

Introducing the TDAG First Steps Guides to Canopy Cover

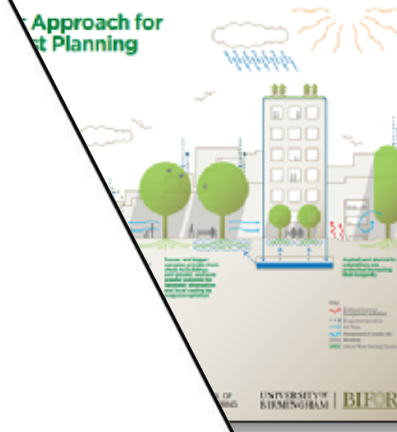
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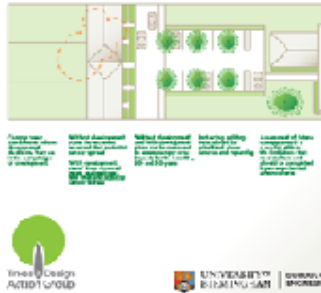
First Steps in Urban Tree Canopy Cover

Approach for Urban Planning



First Steps in Canopy Cover Assessment

For All Working in the Built Environment at a Development Site Level



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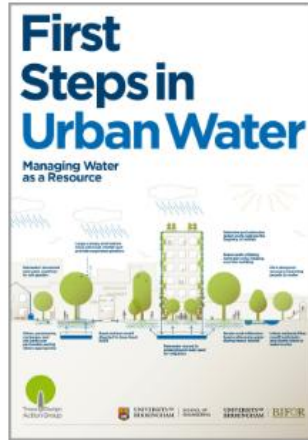
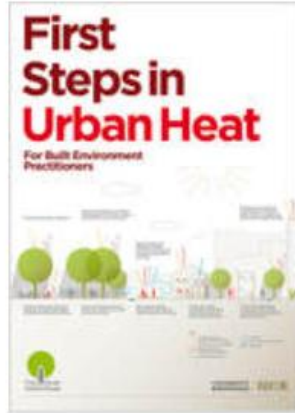
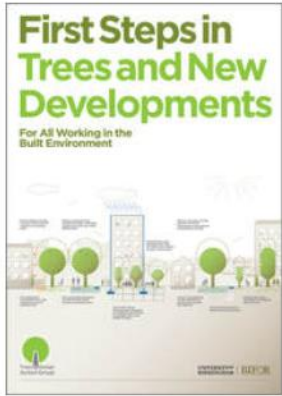
BIFoR

Birmingham Institute of Forest Research



CARMINE

Climate-Resilient Development Pathways in Metropolitan Regions of Europe



TDAG YouTube

<https://www.youtube.com/@treesanddesignactiongroup7020>

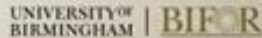


TDAG publications

www.tdag.org.uk/our-guides

First Steps in Urban Tree Canopy Cover

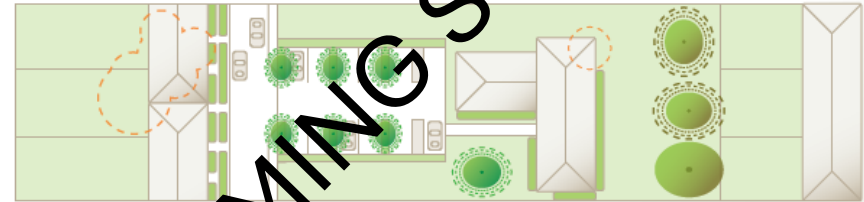
A Strategic Approach for Urban Forest Planning



part one

First Steps in Canopy Cover Assessments

For All Working in the Built Environment at a Development Site Level



Canopy cover assessments inform development decisions. They are in the early stages of development

'Without development' plans show current trees and the potential canopy spread

'With development' plans show retained trees and potential canopy spread

Protecting existing trees should be prioritised above removal and replanting

Assessment of future canopy spread is a model, with all the limitations that models have and should be completed by an experienced arboriculturist

Visualising canopy cover now and in the future demonstrates how targets can be met through on-site design; assets with planning applications communicate, helps reduce community opposition

- Trees to be retained - shown as uniform shape and if appropriate project canopy spread; all trees continue to increase in size depending on life stage
- Trees to be removed - overlapping canopies create as one footprint
- Trees to be planted - include projections of canopy spread for 10-, 20- and 30-years



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part two

What is Canopy Cover?

