Tree Planting Opportunity Mapping

Bristol City Council's Parks and Green Space and Food Growing Sites

May 2023

1. SUMMARY

Bristol's land area: 111.6 km2 or 11,160 hectares

Bristol's tree canopy: 16.9% [18.9 km^2 or 1,890 hectares] *(Source: Bluesky canopy data 2020)*

Parks and green space and food growing tree canopy: 37.3% (sampled sites 46.6%)

Target Bristol tree canopy: increase by 795 hectares to 24% tree cover, by 2046 (working target)

38 samples sites (out of 509 sites) 34.7% by area, 7.5% by number

Potential to increase tree canopy:

SAMPLED parks, green space and food growing sites:

> Lower impact: **3.3%** potential increase

> Higher impact: **7.1%** potential increase

ALL parks, green space and food growing sites:

> Lower impact: **74.6 hectares** potential increase [37% - 41% tree canopy]

> Contributing **9.4%** of city target, increasing city tree canopy to **17.6%** (0.7% absolute increase)

> Higher impact: **154.4 hectares** potential increase (37% - 45% tree canopy]

> Contributing **19.4%** of city target, increasing city tree canopy to **18.3%** (1.4% absolute increase).

2. OBJECTIVES

Objectives of study:

To quantify the potential to add tree canopy in Bristol City Council parks and green space and food growing sites via a representative sample of such spaces, in line with current planting design principles.

To predict the potential of all Bristol City Council parks and green spaces and food growing sites to contribute to the city target to double tree canopy by extrapolating data from the sample assessment.

3. CONTEXT

A Bristol One City Plan's target is to double Bristol's tree canopy by 2046, from a 2018 baseline.

Bristol's tree canopy is 16.9% *(Source: Bluesky canopy data 2020)*

A working target has been set to achieve 24% tree canopy by 2046, adding 795 hectares of tree canopy. Note: 17% is a revised baseline, previously measured at 12%.

The Bristol Tree and Woodland Strategy which is in preparation at the time of this report will confirm the canopy percentage target and required area increase.

4. SCOPE

This assessment encompasses land included in Bristol City Council's 2023 Parks and Green Space Strategy (PGSS), including:

- Recreational parks and green space
- Food growing and grazing land areas (not allotments)

The assessment included Ashton Court Estate, which is outside the Bristol boundary. The calculated percentage contribution to Bristol tree canopy has been adjusted to reflect city land area.

See section 5.1 for map of sites sampled and 7.1 for full list of sites within the results.

5. METHODOLOGY

Methodology, see Tree Planting Opportunity Mapping - method v6.docx

The assessment followed two stages:

A. Opportunity to establish tree canopy, without defined benefit criteria, and
B. Priority to establish tree canopy, with benefit criteria applied

5.1 A: Opportunity Mapping

Thirty-eight sites were selected as a representative sample from 509 PGSS sites, comprising 29 Recreational Green Space sites and 9 Food Growing and Grazing sites. See map below.

The sample size is 7.5% of the total number of PGSS sites (38 of 509), and 34.7% by area (7.4 km^2/21.3 km^2). See Appendix 1 for sampling method.

Map 1: PGSS sites sampled
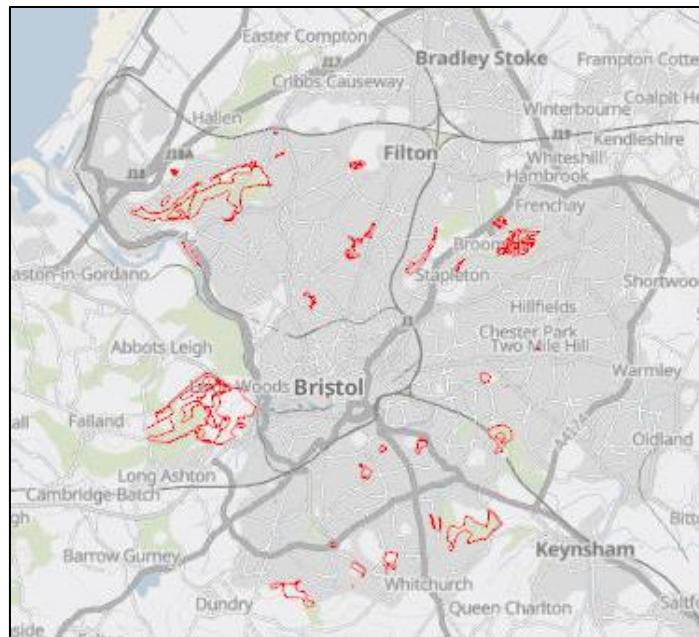
Each site was subject to a desk top review and site-based assessment to identify potential to add tree canopy, taking into account site designation, use and character.

Within each sample site, two scenarios to add tree canopy were considered at a lower impact and a higher impact scale. Both scenario's identify land **judged suitable** for tree planting, by discounting land where tree planting was considered harmful or undesirable. The lower end projection is considered more progress-able, whereas the higher range projection is considered less so due to competition from other land uses, including other habitats, food growing or recreational space

The scenarios are not a definitive plan or proposal for any site. They are a view of what is possible and what may be acceptable. This assessment is a **'sense check'** to understand the potential of parks, green space and food growing land to contribute to the cities ambition to double tree canopy.

