

• Bristol City Council Scenario Analysis

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Future Parks Accelerator Programme

Contents

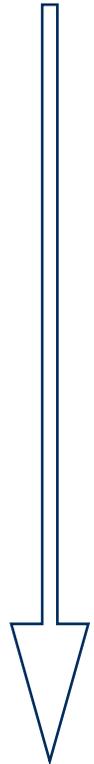
This slide deck presents the results of Vivid's scenario analysis of Bristol's greenspace interventions. Scenarios were devised in consultation with Bristol City Council (BCC) considering results from the baseline natural capital account for Bristol as well as local priorities. In each scenario, the impact on annual visit numbers and annual benefits are estimated using Vivid's Greenkeeper Toolkit.

The slide deck is structured as follows:

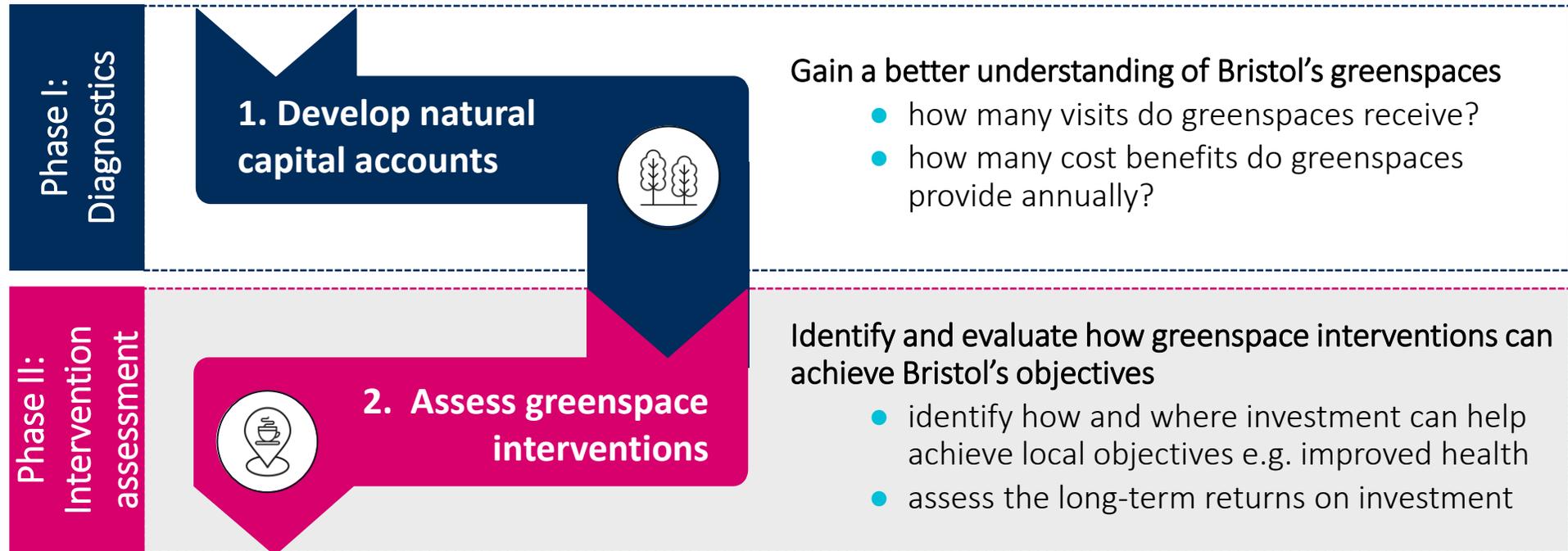
1. Context of scenario analysis
2. Outline of scenarios
3. Headline results
4. Scenario 1: The 10 Minute Standard
5. Scenario 2: Bristol 2043

In Phase II we have assessed the impact of potential greenspace interventions and future greenspace use

Inefficient
asset use



Maximised
benefits



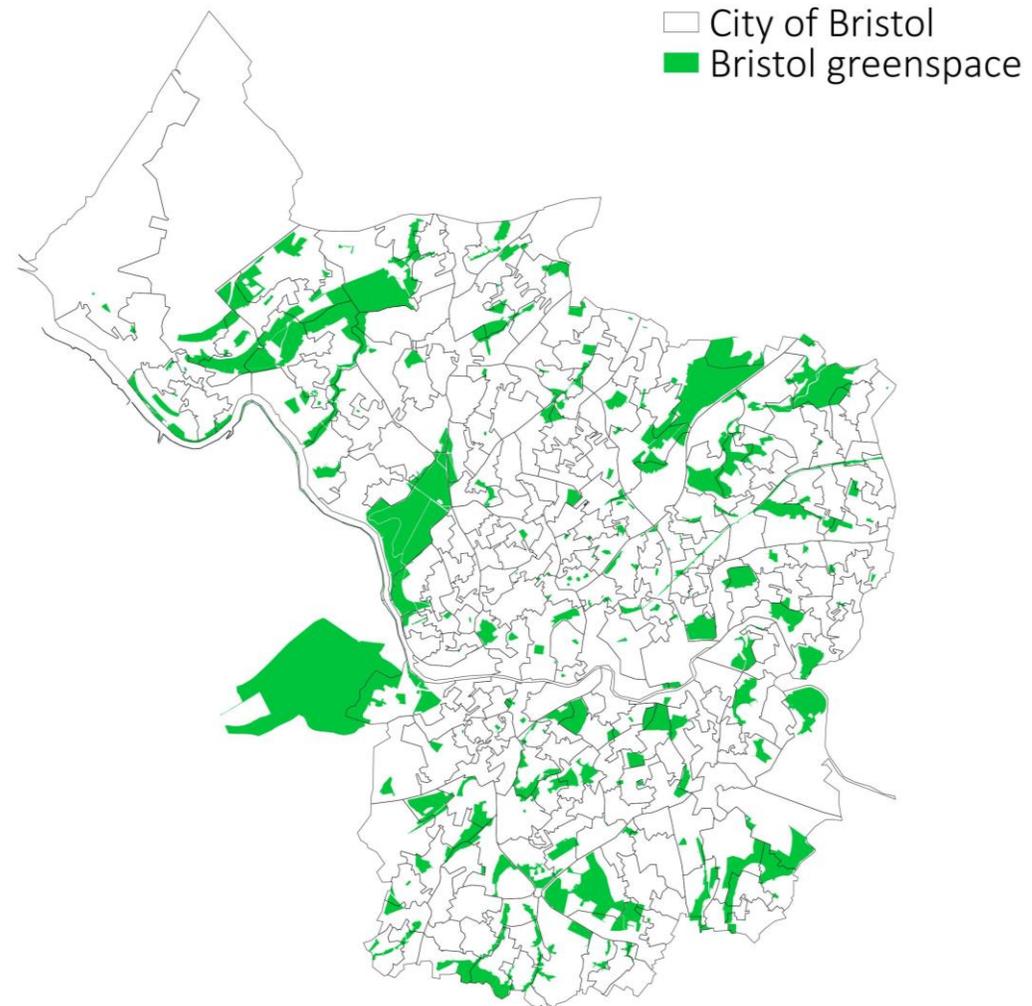
Bristol greenspaces currently provide services valued at £385 million annually

