Leverhulme Centre
for Nature Recovery

Oxfordshire's greenspace-deprived neighbourhoods

Martha Crockatt

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Coordinating author:

- Martha Crockatt |Leverhulme Centre for Nature Recovery, University of Oxford

Contributors:

Matt Whitney (Oxfordshire Local Nature Partnership), Alison Smith (University of Oxford), Rosie Rowe (Oxfordshire County Council), Mark Hirons (University of Oxford), Constance McDermott (University of Oxford), Camilla Burrow (Wild Oxfordshire) and Joseph Gent (University of Oxford).

Contents

Using the report

This report is aimed at those interested in greenspace provision, in terms of quantity and quality, in Oxfordshire. The intention is that it is readable and usable; for this reason, technical details have been kept out of the main body of the report, and are available as appendices. If any further detail is required, please contact: martha.crockatt@ouce.ox.ac.uk or naturerecovery@ouce.ox.ac.uk.

The intention is that this report complements existing green infrastructure strategies and activities of the five local authority districts (Cherwell, Oxford City, South Oxfordshire, Vale of White Horse and West Oxfordshire) by taking an independent, county-wide approach.

The report is based almost exclusively on desk-based analyses of a single data set (Natural England Green Infrastructure mapping data). There will inevitably be errors and omissions in this dataset that have the potential to cause errors in this study; local knowledge should be used before making any decisions based on the findings of this report.

Acknowledgements

Executive summary

Background

There are well known links between health and access to and engagement with green spaces, which is increasingly recognised in environment and health policy, reflected in increasing interest in green social prescribing. However, there is evidence that the most deprived communities have least access to greenspace, that more deprived communities receive greater benefits from greenspace, and that not all greenspace has similar impacts, with more biodiverse areas providing greater benefits.

Oxfordshire is the South East's most rural county, with many large, privately owned estates. The relative affluence of the county means that small areas of socio-economic deprivation risk being overlooked. The most socio-economically deprived neighbourhoods occur in densely populated urban areas, but assessment at the neighbourhood scale can mask smaller-scale areas of socio-economic deprivation, especially in rural areas.

Aim

This report explores Natural England's Green Infrastructure data to identify neighbourhoods in Oxfordshire experiencing both socio-economic deprivation and poor provision of accessible greenspace, with a view to these neighbourhoods being prioritised in terms of planning, allocation of funding, and effort for improving quality and quantity of accessible greenspace.

Analysis

Based on Natural England's Green Infrastructure mapping and Accessible Greenspace Standards, six criteria were used to assess access to greenspace. The Index of Multiple Deprivation was used to assess socio-economic status and prioritise neighbourhoods:

- Socio-economic status: the Index of Multiple Deprivation was used to assess the socio-economic status of each neighbourhood.
- Local greenspace quantity: the percentage of each neighbourhood that is within walking distance of local greenspace.
- Greenspace crowding: population density relative to the amount of local greenspace.
- Public Rights of Way: the density of public rights of way and greenspace in a neighbourhood.
- Man-made surfaces: the percentage of a neighbourhood that is man-made surfaces, i.e. how much is NOT natural.
- Private garden provision: the area of private garden per 1,000 people.

Findings

Sixteen high priority neighbourhoods were identified

Sixteen Oxfordshire neighbourhoods are in the lowest 30% of socio-economic deprivation in England and lack access to greenspace according to multiple metrics; these are all in urban areas with clusters in Banbury and Oxford.

Recommendations for next steps

The following recommendations are intended to complement existing green infrastructure strategies and plans, which are included at multiple policy levels. The recommendations are based on discussions with a consultee group and the process of researching and creating this report, as well as the findings of it.

1. In collaboration with local communities, increase knowledge of accessible greenspace before taking action.

2. Consider diversity within and between accessible greenspaces, in terms of both biodiversity and diversity of function.

3. Protect existing accessible greenspaces, while looking for innovative opportunities to increase the quantity of accessible greenspace.

4. Explore green infrastructure opportunities to increase neighbourhood "greenness".

5. Increase connectivity of accessible greenspace for nature and people.

6. Ensure policy instruments support development to have a positive gain on accessible greenspace.

7. Investigate the potential for an Oxfordshire sub-regional sized publicly accessible greenspace (> 500 ha) that is accessible by active travel and public transport.

Background and project aims

The importance of greenspace to communities

Green spaces can provide economic, social and environmental benefits and opportunities to local communities, including health and well-being, nature recovery and climate change adaptation and mitigation. There are well known links between health and access to and engagement with green spaces[1], as shown by the increased interest in social prescribing[2]; this is reflected in public attitudes, with over 90% of surveyed adults agreeing that spending time in nature was good for both mental and physical health[3]. However, there is evidence that greenspace and its benefits are not equally distributed: about a third of homes in England are not within a 15-minute walk of an accessible greenspace, while just 3% of the most deprived communities in England meet the same standard[4]; in terms of benefits from greenspace, health inequalities associated with socio-economic status are lower in areas with more greenspace[5]. Greenspaces vary, and is known that not all greenspace has similar impacts, with more biodiverse areas providing greater benefits[6].

Aim

This report aims to identify Oxfordshire neighbourhoods that are both socio-economically deprived and have poor provision of local, accessible greenspace, and should thus potentially be prioritised in greenspace funding, strategy and policy.

The project is entirely desk-based using publicly available data; no decisions should be made based on the study without consulting local knowledge, hence *potential* priority neighbourhoods are identified. The publication of updated Natural England Accessible Greenspace Standards earlier in the year, the current development of Oxfordshire's Local Nature Recovery Strategy, the introduction of mandatory Biodiversity Net Gain and the interest in Neighbourhood Plans mean increased interest in greenspace, nature and people - this is a timely investigation, intended to support local government, NGOs and community groups involved with accessible greenspace.

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1   Smith et al. 2023. Agile Initiative Research Brief: Embedding nature recovery in the Levelling-up and Regeneration Bill. https://www.agile-initiative.ox.ac.uk/wp-content/uploads/2023/03/Short_LevelUp_Policy_Brief_v5.pdf

2   Sandhu et al., 2022. https://doi.org/10.3399/bjgp22X721445

3   https://www.gov.uk/government/statistics/the-people-and-nature-survey-for-england-data-tables-and-publications-from-adults-survey-year-3-april-2022-march-2023-official-statistics/adults-year-3-annual-report-april-2022-march-2023-official-statistics#benefits-of-visiting-green-and-natural-spaces

4   Natural England, 2023. https://designatedsites.naturalengland.org.uk/GreenInfrastructure/MappingAnalysis.aspx

5   Rigolon et al., 2021. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7967323/

6   Aerts et al., 2018. https://doi.org/10.1093/bmb/ldy021

What is accessible greenspace?

Natural England defines greenspace as *"an area of vegetation that is set within a landscape or townscape. Greenspace can include blue space (i.e. lakes, rivers and wetlands) and may include built environment features."* Greenspaces are described as being accessible if they are freely open to the public without payment and with what amounts to no time restrictions; e.g. if a park is locked overnight it would still be described as accessible, whereas a private estate that is open to the public 2-3 days a year would not be considered accessible. Accessible greenspaces should be open to all, every reasonable effort should be made to comply with the Equality Act 2020. Accessible greenspaces include parks, amenity greenspace, natural or semi-natural areas in rural or urban environments, and so on. Examples of greenspace which are not accessible include golf courses, private gardens and school or institutional grounds. Whether a greenspace is accessible is not always simple to decide (Box 1).

Greenspace is a subset of "green infrastructure" which, as well as the types of greenspace mentioned above, includes elements such as green corridors, living walls, street trees and verges, together forming a network of greenspace for people and nature. Green infrastructure is an increasingly common concept, for example in the National Planning Policy Framework[7], and in Natural England's Green Infrastructure Standards[8].

Box 1: Types of accessibility

- **Accessible:** the general public are encouraged to freely access the site without charge (although car park charges may be applied).
- **Permissive access:** access is granted at the land owner's discretion, rather than through official or legal obligations. An example of permissive access would be National Trust and Wildlife Trust sites that are open to the public without a charge.
- **De facto public access:** sites that, although not formally publicly accessible, are used as such. This includes some sites that are accessible only by Public Rights of Way (PRoW), but where this is either not enforced, is generally ignored or when staying on the PRoW does not significantly impact the experience in the greenspace (e.g. in a dense woodland where visitors are unlikely to leave the paths).
- **Restricted access:** access to the site is restricted in some way, typically by a charge, e.g. a golf course or private grounds, or some form of membership (for example allotments or schools).
- **Inaccessible:** there is no public access to the greenspace, e.g. a pasture, or site access is only by footpaths, for example a footpath within a private woodland.

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7 Department for Levelling Up, Housing and Communities, 2023. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1182995/NPPF_Sept_23.pdf

8 Natural England Green Infrastructure Standards https://designatedsites.naturalengland.org.uk/GreenInfrastructure/GIStandards.aspx

Exploring Oxfordshire greenspace

Greenspace Data

In order to assess the equality of access to greenspace in Oxfordshire, a map or database of greenspaces is required. Two key greenspace datasets were assessed for use in this project; Natural England's Green Infrastructure data[9] was deemed most suitable for the bulk of the analysis, but Natural Capital mapping from The University of Oxford[10] (more information on these data sets in Appendix 1: Methodology).

Quantifying access to greenspace: the Accessible Greenspace Standards (AGS)

Natural England has produced Green Infrastructure Standards which include access to greenspace, the Accessible Greenspace Standard (AGS)[11]. The Standard sets out minimum sizes for accessible greenspaces within maximum distances / journey times from homes (Table 1). Homes should meet either the Doorstep or Local standard, as well as the other standards (Neighbourhood, Wider Neighbourhood, District and Sub-regional). This report uses the AGS to assess the provision of accessible greenspace in Oxfordshire neighbourhoods, focusing on the "15-minute walk zone" (the Doorstep, Local and Neighbourhood standards), collectively termed the neighbourhood standards for the purposes of this report, these being the greenspaces that communities typically encounter on a daily basis in their local area, and that are the most frequently visited as greenspace destinations[12].

Table 1: Natural England's Accessible Greenspace Standards (AGS).

All households should meet EITHER the Doorstep OR Local standard, as well as all of the standards for larger spaces.

Name	Minimum Size	Maximum Distance	Maximum Journey	
Doorstep	0.5 ha	200 m	Under 5 min walk	Focused on in this report
Local	2 ha	300 m	5 min walk	
Neighbourhood	10 ha	1 km	15 min walk	
Wider Neighbourhood	20 ha	2km	35 km walk	
District	100 ha	5 km	15 - 20 min cycle	
Sub-regional	500 ha	10 km	30-40 min cycle	

9   Natural England Green Infrastructure Mapping data https://designatedsites.naturalengland.org.uk/GreenInfrastructure/Map.aspx

10 Smith, Alison https://www.biodiversity.ox.ac.uk/publications/natural-capital-in-oxfordshire/

11 The 2023 Accessible Greenspace Standard replaces the previous version, the Accessible Natural Greenspace Standard (ANGSt); in Natural England's online mapping and guidance the term "ANGSt" is still used, but the mapping is based on the updated standards, i.e., AGS rather than ANGSt.

12 A national survey found that 67% of visits to greenspace are within two miles of the home, with 42% within one mile; Natural England. (2023). People and Nature Survey for England, 2020-2022: Secure Access. [data collection]. UK Data Service. SN: 9094, DOI: http://doi.org/10.5255/UKDA-SN-9094-1.

Oxfordshire

Oxfordshire has an area of 2,605 km[2] and a population of circa 725,000[13]. It is the most rural county in the South East, with relatively small urban centres in the city of Oxford and towns including Banbury, Bicester, Didcot, Thame and Wallingford.

As a whole, the county is relatively prosperous with measures such as unemployment, household deprivation and health being more favourable than the averages for England[7]. However, the Index of Multiple Deprivation (IMD[14]) illustrates the range of socio-economic deprivation within the county: of the 407 neighbourhoods (Lower-layer Super Output Areas; LSOAs[15]) in Oxfordshire, 16 (7%), occurring in ten wards, are among the most deprived 30% in

England, while 247 (61%) are in the top 30% (Figure 1).

Figure 1: Distribution of Oxfordshire neighbourhoods across IMD deciles; deciles are in based on all neighbourhoods across England, i.e. neighbourhoods in IMD decile one are in the 10% most deprived neighbourhoods in England.
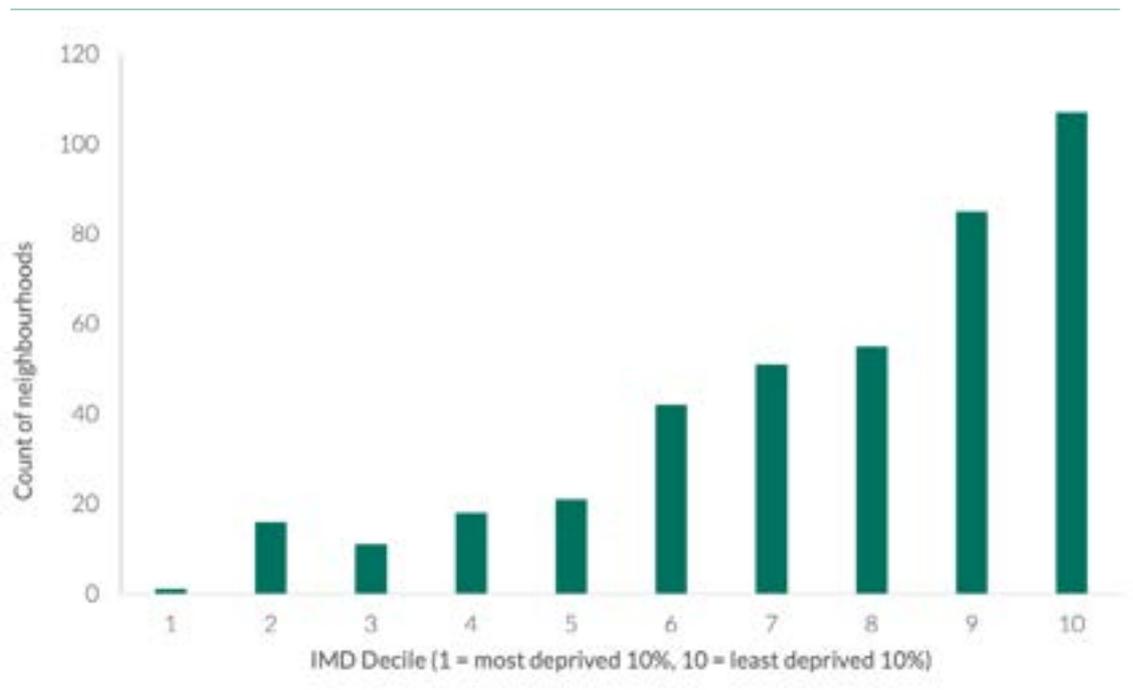
13 Office of National Statistics, 2021. https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration

14 Index of Multiple Deprivation (IMD) is an official measure of relative deprivation in England. The IMD is created from seven domains: Income deprivation, Employment deprivation, Education, skills and training deprivation, Health deprivation and disability, Crime, Barriers to housing and services and Living environment deprivation; the domains are weighted so that some contribute more to the score than others. More information: https://www.gov.uk/government/statistics/english-indices-of-deprivation-2019

15 Lower-layer Super Output Areas (LSOAs) can be considered neighbourhoods; these official areas are clusters of post codes with an average of 650 households or 1200 people that share similar characteristics and are widely used in social geography; Each LSOA has an IMD score and a relative ranking from 1 (most deprived) to 32,844 (least deprived).

