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A Spatial Strategy for London's Urban Forest Plan

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Overview

- An Urban Forest Plan is being drafted to increase London's canopy cover by 10% by 2050

- But where? How?

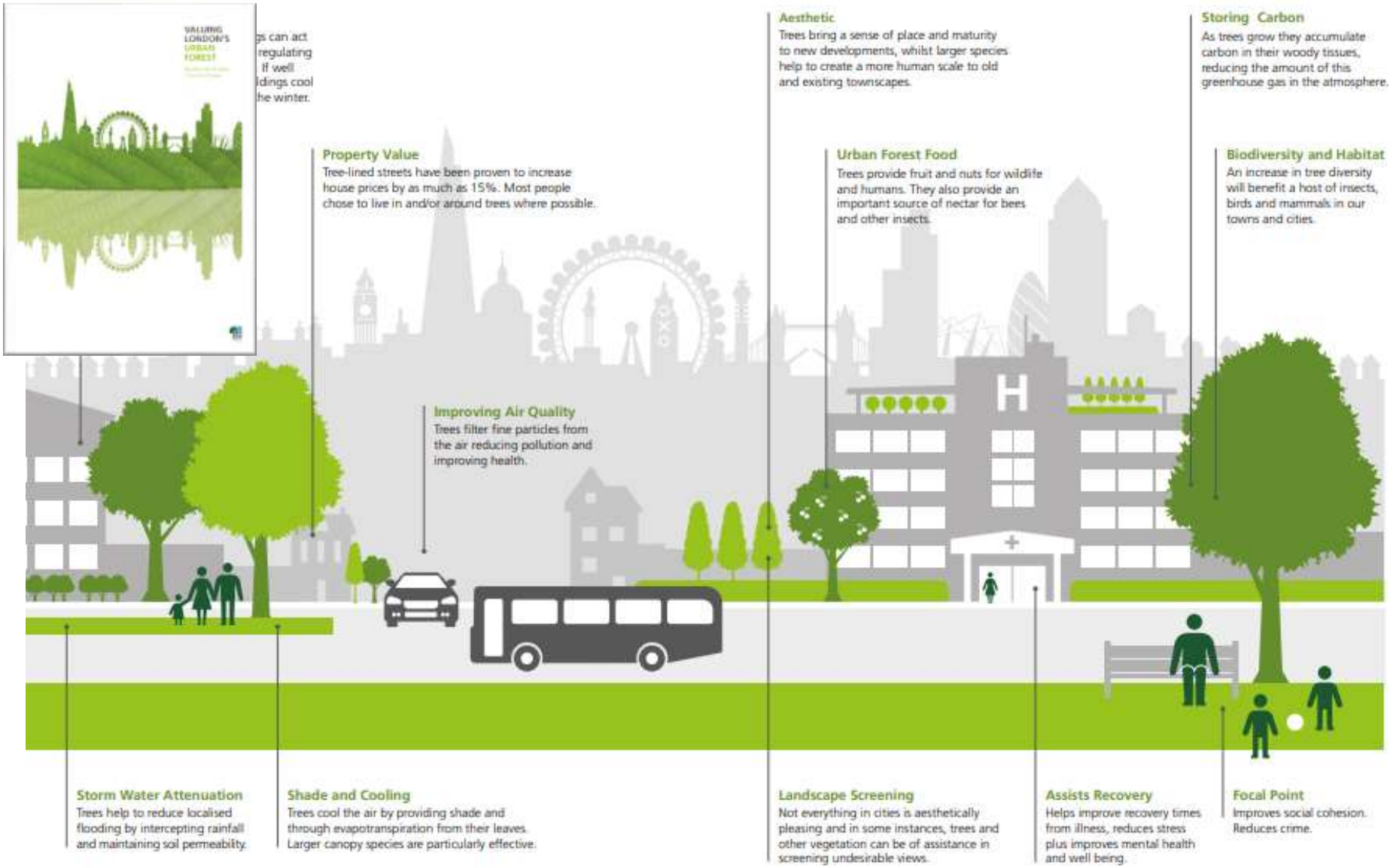
- Identify priority Wards for increasing canopy cover
- Identify potential actionable planting opportunities
- Provide tools to convince decision makers

LEARNING OBJECTIVES

- Understand how this ambitious planning & land use strategy will support biodiversity enhancement at a range of spatial scales
- Share good practice and reflect on success factors
- Reflect on implications for the profession

The Challenge

Context – City/Policy



Context – City/Policy

London's trees provide at least £133m of benefits every year in terms of air pollution removal, carbon sequestion and reducing the amount of water going into drains.

2,241

tonnes of pollution removed from the air every year, worth £126M. They remove the equivalent of 13% of PM_{10} particulates and 14% of NO_2 emitted by road transport.

40%

Nearly 40% of London's surface is impermeable; 32% of ground cover is grass.

60%

Almost 60% of London's trees are in private ownership, but the trees on public land contribute 60% of the ecosystem service benefits. This is because parks and green spaces have a higher proportion of larger trees.

Trees prevent

10x

The volume of water in the Serpentine from entering London's drainage system. This helps reduce the risk of localised flooding.

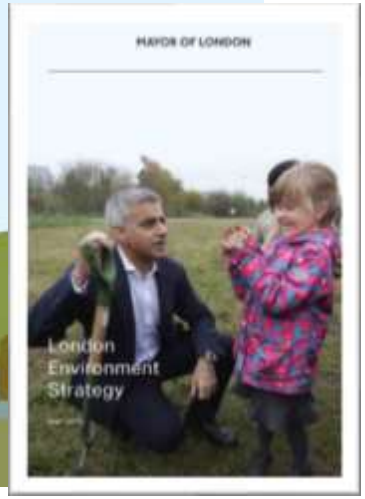
Biodiversity – London's trees support and are closely associated with a wide range of priority species such as all bat species, birds like barn owl, butterflies like purple emperor, other insects like stag beetle, and fungu like oak polypore.

3m
2m
1m
0

2,367,000

tonnes of carbon is stored in London's trees, worth £147M

Pests and diseases – If Asian Longhorn Beetles become established in London, they could damage over 3 million of London's trees leading to a reduction in ecosystem services and associated economic cost.



