

Enhancing the Climate Change Benefits of Urban Trees in Cambridge

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Benefits of urban trees

- **Reduction of air pollution**
- **Increased shade and cooling**
- **Increased carbon sequestration**
- **Reduced flood potential**
- **Improved health and wellbeing**



Policy background

- **The Trees in Towns II Project (Britt & Johnston, 2008)**
- **Read report (2009)**
- **The Natural Environment White Paper (2011)**
- **National Planning Policy Framework (2012)**

Aims for the study

- **Inform Council policy regarding desired canopy cover targets and add weight to any tree management policy**
- **Cost-effective target tree planting in areas of low canopy cover**
- **Identify areas of unprotected trees with large canopies**
- **Provide a baseline to measure future changes in tree stock quantity and quality**
- **Set measureable targets for canopy cover in the City**
- **Inform the Council on the health and fitness of its stock with respect to risks from climate change**

Methodology

- **Digital tree map layer (ProximiTREE™) details the spatial location, height and canopy area of individual trees**
- **City wards, land use classification and land ownership areas**
- **Ground survey**
- **Canopy growth model**



Results

Land use class	Number of trees (%)	Canopy cover (%)	Land area (%)	Tree Density (Trees ha ⁻¹)	Canopy Density (m ² ha ⁻¹)	Average canopy size (m ²)
Low Density Residential	6.9	9.6	3.9	58.7	4171	71.1
Medium Density Residential	53.3	37.6	31.4	55.7	2015	36.2
High Density Residential	4.3	3.9	4.2	33.7	1728	51.3
Town Centre and Commercial	5.3	5.9	7.7	22.9	1311	57.2
Industrial Areas	2.6	2.0	4.5	19	752	39.6
Formal and informal open space	5.0	8.1	6.4	26	2147	82.6
Institutional open space	11.5	17.3	16.1	23.8	1836	77.1
Derelict, neglected and abandoned open space	1.2	1.6	0.7	61.2	4066	66.4
Remnant countryside	9.8	13.9	25.0	13.1	954	72.8