Accessible / inaccessible greenspace in Oxfordshire

Within Oxfordshire there are 50 - 109 km^2 of publicly accessible greenspace, but the majority (> 700 km^2) of greenspace is not publicly accessible[16] ([Figure 2](#)); Oxfordshire residents may of course travel further afield to access greenspace.

Figure 2: Accessible and inaccessible greenspace in Oxfordshire.
The map shows Natural England Green Infrastructure data, with significant publicly accessible greenspaces added. These are NOT all officially public access, but could be considered so. These include Wittenham Clumps (permissive access; public access encouraged), Wytham Woods (permissive access, but free permit required), and Bagley Woods and the parkland at Blenheim Palace, both of which have Public Rights of Way (PRoW) crossing them so that, although the public are allowed ONLY on these PRoW, not on the rest of the site, the ambience and sights of these greenspaces can be enjoyed by the public.
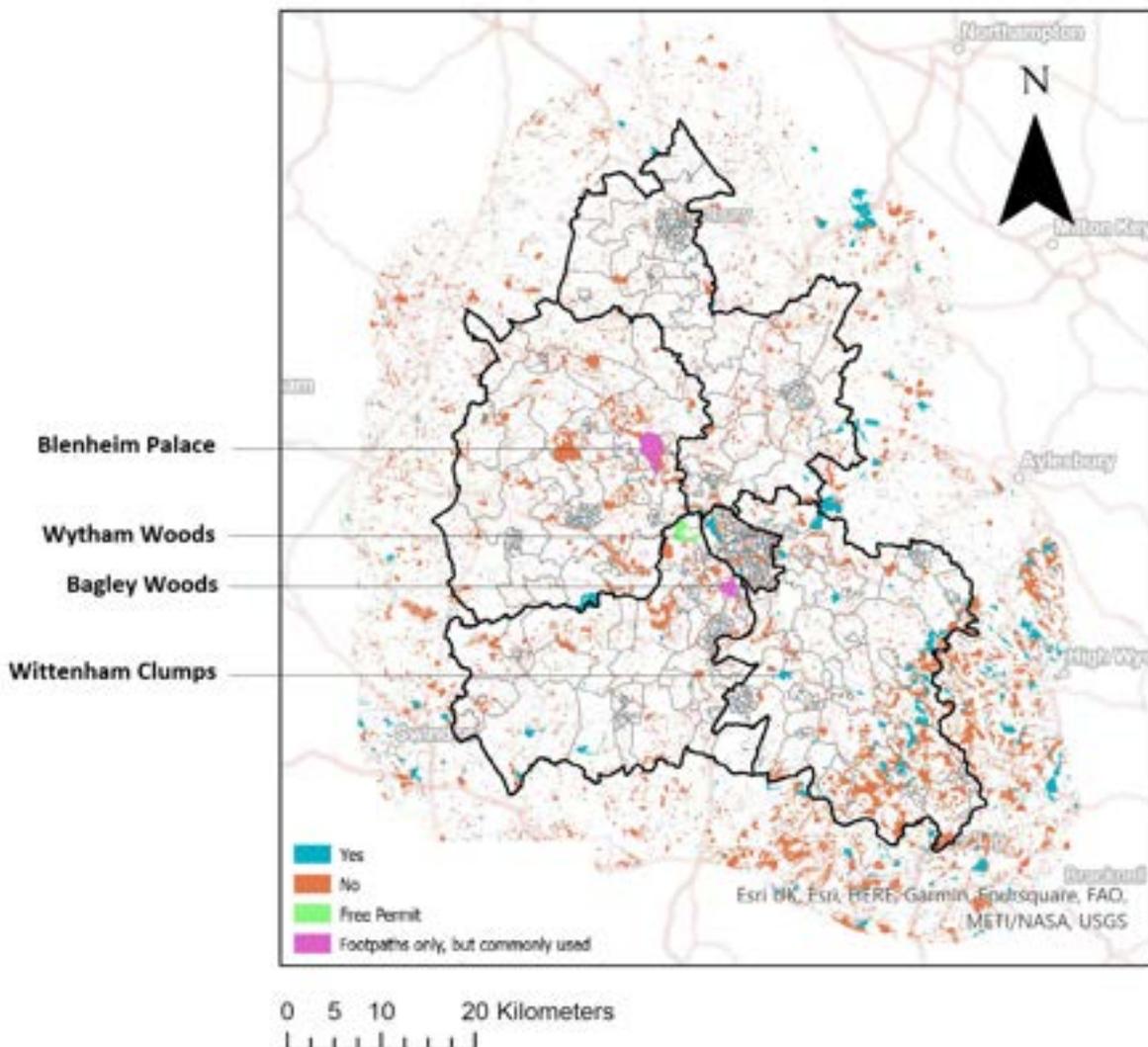
16 The large variation in estimates of publicly accessible greenspace stem from the conservative mapping of Natural England and the inclusive Natural Capital mapping, which includes much smaller patches of greenspace. It is difficult to directly compare inaccessible greenspaces between data sources, but the Natural England Green Infrastructure data suggests 707 km^2 of non-accessible greenspace.

Oxfordshire's accessible greenspace is not evenly distributed in space, and, in common with much of the rest of England[17], does not meet what are deemed appropriate community needs: a 2017 study using a previous iteration of the Accessible Greenspace Standard found that large areas of Oxfordshire met none of the Standards[18] (Figure 3). Our assessment confirmed this, finding that 51-66 %[19] of Oxfordshire, in terms of land area, does not meet any of its AGS requirements.

Figure 3: Area of Oxfordshire meeting none of the previous Natural England greenspace standards. Restricted access sites excluded. TVERC, 2017[18]. Restricted access sites are those that the general public can access for a fee.

Areas where no ANGSt requirements met

Oxfordshire County Boundary

Scale approximately 1:2,800

17 38% of people in England do not live within 1km of an accessible greenspace; Natural England, 2023. https://designatedsites.naturalengland.org.uk/GreenInfrastructure/MappingAnalysis.aspx

18 TVERC, 2017. https://www.oxfordshire.gov.uk/sites/default/files/file/countryside/OxonAccessibleNaturalGreenspace.pdf Natural England's Accessible Greenspace Standard was released in January 2023 and replaces the previous version, the Accessible Natural Greenspace Standard (ANGSt). Note that in Natural England's online mapping and guidance the term "ANGSt" is still used, but the mapping is based on the updated standards, i.e., AGS rather than ANGSt. Key changes include the introduction of the Doorstep and Neighbourhood standards.

19 Range reflects the Natural England data alone, vs inclusion of the additional sites in Figure 2.

Identifying socio-economically deprived neighbourhoods (LSOAs) lacking greenspace access

Given that such a large proportion of the county does not meet Accessible Greenspace Standards, a more detailed assessment is required to identify neighbourhoods that should potentially be prioritised for greenspace effort and spending, as stated in the project aims, hereafter described as priority neighbourhoods.

Using Natural England Green Infrastructure data, a range of metrics were used to identify neighbourhoods (LSOAs) that have poor greenspace provision and high socio-economic deprivation. Neighbourhoods that met thresholds of at least two metrics, one of which being socio-economic deprivation, are presented as priority neighbourhoods; a more detailed description is in the Appendix 1: Methods.

The metrics

1. **Index of Multiple Deprivation**: Neighbourhoods in deciles 1-3, i.e. the 30 % most deprived of England's neighbourhoods.

2. **AGS requirements**: Neighbourhoods in which less than 30% of the area meets each of the three neighbourhood AGS requirements.

3. **Population density**: Neighbourhoods which have low AGS coverage and high population density.

4. **Public Rights of Way (PRoW) and AGS**: PRoW provide an alternative way to access greenspace; areas that have low densities of both PRoW and AGS could be priorities.

5. **Man-made surfaces**: a high percentage of man-made surfaces in an area implies a lack of natural surfaces, thus providing less green experience within an area.

6. **Private gardens**: private gardens can supplement publicly accessible greenspace, so may be of particular importance in areas with low access to public greenspace.

It should be noted that the LSOA neighbourhoods are named by codes and do not have common, recognisable names. For this reason, wards in which neighbourhoods sit are provided in maps and tables, as well as the neighbourhood codes. Note that ward and neighbourhood boundaries do not always align.

Metric 1: Index of Multiple Deprivation

Oxfordshire is a relatively prosperous county with small pockets of deprivation. 28 of Oxfordshire's 407 neighbourhoods are in the most deprived 30% of neighbourhoods in the country, where communities will particularly benefit from public greenspace (Figure 4; Appendix 2.)

These neighbourhoods are clustered in Banbury and Oxford, with one each in Bicester and Abingdon. It is important to note that the LSOA system can mask small pockets of deprivation, especially in rural areas[20]. The distribution of deprived neighbourhoods should not be taken to mean that deprivation is limited to urban areas; the IMD scoring system is based on averages, so that not all residents in neighbourhoods that rank more highly on the IMD are affluent.

Figure 4: Neighbourhoods in the 30% most deprived neighbourhoods in England, shown in red.
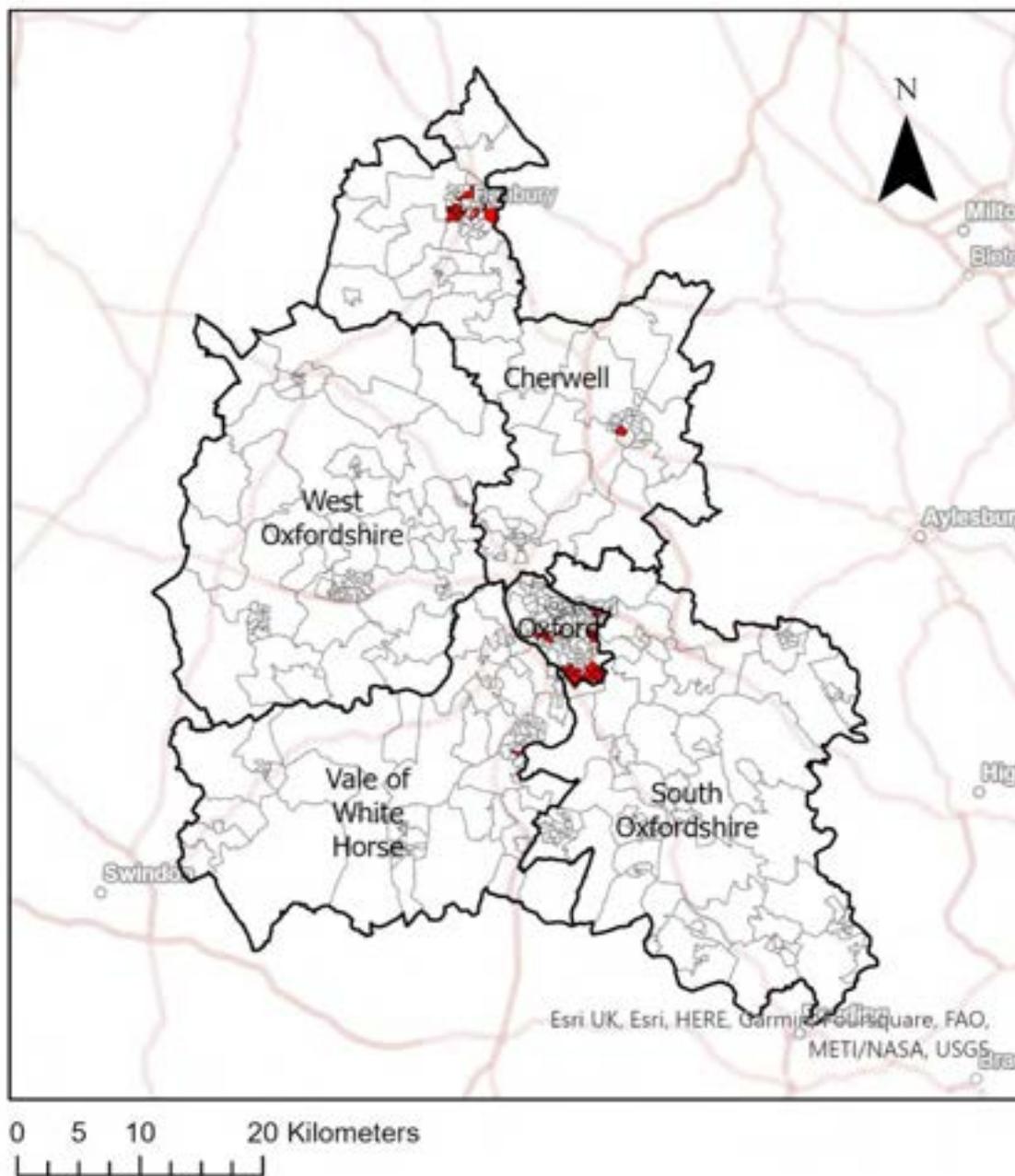
20 Burke, A., & Jones, A. (2019). The development of an index of rural deprivation: A case study of Norfolk, England. Social Science & Medicine, 227, 93–103. https://doi.org/10.1016/J.SOCSCIMED.2018.09.019

Metric 2: Accessible Greenspace Standards local provision

There are 197 neighbourhoods that have poor provision of publicly accessible greenspace within the local neighbourhood (Appendix 3), seven of which are in the 30% most deprived neighbourhoods in England[21]. These neighbourhoods occur solely in urban areas, with one each in Abingdon and Banbury and the remaining five clustered in the wards of Littlemore, Northfield Brook and Blackbird Leys, in the south of Oxford (Figure 5).