Bristol's greenspaces attract an estimated 17 million visits each year, creating benefits valued at £385 million annually.

Following the construction of a baseline, the Greenkeeper Toolkit was implemented in order to better understand how a set of interventions may enhance the benefits of greenspaces for local communities, and also how overall greenspace use is expected to change in the future.

The scenario analysis for the BCC is composed of two parts, namely:

- **Scenario 1: The 10 Minute Standard**, which would bring 94% of the Bristol population within 10 minutes walking distance to a high quality park; and
- **Scenario 2: Bristol 2043**, which models the effects of population growth from 2018 to 2043.

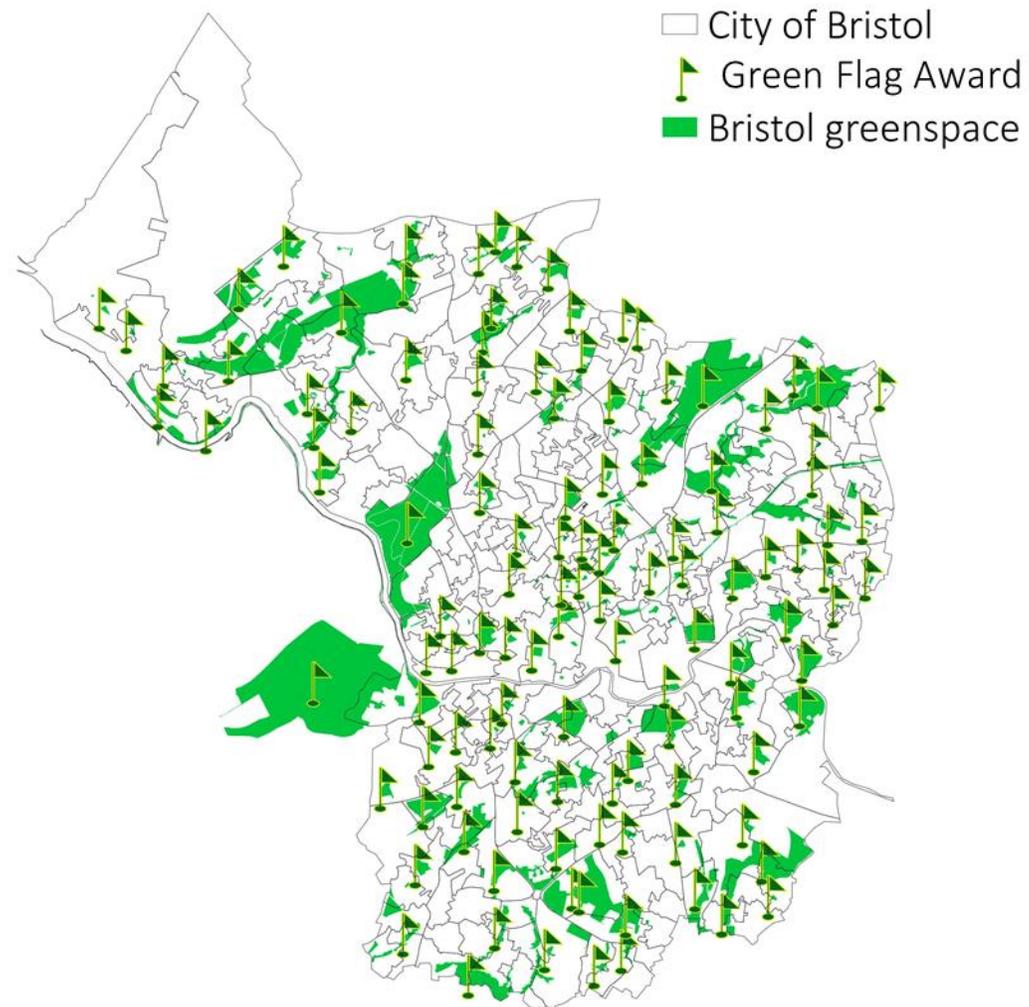


Scenario 1: The 10 Minute Standard Scenario is designed to deliver transformational change to Bristol's existing greenspaces

The 10 Minute Standard scenario would provide near universal access to greenspace to high-quality greenspace for Bristol's residents. To reach this 10 Minute Standard, the majority of Bristol's existing parks are elevated to a recognisable level of quality. The scenario involves interventions in 123 parks across the city which brings 94% of the population within a 10-minute walking distance of a high quality greenspace.

We model increases in quality by assigning Green Flag Awards to the 123 parks where interventions take place. Green Flag Awards represent the benchmark standard of quality in the UK: only parks that are well-managed and maintained are eligible to receive the award.