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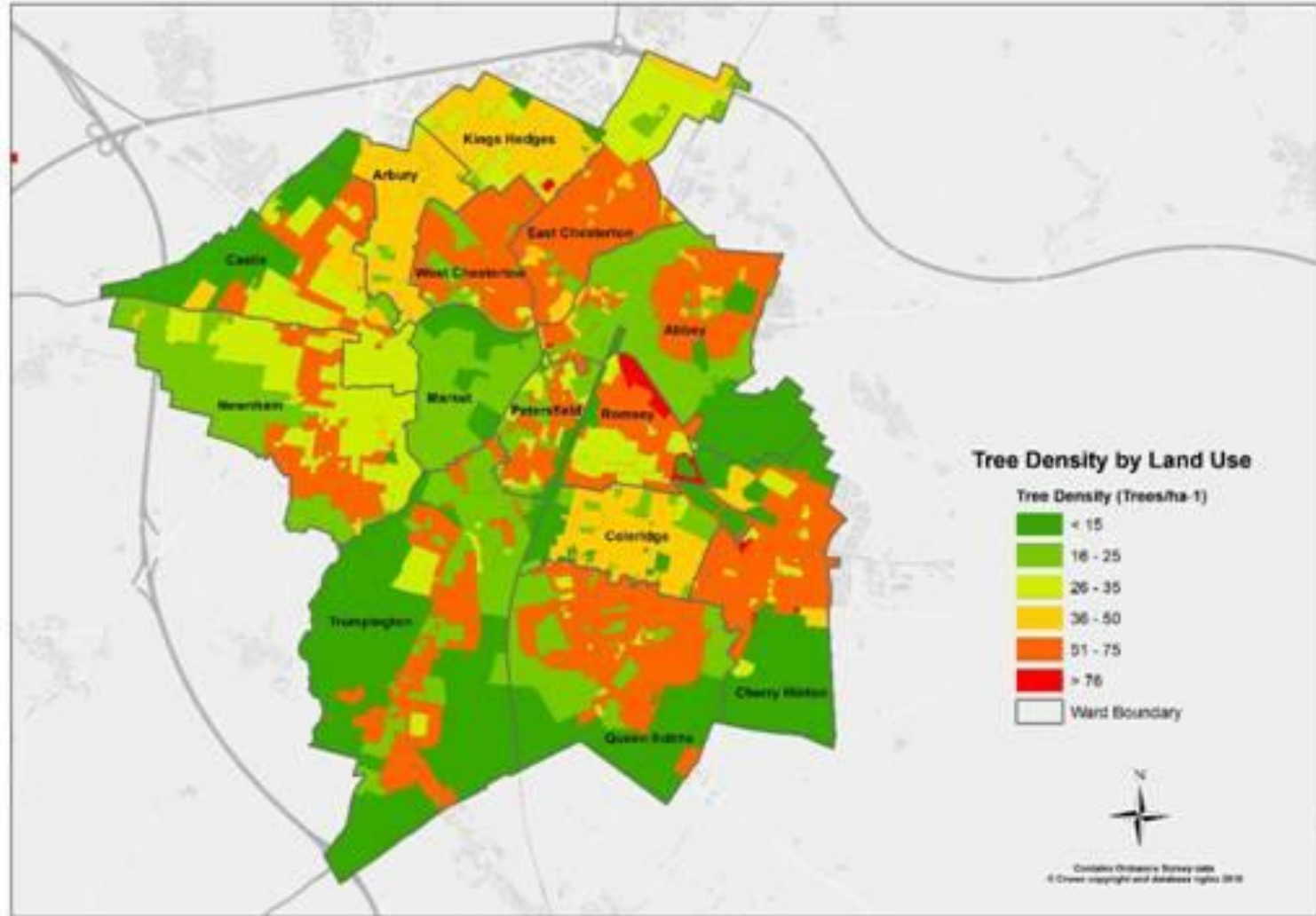