Figure 5: Neighbourhoods in the 30% most deprived neighbourhoods in England that have poor local provision of accessible greenspace.
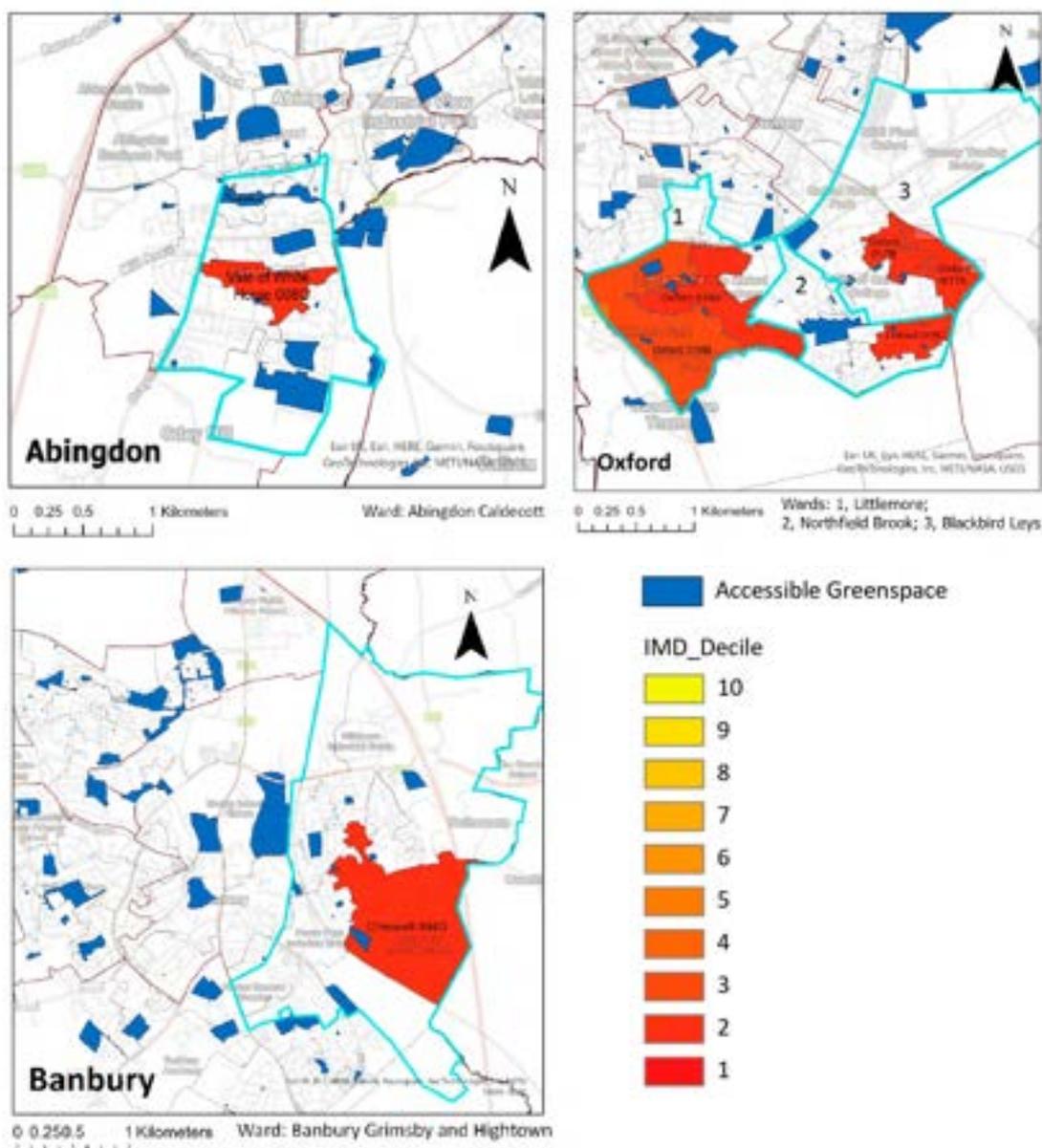
21 Defined as neighbourhoods in which the first three AGS requirements (doorstep, local and neighbourhood) are met in less than 30% of the neighbourhood's area. See Appendix 3 for these 7 LSOAs.

Figure 6: Neighbourhoods in Oxfordshire which have poor provision of local greenspace.
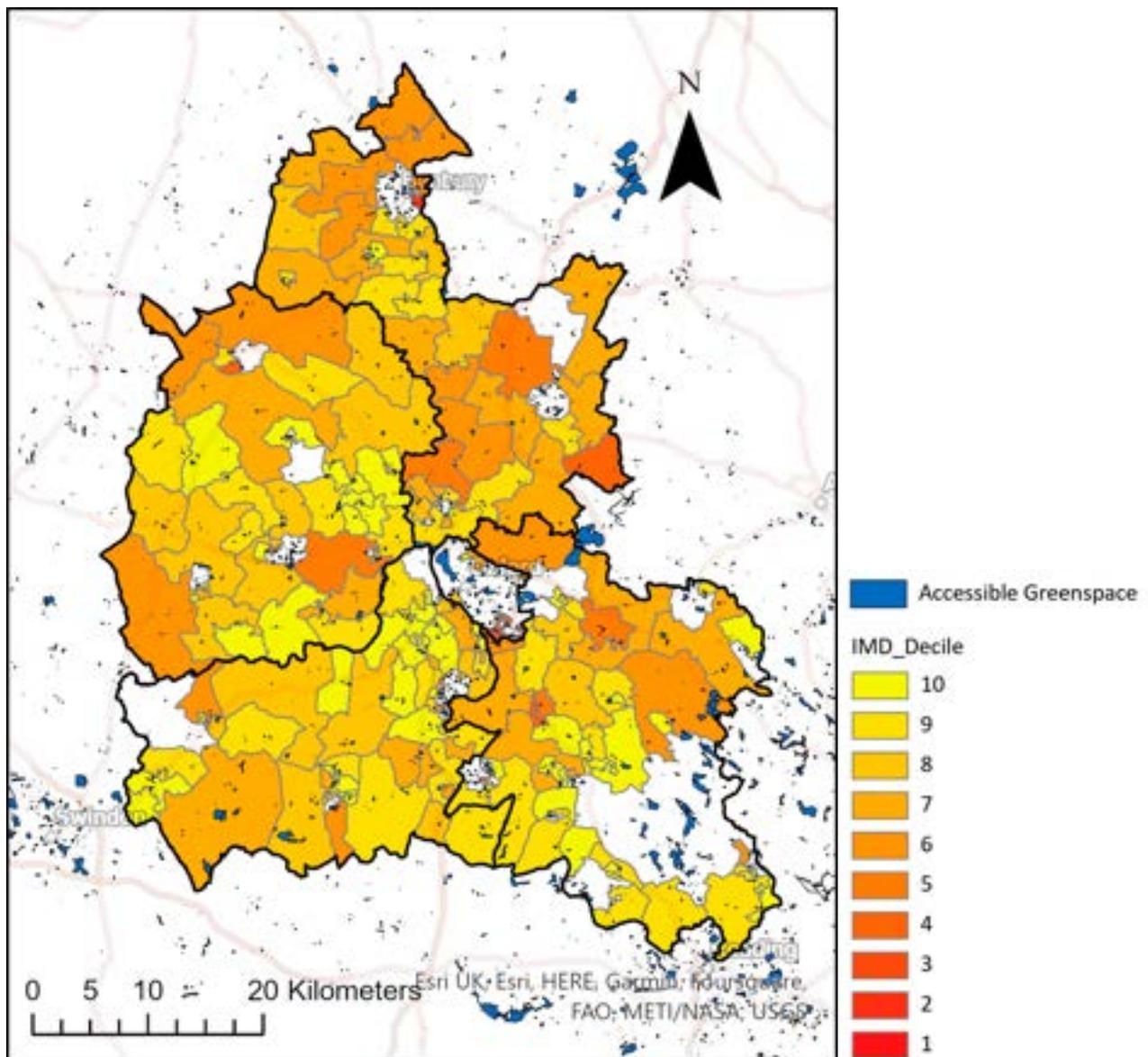
A lack of accessible greenspace is not limited to urban areas; the majority of rural Oxfordshire is, according to this metric, low in greenspace (Figure 6). This can be attributed at least partially to the sparse nature of rural populations, making it unlikely to have formally designated accessible greenspace within reach of all residents. Although lacking in accessible, local greenspace, these rural neighbourhoods are higher in IMD deciles, so are not classed as priority neighbourhoods. There is an important question as to whether lived experience of individuals and communities in rural areas, which have much more green, natural surfaces than urban areas, reflects the apparent lack of greenspace but this is beyond the scope of this report.

Metric 3: Population density and accessible greenspace

Twelve neighbourhoods have high population density and low provision of local accessible greenspace[22] (Appendix 4) six of which are in the 30% most deprived neighbourhoods in England, all in Oxford (Figure 7). There is potential for overcrowding in greenspaces in these neighbourhoods; there is also a greater number of people experiencing the low amount of accessible greenspace than in a less densely populated area.

Some of these neighbourhoods occur in clusters, particularly in Blackbird Leys ward where there are three neighbourhoods of concern, two of which are in the 20% most deprived neighbourhoods in England.

Figure 7: Neighbourhoods with high population density and poor provision of local greenspace.
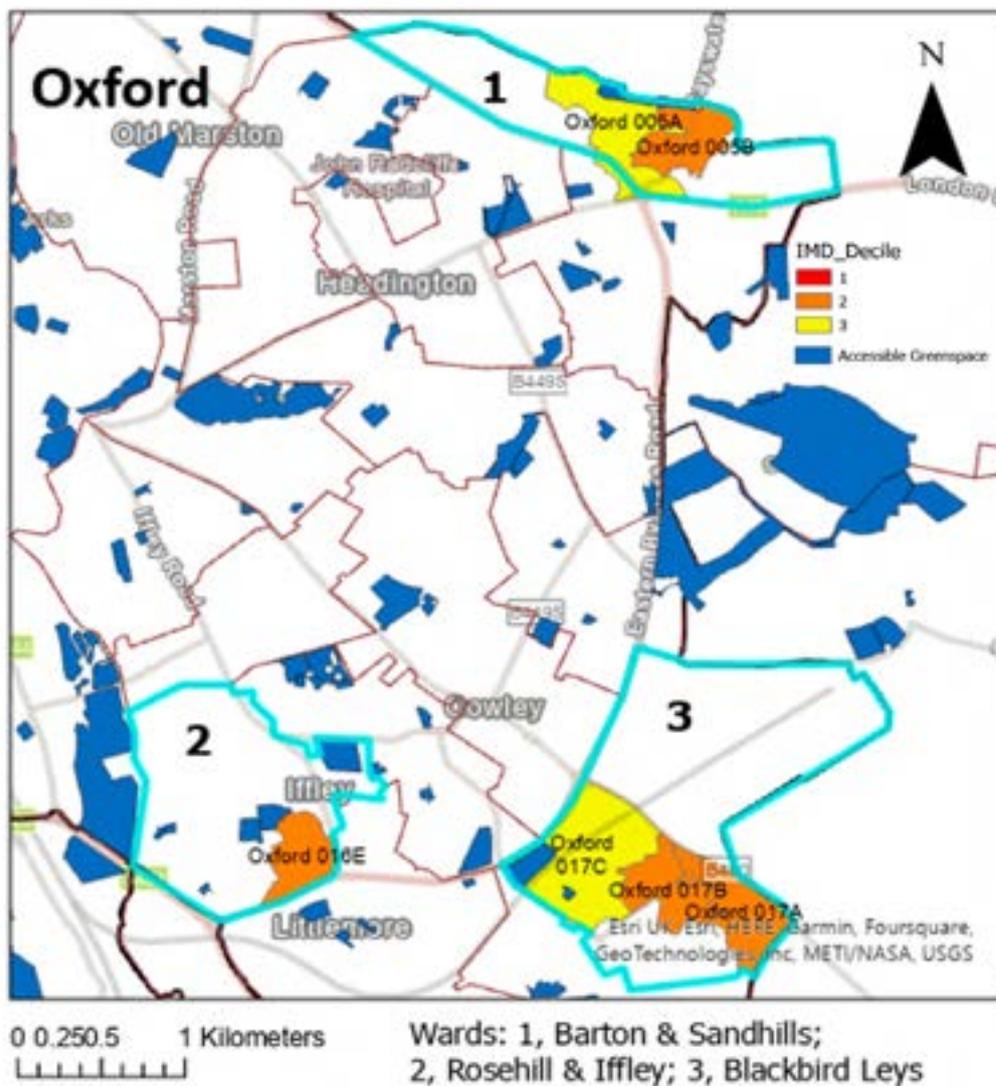
22 The Natural England Green Infrastructure system of assessing population density and AGS coverage was used. This assigns each neighbourhood to a lower, middle or upper tier for population density and the percentage of the neighbourhood that meets each AGS standard which are combined to create a single score. Neighbourhoods with low scores for two out of the three neighbourhood AGS standards were prioritised.

Metric 4: Low density of both Public Rights of Way and accessible greenspace[23]

Public Rights of Way (PRoW) can provide an additional way to experience greenspace, even if land through which the PRoW runs is not publicly accessible; this is especially the case in rural areas. A high density of PRoW in an area thus has the potential to some extent to alleviate a lack of greenspace. Nine neighbourhoods are in the lowest 15% in the county for density of both Public Rights of Way and publicly accessible greenspace (Appendix 5, Figure 8); in these areas the low amount of greenspace is not offset by PRoW.