Scenario 1: lower impact projection to add tree canopy = land suitable for tree planting and **higher** likelihood of acceptance to favour tree planting over any other land use.

Scenario 2: higher impact potential to add tree canopy = land suitable for tree planting, **lower** likelihood of acceptance to favour tree planting over other land use.

For some sites the potential to add tree canopy is zero or there is no maximum projection to reflect constraints.

The potential to add tree canopy has been assessed in accordance with the Principles (for tree planting / natural regeneration), set out in the West of England Tree and Woodland Strategy, and following the 'Right Place, Right Tree, Right Reason' approach and in accordance with Bristol City Council's Tree Planting Design Principles.

In assessing the potential to add tree canopy four tree planting types were considered: woodland, standards, orchards or wood pasture (mosaic of trees and species rich grassland) and the % canopy contribution identified within each site. The % canopy contribution is an assumed area when the trees are at maturity, and hence achieving this will vary according to the type of planting and species selected. Tree planting also means establishment by natural regeneration, whichever is preferred.

Table 1: Types of tree planting and tree canopy projection at maturity

Type of planting	Canopy projection
Woodland	100%
Standards	100%
Orchard	70%
Wood pasture (scattered standard trees)	20%

For some sites the minimum layer may be the only view as there is no scope for additional planting. Methodology details are found in Tree Planting Opportunity Mapping - method v6.docx.

Sites were subject to a site assessment by two Arboricultural professionals who compared results and presented a consensus view. Inevitably opinions between persons differ and others making the same assessment may conclude a different outcome. This assessment represents the best professional judgement for the resources available.

For parks and green space sites, tree planting potential was mapped by Typology – as Table 2, below. Food growing sites are not assigned typologies.

Table 2: Parks and Green Space Typologies

Parks and Green Space Typologies
Informal Green Space
Formal Green Space
Natural Green Space
No right of public access
Children's Play Space
Young Person's space

5.2 Priority Mapping

Prioritisation criteria were defined to identify areas where tree planting would deliver the greatest benefit. Criteria applied are:

a) Deprivation - Indices of Multiple Deprivation. Score 1 – 4 (4 most deprived)
b) Heat risk stress - Urban Heat Stress Vulnerability. Score 1-4 (4 highest heat stress risk)
c) Nature recovery - Nature Recovery and other nature networks. Score 1-4 (4 most ecological benefit)
d) Tree deficit - Score 1-4 (4 = least treed)

These are prioritised according to need/ risk/ increase on a scale of 1 - 4. The highest score category within each PGSS site is used to calculate the park prioritisation score for that criteria noting there could be lower scores within the site. The final sum of the four criteria is then scored as below. See Appendix 4 for details of each individual factor scoring.

Table 3: Prioritisation scores based on the four criteria

Priority score	Prioritisation of benefit / need	Total score of the four criteria combined
4	Very high	13+
3	High	10-12
2	Medium	7-9
1	Low	4-6

6 BASELINE TREE CANOPY

6.1 All sites baseline tree canopy

Existing tree canopy across **all** parks and green space sites is **40.7%,** and for food growing sites is **15.8%**. Across all parks and green space sites and food growing sites tree canopy is **37.3%.**

For parks and green space sites tree canopy distribution is broken down further by typology (primary land use types) – ranging from 7.9% for 'Young Person's Space' to 55.1% for 'Natural Green Space'. Food growing land is not currently defined by typology.

Table 4: Tree Canopy across all Parks and Green Space by typology

Parks and Green Space typology	Typology area (m^2)	Existing Tree canopy area (m^2)	Existing tree Canopy %
Informal Green Space	6618877	1394944	21.1%
Formal Green Space	1073732	374458	34.9%
Natural Green Space	10264895	5653819	55.1%
No Right of Public Access	220076	37717	17.1%
Children's Play Space	178431	44086	24.7%
Active Sports - Fixed	79382	8542	10.8%
Young Person's Space	42416	3358	7.9%
Total	18477810	7516924	**40.7%**

Food Growing land	Area (m^2)	Existing Tree canopy area (m^2)	Existing tree Canopy %
Commercial Food Growing and Grazing	2871439	454723	**15.8%**

4

Parks and Green Space and Food Growing land	Area (m^2)	Existing Tree canopy area (m^2)	Existing tree Canopy %
All park typologies + commercial food growing and grazing	21349249	7971647	**37.3%**

