The Assessment of Green Infrastructure Equity (AGIE) methodology

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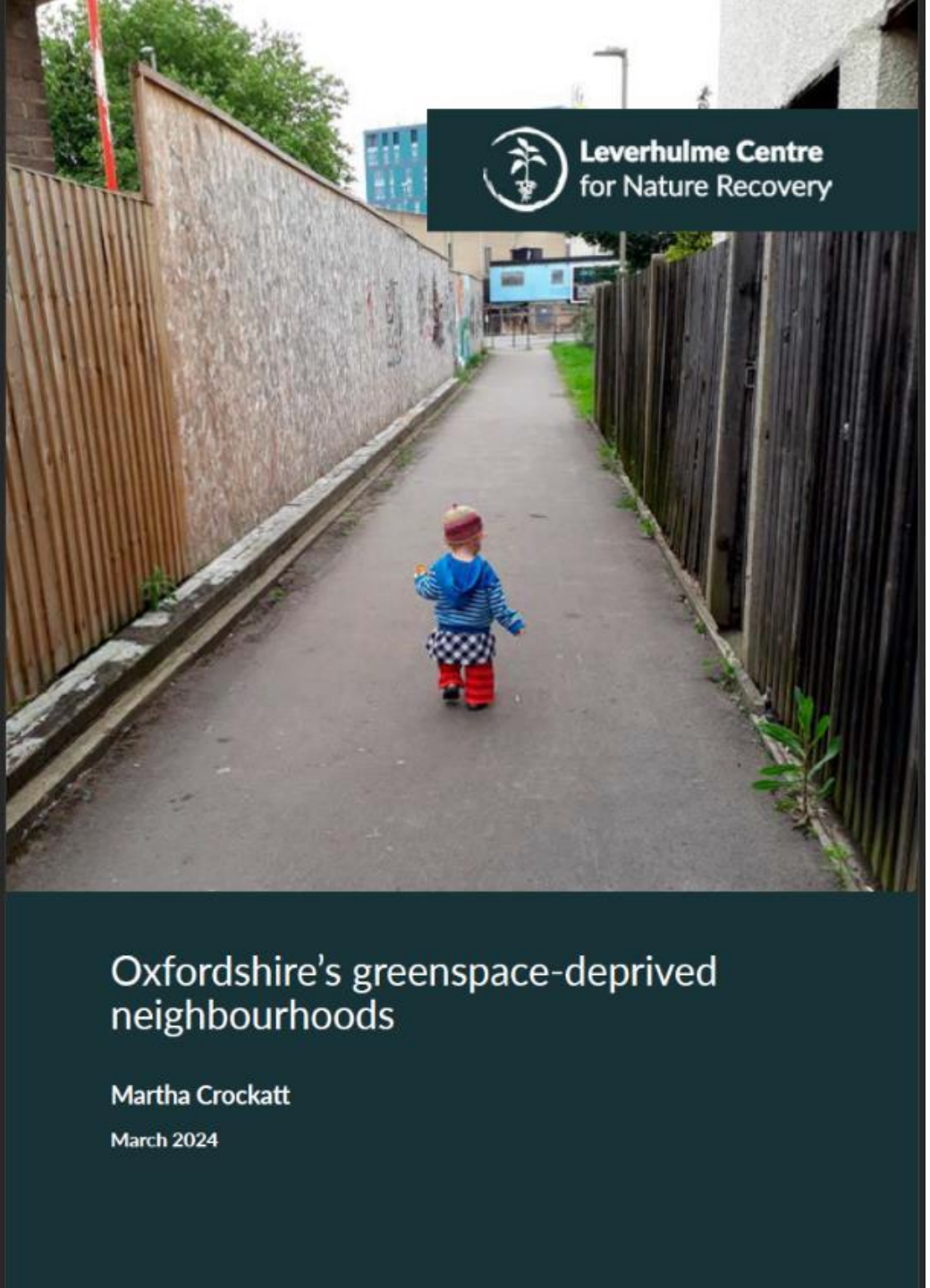
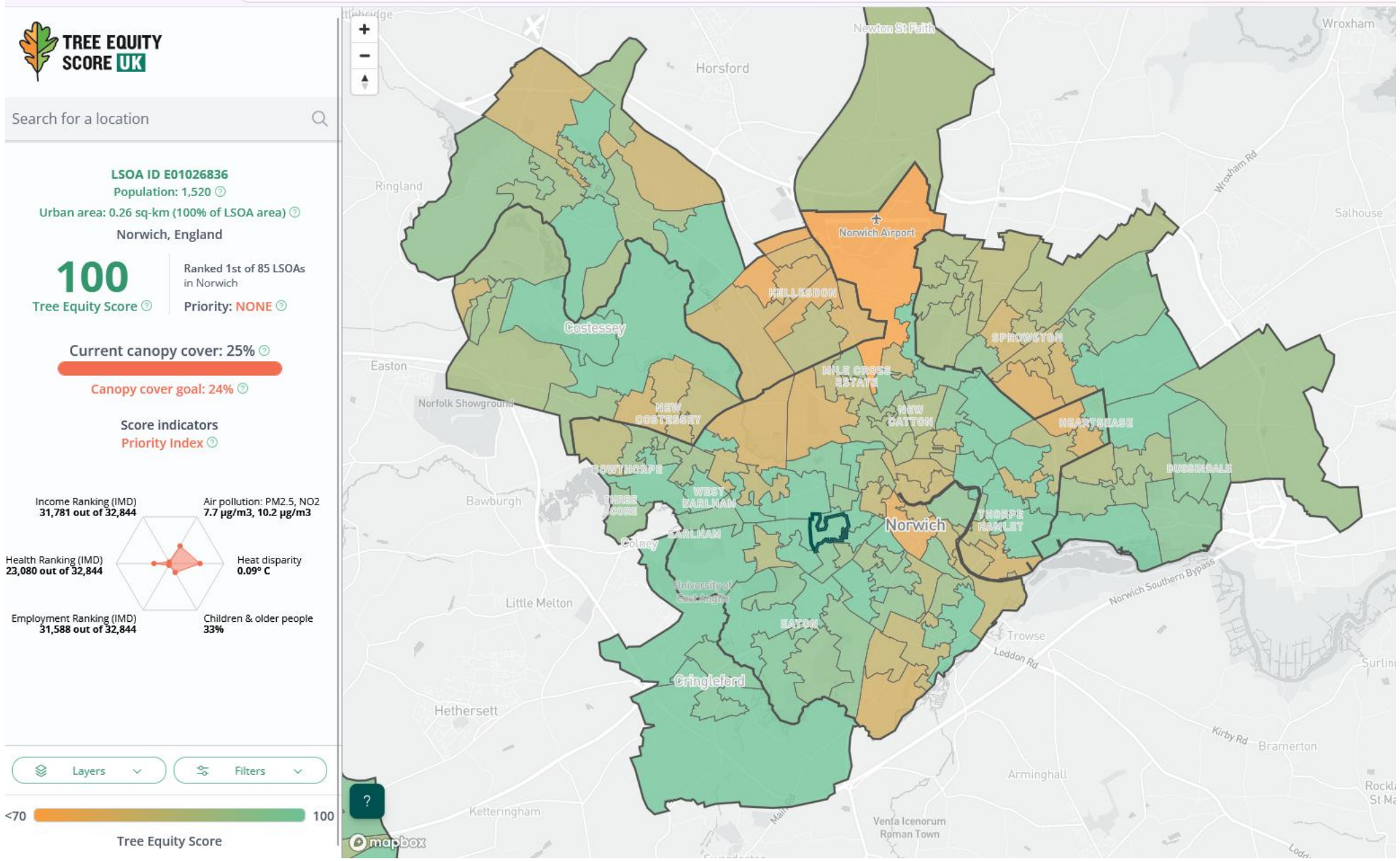


