# Canopy Cover Targets in Planning Policy:

Increasing the Quantity and Quality of Tree Cover in New Developments.

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- 1. Basic assumptions,
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- 3. What is Tree Canopy Cover?
- 4. Wycombe's Canopy Cover Report
- 5. Canopy Cover target in planning policy.
  - a) Setting a target
  - b) Our draft Local Plan policy
  - c) How it could work
- 6. Conclusion

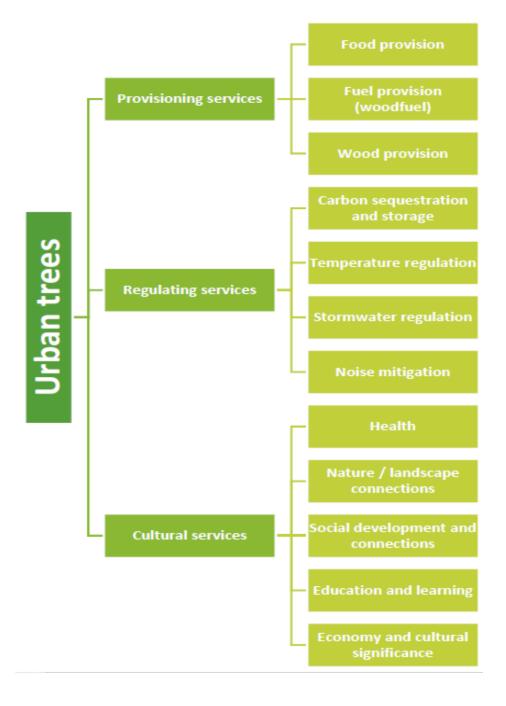
## Basic assumptions:

Trees are good - they give lots of benefits:

- Social
- Economic
- Environmental
- Or as Ecosystem Services:
- In evolutionary terms we came from the trees and so its not that strange that we like them!

Here are a couple of good places to find more info if you need convincing about the benefits:

- http://depts.washington.edu/hhwb/
- Or for UK based research look at section 2 (pg 7 onwards) of the report 'Canopy Cover Assessment & Recommendations for Wycombe District': <a href="https://www.wycombe.gov.uk/uploads/public/documents/Planning/New-local-plan/Tree-canopy-cover-assessment-report.pdf">https://www.wycombe.gov.uk/uploads/public/documents/Planning/New-local-plan/Tree-canopy-cover-assessment-report.pdf</a>



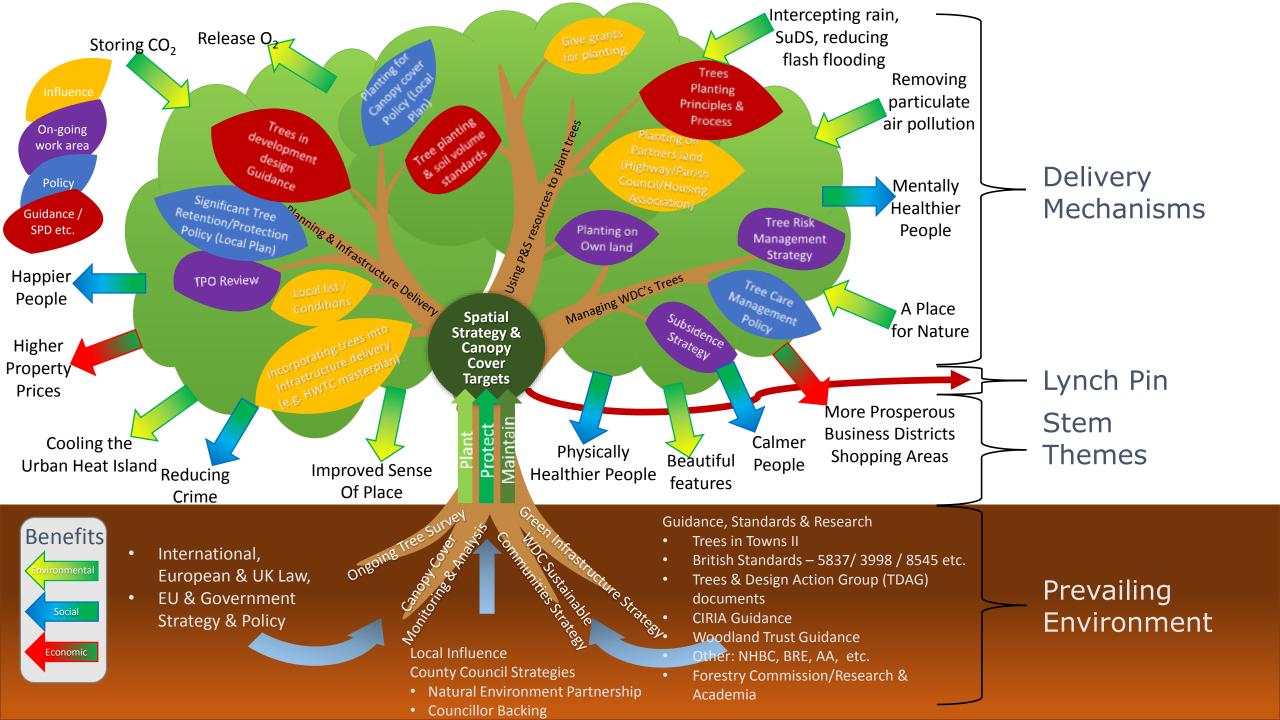
We need a strategy to maximise benefits trees provide for our area.