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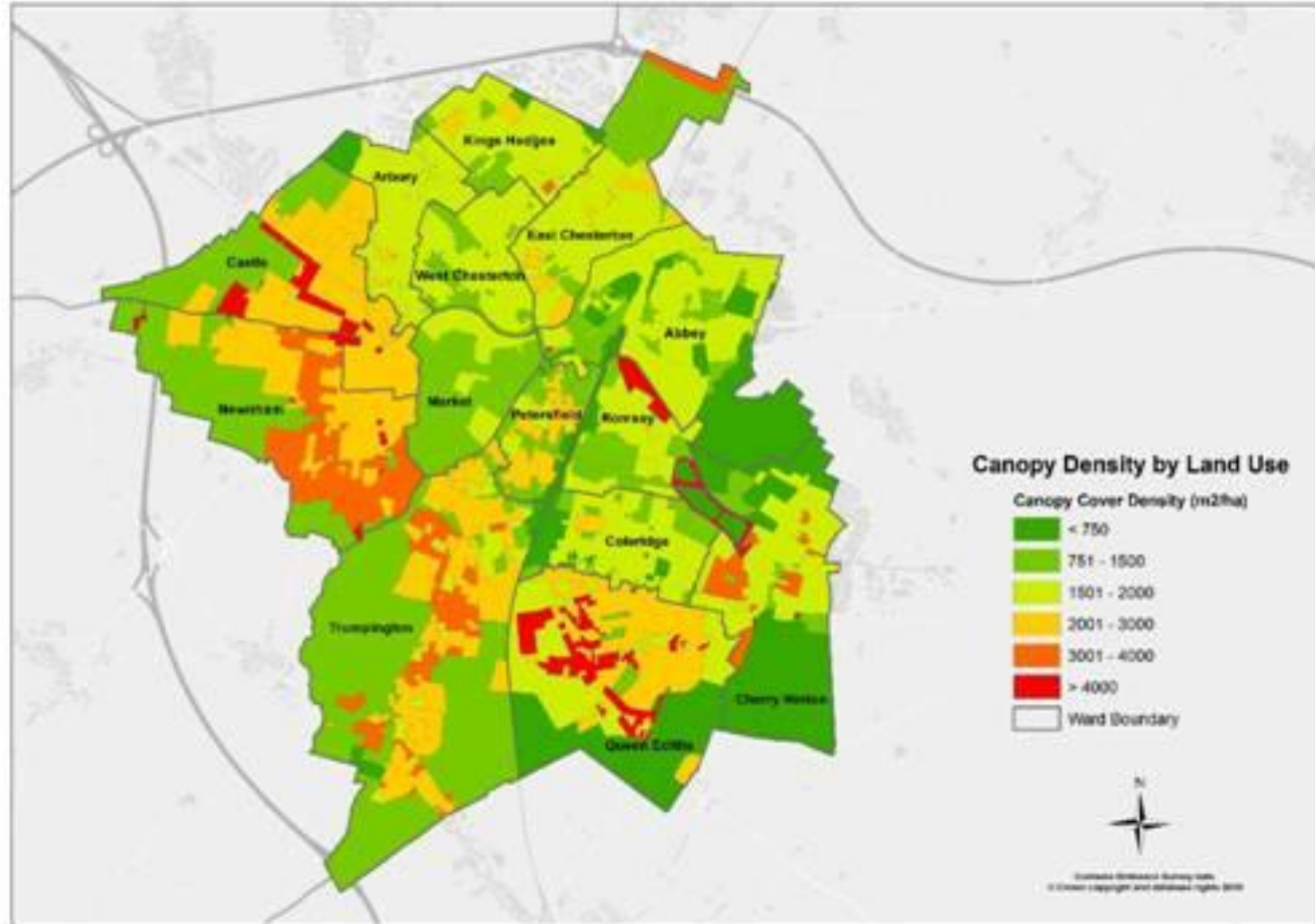
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