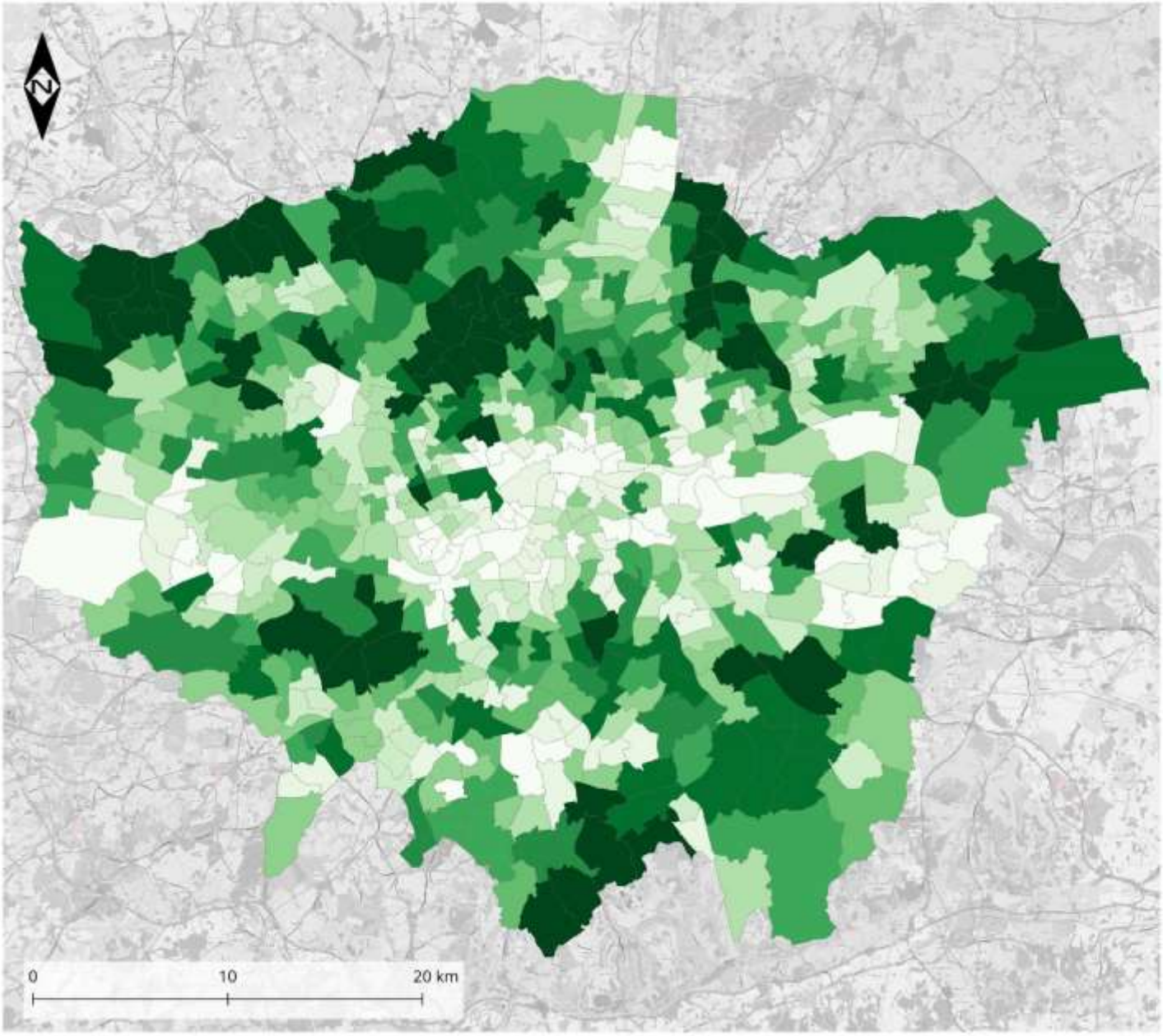
Context - Organisational

- **Governmental**
  - GLA
  - Forestry Commission
  - Natural England
  - *London Tree Officers Association*
- **3rd Sector**
  - Trees for Cities
  - The Woodland Trust
  - The Tree Council
  - London Wildlife Trust
  - The Orchard Project
  - The Conservation Foundation
  - TCV
  - Groundwork
  - CPRE London
  - The Thames Chase Trust

Context - Data

- Ward boundaries
  - Most useful for policy makers
- Tree Canopy Cover
  - Canopy Curio
- Index of Multiple Deprivation
  - Lower Super Output Areas
- Urban heat island
  - Mean summer night-time temp
- Green Blue cover
  - Normalised Difference Vegetation Index
- Air pollution
  - Atmospheric Emissions Inventory air data (NO2 and PM2.5)
- Sites of Importance for Nature Conservation
- Surface water flooding and Water Quality

The Solution



Identifying priority wards for tree planting: Current Canopy

Percentage of ward currently under tree canopy

Curio Canopy ward rank deciles (1 low)

1
2
3
4
5
6
7
8
9
10

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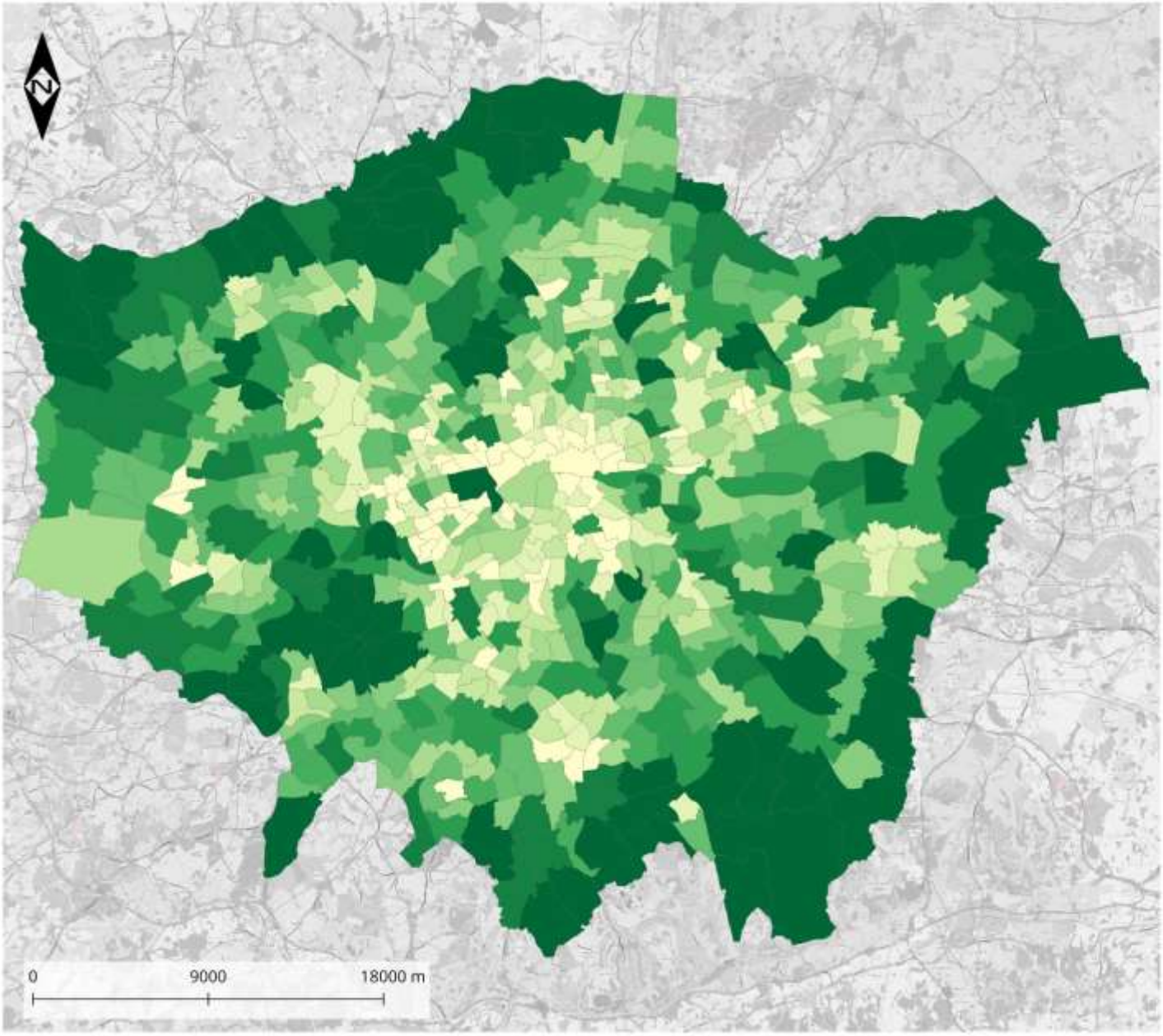

