- Representatives of the Council Environment groups
- Representatives of the Council Planning & highway groups
- A representative of the protected landscapes within Somerset
- A representative from the Forestry Commission
- Environment Agency
- Natural England
- Historic England
- A town/landscape planner/architect
- A woodland manager holding Institute of Chartered Forester status
- An arboriculturalist holding Arb Association membership
- One representative representing the views of all the environmental NGOs (Woodland Trust, Wildlife Trusts, National Trust etc)
- A representative of community woodlands
- A sawmiller/carbon trader, someone representing the forest industries, possibly a regional member of the Confederation of Forest industries
- An owner representative, possibly from the Royal Forestry Society
- Ecological representation
- Community representation
- Education representation

It has been suggested that the steering group be joined by an "ethics committee" of knowledgeable people that could adjudicate on contentious planting schemes and issues in Somerset and add their support (or not) to planning applications and planting schemes. This would, we believe, be unique in the UK.

Statutory responsibility for tree cover

The Strategy cannot ignore the continued need to ensure public and private bodies fulfil their statutory obligations to tree cover. These obligations regarding Tree Preservation Orders (TPO) and Tree Works Applications (TWA) along with national legislation ensuring woodlands are replanted come to either the Council or national bodies such as Forestry Commission to enforce and administer.

These obligations need to be reviewed regularly as they underpin the governance of the Strategy. Those officers working on achieving the goals of the Strategy need to be in close communication with those in the Council with responsibility for TPOs and TWAs as well as with Forestry Commission Woodland Officers.

It may be that to ensure closer working between the statutory responsibilities and those involved in tree work, the publication of the Strategy is a good moment to review the consultation process around tree works; draft enforcement protocols and create a supplementary planning document relating to trees and development sites.

7.3 Marketing and promotion

The focus of this strategy is creating a wood culture in Somerset, to bring the residents of the County on a journey. To do this will require exceptional marketing a promotion focussing on all demographics.

There are a number of tools that can be used to do this, some tree related, others promotional.

Social media

Social media, especially Instagram and Tik Tok as well as a new focus on in-game promotion is unused for specific purposes around Somerset's trees. As the new tree officers in the County are recruited it should be with them and with the Steering Group to bring together a marketing strategy that matches user groups with media types.

This strategy needs to use rich imagery and messaging. We would recommend bringing in some form of market development expertise to start to create this wood culture.

Veteran trees and agroforestry

As a sub group of Somerset's treescape, veteran trees and agroforestry act to transcend the boundaries between urban and rural, woodland and agroforestry. They can be used as a thread to draw together the elements of the Strategy in an engaging way given their importance.

Somerset has 3114 trees in the Ancient Tree Inventory, though many of these records date back to a 2006 survey:

- 357 are on private ground with no access or visibility from a path; 265 are visible though on private land and the rest, 2056 have some form of access. This opportunity could be harnessed as a promotional tool for Somerset's trees, drawing on their past to look at their future.
- 487 were recorded as having some threat, largely from cultivation, development, vandalism or over-shading.
- They cover a wide variety of landscapes from urban (6), church grounds (148), wood pasture, parkland & historic gardens and woodland (c.2,000)

These veteran trees can be used as a handle to draw in people through promotion, through, citizen-science surveying, through a new inventory and survey, through an interactive map of those that are accessible with information on their ecology, their history and their importance.

Connecting landscapes

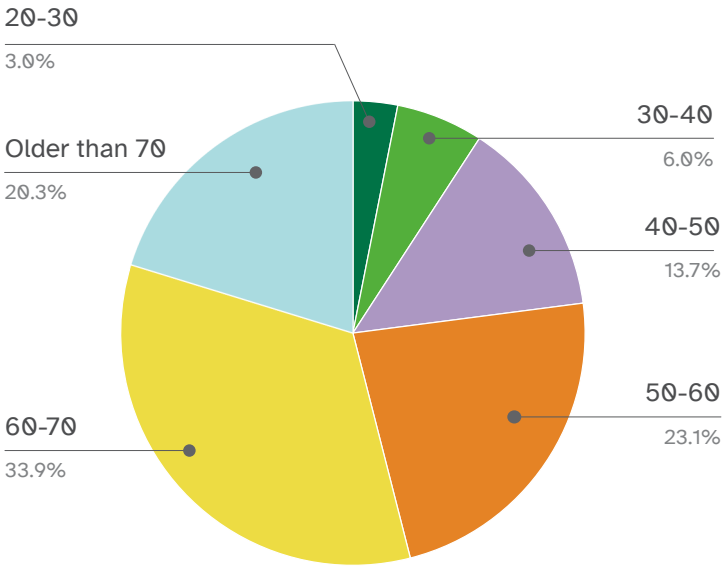
An objective of the Strategy is to start to weave a connected web of ecologically resilient woodlands. An ambitious goal has been set to create two completely connected corridors across Somerset and this can form the backbone of a second strand of long-term promotion. Creating buy-in from public, landowners and policy makers to achieve this aim will have the knock-on effect of promoting the much wider remit of the Strategy to create a resilient and adaptable wood culture in Somerset. The details of these corridors will be developed over the initial years of the Strategy.