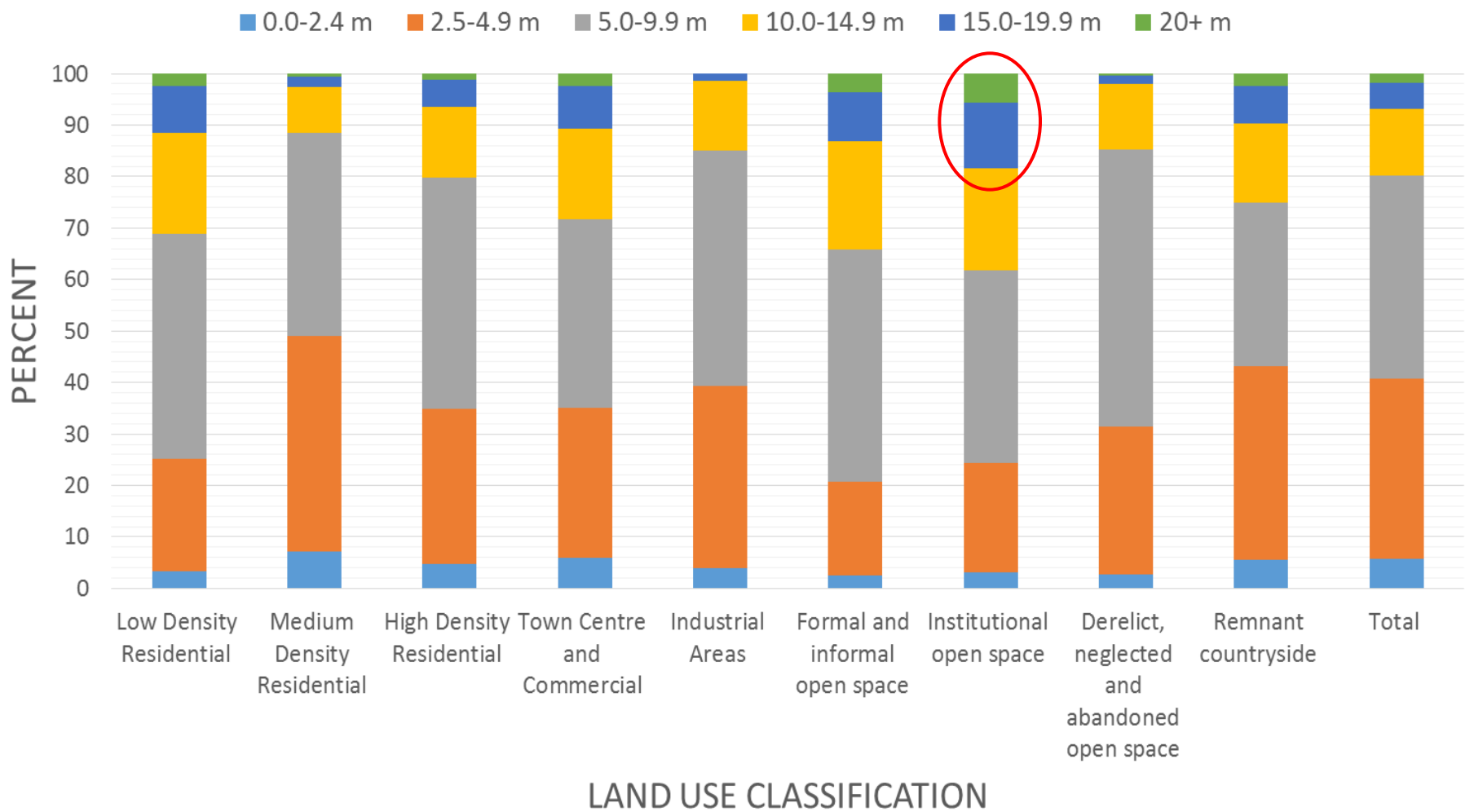
Results – Tree density by ward and land-use in Cambridge City