Identifying priority wards for tree planting: Current Blue/ Green cover

Percentage of ward that is green cover or open water

Blue Green ward rank deciles (1 low)

1
2
3
4
5
6
7
8
9
10

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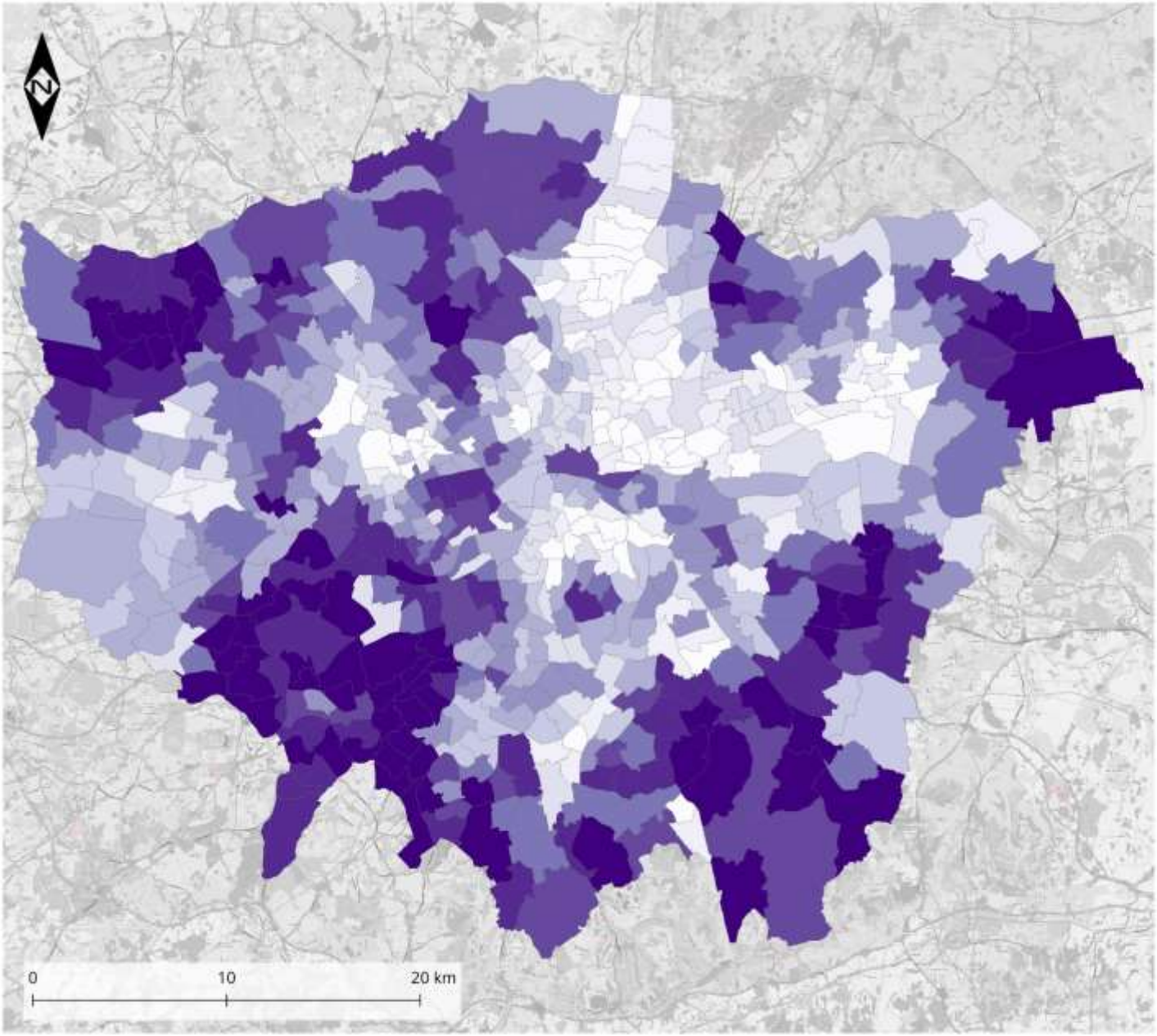
Map design: Maplango. Foreground data: Contains National Statistics data (Ward boundaries) © Crown copyright and database right 2018 and Blue/Green cover from UKMap © Verisk Analytics GeoInformation Group. Background map © OpenStreetMap contributors.

