Meeting on Tree-Planting in Greater Cambridge Area
South Cambs Hall, Council Chamber
28th January 2019

Participants

Gemma Barron (South Cambs DC)
Wendy Blythe (FeCRA)
Sam Davies (Beacon Wood project)
Luke Engleback (Cambridgeshire Quality Panel)
Cllr Pippa Heylings (South Cambs DC)
Miriam Hill (South Cambs DC)
John Hollis (Environment Agency)
Neil Jarvis (Forestry Commission)
Tom Larnach (Conservators of the Cam)
James Littlewood (Cambridge PPF)
Matthew Magrath (Cambridge City Council)
Anne Miller (Carbon Neutral Cambridge)
Robert Murison (Cambridge City Council)
Robin Nicholson (Cambridgeshire Quality Panel)
Keith Sacre (Barcham Trees)
Cllr Katie Thornburrow (Cambridge City Council)
Stephen Tomkins (Cam Valley Forum)
John Tucker (Woodland Trust)
Sian Williams (Wildlife Trust)
Rob Wise (NFU)

Apologies
Sue James (Trees and Design Action Group)
Sara Lom (Tree Council)

This meeting was convened by Peter Landshoff and chaired by Pippa Heylings of SCDC at South Cambs Hall, Cambourne and involved key actors who share a desire to get more trees planted and habitat enhanced in the right places in the Greater Cambridge area, including alongside the River Cam which connects many of the areas to the city.

Pippa Heyland – The rationale for the meeting

In the Greater Cambridge area there is a deficit of trees and the services they provide for flood management, clean water, clean air, carbon sequestration and biodiversity. Many efforts are already being made. We need to understand: what tree canopy coverage we already have, both in the natural and urban environment; which places are appropriate for tree-planting and would benefit from the services they provide; who are the landowners and land-managers and what interest they may have in tree-planting; how we can work together to increase the canopy coverage; and how to consider the costs of tree management in the longer-term. During 2019, we are taking the first steps towards drafting a new Joint Local Plan for both Cambridge City and South Cambs. This will provide us with the opportunity to build a strategic and shared vision for the area, and identify potential strategic open space for biodiversity offsetting and for carbon sequestration. Meanwhile, we think much can be done if we take a participatory stakeholder engagement approach, and work together with land-owners, farmers and land-managers. Given the scale of growth in the wider area, we also need to consider how trees can be incorporated into planned developments and whether/where there could be offsetting. This could also include strategic tree-planting to address carbon neutrality for the large highways schemes crossing the district (recognizing that such tree belts would need

to be over 30 years old before they provide carbon-positive returns).

Keynote presentations and discussion summarised – Wendy Blythe

Matthew Magrath – Senior Arboritorial Officer for Cambridge City Council

City Council tree officers care for and maintain City trees as well as the street trees for the County Council. In 2016 the City Council adopted a tree strategy[1] taking an urban forest approach. The aim is to bring value to the urban environment regardless of ownership. The city's distribution and variety of trees is important in delivering that aim.

Canopy density varies across the city, with more canopy in the south and west but more trees in the north-east reflecting the relative ages of development. The aim is to increase tree canopy cover by 2% by 2050. *Forest Commision*[2] recommends an increase of 5% as a target for urban tree canopy. In Cambridge that would be an area equivalent to the size of Coleridge Ward. That is equivalent to 40ha per 1% for Cambridge. A 2% increase in planting was chosen on the basis this is achievable.

Modelling done suggested this increase could be achieved by planting 16,000 standard sized trees over 5 years, with 40,000 over 5 years required for 5% increase. Model assumes a thirty year period to reach the target. At current rates they would expect to plant 1,250 trees over a 5 year period in Council managed land, approx. a quarter of the land area of the city. Planting rate is determined by the mortality rates and designed to keep city sustainable in tree numbers.