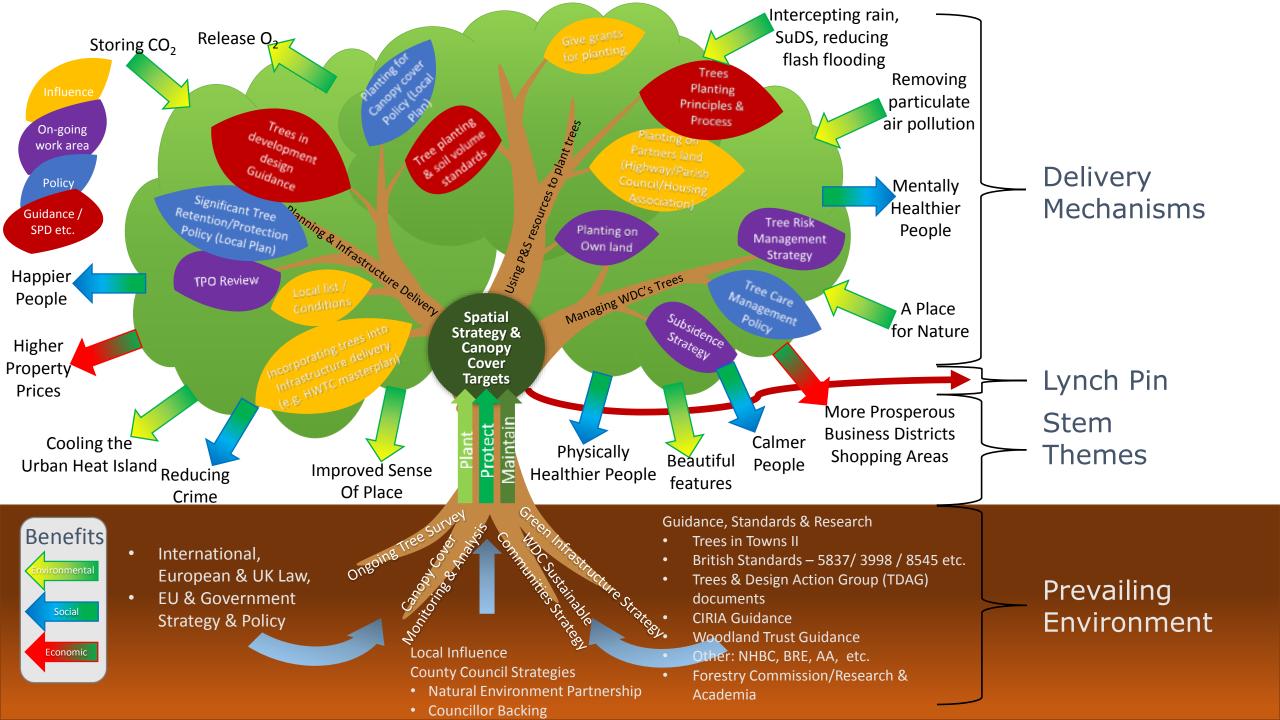
If we fail to plan, we plan to fail.

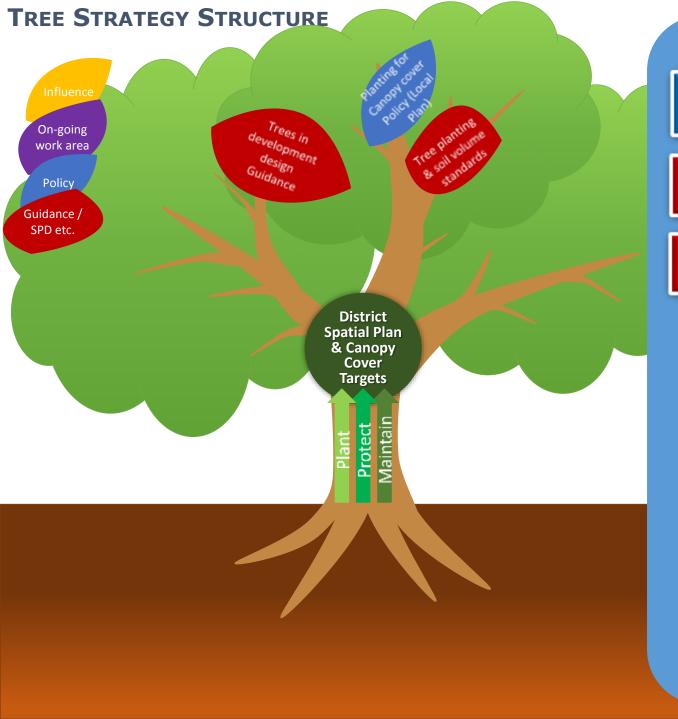
Fundamentals for a tree strategy from Trees in Towns ii:

- A. What do we have?
- B. What do we want?
- C. What do we do?
- D. Are we getting what we want?

The full version of Trees in Town ii is highly recommended reading, for all Tree Officers, the executive summary can be downloaded here: <a href="http://www.charteredforesters.org/resources/download-library/doc\_download/66-trees-in-towns-ii/">http://www.charteredforesters.org/resources/download-library/doc\_download/66-trees-in-towns-ii/</a>







- Planting for Canopy Cover Policy (Local Plan)
- Trees in Development Design Guidance
- Tree Planting & SoilVolume Standards

More Tree Canopy Cover



What do Stewant? Themes

What do

Delivery

Mechanisms

**Canopy Cover Analysis** 

Monitoring through repeat survey

What do we have? Prevailing Emerican ment getting what we want?

## What is canopy cover?

- The area of ground covered by trees when seen from above.
- It can be measured in different ways:

	Advantages	Disadvantages	
By point sampling and aerial photo	Cheap simple and relatively quick to do for any given area.	It only returns a canopy cover estimate for the area looked at, and can not be interpreted further. No additional information is collected.	
Drawing round canopies on an aerial photo	Gives a canopy cover percentage for an area and any area within it can be calculated too.	Time consuming, need to have good aerial photos. Only produces polygons of the area, nothing else.	
Using algorithms to interpret remotely sensed information	Has already been done for the whole of UK. Can get updates every few years. Includes interpretation of individual trees including height and spread. Can be analysed on a spatial level which is helpful for a spatial strategy.	Bound by terms of Bluesky licence. Does not include finer grain od data such as species	
Sampling from the ground plus point sampling (itree)	Information collected can give a greater understanding of an entire area's tree stock which can be interpreted to get values of services. This is good for convincing the public and politicians of the value of trees and can be used to inform some strategic thinking. Good opportunity for community engagement with trees through volunteering to survey plots.	The spatial detail is limited to statistics based on point detail it is therefore not very useful in informing a spatial strategy.  Labour intensive, requiring many volunteers.	
Measuring from the ground (tree survey e.g. BS5837)	Useful for understanding an individual site's trees	Only relevant to specific sites.	