2D representation of the area covered by the branches and foliage of a tree(s).

It is usually expressed as a percentage





50 trees



50 trees



First Steps in Urban Tree Canopy Cover

A Strategic Approach for Urban Forest Planning

Future canopy cover defined by well-planned, currently limited and publicly managed trees

UTCC metrics can give a sense for comparison between and help identify clear messaging

Different UTCC calculation methodologies may provide differing values - choose one for consistency over time

Baseline UTCC data and/or monitoring of changes over time

UTCC data can be integrated with other datasets e.g. environmental, traffic, flood etc

Monitor trees being planted and other biodiversity

Green and blue corridors provide much more to buildings and grounds, and have greater potential for biodiversity enhancement and social cooling for amenity/enjoyment

Height and density indicators are important for understanding tree canopy

Key:
 ■ Buildings
 ■ Green spaces
 ■ Blue spaces
 ■ Roads
 ■ Trees
 ■ Urban Tree Canopy Cover

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Table 1 Resources		Quality assured	Open access	Historical data	Copyright applies	Accuracy reported	Precision reported
Resource		Detail					
Data collection tools/data sets available	National Tree Map™ (NTM™) Bluesky International Ltd 	Data entirely derived from photogrammetric datasets captured using fixed wing aircraft. It can be provided in a variety of formats for both non-GIS (Geographic Information System) and GIS users. Across England, Scotland and Wales, location, height and canopy/crown extents for all trees 3m and above in height is provided. Historical data can be requested. Data is updated every two years.					
	i-Tree Canopy Tool i-Tree 	A tool for calculating UTCC of defined areas, large and small, through user interpretation of aerial photographs from Google Maps aerial photography using point sampling. Data can be collected and processed very quickly with minimal training. As the date of the aerial photography is not known it is difficult to make comparisons over years.					
	Trees Outside Woodland Forest Research/Defra 	Designed to provide accurate information about the size, distribution, composition and condition of trees outside woodland. Data used is from the National Tree Map™, the National Forest Inventory programme of field surveys and hand mapping of non-woodland tree cover, for calibrating and correcting areas.					
	Lidar derived Vegetation Object Model (VOM) Environment Agency 	In this raster product each pixel represents the height of top of canopy above ground, for all classified vegetation objects above a threshold of 2.5 metres. Data is produced by complex GIS modelling of the Environment Agency national LIDAR programme, is fully automated and collected during the winter season with repeat coverage at least every five years. A 3D webmap including the VOM has been produced (60% of England covered).					
UTCC processed data	Friends of the Earth Tree Mapping Tera Sullis 	Identifies existing tree cover and aims to draw up an 'opportunity map' of areas that may be suitable for creating woodlands. UTCC percentage is available for local authorities in England and neighbourhoods within. Data source: Environment Agency data, newly available laser LiDAR imaging of England and national datasets from Defra.					
	Google Environmental Insights Explorer (EIE) Tree Canopy 	Builds on high resolution aerial imagery fed into a deep learning semantic segmentation model trained using a human-labelled Urban Tree Cover Webmap version of same type of aerial data. UK city-level data is available on the website, applications can be made to get access to more data for a city or region.					
	Urban Tree Canopy Webmap i-Tree 	UTCC percentages for all urban <i>wards</i> in the UK have been calculated based on 2018-2022 aerial images - UK Ward Canopy Cover . Percentage canopy cover is listed as 'percancov' and 'numpts' refers to the number of points.					
	Tree Equity Mapping The Woodland Trust, American Forests and Centre for Sustainable Health Care 	A map-based application created to help address disparities in urban tree distribution by identifying the areas in greatest need of people-focused investment in trees. Data source is Google EIE. This resource covers the UK (city and <i>LSOA</i> level) but some areas are not mapped [2024].					
	TreePlotter CANOPY PlanIT Geo/Geotra Villa 	Enables users to assess, visualize, and share tree canopy data, set measurable goals, and plan planting efforts. Combines multiple layers, indices of multiple deprivation, TreeEquity, 3-30-300, air pollution, flooding, and heat island.					
TreeKeeper® Davey Resource Group/ Treeco,nomics 	A versatile software designed for observing, prioritising, and sharing tree canopy assessment data. It helps users define measurable canopy goals, prioritise planting efforts, project future canopy benefits, and budget planting costs. Users can review canopy data, explore changes, customise attributes, and identify planting opportunities. It supports strategy creation, community customisation, and stakeholder collaboration. Historical data can be added on request.						