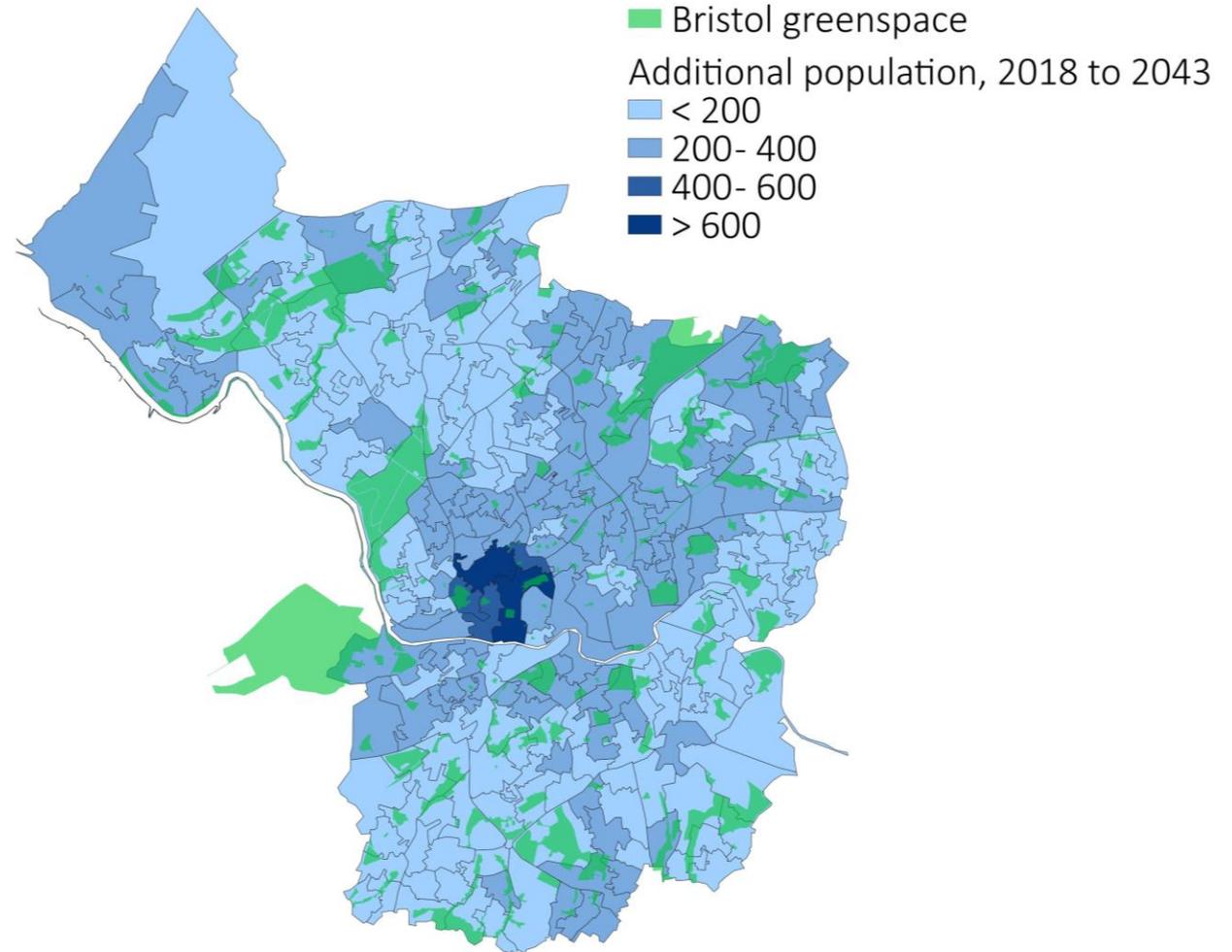
The 10 Minute Standard creates the opportunity for people to enjoy Bristol's greenspaces to the fullest extent by providing them access to safe, well-maintained and excellently managed greenspaces. The scenario represents the highest levels of ambition for greenspace improvements and would fundamentally change peoples' engagement with Bristol's parks.



Scenario 2: The population of Bristol is projected to increase by over 50,000 by 2043

In the Bristol 2043 Scenario, we model the effects of an additional 53,000 residents throughout the city. The population of Bristol as of 2018 was 463,000. The additional population expected by 2043 is equivalent to a 12% increase from 2018 levels, with the largest increases expected in wards such as Avonmouth and Lawrence Weston, Central and Westbury-on-Trym and Henleaze.

Population projections were provided by BCC at the ward level and distributed to the lower-level super output area (LSOA) level. The increase in population distributed to each LSOA is proportional to that LSOA's share of the total 2018 ward population it is a part of.*



Note: *For example, Ward A is composed of two LSOAs: LSOA 1 and LSOA 2. If each LSOA was responsible for 50% of the total population of Ward A in 2018, both LSOAs receive 50% of the total projected population increase by 2050.

Results from the analysis reveal that both increased greenspace quality and a larger population will significantly increase visitation to Bristol's greenspaces

Scenario 1: The 10 Minute Standard

In the 10 Minute Standard scenario, we estimate that annual visits to greenspaces could increase by as much as 7.3 million – a 43% increase from the baseline NCA. These results are consistent with the ambition of the scenario, which would make Bristol's parks considerably more attractive to visit. An increase in annual visitation of this magnitude leads to a pronounced effect on mental wellbeing and physical health benefits. In particular, we estimate that the scenario could lead to additional health benefits valued at £156 million per year.

BCC could maximise potential benefits by prioritising improvements in a handful of parks where the most significant changes to benefits are predicted. In particular, improving the quality of 34 District Parks and Destination Parks to Green Flag levels alone may lead to an additional £136 million in health benefits.