Figure 8: Neighbourhoods with low density of both Public Rights of Way and accessible greenspace.
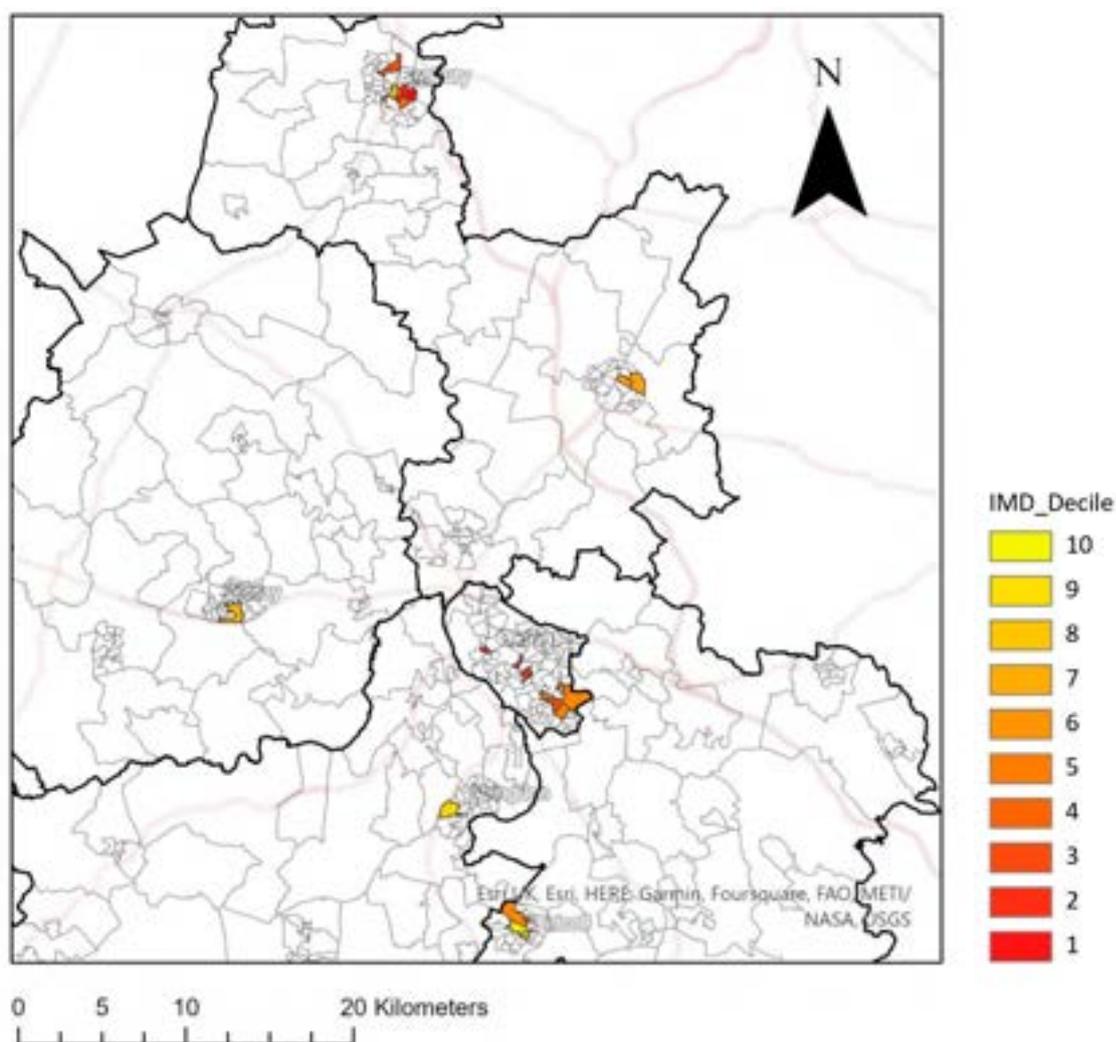
These priority neighbourhoods occur in both rural and urban areas. Although urban neighbourhoods appearing in this map are not in the lowest three IMD deciles, they may have high footfall from commuters, shoppers, leisure etc., so increasing green infrastructure in these areas could benefit the wider local community, not just residents.

23 Density calculated as length / area of PRoW / accessible greenspace, respectively, per ha for each neighbourhood using Natural England green infrastructure data.

Metric 5: High percentage of man-made surfaces

The 5% of neighbourhoods with the highest percentage of man-made surfaces[24] (the least green) include four neighbourhoods in the 30% most deprived neighbourhoods in England (Appendix 6, Figure 9).The percentage man-made surfaces in Oxfordshire neighbourhoods ranges from 2% to 83% with a mean of 24%.

Figure 9: Neighbourhoods with a high percentage of man-made surfaces.
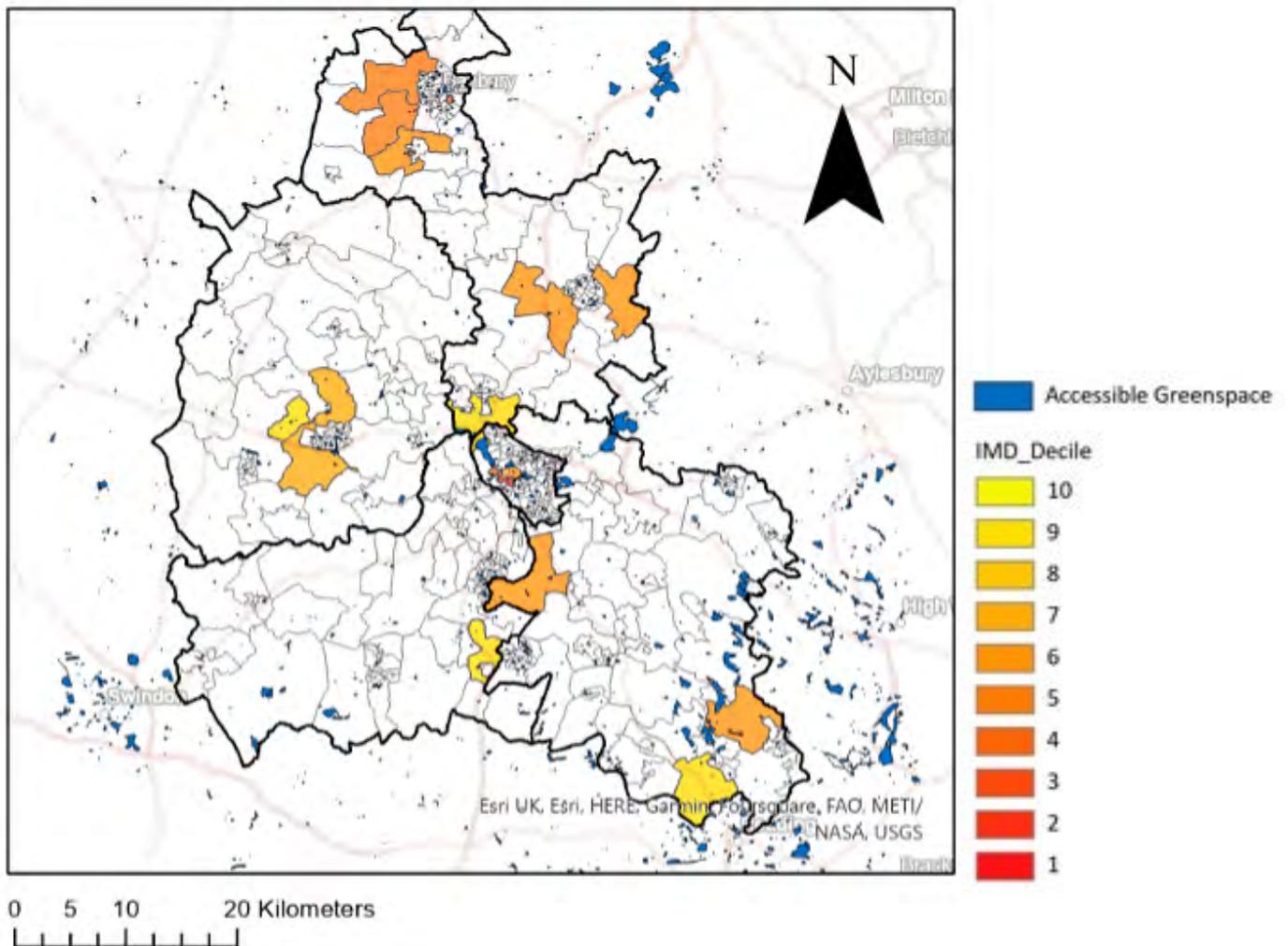
Having a high percentage of man-made surfaces alone is not sufficient to cause concern, but coupled with other factors, such as low amounts of accessible greenspace and/or deprivation, it becomes potentially important. These neighbourhoods could also merit focus if they have high traffic routes along which lots of people travel; increasing the greenness of these routes would benefit those passing through as well as residents.

24 These data are taken from Natural England's Green Infrastructure mapping. They are derived from a 250m gridded dataset from Ordnance Survey that assigns the percentage of each grid square that is man-made surface. The mean of these is then calculated for each neighbourhood. Small areas of green such as street trees, planters etc. are not taken into account.

Metric 6: Low area of private garden

Provision of private gardens was assessed as the area of private garden per 1000 people; assessment was limited to urban and urban fringe areas only, due to data availability[25].

The 5% of neighbourhoods with the lowest private garden provision include three neighbourhoods in the 30% most deprived neighbourhoods in England, all of which are in Oxford (Figure 10; Appendix 7). Private gardens have limited ability to benefit the wider community (although front gardens could contribute to an area's "greenness"), but may ameliorate some impacts of a lack of greenspace.

Figure 10: Neighbourhoods with lowest provision of private gardens.
(Data not available for rural areas)
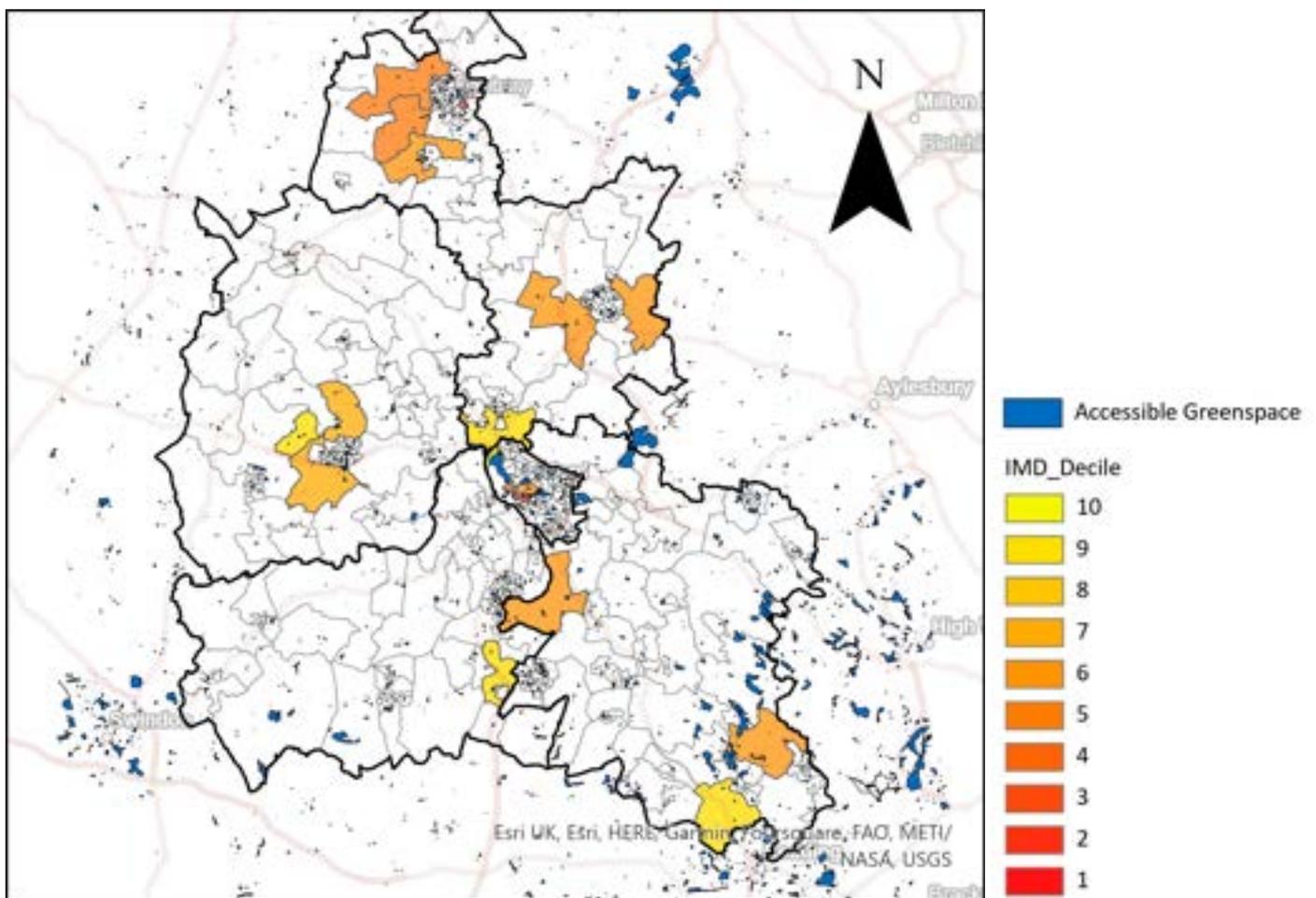
25 Natural England Green Infrastructure data on private gardens does not cover rural areas. Data for both rural and urban areas is available within Alison Smith's Natural Capital mapping, but it was deemed more appropriate to adhere to a single dataset throughout the analysis. Access to private gardens was assessed on the area of private garden per 1000 people; neighbourhoods were ranked according to this metric and the lowest 5% were selected as priorities.

Priority neighbourhoods: synthesis of metrics to identify neighbourhoods most in need of greenspace interventions

Neighbourhoods meeting at least two metrics, one of which is socio-economic deprivation, i.e. is in the 30% most socio-economically deprived neighbourhoods in England (IMD decile 1, 2 or 3), have been designated "priority neighbourhoods"; those meeting three metrics, including socio-economic deprivation, are highlighted as potentially being higher priority (Table 2). Also included as a higher priority neighbourhood is the only neighbourhood in the IMD 1, although it meets the threshold of no other metric.

The 16 priority neighbourhoods identified in this way occur exclusively in urban areas and are clustered in Banbury and parts of Oxford (Figures 11-15, inc.).

Being a desk-based study, this prioritisation should be treated as a starting point for further exploration of these areas, rather than a call to take immediate action; a richer understanding of local communities and their greenspaces is required before action is taken. This is discussed further in the next steps section.