6.2 Sample sites baseline tree canopy

Across the 38 sites sampled existing tree canopy is **46.6%** (compared to 37.3% baseline across all sites. As such the sample sites somewhat over-represent sites with a higher tree canopy, this inadvertent bias may influence the results but in an unknown way (sampled sites with a higher canopy than average may have a lower potential to add more canopy or they may not).
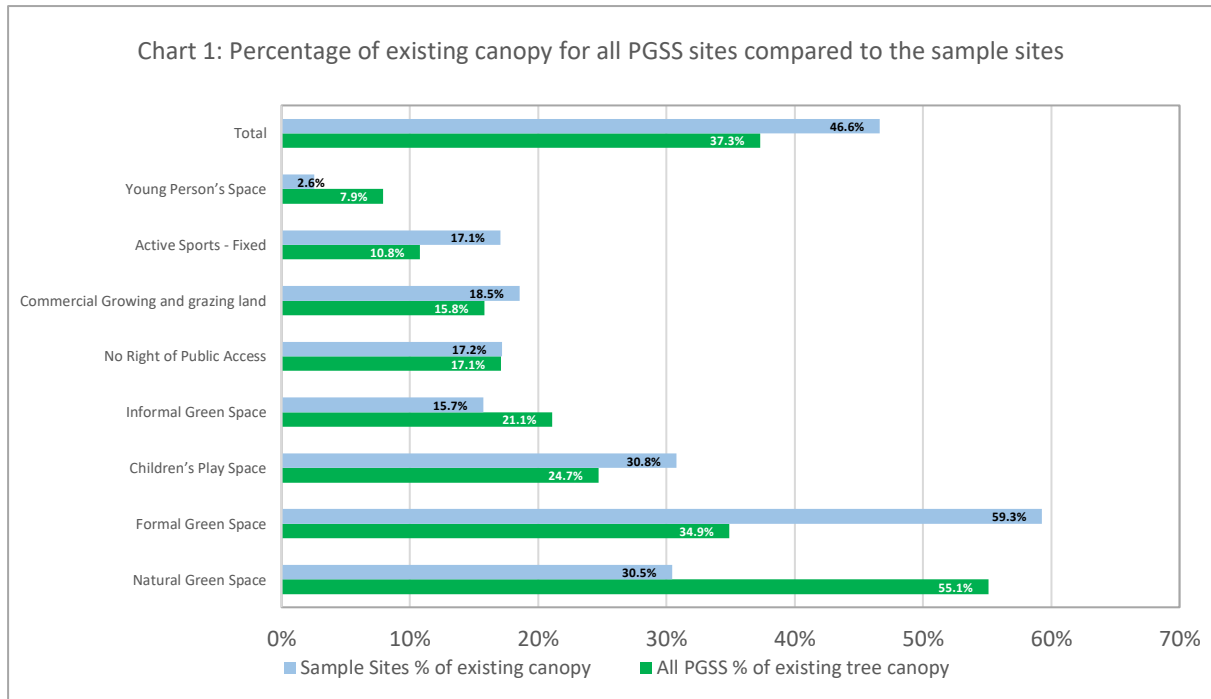

Chart 1: Percentage of existing canopy for all PGSS sites compared to the sample sites

Table 5: sample sites existing tree canopy

Typology / land category	Area m^2	Existing canopy %
Recreational Parks and Green space		
Informal Green Space	1796186	15.7%
Natural Green Space	5166139	59.3%
Formal Green Space	103704	30.5%
No Right of Public Access	153951	17.2%
Children's Play Space	21346	30.8%
Active Sports - Fixed	6518	17.1%
Young Person's Space	3011	2.6%
Food growing space		
Commercial Growing and grazing land	371958	18.5%
Total	**7622813 (76.2 km^2)**	**46.6%**

Note: There is a slight variation in canopy/ area calculations whether scaled at the site or typology level. The figures used here are based on typology. Please see section 10 for more detail.

7 RESULTS

7.1 Tree Planting Opportunity Mapping – Sample sites

Of the 38 sites included in the study, the potential to increase tree canopy was assessed to give a) a lower impact potential canopy increase, and b) a higher impact potential canopy increase. This was assessed per site and per typology (where categorised). See Table 6.

<u>Table 6</u>: Potential to Increase tree canopy within sampled sites – summary

Sample Parks and Green Space and Food growing sites	Total area of sample m²	Baseline Existing canopy %	Lower canopy projection %	Lower canopy projection + existing canopy %	Higher canopy projection %	Higher canopy projection + exiting canopy %
Total	**7361553 m² (7.4 km²)**	**46.5%**	**3.3%**	**49.9%**	**7.1%**	**53.6%**

Scenario 1 – 3.3% <u>Lower impact potential to add tree canopy</u> all sites (**46.5% - 49.9% projected canopy sampled sites)**

Scenario 2 – 7.1% <u>Higher impact potential to add tree canopy</u> all sites: (**46.5% - 53.6% projected canopy sampled sites**)