- http://www.treeconomics.co.uk/wp-content/uploads/Axe-Autumn-2014-KR-article-Canopy-Cover.pdf
- http://www.urbantreecover.org/urban-forest-cover/
- http://www.ltoa.org.uk/documents/doc\_view/208-oscca-arcgis-user-guidance
- http://www.bluesky-world.com/national-tree-map
- http://www.forestry.gov.uk/fr/itree

	Own trees (within ownership)	Protected trees (within power)	Wider area (within influence)
What do we have?	Tree survey (size, species, condition, value, risk).	Lists, maps (GIS) & photos of TPOs and Conservation Areas.	1 - Knowledge which is difficult to interrogate (aerial photos, local knowledge) 2 - Quantifiable survey (canopy cover, itree.)
What do we want?	A healthy, safe, valued tree resource maximising benefits to maximum number of beneficiaries. Right tree right place – quality and quantity.	Trees (not under our ownership) are retained, appropriately managed and where necessary replaced. For the amenity value they provide.	Trees where they can provide benefits.  Linking with Green Infrastructure Strategy objectives to provide GI links and hubs.
What do we do?	Proactively manage and plant trees, focussing effort in a prioritised way to meet identified quantifiable objectives.	Protect appropriate trees when they come to our attention, refuse inappropriate works and ensure replacements are plant & maintained.	Improve the existing and influence the new:  1 - Plant on third party land where there is a feed.  2 - Ensure there is appropriate new planting within new developments.
Are we getting what we want?	Re survey and check progress against stated objectives.	TPO Review (cross reference with wider area canopy cover review).	Re survey and check progress against stated objectives.





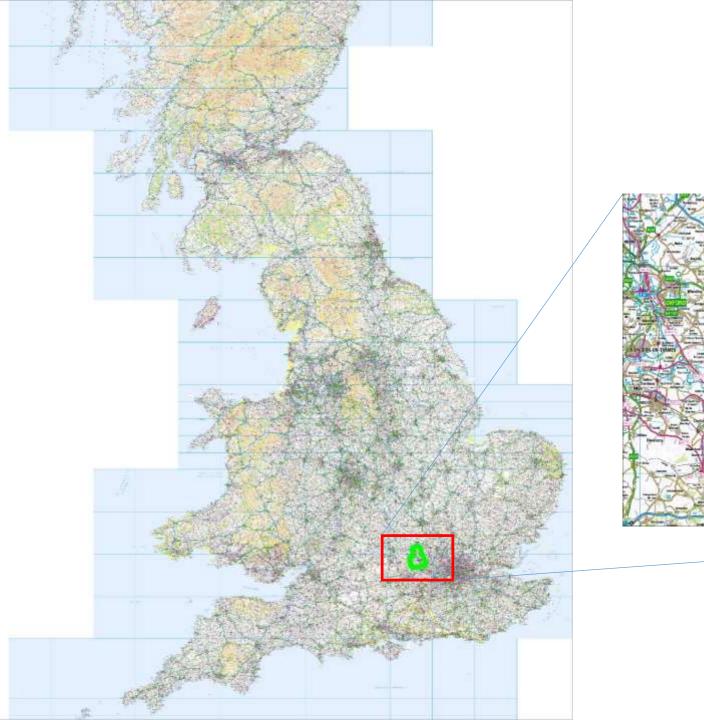
# & Recommendations for Wycombe District