Problem 1 - 16,000 trees is approximately equivalent to half the Council tree stock, illustrating the scale of planting that might be required to increase canopy. However, there are opportunities to make the task easier. They include:

- Prioritising planting where it will have the most benefits
- Encouraging land owners to plant on their own land
- Planting the easy options first

The greatest benefits in terms of cooling, storm water attenuation and health and well-being come from planting within the built environment itself.

- Areas of existing low canopy cover
- Areas of high social deprivation
- Areas of high flood risk
- Areas of high public access such as streets and parks
- Areas frequented by the vulnerable eg shade provision in schools and play areas
- Public engagement in order to incentivise tree planting on private land and gardens
- Maximising the potential of publicly owned land to carry tree cover, while this is a cost , these trees are available to everyone and therefore have a high value.

[1] https://www.cambridge.gov.uk/tree-strategy

[2] 'In principle, the Forestry Commission's minimum policy objective is that development ought, through Green Infrastructure provision, to lead to an increase in tree canopy cover by 5%' The case for trees in development and the urban environment https://www.forestry.gov.uk/pdf/eng-casefortrees.pdf/$FILE/eng-casefortrees.pdf

- Opportunities exist to make an inventory of, and plant up potential planting positions, especially positions in shrub beds or grass, which could significantly boost canopy in a relatively short period

Problem 2 - Both public and private development provide some of the best opportunities to deliver high quality tree planting, reducing subsidence risk which is expected to increase with climate change, or combining with SUDS

- We do not know whether planning has a positive or negative affect on tree canopy cover. This should be assessed.
- We do not know whether public infrastructure projects deliver on planning. Tool kits could be developed to assist decision makers in incorporating green infrastructure into projects and justify the investment.
- Simple metric could be developed to measure both public and provide canopy cover interventions

Miriam Hill – South Cambridgeshire District Council

South Cambridgeshire is not a large landowner. The land held is for small developments – 101 villages.

SCDC does not have its own data for the percentage of tree cover. National tree cover is 12.5% in non-woodland cover. The majority of SCDC trees are in villages. The Forestry Commission has data for each region. There is no woodland cover. When you look at a map you can pick out where all the trees are. Most of SCDC tree cover comes from non woodland tree canopy cover. SCDC do not have a tree canopy policy. There has never been a perception this is required. The trees are mostly on SCDC land. The County Council is the largest landowner and manages a great variety of trees.

SCDC has recently rejuvenated the tree warden network to ensure parishes get what they want. This is in the early stages, and there is a desire to do more tree-planting.

There is a need for more education (Forest Schools). SCDC did a small survey to establish the interest to do tree planting and found people were avid for information and interested in learning about community orchards and the management of new and existing trees.

It would be difficult to assess how many land owners would give land to woodland. Agricultural land in South Cambridgeshire is very high quality. This might change with microbreweries, these correlate with orchards. But so far there has been little development in this area. There is not much woodland craft industry either so again there has been no need to provide trees for this.

Existing settlements

The role of the parish council in delivering an increase in tree planting is critical and in using the media to generate interest in different planting styles and trees.

Proposed new settlements

There are lots of new towns planned and an increase in settlements. One of the barriers to more tree coverage is SUDs. Communities want native woodlands, but they do not want

shelterbelts etc. Landscape architects are stuck between developer and community. There is more opportunity for orchard planting than there is for planting shelter belts.

SUDs take up open space, they also have a higher design spec which makes it more difficult and costly to plant woods. But the council is working on this.

There are three characteristic South Cambs landscapes where trees are not common. How do we plant more trees here? But would this be appropriate?

Chalk meadows – trees are not a dominant feature in chalk meadow areas and down land

Fen cover - the water level has dropped substantially, this is across the whole of Fenland (water loss is less of an issue in the chalk areas for trees).

Native woodland – is it appropriate to diversify woodland cover in the county?

SCDC do not have much of an overview of the County Council's plans or landownership within the borough. They don't have a tree policy but they do have many linked policies.

The County Council is a land owner, but it is not clear what their tree priorities are. They also have very few staff. Cambridgeshire has one of the largest tenanted farm stock.

