

Woodland creation and tree planting for Biodiversity, Natural Flood Management, Recreation, Carbon Capture, and Urban Climate Mitigation

Carbon Neutral Cheltenham's ambition for 2030 contains a commitment to plant one million trees, but wisely does not rely on their contribution to carbon capture to meet its zero target. Locking up carbon is a critical role, but trees are the key to other elements of a climate change strategy. Although "The best time to plant a tree was 20 years ago; the second-best time is now", in considering tree planting, the most important thing is to identify the role we want that tree to play.

All land with woodland now, and that proposed for the future, is in private ownership. Some is owned and managed by conservation charities such as the Woodland Trust's Lineover Wood, but most is owned and managed by farmers and estate owners. No strategy can succeed without seeking their active engagement and support. Public greenspaces and highway verges are in public ownership, and discussion and negotiation with the County and Borough Councils will also be important.

A significant number of individual trees and some woods and tree belts are the subject of Tree Preservation Orders made under the Town and Country Planning (Tree Preservation) (England) Regulations 2012. We need to better understand where these TPOs have been made and whether they can play a role in developing this strategy.

Objective 1: Restoring existing and creating new native woodlands

Ecosystem Services

Natural woodlands have the potential to deliver a wide range of 'Ecosystem Services', which are the benefits people derive from ecosystems, i.e. raw materials; regulating services such as carbon capture, soil conservation and flood alleviation; and cultural services such as recreation and a sense of place. We believe that all of these are important in addressing our Natural Environment theme.

Goal: We will ensure that our existing and new woodlands deliver the optimal mix of ecosystem services for people and wildlife.

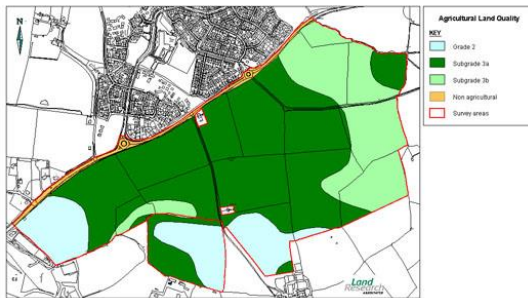
Appropriate and available land

Agricultural land in England has been classified by the Agricultural Land Classification of England and Wales into five grades. Grade one is best quality and grade five is poorest quality. Consistent criteria were used for assessment, including climate (temperature, rainfall, aspect, exposure, frost risk), site (gradient, micro-relief, flood risk) and soil (depth, structure, texture, chemicals, stoniness). Maps have been digitised and copyright is held by Natural England.

Large scale tree planting and increasing woodland cover by natural wilding, should probably only be considered on Grades 3b, 4 & 5 land. However, Grades 4 and 5 land are often of higher value for their biodiversity, because the physical constraints have historically prevented intensive agricultural use.

The farmland and woodland around Charlton Kings forms 75% by area of the parish and is entirely within the Cotswolds AONB. Much is Grade 3b. As an example of the potential for woodland planting, in discussions about footpath upgrades, the owner of one Charlton Kings farm has volunteered the view that much of the grassland on the farm, currently let on annual grazing licences, would be better used for public amenity than as relatively unproductive grazing land (although the two need co-exist where grassland is required). Woodland creation and work to enhance Natural Flood Management would be obvious alternative land uses.

ALC Subgrade 3b: Moderate Quality Agricultural Land.



This land is capable of producing moderate yields of a narrow range of crops (mainly cereals and grass) or lower yields of a wider range of crops, or high yields of grass (for grazing/harvesting)

Gloucestershire Wildlife Trust and Natural England hold copies of comprehensive habitat/land use maps that were compiled through field by field surveys in the 1970s and 80s. They are also a good way of identifying what land is best to plant and what not to plant because of its wildlife value. Phase 1 maps show broad habitat classifications, e.g. conifer/broadleaf/mixed woodland, 'unimproved' grassland, open water and Phase 2 maps give a more comprehensive habitat classification, e.g. Oak/Ash woodland, limestone grassland.