Identifying priority wards for tree planting: Index of Multiple Deprivation

Average IMD scores for ward



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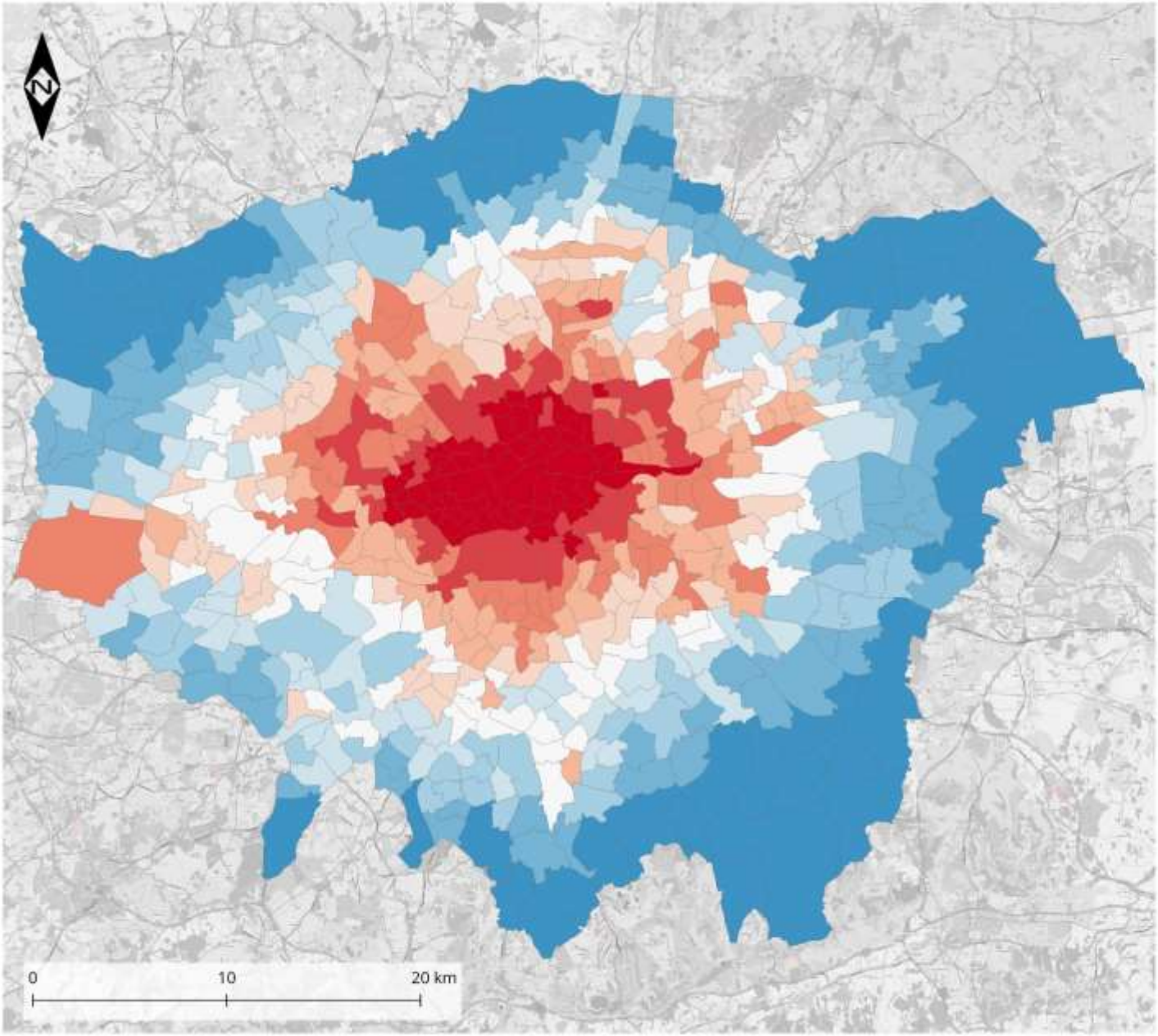

Identifying priority wards for tree planting: Nitrogen Dioxide

Average concentrations of NO2 in ward

NO2 ward rank deciles (1 high)

1
2
3
4
5
6
7
8
9
10

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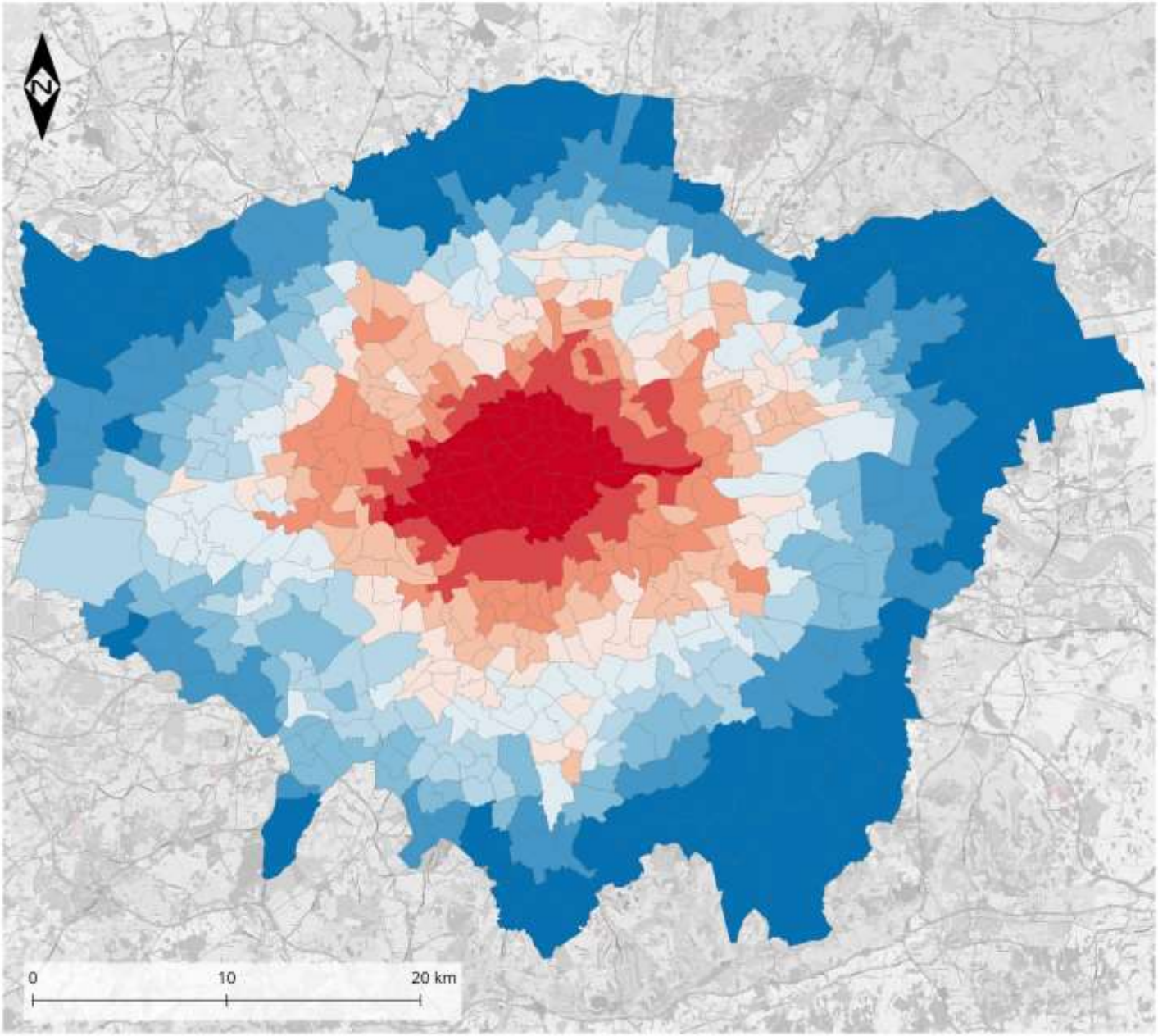