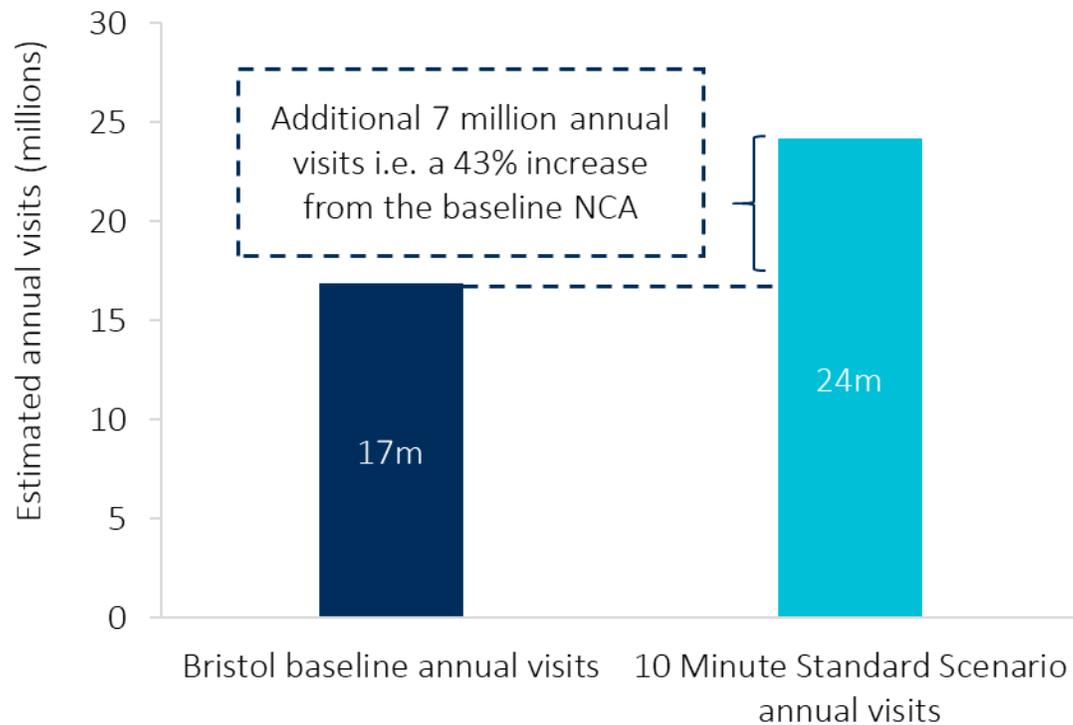
Scenario 2: Bristol 2043

In the Bristol 2043 scenario, annual visits are estimated to increase by approximately 2 million, or 12%, leading to **additional benefits valued at £47 million per annum.** Increases in annual visits and benefits are projected to increase by 11% to 13% across all classes of greenspaces by 2043.

Health benefits represent 92% of additional benefits in 2043. A larger population implies a larger pool of potential visitors to greenspaces, which is expected to drive mental wellbeing and physical health benefits upward. Similarly, the new population is estimated to create an additional £3 million in annual property uplift for future residents, assuming that dwellings are built to accommodate.

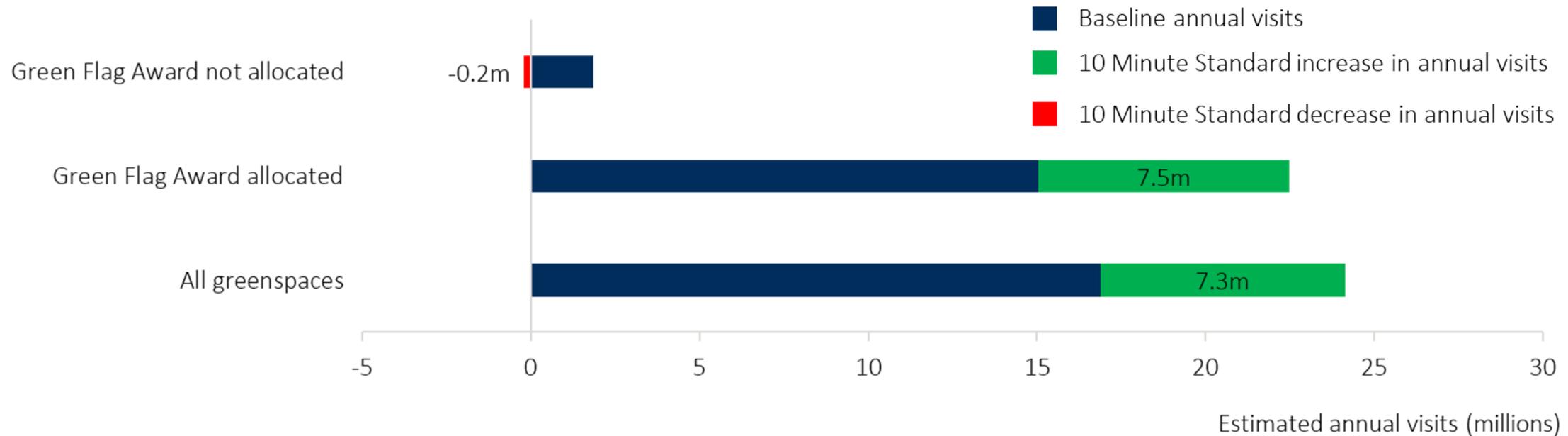
We estimate that the 10 Minute Standard scenario could increase annual visits and benefits by 43% and 41%, respectively

Estimated annual visits (millions)		Estimated annual benefits (£ millions)	
Bristol Baseline	10 Minute Standard scenario	Bristol Baseline	10 Minute Standard scenario
17	24	385	541



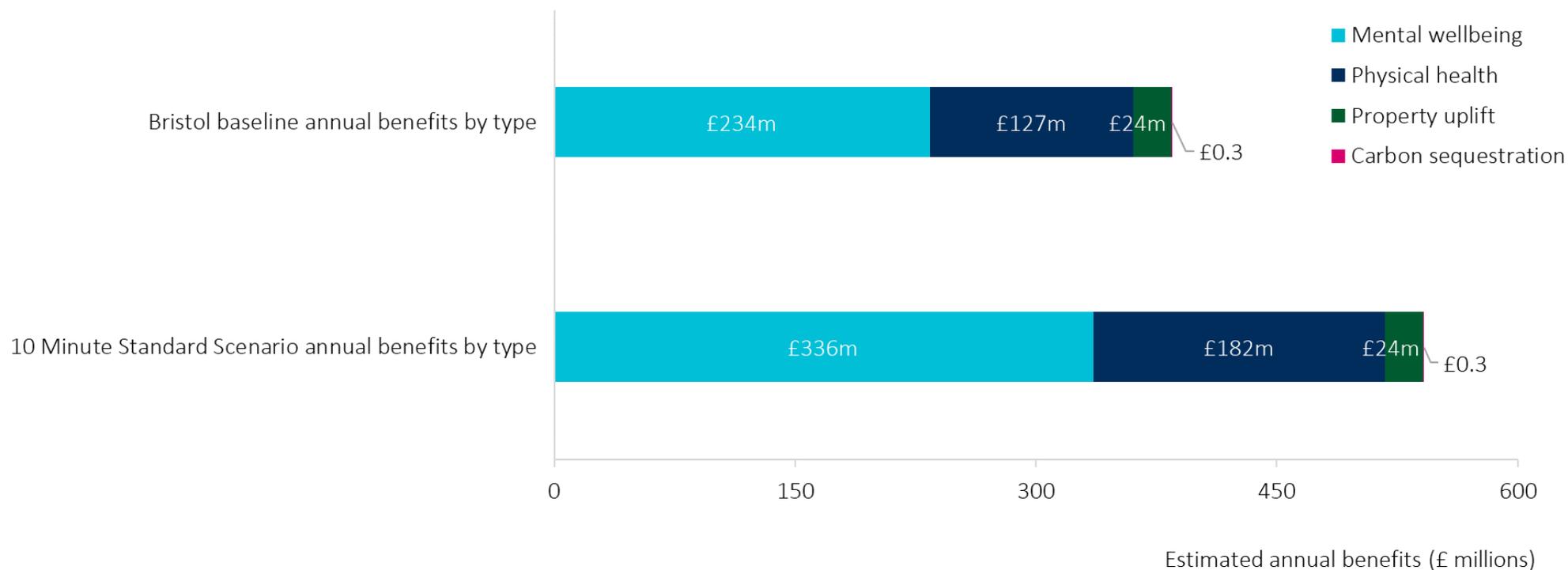
A small decrease in visits to non-Green Flag greenspaces is more than offset by a substantial increase in visits to Green Flag allocated greenspaces