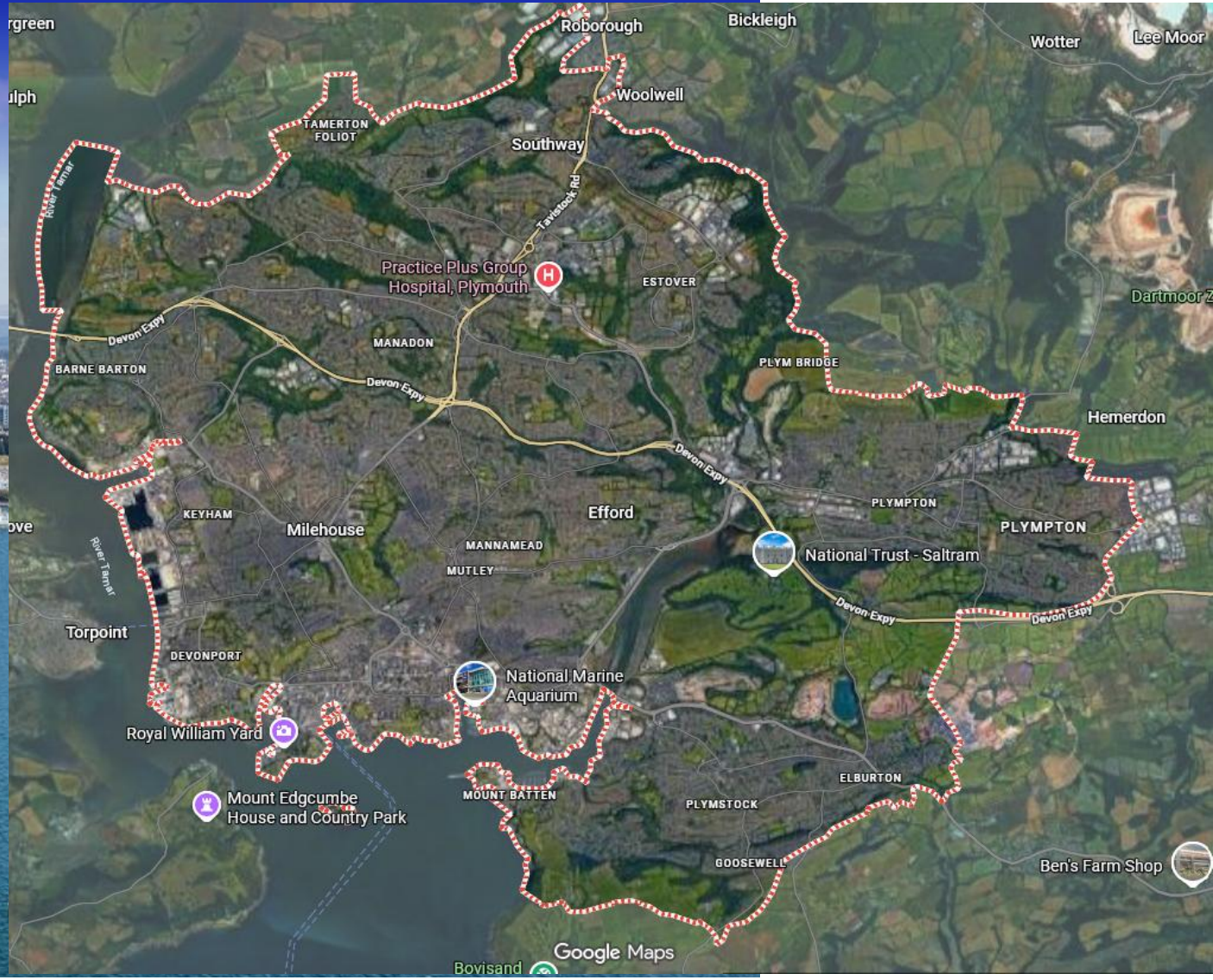
Aim:
Identify Oxfordshire neighbourhoods that are both socioeconomically deprived and have poor provision of accessible greenspace.