Figure 11: Priority neighbourhoods in Oxfordshire.
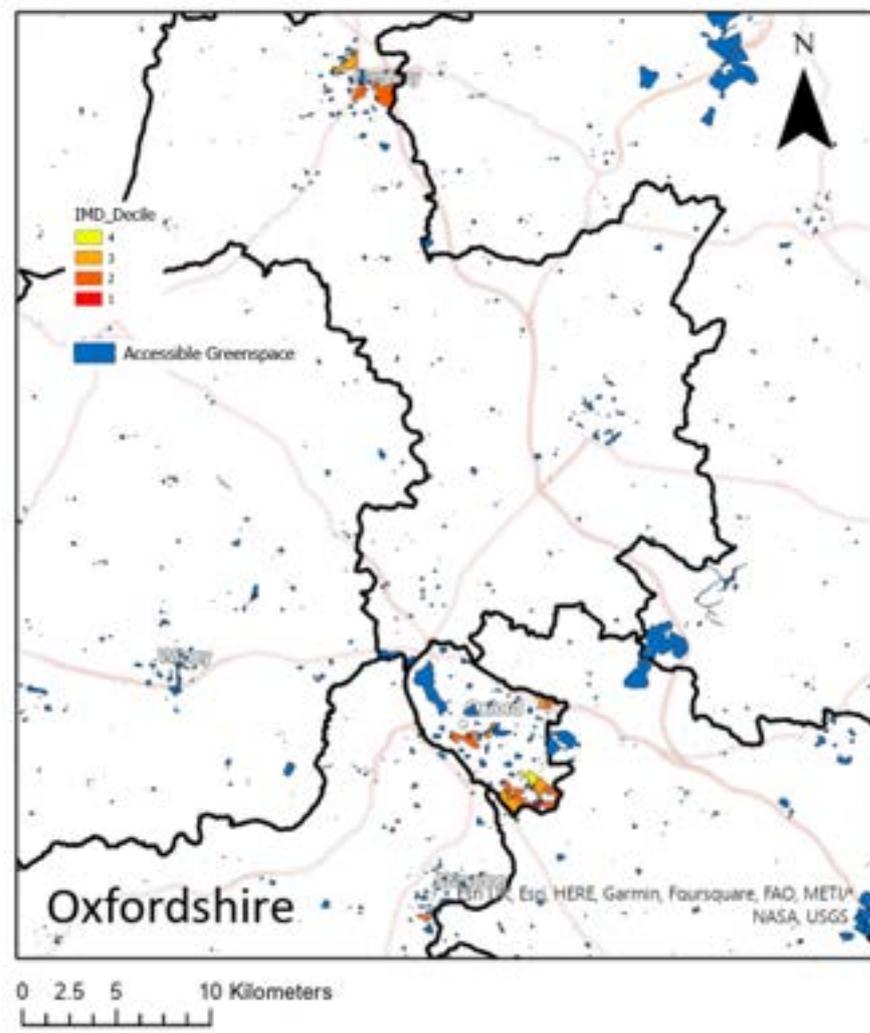
Table 2: Priority Neighbourhoods.

Neighbourhoods (LSOA)[26] meeting three metrics are considered higher priority. The single neighbourhood in the lowest decile has been automatically included as high priority, although it does not meet any other criteria for inclusion. Neighbourhoods in IMD deciles 4-10 meeting at least two criteria were are presented in Appendix 8.

Neighbourhood (LSOA)	Within ward	IMD Decile	lowest three IMD deciles	<30% of area meets each of the three neighbourhood AGS	High population density & low accessible greenspace provision	Lowest 15% for PRoW & accessible greenspace density	Lowest 5% private gardens	Top 5% mean manmade surfaces	Count of Ys
Oxford 017A	Blackbird Leys	2	Y	Y	Y				3
Oxford 017B	Blackbird Leys	2	Y	Y	Y				3
Oxford 017C	Blackbird Leys	3	Y		Y			Y	3
Oxford 011D	St Clement's	3	Y				Y	Y	3
Oxford 018B	Northfield Brook	1	Y						1
Oxford 016E	Rose Hill & Iffley	2	Y		Y				2
Oxford 005B	Barton & Sandhills	2	Y		Y				2
Cherwell 004A	Banbury Cross & Neithrop	2	Y					Y	2
Cherwell 004G	Banbury Grimsbury & Hightown	2	Y	Y					2
Oxford 016A	Littlemore	2	Y	Y					2
Oxford 008B	Holywell	2	Y				Y		2
Vale of White Horse 008C	Abingdon Caldecott	2	Y	Y					2
Oxford 018C	Northfield Brook	2	Y	Y					2
Oxford 005A	Barton & Sandhills	3	Y		Y				2
Cherwell 003A	Banbury Cross & Neithrop	3	Y					Y	2
Oxford 016B	Littlemore	3	Y	Y					2

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26 LSOA codes refer to 2011 boundaries, in line with the Natural England Green Infrastructure data; ward boundaries are those from 2021, as it was deemed appropriate to use the most up to date ward names.

Figure 12: Priority neighbourhoods; Abingdon.
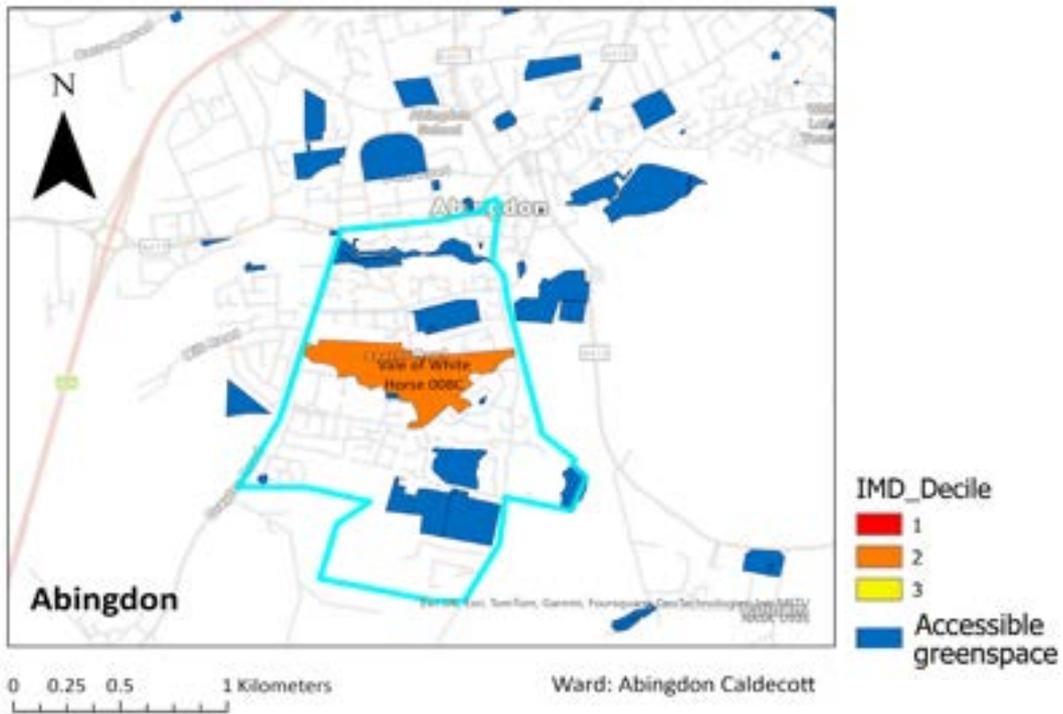
Figure 13: Priority neighbourhoods; Banbury
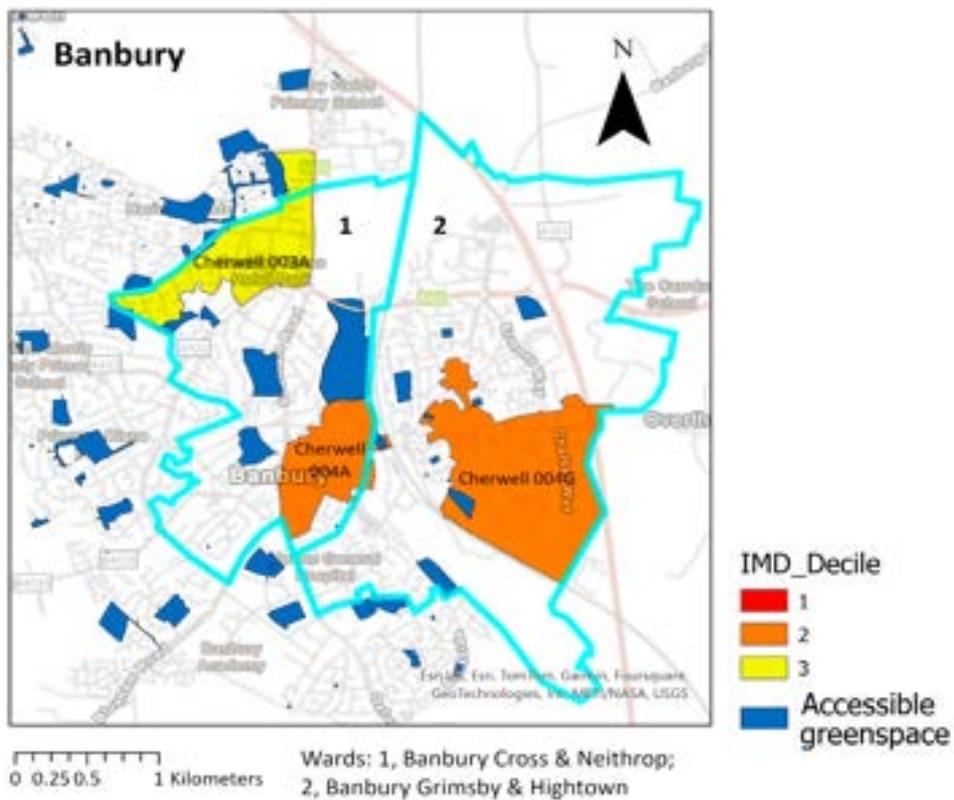
Figure 14: Priority neighbourhoods; Oxford, central.
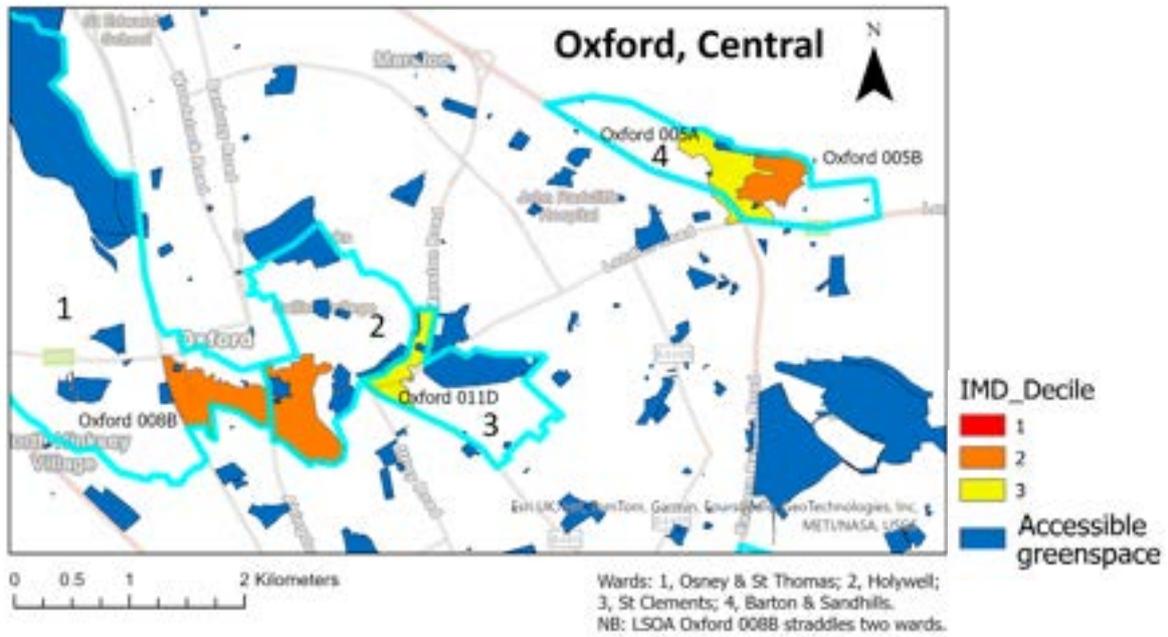
Figure 15: Priority neighbourhoods; Oxford, south.

Summary of key findings
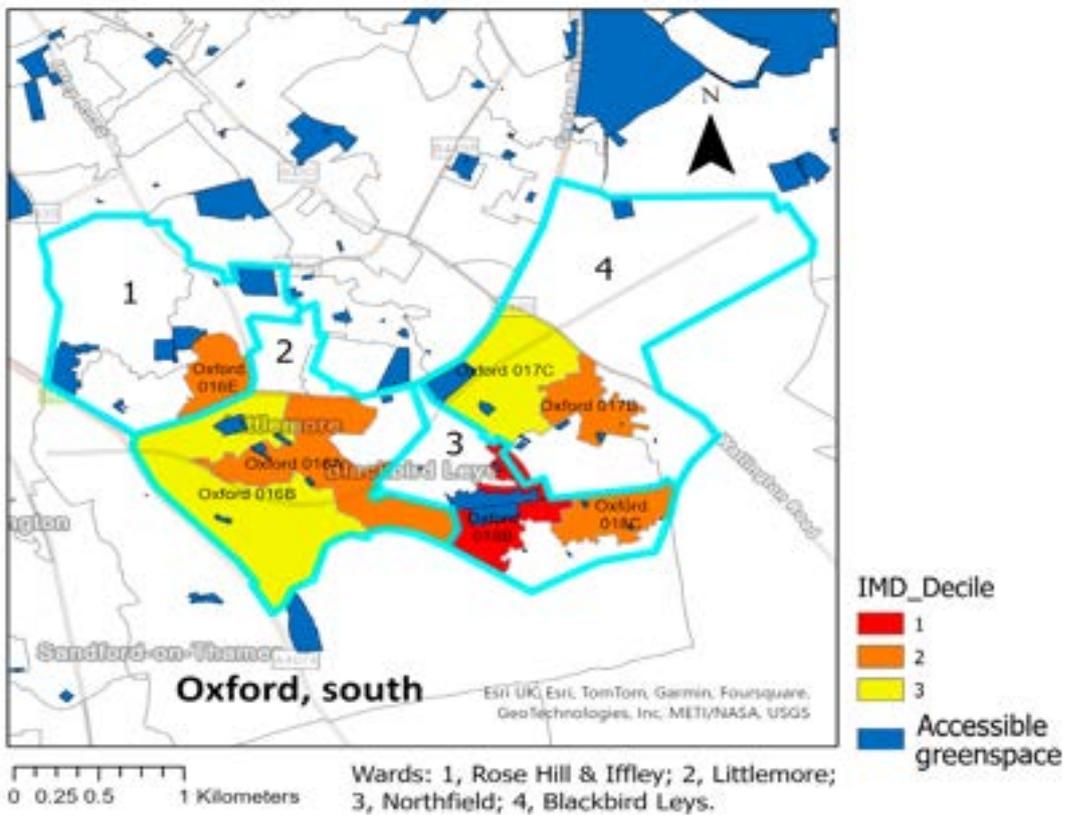
- A large proportion of Oxfordshire does not meet any of the Accessible Greenspace Standards. These areas are predominantly rural neighbourhoods which are, according to the Index of Multiple Deprivation, typically more affluent than urban areas.