<u>Table 7</u>: Potential to increase tree canopy within sampled sites - detail

Site name	Site code	Use	Ward	Site area m²	Baseline Existing canopy %	Lower canopy projection %	Lower canopy projection + existing canopy %	Higher canopy projection %	Higher canopy projection + exiting canopy %
Access Lane to Nibley Road Allotments	ACCE NIRO AL	2	Avonmouth & Lawrence Weston	583	51.5%	**0.0%**	51.5%	0.0%	51.5%
Amercombe & Hencliffe Walk	AMER HEW A	1	Stockwood	9741	71.7%	**8.1%**	79.8%	8.1%	79.8%
Anchor Square	ANCH SQ	1	Central	3542	6.1%	**0.0%**	6.1%	0.0%	6.1%
Arnos Court Park	ARNO COPA	1	Brislington West	69928	38.7%	**7.1%**	45.8%	13.4%	52.1%
Ashton Court Estate	ASHT COES	1	Bedminster	3110589	34.3%	**0.5%**	34.9%	0.8%	35.2%
Barnard Park	BARN PAW EFA	1	Henbury & Brentry	11292	25.6%	**8.5%**	34.1%	8.5%	34.1%
Bedminster Down Smallholding The Piggery	BDS	2	Bishopsworth	2364	10.4%	**3.1%**	13.9%	15.7%	27.8%
Blaise Castle Estate	BLAIC AES	1	Henbury & Brentry	1223744	67.6%	**2..0%**	69.6%	2.3%	69.9%
Briery Leaze Road Amenity Area	BRIEL EROR O	1	Hengrove & Whitchurch Park	908	22.0%	**24.3%**	46.3%	24.3%	46.4%
Briery Leaze Road Open Space	WHIT PH2	1	Hengrove & Whitchurch Park	107071	26.4%	**9.3%**	35.7%	13.6%	40.0%
Cheddar Grove	CHED GR	1	Bishopsworth	2083	48.2%	**23.8%**	72.2%	35.9%	84.3%
Crews Hole Road Open Space	CRE WHO RO	1	St George Troopers Hill	56772	82.5%	**0.0%**	82.5%	0.0%	82.5%
Crosscombe Drive Open Space	CROS DROS	2	Hartcliffe & Withywood	250081	66.0%	**12.4%**	78.4%	16.7%	82.8%
Eastwood Farm	EAST FAIN CO	1	Brislington East	278804	53.5%	**6.5%**	59.8%	13.8%	66.9%
Fir Tree Lane Hall	FTH	2	St George Troopers Hill	2048	47.0%	**11.9%**	58.9%	11.9%	58.9%
Hartcliffe Way Roundabout	HART WAR O	1	Filwood	13393	27.0%	**20.2%**	47.3%	20.2%	47.3%
Hawkfield Meadow	HAW KME	1	Hengrove & Whitchurch Park	58708	46.6%	**0.0%**	46.6%	0.0%	46.6%
Hazelbury Road Open Space	HAZE ROO S	2	Stockwood	15881	68.7%	**12.3%**	81.0%	12.3%	81.0%

Horfield Common Open Space	HORF CO	1	Horfield	120783	23.8%	**8.3%**	32.1%	12.8%	36.6%
Kingsweston Estate	KING WEE S	1	Avonmouth & Lawrence Weston	311741	74.5%	**2.2%**	76.6%	2.2%	76.6%
Lawrence Weston Community Farm	LAWR WEC OFA	2	Avonmouth & Lawrence Weston	24840	51.0%	**0.4%**	51.4%	4.0%	55.0%
Lockleaze Open Space	LOCK PLFI	1	Lockleaze	146719	18.7%	**10.3%**	29.0%	50.5%	69.2%
Napier Miles O/S & Fernhill Fields	NAPI MIOS FE	1	Avonmouth & Lawrence Weston	109522	68.8%	**1.5%**	70.3%	5.9%	74.7%
Oldbury Court Estate	OLDB COES	1	Frome Vale	472779	54.2%	**5.1%**	59.9%	14.1%	69.6%
Pen Park Playing Fields	PENP APLFI	1	Southmead	58206	3.9%	**3.1%**	9.0%	38.9%	55.6%
Perretts Park	PERR PA	1	Windmill Hill	26429	14.5%	**13.1%**	27.7%	20.7%	35.7%
Portway (Between Railway and River)	PORT BERA RI	1	Stoke Bishop	56574	5.1%	**11.4%**	16.5%	35.6%	40.7%
Primrose Lane Open Space	PRIM LAOS	2	St George Central	3777	24.0%	**18.0%**	42.0%	57.1%	81.1%
Redland Green	REDL GRPA	1	Redland	40968	46.6%	**3.2%**	49.8%	5.1%	51.7%
Stapleton Small Holdings I	STAP SMAL LI	2	Eastville	6114	11.1%	**10.1%**	21.1%	12.9%	24.0%
Stapleton Small Holdings J	STAP SMAL LJ	2	Eastville	66029	6.8%	**4.7%**	11.4%	74.1%	80.9%
Stockwood Open Space	STOC OS	1	Stockwood	572974	58.4%	**9.4%**	67.8%	13.5%	72.0%
The Tump	THET U	1	Avonmouth & Lawrence Weston	34160	60.2%	**3.6%**	63.8%	5.4%	65.6%
Tormarton Crescent OS	TOR MCR	1	Henbury & Brentry	4943	37.7%	**9.7%**	47.3%	21.5%	59.2%
Victoria Rooms (Fountain Surround)	VICT RO	1	Central	1027	21.8%	**0.0%**	21.8%	0.0%	21.8%
Wedmore Vale Open Space	WED MVA OS	1	Knowle	65699	42.9%	**4.3%**	47.1%	13.3%	56.1%
Wickham Glen Open Space	WICK GL	1	Eastville	18731	40.4%	**31.7%**	72.1%	33.6%	74.0%
Witch Hazel Road	WITC RO	1	Hengrove & Whitchurch Park	2004	43.1%	**24.3%**	67.4%	39.7%	82.8%
Totals				**7361553 (7.4 km^2)**	**46.5%**	**3.3%**	**49.9%**	**7.1%**	**53.6%**