OLNP
OXFORDSHIRE LOCAL NATURE PARTNERSHIP

OXFORDSHIRE COUNTY COUNCIL

Wild Oxfordshire


TREE EQUITY SCORE UK
Search for a location
LSOA ID E01026836
Population: 1,520
Urban area: 0.26 sq-km (100% of LSOA area)
Norwich, England
100
Tree Equity Score
Ranked 1st of 85 LSOAs in Norwich
Priority: NONE
Current canopy cover: 25%
Canopy cover goal: 24%
Score indicators
Priority Index
Income Ranking (IMD)
31,781 out of 32,844
Air pollution: PM2.5, NO2
7.7 µg/m3, 10.2 µg/m3
Health Ranking (IMD)
23,080 out of 32,844
Heat disparity
0.09° C
Employment Ranking (IMD)
31,588 out of 32,844
Children & older people
33%
Layers
Filters
<70
100
Tree Equity Score
Horsford
Newton St Faith
Wroxham
Wroxham Rd
Salhouse
Ringland
Norwich Airport
HELLESDON
Costessey
SPROWSTON
Easton
MILE CROSS ESTATE
Norfolk Showground
NEW COSTESSEY
NEW CATTON
HEARTSEASE
DUSSINDALE
BOWTHORPE
WEST EARLHAM
THREE SCORE
Bawburgh
Norwich
THORPE HAMLET
EARLHAM
Colney
University of East Anglia
Norwich Southern Bypass
Little Melton
EATON
Trowse
Loddon Rd
Cringleford
Hethersett
Kirby Rd
Bramerton
Arminghall
Ketteringham
Venta Icenorum Roman Town
mapbox



PLYMOUTH CITY COUNCIL

WOODLAND TRUST

Leverhulme Centre for Nature Recovery

UNIVERSITY OF OXFORD

AGIE methodology

Desk based

- Publicly available data
- Urban LSOAs in England
- Evidence-based starting point
- Decision support tool

Three domains

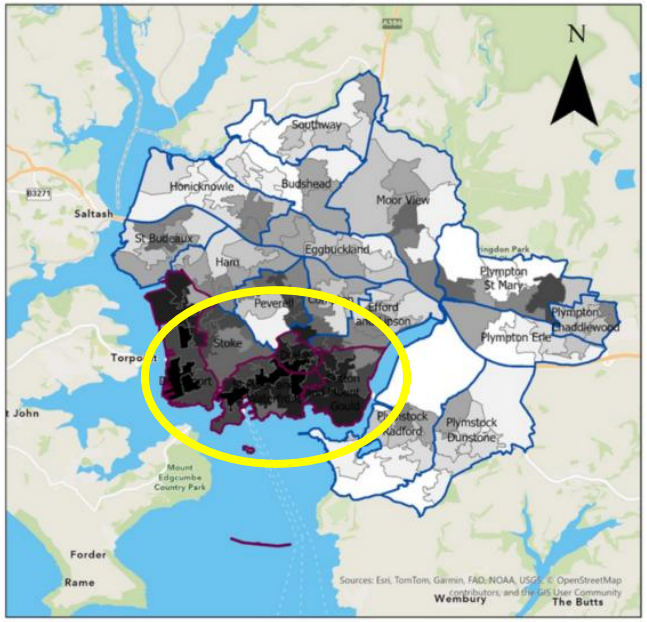
- Distribution of green infrastructure
- Environmental need
- Socioeconomic need