Example of an urban canopy cover map

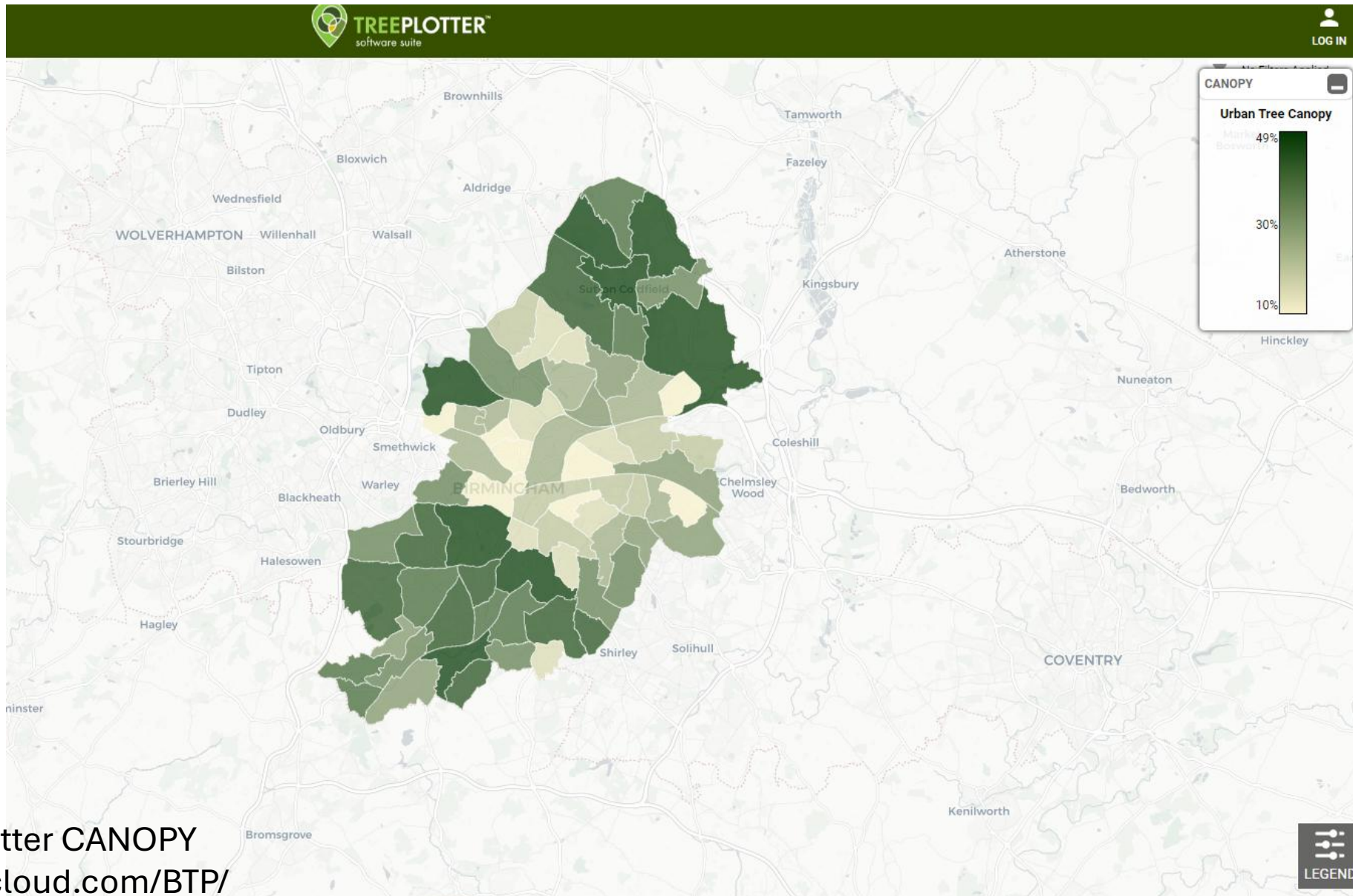
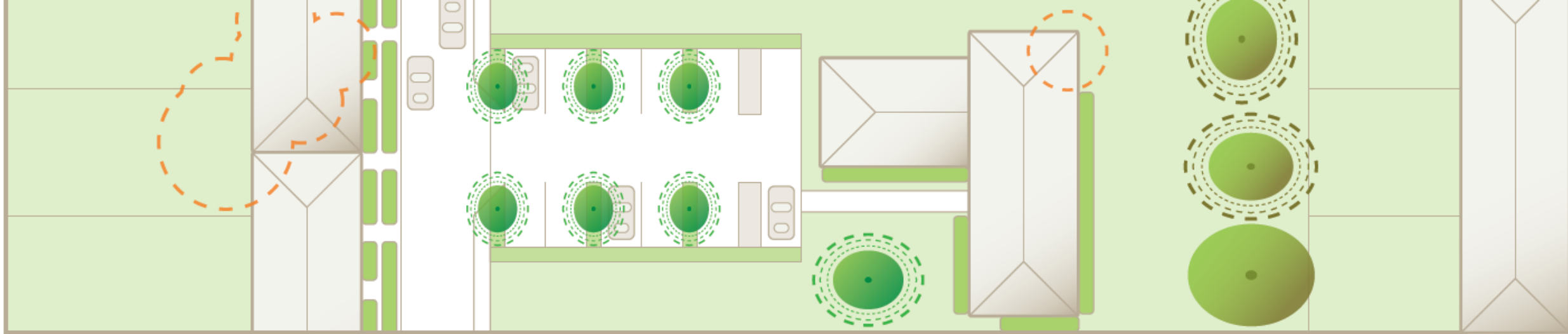


Image: TreePlotter CANOPY
<https://uk.pg-cloud.com/BTP/>



Canopy cover assessments inform development decisions. They are in the early stages of development

'Without development' plans show current trees and their potential canopy spread

'With development plans' show removed trees, retained trees, new trees and potential canopy spread

'Without development' and 'With development' plans can be compared to assess canopy cover impacts for the next 10-, 20- and 30-years

Protecting existing trees should be prioritised above removal and replanting

Assessment of future canopy spread is a model, with all the limitations that models have and should be completed by an experienced arboriculturist

Visualising canopy cover now and in the future; demonstrates how targets can be met through creative design; assists with planning application communications; helps reduce community opposition

- Trees to be retained - shown as oval form shape and if appropriate project canopy spread (not all trees continue to increase in size depending on life stage)
- Trees to be removed - overlapping canopies count as one footprint
- Trees to be planted - include projections of canopy spread for 10-, 20- and 30-years

Authors

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Underwood

Graphics provided by Steve @Reduction

Thank you for your attention

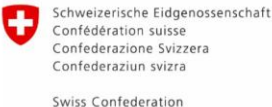
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