1= Recreational park or green space   2 = Commercial Growing and grazing land

The completed sample site assessment forms can be found here, including proposed tree plans: PGSS Site assessments_final ALL V3.pdf

Within the sample sites, the typologies with the most scope for increasing the canopy are Informal Green Space, Commercial food growing and grazing land and Natural Green Space in that order (see Table 8).
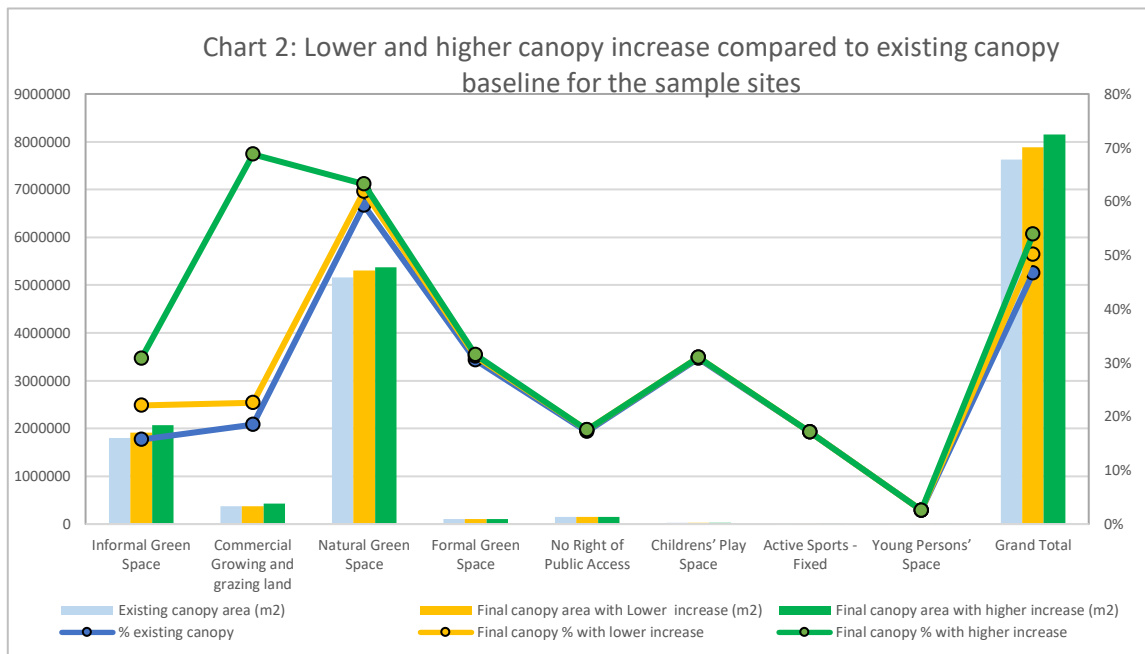
Chart 2: Lower and higher canopy increase compared to existing canopy baseline for the sample sites

Table 8: Potential canopy increase by Typology across the sample sites.

Typology	% existing canopy	Min canopy area (m2)	% Min canopy	Max canopy area (m2)	% Max canopy
Informal Green Space	15.71%	114535.3	6.38%	271317.0	15.10%
Commercial Growing and grazing land	18.54%	4110.2	4.02%	51350.8	50.23%
Natural Green Space	59.28%	135311.9	2.62%	206204.5	3.99%
Formal Green Space	30.45%	781.7	0.75%	1035.9	1.00%
No Right of Public Access	17.19%	396.2	0.26%	396.2	0.26%
Children's Play Space	30.79%	39.3	0.18%	39.3	0.18%
Active Sports – Fixed	17.08%	0.0	0.00%	0.0	0.00%
Young Person's Space	2.56%	0.0	0.00%	0.0	0.00%
Grand Total	**46.64%**	**256930.5**	**3.49%**	**532099.5**	**7.23%**

Note:

There is a slight variation in canopy/ area calculations whether scaled at the site or typology. The figures used are based on typology. Please see section 10 for more detail.

The existing, minimum and maximum potential canopy calculations for typologies are based on the weighted average of each typology's size compared to site size.

The Active sports seasonal typology areas are also included in informal/ formal green space typologies within the existing GIS site mapping so have been removed from the final typology calculations.

7.2 Tree Planting Opportunity and Priority Mapping- sample sites

Sites where opportunity for tree planting where identified, were also ranked to identify priority planting areas based on need / benefit criteria.

61% of the sites score 'very high' or 'high' priority for tree planting when combining the four criteria: deprivation, urban heat stress, nature recovery network and tree deficit. See Table 9. The full prioritisation scores for the sample sites can be viewed in Appendix 5.

Table 9: Overview of park prioritisation scores across the sample sites.