		Green infrastructure metric	Data source
Distribution of green infrastructure	1	**Greenspace access** No. of homes with accessible greenspace nearby*	Defra
	2	**Greenspace provision** m^2 of accessible greenspace per person	NE GI
	3	**Tree canopy cover** % neighbourhood under tree canopy	TES
	4	**Manmade surfaces** % neighbourhood that is manmade surfaces	NE GI
Environmental need	5	**Air quality** Combined measure: small particulate matter and NO_2 concentrations	TES
	6	**Heat disparity** How much a neighbourhood varies in heat extremes in relation to the local authority average	TES
Socioeconomic need	7	**Indices of Multiple Deprivation rank** Neighbourhood's rank relative to England's 32,000 neighbourhoods	English Indices of Deprivation (2025)
	8	**Age dependency ratio** Proportion of population that is under 17 or over 64	census
	9	**Minoritised ethnicity** Proportion of population that is of minoritized ethnicity	census

Equally-weighted to produce single AGIE score

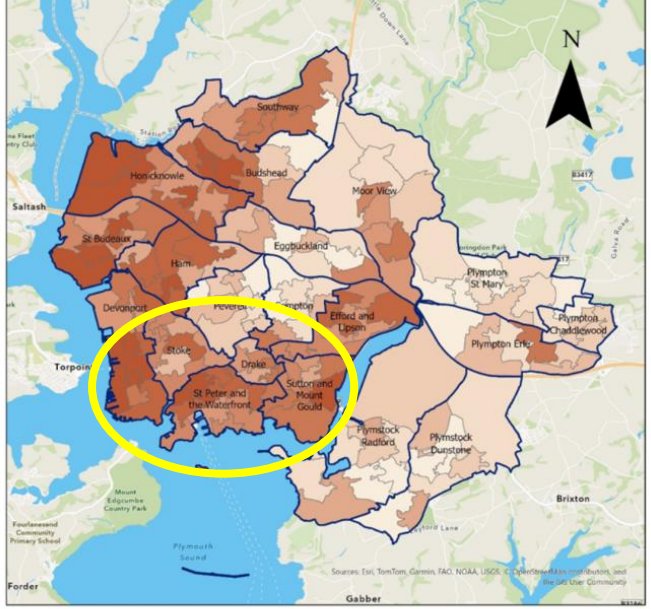
NE GI, Natural England Green Infrastructure

TES, Tree Equity Score



0 0.5 1 2 Kilometers

Manmade surface (%)
- 13.2 - 21.6
- 21.7 - 30.4
- 30.5 - 36.0
- 36.1 - 39.7
- 39.8 - 43.8
- 43.9 - 48.2
- 48.3 - 54.2
- 54.3 - 64.0
- 64.1 - 73.7
- 73.8 - 86.5
- Wards
- Focal wards



