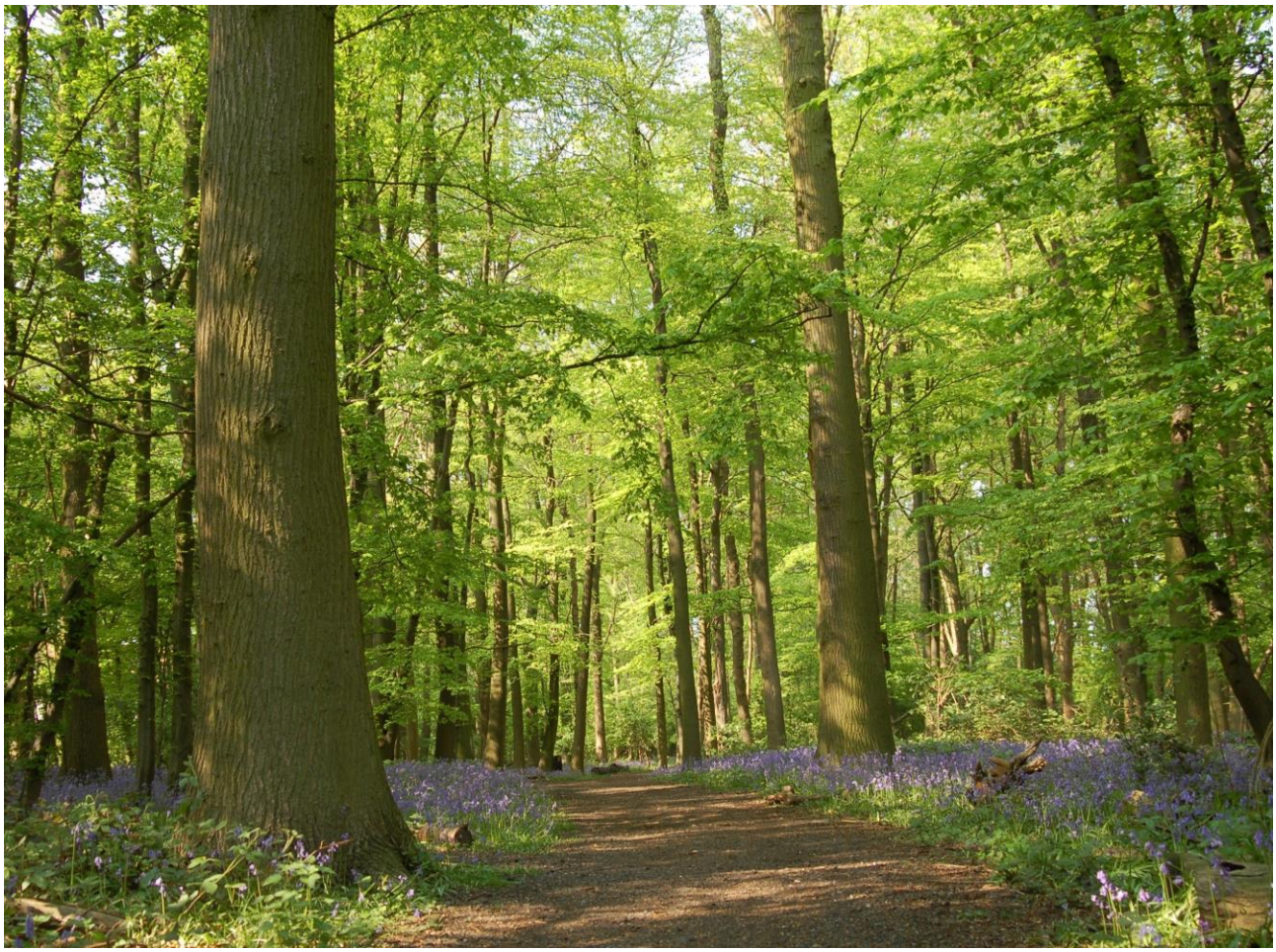
Hertfordshire County Council

Tree and Woodland Strategy

2022 – 2030



Hertfordshire

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Executive summary

In its 25 Year Environment Plan, the government sets itself a target of increasing woodland cover to 12% by 2060 as a way to contribute to its aspirations for *thriving plants and wildlife*. Subsequently, the government pledged a tree planting target of 30,000 Hectares annually from 2025 until 2050.

Following our Climate Emergency Declaration in July 2019, Hertfordshire County Council developed the Sustainable Hertfordshire Strategy. This sets out the policies and strategies needed to embed sustainability across the council and the county; including a call for a Tree Strategy to support our ambitions to improve Hertfordshire's wildlife by 20% by 2050.

While wildlife has been a key driver for local and national commitments around trees and woodlands; increasingly science and policy are recognising the multiple benefits that treescapes provide to people, places and the environment. These include reducing atmospheric carbon, improving air quality, enhancing health and wellbeing and supporting adaptation to the impacts of climate change.

In our Tree and Woodland Strategy, we set out ambitions for Hertfordshire's treescapes until 2030 and recognise that the actions we take in the current decade must not only benefit Hertfordshire's communities today, but also its future generations.

Vision

Our vision for Hertfordshire is a county where the benefits provided by trees and woodlands are shared by everyone who lives, works and plays here; both now and for future generations. To achieve this, we will work with partners to increase tree cover across the county, prioritising areas and approaches which will ensure the widest range of public benefits. We will support the management of Hertfordshire's trees and woodlands to promote healthy habitats and to mitigate and adapt to the effects of climate change. We will engage with residents to enable everyone to enjoy the county's treescapes and to support their expansion and active management.

Ambitions

1. We will support the establishment of at least 1.8 million new trees across Hertfordshire by 2030. This will include;

a) at least 1.2 million trees, one for every resident of Hertfordshire,
b) at least 100 km of hedgerows, equating to 600,000 hedgerow trees.

We will seek to deliver this by:

c) creating substantial areas of new woodland on the county council's rural estate. While subject to the availability of suitable land, and with confirmed targets be informed by a robust assessment of opportunities (delivered through an updated Rural Estates Strategic Review), our aspiration is to establish around 120 Hectares (Ha) of new woodlands,
d) establishing at least 10km of new hedgerows and 10 Ha of linear woodlands on the county council's highway estate; subject to comprehensive on-site evaluations to ground-truth and support desk-top assessment,
e) where appropriate, establishing at least 100 new trees on the county council's highway estate in each urban ward which has a tree canopy cover of below 15% (of the total ward area), subject to on-site gap analysis to confirm viable planting opportunities.

2. We will promote and support the development of woodland management plans to help ensure woodlands provide a range of benefits to their owners, wildlife and local communities, while remaining resilient to pressures on tree health

We will seek to deliver this by:

a) ensuring that all woodlands (minimum 0.5 Ha) on the in-hand part of the county council's estate are supported by management plans,
b) working with the county council's tenants and with other landowners to support the development of site-specific woodland management plan.

3. We will facilitate and enable residents and businesses to support tree and woodland establishment and enhancement initiatives in Hertfordshire; and to support the protection and restoration of other threatened global woodland habitats to reverse biodiversity declines and combat climate change

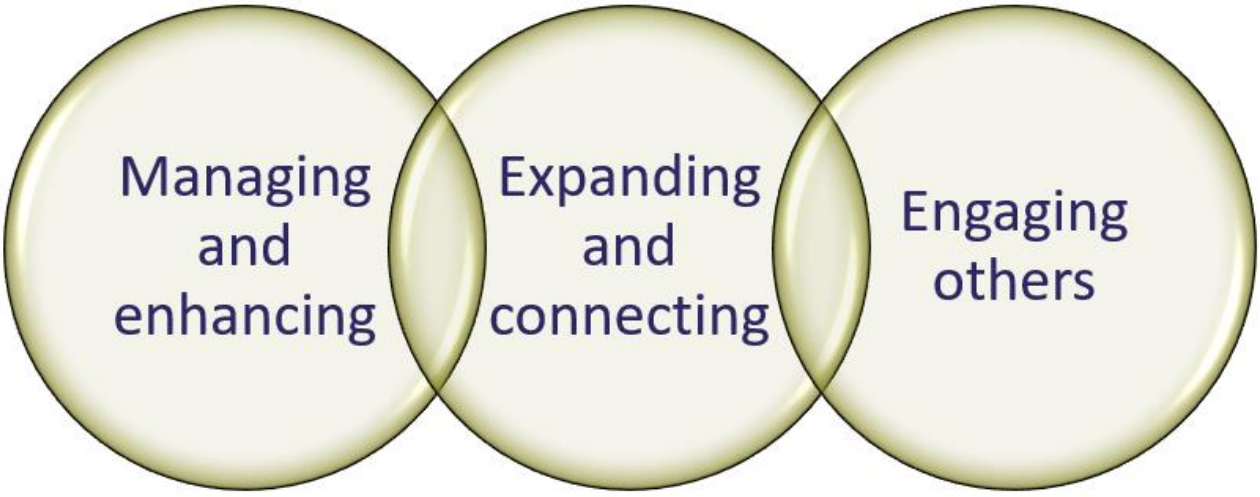
We will seek to deliver this by:

a) establishing a local grant scheme to support town and parish councils to create community pocket-woodlands, orchards and other treescape initiatives,
b) Trialling a programme of community tree watering through local volunteer networks to maximise budgets for tree planting,
c) providing 100,000 free tree planting kits to Hertfordshire residents and businesses,
d) establishing tree sponsorship and crowdfunding mechanisms to enable communities to fund new tree planting and woodland protection initiatives.

The strategy

The Tree and Woodland Strategy ('the Strategy') sets out our corporate approach and ambitions for expanding and managing trees and woodlands on the county council's estate. This comprises council offices, fire stations, libraries and other parts of the built estate, green belt and tenanted farmland, schools and the county's highway network. The Strategy also details our aspirations to support others in Hertfordshire to establish, manage, support and enjoy trees and woodlands across the county. The Strategy will direct our activities relating to trees and woodlands until 2030, to complement ambitions and timescales set out in the Sustainable Hertfordshire Strategy[i]. The county council will review the Strategy in 2026 to ensure that its ambitions are still appropriate, in recognition of the fast-changing national policy landscape relating to trees and woodlands and the new pressures arising from climate change.

The Strategy includes three key ambitions and 27 policy position statements which will guide the county council's approach to planning for and managing trees and woodlands. These Tree and Woodland Strategy Policies (TWSP) are presented throughout the document and are also collated in Appendix A. The Strategy also includes initiatives which will help deliver our ambitions, presented under three key themes; Managing and enhancing, Expanding and connecting, and Engaging others.



The Strategy will integrate with a suite of existing documents which detail the operational management and maintenance of trees on the county council estate. In so doing it will align departmental processes for tree and woodland management into a corporate framework, ensuring consistent goals and approaches which are appropriate to the diverse tree and woodland assets within the county council's portfolio.

The Strategy will also incorporate the principles set out in the Tree Resilience and Recovery Strategy for Hertfordshire (the Resilience Strategy') (Appendix C). Following publication of the government's national Tree Health Resilience Strategy[ii], the Resilience Strategy has been developed to set out a Hertfordshire response to the increasing pressures on tree health, posed by pests and disease and by climate change. The Resilience Strategy was developed in collaboration with the Tree Health Network with input from Hertfordshire's district and borough councils' tree officers, green spaces management teams, and other stakeholders involved with the management of Hertfordshire's trees and woodlands.

Policy context

International

Following the outbreak of the Covid-19 pandemic, the United Nations Environment Programme (UNEP) advocated a renewed investment in global forests in order for the world to build back better and greener[iii]. Globally, trees and woodlands provide economic prosperity, support for wildlife and deliver a wide range of social benefits.

Global deforestation is increasing; although this masks regional variation, with consistent expansion of woodlands in Asia and Europe over the past 30 years, outweighed by significant declines in Africa and South America over the same period.

Similarly, there are stark regional differences between the extent of woodlands supported by management plans; comparatively high in Europe (96%) and Asia (64%), compared with significantly lower rates in Africa (24%) and South America (17%)[iv]. This highlights a link between tree canopy expansion and a formal commitment to woodland management.

In 2020, the total carbon held in global woodlands was 662 gigatonnes. Trees are often heralded as part of the solution to climate change and this has led to the mass-planting of hundreds of millions of new trees, including in India, China and Ethiopia. However, some such initiatives have raised concerns that the wrong planting in the wrong place can be counterproductive. Consequently, plans for tree cover expansion must be carefully produced to ensure the right tree is located in the right place and for the right reason.

National

In the 25 Year Environment Plan, the government set out its aspiration to increase woodland cover in England from the existing level of 10% to 12% of total land area by 2060[v]. In response to the Committee on Climate Change's recommendations on tree planting[vi], the Government committed to increase tree planting across the UK to 30,000 Ha annually by 2025, and to maintain this until 2050. After consulting on the England Tree Strategy[vii], the government published the England Tree Action Plan 2021-24[viii] which details a national trajectory towards these targets between now and 2024.

Carbon stored in the UK's woodlands is currently estimated at four billion tonnes[ix]. Trees can contribute towards our national commitment to reach net zero emissions by 2050. However, in its *State of the UK's Woods and Trees* report, the Woodland Trust highlight concerns about the quality of woodland habitats and the net loss of non-woodland trees from the wider landscape[x]. This underlines the importance of protecting and investing in existing trees and woodlands in addition to fresh ambitions for canopy expansion.

The Environment Act 2021[xi] provides further support for the expansion, management and protection of trees and woodlands. The initiatives introduced through the Act include Biodiversity Net Gain, which mandates a mechanism for measuring a 10% net gain in biodiversity through the planning process; and establishment of a Nature Recovery Network, underpinned by local strategies to support species and habitat recovery.

While this aspirational Strategy places significant emphasis on the benefits provided by trees and our ambitions to expand and enhance trees and woodlands, we also recognise that the management of trees should maintain the risk they pose to people and property at an acceptably low level. Published in 2011, the National Tree Safety Group's (NTSG) *Common sense management of trees*[xii] guidance document has become an essential resource, supporting many organisations to develop a balanced approach to tree risk management. A decade later, the NTSG is producing a revision to this guidance, publication in 2021, which will outline the latest expert thinking on tree risk management. We welcome this revision and plan to evaluate our own approaches in light of its recommendations.