Appendixes

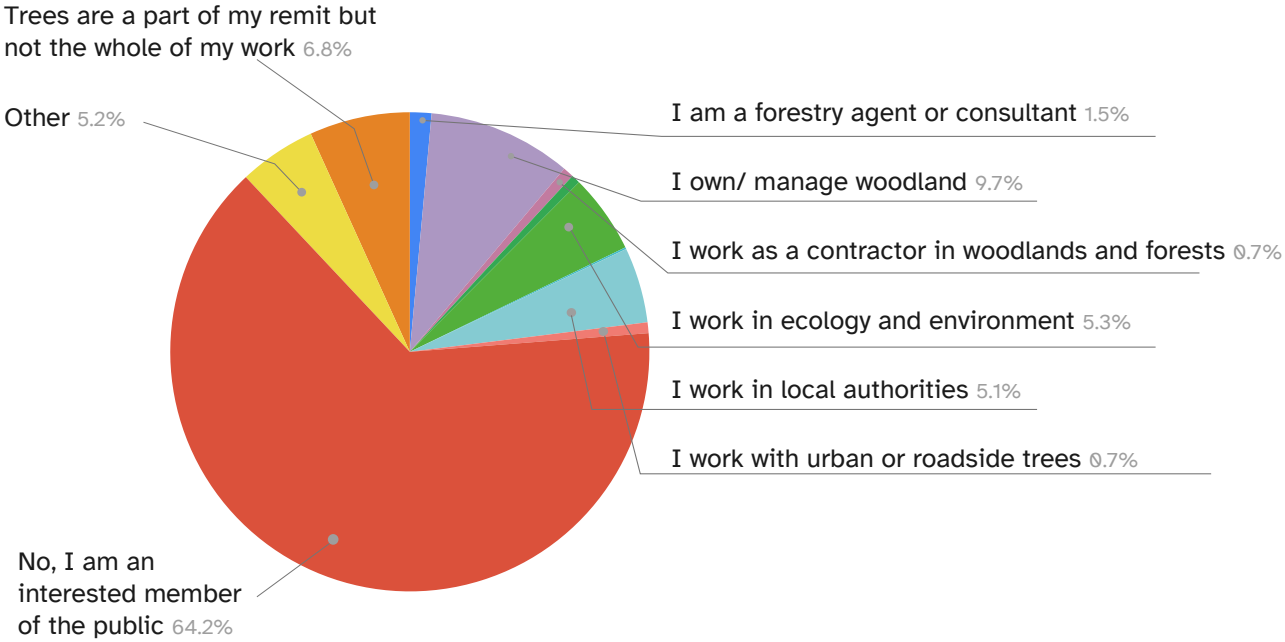
A1 Results of survey

Part 1: Who answered the survey?

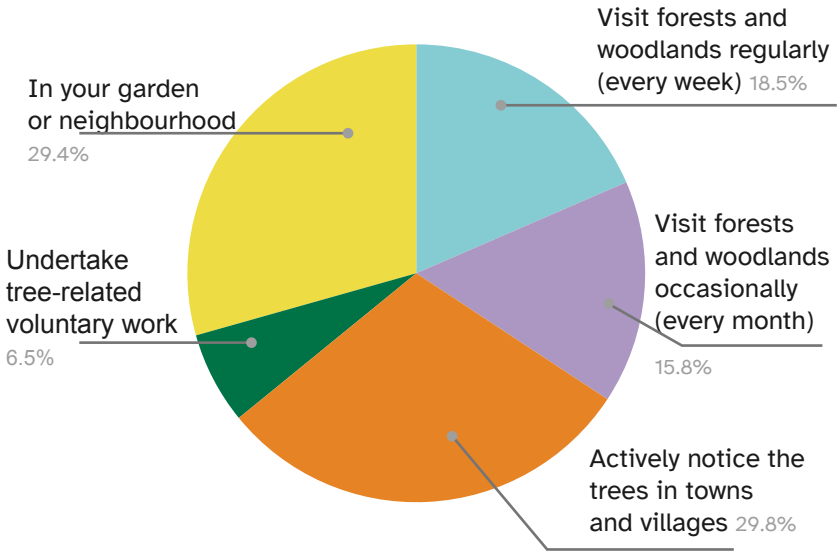
Q1: Age group
Total number of responses: 735
77% of the respondents were over the age of 50, and just 10% under 40.



Q2: Does your work involve trees?
Total number of responses: 740
The majority of respondents were interested members of the public who do not work with trees (64%). Although 10% who answered were owners/ managers of woodlands.

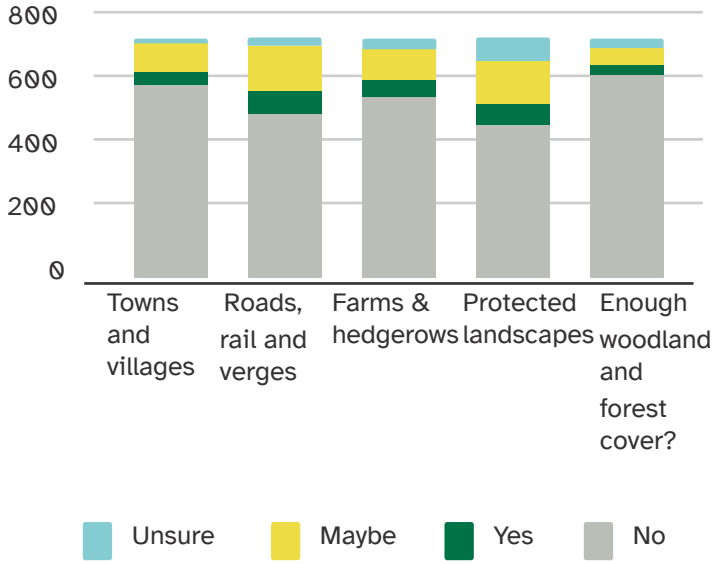


Q3: Do you interact with trees outside of work?
Total number of responses: 745
The most common way for respondents to interact with trees outside of work, was through actively noticing them in towns and villages, followed by interacting with them in gardens or the neighbourhood.