- There is no publicly accessible greenspace in Oxfordshire large enough to meet the sub-regional Accessible Greenspace Standard requirement, although at least one site of this size can be accessed via Public Rights of Way (the parkland at Blenheim Palace; Figure 2).

- In terms of local greenspace provision there are 33 neighbourhoods that met at least two of this project's criteria for concern; 16 of these are in the most deprived 30% of neighbourhoods in England, and are considered priority neighbourhoods.

- The priority neighbourhoods occur exclusively in urban areas, with clusters in Bicester, Banbury and Oxford, especially the wards of Barton & Sandhills, Littlemore, Northfield Brook and Blackbird Leys.

Discussion and recommended next steps

This report has, in accordance with the stated aims, identified Oxfordshire neighbourhoods that are both socio-economically deprived and have poor provision of local, accessible greenspace, and should thus potentially be prioritised in greenspace funding, strategy and policy.

In line with previous research[18], we have found that more accessible greenspace is required across the county to meet the Accessible Greenspace Standards. This is especially true in priority neighbourhoods, where there is greater socio-economic deprivation; particular consideration should be paid to areas where these priority neighbourhoods are clustered, such as the area around Littlemore, Northfield Brook and Blackbird Leys wards in the south of Oxford. However, local knowledge may suggest other neighbourhoods that should also be prioritised for actions to increase quantity and quality of accessible greenspace, given that this study is exclusively desk-based.

A recurring theme in the findings of this project is the difference in accessible greenspace metrics between urban and rural communities. An understandable assumption would be that rural neighbourhoods, being by definition surrounded by natural surfaces and green-ness, should be lower priority for action on accessible greenspace provision, despite the vast majority having low levels of local accessible greenspace (Figure 6). However, lived experience may not match these assumptions: the LSOA (neighbourhood) system can mask pockets of deprivation; access to PRoW within natural settings, a key aspect of perceived access to greenspace in rural areas, may be severely limited for those with mobility issues,

wheelchair or mobility scooter users and families with young children and/or prams; and those in rural areas generally have to travel further to reach accessible greenspace. As this project focuses on accessible greenspace in socio-economically deprived neighbourhoods, which in Oxfordshire occur only in urban areas, the question of how to approach accessible greenspace in rural areas will not be discussed in detail here, but it would be a valuable issue to explore further, especially with policies such as mandatory Biodiversity Net Gain, Environmental Land Management Scheme and the Local Nature Recovery Strategy being introduced.

Within urban areas it is often difficult to increase the amount of accessible greenspace due to constraints on land use, so protecting, enhancing and connecting existing greenspace in collaboration with local communities, to ensure that greenspaces meet the needs of as wide a demographic as possible, is essential. The perceptions of those living within an area can be at odds with what is shown on a map, exemplified in Box 2, hence the importance of engaging and collaborating with local communities to understand their needs.

Box 2: A local resident recognises the different lived experiences of access to greenspace.

The quote is an unsolicited reflection of personal experience in response to reading a draft version of this report, included with the author's permission; it highlights the variance that can exist between lived experience and desk-based study:

"Littlemore has challenges around green access for sure and the development pressure is significant around this area.

As a resident here, I currently feel that I have access to green spaces in adjoining areas. However I recognise that I may fall into a more privileged demographic and not all would be able to walk/ cycle to those places. It would be of great benefit if there was more protection for the green spaces in the areas you have noted in and around Littlemore, or the opportunity to improve the areas that are there for nature and people."

The analysis has focused on quantity only of accessible greenspace; inclusion of quality, in terms of naturalness, accessibility and facilities would allow a richer assessment of accessible greenspace provision. This type of information will of course be required as part of any actions towards improving provision of accessible greenspace.

The following recommendations are intended to complement existing green infrastructure strategies and plans, which are included at multiple policy levels, from parish-level Neighbourhood Plans, e.g. that for Eynsham[27], to District Council strategies, e.g. Cherwell District Council's Local Plan Review[28]. The recommendations are based on discussions with a consultee group of local stakeholders from Local Authorities and NGO's, formed at the start of the project (Appendix 1: Methodology).

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27 https://www.westoxon.gov.uk/media/ngkckyhi/eynsham-neighbourhood-plan.pdf
28 https://www.cherwell.gov.uk/info/112/evidence-base/848/local-plan-review---environmental-and-energy-evidence/3

In order to reduce inequalities in the provision of accessible greenspace in Oxfordshire, the following steps should be taken within the priority neighbourhoods:

1. **In collaboration with local communities, increase knowledge of accessible greenspace before taking action**, focussing on:
   a. Ground truthing greenspace maps to check for errors, such as missing greenspace and footpaths.
   b. The quality, accessibility and naturalness of greenspaces.
   c. How and why local communities do, or do not, use their accessible.
      greenspace; and How this knowledge can be used to increase use of and benefits from existing greenspace. For example, a collaboration which supported teenage girls in East Oxford to design inclusive, accessible greenspace to meet their needs[29].

2. **Consider diversity of accessible greenspace**, in terms of the existing and potential biodiversity, as well as diversity of function between different accessible greenspaces in an area; although it is desirable to have accessible greenspace that is suitable for both people and nature, the balance between the two does not have to be same in every greenspace.

3. **Protect existing accessible greenspaces, while looking for innovative opportunities to increase the quantity of accessible greenspace.** It is typically very challenging to create new accessible greenspace, especially in dense urban areas where land is at a premium. However, potential opportunities should be explored, e.g. through stewardship agreements between private landowners and local communities, or through schemes such as after-use proposals associated with mineral extraction, water management schemes, solar farms and BNG. It is important, at the same time, to protect existing accessible greenspace from threats such as development; this is especially important in more socio-economically deprived areas, where accessible greenspaces have been found to be less likely to have legal protection[30].

4. **Explore green infrastructure opportunities to increase neighbourhood "greenness"**. Green corridors, pocket parks, green walls, street trees and so on can all contribute to the "greenness" of a neighbourhood. These innovations benefit those passing through an area, without having to visit a particular greenspace destination.

5. **Increase connectivity of accessible greenspace for nature and people** through creating new or greening existing active travel and public transport routes which allow people to reach neighbourhood and further afield accessible greenspaces, focusing on priority neighbourhoods and routes that have the potential to connect ecologically important spaces as well as communities.

6. **Policy instruments should support development to have a positive gain on accessible greenspace**. Oxfordshire has a rapidly expanding population, with expectations that Oxford city alone will require 26,000 new homes by 2040[31]. Existing greenspace must be appropriately protected[8] and adequate provision of greenspace must be enshrined as part of planned developments, with an emphasis on this when developments are adjacent to areas that are already short of accessible greenspace. There is also the

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29 https://publications.naturalengland.org.uk/publication/460687106401894

30 A recent study found that green spaces in more deprived areas are less likely to have legal protection https://www.cpre.org.uk/news/more-local-green-spaces-but-deprived-areas-still-lacking-our-report-shows/

31 https://www.oxford.gov.uk/news/article/2526/how_many_more_homes_will_oxford_need

potential for Neighbourhood Plans to support communities in shaping their local accessible greenspace provision. The advent of BNG should contribute to there being more biodiverse spaces associated with new developments, but there are concerns that challenges with implementation risk undermining the policy's effectiveness to address biodiversity loss[32]. There is also potential to embed the role of accessible greenspace within Oxfordshire's Local Nature Recovery Strategy, now in development, as areas that have potential to support both people and nature.

7. **Investigate the potential for an Oxfordshire sub-regional publicly accessible greenspace (> 500 ha) that is accessible by active travel and public transport**. Oxfordshire currently lacks an accessible greenspace of this size, and no greenspaces in neighbouring counties are close enough to supply this deficiency. Although an ambitious project, the potential to create such a space should be explored.

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32 Rampling et al., 2023. https://conbio.onlinelibrary.wiley.com/doi/abs/10.1111/cobi.14198

Appendices

Appendix 1: Methodology

The following is intended to complement and provide further information on what is presented within the main body of the report, rather than be a stand-alone methodology. If further details are required please contact martha.crockatt@ouce.ox.ac.uk or naturerecovery@ouce.ox.ac.uk.

Data sets of publicly accessible greenspace

Alison Smith's Natural Capital mapping[33] (Nat Cap data) and Natural England's Green Infrastructure[34] (NE GI data) datasets were compared to identify the most suitable for this project. A decision was made to focus on the Natural England Green Infrastructure data for the following reasons:

1. The Nat Cap mapping included very small areas of greenspace, such as grass verges around car parks; although such features are hugely valuable, they are not in themselves accessible greenspace. For technical reasons, it was not feasible to effectively remove these features from the data.

2. NE GI data is available England-wide, bringing the potential for comparison with the rest of the country;

3. NE GI dataset is simple to use for this analysis, being designed specifically for greenspace analysis;

4. A range of socio-economic data are provided in association with the NE GI greenspace maps.

However, it is recognised that the NE GI data:

1. Has poorer coverage of permissive public access sites and urban paths.

2. Has a less nuanced approach to accessibility than the Nat Cap data which has a scoring system for accessibility from 0 (inaccessible) to 1 (fully accessible), with sites such as allotments, golf courses and schools having appropriately designated intermediate scores.

Full details of what is included within the NE GI data and the sources for those data are available from Natural England[35].Analyses of the data were conducted in ArcGIS Pro 3.0.3 and Excel.

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33 An explanation of the data is available online: https://www.biodiversity.ox.ac.uk/publications/natural-capital-in-oxfordshire/. For more details please contact naturerecovery@ouce.ox.ac.uk

34 Natural England Green Infrastructure data available for download: https://www.data.gov.uk/dataset/f335ab3a-f670-467f-bedd-80bdd8f1ace6/green-and-blue-infrastructure-england

35 Natural England Green Infrastructure mapping description: https://designatedsites.naturalengland.org.uk/GreenInfrastructure/UserGuide/Section03.aspx#green-blue-infrastructure.

Metrics

Access to greenspace was assessed at the LSOA (neighbourhood) scale, combining NE GI's spatial data on accessible greenspace with their accompanying *Social Statistics* dataset which includes a wide range of data at the neighbourhood scale (e.g. those used within this study such as population, IMD decile, mean % man-made surface, etc., as well as other data such as demographic breakdowns).

Neighbourhoods were assessed using the following metrics to identify those that should be prioritised for actions to improve accessible greenspace provision. Metrics were selected to represent the main ways in which communities encounter greenspace in daily life. Thresholds for the metrics were set using NE's Accessible Greenspace Standards (Accessible greenspace requirements), NE mapping approaches (Population density), or simply the neighbourhoods in the highest / lowest percentage of neighbourhoods in Oxfordshire (PRoW and AGS; Man-made surface; Private garden).

Metric	Criteria/Threshold
Socio-economic Deprivation	Neighbourhood is in IMD decile 1-3.
Accessible Greenspace requirements	Less than 30% of the neighbourhood meets the doorstep, local and neighbourhood AGS.
Population density	Using Natural England's ranking system, neighbourhood has both low AGS coverage and high population density for at least two out of the doorstep, local and neighbourhood AGS.
Public Rights of Way and AGS	Neighbourhoods that were in the lowest 15% of Oxfordshire neighbourhoods for both density of Public Rights of Way (m per ha) and accessible greenspace (m² per ha).
Man-made surfaces	Neighbourhoods that were in the top 5% of Oxfordshire neighbourhoods for mean % man-made surfaces.
Private gardens	Neighbourhoods that were in the lowest 5% for area of private garden per 1000 people.

Consultee Group

The intention of this project being to produce a resource that is valuable for local communities, a consultee group of experts from local councils and NGOs was formed to inform the direction of the project and the recommendations resulting from it.

A list of relevant individuals was formed from professional contacts, covering those working in community, planning and ecology teams for each of Oxfordshire's district, city and county councils. In addition, relevant NGOs were also approached. Emailed invitations to 18 individuals resulted in meetings with 15 people at the start of the project; these meetings provided insights into ongoing activity on accessible greenspace within the county and an overview of priorities within the consultee group. Feedback on a draft version of the report was received from seven of the consultees.

Appendix 2: Oxfordshire neighbourhoods in the lowest three IMD deciles, i.e. the 30% most socio-economically deprived neighbourhoods in England

LSOA (neighbourhood) name (2011)	Ward (2021)	IMD Decile
Oxford 010C	Churchill	3
Oxford 011D	St Clement's	3
Cherwell 014A	Bicester West	3
Oxford 010B	Churchill	3
Cherwell 003A	Banbury Cross and Neithrop	3
Oxford 017C	Blackbird Leys	3
Cherwell 005E	Banbury Ruscote	3
Oxford 016B	Littlemore	3
Cherwell 005D	Banbury Ruscote	3
Oxford 016F	Rose Hill & Iffley	3
Oxford 005A	Barton & Sandhills	3
Cherwell 003D	Banbury Cross and Neithrop	2
Oxford 016A	Littlemore	2
Oxford 017D	Northfield Brook	2
Vale of White Horse 008C	Abingdon Caldecott	2
Oxford 017A	Blackbird Leys	2
Cherwell 005A	Banbury Ruscote	2
Oxford 005B	Barton & Sandhills	2
Oxford 008B	Holywell	2
Cherwell 004G	Banbury Grimsbury and Hightown	2
Cherwell 004A	Banbury Cross and Neithrop	2
Oxford 017B	Blackbird Leys	2
Oxford 018A	Blackbird Leys	2
Oxford 018C	Northfield Brook	2
Cherwell 005F	Banbury Ruscote	2
Oxford 016E	Rose Hill & Iffley	2
Cherwell 005B	Banbury Ruscote	2
Oxford 018B	Northfield Brook	1

Appendix 3: Oxfordshire neighbourhoods with poor local provision of accessible greenspace

Poor access to local accessible greenspace is defined as less than 30% of the neighbourhood's area meeting the AGS Doorstep, Local and Neighbourhood standards.