Tree Benefit / Priority score	Prioritisation of need	Number of sample sites
4	Very high	3
3	High	20
2	Medium	9
1	Low	6
Total		**38**

8. POTENTIAL TO INCREASE TREE CANOPY ALL SITES (population)

To extrapolate the results across the PGSS network, the % lower / higher impact increase has been used for each typology and the resulting increases calculated.

The results indicate that based on typology figures there is a potential current canopy increase of **74.6** hectares at the lower impact potential or **154.4** hectares at the higher impact potential. These would increase the existing canopy of all PGSS sites from 37% to 41%, or 45% respectively.

Table 10: Potential canopy increase across all PGSS sites

Typology / land type	Typology area m2	Existing (baseline) tree canopy %	Lower canopy increase %	Higher canopy increase %	Additional lower canopy m2	Additional higher canopy m2	Projected canopy Lower scenario %	Projected canopy Higher scenario %
Informal Green Space	6618877.5	21.1%	6.4%	15.1%	422011.4	999253.4	27.5%	36.2%
Formal Green Space	1073731.5	34.9%	0.4%	1.0%	8093.8	10725.3	35.6%	35.9%
Natural Green Space	10264895.4	55.1%	2.6%	4.0%	268858.8	409628.8	57.7%	59.1%
No Right of Public Access	220076.1	17.1%	0.3%	0.3%	566.3	566.3	17.4%	17.4%
Childrens' Play Space	178431.2	24.7%	0.3%	0.3%	328.7	328.7	24.9%	24.9%
Active Sports - Fixed	79381.7	10.8%	0.0%	0.0%	0.0	0.0	10.8%	10.8%
Young Persons' Space	42416.1	7.9%	0.0%	0.0%	0.0	0.0	7.9%	7.9%
Commercial Food Growing and Grazing	2871438.7	15.8%	4.0%	50.2%	115448.6	1442339.2	19.9%	66.1%
Grand Total	**21349248.2 (21.3 k m²)**	**37.3%**	**3.5%**	**7.2%**	**745784.1**	**1544107.2**	**40.8%**	**44.6%**
					74.6 ha	**154.4ha**		

Note: there is a slight variation in canopy calculations whether scaled at the site or typology. These figures used are based on typology. Please see Limitations – Data for more detail.

Bristol's land area is 111.6 km2 (11,160 hectares). The current canopy: 16.9% = 18.9 km2 (1,890 hectares) *(Source: Bluesky canopy data 2020).* Target: 24% tree cover. Requirement: Additional 7.95 km2 of tree canopy (795 hectares).

Scenario 1: (lower impact projection) **74.6 ha** increase, contributing 9.4% of city target, increasing city tree canopy to 17.6% (0.7% absolute increase)

Scenario 2: (higher impact projection) **154.4 ha** increase, contributing 19.4% of city target, increasing city tree canopy to **18.3%** (1.4% absolute increase).

Table 11: Potential canopy increase ranked by typology (or land category)

Typology	Ranked potential to increase tree canopy (8 =highest potential)	Lower canopy projection (%) _ Scenario 1
Informal Green Space	8	6.38%
Commercial Food Growing and Grazing	7	4.02%
Natural Green Space	6	2.62%
Formal Green Space	5	0.75%
No Right of Public Access	4	0.26%
Children's Play Space	3	0.18%
Active Sports - Fixed	1	0.00%
Young Person's Space	1	0.00%

9. LIMITATIONS

Mapping new canopy

The opportunity mapping has been undertaken according to BCCs' current standard tree planting principles, designations, land-use and nature conservation priorities. It also assumes that existing tree populations will stay the same. Evidence demonstrates that existing urban tree populations are extremely vulnerable to climate change, pests and disease outbreaks and from the effects of urban intensification.

A greater emphasis on the importance of successional planting and a focus on areas that have the worst resilience because of poor species and age diversity, might be a better way of ensuring higher canopy cover for the future than focusing solely on new planting opportunities.

Data

The figures in this study are the best estimate using the currently available data, which is subject to change and the following should be considered. The GIS analysis used in this study is based on an export from the live parks and green space strategy GIS geodatabase, which is subject to ongoing change. As a result, the figures presented in this study may not reflect future versions of the data.

The datasets are currently being updated to the latest footprint, integrating several datasets into a single version, and modifying typology definitions in line with new parks and green space strategy themes and objectives. There may be slight differences between figures aggregated or calculated with different versions or scales of data (site, typology feature etc) due to intentional overlay of some typology feature types. There may also be small areas of canopy that fall outside of the sample site boundaries.

APPENDICES

Appendix 1: PGSS site sampling

Due to the diversity of the PGSS target sites and the majority are under 1 ha, it was agreed to undertake a stratified sample and adjust to ensure it was representative.

The sites were categorised by size classification (A-G) and a 5% stratified sample was undertaken, adjusted accordingly to give a final sample number of 29 rather than 25. Also, to provide a representative sample of the growing and grazing sites 9 sites will be sampled. This gave a sample of just over 7.5% of the population, a total of 38.

The population was then sampled using random number generation. The PGSS list was sorted via the FID reference for the verges from ARC and a random number generated for each. The list was filtered by the random number from small to large and the lowest random numbers were selected for the sample according to the sample allocation table below. For the larger sites, it was agreed that 2 sites would be sampled. Nine additional growing and grazing land sites were also sampled randomly according to size.