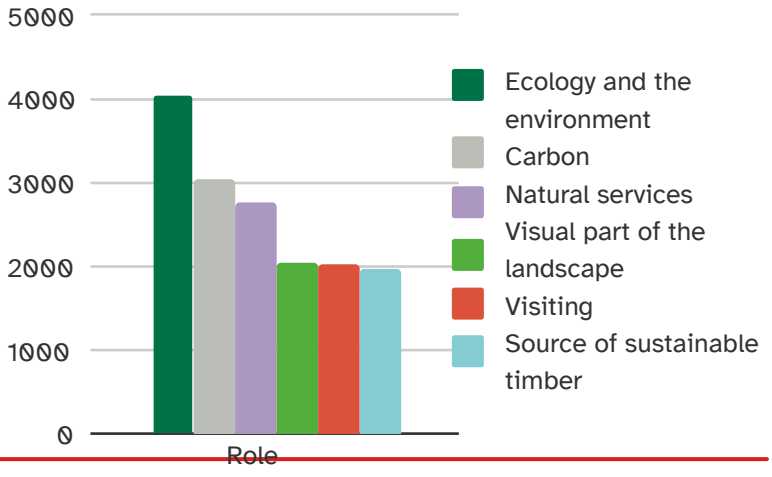
Part 2: Somerset's current trees

Q4: Does Somerset have enough trees?
Total number of responses: 752
The survey results showed that overall respondents think that Somerset does not have enough trees across all areas. The strongest areas selected for not having trees were overall woodland and forest cover, followed by towns and villages.



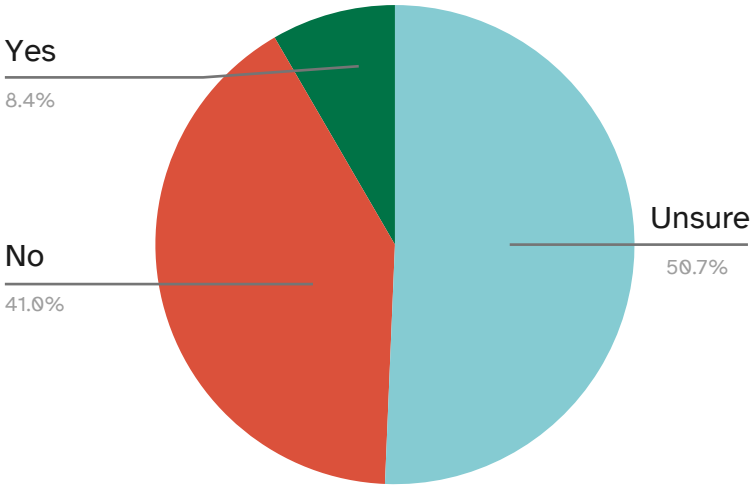
Q5: Rank the role of trees and woodlands in order of importance
Total number of responses: 752

The most important role of current trees and woodlands was voted as ecology and the environment (74%). Meanwhile sustainable timber (30%) and visiting trees and woodlands (25%) were rated as the least important role of trees and woodlands.



Q6: Are Somerset's woodlands resilient to a changing climate?
Total number of responses: 752

The survey results show significant uncertainty in the respondents' views on whether Somerset's woodlands are resilient to a changing climate. 41% of respondents voted the woodlands as not resilient to climate change, whilst 51% voted they were unsure, and