Category	Baseline annual visits (millions)	10 Minute Standard annual visits (millions)	Change in annual visits (millions)	% change in annual visits
Green Flag Award allocated	15	22.5	(+) 7.5	(+) 50
Green Flag Award not allocated	1.9	1.7	(-) 0.2	(-) 11
All greenspaces	16.9	24.2	(+) 7.3	(+) 43



Additional benefits under the 10 Minute Standard scenario are driven by improvements to mental wellbeing and physical health for visitors

Increasing the quality of a greenspace has a pronounced, positive effect on annual visitation, which drives improvements in mental wellbeing and physical health. However, because both the size and locations of greenspaces are unchanged, the value of annual property uplift remains constant in the 10 Minute Standard scenario. The same can be said for carbon sequestration: since tree cover is assumed to stay constant, the annual value of carbon sequestration does not change despite increased quality of the greenspace.



Note: Property uplift is a function of distance to greenspace and the size of a greenspace. Since neither the distance or size of greenspaces are changing, amenity value remains constant. Similarly, annual carbon sequestration is directly related to tree cover which is also assumed to remain unchanged.

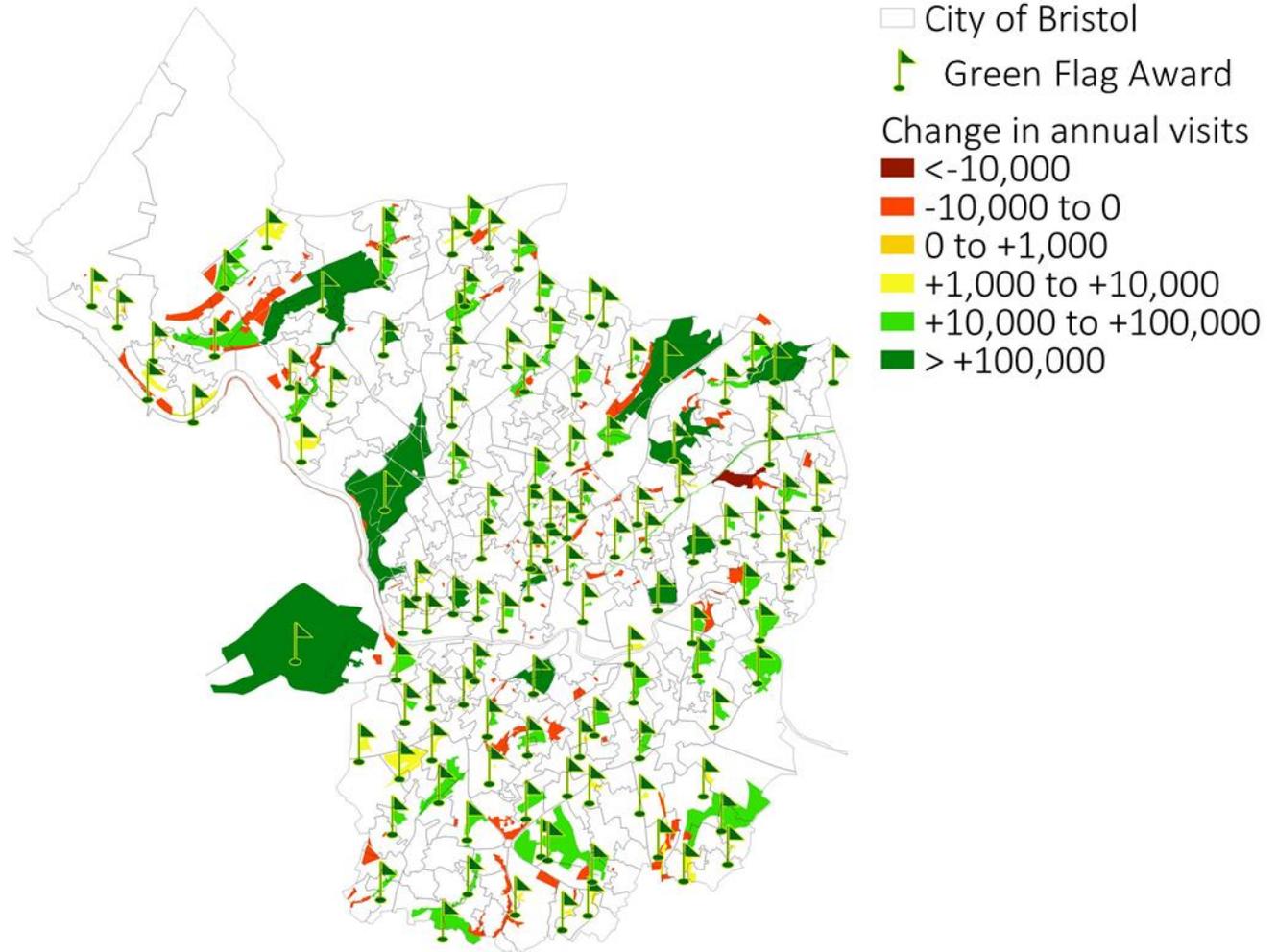
On average, annual visits to a park brought up to Green Flag levels of quality increase by approximately 60,000 per year

Every park that reaches Green Flag quality sees an increase in annual visits.