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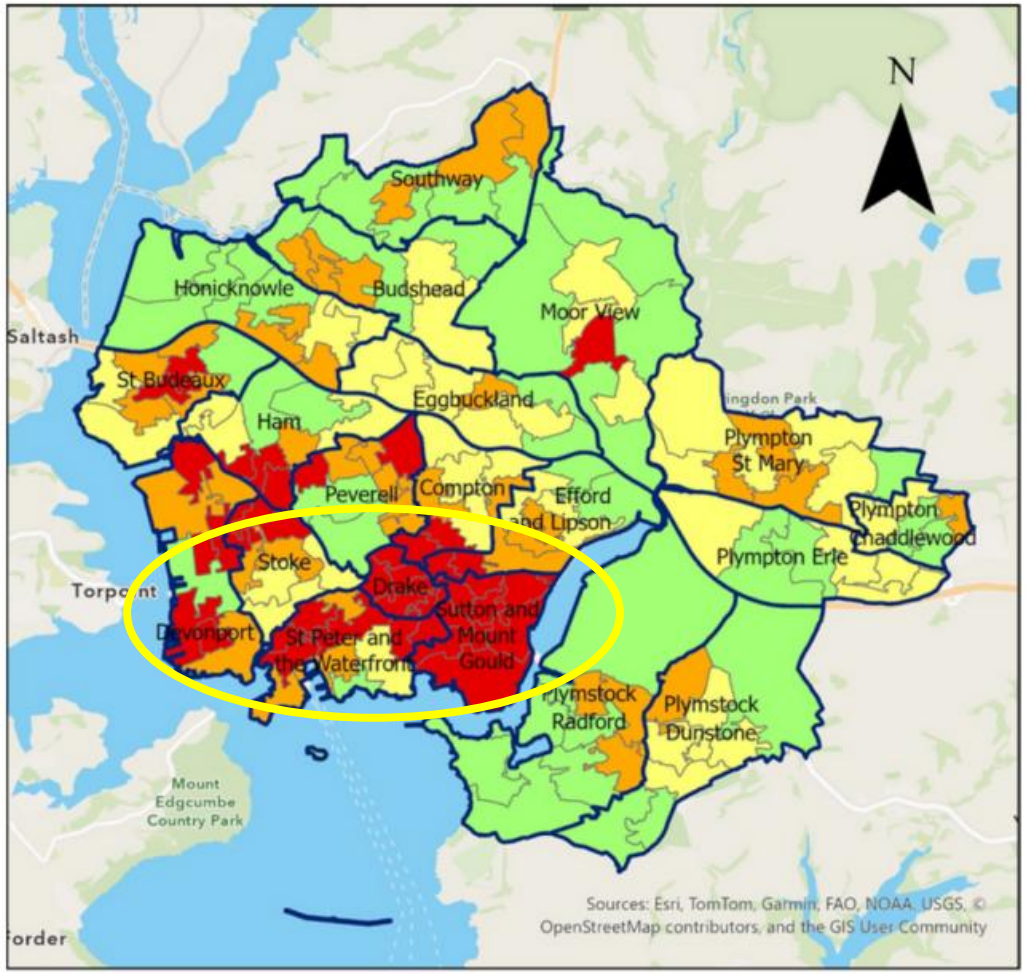
IMD rank
- 88 - 2878 Greater socioeconomic deprivation
- 2879 - 5688
- 5689 - 8250
- 8251 - 10936
- 10937 - 14455
- 14456 - 17413
- 17414 - 20439
- 20440 - 24646
- 24647 - 28423
- 28424 - 32078 Less socioeconomic deprivation
- Plymouth wards

0 0.5 1 2 Kilometers

Percent tree canopy cover
- 3.8 - 5.0 Lowest canopy cover
- 5.1 - 10.0
- 10.1 - 15.0
- 15.1 - 20.0
- 20.1 - 25.0
- 25.1 - 30.0
- 30.1 - 35.0
- 35.1 - 40.0
- 40.1 - 45.0
- 45.1 - 50.0 Highest canopy cover
- Plymouth wards