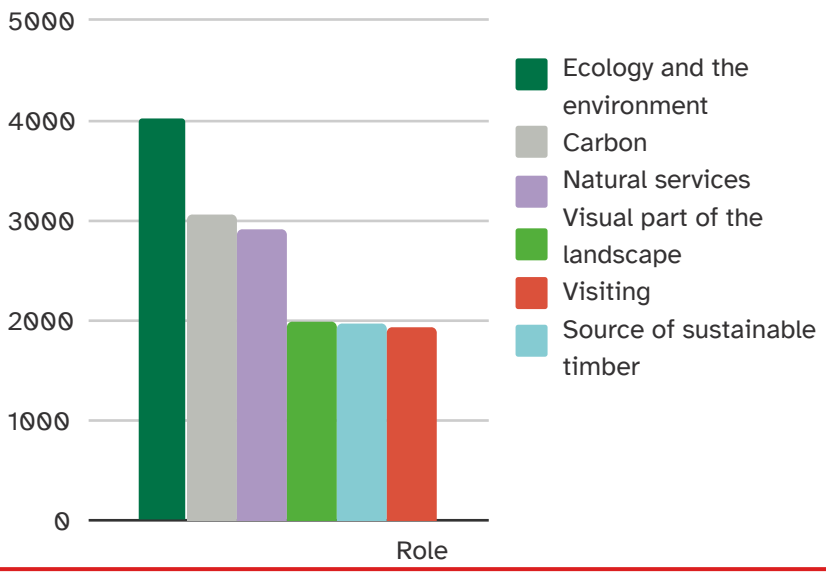


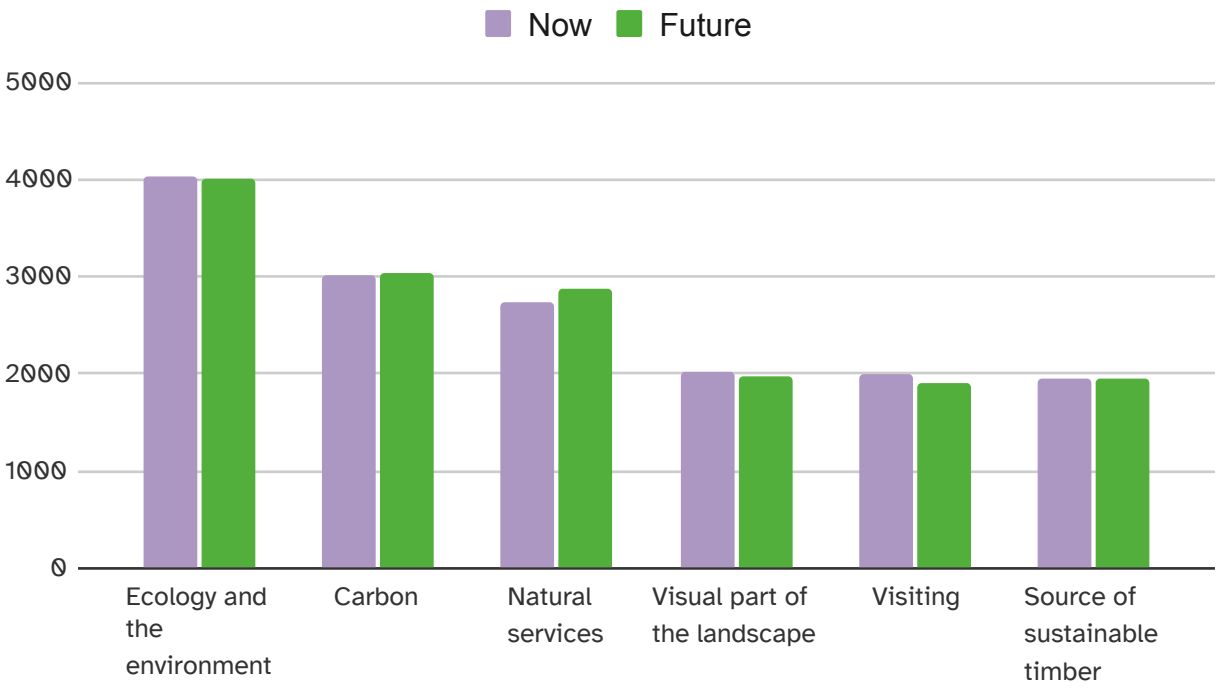
Q7: Does Somerset need more trees?
Total number of responses: 749

Respondents felt that overall Somerset needed more trees. In particular, 89% of respondents felt that Somerset needed more trees in villages, towns and cities.

Q8. In the future what are the most important services trees should be providing to us in Somerset?
Total number of responses: 752

When asked about the future role of trees, ecology and environment was rated as the most important, followed by carbon and natural services. The future role rankings were highly similar to the current rankings, shown in the figure to the right.





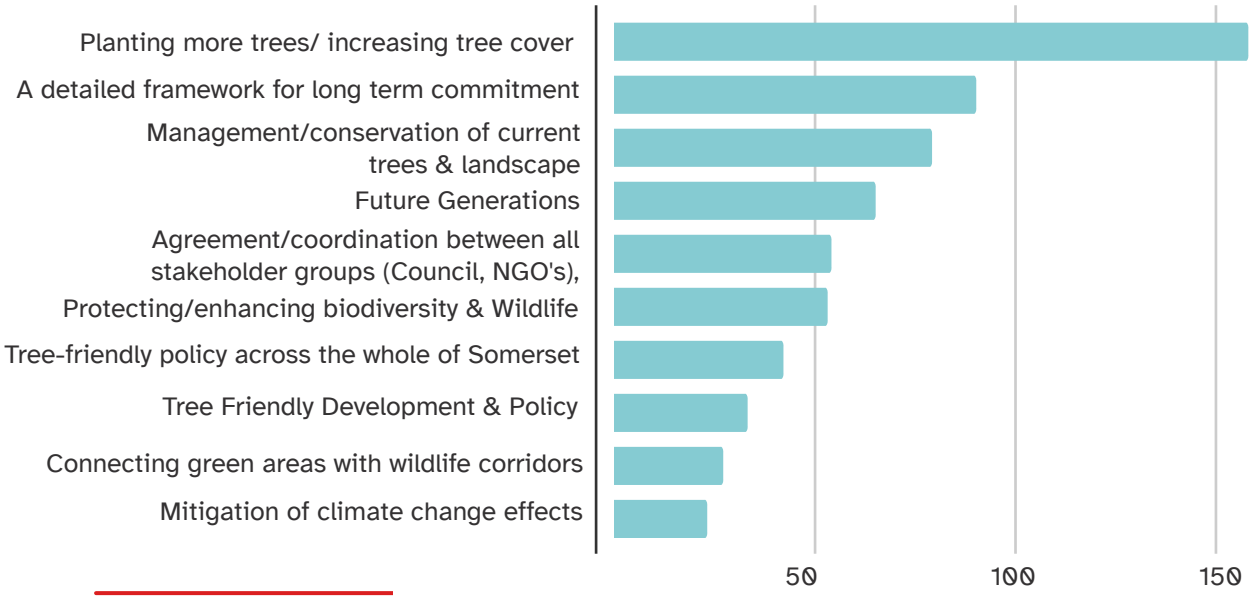
Part 4: The Strategy

Thematic Analysis Results

Q9. What does a County wide strategy mean to you?