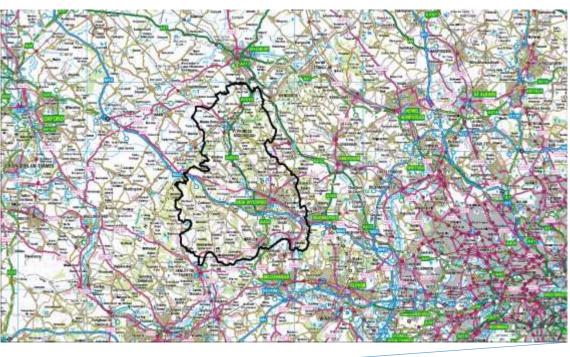




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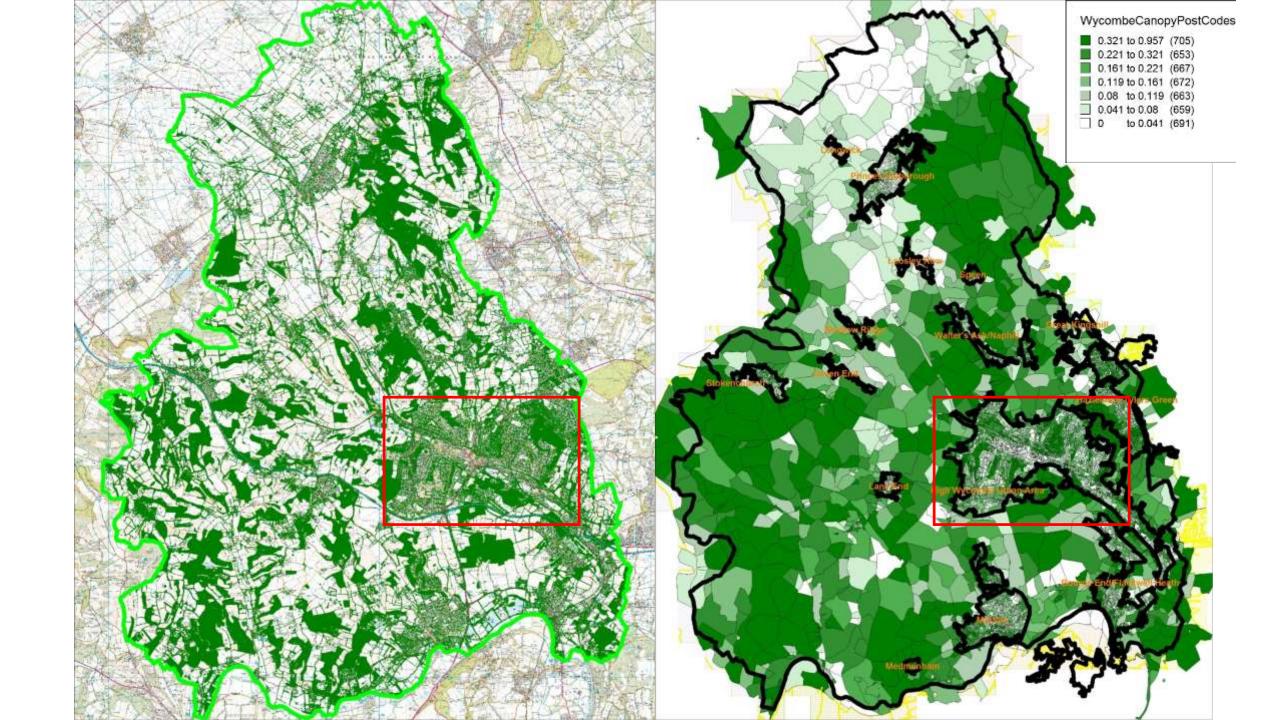