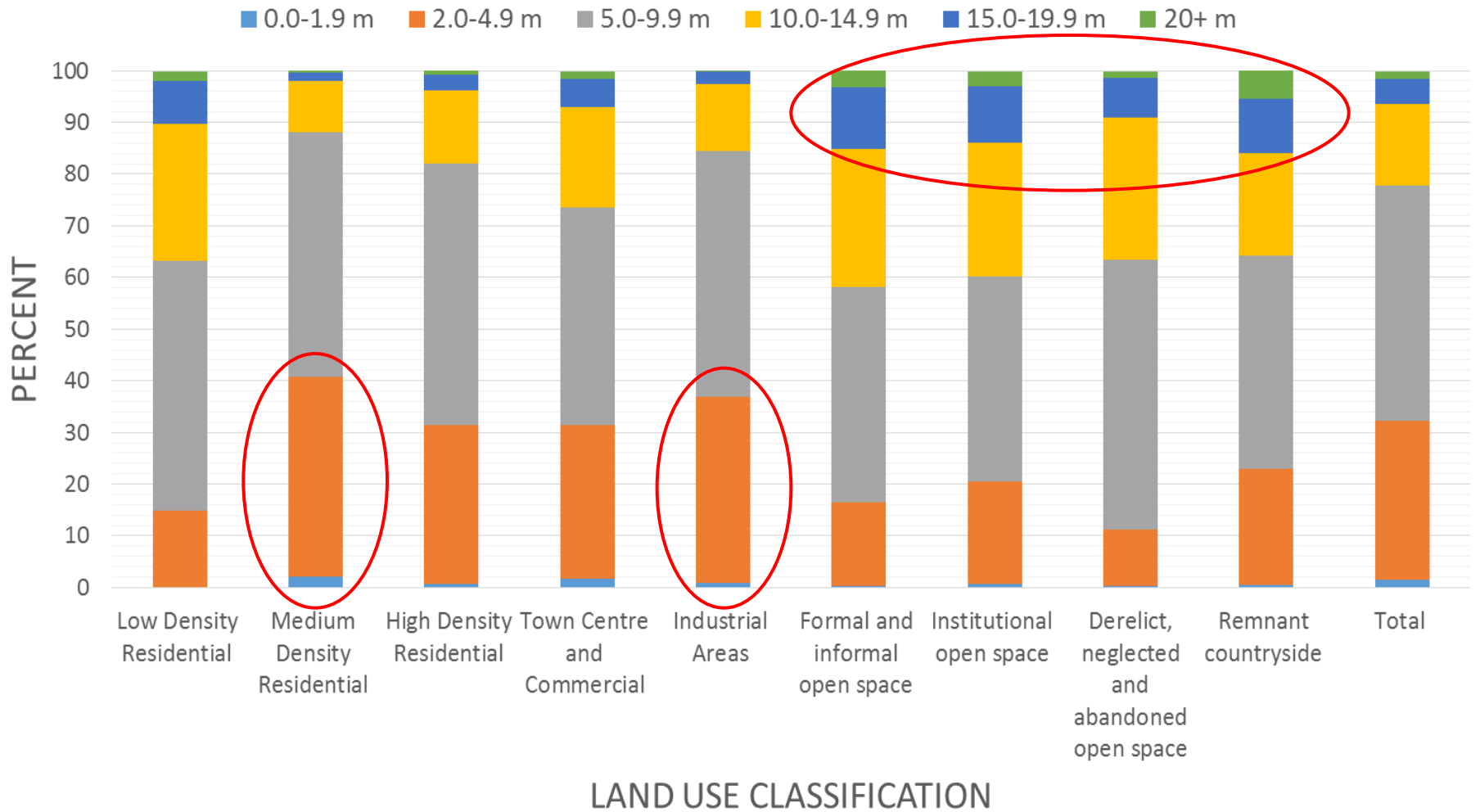
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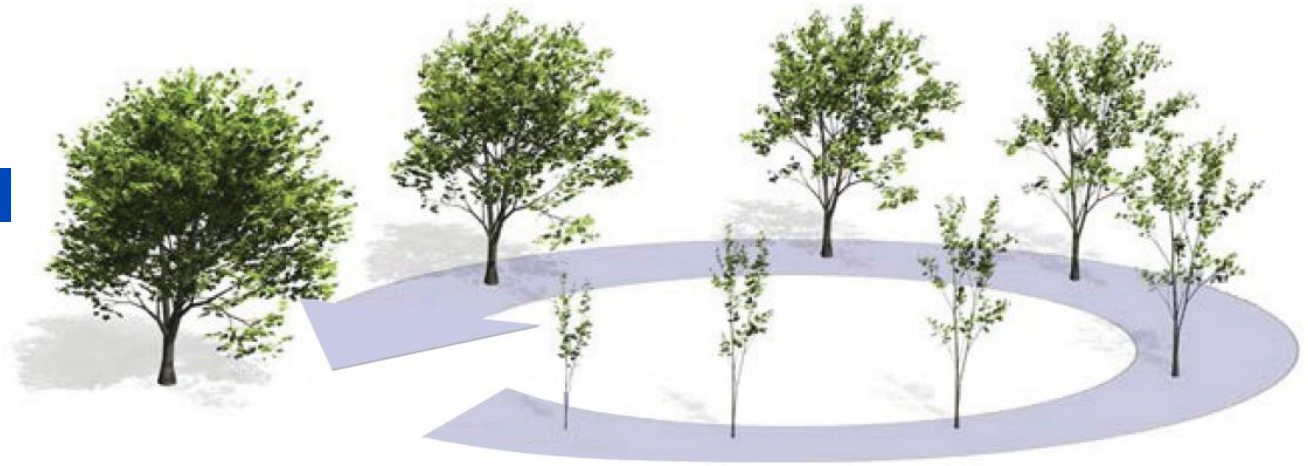
Results – Tree height