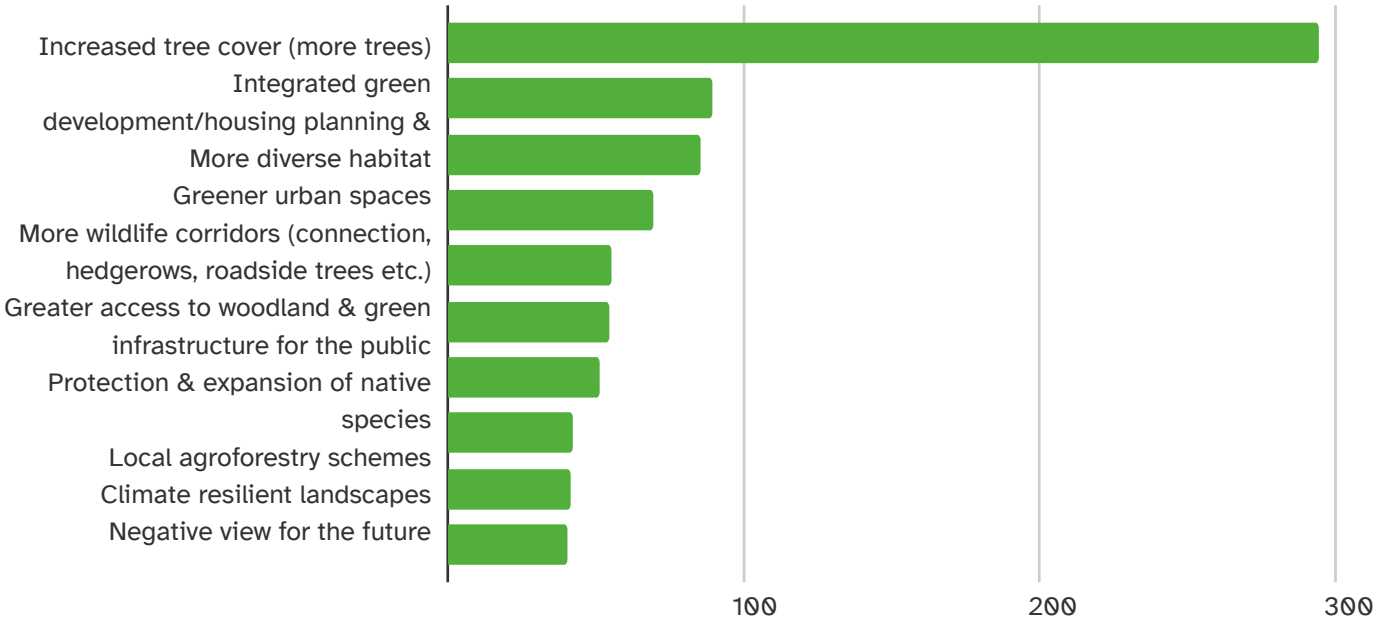
Total number of responses: 668

Over one quarter of the responses mentioned planting more trees or increasing tree cover. Long term commitment and a detailed framework were mentioned around one in seven times.
Key phrases that came up include planting the right trees in the right places, as well as appropriate considerations for different areas. Other key aspects included future generations, agreement/ coordination between all stakeholders, and connecting green areas with wildlife corridors.



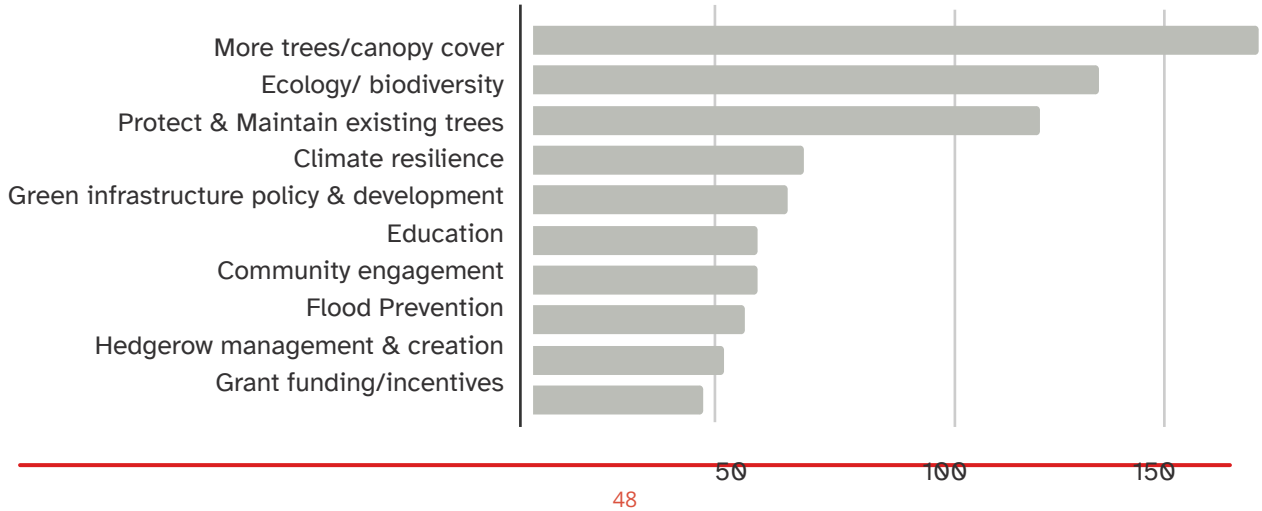
Q10. In 20 years and beyond, what does Somerset's landscape look like?
Total number of responses: 580

This question had a significant focus on increased tree cover, with over 50% mentioning more trees. Other responses were less strongly divided, but focussed on integrating green development and legislation (15%), for habitats to be more diverse (15%), and greener urban spaces (12%). Wildlife corridors were also mentioned as in the previous question. This also links in a pattern of key phrases mentioning there being currently isolated natural nodes, that are ecologically fragile as a result of not being joined up, and so a need for a joined up landscape where trees and hedges link up across the county. A restored relationship with trees was also a key message.