Figure 4: Average healthy life expectancy

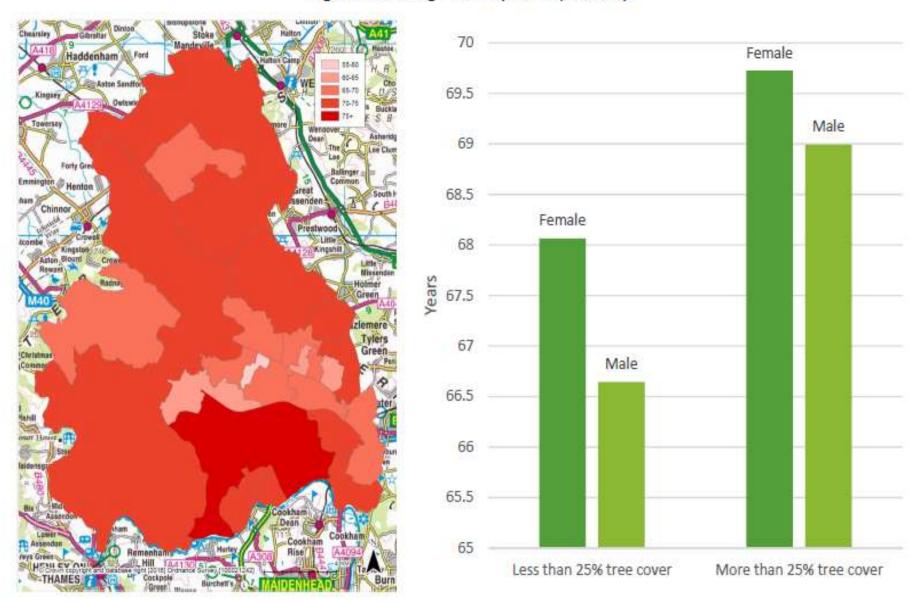


Figure 6: GCSE achievement

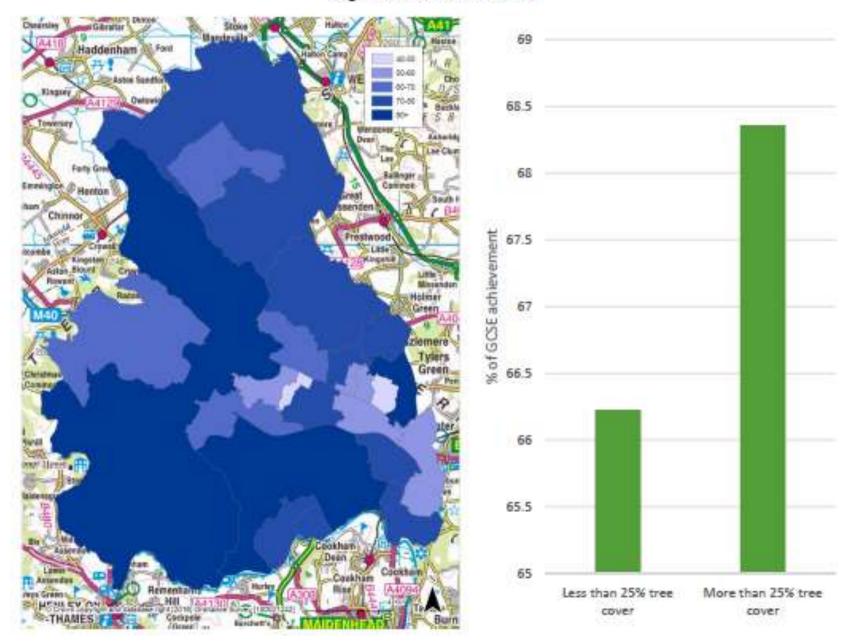


Figure 11: Sale prices

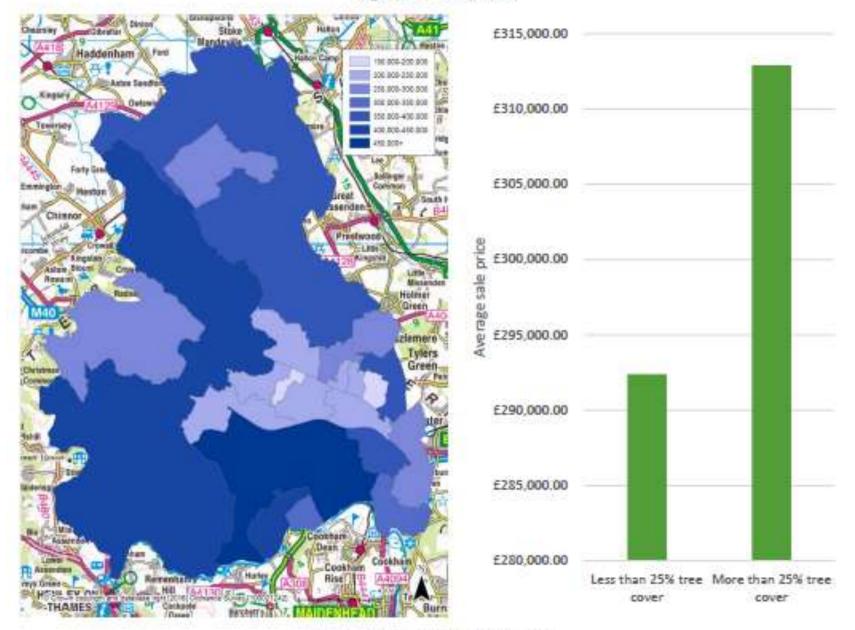


Figure 12: Sale prices distribution

Figure 14: Index of Multiple Deprivation score

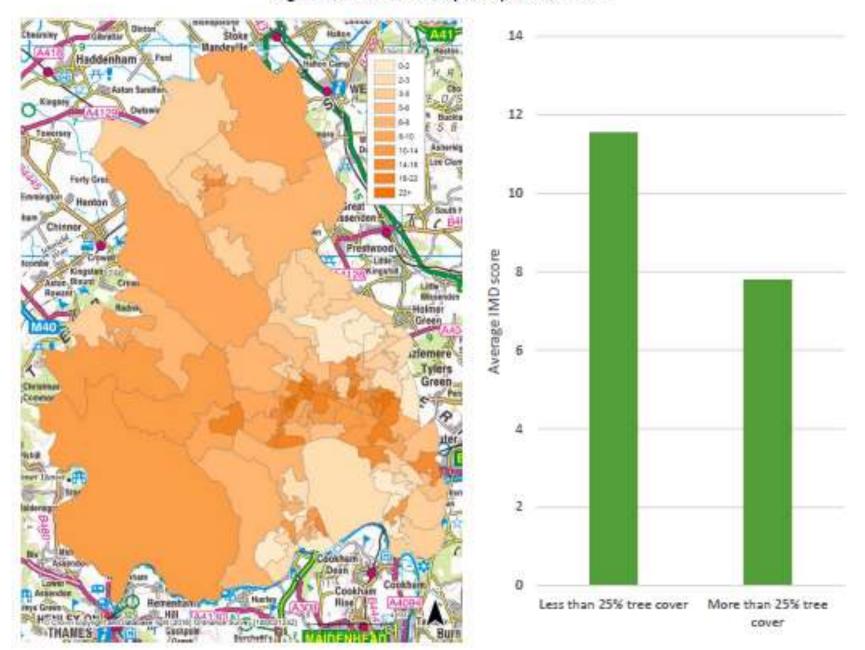


Figure 17: Employment deprivation

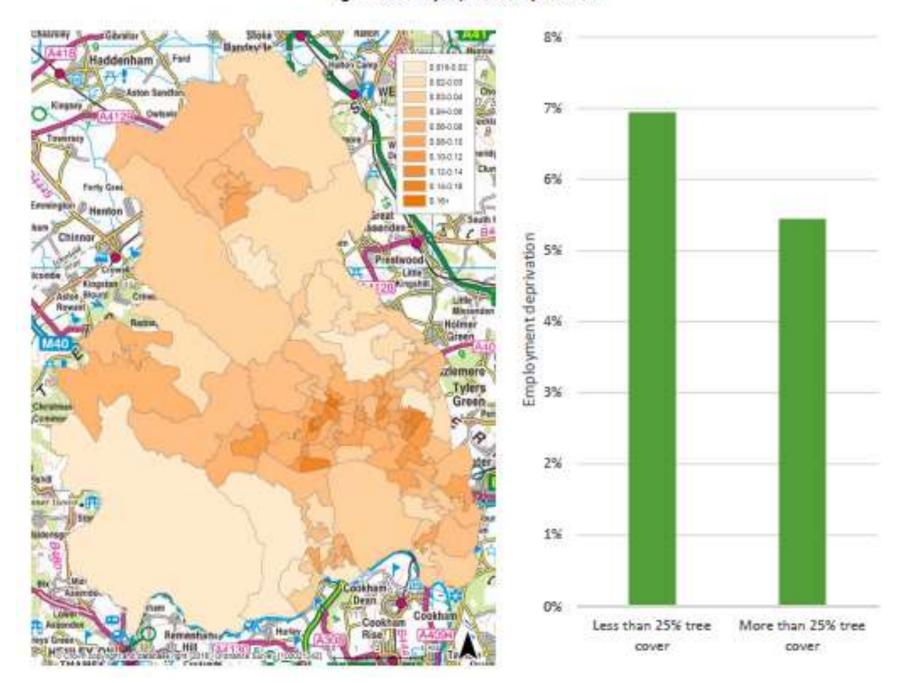
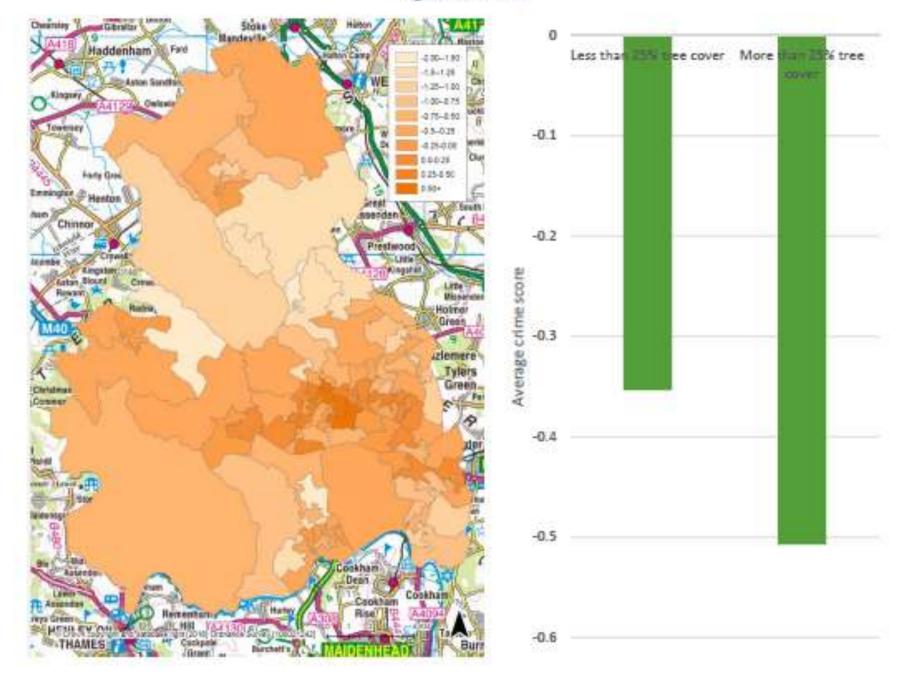