Local

In July 2019, the county council declared a climate emergency. In the six months that followed we developed the Sustainable Hertfordshire Strategy, adopted in March 2020. This sets out nine ambitions for Hertfordshire and the three levels of influence through which the county council shall work to achieve these. The ambitions focus on the need to reduce greenhouse gas emissions, enhance biodiversity, reduce waste, improve air quality and adapt to a changing climate.

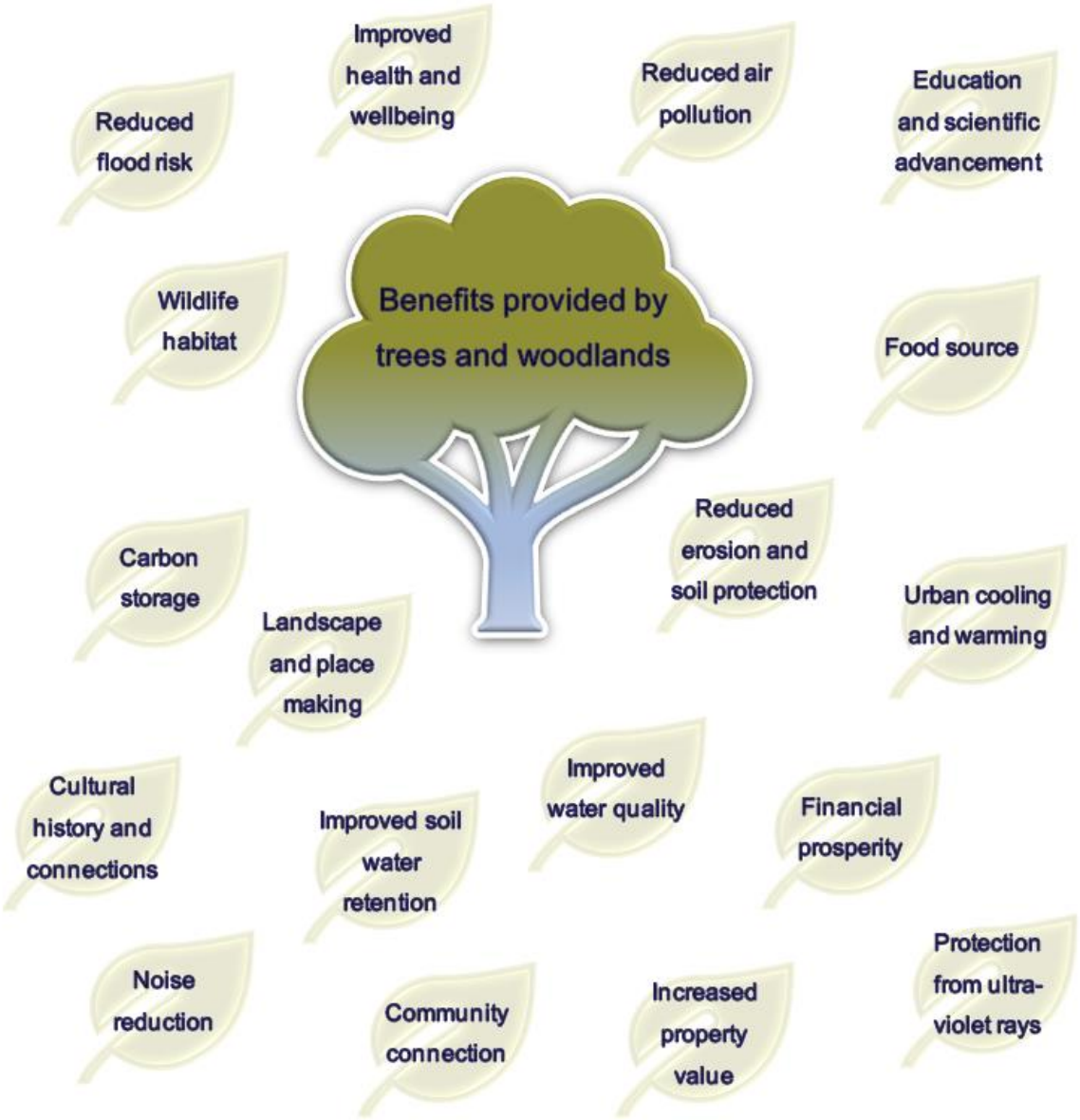
In 2019 we adopted a Pollinator Strategy[xiii] which recognises the role of trees and flowering plants in supporting pollinating insects, many of which are experiencing population decline. We are in the process of developing a renewed Green Infrastructure Strategy for Hertfordshire, due for publication in Spring 2022. This will set out how trees, woodlands and other green infrastructure can be utilised to provide important services to Hertfordshire's communities.

The Tree and Woodlands Strategy will support these existing and developing strategies by ensuring that the expansion and management of Hertfordshire's tree canopy delivers benefits to people and wildlife for many years to come.

In addition, each of Hertfordshire's ten district and borough councils has made a formal commitment to address the threat posed by climate change, and in 2020 the Hertfordshire Climate Change and Sustainability Partnership (HCCSP) was formed. This Partnership provides a mechanism for all eleven authorities, as well as the Hertfordshire Local Enterprise Partnership, to collaborate in our drive for sustainability and our response to climate change[xiv]. We will work with our partners in HCCSP to ensure that Hertfordshire's trees and woodlands contribute positively to these endeavours

Benefits provided by trees and woodlands

While trees provide a quiet backdrop to our daily lives, they also provide a constant and rich variety of unnoticed benefits for communities, businesses, and local wildlife. These include; improved health and wellbeing, soil water retention and water quality, reduced flood risk, air pollution and erosion, education and scientific advancement, wildlife habitat, a source of food, carbon storage, landscape and place making, urban cooling and warming, cultural history and connections, financial prosperity, protection from ultra-violet rays, increased property value, community connection and noise reduction.



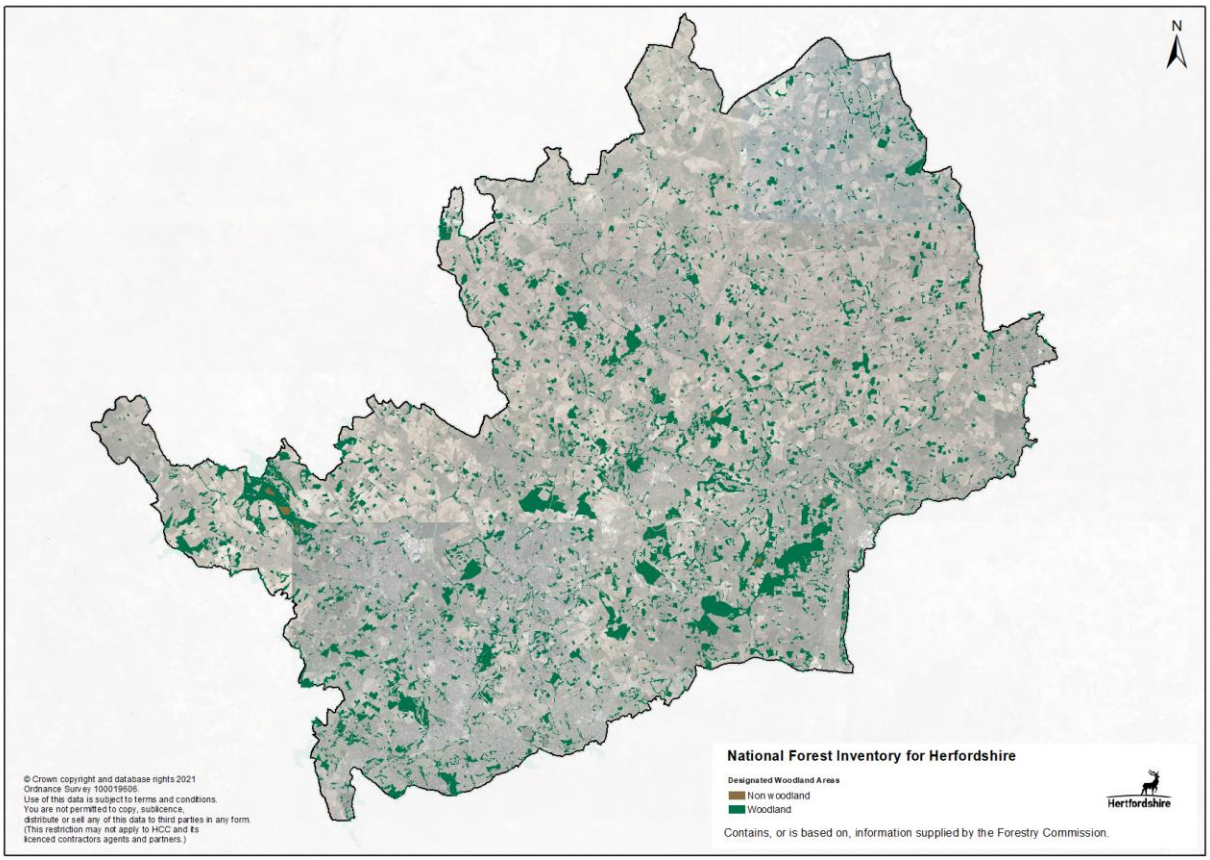
Hertfordshire's trees and woodlands

According to the National Forest Inventory, which records woodlands larger than 0.5 Ha, woodlands cover 10.75% of Hertfordshire[xv]. This compares favourably with England's overall woodland cover of 10%, but an increase in woodland cover will be required for Hertfordshire to support align with the government's target of 12%.

i-tree canopy is a citizen science project, a partnership collaboration between Forest Research, Trees for Cities and Brillianto. Following a scientifically robust assessment methodology using random point classification, it provides an estimate of total tree canopy cover for each of the UK's electoral wards. Thanks to Hertfordshire residents who generously volunteered their time to complete an assessment of the county's 178 district wards, this project estimates Hertfordshire's total tree canopy cover to be 21.4%, compared with an England average of 16.5%[xvi].

These figures highlight the important contribution that non-woodland trees – individual trees, hedgerows and groups of trees smaller than 0.5 Ha – make to Hertfordshire's treescape. Many non-woodland trees are found in Hertfordshire's urban centres as street trees, trees in parks and other public greenspaces, and in domestic gardens.

However, there is significant variance between wards, with some urban wards enjoying more than 6-times greater canopy cover than other wards.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National Forest Inventory for Herfordshire
Designated Woodland Areas
Non woodland
Woodland
Contains, or is based on, information supplied by the Forestry Commission.
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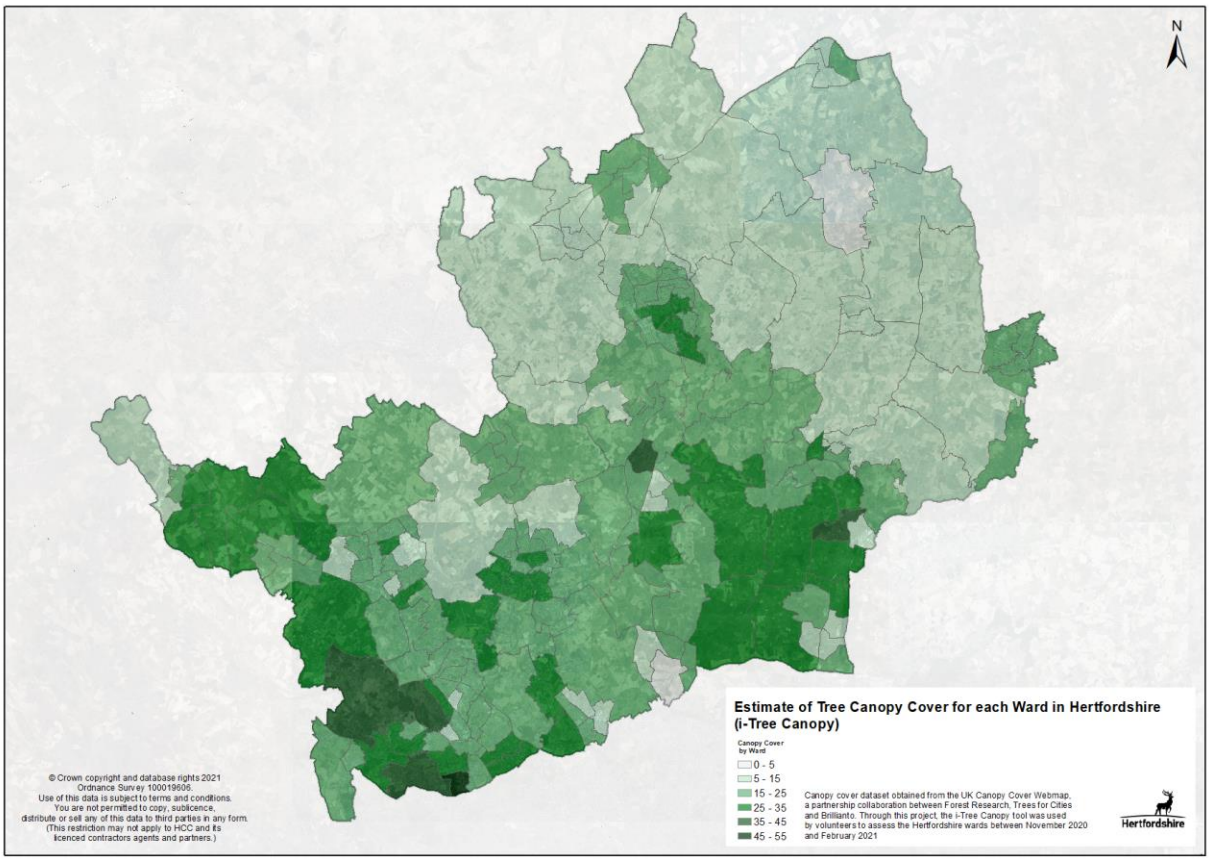
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Estimate of Tree Canopy Cover for each Ward in Hertfordshire (i-Tree Canopy)
Canopy Cover by Ward
0 - 5
5 - 15
15 - 25
25 - 35
35 - 45
45 - 55
Canopy cover dataset obtained from the UK Canopy Cover Webmap, a partnership collaboration between Forest Research, Trees for Cities and Brilliantio. Through this project, the i-Tree Canopy tool was used by volunteers to assess the Hertfordshire wards between November 2020 and February 2021
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Our trees and woodlands

The county council owns and manages over 200,000 trees along the county's highway network and on its built estate, primarily within the urban environment. On the highway network, many of these are managed through partnership working via Agency Agreements with tree officers in district and borough councils. We also own and manage approximately 460 Ha of woodland across our rural estate, including two woodlands which make up part of Hertfordshire's only National Nature Reserve, Broxbourne Woods. Our rural estate also features tens of thousands of individual and groups of trees outside of woodlands, as well as an extensive network of hedgerows.