- On average, annual visits to a park brought up to Green Flag levels of quality increase by approximately 60 thousand or 50%

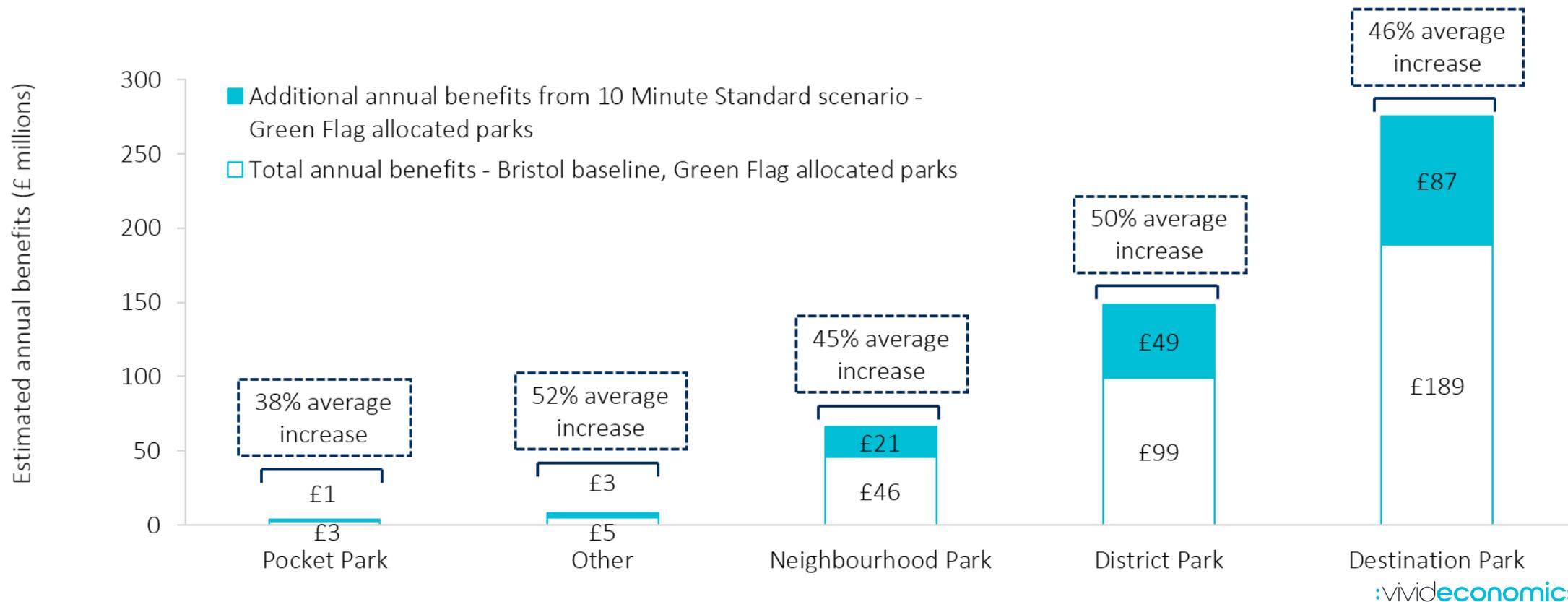
However, large increases in a select number of parks can misrepresent the true change in annual visits brought about through higher greenspace quality, which, varies greatly from park to park.

- Changes to annual visits range from a 1,000 increase to 0.9 million increase relative to the baseline
- Greenspaces classified as district parks or destination parks typically experience the largest increase in annual visits as a result of reaching Green Flag levels of quality



District and destination parks create 86% of all additional benefits, but significant increases from baseline values are seen across all classifications of greenspaces

While almost every district park and destination park receives a Green Flag Award under the 10 Minute Standard scenario, a large share of parks in the other classes of greenspaces do not. Accordingly, looking only at parks that are allocated Green Flag Awards is more informative since it filters out non-Green Flag Allocated parks where decreases in annual visits occur. As shown below, all greenspaces, regardless of their classification, are subject to a large increase in annual visits when expressed as a percentage of their baseline value.



From an efficiency perspective, BCC should consider prioritising investments in parks where increased quality is expected to create the most value for visitors