Table A1 PGSS site area classification of recreational green spaces and the associated sample

Row Labels	Sum of Area (Ha)	Number	% of total	Sample calc	Final sample
A: Under 1ha	94.6	289	58.27%	15	6
B: 1-5ha	323.7	129	26.01%	7	7
C: 6 -10ha	295.3	44	8.87%	2	6
D: 11-20ha	227.5	17	3.43%	1	4
E: 21 -40ha	254.5	10	2.02%	1	2
F: 41-100ha	157.7	3	0.60%	0	2
G: >100 ha	700.0	4	0.81%	0	2
Grand Total	2053.4	496	100.00%	25	30

Appendix 2: Prioritisation (benefits realised) criteria

i. Deprivation (indices of multiple deprivation, 2019

This is used to provide the highest deprivation risk per PGSS site. Please note different areas within the site may vary and cannot be used as a representation of the largest area of deprivation within a site.

Prioritisation score	Deprivation	Deprivation indices
4	High deprivation	Most deprived 10% in England
3	Medium	Between 10 and 20% most deprived (10%?) in England
2	Low	Between 20 and 30% most deprived (10%?) in England
1	Very low deprivation	Less significantly deprived

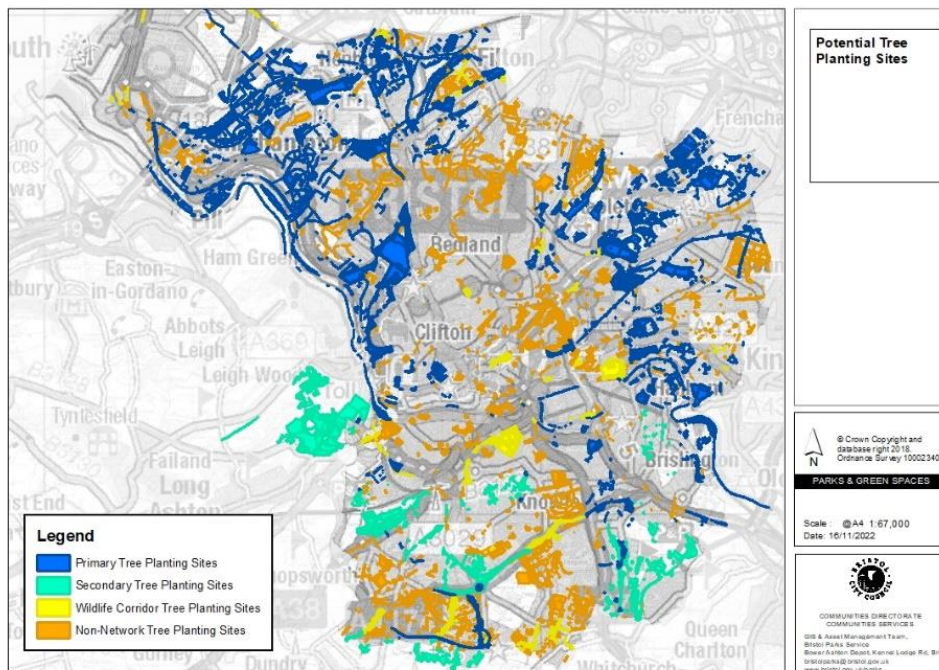ii. Urban heat stress [Keep Bristol cool mapping tool – Heat vulnerability index]

A combination of Age, Deprivation, Indoor and Outdoor heat vulnerability factors. Ranked 1 (lowest) to 263 (highest). The site prioritisation score is based on the highest risk area within a site and cannot be used as a representation of the largest area of risk within a site.

Prioritisation score	Urban heat stress risk	Urban heat stress index
4	Very high urban heat risk	211 – 263
3	High	158 – 210
2	Medium	106– 157
1	Low - Very low urban heat risk	53 – 105 (low), 1 – 52 (very low)

iii. Nature Recovery

As part of the NRN work, TP potential sites have been identified by overlaying the habitat distinctiveness and ecological network layers, enabling identification of priority sites. Any sites not identified on a NRN planting layer will score 1. The four layers were scored as follows:

Prioritisation score	TP priority	NRN tree planting priority layer
4	Very high TP priority	Primary TP Sites
3	High TP priority	Secondary TP Sites
2	Medium TP priority	Wildlife Corridor TP Sites
1	Low TP priority	Non-network TP Sites (including any not listed as NRN non-network sites)

Priority	Distinctiveness category	Notes
Priority for Tree planting	Low	• Potential to change to a more desired habitat or invest in the existing one to create a more functional same habitat • Potential to link V. High/High quality areas • Check the NRN/ SNCI designate and details • Low areas not in NRN, also main opportunity for Tree planting
Possible for Tree planting	Medium	• Includes scrub, quality grassland and some woodland • Potential to invest in existing habitat to improve • What would TP bring to the wider site?
Avoid Tree planting	High	• Not suitable for Tree planting • Can be linked to via lower distinctiveness categories to widen the category area