Through analysis of the county council's tree and woodland portfolio, we are working to quantify the benefits they provide to local communities. Analysis initiated by our Highways service through an *i-Tree Eco* assessment shows that trees along the urban highway alone play a significant role. These trees can remove more than 11 tonnes of harmful air pollution[1] per annum. In addition, they can mitigate the risk of urban flooding by reducing as much as 21,700 m^3 of surface water runoff every year.

However, these benefits are not limited to urban areas. The same *i-Tree Eco* assessment shows that the county council-owned and managed sections of the nationally important Broxbourne Woods stores over 12,900 tonnes of carbon and continues to sequester almost 600 tonnes of carbon from the atmosphere every year.

The trees and woodlands across the county council's portfolio include or are part of a range of national and international nature and landscape designations. These include the Chilterns Area of Outstanding Natural Beauty, one National Nature Reserve, Local Nature Reserves, Local Wildlife Sites, Sites of Special Scientific Interest and Special Areas of Conservation. We also manage many trees located in Conservation Areas or which carry Tree Preservation Orders. These designations recognise the important nature and amenity value that our trees provide within the local landscape.

[1] Carbon monoxide, ozone, sulphur dioxide, particulate matter (PM) 2.5, and nitrogen dioxide

Our approach to trees and woodlands

What is a tree?

"The tree is more than first a seed, then a stem, then a living trunk, and then dead timber. The tree is a slow, enduring force straining to win the sky."

Antoine de Saint-Exupéry (French writer and poet)

Trees are living organisms with lifespans from tens to thousands of years. As slow growing organisms, trees can pre-date and outlast neighbouring manmade features and transfer between owners and management regimes throughout their lifetime.

Trees are woody perennial plants, typically growing with a single stem or trunk and bearing lateral branches. Their height and form can vary considerably between species, while location and management can also influence longevity, growth and can lead to multiple-stem form and increased bushiness.

While trees may grow to full height with spreading canopies, some common approaches to management can result in tree forms more like large woody shrubs. Hedges, for instance are typically only a few metres tall and wide but can produce dense leafy growth which provide many benefits in the right location;

- homes and travel corridors for wildlife,
- highly effective filtration of road pollution,
- visual and noise screening.

Given this diversity of common tree forms and the services that different trees can provide, we encourage a holistic approach to selecting, locating and valuing trees.

Trees within Hertfordshire's habitat network

Trees and woodlands are central to Hertfordshire's rich mosaic of natural habitats and play an important role in supporting local wildlife. However, Hertfordshire also benefits from other locally, nationally and globally important habitats; including species-rich grasslands and approximately 10% of the world's chalk rivers. Planning for the future expansion and management of Hertfordshire's trees and woodlands must take account of these other vital habitats to avoid unintended loss or degradation through well-intentioned tree planting.

The right tree, in the right place, for the right reason

The right tree, in the right place, for the right reason has become a familiar mantra for tree and woodland managers in recent decades. The importance of treescape design is exemplified in Hertfordshire's garden cities, Letchworth and Welwyn, and in its new towns, such as Stevenage and Hemel Hempstead. These urban centres benefit from retention of trees which pre-date modern-day construction and from their tree-rich landscape design.

Taking time to design and invest in high-quality treescapes can ensure that the trees we establish today will benefit the future communities of Hertfordshire hundreds of years from now. These decisions can be supported by inter-disciplinary collaboration and by a robust evidence base which informs the benefits of the right species mix in the right location. In so doing we can ensure that trees provide the required benefits for local communities.

Tree and Woodland Strategy Policies

TWSP1 – We will work with partners to conserve and enhance existing woodlands and treescapes, to safeguard the benefits they provide to wildlife and to local communities, businesses and visitors to Hertfordshire.

TWSP2 – We will practice and promote the importance of site evaluations prior to tree planting to avoid inadvertent damage to existing habitats.

TWSP3 – Using the mechanisms of Local Nature Recovery Strategies and Biodiversity Net Gain, we will work with local planning authorities, landowners and other partners to identify priority locations for tree and woodland cover.

TWSP4 – We will work with local planning authorities to produce best practice guidance for dissemination to developers and residents, which provides advice on locally appropriate species selection according to planting purpose, and on the ongoing maintenance requirements for trees in both the urban and rural landscape.

TWSP5 – We will work with partners to expand the available evidence base to inform decisions on tree planning and management and how these can enhance air quality, local wildlife, and the health and wellbeing of our communities.

Trees in towns and villages

Trees outside of woodlands comprise small groupings of trees, hedgerows and individual trees, present in either urban or rural settings. A recent inventory suggests that collectively trees outside of woodlands provide 742,000 Ha of canopy cover across Britain, which represents 3.2% of the total land area and 19% of all tree cover[xvii].

Comparing Hertfordshire's woodland cover (reported in the National Forest Inventory) with results from the *i-Tree canopy* project, it appears that canopy from trees outside of woodlands covers 10.65% of the county and account for almost 50% of Hertfordshire's total tree canopy. Much of this canopy cover is in towns and villages, either along the highway or in local parks or other amenity areas, as well as in domestic gardens. Here, the close proximity of trees to people can maximise many of the benefits they provide.

In addition to the amenity and landscape value of trees in urban centres, they also help regulate impacts, including excessive noise, air pollution, temperature extremes and flooding.

Managing trees in urban centres, close to where people live, work and play, requires expertise and committed investment. Not only do trees in these areas require more intervention to manage the small risk posed by trees; but the competition for above and below ground space can impede root and canopy expansion and consequently can make urban settings a more challenging environment for healthy tree growth.

In these settings, there can be greater value in tree management which conserves and maximises the benefits provided by existing trees, than in new tree planting without regard for available space. Consequently, an evidence-based approach to planning for and managing trees is beneficial, as this can help target planting in the most suitable locations.

Tree and Woodland Strategy Policies

TWSP6 – We will continue to support local planning authorities, developers and others to select the right tree species and right locations to deliver green infrastructure and biodiversity gains, both on development sites and on biodiversity offset sites.

TWSP7 – We will use evidence and expertise to inform suitable types of tree planting and to target urban centres where an increase in tree canopy is most needed and where it can have the greatest impact.

Landscape trees

In addition to urban street trees, other trees outside of woodlands include hedgerows, individual trees and smaller copses in agricultural or rural parkland settings. While trees in these settings can be further removed from larger concentrations of homes and businesses, they offer an important range of benefits both to people and wildlife.

As one of England's smaller counties, Hertfordshire comprises numerous mid-sized urban centres and smaller market towns, as well as a significant area of highly productive farmland. Consequently, space for largescale woodlands is limited, although Ashridge Forest, Broxbourne Woods and Heartwood Forest are notable exceptions. Alongside these larger woodlands are many smaller woodlands and countless copses which provide important habitat connectivity for wildlife, and cumulatively make a meaningful contribution towards reducing atmospheric carbon.

In addition, the UK is crisscrossed by a latticework of over 650,000 km of hedgerows. Approximately two thirds of these are actively managed with the rest being fragmented or in poorer condition. However, today's extent is less than half the length of hedgerows found across the UK 75 years ago[xviii].

Hedgerows have been recognised as a key pathway for the UK to achieve its net zero target, with the Committee on Climate Change including a 40% increase in hedgerow extent within its land use change scenarios[xix]. Hedgerows also act as wildlife corridors, providing forage and habitat for birds, insects and mammals. In addition, hedgerows can help slow flooding and prevent soil erosion by reducing run-off from fields into chalk streams and road drains.

Tree and Woodland Strategy Policies

TWSP8 – We will work with partners to promote and support the establishment of hedgerows and other landscape trees in suitable settings that support greater landscape connectivity.

TWSP9 – We will establish new hedgerows and other linear tree groupings along the county's highway network following an assessment of highway verge management opportunities.

TWSP10 – We will practice and promote a best practice approach to the management of hedgerows to halt and reverse declines in hedgerow condition (and consequently extent) in line with Defra's Hedgerows Standard.

Woodlands

According to *Hertfordshire's State of Nature* report, produced by the Herts and Middlesex Wildlife Trust, woodlands comprise 61% of the county's semi-natural habitat, while over one third of Hertfordshire species of conservation concern are associated with woodlands[xx]. The oak tree (*Quercus spp*) in particular is a cornerstone of Hertfordshire's woodlands; supporting some 2,300 species including birds, insects and mammals[xxi].

Woodlands are fundamental to Hertfordshire's landscape and cultural value. Hornbeam (*Carpinus betulus*) is one of the hardest and densest trees growing in the UK; its historic management through coppicing to produce firewood and charcoal is an important part of the county's cultural and economic past. Hertfordshire marks hornbeam's north-westerly natural range within Europe; as such, the county's characteristic oak-hornbeam woodlands comprise a significant portion of this habitat type present in the UK.

Alongside their value for wildlife, landscape and culture, well-managed woodlands can also hold significant stores of carbon, both in their above and below ground biomass and in their undisturbed soils. The county council-owned parts of Broxbourne Woods National Nature Reserve have been assessed as holding over 12,900 tonnes of carbon. Good management can ensure that this carbon remains locked up long into the future.

While the importance of woodlands within the county is not in doubt, recent reports (*Hertfordshire's State of Nature* report and the *State of the UK Woodlands* report) raise concerns that while woodland extent is increasing, declines in woodland wildlife remain a cause for concern. This identifies the need for continued commitment to and investment in the management of Hertfordshire's woodlands, in particular Hertfordshire's remnant ancient woodlands which are the keystone for future woodland biodiversity.

Declines in woodland habitat condition are often a result of undermanagement, which typically stems from a reduced demand for locally grown timber products. However, in addition to a renewed drive to identify markets for timber, there is a growing emphasis on recognising and rewarding woodland owners for the value that woodlands offer for the public good.

Tree and Woodland Strategy Policies

TWSP11 – We will work with partners to promote and support the establishment of new woodlands in suitable settings that provide locally appropriate benefits for wildlife and to local communities, businesses and visitors to Hertfordshire.

TWSP12 – We will practice and promote best practice approaches to woodland management, supporting partners by identifying external funding opportunities wherever possible.

TWSP13 – We will seek to establish a substantial area of new woodlands on the county council estate following a robust assessment of opportunities (delivered through an updated Rural Estates Strategic Review).

The role of succession and natural regeneration

Planting trees is a common and necessary part of maintaining and expanding tree canopy cover, particularly in non-woodland settings. Establishing new street trees in urban areas typically requires planting trees which are large and robust enough to outcompete other plants and to withstand vandalism. Tree planting can also be necessary in rural settings when establishing tree species which are not already represented in the soil seed bank.

Once a tree is planted, suitable aftercare – watering and weed suppression – must be in place for multiple years to ensure successful establishment. However, this approach to establishing new trees is resource-intensive, both financially and in terms of watering requirements, a notable concern as Hertfordshire is one of England's driest counties.

In some cases, and with adequate site conditions and preparation, trees can instead be established through natural regeneration from locally occurring seed sources where suppressive management or browsing by deer or rabbits is removed. This approach has limitations; it is more difficult to ensure the desired tree species composition, some ground preparation may be required, as may the installation of fencing to exclude wild grazing animals.

Natural regeneration is typically a longer and more unpredictable process than planting trees, but where successful it presents inherently greater value both for biodiversity and for soil carbon retention. It can also present a cost-effective option to woodland creation which is not limited by fluctuations in the availability of panting stock. More importantly, it is likely to result in young woodlands which are more resilient to climate extremes like drought.

Natural regeneration offers an additional benefit through the successional process of the developing habitat. While some wildlife thrives in mature woodlands, others rely on the mosaic of habitats produced by early-establishing and young woodlands. There is a growing appreciation for the value of 'scrub' within a habitat mosaic as part of a cycling ecosystem.

Tree and Woodland Strategy Policies

TWSP14 – Where practicable, we will practice and promote natural regeneration as the default option for woodland establishment.

TWSP15 – Where natural regeneration is not practicable, we will practice and promote the collection (and where possible recycling) of plastic tree guards and other resistant materials (mulch mats, membranes etc) post-establishment when these are used. We will also monitor developments in biodegradable tree guards and adopt and promote the use of viable designs.

Sustainable timber production

Before the decline in demand for timber across various industries and practices (building, manufacturing, heating, etc.), woodland owners would regularly invest in these assets through management interventions which ensured the continued production and extraction of timber product. In so doing they maintained habitats which supported a wide range of woodland biodiversity, while also ensuring an income for the landowner.

As the timber economy declined, so too has woodland management, and consequently the UK has experienced a decline in the condition of woodland habitats and in the species which rely on productive woodlands. Around 70% of the UK's demand for timber products is now met through imports[xxii], while domestically grown timber has increasingly been produced using fast-growing non-native conifer plantations. These woodlands are often grown under monoculture conditions which offer fewer opportunities for native wildlife.

Not only have these shifts in the forest economy led to reduced management in many native woodlands, they have also prompted a societal change in the way we view the active management of trees and woodland habitats. While the perceived value of trees has shifted away from timber production towards a wider suite of benefits, the planting design and management of trees and woodlands should not treat these outcomes as mutually exclusive. A well-planned productive woodland can deliver a variety of public goods, while also providing a financial return to the landowner to ensure its continued management.