Identifying priority wards for tree planting: Particulate matter 2.5

Average concentrations of PM2.5 in ward

PM2.5 ward rank deciles (1 high)

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10

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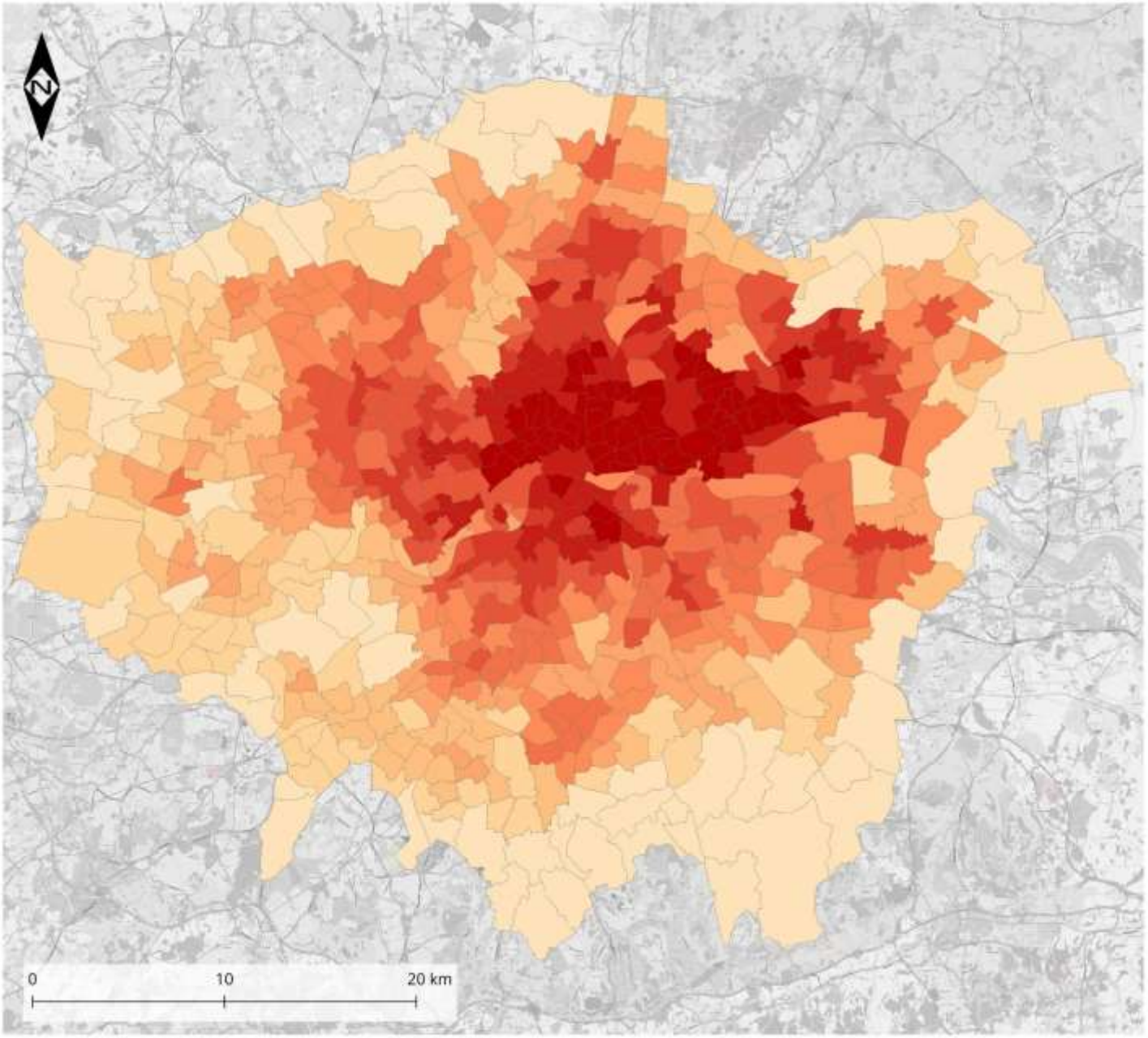

Identifying priority wards for tree planting: Urban Heat Island

Average midnight temperature for ward during a typical summer

UHI ward rank deciles (1 high)