Goals: we will

- access and purchase the most recent ALC map for Charlton Kings by March 2021.
- by March 2021, we will have discussed the availability of their Phase 1 & 2 maps with GWT.
- identify land ownership – By March 2022, produce a land-ownership map of farmland and woodland in the parish.
- negotiate for the sale or lease of land – Hold talks now with interested landowners, to identify opportunities, barriers, likely costs, and level of likely interest. By March 2022, complete agreement to plant at least one new piece of woodland.

Sources of financial support

Woodland management and creation is a very expensive undertaking and our objectives cannot be achieved without making optimal use of government grants, developing public financial support, and harnessing the enthusiasm of landowners.

Goals: We will

- develop applications for Forestry Commission planting grants – By March 2021 we will have systematically researched and reported on current Forestry Commission grant schemes.
- create a directory of all grant making organisations connected with trees and woodlands by March 2021.

Planting - right tree, right place, right purpose

The final decision as to what types of woodland should be developed will depend on what mix of objectives is chosen and which are the most important in each location:

Goal: Timber production - Potentially important on easily accessible land but can be largely disregarded on inaccessible slopes. As the primary objective is to manage existing broadleaf woodlands and create long-term native broadleaf woodlands through new planting, most income will be created only in the long term.

- We will help landowners to achieve optimal income from existing woodlands so as to promote replanting and enhanced management.
- Planting plans for easily accessible land will seek to recover some costs through marketing thinnings, but realistically, most income will be long-term.

Goal: Landscape conservation - All Charlton Kings' plantable land is in the Cotswolds AONB, so it is vital to work within the parameters of their Landscape Character Areas.

- By March 2021, using the Character Area maps and descriptors from the Cotswold Conservation Board’s documents we will create a tailored map of potentially plantable land that meets the AONB criteria.

Goal: Carbon storage - Timber production from fast growing, mostly coniferous tree species that are best at carbon capture is not a priority here, where we are looking to create woodlands for centuries to come. There is, mostly, little to choose between the slower-growing broadleaved species, so other characteristics, e.g. native to the Cotswolds, may become more important.

- By March 2021, we will have researched the carbon capture characteristics of all potentially plantable tree species.

Goal: Natural Flood Management (NFM) - Charlton Kings is at the head of the extremely ‘flashy’ River Chelt and slowing down the flow of our rainfall will help us and Cheltenham to reduce susceptibility to flooding. More tree planting helps by:

- promoting higher soil infiltration rates
- direct interception of rainfall
- increasing water use through transpiration
- creating greater ‘hydraulic roughness’ i.e. water experiences increased frictional resistance when passing over land which can be increased by artificial means within established woodland.
- By March 2021, we will have re-engaged with researchers at the University of Gloucestershire’s School of Natural and Social Sciences, to access topographical and surface water flow maps of Charlton Kings and use their interpretation skills.
- All land where new tree planting is proposed will have an integrated NFM delivery plan.

Goal: Recreation - Building in recreational opportunities to areas of new planting and reassessing the recreational potential of existing woodland will be integrated into all plans. Spacing of new woodland blocks is important, as is the creation of glades and tracks.

- We will consider recreation opportunities as an integral element of the tree strategy.

Goal: Nature conservation and biodiversity - To create optimum overall biodiversity, it may be appropriate to use as a planting template, the species that woodland research has identified as forming the native components of woodland in the local area as shown in Lineover Wood or Timbercombe Wood. This has been described by the former Nature Conservancy Council’s woodland ecologist, George Peterken as a southern, calcareous, ash-wych elm stand type (1Aa) that has the following tree and shrub species. The constancy classes simply describe the likelihood of finding a species in any example of this woodland type, from v – in every sample, e.g. Hazel, to + - occasional, e.g. Yew.