Results – Canopy spread



Results – Growth model



Year	Canopy area (m ²)
1	0.79
2	1.57
3	2.92
4	4.98
5	7.91
10	37.55
15	83.99
30	336.53
25% Loss	252.40

Canopy area prediction

Current Canopy Cover (m²)	6,961,907
Future Canopy Cover (m²)	7,780,214
% increase in Canopy Cover	11.75%
Current Canopy Cover as % of land area	17.08%
Future Canopy Cover as % of land area	19.08%
Actual % increase in Canopy Cover	2.01%

Current and projected canopy characteristics

Discussion – Planting strategy

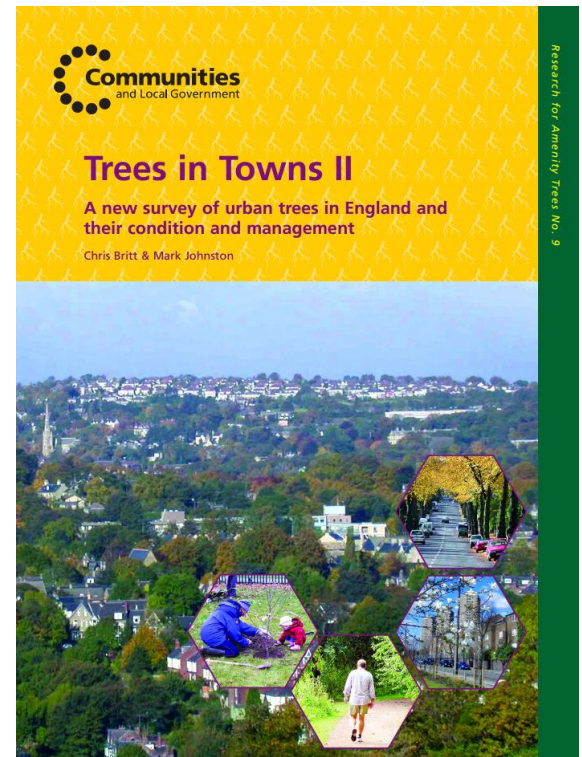
- **Need for partnerships, guidance and schemes advising local residents on how they can increase canopy cover**
- **Scope for increasing tree density on industrial land**
- **Maximising the canopy cover**

Discussion – Ground survey

- **Ground survey results provided a reasonable comparison with canopy density from ProximiTREE**
- **Good baseline against which future changes in the city's tree characteristics can be assessed**
- **Ground survey allowed for identification of tree species**

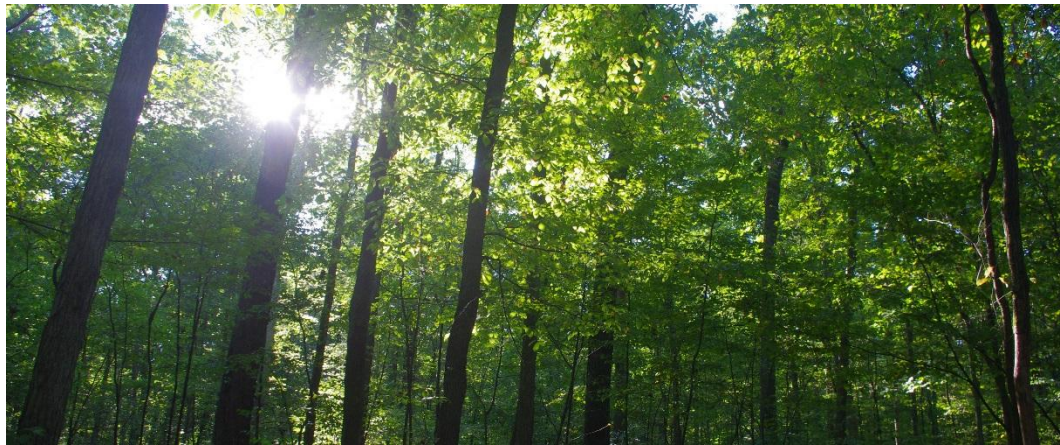
Discussion – Comparison with Trees in Towns II

- **Trees in Towns II survey obtained an estimate of urban tree stock in towns and cities across England**
- **Tree densities in Cambridge, estimated from ProximiTREE data, were lower than tree densities estimated by the TTII study for other large towns, while canopy densities were higher**
- **Indication that Cambridge has a more mature stock of trees compared to other English towns and cities**



Recommendations

- It is recommended that planting strategies are targeted by ward and land-use to attain city average canopy covers within each category
- Increase in canopy cover from 17.1% to 19.1%



Suggested outcomes from study

- **Strategic management**
- **New planting**
- **Protection**
- **Maintenance**