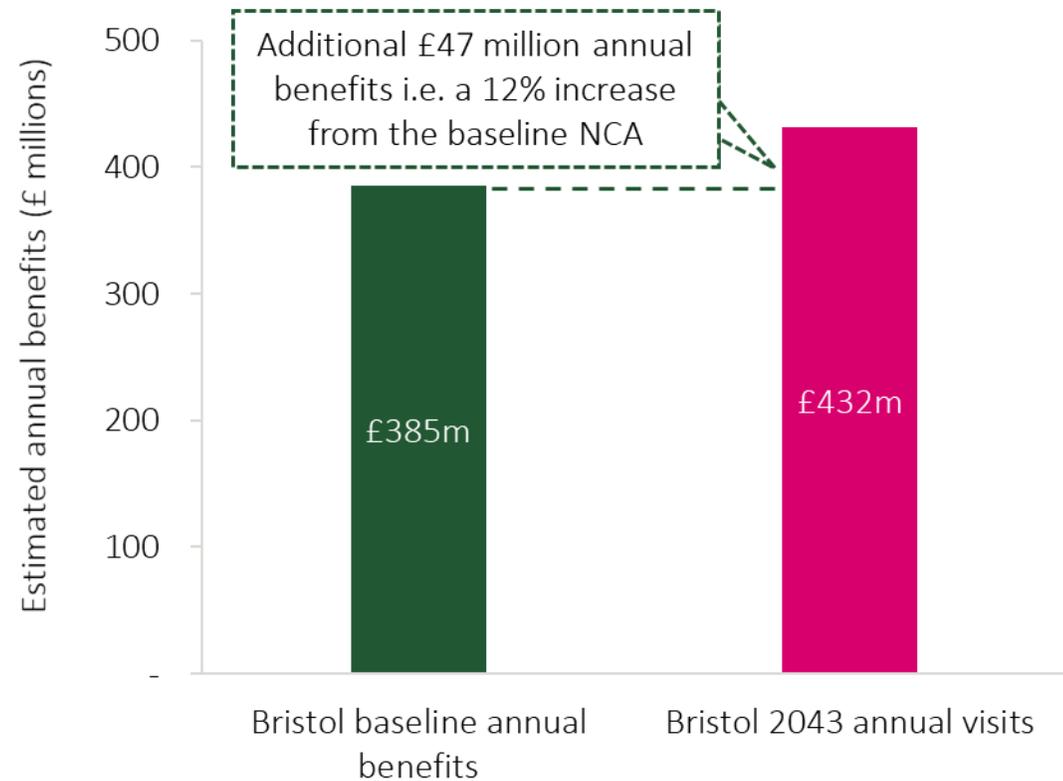
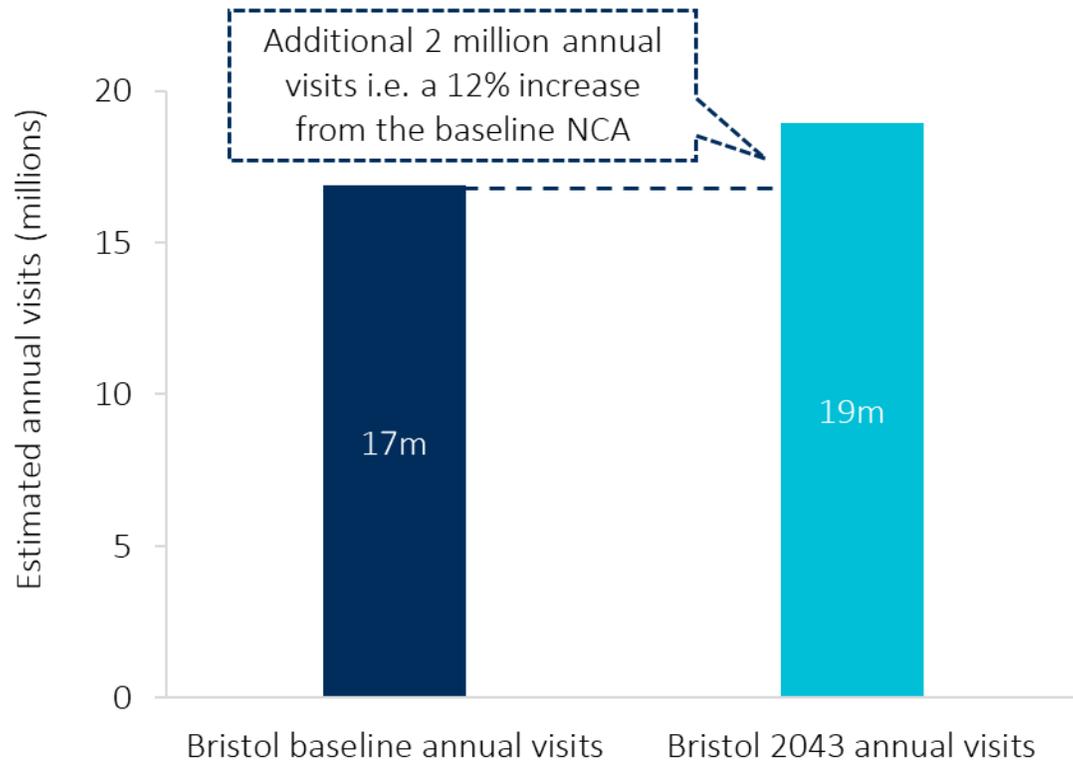
Our analysis suggests that the marginal benefit of improving greenspace quality is higher for district and destination parks than for other greenspaces in Bristol.

On average, bringing a district or destination park to Green Flag level quality results in an additional £2.1 million and £9.6 million worth of health benefits annually, respectively. On the other hand, the average increase in annual benefits for the other classes of greenspaces are considerably lower. For example, allocating a Green Flag Award to a neighbourhood park results in additional health benefits of approximately £0.3 million per year on average. Accordingly, from an efficiency standpoint, there is a strong case for making investments in particular types of greenspaces over others, especially if the BCC is constrained by limited resources.

Category	Average increase in annual benefits (millions)	Average % increase in annual benefits
Pocket Park	< £0.1	38%
Other	£0.7	52%
Neighbourhood Park	£0.3	45%
District Park	£2.1	50%
Destination Park	£9.6	46%

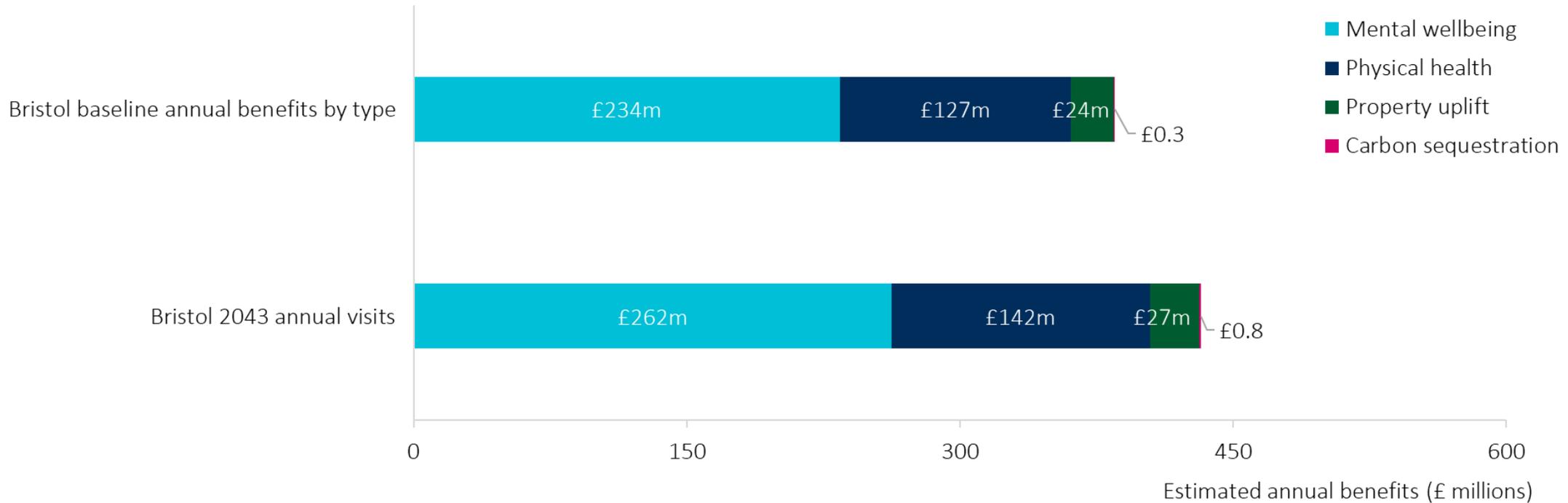
Annual visits and benefits are estimated to increase by 12% as a result of population change by 2043