Sustainable tree and woodland management should consider the destination of the timber product at the design stage and at the inception of any new management plan. The aim should be to derive as much benefit from the timber product as is feasible, while ensuring continued provision of the other desired non-timber benefits. Producing and harvesting timber without an intended market is a wasted resource and misses the opportunity to lock-up carbon in the form of timber products or to replace the use of fossil fuels by using wood as an alternative heating source. Sustainable use of trees and woodlands should also consider and identify local markets for timber products, both to shorten supply chains and transport costs and emissions, and also to ensure demand for trees which are suited to local growing conditions.

Tree and Woodland Strategy Policies

TWSP16 – Where practicable, we will practice and promote the principles of productive forestry as a component of woodland design and management to improve woodland condition and offset the costs of management.

TWSP17 – We will explore options for non-woodland timber disposal, following necessary safety felling, to maximise the benefits of this natural resource.

Carbon and biodiversity offsetting

Carbon offsetting

Increasingly, the design and management of productive woodlands should also realise the opportunity to secure funding through carbon credits. Certified schemes which administer carbon credits will allow landowners to generate a financial return on their investment by producing a timber harvest which removes and stores atmospheric carbon.

In the Sustainable Hertfordshire Strategy, the county council has set an ambition to be carbon neutral in our own operations by 2030. While a significant emissions reduction is our priority, it will not be possible for the county council to completely eliminate all emissions by 2030. Therefore, the remaining emissions will be offset through natural carbon sinks, such as trees and woodlands.

However, as only a small quantity of atmospheric carbon is removed in the first ten years of tree growth, planting trees on the county council estate will only partially support a carbon offsetting strategy. Furthermore, while carbon credits are currently relatively inexpensive, the value of this market is predicted to increase. Consequently, early investments in carbon offset initiatives would enable the county council to maximise its offset investment, alongside an ambitious approach to emissions reduction.

Biodiversity offsetting

The Environment Act's introduction of Biodiversity Net Gain will establish new funding opportunities to enhance treescapes and other habitats. While developers will be encouraged to deliver biodiversity within the development, Biodiversity Net Gain will also provide an opportunity for developers to offset biodiversity.

The Environment Act has also iintroduced a requirement for Local Nature Recovery Strategies, an England-wide system of spatial strategies that will establish priorities and map proposals for specific actions to drive nature's recovery and provide wider environmental benefits. These strategies will guide the preferred location and nature of biodiversity offsets, enabling a strategic approach across the county.

Incorporating Biodiversity Net Gain and developing a Local Nature Recovery Strategy for the county will involve close partnership working between with local planning authorities and a wide range of other partners. These two initiatives will provide fresh approaches to create and enhance local habitats, including opportunities for trees and woodlands.

Tree and Woodland Strategy Policies

TWSP18 – We will explore opportunities for unavoidable carbon and biodiversity offsetting which delivers meaningful improvements to the extent and condition of vital treescape habitats.

The drivers and benefits of active management

Today, woodland management includes a range of activities; installing interpretation boards and facilitating access to enable communities to visit and enjoy local woodlands; removing unwanted or invasive species which can outcompete, stunt and damage more desirable species; installing fencing to exclude deer grazing from compartments where natural regeneration is being promoted.

However, felling trees to recoup the value in the timber remains an essential component of sustainable woodland management, even if the drivers behind that management may have changed. The financial support and incentives for woodland management enable the continued interventions which promote quality woodlands.

In addition to timber production, trees are felled for a variety of reasons; public safety, if a tree is dead, diseased, dying or poses some real danger to property or people visiting or working in the woodland; to thin the number of individual trees which were originally established, reducing competition for light and nutrients and promoting more vigorous and healthy growth in a smaller number of trees; to open up glades or areas designed as wood pasture, which provide important habitat for species which thrive in sunnier situations or in the edges between different habitat types.

Another aspect of active management includes ‘coppicing’ – felling trees close to ground level to leave a living ‘stool’ – which allows multi-stemmed regrowth. This produces less dense leaf canopies, allowing more sunlight to reach the woodland floor and promoting a greater diversity of wildlife.

Sometimes, extensive felling can occur when seeking to return a habitat to its historic condition. In the 1900s many long-standing broadleaf woodlands were felled for timber and replaced with plantations of conifer trees. In the UK, conifers support a different and reduced, range of wildlife and can alter a woodland’s natural processes. There is often a drive towards returning these plantations to broadleaf or mixed woodlands through gradual or wholesale removal of the comparatively new conifers and enabling broadleaf regrowth.

Tree and Woodland Strategy Policies

TWSP19 – We will practice and promote active management of woodlands in order to halt and reverse declines in woodland condition; and strengthen the financial viability of woodland assets to support ongoing management.

TWSP20 – We will engage with local communities and other stakeholders to raise awareness of the need for active management in order to maintain and improve woodland condition.

Tree Resilience and Recovery

Between 2000-2019, the UK saw a 360% increase in new tree pest and disease emergence, in comparison with the period 1970-2000. This represents 18 new emergences in 19 years[xxiii].

This can be attributed to an increase in global trade and to a drastic shift in climatic conditions, with wetter and warmer winters facilitating the survival of organisms which would not historically have been supported by the UK's climate.

The climate emergency is also impacting on tree health through prolonged periods of drought and flooding and through extreme and unseasonal weather events such as storms and late frosts.

These compounding issues are predicted to perpetuate a decline in tree health, which could result in significant financial and ecological costs, as well as increasing the risk to property and public safety. This prompted the county council to add Tree Health to its Corporate Risk Register in 2016.

According to the NTSG analysis in *Common sense risk management of trees*, the typical risk associated with falling trees is very low. However current predictions suggest that ash dieback (*Hymenoscyphus fraxineus*) alone could result in the failure and loss of up to 70% of ash trees in the UK[xxiv], the predicted societal cost of which has been quantified at £15 billion[xxv].

We have been working with a range of local and national partners to address the threats posed by tree pests and disease; including the Department for Environment, Food and Rural Affairs (Defra), the Forestry Commission, Forest Research, the Tree Council and the Woodland Trust. This engagement has supported the production of national guidance and has informed our local approach to tree pests and disease. This approach is set out in the Resilience Strategy (Appendix C) which was developed in collaboration with the Hertfordshire Tree Health Network. It was produced to help tree owners in Hertfordshire incorporate resilience planning into treescape management.

Tree and Woodland Strategy Policies

TWSP21 – We will incorporate and promote the principles within the Resilience Strategy to address the increasing pressure on tree health.

TWSP22 – We will continue to engage with other local and national organisations in order to share local learning, provide input into national policy and draw down updates on tree health from across the country.

Native vs non-native

Native tree species are those which colonised Britain between the end of the ice age, 10,000 years ago, and the formation of the English Channel. Through long association with the UK's native wildlife, native trees are often considered to provide more suitable habitat and are better suited to local conditions. However, some tree species which have been introduced into the UK since this period have become naturalised and are now widely accepted as part of our natural treescapes.

Woodland management sometimes includes efforts to reduce the presence of non-native tree species within a predominantly native species composition where there are concerns that non-natives could outcompete of hybridise with native species. However, as the climate emergency precipitates changing conditions, some tree species may become less well suited in parts of the county and other non-native species may present new opportunities for establishing resilient habitats. Also, an increase in tree species diversity can mitigate the risk of large-scale canopy loss resulting from pests and diseases which target specific species, or other pressures on tree health.

Trees in urban centres often include a mixture of native and non-native species, which provides canopy resilience and adds variety to the built environment. As such, non-native tree species do fill an important niche within Hertfordshire's treescapes.

Home-grown vs imported

Importing trees from outside the UK increases the risk of introducing pests and diseases which pose a growing threat to the biosecurity of UK's treescapes. Currently, many trees planted in the UK are imported from other countries. This is sometimes necessary, when sourcing certain non-native species for urban settings which cannot easily be established in UK conditions on a commercial basis. However, this trend also reflects the expansion of overseas tree nursery markets and reduced production costs and sale price.

Currently, the domestic tree nursery market cannot meet the total demand for trees planted in the UK; however, this is expected to change as investment in this market featured in the England Tree Action Plan. As more organisations commit to sourcing trees from UK nurseries, this will instil confidence in domestic markets to expand production.

Tree and Woodland Strategy Policies

TWSP23 – We will practice and promote tree species selection which is most appropriate to local conditions and future climates.

TWSP24 – We will adopt and promote a tree procurement protocol which requires that, where possible, all trees sourced are certified as sown and grown in the UK; or where this is not possible, that they be sourced from a nursery with "Plant Healthy" certification.

Ancient woodlands

In England, ancient woodland refers to areas which have retained persistent woodland cover since the year 1600. Over the centuries these woodlands have developed strong associations with the underlying soil and local conditions and provide an important habitat for local wildlife. They are also strongly intertwined into our cultural history. Nationally, ancient woodlands have become highly fragmented and now accounts for only 2.5% of the UK's land area.

Ancient woodlands comprise both ancient semi-natural woodlands (ASNW), which are likely to have undergone management but have retained overall canopy cover since 1600; as well as plantations on ancient woodland sites (PAWS) which are ancient woodlands which at some time have been felled and replanted with non-native species. While PAWS are a degraded version of ancient woodlands, they typically retain the original seed bank and can be reverted to a more traditional ancient woodland composition through sensitive management.

Like other woodlands, ancient woodlands are subject to deterioration from a range of factors, including cessation of positive management, grazing pressure, invasive species, squirrel damage and pollution. Given the comparative scarcity of these priceless assets, extra efforts should be made to ensure that ancient woodlands are conserved in favourable condition.

Veteran trees

Unlike ancient woodland, veteran trees lack a clear unambiguous definition. However, a tree is likely to be considered a veteran based on some combination of its great age; its age relative to others of the same species, existing in an overly mature stage of life or due to its biological, aesthetic or cultural interest.

Some groups further differentiate by identifying veteran trees which are old relative to others of the same species, referring to these as Ancient trees; however, given the importance and relative scarcity of all types of veteran trees we do not differentiate between these two tree types here.

The value of veteran trees is diverse, including their landscape and amenity value, their value for cultural and historical heritage, and their significant ecological value. Due to their great value and relative scarcity, all reasonable efforts should be made to retain veteran trees in the landscape. This can involve more sensitive and sometimes more costly interventions than would be typical. For safety reasons, it may not always be feasible to retain veteran trees; however, their removal shouldn’t be considered unless this is the only practicable solution.

Tree and Woodland Strategy Policies

TWSP25 – We will continue to work with local planning authorities to support the protection of ancient woodlands through the mechanisms available through the National Planning Policy Framework.

TWSP26 – We will practice and promote a best practice approach to ancient woodland management which seeks to revert PAWS to a woodland composition more typical of ASNW, and to maintain and improve the condition of these sites.

TWSP27 – We will practice and promote an approach to veteran tree management which aligns with the Veteran Tree Management Standard, ensuring that, if required, additional advice is sought from a VETcert qualified professional.

Managing and enhancing trees and woodlands

While the *Hertfordshire's State of Nature* report reveals a small increase in Hertfordshire's woodland cover since 1970, it also highlights significant declines in woodland wildlife. Wildlife declines have been linked to pests and disease, heavy browsing from wild grazing animals, and insufficient or unsuitable management. This suggests a need for improvements in the condition of parts of Hertfordshire's woodlands.

The *State of the UK's Woods and Trees* report also identifies a national need to enhance woodland management, calling for more deadwood, veteran trees and open habitat within woodlands, as well as greater diversity of tree species and age.

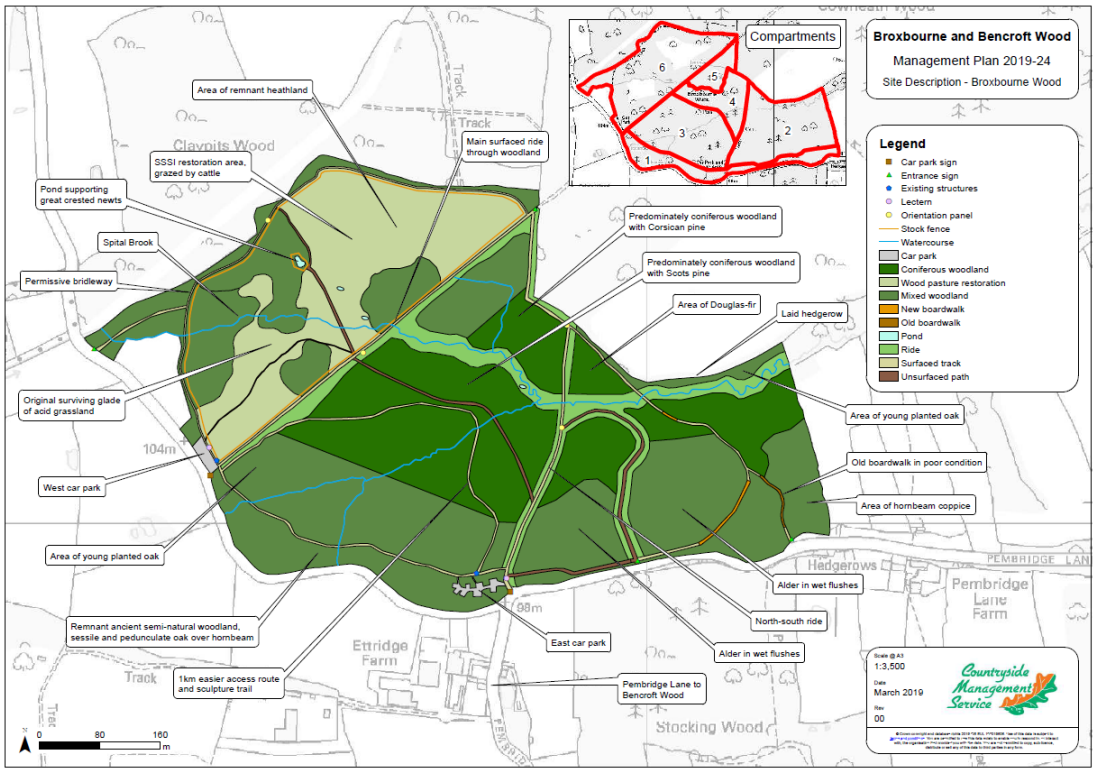
We will work with partners to provide advice and support for best practice woodland management and to enable any woodlands which show signs of decline to be placed on the road to recovery.