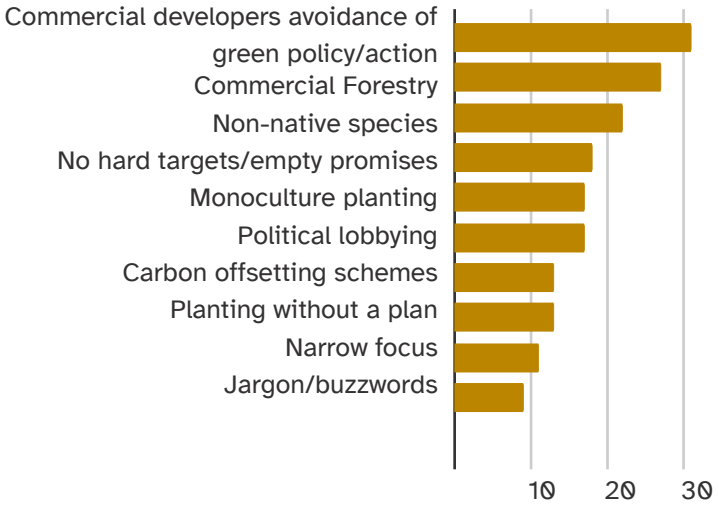
Q11. What should the strategy cover?
Total number of responses: 629

Again, for the third question in a row, more trees and increased canopy cover came up as the strongest response for this question (27%), but was closely followed by ecology and biodiversity (21%) and protecting and maintaining existing trees (19%). Just 10% of respondents mentioned climate resilience. Key ideas additionally included community projects involving trees, and community orchards.



Q12. Is there anything that shouldn't be in the Strategy?
Total number of responses: 349

Commercial activity was strongly voted against in this question, where commercial developers avoiding green policy was suggested by 9% of respondents, and commercial forestry by 8%. However it is important to note here substantially less people answered this question, so the scale of responses is altered. The most common responses to this question still only had 20-30 mentions, compared to previous questions which had several hundred.

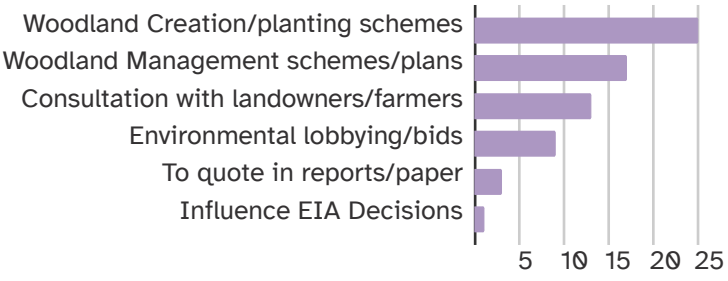


Q13. How do we engage more people in that vision?
Total number of responses: 594

The most popular suggestions for how to engage more people in the strategy / vision were education, through schooling initiatives (20%) and educating across all age groups (13%). New publicity i.e. social media was also mentioned by 11% of respondents. Key ideas were linked to social media, encouraging schools to be tree nurseries, and again working with community groups.

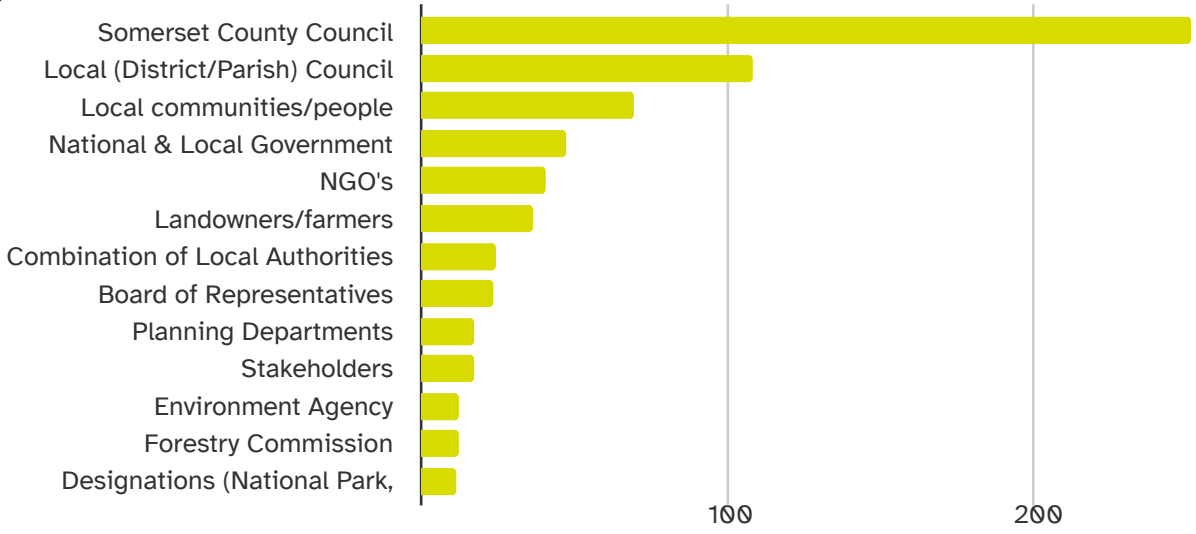
Q14. If you are completing this as a professional, how would you envisage using the strategy ?
Total number of responses: 258

Of the professionals working with trees, woodland creation schemes were the predominant way they envisaged using the strategy (10%). Following that woodland management was also suggested (7%), and consultation with stakeholders (5%). Some key themes that came up were targeted woodland creation, informing EIA decisions and lobbying partnerships to expand and broaden thinking on trees.



Q15. Who should be responsible for the strategy?
Total number of responses: 563

There was a strong preference for Somerset County Council to be responsible for the strategy, despite the fact that Somerset is soon moving to become a unitary authority. Other groups mentioned were the local council, local communities and national and local Government. There was also a preference for a partnership approach, and potentially setting up a committee to include public/professionals and council representation.



A2 Examples of tree management

List of places seen by the Steering Group as representing good and bad examples of how trees should be managed in Somerset.