0 0.5 1 2 Kilometers

AGIE priority category
- Highest
- High
- Moderate
- Low
- Plymouth wards

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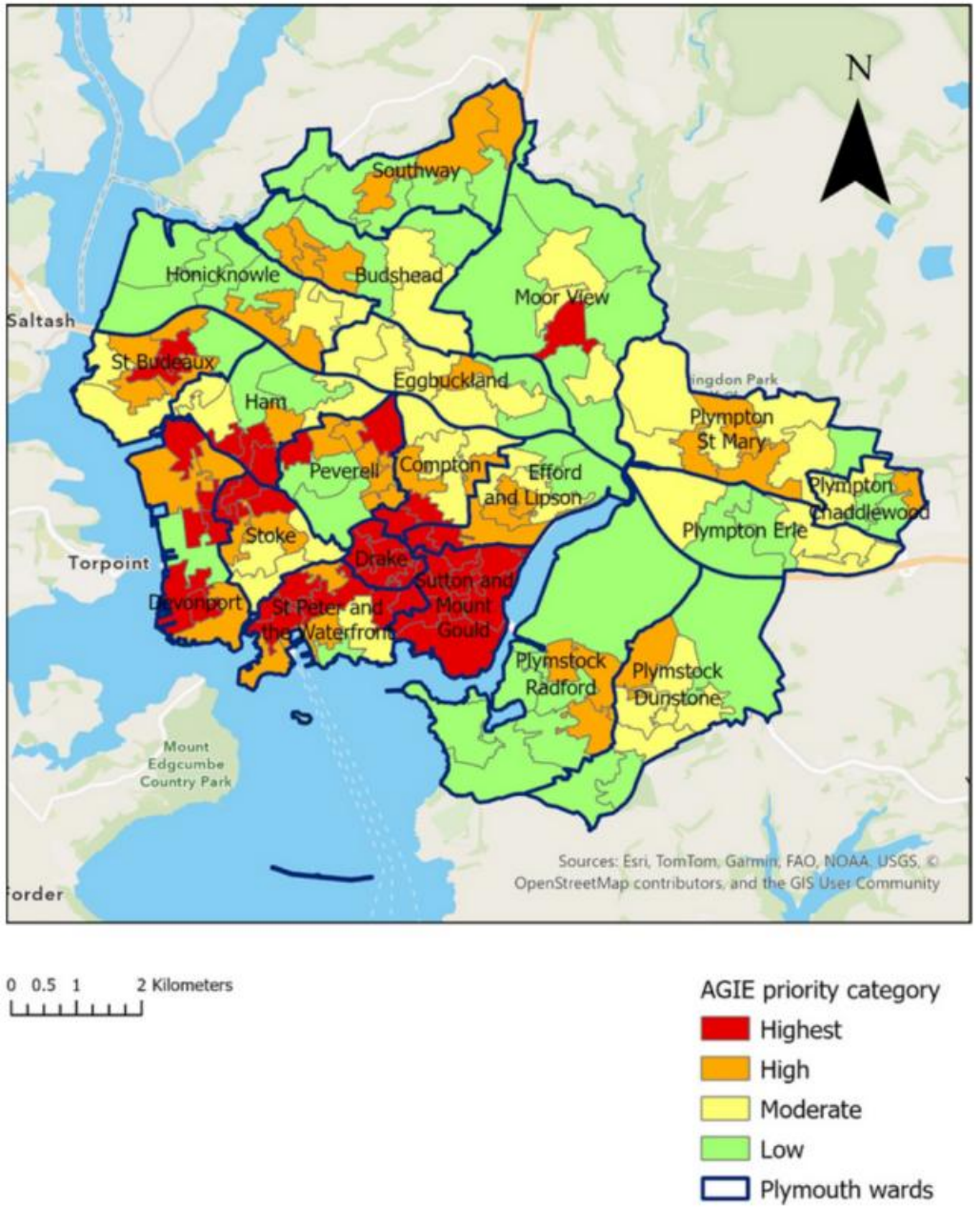
Compared to low priority areas, high priority areas have:

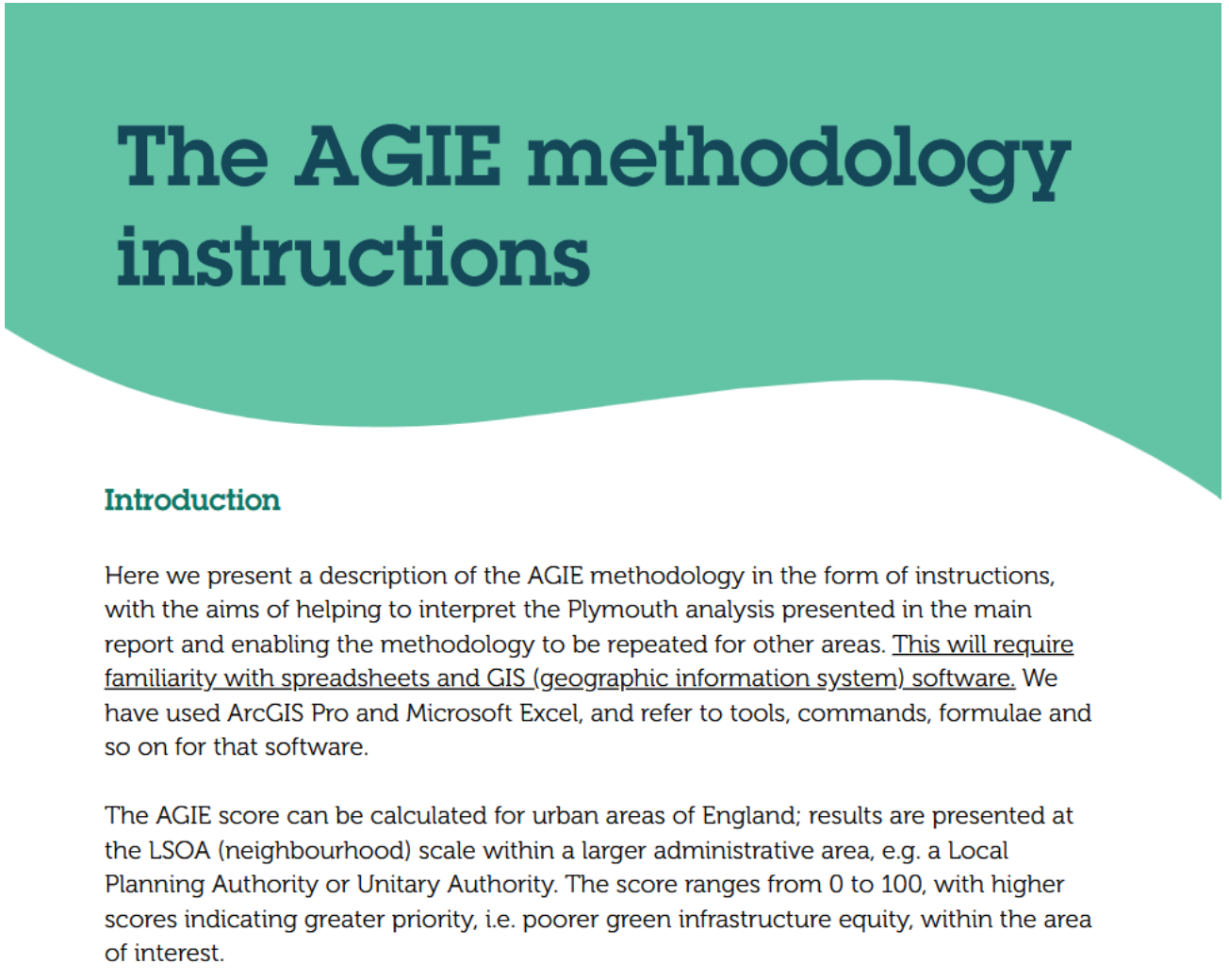
- less than a tenth of the accessible greenspace per person
- less than half the canopy cover
- more than double the percentage of manmade surfaces
- temperature extremes of over 3 ^{o}C greater



AGIE is replicable and open

- Urban areas in England
- Can use locally-held data sets
- Explore individual components separately
- Add other components? Remove components?
- Future: England-wide dataset and analysis

Report and methodology available: https://naturerecovery.ox.ac.uk/outputs/green-infrastructure-equity/



The AGIE methodology instructions

Introduction

Here we present a description of the AGIE methodology in the form of instructions, with the aims of helping to interpret the Plymouth analysis presented in the main report and enabling the methodology to be repeated for other areas. This will require familiarity with spreadsheets and GIS (geographic information system) software. We have used ArcGIS Pro and Microsoft Excel, and refer to tools, commands, formulae and so on for that software.

The AGIE score can be calculated for urban areas of England; results are presented at the LSOA (neighbourhood) scale within a larger administrative area, e.g. a Local Planning Authority or Unitary Authority. The score ranges from 0 to 100, with higher scores indicating greater priority, i.e. poorer green infrastructure equity, within the area of interest.

Thanks!

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Stakeholder group