Anne Miller – Carbon Neutral Cambridge - Carbon and trees

SCDC and Camb City have rightly set a target to get to net zero carbon emissions before 2050.

Firstly we need to halve carbon emissions from housing, transport and industry every decade until the 2050s at least. We can then balance out the remainder by increasing current area of woodland by x4 (ie additional 90km2) and add say 5km2 of regenerated wetland peat.[3] As Cambridgeshire is one of the least wooded counties in the county, that x 4 increase would increase SCDC % of woodland cover from about 3% to UK average of about 12% woodland cover.

But that won't be enough to balance out the remaining carbon emissions if new roads are being built everywhere. That's where the idea of an East West Forest comes from: Highways England figures say A14 improvement scheme will generate an additional 5.4M Tonnes of CO2 in next 60 years. Forestry commission figures suggest that sequestering this needs an area of woodland/peat roughly 1km wide, each side of the whole 34 Km length of the A14 improvement scheme (ie 68 km2).

Pippa commented that one of the land owners along the A14 improvement scheme who had to give up his land for it would love to see a 1km belt of trees there.

Trees are good for carbon sequestration, but not magic. 30 year old trees might sequester 7 TCO2 /ha pa, very similar to typical UK yield of wheat.[4] To put it in proportion, note that

[3] Cambridgeshire is 3.3% woodland and south cambs area is 901km2. That implies current area of woodland in south cambs is about 30km2 If that's 30year old trees, they're sequestering about 700T/km2 or 21kT pa. which is 1.75% of S cambs current measured carbon emissions of 1.2M Tonnes pa.

[4]https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/651173/structure-jun2017prov-UK-12oct17.pdf

the UK average personal carbon footprint is about 15T CO2 pa. Other things work too, so in one experiment actively rebuilding peat sequestered over 60T/ha /pa.

It matters what the land was being used for, before the trees were planted. So for example, turning a peat bog into woodland would probably make things worse. Turning high intensity arable into woodland is good (from a Carbon sequestration point of view)

It matters that the trees are allowed to grow for their full lives, because tiny young trees do very little until they get big.

It matters what happens at end of the tree's life: The best options from a carbon point of view is probably to plant trees that get used for timber in buildings. They're then locking up the carbon for another 100 years or so, and are also replacing very high carbon brick and cement so have a carbon benefit of about 3 Tonnes/ Tonne of biomass. Producing Biochar is a relatively new way of sequestering carbon and also improve soil quality. The German firm Pyreg has interesting technology that it would be good to see used here. This could help create an income stream to incentivise farmers et al to create woodland.

Neil Jarvis – Forestry Commission

The Forest Service works with the private sector and gives advice about grants and stewardship.

Planting woodland for National Flood Management (NFM)
This is a double edged sword. Understanding the science of trees and water is important. A broad-leaved woodland canopy typically intercepts 30-40% of rainfall from reaching the soil. A mature broad-leaved tree on a summer day will use on average 265 litres a day per tree. Root mass allows infiltration and storage of water into woodland soils. Woodland also has leaf litter and this build up of rich soil too holds a lot of water that helps water storage and reduce run-off. Woodlands thereby create ''The Sponge Effect" which can mop up flash floods.

Tree roots stabilise and protect the soil from erosion, sediment does not enter water courses, the water carrying capacity of a drainage network is not reduced by the accumulation of sediment and therefore the network can cope better with flooding.

Trees hold water, 30% of a tree is water. Like a pump – they're very good at that. The surface of a woodland has a high hydraulic roughness that slows down water infiltration even more. Trees evaporate more water than grass or other types of vegetation. Soil porosity has been found to be 15-5% higher under woodland compared to arable land.

*Conclusio*n
Don't plant trees where you want some water. If arable land is drying out targeting where to put a tree belt is very important. The carrying effect of drains is relatively low. You cannot ignore the fact trees are needed in the right place for flood management.

Planting woodland to improve water quality

Phosphates and nitrates in rivers are a particular problem in East Anglia. The number of agricultural products going into food has reduced, but there is still the problem of trying to decouple farming products and water quality.