Calcareous ash-wych elm stand type typical of Charlton Kings native woodlands		
Species	Constancy Class (ranked high v – low i/+)	Comments
Hazel	v	Identified as a high value carbon sink.
Ash	v	Ash die back disease currently renders new planting pointless
Wych Elm	v	Naturally a major component, but reduced by Dutch elm disease. Resistant varieties are now available to plant.
Field Maple	iv	Identified as a high value carbon sink.
Hawthorn	iv	
Pedunculate Oak	iii	Identified as a high value carbon sink.
Holly	iii	
Downy Birch	ii	
Small-leaved Lime	ii	An important tree in Lineover Wood
Wild Cherry	ii	

Elder	ii	
Beech		Not native this far north in the Cotswolds but a valuable tree, and locally planted
Hornbeam		Not native to the Cotswolds but planted locally and thriving.
Sycamore	i	Would not recommend planting in a native woodland mix as it will naturally invade
Spurge Laurel	i	
Spindle	i	
Privet	i	
Silver Birch	+	
Sessile Oak	+	
Midlands Hawthorn	+	
Crab Apple	+	Identified as a high value carbon sink.
Aspen	+	
Goat Willow	+	Identified as a high value carbon sink.
Whitebeam	+	
Yew	+	
Dogwood	+	
Large-leaved Lime	+	
Guelder Rose	+	

To validate these ideas, we will hold discussions with conservation organisations such as the Woodland Trust and Gloucestershire Wildlife Trust as well as with local landowners and specialists.

Objective 2: Greening our built environment

Within the 25% of Charlton Kings parish that is built-up, space is at a premium and thus only a relatively small number of new trees can be planted. They will therefore meet fewer goals than extensive areas of woodland, but do contribute significantly to some, and have a bigger impact in other areas such as people's mental and physical health. Research shows that:

- Trees increase a perception of beauty and promote feelings of well-being
- The shade provided by trees can significantly reduce our physiologically equivalent temperature - how warm we feel our surroundings to be.
- Gaseous air pollution is reduced – trees remove carbon, sulphur, and nitrogen dioxides.
- Some plantings can reduce noise pollution.

Improving the ecosystem services provided by highway verge trees

Gloucestershire Highways is responsible for the planting and management of trees on highway verges. There are some 7,500 highway verge trees in Cheltenham alone, so it is a significant responsibility, and values of landscape, biodiversity, and public enjoyment have to be balanced against public safety (and the potential liability costs). It seems as though over the years, larger highway verge trees in Charlton Kings have either been removed (as along Copt Elm Road) or replaced with small-growing ornamental species such as flowering cherry, wild service tree, hawthorn, crab apple.

Goals:

- Create an inventory spreadsheet of every street tree in Charlton Kings, identifying its species, height, condition, etc. and the state of any protective stakes and cages.
- Explore the concept of street tree guardians for every street, who monitor the condition of each tree, make recommendations, and look after 'their' trees.
- Begin engagement with GH Trees Officer to discuss the County Council's current strategy and any modifications we may suggest to new or replacement plantings and maintenance schedules.

More trees in our public green spaces

Charlton Kings is favoured by many green spaces, Most are public recreation fields – The Beeches, Grange Field, QEII field, Old Pats’ playing fields, but Newcourt Green also has the distinction of being recognised as a Public Green Space in the recently-adopted Cheltenham Plan. However, the total area of these public green spaces is not large, and they have to accommodate many, often conflicting objectives – recreation, games, trees, wildflower planting. Some have a wide range of tree species, to which the Parish Council is adding an annual increment of new, unusual, and disease-free specimen trees.

Goals:

- We will compile an inventory of urban greenspace, to identify potential tree planting areas.
- We will work with the Borough Council’s Senior Trees Officer to identify the type of each tree in our green spaces and create a GPS map.
- We will cooperate in identifying a long term, sustainable tree planting and replacement plan for every public green space.

Making the most of our private gardens

If 25% of the parish is ‘developed’, then at least half of that area must be taken up by gardens, small and large. Mature garden trees can make for uncomfortable neighbours with houses, but they add immensely to the character of our urban environment, as well as providing a range of ecosystem services.

Goal:

- We will develop a framework of engagement with residents to promote the retention and planting of trees in private gardens, compatible with the safety of houses and people, and the enjoyment of views and light.

CKPC

CK Futures

October 2020



CK futures is Charlton Kings Parish Council’s response to Cheltenham Borough Council’s declaration of Climate Emergency in 2019 and its commitment to a carbon neutral Cheltenham by 2030.