Location	Good	Bad
Nutcombe Bottom – home to England's Tallest tree or Ashbrittle Church – home to England's oldest tree are absolute musts. We have some of the most amazing trees in the country!!!!!	1	
East Exmoor valley woodlands – 'temperate rainforest dripping with lichens' - Burridge Woods and/or North Hill woodlands	1	
Castle Neroche, Blackdowns Hills, on a misty autumn morning. Big trees and open grass beneath, views out over the Vale of Taunton - can be quite magical	1	
Anywhere with clusters of ancient trees. Some of the best examples: Piddle oaks (Blackdown Hills), Nettlecombe Court (Exmoor) Fyne Court (ash dieback) (Quantocks)	1	
Areas where woodland & open landscapes merge harmoniously/ fairly naturally, southern fringe of the west Mendip Hills is particularly nice - Kings Wood (ash dieback)	1	
Any stand of Continuous Cover sustainably managed mixed species forest – Forestry England woods on the Blackdowns - Wych Lodge	1	
The woodlands and avenues around Rexton Gorse and Crowcombe Heathfield Station	1	
The "Avenue" (outgrown beech hedgebanks) on the Quantock Hills, north-west of Triscombe Stone carpark	1	
Impressive oaks and oak parkland on the Nettelecome Estate	1	
Commercial orchards at Sheppy's cider	1	
Sweet chestnut parkland at Nynhead Court nursing home	1	
Oak coppice on either side of Five Lords Lane (north side of the Quantock Hills east of Holford.	1	
Community orchard in Carhampton	1	
Traditional orchards around Brandish Street, Allerford	1	
Alders beside the river in Combe Florey	1	
Village trees and mixed woodland (scenery) around Combe Florey.	1	
Holly hedges north of combe florey.	1	
Deep hedges around Pitminster.	1	
Impressive stand of poplar north of the former Sandhill Park gatehouse near to the junction the B3224 / A358	1	
Vivary Park., Taunton	1	
Wellspring open Space, Taunton	1	
Netherclay local nature reserve, Bishops Hull Taunton	1	
Wellington Park, Wellington	1	
Swains Lane Local Nature Reserve (orchard)	1	
Terry's Community Woodland near Wedmore	1	
Places with ash dieback – the Mendip ash woodlands is heart-breaking - Kings Wood (ash dieback)		1
Areas of industrial farming that have no woodlands, no field trees, manicured hedgerows. I can think of a number, but the Vale of Taunton around Wellington is where I would suggest finding this		1
Any even aged monoculture – either an unmanaged new native monoculture or a stand of productive conifer – either are how we should not be managing woods in the future		1
A stand of squirrel damaged beech (not very Somerset specific but		1
I might be quite controversial when I say this but: the middle of the Somerset levels!		1
Taunton Town centre		1

A3 Regional and national documents

Regional

Adapting to Climate Change on the Somerset Levels
Mendip District Council District-wide Carbon Management Plan
North Somerset Green Infrastructure Strategy
North Somerset Local Plan 2038
NRO 149 - Ecosystem Interactions on the Somerset levels
Reimagining the Levels main report 2016
Reimagining the levels, making Connections Technical Annexe 2016
Sedgemoor Climate Emergency Strategy 2020
Sedgemoor District Council Climate Emergency Strategy
Sedgemoor, and Somerset West and Taunton, District Councils' Joint Ecological Emergency Vision Document
Somerset carbon Neutrality and Climate Resilience Plan
Somerset's Climate Emergency Strategy
Somerset County Council Transport Policy habitat Regulations Assessment 2010
Somerset's Future Transport Plan
Somerset Housing Strategy 2019-23
Somerset Woodland Strategy 2010
Somerset West and Taunton Carbon Neutrality and Climate Resilience Action Plan 2020
Somerset-west-and-taunton-ecological-emergency-action-plan
South Somerset DC Tree canopy cover report 2021
South Somerset DC Environment Action Plan 2022-23
Taunton Garden Town 2040 Prospectus

National

The England Trees Action Plan 2021-2024
England Tree Strategy Analysis of consultation responses
Forestry and Climate Change partnership Action Plan (DEFRA)
Forestry Commission Adaptation Reporting Power: Third round report 2022
NFI provisional estimates for woodland in the Heart of the South West Local Enterprise Partnership area (Forest Research)
A Green Future: Our 25 Year Plan to Improve the Environment (DEFRA)
Responding to the climate emergency with new trees and woodlands: A guide to help local authorities and landowning businesses achieve net zero
The Canopy Cover of England's Towns and Cities: baselining and setting targets to improve human health and well-being
Tree Health Resilience Strategy: Building the resilience of our trees, woods and forests to pests and diseases (DEFRA)
Woodland cover target: Detailed Evidence report 2022 (DEFRA)

A4 Steering Group workshop results

Overall ranking of Objectives

Objectives	Ranking by priority score
Engage communities	1
Recognise the need for the 'tree strategy' to be a living document. Do not let it stagnate	2
Engage young people	3
Encourage increasing diversity on a woodland scale	4
Any new combined authority Strategic planning documents must recognise the roles of trees	5
Create linear features to allow connectivity and movement of biodiversity	6
Increase the understanding of the opportunities and issues of treescapes in developments beyond just the aesthetics	7
Bring people in the profession together regularly	8
Rationalise documents and remove (as much as possible) relic documents	9
Create a contract with the steering group and the CC to outline roles and responsibilities	11
Increase urban tree cover in parks and on roadside	11
Aim to plant 240ha/year in Somerset	12
Identify unmanaged woodland and encourage owners	13
Identify areas where more radical carbon planting may take place	14
Become a centre of excellence for agroforestry practice	15
Be open minded about species origin and provenance	16
Increase diversity of woodland types catchment scale	17
Engage FE and HE colleges and apprenticeship opportunities	18
Ensure increased tree cover is monitored	19
Encourage thinking on origin and provenance of stock	20
Be flexible and responsive to emerging opportunities. Use this action plan as a basis for funding bids	21
Create a Somerset First policy for timber use in developments	22
Ensure woodland product and services are ecologically sensitive	*
Ensure' support mechanisms for interested parties	*
Trees adapted for shading for people and animals	*
Recognise decline of old orchards & orchard creation in orchards	*
Challenge status quo, an open discussion for new ideas on woodland management	*