Woodlands planted in water catchments or along rivers as shelter belts develop root systems that can take up water borne fertilisers and agro-chemicals. Riverside shelter belts can help with spray drift too. They provide a barrier that prevents it from entering a drainage network. Trees act as a physical barrier above and below ground.

We need to emphasise to farmers that we are not talking about large belts of woodlands. The research shows narrow belts, 3 lines of trees 5-8m, will do lots of good. The phosphates can be almost entirely mopped up. The area of woodland required to improve water quality does not have to take up large areas of productive arable or development land. Even small woodlands can work as a sponge and filter for dissolved nutrients.

Discussion points

It is important to have a strategic framework.

Don't get into the detail of where to plant trees too soon, but engage with all the stakeholder groups and understand their aims and objectives.

Landscape architect Kim Wilkie's groundbreaking *Thames Landscape Strategy*[5] is still going strong twenty-five years later. Local communities were involved right from the start as key stakeholders in setting out priorities.

There should be a separate greening infrastructure workstream in the new Joint Local Plan for Greater Cambridge for natural capital, scenic and cultural value systems.

Community representation and local knowledge is important, as some of those engaging stand to benefit financially from natural capital decisions.

Lots of charities, including CPPF and the Wildlife Trust are also South Cambs landowners. The land is not just under Local Authority management.

The Cam Conservators (the statutory navigation authority for Cambridge from Bottisham Lock to Byron's Pool) are keen to diversify trees along the tow path. They have the time and the equipment to plant trees, but need pollarding expertise and funding for long term maintenance. The cost of pollarding is £120 per tree. The Cam fails WFD for phosphate. But if trees along the Cam could be used as a filter, so there could be a benefit for farmers, this might work as a strategy for tree planting and funding.

A narrow shelter belt alongside rivers would not only take up nutrients but act as a physical barrier and filter.

[5] http://thames-landscape-strategy.org.uk/

We should emphasise to farmers that we are not talking about large belts of woodlands but narrow belts acting as a sponge and filter for water borne compounds.Treeconomics[6] is a social enterprise who work with software models such as i-Tree[7], an American system (adapted for use in the UK) but widely accepted as the best tool, it is possible to measure the structure and composition of trees and the urban forests and establish what tree cover there is. There are three principal methods.

1) I-Tree Canopy, used by the Forestry Commission. This is a desk top exercise using Google maps, which gives canopy cover.
2) I-Tree Eco This sets out ¼ of an acre points and assesses the tree cover. (The magic number is 250). It values a number of different ecosystem services such as carbon sequestration, storm water attenuation, pollutant absorbtion – including values in monetary terms. See the London iTree Report[8] for the data available.
3) i-Tree Inventory.This can take a Local Authority tree inventory and measure ecosystem services as in i-tree Eco but without the need for sample plots.

Using an independent, evidence based approach such as i-Tree is important for public engagement and trust. How much is your tree population worth?

As a member of the Cambridgeshire Biodiversity Group[9] the Wildlife Trust is biodiversity mapping existing habitats across Cambridgeshire and Peterborough and identifying opportunities to create new areas of habitat. They are looking at the most important habitats and at wetland and farmland habitats to put trees in.

The mapping exercise looks at data from **Living Landscapes**, the habitat mapping of habitats to be more resilient to change. The Living Landscapes vision is to restore, recreate and reconnect wildlife habitats including SSSIs, Local Wildlife Sites and Nature Reserves, so that the species living within them can move through the landscape more easily and continue to survive and thrive long into the future. Northamptonshire have done their mapping, but they want to add ecosystem services, where the need is.

The Wildlife Trust is about to set out their strategic plan for the future. They want new data, but current mapping is using the best data. There is no new primary data.

A natural capital greening strategy for South Cambridgeshire would look at the financial benefits of ecosystem services. In London, £1bn in NHS admissions has been saved as a result of green space.

At the Natural Capital Committee[10], Dieter Helm is trying to change the mindset. As a nation we need to double the number of trees in the UK. How do we address that? The landscape has changed over the last 200 years.