Layer	Description
Primary TP Sites	Identifies sites of low or medium distinctiveness that are within just the WoE Woodland Strategic Network. - Existing areas of woodland and scrub have been removed. - Areas that are currently managed on a hay cut have been removed as these are all SNCI areas where we are wanting to restore grassland.
Secondary TP Sites	Identifies sites of low or medium distinctiveness that are within both the WoE Woodland Strategic Network and the Grassland Strategic Network, therefore any TP would need to be considered alongside opportunities for grassland enhancement. - Existing areas of woodland and scrub have been removed. - Areas that are currently managed on a hay cut have been removed as these are all SNCI areas where we are wanting to restore grassland.
Wildlife Corridor TP Sites	Identifies sites of low or medium distinctiveness that are designated as Wildlife Corridor sites. - Existing areas of woodland have been removed.
Non-network TP Sites	Identifies sites of low distinctiveness outside of strategic network or corridor sites.

iv. Tree Deficit

Each sample site is scored according to the wards' existing canopy when compared to the average existing canopy across the city. The average canopy cover across the city is 18%. This was scored as below:

Score	Canopy description (%)
1	>18% canopy (18% >)
2	15-17% canopy (15– 17.9%)
3	12-14% canopy (12 – 14.9%)
4	< 11% canopy (< 11.9%)

Appendix 3: Prioritisation scores for the Samples sites.

A prioritisation score of 4 = very high prioritisation of need, whilst 1 = very low prioritisation of need.

Site name	Ward	PARK PRIORITY RATING	Total score	Prioritisation criteria scores			
				Tree deficit	Deprivation	Urban heat	NRN TP priority
Access Lane to Nibley Road Allotments	Avonmouth & Lawrence Weston	2	8	2	4	1	1
Amercombe & Hencliffe Walk	Stockwood	3	10	1	4	1	4
Anchor Square	Central	3	10	4	1	4	1
Arnos Court Park	Brislington West	3	10	1	3	2	4
Ashton Court Estate	Bedminster	3	12	4	2	3	3
Barnard Park	Henbury & Brentry	4	13	1	4	4	4
Bedminster Down Smallholding The Piggery	Bishopsworth	1	4	1	1	1	1
Blaise Castle Estate	Henbury & Brentry	3	11	1	4	2	4
Briery Leaze Road Amenity Area	Hengrove & Whitchurch Park	2	9	3	4	1	1
Briery Leaze Road Open Space	Hengrove & Whitchurch Park	1	6	3	1	1	1
Cheddar Grove	Bishopsworth	1	5	1	1	1	2
Crews Hole Road Open Space	St George Troopers Hill	1	5	1	1	2	1
Crosscombe Drive Open Space	Hartcliffe & Withywood	3	11	2	4	2	3
Eastwood Farm	Brislington East	2	9	1	3	2	3
Fir Tree Lane Hall	St George Troopers Hill	1	5	1	1	2	1
Hartcliffe Way Roundabout	Filwood	3	12	3	4	1	4
Hawkfield Meadow	Hengrove & Whitchurch Park	3	12	3	4	4	1
Hazelbury Road Open Space	Stockwood	1	4	1	1	1	1
Horfield Common Open Space	Horfield	4	13	4	3	4	2
Kingsweston Estate	Avonmouth & Lawrence Weston	3	11	2	3	2	4
Lawrence Weston Community Farm	Avonmouth & Lawrence Weston	2	7	2	3	1	1
Lockleaze Open Space	Lockleaze	2	9	2	4	2	1
Napier Miles O/S & Fernhill Fields	Avonmouth & Lawrence Weston	3	11	2	4	1	4
Oldbury Court Estate	Frome Vale	3	10	1	4	1	4
Pen Park Playing Fields	Southmead	3	10	2	3	1	4
Perretts Park	Windmill Hill	2	9	3	1	3	2
Portway (Between Railway and River)	Stoke Bishop	2	9	1	3	1	4
Primrose Lane Open Space	St George Central	3	12	4	2	4	2
Redland Green	Redland	3	9	2	1	4	2
Stapleton Small Holdings I	Eastville	1	4	1	1	1	1
Stapleton Small Holdings J	Eastville	2	7	1	1	1	4
Stockwood Open Space	Stockwood	3	10	1	4	2	3
The Tump	Avonmouth & Lawrence Weston	3	10	2	3	1	4
Tormarton Crescent OS	Henbury & Brentry	2	9	1	3	4	1
Victoria Rooms (Fountain Surround)	Central	3	10	4	1	4	1
Wedmore Vale Open Space	Knowle	2	9	2	3	1	3
Wickham Glen Open Space	Eastville	2	8	1	1	2	4
Witch Hazel Road	Hengrove & Whitchurch Park	3	11	3	4	3	1

Appendix 4: Supporting documents

Tree Planting Opportunity Mapping - method v6.docx

Completed sample site assessment forms including proposed tree plans: PGSS Site assessments final ALL V3.pdf

Main sample site data: PGSS Trees site list V4.xlsx *(Full sample site data is on tab: SampleSitesincAss23.2.23 and All PGSS site list: ALL SITES)*

ALL PGSS and sample site typology data: PGS & sample sites typology data set Feb23 V1.xlsx