* added after workshop

A4 Steering Group workshop results

Ranking by theme

Objectives	Ranking by priority score	
Create linear features to allow connectivity and movement of biodiversity	6	Expanding tree cover
Increase urban tree cover in parks and on roadside	11	Expanding tree cover
Aim to plant 240ha/year in Somerset	12	Expanding tree cover
Identify areas where more radical carbon planting may take place	14	Expanding tree cover
Recognise the need for the 'tree strategy' to be a living document. Do not let it stagnate	2	Governance
Any new combined authority Strategic planning documents must recognise the roles of trees	5	Governance
Rationalise documents and remove (as much as possible) relic documents	9	Governance
Ensure increased tree cover is monitored	19	Governance
Be flexible and responsive to emerging opportunities. Use this action plan as a basis for funding bids	21	Governance
Create a contract with the steering group and the CC to outline roles and responsibilities	10	Governance
Ensure' support mechanisms for interested parties	*	Governance
Encourage increasing structural diversity on a woodland scale	4	Resilient and adaptable treescapes
Increase the understanding of the opportunities and issues of treescapes in developments beyond just the aesthetics	7	Resilient and adaptable treescapes
Identify unmanaged woodland and encourage owners	13	Resilient and adaptable treescapes
Be open minded about species origin and provenance	16	Resilient and adaptable treescapes
Increase diversity of woodland types catchment scale	17	Resilient and adaptable treescapes
Encourage thinking about origin and provenance of stock	20	Resilient and adaptable treescapes
Ensure woodland product and services are ecologically sensitive	*	Resilient and adaptable treescapes
Trees adapted for shading for people and animals	*	Resilient and adaptable treescapes
Challenge status quo, an open discussion for new ideas on woodland management	*	Resilient and adaptable treescapes
Engage communities	1	Wood culture
Engage young people	3	Wood culture
Bring people in the profession together regularly	8	Wood culture
Engage FE and HE colleges and apprenticeship opportunities	18	Wood culture
Become a centre of excellence for agroforestry practice	15	Woodland services
Create a Somerset First policy for timber use in developments	22	Woodland services
Recognise decline of old orchards & orchard creation in orchards	*	Woodland services

* added after workshop

A4 Steering Group workshop results

Workshop ranking by theme

Objectives	WC	WS	G	RA	ET	Tot.	Difference between high & low score
Engage communities	1	4	6	3	4	18	3
Recognise the need for the 'tree strategy' to be living doc.	13	14	2	1	3	33	13
Engage young people	2	14	3	3	13	35	12
Encourage increasing diversity on a woodland scale	15	2	12	1	7	37	14
Any new combined authority Strategic planning documents must recognise the roles of trees	8	9	11	1	8	37	10
Create linear features to allow movement of biodiversity	16	1	12	7	2	38	15
Create linear features that connect the landscape	18	1	12	7	2	40	17
Increase the understanding of the opportunities and issues of treescapes in developments beyond just the aesthetics	5	14	9		12	40	9
Bring people in the profession together regularly	4	14	1	9	14	42	13
Rationalise documents and remove relic documents	9	10	12	6	6	43	6
Create a contract with the steering group and the CC	6	14	12	5	11	48	9
Be open minded about species origin and provenance	11	14	12	6	6	49	8
Increase urban tree cover in parks and on roadside	3	14	5	10	18	50	15
Aim to plant 240ha/year in Somerset	17	14	12	8	1	52	16
Identify unmanaged woodland and encourage owners	14	14	12	6	6	52	8
Identify areas where radical carbon planting may take place	21	14	7	2	10	54	19
Become a centre of excellence for agroforestry practice	12	14	12	7	9	54	5
Be open minded about species origin and provenance	7	6	12	13	18	56	11
Increase diversity of woodland types catchment scale	25	14	3	1	19	62	24
Engage FE and HE colleges & apprenticeship opportunities	23	14	12	8	5	62	18
Ensure increased tree cover is monitored	10	14	12	14	15	65	5
Increase diversity of woodland types catchment scale	19	14	12	4	17	66	15
Encourage thinking on origin and provenance of stock	20	7	12	16	15	70	13
Be flexible and responsive to emerging opportunities	22	14	12	11	16	75	11
Create a Somerset First policy for timber use in dev.	24	14	12	15	20	85	12
Ensure woodland product & services ecologically sensitive		3					
Right support mechanisms for interested parties		5					
Planning docs recognise role of trees		8					
Trees adapted for shading for people and animals		11					
Urban trees increase.		12					
Recognise decline of old orchards & creation in orchards							
Form an ethics commitee relay with EIA decisions			8				
Challenge status quo, open discussions			10				

A4 Steering Group workshop results

Character area by ranking

	Levels and Moors	Mendip Hills	Yeovil S'lands	Exmoor	Vale of Taunton	B'down Hills	Q'tocks	Mid S'set Hills
Diversify woodland types	5	2	4	3	5	3	4	3
Increase tree cover	5	3	2	2	3	3	5	2
Create linear features	5	3	2	4	1	5	3	2
Open minded species/ origin	2	1	1	2	1	2	1	1
Agroforestry opportunities	4	1	3	2	5	2	2	2
Increase urban tree cover	3	4	5	5	2	7	7	4
Trees in urban developments	4	3	6	4	3	6	6	5
Woodlands into management	1	1	2	1	3	1	1	2
Increase tree-based carbon stocks	6	2	3	2	4	2	2	3
Contribute to home-grown timber	2	2	3	1	3	4	4	2