Neighbourhoods in the lowest three IMD deciles, i.e. those most socio-economically deprived, are highlighted at the top of the table.

LSOA (neighbourhood) name (2011)	IMD Decile	Ward (2021)	% LSOA meeting Doorstep standard	% LSOA meeting Local standard	% LSOA meeting Neighbourhood standard
Oxford 017A	2	Blackbird Leys	0	0	0
Oxford 017B	2	Blackbird Leys	0	0	0
Oxford 018C	2	Northfield Brook	8.8	28.3	0
Cherwell 004G	2	Banbury Grimsbury and Hightown	15.2	0	24.3
Oxford 016A	2	Littlemore	16.7	13.4	0
Vale of White Horse 008C	2	Abingdon Caldecott	29.3	18.6	0
Oxford 016B	3	Littlemore	27.9	0	0
Cherwell 016D	4	Launton and Otmoor	3.7	0	0.5
West Oxfordshire 009A	4	Witney Central	5.1	2.3	0
West Oxfordshire 001B	4	Chipping Norton	7.1	0	0
South Oxfordshire 006B	4	Berinsfield	13.4	0	0
Oxford 015C	4	Cowley	27.3	0	0
South Oxfordshire 006A	5	Berinsfield	0.3	0	0
Cherwell 011B	5	Fringford and Heyfords	2.1	0.6	7.9
West Oxfordshire 011C	5	Eynsham and Cassington	2.2	0.6	3.9
Cherwell 016C	5	Launton and Otmoor	3.4	0.4	0
South Oxfordshire 004A	5	Haseley Brook	4.7	0	0
Vale of White Horse 009C	5	Faringdon	15.6	0.9	0
Oxford 016C	5	Littlemore	16.4	0	0
South Oxfordshire 013C	5	Didcot South	16.6	0	0
Cherwell 010C	6	Fringford and Heyfords	0.6	0.7	12.8

LSOA (neighbourhood) name (2011)	IMD Decile	Ward (2021)	% LSOA meeting Doorstep standard	% LSOA meeting Local standard	% LSOA meeting Neighbourhood standard
West Oxfordshire 012A	6	Alvescot and Filkins	0.7	0.7	3.7
Cherwell 001A	6	Cropredy, Sibfords and Wroxton	0.9	1.4	9
Vale of White Horse 009B	6	Faringdon	1.4	2	11.9
Cherwell 001D	6	Cropredy, Sibfords and Wroxton	1.5	0.8	0
Cherwell 001B	6	Cropredy, Sibfords and Wroxton	1.5	0	0
West Oxfordshire 002B	6	Kingham, Rollright and Enstone	1.9	0	0
Cherwell 009D	6	Cropredy, Sibfords and Wroxton	3	3.3	0
Cherwell 016B	6	Fringford and Heyfords	4	1.9	0
South Oxfordshire 002A	6	Forest Hill & Holton	4.8	2.2	10.3
South Oxfordshire 013B	6	Didcot South	5.4	10	0
West Oxfordshire 002A	6	Kingham, Rollright and Enstone	6	7.3	17.3
Vale of White Horse 015F	6	Wantage Charlton	6.2	0	0
South Oxfordshire 008B	6	Watlington	10.3	10.7	26.4
South Oxfordshire 016B	6	Henley-on-Thames	11.4	0	0
Cherwell 004C	6	Banbury Grimsbury and Hightown	11.5	0.7	21
Oxford 015B	6	Cowley	14.2	27.9	0
South Oxfordshire 006E	6	Sandford & the Wittenhams	15.4	3.8	0
Vale of White Horse 008B	6	Abingdon Caldecott	23.7	15	0
Vale of White Horse 006C	6	Abingdon Fitzharris	28.4	0	0
Vale of White Horse 010D	7	Sutton Courtenay	0	0	0
West Oxfordshire 014B	7	Carterton South	0	0	0
Cherwell 009C	7	Deddington	0.2	0	0

LSOA (neighbourhood) name (2011)	IMD Decile	Ward (2021)	% LSOA meeting Doorstep standard	% LSOA meeting Local standard	% LSOA meeting Neighbourhood standard
Vale of White Horse 010B	7	Steventon & the Hanneys	0.5	0	0
South Oxfordshire 006C	7	Sandford & the Wittenhams	0.9	0.2	0
Cherwell 011F	7	Launton and Otmoor	2	0.3	2.8
Cherwell 001C	7	Cropredy, Sibfords and Wroxton	2.2	0	0
Cherwell 016E	7	Launton and Otmoor	2.5	0.4	2.4
Cherwell 010E	7	Deddington	2.7	0	0.7
Cherwell 009A	7	Adderbury, Bloxham and Bodicote	3.4	3.5	0
Cherwell 019A	7	Kidlington West	3.9	0	0
Cherwell 011D	7	Fringford and Heyfords	4.6	5.1	9.1
Vale of White Horse 015C	7	Blewbury & Harwell	5.2	0	0
West Oxfordshire 011D	7	Standlake, Aston and Stanton Harcourt	5.8	5.8	19.1
South Oxfordshire 012D	7	Wallingford	6	0	0
South Oxfordshire 004B	7	Forest Hill & Holton	6.8	5.7	10.6
Vale of White Horse 002A	7	Kennington & Radley	6.9	0	4.4
West Oxfordshire 003B	7	Chadlington and Churchill	7.3	7.6	15.3
South Oxfordshire 005A	7	Chinnor	7.6	6.3	28.3
South Oxfordshire 006F	7	Sandford & the Wittenhams	7.8	3.9	0.9
Cherwell 018D	7	Kidlington East	7.8	0	0
Cherwell 017C	7	Kidlington West	8.9	0	0
Oxford 004A	7	Marston	9.1	0	22
Vale of White Horse 016E	7	Stanford	9.9	12	24.4
Oxford 018D	7	Northfield Brook	10.6	26	0
Cherwell 016A	7	Fringford and Heyfords	11.1	9.6	25.7

LSOA (neighbourhood) name (2011)	IMD Decile	Ward (2021)	% LSOA meeting Doorstep standard	% LSOA meeting Local standard	% LSOA meeting Neighbourhood standard
Vale of White Horse 003E	7	Wootton	11.5	0	0
Vale of White Horse 010C	7	Hendreds	14	0	0
Vale of White Horse 011E	7	Grove North	18.4	0	0
Cherwell 018B	7	Kidlington East	19.2	0	0
Cherwell 009E	8	Cropredy, Sibfords and Wroxton	0	0	0
Vale of White Horse 014D	8	Wantage & Grove Brook	0	0	0
West Oxfordshire 010B	8	Witney Central	0	0	12.7
Oxford 007A	8	Barton & Sandhills	0.8	0	0
Vale of White Horse 007C	8	Thames	1.2	1.3	0
West Oxfordshire 012C	8	Burford	1.7	0.5	0
Vale of White Horse 007A	8	Steventon & the Hanneys	2.5	0.6	0
West Oxfordshire 015B	8	Bampton and Clanfield	2.6	0	0.1
Cherwell 010D	8	Deddington	2.9	0	1.5
Cherwell 008A	8	Adderbury, Bloxham and Bodicote	3	0	0
West Oxfordshire 002D	8	The Bartons	3.3	1.3	7.4
Vale of White Horse 015D	8	Blewbury & Harwell	3.8	0	0
South Oxfordshire 002C	8	Garsington & Horspath	3.9	0	0
West Oxfordshire 012B	8	Brize Norton and Shilton	4	2.1	10.9
West Oxfordshire 007A	8	Ducklington	4.6	3.2	11.9
South Oxfordshire 007B	8	Haseley Brook	5.2	4	20.5
West Oxfordshire 007B	8	Hailey, Minster Lovell and Leafield	5.4	0	0.1
West Oxfordshire 004G	8	Stonesfield and Tackley	5.9	5.5	15.7

LSOA (neighbourhood) name (2011)	IMD Decile	Ward (2021)	% LSOA meeting Doorstep standard	% LSOA meeting Local standard	% LSOA meeting Neighbourhood standard
Vale of White Horse 003D	8	Kennington & Radley	8.2	1.9	0
Vale of White Horse 016G	8	Ridgeway	10.3	9.5	21
Cherwell 019B	8	Kidlington West	11.3	0	0
Vale of White Horse 004C	8	Abingdon Dunmore	20	2.2	0
Oxford 009B	8	Osney & St Thomas	21.5	0	6.5
Vale of White Horse 009A	8	Faringdon	24.2	27.5	0
Vale of White Horse 002E	8	Botley & Sunningwell	24.6	0	0
South Oxfordshire 004D	9	Wheatley	0	0	0
Vale of White Horse 003C	9	Kennington & Radley	0	0	0
West Oxfordshire 011A	9	Eynsham and Cassington	0	0	0
Cherwell 011A	9	Bicester South and Ambrosden	0	0.2	21.7
Vale of White Horse 016D	9	Watchfield & Shrivenham	0	2.9	0
Cherwell 010B	9	Deddington	0.1	0	0
Vale of White Horse 016C	9	Watchfield & Shrivenham	0.9	1.5	1.1
Vale of White Horse 009E	9	Stanford	1.1	0	0
Vale of White Horse 015E	9	Hendreds	1.2	0	0
Vale of White Horse 003A	9	Marcham	1.7	1	0
West Oxfordshire 002C	9	Kingham, Rollright and Enstone	1.9	0	0
Vale of White Horse 014E	9	Wantage & Grove Brook	2.6	0	0
Vale of White Horse 015B	9	Blewbury & Harwell	2.7	0	0
West Oxfordshire 001C	9	Chipping Norton	2.9	0	3.3

LSOA (neighbourhood) name (2011)	IMD Decile	Ward (2021)	% LSOA meeting Doorstep standard	% LSOA meeting Local standard	% LSOA meeting Neighbourhood standard
Vale of White Horse 001A	9	Cumnor	3	0	0.9
West Oxfordshire 003C	9	Milton-under-Wychwood	3.3	3.2	0
South Oxfordshire 006D	9	Garsington & Horspath	3.3	5.3	28.5
West Oxfordshire 007C	9	Hailey, Minster Lovell and Leafield	3.7	0	0
South Oxfordshire 015A	9	Cholsey	4.1	0.1	5.8
South Oxfordshire 020A	9	Kidmore End & Whitchurch	4.7	2.4	6.2
South Oxfordshire 007E	9	Chalgrove	4.8	0	2.5
South Oxfordshire 018C	9	Kidmore End & Whitchurch	5	2.7	0
Cherwell 016F	9	Launton and Otmoor	5.2	0	0
West Oxfordshire 015D	9	Standlake, Aston and Stanton Harcourt	5.3	0.9	14
Cherwell 008B	9	Adderbury, Bloxham and Bodicote	5.4	0	0
Vale of White Horse 011D	9	Grove North	5.9	0	0
South Oxfordshire 007A	9	Benson & Crowmarsh	6.9	0	0
Cherwell 010A	9	Deddington	6.9	2.6	21
Cherwell 006D	9	Banbury Calthorpe and Easington	7.2	0	0
Vale of White Horse 011C	9	Grove North	7.3	0	0
South Oxfordshire 018F	9	Woodcote & Rotherfield	7.6	0	0
West Oxfordshire 006A	9	Eynsham and Cassington	8.3	1.6	11
West Oxfordshire 005D	9	North Leigh	8.6	8.1	20.4
Vale of White Horse 010E	9	Sutton Courtenay	8.7	0.9	0
Vale of White Horse 015A	9	Blewbury & Harwell	9.1	8.7	27.3

LSOA (neighbourhood) name (2011)	IMD Decile	Ward (2021)	% LSOA meeting Doorstep standard	% LSOA meeting Local standard	% LSOA meeting Neighbourhood standard
West Oxfordshire 007D	9	Hailey, Minster Lovell and Leafield	9.4	0	0
Cherwell 006E	9	Banbury Calthorpe and Easington	10.2	16.8	0
Cherwell 019C	9	Kidlington East	10.7	9.7	23.5
South Oxfordshire 015D	9	Cholsey	10.9	5.6	0
South Oxfordshire 015E	9	Cholsey	12.2	12.4	16.6
South Oxfordshire 019B	9	Sonning Common	12.6	10	29.2
Cherwell 017B	9	Kidlington West	14.3	0	0
South Oxfordshire 016A	9	Henley-on-Thames	15.6	0	0
Cherwell 008C	9	Adderbury, Bloxham and Bodicote	21.3	0	0
Cherwell 009B	9	Deddington	22.1	0	0
Cherwell 017A	9	Kidlington West	23.9	0	0
South Oxfordshire 001B	9	Thame	23.9	0	0.5
Vale of White Horse 008D	9	Abingdon Fitzharris	27.3	0	0
South Oxfordshire 004E	10	Wheatley	0	0	0
Vale of White Horse 004F	10	Abingdon Peachcroft	0	0	0
Vale of White Horse 009D	10	Faringdon	0	0	0
South Oxfordshire 011C	10	Benson & Crowmarsh	0	0	26
South Oxfordshire 004C	10	Wheatley	0.1	1	12
South Oxfordshire 008C	10	Watlington	0.6	0	6.4
West Oxfordshire 015C	10	Standlake, Aston and Stanton Harcourt	1.1	0	0
Vale of White Horse 016B	10	Watchfield & Shrivenham	1.2	0	13
West Oxfordshire 015A	10	Bampton and Clanfield	2.1	0	0
Vale of White Horse 014C	10	Wantage Charlton	2.3	0	0
West Oxfordshire 003A	10	Ascott and Shipton	2.8	2.9	0
South Oxfordshire 012B	10	Wallingford	2.9	2.6	0

| LSOA (neighbourhood) name (2011)	IMD Decile	Ward (2021)	% LSOA meeting Doorstep standard	% LSOA meeting Local standard	% LSOA meeting Neighbourhood standard
Vale of White Horse 001D	10	Thames	3.1	0	0
South Oxfordshire 007C	10	Benson & Crowmarsh	3.7	0	0
Vale of White Horse 003B	10	Marcham	3.8	0	0
Vale of White Horse 007B	10	Kingston Bagpuize	4	3.2	0
South Oxfordshire 015C	10	Goring	4.2	0	1.4
West Oxfordshire 006C	10	Freeland and Hanborough	4.6	0	0
Vale of White Horse 010A	10	Drayton	5	5	0
West Oxfordshire 014D	10	Carterton South	5	0	0
Oxford 002C	10	Cutteslowe & Sunnymead	5.6	0	0.1
West Oxfordshire 006B	10	Freeland and Hanborough	6	6	28.4
South Oxfordshire 019C	10	Sonning Common	6.1	0	0
West Oxfordshire 014C	10	Carterton South	6.4	0	0
South Oxfordshire 011B	10	Benson & Crowmarsh	6.8	5.8	23.2
South Oxfordshire 005D	10	Chinnor	6.8	4.2	18.5
South Oxfordshire 018E	10	Woodcote & Rotherfield	7.4	0	0
Vale of White Horse 001B	10	Cumnor	7.4	0	0
West Oxfordshire 006D	10	Freeland and Hanborough	7.5	2.4	18.8
Vale of White Horse 011B	10	Wantage & Grove Brook	7.7	0	0
Vale of White Horse 003F	10	Botley & Sunningwell	8.5	9.1	0
West Oxfordshire 004F	10	Woodstock and Bladon	9.1	9.8	0
West Oxfordshire 004E	10	Woodstock and Bladon	9.6	0	0