[6] https://www.treeconomics.co.uk/
[7] https://www.itreetools.org/
[8] https://www.treeconomics.co.uk/projects/london-i-tree-project/
[9] http://www.cpbiodiversity.org.uk/who-we-are
[10] The 6th Annual report of the NCC has recently been published https://www.gov.uk/government/publications/natural-capital-committees-sixth-annual-report

How do we deal with the current agricultural situation and put back natural capital? And how do we increase the number of trees in a way that enhances? This is not just about dotting landscapes with woods.

The example of Rewilding at Knepp was referred to and Isabella Tree's book *Wilding*. She describes the successful Knepp initiative of letting scrub and trees rejuvenate naturally after decades of intensive agricultural farming and the impact this has had on increasing natural capital.[11]

There are two approaches to dealing with the current agricultural situation:

1) Land sharing – woodland, hedgerows, tree belts
2) Land sparing – where land is taken out of agriculture to be put back into woody, peat system, as in the Great Fen and like the rewilding Knepp initiative.

Manpower deficit issues are a hurdle. There are very few people in the team. But an officer framework will be necessary to make these ideas work.

The NPPF has Net Gain at its heart, but national infrastructure is exempt. This is a big issue for major schemes such as the OxCam Expressway. Major infrastructure projects and the cost of all the carbon going into them needs to be responded to as a concern.

Do not forget the other local benefits of tree planting. These relate to scenic and cultural value, heritage and archaelogy etc.

There are lots of people in farming keen to play their part. The issue locally is the high cost of converting arable land to tree cover. The land is high value for grain and fruit and vegetables. Natural Capital gives a value and we need to identify the opportunity and fund the incentivisation of it to farmers so that they can see where the value might exist. Essentially we need to cover the costs of it. However, there are big corporate businesses that want to do the right thing for the community.

Those promoting the Beacon Wood Project to offset carbon have been working with the county council for over a year to develop plans for a landscape corridor. The big question for the promoters is that of funding, who will pay.

It is not just a question of where to put trees and funding, but what are the most valuable uses of land and who decides about priorities and transparency about that.

The Agricultural Bill consultation is over and is now at report stage.[12] Formal consultation has been held on the Environmental Bill and further consultation is planned.[13]

What are the incentives? How many will participate in the Stewardship Scheme?

Are there other ways for delivering environmental measurement? There is a buoyant market for firewood, but trade in carbon in terms of creating new woodland is not an incentive because of the high value of productive land.

[11] https://www.theguardian.com/books/2018/jun/28/wilding-isabella-tree-review-farm-return-nature
[12] https://services.parliament.uk/bills/2017-19/agriculture.html
[13]

When you put lines on a map people have concerns about what that means. Landowners get very nervous.

There needs to be a development code of practice.

Highways need to be at the table.

***Further information since the meeting*:**

Keiron Doick has measured Cambridge's canopy using *i-tree canopy* as part of a study described in this paper:[14] Cambridge City Council's Proximitree study measurement (17.1%) is also in there for comparison. Cambridge falls slighly above the average and median values for this sample. This data has been added to an interactive map – which makes the data a bit more accessible: http://www.urbantreecover.org/ [15]

The Trees and Design Action Group's[16] submission to the Defra Consultation suggests a proportion of the fund for urban trees - perhaps £2 million - should go towards the setting up of a Living Laboratory to show how increasing canopy cover and improving areas of deprivation can be achieved as an exemplar project which can be monitored. The government funding has to be match funded, so the question is whether there would be a source of research funding to match this. NERC and academic links could be very useful. Dr Emma Ferranti at the University of Birmingham and Professor Alister Scott at Northumbria, both NERC Knowledge Fellows, may be able to help.

The Trees and Design Action Group suggest Cambridge may be a good place to experiment in this way - while there is good tree cover in the south-west, there is much less/not enough in the north-east and the demographics and socio-economic aspects are also interesting. Trees might make other useful improvements for example regarding health etc. and be a very useful 'living lab' on several counts.