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10

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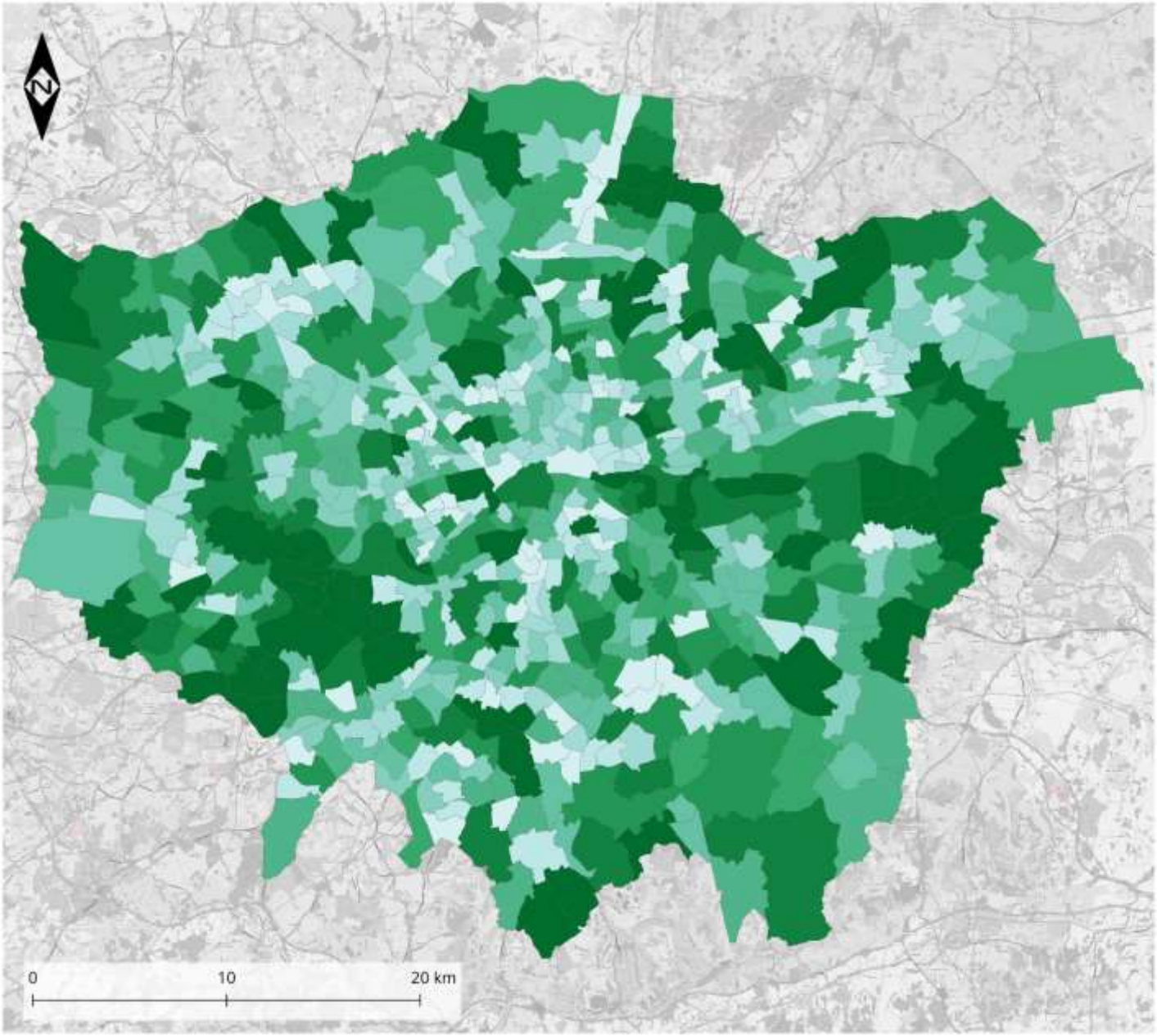

Identifying priority wards for tree planting: Sites of Importance for Nature Conservation

Percentage of ward designated as a SINC

SINC ward rank deciles (1 low)

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10

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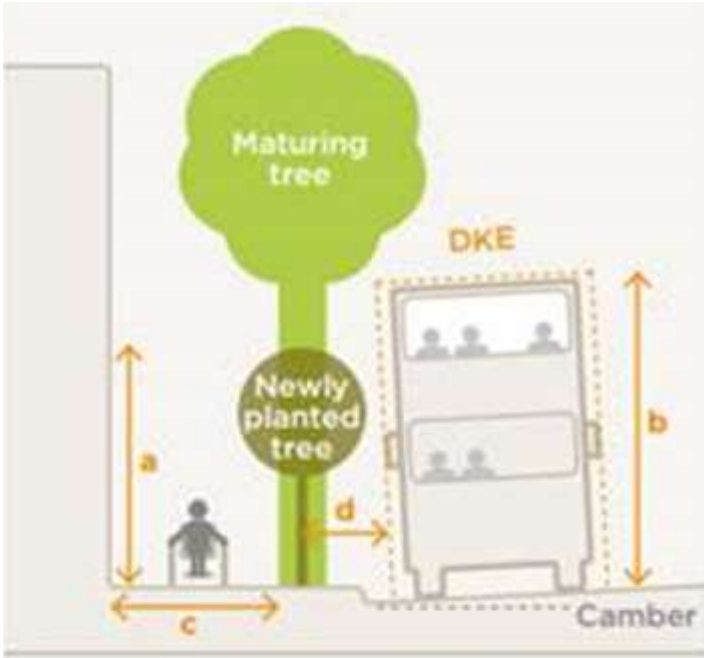
Planting criteria

- Species
- Crown spread
- Root spread
  - British Standard 5837
- Stocking estimates
  - 1280/stems/ha
  - 20% open-space in woodland scheme
- Planting costs (Inc. 3 years of maintenance)
  - £837.45 - Standard
  - £2.29 - Whips