Woodland management plans

A management plan is a vital component of successful woodland management as it allows operations to be undertaken on a strategic, rather than ad hoc basis. Management plans can also support evidence of ongoing activity to support applications for certification and funding, track progress towards set objectives, and help woodland owners engage with and provide information to visitors.

We will ensure that all woodlands (minimum 0.5 Ha) on the in-hand part of the county council's estate are supported by management plans, and that an update on woodland condition and progress towards delivering management plan objectives will be reported on a biennial basis.

Additionally, we will work with the county council's agricultural tenants and other landowners in Hertfordshire that are seeking to enhance the management of their woodlands by supporting them to develop a site-specific woodland management plan.



Tree Resilience Strategy

The rapidly increasing emergence of new tree pests and diseases compounded by climate change and under-management has increased the risk of tree health decline. This could result in significant financial and ecological losses, as well as an increasing risk to property and public safety.

The Resilience Strategy (Appendix C) sets out principles for a local response to declining tree health. Not only will we seek to ensure that these principles are reflected in our own tree and woodland management operations, but we shall also promote these principles to our partners and ensure that all woodland management plans which we produce in collaboration with landowners give due regard to the resilience of their woodlands.

Restoration of Plantations on Ancient Woodland Sites

In response to the loss and fragmentation of ancient woodlands across the UK, these habitats are now subject to strict protections. However, many ancient woodland sites have been converted to plantation and no longer provide the full range of services for wildlife and local communities as they once did.

We will support landowners who wish to restore PAWS to ASNW. We will provide expert advice, support with grant identification and application, and where appropriate, additional funding and product market opportunities. We will work with landowners to support the improvement of these remnant habitats and seek to ensure that they are improved and conserved for future generations.

Support for Hertfordshire’s orchards

Fruit orchards offer an almost endless range of benefits; pollinator forage, carbon sequestration, a source of food production, landscape heritage, community engagement, and opportunities for education. However, despite this Hertfordshire’s orchards have experienced significant declines.

We will renew support for the Hertfordshire Orchard Initiative (a not-for-profit group which was established in response to rapid declines in Hertfordshire’s orchard and fruit heritage) and enable orchard restoration and reinstatement projects which are supported by landowners and local communities.

Tree Risk Management Framework

The daily operational management and maintenance of trees across the county council's estate is informed and directed by a collection of departmental tree management strategies. These strategies set out detailed processes for the management of trees and outline how the potential risk posed to people and property by trees will be managed at an acceptably low level.

The approaches set out in these key documents reflect the varied tree and woodland assets across the county council's estate. We continually strive to ensure that these management strategies are fit for purpose and as part of this process, the county council underwent a voluntary external review of its tree risk management processes in 2021.

We are working to review the recommendations of this audit and to incorporate these into our operational processes. As part of this we are developing an overarching Tree Risk Management Framework which will set out key principles and approaches for the management of tree risk across the county council's estate. This framework will also be informed by the National Tree Safety Group's (NTSG) anticipated revision of the *Common sense management of trees* guidance document, publication of which is expected shortly.

The Tree Risk Management Framework will not curtail the ability of individual departments to adapt approaches where this is necessary, but it seeks to ensure that our decisions are consistent and that our systems and processes make best use of resources.

Expanding and connecting trees and woodlands

The *Hertfordshire's State of Nature* report concludes that, unlike other habitats which have declined since 1970, the extent of woodland in Hertfordshire has increased during the past 50 years. Furthermore, the *i-tree canopy* results suggest that a significant portion of Hertfordshire's non-woodland area benefits from tree canopy.

Consequently, care must be taken to balance the need for more trees with the need to conserve other important and more scarce habitats. Locating new trees and woodlands in the right place can improve habitat connectivity and ensure that the wider benefits to communities are gained in the places where they are needed most.

We will work with partners to progress multiple initiatives to expand tree and woodland cover, both on the county council estate and across the rest of Hertfordshire.

Hedgerow networks

Although smaller in stature than trees with full canopy expansion, hedgerows provide ideal corridors which provide food, shelter and help wildlife move through open landscapes, bridging the gaps between other habitats. In the right location, hedgerows are also well suited to filtering airborne particulates and interrupting air and water flows that cause soil erosion or localised flooding.

Our ambition is to enable the establishment of at least 100 km of hedgerows by 2030. This is equivalent to the distance from Royston to Hemel Hempstead and back again.

We will connect with partners across the county to enable and inspire ambitious programme of hedgerow establishment and to provide advice on the best methods of management. These actions will reverse historic declines, thereby improving wildlife connectivity and air quality, and reducing soil erosion and flooding.

Wilding our parks

For many years, district and borough councils have found space to plant trees in public green spaces and as a result, new opportunities are now more limited. With competing demands for space from leisure pursuits and from other habitats, care must be taken to ensure that the establishment of new trees in public parks does not have negative impacts.

We will continue to work with district and borough council through the Hertfordshire Climate Change and Sustainability Partnership and other channels to identify opportunities to establish new trees and hedgerows in Hertfordshire's public green spaces. Through this collaboration, we will combine expert advice and local knowledge to identify and map areas which would be best suited to the establishment of new trees, hedges and woodlands, while being mindful of other habitat opportunities.

Queens Green Canopy

The Queen's Green Canopy is a unique tree planting initiative created to mark Her Majesty's Platinum Jubilee in 2022. This invites people from across the UK to "Plant a Tree for the Jubilee."

We will continue to play a leading role in coordinating the delivery of this initiative within the county, in close partnership with Hertfordshire's Lord Lieutenant, Deputy Lieutenants, and other key stakeholders.

We have set aside £200,000 to mark this historic occasion. This fund will be used to provide grant funding for local authority partners and community groups, and to establish at least 3,200 trees on our built, rural and highways estate.

Support for treescape creation

Various national initiatives are available to support landowners to plant new woodlands[xxvi] [xxvii]. Also, following the UK's exit from the European Union, the government has announced its intention to replace agricultural funding available under the Common Agricultural Policy with the Environmental Land Management Scheme (ELMS)[xxviii]. ELMS will pay public money for public goods and is expected to include incentives for treescape creation on eligible land.

Successful applications for such schemes often benefit from bespoke advice and support to help landowners choose the right scheme or combination of schemes. This can include support to navigate the application process and to design a scheme which complements the local landscape, environment and the landowner's business model.

We will work with landowners to create new treescapes; identifying suitable funding opportunities, developing the application, and providing project design and delivery.

The county council’s estate

We will explore opportunities for new tree, hedgerow and woodland establishment on the county council’s rural, built and highways estates, and where possible we shall seek to link new tree and woodland establishment on our own land with other local partners.

Woodland creation on the rural estate

The county council’s rural estate comprises approximately 4,500 Ha of farmland and greenbelt across the county. The majority of this land is managed through a portfolio of agricultural tenancies. Much of the remaining land is managed in-hand and includes a significant woodland holding, as well as land comprising other important local habitats.

Through an updated Rural Estates Strategic Plan, we will conduct an assessment of opportunities to create new woodlands on the rural estate. Development of this Plan is a significant and complex programme of work which must recognise and balance the various outputs that the rural estate is expected to deliver. The creation of these new woodlands is subject to the availability of suitable land which is both ecologically and strategically appropriate for this purpose. While confirmed targets will be informed by the Plan's development, our aspiration is to establish around 120 Hectares (Ha) of new woodlands.

The design of new woodlands will seek to minimise and mitigate tree-related risk and consequently the ongoing costs associated with tree risk management. Furthermore, we shall seek to offset costs associated with woodland management through grants, environmental credits and the sale of harvested timber. However, delivering a significant increase in woodlands on the county council's rural estate will require an ongoing investment in their management to ensure the new woodlands of today produce tomorrow's veteran trees.

Increasing tree cover on the built estate

The county council's built estate comprises a varied portfolio of properties which provide many different services to local communities. We will identify sites which are suitable for tree and hedgerow establishment where this is appropriate and does not impact negatively on other habitats or service delivery.

Replacing trees on the highway estate

We will adopt a policy of replacing all trees along the county council's highway estate which are removed for safety reasons. These trees will be replaced in or near the location from which they were removed, whenever this is practicable. The aim will be to replace trees by the end of the next financial year following their removal.

Increasing tree cover on the urban highway estate

When planting trees beside the highway, due consideration should be given to the potential risks that trees can pose to people and property. However, consideration should also be given to the benefits that trees provide, particularly in urban centres close to where people live and work; where these benefits are most acutely felt. We will use the *i-Tree canopy* assessment of Hertfordshire to identify urban wards with canopy cover below 15% and prioritise tree establishment in these wards. Where appropriate, we will seek to establish at least 100 new trees on the county council's highway estate in each of these wards, subject to on-site gap analysis to confirm viable planting opportunities, while recognising the importance of planting the right tree in the right place, for the right reason.

Increasing tree cover on the rural highway estate

A recent assessment of the rural highway verge network has identified opportunities to establish hedgerows and linear woodlands. This assessment will require further on-site ground truthing to confirm that both planting and ongoing maintenance can be delivered safely and practicably. We will aim to establish at least 10km of new hedgerows and 10 Ha or linear woodlands on the county council's highway estate by 2030.

Trees for schools

Within Hertfordshire's schools, there is a growing awareness of and desire to act in response to climate change. In addition to removing atmospheric carbon, trees in school grounds help with climate adaptation by providing areas of shade during hot breaktimes. But more than this, growing up surrounded by trees can enable new generations to embrace the value of nature and support students learn about environmental science.

We will offer all schools in Hertfordshire free trees and advice on how, where and when to establish them, enabling school children to take an active role in fighting climate change and to engage with local wildlife.

Engaging others with trees and woodlands

We believe that everyone who wishes to should be able to play a part in supporting and safeguarding plentiful and healthy treescapes across Hertfordshire. Consequently, we will promote, facilitate and reinforce opportunities for communities to contribute directly to initiatives which seek to expand, protect and enhance trees and woodlands.

We will encourage communities and businesses within the county to contribute to the ambitions set out in the strategy in order to reverse wildlife decline, improve air quality and combat climate change.

Community copse creation

We will establish a fund to enable Hertfordshire's town and parish councils to support community copse and other treescape creation and enhancement initiatives.

Through this fund, local communities can apply for funding to support the creation of new treescapes, from pocket-woodlands and orchards to larger scale projects. In addition to the fund itself, we will support communities to design and deliver habitat enhancement and creation projects that suit their local area and needs, help to produce a woodland management plan to guide long-term ambitions, and facilitate the establishment of suitable mechanisms for ongoing community-led woodland management.

Community tree watering networks

Trees are most susceptible to environmental stresses in the first few years after they have been planted. This is particularly relevant for street trees which are typically larger and require more care to ensure they establish successfully. It is essential that newly planted street trees are watered sufficiently during the hot and dry months of the year. Watering newly planted trees across the whole county is a costly exercise which accounts for a significant portion of annual tree planting budgets.

We will explore delivery of a pilot project to recruit community networks of volunteers to water newly planted street trees in their local area. By enabling communities to help share the challenge of establishing new trees, we will aim to double the number of new trees we plant on our highway estate in these areas and to assess the potential to expand this approach.

Free trees for communities and businesses

We will provide 100,000 free tree planting kits for residents to plant in domestic gardens, and for local businesses in areas of greenspace within commercial units. Kits will include a site-appropriate tree, cane, shelter, mulch, as well as planting and aftercare guidance.

This will allow residents and businesses to support the planting of up to 100,000 trees across Hertfordshire in both urban and rural areas; simply by providing a small piece of land and taking a hands-on approach to the county's treescape expansion.

Should residents also wish to make a financial contribution, we will be introducing two other opportunities for residents and businesses to make an impact.

Urban forest sponsorship

For residents and businesses that would like to support the expansion of canopy cover in Hertfordshire, but do not have access to appropriate outdoor space, we will provide an opportunity to sponsor a bespoke and publicly viewable programme of tree planting on the county highway network.

This planting programme will be above and beyond our other tree planting initiatives on the highway estate and will target areas across Hertfordshire that are more deprived and subject to greater health inequalities. Sponsorship contributions can be made by individuals, groups or businesses and will support the purchase, planting and aftercare of a tree or trees as part of this programme.

Donate to protect

Establishing trees along the highway is expensive and could be beyond the financial means of some residents. Furthermore, in addition to our ambition to support the establishment of 1.8 million new trees in Hertfordshire, we also recognise the importance of halting and reversing the global deforestation of vital woodland habitats, many of which have suffered huge losses. Should this continue, not only will other global citizens be affected, but it is expected to accelerate and increase the impacts of climate change around the world, including here in Hertfordshire.

To help combat global deforestation, we will establish a crowd-funding mechanism channel financial support from Hertfordshire's communities and businesses into the protection and restoration of important global woodland habitats. This will allow the pooling of Hertfordshire donations so support can be coordinated and concentrated where it is most needed.

In recognition of these generous donations, for every £1 donated through this funding mechanism, the county council will secure and set-aside an equivalent budget to support new tree and woodland establishment here in Hertfordshire.

Our target is to enable Hertfordshire's communities and businesses to donate £100,000, to help protect threatened global woodlands, and in so doing, enabling an additional programme of tree and woodland establishment here in Hertfordshire, up to a value of £100,000.