Figure 20: Crime



So if a Tree Canopy Cover Target is to get into planning policy, it needs to get over some hurdles:

For a policy to make it into a Local Plan, it needs to:

1.be supported by the planners at your own council for it to make it into draft policy,

2.make it through the consultation and revision process,

3.make it through examination by a planning inspector,

# Questions to be answered:

1. Is this a legitimate use of planning policy?

2. Is this viable? i.e will it effect:

A. the developers ability to build and make a profit?

B. our ability to meet our housing supply targets?

3. How will this work in practical terms?

## Planning: Town and Country Planning Act 1990

#### Chanter I

# 1.Is this a legitimate use of planning policy?

Planning permission to include appropriate provision for preservation and planting of trees. General duty of planning authorities as respects trees

- **197.** It shall be the duty of the local planning authority—
  - (a) to ensure, whenever it is appropriate, that in granting planning permission for any development adequate provision is made, by the imposition of conditions, for the preservation or planting of trees; and
  - (b) to make such orders under section 198 as appear to the authority to be necessary in connection with the grant of such permission, whether for giving effect to such conditions or otherwise.



National Planning Policy Framework



Trees are only mentioned once in the NPPF in paragraph 118, and that is specifically related to 'aged and veteran trees'.

#### However:

Of the 13 sections in the NPPF trees are able to contribute to meeting the objectives of 11 of them.

- (Section 1) "Building a strong, competitive economy",
- (Section 2) "Ensuring the vitality of town centres",
- (Section 3) "Supporting a prosperous rural economy",
- (Section 4) "Promoting sustainable transport",
- (Section 6) "Delivering a wide choice of high quality homes",
- (Section 7) "Requiring good design",
- (Section 8) "Promote healthy environments",
- (Section 9) "Protecting Greenbelt",
- (Section 10) "Meet the challenge of climate change, & flooding"
- (Section 11) "Conserve & enhance the natural environment",
- (Section 12) "Conserving & enhancing the historic environment",

Local Planning policy should not repeat the NPPF but must be in accordance with it.

As trees can contribute to meeting so many of the NPPF's objectives, tree canopy cover is an ideal area for new Local Plan policy



Government Forestry and Woodlands Policy Statement

Incorporating the Government's Response to the Independent Panel on Forestry's Final Report

The 'Government Forestry and Woodlands Policy Statement' is the latest government statement which covers trees.

In the Ministerial Foreword, the Executive Summary, Section 7 'Expanding Our Woodland Resource' and recommendations 6 and 16, it makes it clear that:

'We want to see more trees and woodlands in and around our towns and cities.'





Figure 26

34 Dwellings per hectare

2385 m<sup>2</sup> of footprint (23.9%)

32 trees = 25.6%

canopy cover



Figure 27

34 Dwellings per hectare

2,434 m² of footprint (24.4%)

32 trees = 25.6% canopy cover



Figure 28

34 Dwellings per hectare

1,966 m<sup>2</sup> of footprint (19.7%)

32 trees = 25.6% canopy cover



Figure 29

29 Dwellings per hectare

1,694 m<sup>2</sup> of footprint (16.9%)

44 trees = 35.2% canopy cover



# Setting a target - There is no golden number! Why 25%?

- 1. The current level of tree canopy cover for Wycombe District is 25%,
- 2. It's broadly in line with other council's strategic targets (typically 20-30%),
- 3. A good level of ecosystem services are likely to be delivered at 25%,
- 4. Testing shows that it **should be possible for developments of around 35 DPH** (dependant upon development form).
- 5. The CABE publication 'What makes an eco-town?' suggests that a canopy cover of at least 25% in residential areas should be provided.