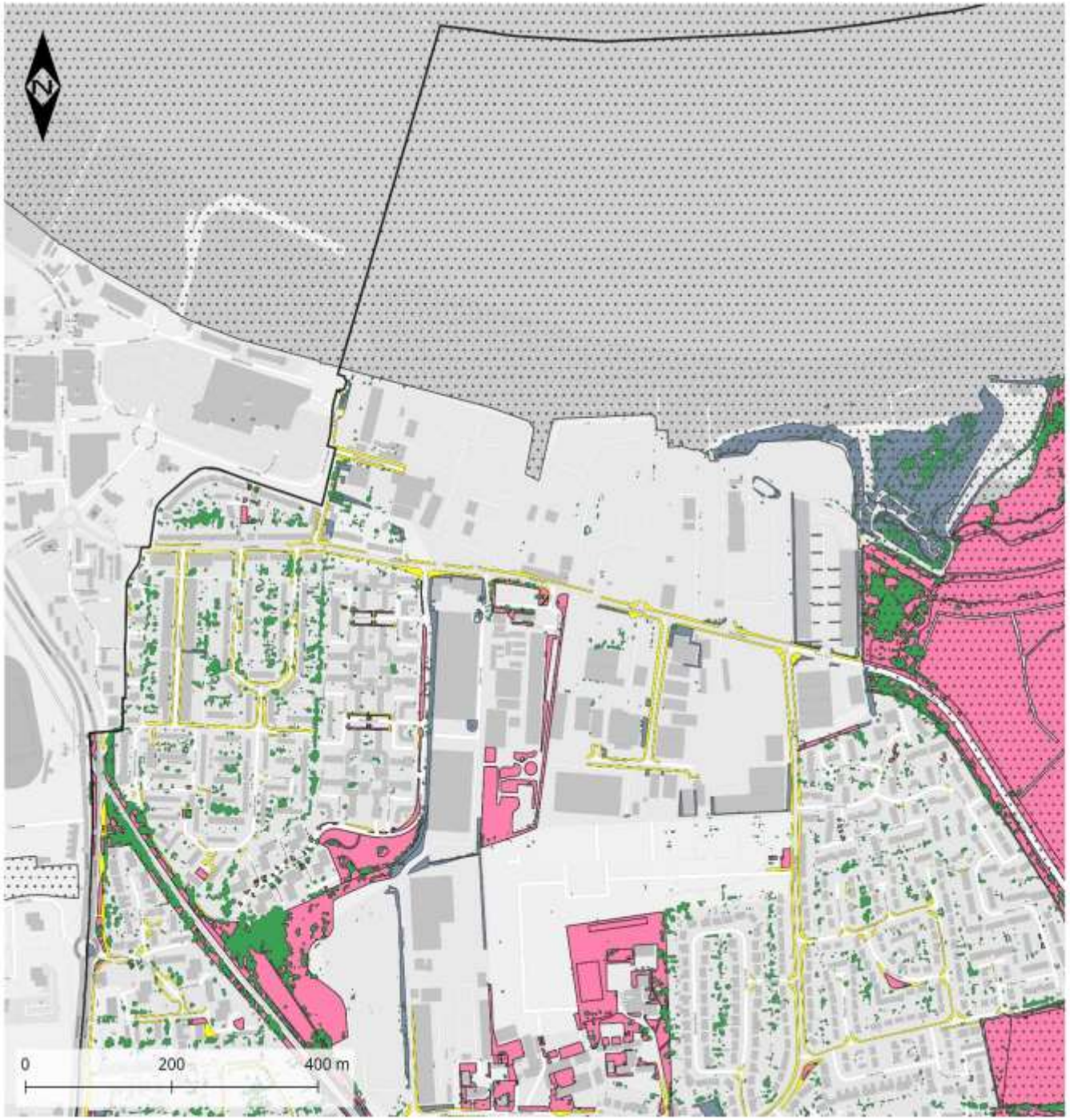
Not to scale: for illustrative purposes only

a. Vertical clearance over footways for pedestrians (eg 2.5-3 metres)
b. Vertical clearance over the carriageway for tall vehicles (eg 4.5 metres)
c. Horizontal clearance on footways to accommodate a wheelchair or buggy
d. Horizontal clearance to accommodate vehicle DKE: (eg 0.6 metres)

Tree data

Most common species	Currently planted	Canopy Radius for (m)
Plane (Platanus x hispanica)	Yes	12.5
Ash (Fraxinus excelsior)	No	
Oak (Quercus robur)	No	
Maple (Acer pseudoplatanus)	Yes	
Maple (Acer platanoides)	Yes	10
Cherry (Prunus avium)	Yes	2.5
Birch (Betula pendula)	Yes	4
Lime (Tilia x europaea)	Yes	7.5

Tree planting opportunity areas: Slade Green & Northend - NW



- Current Canopy
- Pavement - potential for planting
- Greenspace - potential for planting
- Greenspace - other
- SINC

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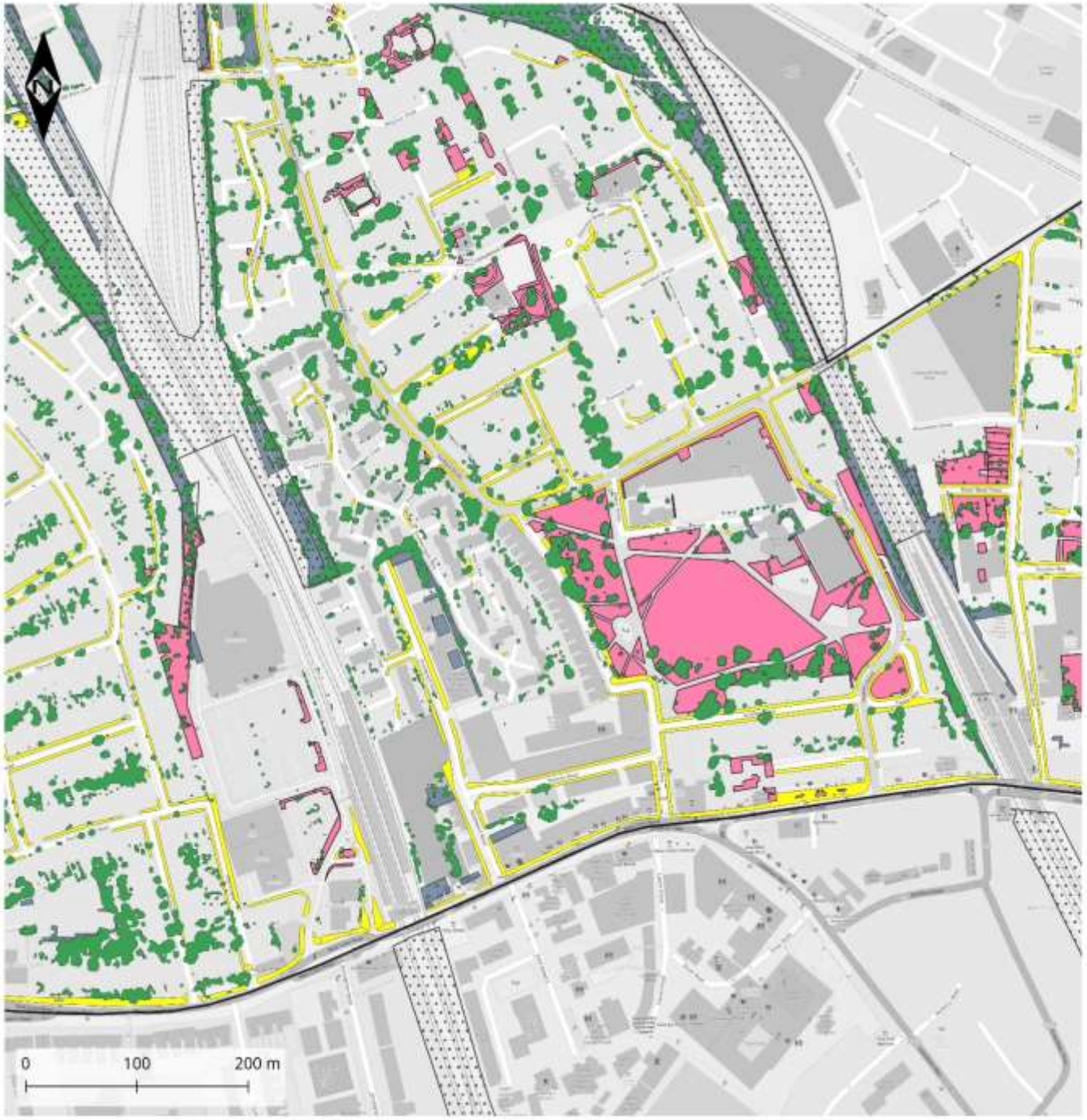
Tree planting opportunity areas: New Cross - S