The Environment Agency has published an online map of the potential for tree planting. This shows that they rate most of the land to the west of the Cam and Ely Ouse Catchment as "very high potential" for woodland planting. It covers the whole country, and lets you zoom in to see the potential in each tiny little river tributary.

Pippa Heyling - Agreed Actions:

1. **Additional Funding.** Tree Officers from SCDC and City to meet in w/c 4th February to review the government consultation on the new Challenge Fund (headed by William Worsley, the Government's Tree Champion) for tree-planting that includes urban and deprived areas; and to consider whether this could potentially be a source of funding for tree-planting, especially given the

[14] https://www.researchgate.net/publication/322337570_The_Canopy_Cover_of_England%27s_Towns_and_Cities_baselining_and_setting_targets_to_improve_human_health_and_well-being http://www.urbantreecover.org/

[15] https://www.gov.uk/government/publications/draft-environment-principles-and-governance-bill-2018/environment-bill-policy-paper

[16] http://www.tdag.org.uk/

unprecedented growth and change in the Greater Cambridge area, an area of high inequality. This would need to involve land-owners and land-managers (such as charitable & religious organisations, businesses, farmers) who manage woodland for public service, because SCDC does not have its own estate. The funds would also need to consider longer-term management of the trees planted.

2. Mapping out what we already have in terms of habitat. The Biodiversity Partnership is finalizing an Opportunity Mapping exercise which it can share with the group. The first phase of this mapping will be finished by March. This will provide information about biodiversity, habitats in the area (based on existing data) and opportunities, giving an indication of where it could be appropriate to plant woodland. The Biodiversity Partnership will share their work at the next meeting of this group in March. This does not go into detail of tree species (like iTree) nor include urban areas.

3. Environment Agency will share its recent Flood Management maps which include "potential maps" that are forest maps that show where new tree-planting could help flood management.

4. Additional "Ground-Truthing" to provide new information to complement the Opportunity Map. CPPF is seeking funding to undertake this exercise. SCDC will see if there is funding to support.

5. Request County Council involvement and cooperation regarding their maps and canopy coverage in land under their management. Explore their openness to tree-planting on their land.

6. Public Engagement. Roundtable with key stakeholders to discuss Vision and possible locations for tree-planting. Once mapping information available in terms of appropriate areas and without having yet drawn maps on lines, SCDC to convene a roundtable. This is the beginning of public engagement that everyone emphasised as essential. Several people/organisations in the room are wishing to do some tree-planting on their land and/or coordinate with neighbouring landowners. Cam Conservancy is about to approve its new Business Plan which includes a section on conservation of the river edge. There is interest in diversifying the trees along the river-side, especially to help with nitrate and phosphate filtration, and for biodiversity and public use. They can supply land, machinery and manpower to plant trees but need support with pollarding and management over time. CPPF is interested and depending on the ground-truthing would then want to talk with landowners. It is key to involve the agricultural sector. There could be farmers and land-managers who are interested in biodiversity/carbon offsetting on their land depending on support. However, it is important to recognize the opportunity costs that they face, given the high productivity value and high development (housing) value of agricultural land. Sam Davies highlighted the opportunity from CSR payments for woodland creation, such as the Beacon Forest initiative.

7. Strategic Vision and Landscape Strategy. SCDC and City will convene a planning discussion with senior officers to see how this can fit into an overall strategic vison and landscape strategy as part of the new Joint Local Plan for Greater Cambridge.

8. Learn from Best Practice. Arrange visits/calls to:
- Wycombe District Council have developed a policy requiring 25% future canopy cover on development sites. This requires a canopy cover assessment[17] of existing trees and space for new canopy for the proposed development site. This requires more detailed knowledge and design in terms of building control for foundations, species choice etc.
- Stephen Briggs' farm in Peterborough, a renowned example of an agroforestry scheme.

[17] https://www.charteredforesters.org/wp-content/uploads/2016/11/Philip-Simpkin-Canopy-Cover-Targets-in-Planning-Policy-2016.pdf