#### POLICY DM33 - DELIVERING GREEN INFRASTRUCTURE IN DEVELOPMENT

#### Development is required to:

- Ensure the continued enjoyment of footpaths and other existing green infrastructure providing opportunities for active transport or outdoor sport;
- 2. Avoid the loss, fragmentation or reduction in size of any woodland;
- 3. Secure a minimum 15 metre buffer to Ancient Woodland;
- 4. Avoid the loss, fragmentation or reduction in size of any incidental open space, where this contributes to the character and function of the area;
- Ensure that priority is given to the retention and protection of trees, hedgerows, or other landscape features which are, or could become, valuable features of the site for their visual amenity, historic, biodiversity or other value;
- Maximise the opportunities available for green infrastructure and biodiversity enhancement through the improvement of existing features and the creation of new features so as to ensure no net loss of biodiversity and where deliverable net gains;
- Achieve a future tree canopy cover of at least 25% of the site area on sites
  outside of the town centres and exceeding 0.5ha.
- 8. Make provision for the management and maintenance of green infrastructure.
- 9. Enhance the natural and built environment to achieve a net gain in biodiversity through:
  - a) Achieving high standards of built and landscape design;
  - b) Taking opportunities to enhance environmental assets on and off site;
  - Taking opportunities to reinforce or augment biodiversity and landscape networks on and off site;
  - d) Mitigating any essential or residual impacts by requiring development to

#### enhance environmental assets either on or off-site.

- 6.90 Policy DM14 in the DSADPD provides a general requirement to maximise biodiversity in new development. This policy elaborates these requirements further and also places a number of other familiar policies (e.g. protection of woodlands) squarely within a holistic green infrastructure approach.
- 6.91 Trees, woodlands and hedgerows are valuable assets which provide Environmental, Economic, Social and Climate Change benefits. They are an important element of green infrastructure, are of particular importance for what they add to landscape character in the Chilterns and are also exceptionally important for their role in making urban areas more sustainable places to live and work.
- 6.92 Wooded areas account for 18.1% of Wycombe District; this represents 5,900ha of woodland. In both urban and rural areas woodlands play an important role in defining the Chilterns landscape and supporting Chilterns ecology, and, particularly in rural areas, in supporting the economy. Woodlands also help to secure sustainable development, through air quality enhancement, storm water control, habitat provision and helping to reduce the rate of global warming by trapping carbon dioxide. They can also be used as a resource for both recreation and education, and, historically, influenced the development of the furniture industry in the District.
- 6.93 Incidental open spaces such as small landscaped areas within housing or commercial developments provide important visual contrasts and soften the hard edge of buildings. They provide opportunities for soft landscaping, and generally contribute to amenity. Typically less than 0.1 hectares in area, they are generally too small to identify on the Policies Map, but their importance to amenity throughout the District's built environment is such that they should be protected.
- 6.94 Where existing trees are on or adjacent to a site and form an important feature the District Council may use its powers to protect the trees with Tree Preservation Orders (TPOs). Where trees on or adjacent to a site could be affected by development proposals the District Council will expect planning applications to follow the process set out in British Standard 5837:2012 Trees in relation to design, demolition and construction (or subsequent revisions), with the use of buffers which exclude damaging activity or other suitable protective measures. The Council will require a tree survey and an Arboricultural Impact Assessment (AIA) to be submitted. Where special techniques and tree protection methods will be necessary for successful implementation, details of them must also be included in the form of a Tree Protection Plan (TPP) and Arboricultural Method Statement (AMS). Details of foundations, services and levels may also be required to enable a properly considered decision to be made on the impact of development on retained trees.
- 6.95 The Council proposes to publish guidance (Designing Trees into New Development) which includes standards on soil volumes to enable newly

- planted trees to grow healthily to a size where they can fulfil the canopy cover standards. It also includes design guidance on how tree crowns can be accommodated. The District Council may impose conditions on planning permissions requiring further information to be submitted and or particular procedures to be followed.
- **6.96** Development proposals should be designed so as to retain existing trees where appropriate, and to plant new trees to help ensure opportunities to enhance biodiversity are maximised. Above the stated thresholds this include a requirement for new development to achieve a 25% future tree canopy cover target. Further guidance on assessing this will be included in the proposed SPD and until the SPD is adopted the Council will adopt a pragmatic approach, seeking to maximise new tree planting on a site-by-site basis towards this objective. Details of new tree planting must ensure that they can be sustained and do not come under threat. The layout of development should ensure that new and retained trees do not block daylight to windows. overshadow amenity or cause other conflicts with the amenities of the people who will use an area, to an unacceptable degree, as this may threaten their future retention. This can be achieved through retention, new planting. It may be possible to reduce the requirement if green infrastructure features are included in a development that perform a similar function/achieve the same result.
- 6.97 Layouts should be planned so that new and existing trees are not only a significant feature of open spaces but they are also incorporated into streets, gardens, parking courts and other publicly accessible areas. Retained trees must be given adequate space to allow for future growth of both roots and crown.

- Applicant to assess existing canopy cover area (m²) using BS5837 tree survey
  - a. Include overhang in, (as long as they are not U cat, or are under threat of removal)
  - b. exclude overhang out,
  - c. U category trees should be removed from assessment.
  - d. Using the site area, calculate the current canopy cover?
- 2. Once the layout has been decided and a Tree Protection Plan has been produced for retained trees, the anticipated retained canopy cover can be calculated.

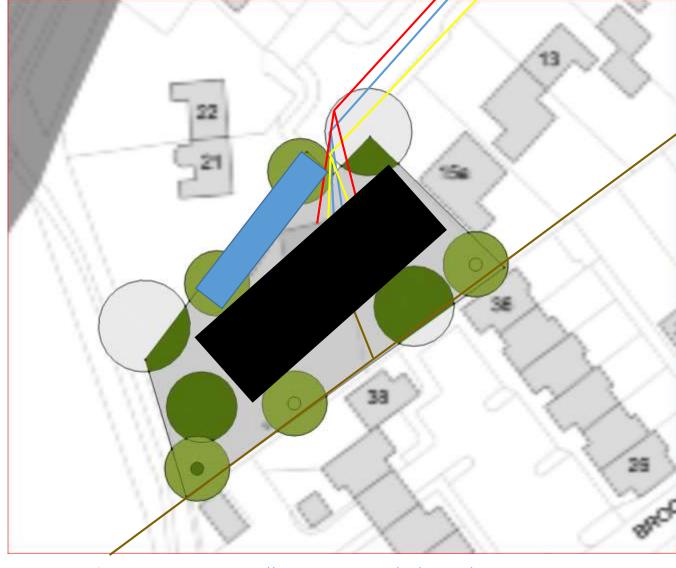
# How can it work?