Glossary

25 year Environment Plan

The government's plan to improve the environment within a generation

Ancient woodlands Areas which have retained persistent woodland cover since the year 1600

Ash dieback

Ash dieback is a serious disease of ash trees caused by the fungus *Hymenoscyphus fraxineus*. It can cause bark lesions, leaf loss, crown dieback and tree failure

Biodiversity

The variety of plant and animal life present in an area

Biodiversity Net Gain

A policy within the Environment Act designed to deliver biodiversity enhancements through planning and development

Common Agricultural Policy

System of funding available to farmers within the European Union

Climate change

The changing trend in global climate patterns

Conservation area

Areas designated by local planning authorities to protect places of historic and architectural value. Felling trees in conservation areas requires permission from the relevant authority

Environment Act 2021

Legislation intended to support the government's environmental agenda

Environmental Land Management scheme (ELMs)

The newly anticipated funding scheme which will pay farmers and landowners to deliver environmental benefits through agreed land management

Green infrastructure

Networks of multi-functional green space/features which deliver quality of life and environmental benefits for communities

Hectare (Ha)

A metric unit measuring 100 metres squared

Hertfordshire Climate Change and Sustainability Partnership (HCCSP)

The lead partnership organisation through which Hertfordshire's local authorities and LEP can collaborate on environmental, climate change and wider sustainability issues

Hertfordshire Tree Health Network

A network of local authority officers involved in the management of trees, focussed on issues effecting tree health

i-Tree Canopy

An online mapping tool which enables citizen scientists to provide quantifies estimates of tree canopy cover for a given electoral ward area

i-Tree Eco

A software application which is used to quantify the structure and environmental effects of urban trees and calculate their value to society

Local Enterprise Partnership (LEP)

Joint local authority-business bodies which promote local economic development

Local Nature Recovery Strategy

Spatial strategies to support nature recovery at a local scale

Local Nature Reserve

Part of the UK's network of statutory designated sites, intended to protect locally important wildlife and geology and to offer people opportunities to study, learn about and enjoy nature

Local Wildlife Site

Site identified and selected for their local nature conservation value; which protect threatened species and habitats, acting as buffers, steppingstones and corridors between nationally designated wildlife sites

National Nature Reserve

Part of the UK's network of statutory designated sites, intended to protect habitats, species and geology and provide opportunities for research

National Planning Policy Framework (NPPF)

Sets out the government's planning policies for England and how these are expected to be applied

National Tree Safety Group (NTSG)

Comprises industry experts with an interest in tree risk management

Native species

Species are those which colonised Britain between the end of the ice age, and the formation of the English Channel

Plantations on ancient woodland sites (PAWS)

Ancient woodland sites where the semi-natural woodland has been replaced with a plantation

Queens Green Canopy

Tree planting initiative created to mark Her Majesty's Platinum Jubilee in 2022

Resilience

The capacity to recover from negative pressures

Site of Special Scientific Interest (SSSI)

Part of the UK's network of statutory designated sites, intended to protect habitats, species and geology and provide opportunities for research

Special Area of Conservation (SAC)

Part of the UK's network of sites designated to protect habitats, species

Special Protection Area (SPA)

Part of the UK's network of sites designated to protect the habitats of migratory birds and certain threatened birds

Sustainable Hertfordshire Strategy

Hertfordshire County Council's strategic response to the Climate Emergency; it outlines how to create a cleaner, greener and more environmentally sustainable county

Treescape

A landscape including many trees or groups of trees.

Trees outside of woodlands

Trees or groups of trees covering an area smaller than 0.5 Ha

Tree Preservation Order (TPO)

An order made by a local planning authority to protect specific trees, groups of trees or woodlands in the interests of amenity

Veteran trees

A tree is likely to be considered a veteran based on some combination of its great age; its age relative to others of the same species, existing in an overly mature stage of life or due to its biological, aesthetic or cultural interest.

Appendix A – Tree and Woodland Strategy Aims

The Strategy includes 27 policy position statements which will guide the county council's approach to planning for and managing trees and woodlands. These policies, which are presented throughout the document, are collated here for ease of reference:

TWSP1 – We will work with partners to conserve and enhance existing woodlands and treescapes, to safeguard the benefits they provide to wildlife and to local communities, businesses and visitors to Hertfordshire.

TWSP2 – We will practice and promote the importance of site evaluations prior to tree planting to avoid inadvertent damage to existing habitats.

TWSP3 – Using the mechanisms of Local Nature Recovery Strategies and Biodiversity Net Gain, we will work with local planning authorities, landowners and other partners to identify priority locations for tree and woodland cover.

TWSP4 - We will work with local planning authorities to produce best practice guidance for dissemination to developers and residents, which provides advice on locally appropriate species selection according to planting purpose, and on the ongoing maintenance requirements for trees in both the urban and rural landscape.

TWSP5 – We will work with partners to expand the available evidence base to inform decisions on tree planning and management and how these can enhance air quality, local wildlife, and the health and wellbeing of our communities.

TWSP6 – We will continue to support local planning authorities, developers and others to select the right tree species and right locations to deliver green infrastructure and biodiversity gains, both on development sites and on biodiversity offset sites.

TWSP7 – We will use evidence and expertise to inform suitable types of tree planting and to target urban centres where an increase in tree canopy is most needed and where it can have the greatest impact.

TWSP8 – We will work with partners to promote and support the establishment of hedgerows and other landscape trees in suitable settings that support greater landscape connectivity.

TWSP9 – We will establish new hedgerows and other linear tree groupings along the county's highway network following an assessment of highway verge management opportunities.

TWSP10 – We will practice and promote a best practice approach to the management of hedgerows to halt and reverse declines in hedgerow condition (and consequently extent) in line with Defra's Hedgerows Standard[xxix].

TWSP11 – We will work with partners to promote and support the establishment of new woodlands in suitable settings that provide locally appropriate benefits for wildlife and to local communities, businesses and visitors to Hertfordshire.

TWSP12 – We will practice and promote best practice approaches to woodland management, supporting partners by identifying external funding opportunities wherever possible.

TWSP13 – We will seek to establish a substantial area of new woodlands on the county council estate following a robust assessment of opportunities (delivered through an updated Rural Estates Strategic Review).

TWSP14 – Where practicable, we will practice and promote natural regeneration as the default option for woodland establishment.

TWSP15 – Where natural regeneration is not practicable, we will practice and promote the collection (and where possible recycling) of plastic tree guards and other resistant

materials (mulch mats, membranes etc) post-establishment when these are used. We will also monitor developments in biodegradable tree guards and adopt and promote the use of viable designs.

TWSP16 – Where practicable, we will practice and promote the principles of productive forestry as a component of woodland design and management to improve woodland condition and offset the costs of management.

TWSP17 – We will explore options for non-woodland timber disposal, following necessary safety felling, to maximise the benefits of this natural resource.

TWSP18 – We will explore opportunities for unavoidable carbon and biodiversity offsetting which delivers meaningful improvements to the extent and condition of vital treescape habitats.

TWSP19 – We will practice and promote active management of woodlands in order to halt and reverse declines in woodland condition; and strengthen the financial viability of woodland assets to support ongoing management.

TWSP20 – We will engage with local communities and other stakeholders to raise awareness of the need for active management in order to maintain and improve woodland condition.

TWSP21 – We will incorporate and promote the principles within the Resilience Strategy to address the increasing pressure on tree health.

TWSP22 – We will continue to engage with other local and national organisations in order to share local learning, provide input into national policy and draw down updates on tree health from across the country.

TWSP23 – We will practice and promote tree species selection which is most appropriate to local conditions and future climates.

TWSP24 – We will adopt and promote a tree procurement protocol which requires that, where possible, all trees sourced are certified as sown and grown in the UK; or where this is not possible, that they be sourced from a nursery with “Plant Healthy” certification.

TWSP25 – We will continue to work with local planning authorities to support the protection of ancient woodlands through the mechanisms available through the National Planning Policy Framework.

TWSP26 – We will practice and promote a best practice approach to ancient woodland management which seeks to revert PAWS to a woodland composition more typical of ASNW, and to maintain and improve the condition of these sites.

TWSP27 – We will practice and promote an approach to veteran tree management which aligns with the Veteran Tree Management Standard, ensuring that, if required, additional advice is sought from a VETcert qualified professional.

Appendix B – Tree Risk Management Framework

The Tree Risk Management Framework is being developed concurrently with the rest of The Strategy with input from the Tree Risk Management Working Group. The draft framework will be presented to The Environment Panel for consideration in due course.

Appendix C – Tree Resilience and Recovery Strategy for Hertfordshire

Tree Resilience and Recovery Strategy for Hertfordshire

Produced by

Hertfordshire County Council

in consultation with the

Hertfordshire Tree Health Network

2022

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Executive summary

The Tree Resilience and Recovery Strategy for Hertfordshire provides a roadmap for land managers across the county to assess, plan for and enhance the resilience of Hertfordshire's treescapes.

Trees can play an important role in our response to the climate emergency, long-term biodiversity decline and pressures on public health and wellbeing[xxx]. However, the health of Hertfordshire's trees is facing an increasing range of pressures, including climate change, under-management and biosecurity failures[xxxi].

Tree and woodland managers can counter these pressures by identifying and delivering actions to help incorporate resilience principles into the management of Hertfordshire's treescapes.

Background

In 2018, the Department for Environment, Food and Rural Affairs (Defra) produced the national Tree Health Resilience Strategy[xxxii]; which outlines the government's strategic approach to ensure the nation's trees and woodlands are resilient to pests and disease. Between 2000-2021, Britain experienced a 360% increase in new tree pest and disease emergence compared with the period 1970-2000[xxxiii]. This represents 18 new emergences since 2000. The predicted cost of ash dieback alone has been quantified at £15 billion[xxxiv].

Pests and disease are not the only threats to the resilience of Hertfordshire's treescape. In 2012 Defra commissioned a climate change risk assessment for the forestry sector. This predicts that by 2080, changes in temperature and water availability could make the South East of England unsuitable for many common tree species and estimates a 30-50% increase in wildfires in the same period[xxxv].

In 2016 the Hertfordshire Tree Health Network was established, comprising representatives from Hertfordshire's county, district and borough councils. This has provided a forum to share information and opportunities to help partners prepare for and act against impending threats to tree health.

There is a growing body of research which advocates the wide-ranging benefits provided by trees including; habitat to reverse significant biodiversity losses, improvements to human health and wellbeing, purification of air and water, reduced soil erosion, and increased urban cooling[xxxvi]. Adoption of a comprehensive strategy to maintain and improve the resilience of Hertfordshire's treescape will help safeguard these benefits in the face of growing pressures on tree health

In 2019, Hertfordshire County Council committed to develop a Tree Resilience and Recovery Strategy for Hertfordshire, which has been done in consultation with the Hertfordshire Tree Health Network. This strategy provides a roadmap which can support all land managers in Hertfordshire to assess, plan for and enhance the resilience of Hertfordshire's trees. It follows the framework produced by Forest Research, Great Britain's principal organisation for forestry and tree related research, as a decision-making

tool to improve tree health and resilience. The strategy identifies threats to tree health in Hertfordshire and provides a foundation on which to establish action plans to address these at a range of relevant scales.

It should be used to guide the design and management of initiatives which aim to expand tree and woodland cover in Hertfordshire to ensure they offer long term resilience.

Hertfordshire’s treescapes

Hertfordshire’s treescapes comprise a mosaic of diverse woodlands and non-woodland trees and woody shrubs, established and sustained through varied management according to local needs.

These include;

trees in urban centres (formal planting and remnant landscape specimens)

trees in parks and greenspaces

trees and hedgerows along rural highways and other field boundaries

trees in historic parklands and formal gardens

other broadleaf and mixed woodlands

conifer plantations

copses and other non-woodland trees spread across Hertfordshire’s agricultural landscape

veteran specimen trees which may predate the local built environment

Benefits provided by trees in Hertfordshire

reduced air pollution

improved health and wellbeing

reduced flood risk

education and scientific advancement

wildlife habitat

food source

reduced erosion and soil protection

carbon storage

urban cooling and warming

improved water quality

improved soil water retention

cultural history and connections

financial prosperity

protection from ultraviolet rays

increased property value

community connection

noise reduction

landscape and place making

Threats to Hertfordshire's treescapes

Numerous factors threaten to disturb Hertfordshire's treescape. Where present, both the requirement for and choice of management may vary. Some threats are already present within the county, and of these some are expected to worsen in the future. Other potential threats have not yet reached Hertfordshire, but management may seek to prevent and prepare for these future threats. Current threats include:

Climate change

- Drought stress
- Root waterlogging
- Storms and extreme winds
- Unseasonal weather conditions (late spring frosts, high winter humidity)

Tree pests and disease

- Ash dieback
- Oak processionary moth (OPM)
- Acute oak decline
- Bleeding canker of horse chestnut

Urbanisation

- Root stress in built up areas
- Root damage caused by the installation of utility trenches
- Tree vandalism including fire and mechanical damage
- Loss of trees and green space through development

Invasive species

- Grey squirrel damage and deer browsing
- Inappropriate species establishment
- Infiltration of invasive plants from domestic gardens and inappropriate disposal of green waste

Under and inappropriate management

- Under-management
- Insufficient funding/resources or funding uncertainty
- Individuals planting or felling trees on land that doesn’t belong to them
- Insufficiently trained arboriculture operatives

Improving Hertfordshire's treescape resilience

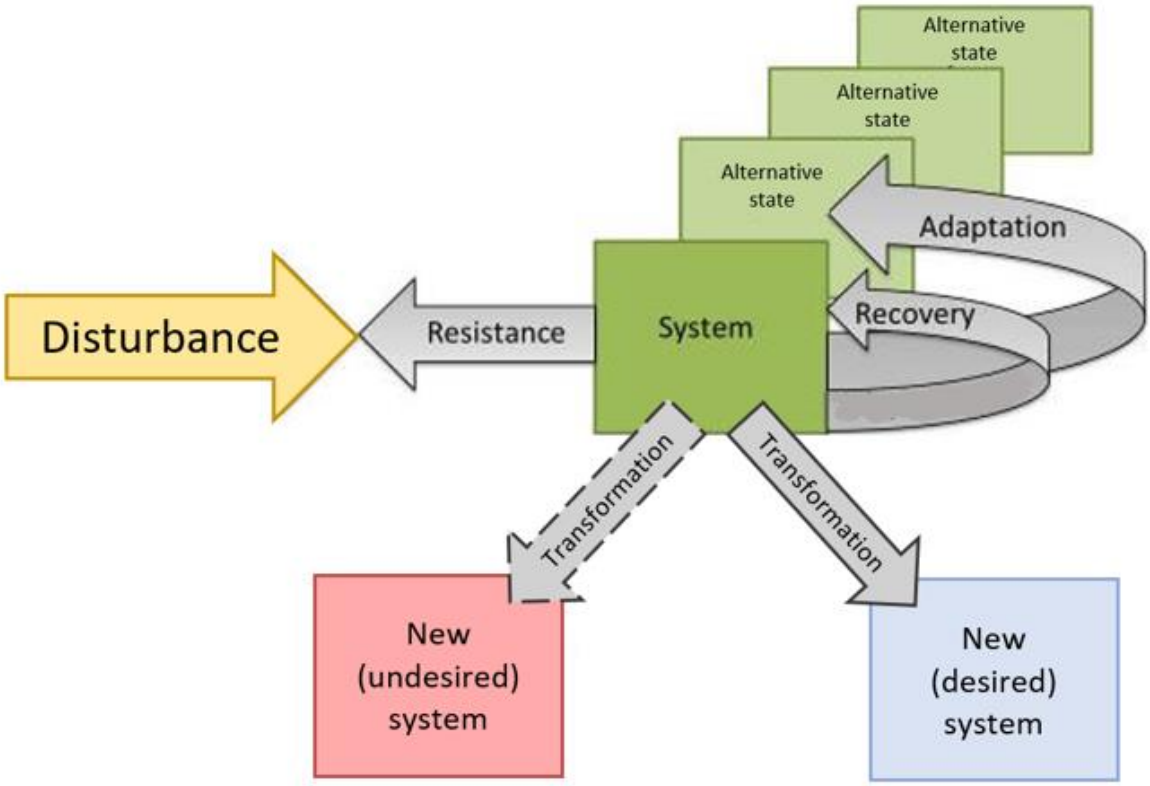
We can help secure the future of Hertfordshire's treescape by ensuring that resilience is a core principle at the heart of tree and woodland management.