LSOA (neighbourhood) name (2011)	IMD Decile	Ward (2021)	% LSOA meeting Doorstep standard	% LSOA meeting Local standard	% LSOA meeting Neighbourhood standard
West Oxfordshire 004B	10	Stonesfield and Tackley	9.8	5.5	1.2
Vale of White Horse 003G	10	Wootton	9.9	0	0
Vale of White Horse 016A	10	Watchfield & Shrivenham	10.2	11	1.9
South Oxfordshire 011A	10	Benson & Crowmarsh	10.4	0	0
Vale of White Horse 014F	10	Wantage & Grove Brook	11.4	0	0
Vale of White Horse 001C	10	Cumnor	11.5	0	0
Vale of White Horse 011A	10	Grove North	11.5	0	0
West Oxfordshire 005A	10	Charlbury and Finstock	11.8	11.7	29.4
South Oxfordshire 009D	10	Didcot North East	11.8	18.2	0
Vale of White Horse 002C	10	Kennington & Radley	12.5	0	0
West Oxfordshire 004D	10	Woodstock and Bladon	14.5	6.5	0
West Oxfordshire 009B	10	Witney West	16.1	23.9	0
South Oxfordshire 007D	10	Chalgrove	16.6	0	0
South Oxfordshire 012C	10	Wallingford	18.2	0.3	0
South Oxfordshire 017B	10	Henley-on-Thames	18.6	1.1	0
Vale of White Horse 006D	10	Abingdon Fitzharris	18.6	27.2	0
South Oxfordshire 012A	10	Cholsey	19.3	0	0
South Oxfordshire 017D	10	Henley-on-Thames	21.8	0	0
Cherwell 008D	10	Adderbury, Bloxham and Bodicote	21.9	1.3	0
Vale of White Horse 002B	10	Kennington & Radley	25.9	9.9	13.2
Vale of White Horse 014A	10	Wantage Charlton	29.8	0	0

Appendix 4: Oxfordshire neighbourhoods with poor local provision of accessible greenspace and high population density.

Using Natural England's categorization system (see below), neighbourhoods assigned L1 or L2 for at least two of the neighbourhood AGS requirements are included; those in the lowest three IMD deciles are of particular concern (shaded in table below).

LSOA (neighbourhood) name (2011)	IMD Decile	Ward (2021)	Doorstep standard	Local standard	Neighbourhood standard
Oxford 017B	2	Blackbird Leys	L2	L2	L2
Oxford 017A	2	Blackbird Leys	L2	L2	L2
Oxford 016E	2	Rose Hill & Iffley	H2	L2	L2
Oxford 005B	2	Barton & Sandhills	M2	L2	L2
Oxford 017C	3	Blackbird Leys	H2	L2	L2
Oxford 005A	3	Barton & Sandhills	H2	L2	L2
Oxford 015C	4	Cowley	M2	L2	L2
Oxford 011F	5	St Mary's	L1	L1	H1
Oxford 016C	5	Littlemore	M2	L2	L2
Oxford 009C	6	Carfax & Jericho	L2	L2	H2
Oxford 014C	8	Donnington	L1	L1	H1

Percentage ANGSt Buffer Coverage
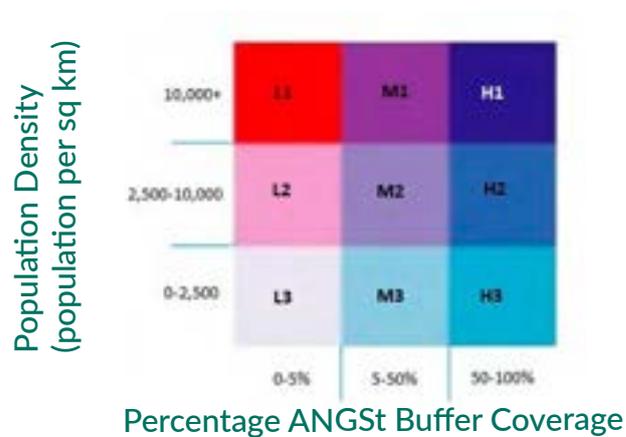
Appendix 5: Oxfordshire neighbourhoods with poor local provision of accessible greenspace

Neighbourhoods were ranked by density of PRoW (m per ha) and the lowest 15% selected; the same was done for density of accessible greenspace (m^2 per ha). Neighbourhoods which appeared on both lists are presented as having low density of both PRoW and accessible greenspace.

A relative rather than absolute measure was used as there is no set standard for this. The Natural England Green Infrastructure data includes a measure of low greenspace and PRoW, but by 1 km grid squares. Given that this report has focussed on neighbourhood access to greenspace it was deemed more appropriate to assess PRoW and accessible greenspace density at the LSOA (neighbourhood) scale.

LSOA (neighbourhood) name (2011)	IMD decile	Ward (2021)	Density of PRoW (m per ha)	Density of accessible greenspace (m2 per ha)
Cherwell 011B	5	Fringford and Heyfords	0.16	14.2
West Oxfordshire 011C	5	Eynsham and Cassington	0.09	18.4
Cherwell 010C	6	Fringford and Heyfords	0.029	6.8
Cherwell 001A	6	Cropredy, Sibfords and Wroxton	0.117	9
West Oxfordshire 012A	6	Alvescot and Filkins	0.114	10.6
Cherwell 009C	7	Deddington	0.122	7.9
Cherwell 008A	8	Adderbury, Bloxham and Bodicote	0.102	18.9
Cherwell 009E	8	Cropredy, Sibfords and Wroxton	0.171	7.9
Vale of White Horse 009E	9	Stanford	0.076	16.1

Appendix 6: Neighbourhoods with the highest mean percentage man-made surface

LSOAs were ranked by mean percentage man-made surface (data from Natural England Green Infrastructure data) and the top 5%, i.e. those with the highest percentage man-made surfaces, selected.

Natural England describe the data as follows: man-made surface is derived from OS Mastermap Typology data. These data are presented on a 250 m square grid, which is then used to calculate a mean percentage man-made surface for each LSOA (neighbourhood).

LSOA (neighbourhood) name (2011)	IMD decile	Ward (2021)	% man-made surface
Cherwell 004A	2	Banbury Cross and Neithrop	83
Cherwell 004H	4	Banbury Grimsbury and Hightown	70
Oxford 009C	6	Carfax & Jericho	70
Oxford 013E	6	Lye Valley	65
Cherwell 003A	3	Banbury Cross and Neithrop	64
Oxford 015C	4	Cowley	64
Cherwell 013A	10	Bicester East	59
Cherwell 013B	5	Bicester East	59
Oxford 011D	3	St Clement's	58
Oxford 015B	6	Cowley	56
Oxford 017C	3	Blackbird Leys	56
South Oxfordshire 009A	10	Didcot North East	56
South Oxfordshire 013B	6	Didcot South	56
Vale of White Horse 006D	10	Abingdon Fitzharris	56
West Oxfordshire 010E	9	Witney South	56
Oxford 011F	5	St Mary's	55
South Oxfordshire 010C	8	Didcot West	55
Cherwell 006A	5	Banbury Cross and Neithrop	54
Cherwell 007B	7	Banbury Cross and Neithrop	54
Oxford 011A	6	St Clement's	54

Appendix 7: Neighbourhoods with the lowest area of private garden

Natural England Green Infrastructure data on the area of private garden per 1000 people per neighbourhood was ranked and the lowest 5% of neighbourhoods were selected.

It is important to note that these data are available for urban and urban-fringe areas only in the NE GI data. Data on private gardens for all areas is available in Alison Smith's Natural Capital mapping, but it was deemed more appropriate to adhere to a single dataset for all analyses.

LSOA (neighbourhood) name (2011)	Ward (2021)	IMD decile	ha private garden per 1k people
Cherwell 019C	Kidlington East	9	0
West Oxfordshire 007D	Hailey, Minster Lovell and Leafield	9	0.02
Cherwell 011F	Launton and Otmoor	7	0.02
Cherwell 009A	Adderbury, Bloxham and Bodicote	7	0.03
Cherwell 001D	Cropredy, Sibfords and Wroxton	6	0.06
South Oxfordshire 006F	Sandford & the Wittenhams	7	0.14
Cherwell 016A	Fringford and Heyfords	7	0.33
Oxford 008B	Holywell	2	0.47
South Oxfordshire 020A	Kidmore End & Whitchurch	9	0.47
Oxford 008A	Carfax & Jericho	7	0.66
West Oxfordshire 007A	Ducklington	8	0.82
Cherwell 009D	Cropredy, Sibfords and Wroxton	6	0.86
West Oxfordshire 007B	Hailey, Minster Lovell and Leafield	8	1.01
Cherwell 004H	Banbury Grimsbury and Hightown	4	1.51
Oxford 009D	Carfax & Jericho	6	1.54
Oxford 001B	Wolvercote	9	1.72
Vale of White Horse 015B	Blewbury & Harwell	9	1.82
Oxford 011D	St Clement's	3	1.94
South Oxfordshire 019A	Woodcote & Rotherfield	7	1.97
Vale of White Horse 006G	Abingdon Abbey Northcourt	9	1.97
Oxford 011G	St Mary's	7	2.04
Oxford 009C	Carfax & Jericho	6	2.09

Appendix 8: Neighbourhoods of concern according to two or more metrics

These neighbourhoods were of concern according to at least two metrics, but were not in the lowest three IMD deciles, so are lower priority than those presented in Table 2.

LSOA (neighbourhood) name (2011)	Within ward (2021)	IMD Decile	<30% of area meets each of the three neighbourhood AGS	High population density & low access to greenspace	Lowest 15% for both PRoW & accessible greenspace density	Top 5% mean manmade surfaces	Lowest 5% private gardens	Count of Ys
Oxford 015C	Cowley	4	Y	Y			Y	3
Cherwell 004H	Banbury Grimsbury & Hightown	4				Y	Y	2
Oxford 011F	St Mary's	5		Y			Y	2
Oxford 016C	Littlemore	5	Y	Y				2
Cherwell 011B	Fringford & Heyfords	5	Y		Y			2
West Oxfordshire 011C	Eynsham and Cassington	5	Y		Y			2
Cherwell 001D	Cropredy, Sibfords and Wroxton	6	Y				Y	2
Cherwell 009D	Cropredy, Sibfords and Wroxton	6	Y				Y	2
Oxford 009C	Carfax & Jericho	6		Y		Y		2
South Oxfordshire 013B	Didcot South	6	Y			Y		2
Oxford 015B	Cowley	6	Y			Y		2
Cherwell 010C	Fringford and Heyfords	6	Y		Y			2
Cherwell 001A	Cropredy, Sibfords and Wroxton	6	Y		Y			2
West Oxfordshire 012A	Alvescot and Filkins	6	Y		Y			2
Cherwell 016A	Fringford and Heyfords	7	Y				Y	2
Cherwell 011F	Launton and Otmoor	7	Y					2

LSOA (neighbourhood) name (2011)	Within ward (2021)	IMD Decile	<30% of area meets each of the three neighbourhood AGS	High population density & low access to greenspace	Lowest 15% for both PRoW & accessible greenspace density	Top 5% mean manmade surfaces	Lowest 5% private gardens	Count of Ys
South Oxfordshire 006F	Sandford & the Wittenhams	7	Y				Y	2
Cherwell 009A	Adderbury, Bloxham and Bodicote	7	Y				Y	2
Cherwell 009C	Deddington	7	Y		Y			2
West Oxfordshire 007A	Ducklington	8	Y				Y	2
West Oxfordshire 007B	Hailey, Minster Lovell and Leafield	8	Y				Y	2
Cherwell 008A	Adderbury, Bloxham and Bodicote	8	Y		Y			2
Cherwell 009E	Cropredy, Sibfords and Wroxton	8	Y		Y			2
Vale of White Horse 015B	Blewbury & Harwell	9	Y				Y	2
Cherwell 019C	Kidlington East	9	Y				Y	2
West Oxfordshire 007D	Hailey, Minster Lovell and Leafield	9	Y				Y	2
South Oxfordshire 020A	Kidmore End & Whitchurch	9	Y				Y	2
Vale of White Horse 009E	Stanford	9	Y		Y			2
Vale of White Horse 006D	Abingdon Fitzharris	10	Y			Y		2

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About LCNR

The ongoing loss and degradation of nature is one of the greatest challenges of our time. To halt and reverse this global biodiversity decline, the Leverhulme Centre for Nature Recovery was created as a hub for innovative research on nature recovery nationally and worldwide. It brings together experts from disciplines across the University of Oxford, including geography, ecology, social science, finance, economics, psychiatry, anthropology, artificial intelligence, statistics and earth observation. Our team collaborates on a range of projects, working with national and international partners.

Funder acknowledgement

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naturerecovery

Environmental Change Institute
School of Geography and the Environment
University of Oxford
South Parks Road
Oxford, OX1 3QY
United Kingdom