3. New tree planting needs to have input from the whole design team and include certain key information for it to be acceptable (submission of this information must be included with the application and cannot be left to condition).

### 4. The tree planting plan must show:

- a. Existing and proposed underground services.
- b. The **number and species of trees** to be planted and their location, this will be accompanied with the expected canopy cover & the soil volume they require. 1 m<sup>2</sup> canopy cover = 0.6 m<sup>2</sup> soil volume (this formula does not apply to fastigiated and columnar habit trees. The soil volume requirement can be calculated for narrow form trees by basing the canopy diameter on the natural growth form, i.e. the widest spread of a particular species).



For more information on soil volume http://www.hort.cornell.edu/uhi/research/subject.htmv

- c. Details of how the soil volume will be provided:
  - i. In hard landscapes, techniques in, <u>'Trees in Hard Landscapes A Guide for Delivery'</u> can be used. The specification of the soil and details of aeration and how water will get in and out, also need to be included with plan and section views.
  - ii. The design elements such as grilles, cages and lighting and other aesthetic features should be shown.
  - iii.In soft landscapes it must be demonstrated that the conditions are appropriate in the volume used for rooting. Only the top 0.6m of soil will be considered as part of the provision. Representative samples of the soil volume must have been tested in the following ways and remediated if necessary:

- 1. Soil texture (sand, silt, clay etc.),
- 2. Bulk density (check table to ensure it is within limits for growth),
- 3. Macro and micro nutrients (N,P,K and others),
- 4. Contaminants,
- 5. Depth of water table,
- d. Other planting specification, including:
  - i. Tree size (e.g. girth, height, standard/feathered/multi-stemmed),
  - ii. Support mechanism, mulch, strimmer guard,
- e. Maintenance:
  - i. Watering,
  - ii. topping up mulch,
  - iii.checking support mechanism,
- The tree species information, combined with the soil volume will give you the expected canopy cover.

#### Notes:

There can be a miss match between tree species and soil volume to create a potential tree canopy cover:

- If a large canopy cover tree is planted in a small soil volume the soil volume will constrain the expected canopy cover
- If a small canopy cover tree is planted in a large soil volume the species will constrain the expected canopy cover.

If soil volumes are linked - the total can be reduced by up to 20% as roots will share soil volume.

There is a need to be have a consistent source of tree sizes:

Some books give maximum sizes based on champion trees, some give ranges, some give sizes after certain lengths of time, many give height but not spread. There is inconsistency even when reporting the same detail. Therefore it is useful for a council to set its own standard expectations, and it would be good if there was coordination between councils.

How is it applied?

### 1. Refuse?

### 2. Zoning and/or Exemptions

- a. for certain areas
  - i. town centres? (because they are difficult but they really need more trees!) better to have a lower standard than exempt them.
- b. for applications below a certain size
  - i. less than 0.5ha (developers will split their applications to avoid the policy)
  - ii.less than 10 houses (see above)
- c. for certain types of application
  - i. Business (different amounts for different use classes?)
  - ii.Industrial (see above)
- 3. Transfer to different type of GI:

http://doee.dc.gov/sites/default/files/dc/sites/ddoe/service\_content/attachments/GARGuidebook\_03\_13\_2014.pdf

a. Biotope Area Factor / Green Area Ratio http://www.seattle.gov/dpd/codesrules/changestocode/greenfactor/whatwhy/

http://www.stadtentwicklung.berlin.de/umwelt/landschaftsplanung/bff/download/Auszug\_BFF\_Gutachten\_1990\_eng.pdf

4. Off site payment for tree planting and maintenance (or Green Infrastructure).

#### A green city center - BAF - Biotope area factor

#### Calculating the BAF

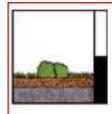
The BAF expresses the ratio of the ecologically effective surface area to the total land area.

In this calculation, the individual parts of a plot of land are weighted according to their "ecological value".

#### Types of surfaces and weighting factors:

(Surface types not mentioned can be calculated as long as they have a positive effect on the ecosystem)

Weighting f per m² of su		Description of surface types
	Sealed surfaces 0.0	Surface is impermeable to air and water and has no plant growth (e.g., concrete, asphalt, slabs with a solid subbase)
	Partially sealed surfaces	Surface is permeable to water and air; as a rule, no plant growth (e.g., clinker brick, mosaic paving, slabs with a sand or gravel subbase)
	Semi-open surfaces 0.5	Surface is permeable to water and air; infiltration; plant growth (e.g., gravel with grass coverage, wood-block paving, honeycomb brick with grass)



Surfaces with vegetation, unconnected to soil below

0.5

Surfaces with vegetation, unconnected to soil below

0.7



Surfaces with vegetation, connected to soil below

1.0

Surfaces with vegetation on cellar covers or underground garages with less than 80 cm of soil covering

Surfaces with vegetation that

below but with more than 80

have no connection to soil

cm of soil covering

Vegetation connected to soil below, available for development of flora and fauna



Rainwater infiltration per m2 of roof area

0.2

Rainwater infiltration for replenishment of groundwater; infiltration over surfaces with existing vegetation



Vertical greenery up to a maximum of 10 m in height

0.5

Greenery covering walls and outer walls with no windows; the actual height, up to 10 m, is taken into account

Greenery on rooftop

0.7

Extensive and intensive coverage of rooftop with greenery

## Conclusion

- Understanding tree canopy cover and having a target is important as part of a tree strategy.
- It can work in planning policy.
- The practicalities of where to use it and how to apply it need some thought and further work.
- Using different targets for different circumstances could be a solution.
- Transferring to other types of on site Green Infrastructure might be the best way to ensure benefits are provided, where space for tree planting is limited.
- Off site payments might be a final resort?