Estimated annual visits (millions)		Estimated annual benefits (£ millions)	
Bristol Baseline	Bristol 2043	Bristol Baseline	Bristol 2043
17	19	385	432



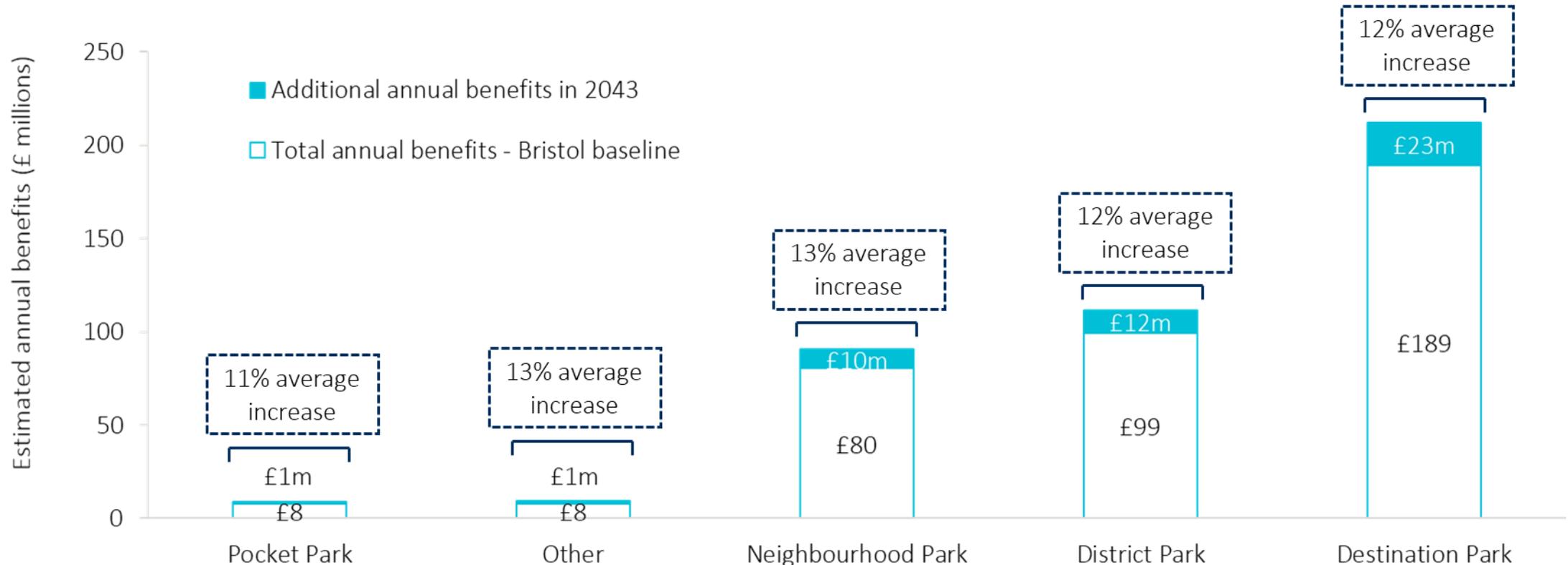
As found in the 10 Minute Standard Scenario, additional benefits in 2043 are primarily driven by improvements in mental wellbeing and physical health

The majority (92%) of additional benefits from population growth are attributable to mental wellbeing and physical health improvements for greenspace visitors. A further 8% is derived from additional property uplift, assuming that new dwellings are built to accommodate a growing population and that the distribution of said population within each LSOA remains relatively constant over time.



Increases in annual visits from population growth are distributed relatively equally across the different classes of parks in Bristol

Absolute changes in annual benefits in 2043 relative to baseline shows that destination parks and district parks see the most additional value as a result of population change. However, when expressed as a percentage of baseline benefits, annual benefits in 2043 are estimated to increase relatively equally across all classes of greenspaces—between 11% and 13%.



Implications of scenario analysis for BCC

Scenario 1: The 10 Minute Standard

- The 10 Minute Standard could have a profound affect on annual visits to BCC greenspaces. Interventions at this level of ambition and scale would be met with considerable benefits for human wellbeing and health.
- The 10 Minute Standard is desirable from an equity standpoint. Access to quality greenspaces is a large determinant of human health and wellbeing, and this scenario would make access nearly universal for all of Bristol's residents.
- However, prioritising quality improvements in district parks and destination parks may be more efficient. On average, interventions in these parks create considerably more annual benefits than what is seen in other classes of greenspaces.

Scenario 2: Bristol 2043

- A larger population will create an increase in demand for greenspace across Bristol. Overall, annual visits are projected to increase by 12%, with the largest numbers of new visits going to district and destination parks that are already highly visited.
- BCC should consider where, and by how much, population will change in the coming decades when considering greenspace interventions. In particular, areas with high projected population growth may not always have good access to high-quality public greenspace or alternatives such as private gardens and allotments. Targeting densely populated areas could be a beneficial strategy if ensuring access for new residents is a high priority.

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The logo for Vivid Economics features a teal colon symbol followed by the word "vivid" in a lowercase, sans-serif font, and "economics" in a larger, bold, lowercase, sans-serif font. Below this, the tagline "putting economics to good use" is written in a smaller, lowercase, sans-serif font.

:vivid economics
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