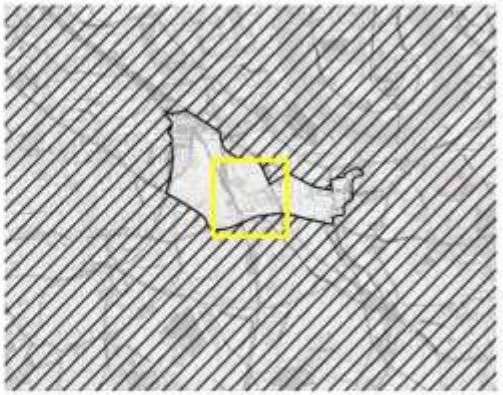
Current Canopy

Pavement - potential for planting

Greenspace - potential for planting

Greenspace - other

SINC



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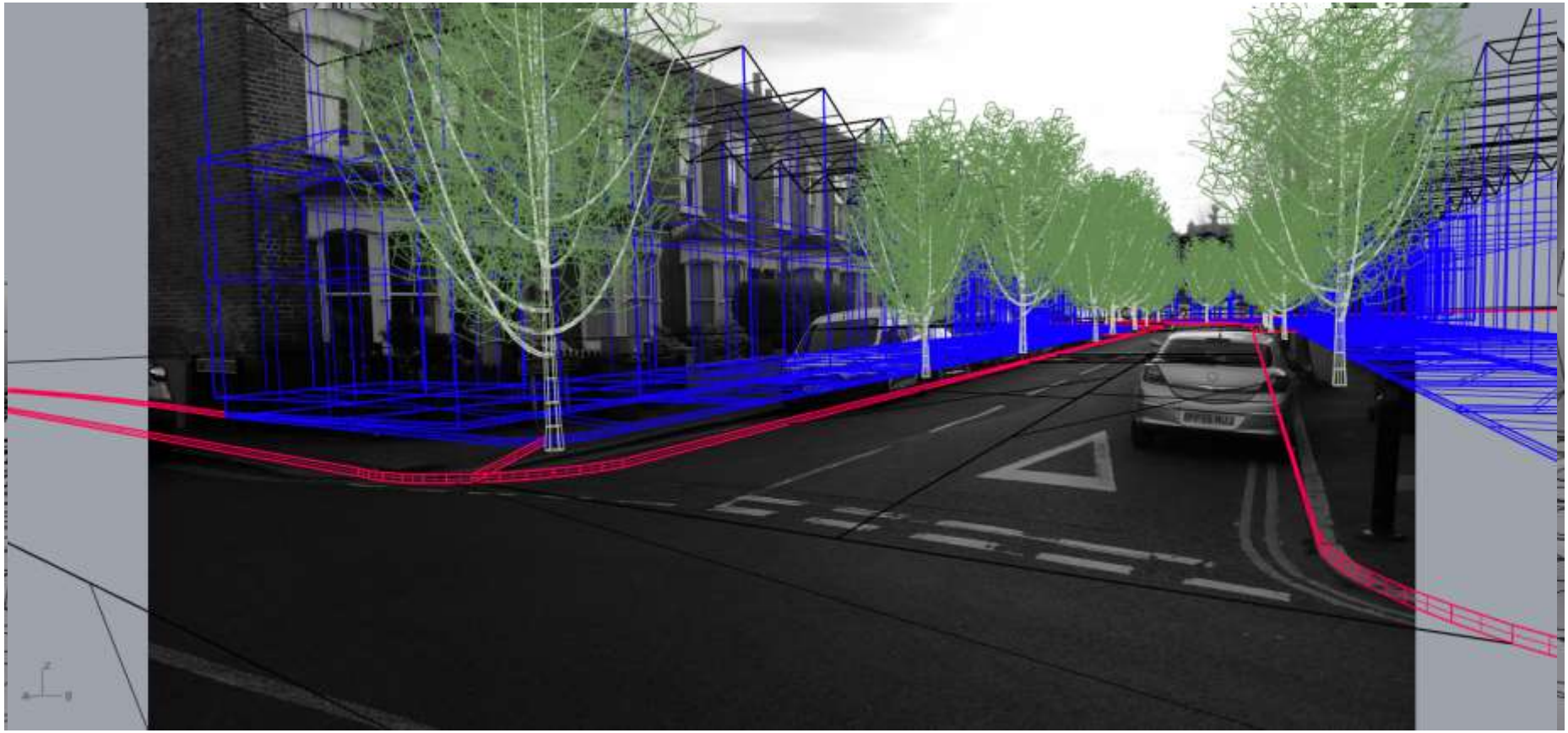
Statistics

Ward		New Cross	Slade Green & Northend
Borough		Lewisham	Bexley
Ward area	ha	181.11	554.26
Current Canopy Ward	%	8.85	2.8
Possible new greenspace canopy	ha	7.59	151.05
Possible new greenspace canopy	%	4.19	27.25
Length all pavement	km	42.22	41.96
Length potential pavement	km	23.58	16.67
Possible number new pavement trees	count	1615	1142
Potential new street tree canopy	ha	27.04	19.12
Potential new street tree canopy	%	14.93	3.45
Total possible canopy increase (openspace + street tree area)	ha	34.63	170.17
Total possible canopy increase (openspace + street tree)	%	19.12	30.7

Communication with Data Viz



3D Animation

3D Before/After

3D Before/After

The Outcome

Informed decisions

Next steps

- Further modelling land use
- Publication
  - On-line interactive tool
- Policy
  - Urban Forest Plan
  - Already used to inform 3 borough GI strategies
- Some uncertainty
  - General and Mayoral Elections coming

"Immediately practical tool to target action and support funding proposals"
GLA (2019)

"Experimental approach to identifying actual planting opportunities"
GLA (2019)

Key take-aways

- Collaborative working can be challenging and often time consuming but to mainstream biodiversity we must
  - Engage with other agendas
  - Value nature
- Strategic planning is vital to ensure resources are targeted effectively
- Policy is most effective when data-driven
  - Make good use of existing closed, shared and open data
  - Embrace technology

LEARNING OBJECTIVES

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Thanks!

Any questions?

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