What is resilience?

The term resilience is widely used across different sectors and disciplines. In the context of this strategy, resilience is the ability of Hertfordshire's healthy and functioning treescape to **resist**, **recover** and **adapt** to a range of pressures and disturbances, or to **transform** to a new state where necessary.

What is a resilience framework?

Forest Research, Great Britain's principal organisation for forestry and tree related research, has produced a framework which provides a methodology to assess how a treescape can be expected to respond to pressures/disturbance.



A treescape may **resist** disturbance, but if the disturbance is too great to resist, it may still be able to **recover** and return to its original state. However, if the disturbance is stronger or persistent, the treescape may have to **adapt** and return to a state similar to its original but changed in some way. If the disturbance is significantly stronger or more persistent, the treescape may need to **transform** into an altogether different condition that is no longer subject to the disturbance.

A practical example of this process is Ash dieback.

- **Resist:** Some ash trees appear to show either a genetic or environmental resistance to ash dieback. Consequently, a group of ash trees may be subjected to ash dieback spores, but be able to resist becoming infected
- **Recover:** While ash dieback commonly leads to tree failure, this is not true in all cases. Infection does not always progress through linear stages of decline and some ash trees appear to recover sufficiently from the original infection and only decline further if subjected to other stresses
- **Adaptation:** Ash dieback is thought to be particularly impactful in a woodland context, however some specimens may still resist or recover from infection. Consequently, the failure of part of the ash population within an ash-dominated woodland can open the canopy and allow new species to emerge, either through natural regeneration if the seedbank can support this, or through intentional re-stocking. In time this could allow the ash woodland to adapt into a more species diverse mixed broadleaf woodland
- **Transformation:** While some ash specimens can resist or recover from infection, ash dieback can lead to total population failure, particularly in even-age ash woodlands comprising young and semi-mature ash which often succumb more easily. In this scenario it may be necessary to fell the entire stand and re-stock with a new species composition. Such a transformative change would likely lead to a shift in the woodland’s flora and fauna

Many tree and woodland managers are already incorporating resilience into management practices to help maintain and enhance the health and functionality of Hertfordshire's treescape. Some examples of this are included throughout the document and this strategy will help mainstream these approaches and enable tree and woodland managers to

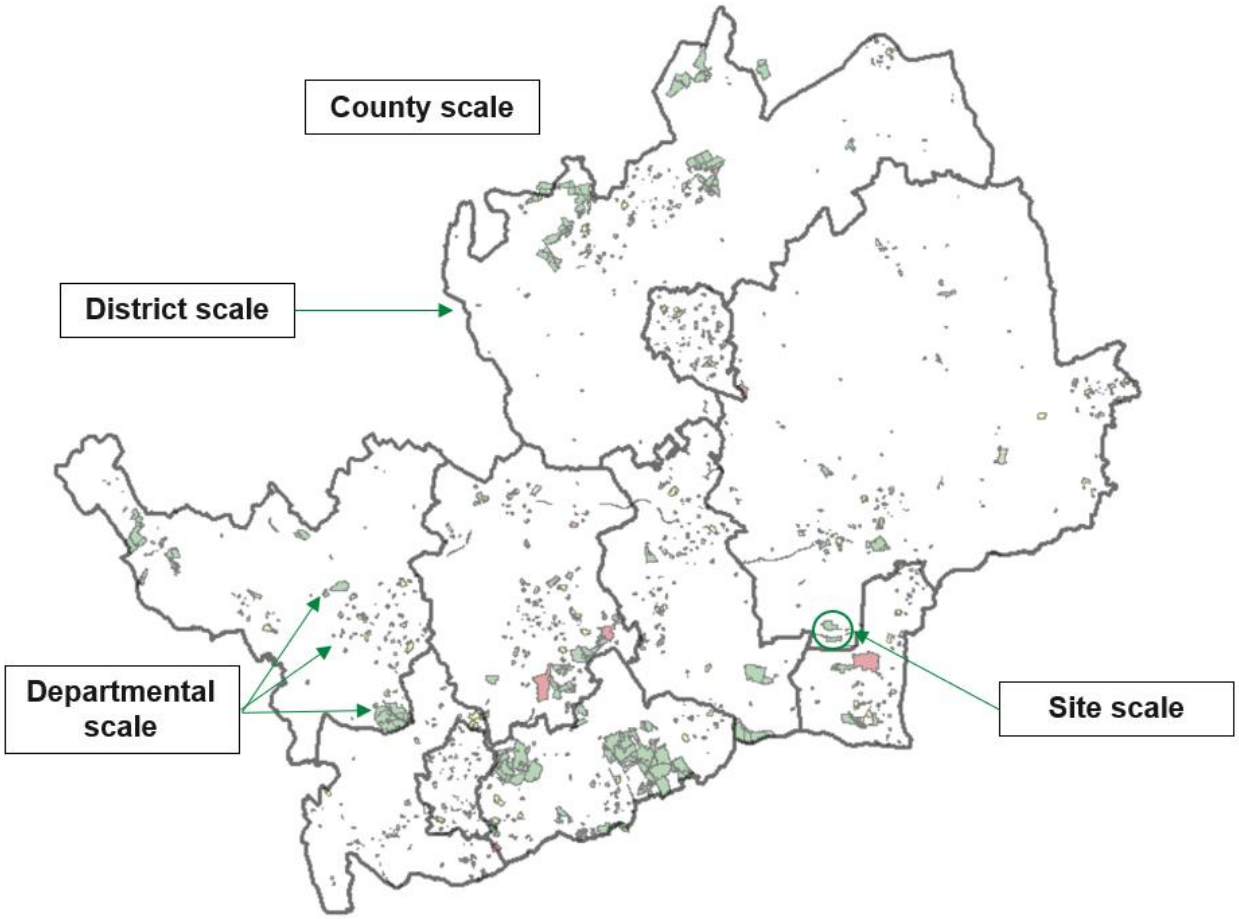
plan for disturbance, ensure necessary resources are in place, and respond proactively with a clear, informed approach.

Applying the resilience framework to Hertfordshire

Hertfordshire's treescape can be subdivided in numerous ways; by ownership, management responsibility, location and purpose. Therefore, the focal treescape could be a single site or a set of nested treescapes at various scales. For example:

- All the trees in the county or a single district/borough or ward
- The trees belonging to a single landowner or organisation
- The trees managed by a specific team or a department within an organisation
- A single site, or even a selection of trees with a site

The resilience framework can be applied within and across administrative boundaries and in collaboration with other partners, to inform and guide management decisions.



Guiding principles for Hertfordshire’s treescape resilience

As part of site or asset management planning, a treescape should be assessed to determine the specific benefits it provides, management objectives and possible threats to treescape health which may impact on the stated benefits and objectives. Following assessment, actions should be identified to ensure the maintenance and enhance of the treescape’s resilience to these threats. Action should consider and reflect five guiding principles for Hertfordshire’s treescape resilience, outlined below.

1. Bring trees and woodlands into active management

To achieve this tree and woodland managers should consider the following:

- Ensure management plans are in place for woodlands, greenspaces and other landscape tree assets to help guide multi-year management and access funding
- Implement inspection regimes which target likely plant health threats (these may be incorporated within general tree risk inspections)
- Address typical symptoms of under-management:
    - Assess requirements for thinning dense stands to support healthy growth
    - Assess requirements for fencing to prevent over-grazing and support natural regeneration
    - Assess requirements and potential for diversification (species/age/genetics) to ensure treescapes are less susceptible to large-scale decline
- Obtain and record monitoring data in support of funding applications

Great Ashby Woodlands

North Hertfordshire District Council is working with Hertfordshire County Council's Countryside Management Service (CMS) to deliver a Greenspace Action Plan for Great Ashby Woodlands by implementing continuous cover forest management. The objective is to encourage natural regeneration through selective, uneven thinning while maintaining the canopy, to increase understory light and removing competition from veteran trees, while also diversifying the age structure of stands ensuring long-term succession. Harvested timber will be used to generate income which will offset the cost of ongoing management.

2. Maintain and expand the tree canopy

To achieve this tree and woodland managers should consider the following:

- Support and engage with campaigns to promote tree planting
- Engage with landowners to provide advice on woodland management and to support planting opportunities
- Gap-up existing hedgerows and reinstate old hedgerows
- Following tree removal, consider future management when selecting appropriate replacements, ensuring *the right tree, in the right place, for the right reason*
- Think about trees holistically, not all settings are suited to large trees which will grow to full maturity. Smaller woody shrubs can be better suited to some settings and objectives
- Implement management to encourage natural regeneration where appropriate; through fencing or cessation/reduction of grazing/mowing
- Identify zones with the potential for new planting through desk-based mapping with surveys to ground-truth opportunities. This should also identify areas where tree planting would have a negative impact
- Identify areas where future canopy decline is likely (e.g. areas with a high prevalence of ash dieback) in order to develop and deliver re-stocking plans

Bishop's Wood

In delivery of the Greenspace Action Plan for Bishop's Wood, Three Rivers District Council and Hertfordshire County Council's CMS have begun restoration of this planted ancient woodland site (PAWS). This involves thinning plantation secondary woodland to encourage natural regeneration from the ancient woodland tree stock, thereby diversifying the age profile and species mix of trees on this site. Management also includes the introduction of a network of leaky dams which reduce surface water runoff to alleviate flood risk to nearby homes.

3. Improve biosecurity controls

To achieve this tree and woodland managers should consider the following:

- Establish plant procurement protocols which give strong weighting to biosecurity considerations, in order to minimise the risk of introducing pests and diseases. This may prioritise securing stock which has been propagated and grown in the UK, either from domestic seed (UK Sourced and Grown) or seed which has been imported in line with best practice biosecurity controls (UK Sown and Grown)
- When UK sown and grown trees are not available and alternative selections are not possible, ensure that trees are secured from nurseries operating a best practice approach to quarantine and supply chain management. The Plant Healthy certification scheme can be used to help identify suitable nurseries
- Follow sanitary guidance provided by Defra's agencies to reduce the risk of cross-contamination, e.g. Keep it Clean
- Require contractors to adhere to agreed procurement and biosecurity protocols
- Identify opportunities to contract-grow, guaranteeing a supply of UK grown trees to meet future requirements
- Promote national and local campaigns for the suitable management of green waste by residents and local businesses

Weston Hills Local Nature Reserve

North Hertfordshire District Council and Hertfordshire County Council's CMS are adapting two ash-dominated compartments within Weston Hill Local Nature Reserve which have deteriorated as a result of ash dieback. Funding has been sourced to support re-stocking using a diverse mix of locally appropriate tree species, which will follow an extensive programme of thinning to reduce the risk to public safety and enhance ground flora. These works are expected to support a wide range of biodiversity, while ensuring the woodland is more resilient in light of future tree health pressures.

4. Engage local communities and other stakeholders

To achieve this tree and woodland managers should consider the following:

- Seek to include local residents, visitors and other stakeholders in decision-making, where this is practicable
- Establish advocates and champions for tree management practices, such as Tree Wardens
- Identify opportunities to involve residents, visitors and other stakeholders in the maintenance and enhancement of Hertfordshire's treescape
- Local communities can support treescape resilience in many different ways:
    - Providing donations for tree planting
    - Providing land for planting
        - Small scale planting in domestic gardens
        - Large scale planting/establishment on more significant land holdings
    - Involvement in community/volunteer planting and maintenance initiatives
    - Involvement in planting aftercare schemes to support healthy growth and reduce damage to trees through anti-social behaviour
    - Volunteer tree health surveyors

Scrubbitts Wood

Hertfordshire County Council's CMS engaged with Aldenham Parish Council to formalise a Friends Group to support the management of Scrubbitts Wood, a greenspace valued by the community. CMS provided resources and advice to help the Friends Group establish. The Friends Group works to control invasive non-native species within the woodland and on the reinstatement of coppice management to increase sunlight for improved ground flora. The Friends Group have successfully expanded support for the wood through engagement with the local community and are working to identify funding opportunities.

5. Smart budgeting

To achieve this tree and woodland managers should consider the following:

- Establish tree risk management practices which are appropriate, balanced and practicable; under continual review and updated as necessary
- Review cost-efficiency of current tree management arrangements and consider alternatives; e.g. in-sourcing / out-sourcing operations, de-coupling tree inspections and works to ensure separation between the two operations
- Estimate changes in the cost of management through long term financial planning; e.g. increased prevalence of OPM, increased tree planting
- Regularly review management costs with budget holders and stakeholders
- Continually review opportunities for external funding
- Utilise tools such as *i-Tree Eco* and Capital Asset Valuation of Amenity Trees (CAVAT) pricing to quantify the benefits provided by trees. Use data to secure continued funding and management support
- Co-ordinate activities to reduce costs; e.g. road closure coordination with other landowners to reduce management costs and local disruption
- Identify or establish local markets for timber, e.g. using timber from felled parkland trees for new benches

Broxbourne Woods National Nature Reserve

Hertfordshire County Council has engaged with Defra, Forestry Commission and Forest Research to develop a management plan for OPM at Broxbourne Woods National Nature Reserve. This will adopt a risk-based approach to OPM control as part of a trial programme which Forestry Commission has instigated with trusted partners. Management will preclude control through insecticidal sprays (which are harmful to other important Lepidoptera species) while ensuring acceptable levels of public safety using methods which are practicable, adaptive and achievable in both the short- and long-term.

Resilience principles in practice: Checklist

This Resilience checklist can support treescape assessments and the production of action plans to help improve treescape resilience.

Availability of information

- Identify available treescape information
    - This will vary based on the size/type of treescape but may include the following: tree asset data, species records, soil/geological/hydrological data, maps of services and other built assets, national data detailing pest/disease ranges, history of past management, tree mortality records, remote sensing data, CAVAT scores, i-Tree survey
- Identify information that isn't currently available but is required to support ongoing management, and how this could this be secured

Surveys and inspections

- Confirm whether the treescape is inspected to manage tree related risk
- Confirm whether additional inspections are required to identifying tree pests/disease
- Identify any treescape surveys to ascertain habitat composition and to identify inhibitors of vigorous/healthy growth
- Identify treescape surveys to record biodiversity data

Features, benefits and aims

- Identify treescape features
    - This should include key habitat and species presence/composition; notable heritage features, opportunities for access and recreation; details of any site designations, TPOs/Conservation area status, and stewardship commitments; the treescape's context of the wider landscape
- Identify specific benefits provided by the treescape

    - Consider the full range of ecosystem services, emphasise those which are particularly pertinent to the specific treescape. Quantify where possible using supporting information
- Identify aims for the treescape
    - Refer to relevant national/local policies, other relevant strategies, existing site management plans, identified stakeholder aspirations

Threats

- Identify current threats to treescape resilience
    - These include both threats to the health of the tree stock and to their ability to provide functional benefits such as improved air quality
- Identify possible future threats to treescape resilience
- Consider levels of acceptable change
    - To what extend can the treescape resist / recover from / adapt to these threats?

Set actions

- Set actions to target the identified threats, with recognition of the treescape's features, benefits and aims
    - This should include who is responsible, other parties involved in delivery, relevant timescales, associated costings

Stakeholder engagement

- Identify stakeholders who should be involved with the development of the actions to maintain/improve treescape resilience
- Establish a process and timescale for wider public engagement to inform and seek support local communities
- Involve communities by encouraging volunteering and advocacy to support management
- Influence stakeholders to adopt best practice biosecurity principles

Scheduling works

- Ensure adequate supply of trees of appropriate quality and provenance has been secured for new planting initiatives
- Ensure tree risk inspections and management works are scheduled to ensure that no works are conducted at an ecologically sensitive time
- Ensure management is planned to cause minimum disruption for public access
- Ensure procedures in place to facilitate access for contractors conducting management works

Budget

- Ensure proposed actions have been fully costed
- Confirm whether budget has been secured for all proposed actions
- Ensure long-term costs and potential changes in cost have been considered
- Confirm whether all opportunities for cost-efficiency have been explored
- Confirm whether all suitable opportunities for funding have been explored and compared

Review

- Establish a process and timescale for a review of the effectiveness of prescribed actions and changes in threat level

Applying the resilience framework to Hertfordshire: Case studies

The following case studies provide a brief summary of how to begin the process of treescape assessment and prescribing actions to address threats to resilience.

Case study 1:

Broxbourne and Bencroft Wood, part of Broxbourne Woods National Nature Reserve

Features

A large woodland on the urban fringe comprising a mixture of oak, hornbeam and mixed conifer. This woodland contains a network of well used permissive footpaths and bridleways and provides habitat for a range of important insect, mammal and bird species.

Benefits

Significant opportunities for access and informal recreation which support the health and wellbeing of Hertfordshire's residents and the wider public; a source of food and habitat for biodiversity; important landscape character as oak/hornbeam woodland is rare within the UK.

Value

Tools are available to calculate the values of the benefits provided by trees, e.g. i-Tree Eco survey, CAVAT, both in terms of a fiscal value and environmental impact, e.g. the quantity of water runoff prevented as a contribution to flood risk mitigation. This valuation step may not be required in all cases but can help quantify the contribution made by trees in a specific area. In this case, costs associated with site management are offset by sales from timber produced through thinning of conifer stocks as well as a range of external funding mechanisms. Quantifying this revenue is an important step in understanding long-term management costs.

Objectives

The site is managed according to a management plan developed in partnership with Natural England and the Forestry Commission. The coniferous compartment is managed to produce a timber crop while allowing recolonization by broadleaf species through thinning. Part of the woodland is being incrementally felled to recreate a wood pasture habitat to improve biodiversity.

Threats

- The site is within the OPM migration range. Because the site has significant value for invertebrates, control of OPM by spraying would be inappropriate; however, the public health of visitors must also be considered
- Lack of natural regeneration of hornbeam and sessile oaks due to density of conifer plantation and competition from turkey oaks
- Inappropriate visitor actions which could lead to wildfires and woodland damage
- Fluctuation in the genetic integrity of the Site of Special Scientific Interest (SSSI) compartment which is an important example of lowland south-eastern sessile (with some pedunculate) oak/hornbeam
- Ambitions to increase regional tree planting resulting in overplanting of open compartments within the overall woodland structure which provide important habitat diversity

Site specific resilience actions

Action 1: Raising visitor awareness of OPM by posting signs at car parks and entrances. Collating species records to identify the significance of the site for local Lepidoptera species. Engaging with the Forestry Commission to agree appropriate management actions. Providing Practical Conservation Volunteers and Wood Wardens with the information required to identify OPM and understand the reporting requirements to enable an early warning system for new cases.

Action 2: Thinning conifers to produce a cash crop which covers management costs, while also opening canopy to encourage regeneration of native broadleaf species. This is also achieved through broadleaf coppicing and small clear fells to create glades. Turkey oaks to be removed or veteranised.

Action 3: Ensure re-stocking is achieved only through natural regeneration or by planting specimens grown from seed sourced from site. Ensure re-stocking does not take place in areas identified as wood pasture. Increase awareness of the value of this habitat within the woodland's overall composition.

Action 4: Engage local communities to bring together regular users of the woodland. Local communities can enhance woodland management, promote positive use of the site, deter improper use and alert officials when this is observed. Such engagement can also ensure woodlands are managed in line with local community aspirations.

Overarching resilience actions

Action 1: Developing a risk-based approach to OPM management across all county council land holdings. The aim of a risk-based approach to OPM management is to identify and the most appropriate control methods and limit controls to those which would have the significant impact on reducing the risk to public health.

Case study 2:

Highway trees in Potters Bar

Features

The composition of the Highways treescape in Potters Bar is predominantly a monoculture of mature ornamental cherries, plums and horse chestnuts. The majority of the trees display the kind of defects commonly associated with species of this age and type, such as pruning wounds and copious amounts of established epicormic growth. These species are suffering from leaf miner and bleeding canker of chestnut. Both issues are chronic and widespread throughout the chestnut population and due to the monoculture nature of the tree stock in some areas, it will become epidemic. In the Potters Bar area alone, the county council manages approximately 2,000 trees of the above species.

Benefits

In Potters Bar, trees managed by Hertfordshire Highways provide aesthetic benefits to the area. Spring blossom adds character and charm to the highway network, while also supporting pollinators. Trees also support biodiversity through the provision of habitat for birds and invertebrates, improve air quality by filtering particulate matter, provides important urban cooling during hot summer months, and reduces pressure on the sewer system by slowing the rate of water runoff during periods of heavy rain.

Value

Tools are available to calculate the values of the benefits provided by trees (e.g. i-Tree Eco survey, CAVAT), both in terms of a fiscal value and environmental impact (e.g. the quantity of water runoff prevented as a contribution to flood risk mitigation). Hertfordshire Highways has commissioned an assessment of its tree stock to generate an i-Tree report and CAVAT valuation which will be used to inform management decisions.

Objectives

To increase tree resilience and biodiversity by proactively managing the tree stock. A phased removal of over-mature trees and poor-quality cherry and plum species, to be delivered through the existing three-year survey cycle alongside, and supported by appropriate re-stocking, to begin the process of replacing the ageing monoculture with a more diverse age and species range. The primary objective is to adapt the treescape to take a whole ecosystem approach which improves biodiversity, landscape and treescape resilience.

Threats

- Ageing tree stock; as trees reach the end of their natural lifecycle the risk to public safety increases, making them potentially unsuitable for their highway location
- Monoculture; the concentration of a limited number of species makes the tree stock more susceptible to pests and diseases
- Shifting climatic patterns and extremes
- Increasing prevalence of pests and disease, including OPM
- Root compression and lack of soil volume
- Root damage and basal damage from grounds maintenance operations

Site specific resilience actions

Action 1: Felling over-mature and poor-quality specimens through the existing three-year survey cycle alongside, allowing for new and appropriate trees to be planted. New trees to be planted to be chosen from a diverse range of suitable native specimens. Planting in this way will refresh the treescape and enhance biodiversity.

Action 2: Selecting species to plant which reflect the anticipated climatic challenges Hertfordshire will face in the future. Periods of drought are predicted to become more commonplace, therefore drought tolerant species such as *Gingko biloba*, *Quercus cerris* and *Sorbus torminalis* should be incorporated. Selecting trees that are tolerant to pollution and can actively reduce pollutants in the air is also crucial when planning tree planting in the urban area of Potters Bar.

Overarching resilience actions

Action 1: Engage with Highways Development Management to provide specialist advice and input into Highways development plans, thereby ensuring that sufficient above and below ground space for trees is designed into developments.

Action 2: Engage with contractors to raise awareness of tree ecology and appropriate management practices to enhance the protection of trees above and below ground and to ensure that newly planted specimens thrive.

Action 3: Review tree procurement and nursery protocols regarding biosecurity. Wherever possible, ensure trees purchased are UK sown and grown. Where UK sown and grown stock is not available and alternative selections are not possible, ensure that selected nurseries have robust biosecurity policies in place and operate to the highest standards as authenticated by approved national certification schemes.

Case study 3:

The county council's Rural Estate woodland portfolio

Features

The county council's Rural Estate includes approximately 4,000 Ha of tenanted agricultural holdings plus 400 Ha of woodlands, managed by officers, across eight districts within Hertfordshire. Trees across the sites are; within woodlands, open spaces, linear access routes, on agricultural land or alongside roads. Woodland sites are managed in-hand, including those within farm tenancies and some are let out to be managed by others. Most woodlands have public access however some are private. Woodlands range from newly planted to ancient. Due to the diverse and extensive nature of these woodlands, it would be advisable to consider resilience at both a site and an overall management level to identify key themes and actions which apply across a range of sites.

Benefits

The Rural Estate woodland portfolio aids in meeting the county council's policies and strategies, including Sustainable Hertfordshire, Pollinators and Health and Wellbeing. The timber from the woodland is used as a source of local materials, e.g. fencing and waymarker posts.

Value

Tools are available to calculate the values of the benefits provided by trees, e.g. i-Tree Eco survey, CAVAT, both in terms of a fiscal value and environmental impact, e.g. the quantity of water runoff prevented as a contribution to flood risk mitigation. This valuation step may not be required in all cases but can help quantify the contribution made by trees in a specific area. Costs associated with management are partially offset by sales from timber produced through thinning of selected sites.

Objectives

The woodlands are maintained in accordance with site specific management plans for a variety of objectives including biodiversity, public access, reduced water run-off, carbon absorption, landscape, timber and food.

Threats

- Climate change impacts (drought, flooding and extreme weather events)
- Pests and diseases (notably ash dieback and OPM)
- Deer and small mammal damage
- Even aged woodlands
- Unauthorised public use (fires, fly-tipping)
- Resource for active management constrained by emphasis on risk-only management of current funding model, leading to woodland degradation
- Reputational damage caused by limited public perception of how the Rural Estate is utilised and managed to support environmental objectives

Site specific resilience actions

Action 1: Use information on site hydrology, underlying soil type and tree species composition to identify woodlands most at risk of drought and flooding. Consider restocking with alternative drought/flood-tolerant species following routine

thinning and re-design of woodland structure to promote appropriate woodland understory/canopy composition to reduce impacts from drought and flooding.

Action 2: Identify opportunities to introduce species-appropriate fencing around new planting/coppice to provide exclusion zones for deer and small mammals. Identify routes for internal/external funding. Consider restocking using species with higher tolerance to squirrel damage in woodlands with large populations.

Action 3: Confirm existing management plans include programmes of proactive thinning / restocking to diversify stands and ensure continuous woodland cover.

Action 4: Engage local communities to bring together regular users of woodlands which suffer from harmful public use. Local communities can enhance woodland management, promote positive use of the site, deter improper use and alert officials when this is observed. Such engagement can also ensure woodlands are managed in line with local community aspirations.

Overarching resilience actions

Action 1: Through cyclical tree risk inspections, identify trees which present both an urgent and non-urgent risk of failure from high winds. Address urgent risks through existing risk management process. Consider non-urgent risks for removal as part of routine thinning programmes.

Action 2: Engage with The Deer Initiative and The UK Squirrel Accord to explore new opportunities for species control.

Action 3: Review management and procurement models. Develop costed action plan which prioritises activities according to available budget and identifies limitations caused by budget restrictions. Explore external funding opportunities.

Action 4: Increase public awareness of the contribution made by the Rural Estate woodland portfolio to climate change mitigation, air and water quality, biodiversity and other services. Promote these woodland sites as examples of best practice management to inspire and inform other local landowners.

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