Tree Inventory Asset Report

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September 2023

This project was carried out by Treeconomics for Royal Borough of Greenwich

Cover Image : Shooters Hill

Source : Eltham Park

Contents

Executive Summary

This report highlights the findings of a study to record the structure and composition of the publicly owned street trees within Greenwich, to calculate some of their functions (benefits, public goods or ecosystem services) and to value the services provided by those functions.

In this report, woodlands and large groups of trees are treated separately to street and park trees. The latter, being intensively managed, naturally have more complete information which allows more in-depth analysis. This distinction does not diminish the significance of the woodlands and the valuable benefits they offer.

i-Tree Eco estimates that there are approximately 22,900 trees in the Royal Borough of Greenwich. The trees have a potential to remove over 2.3 tonnes of air pollution annually at a value of £680,000. These pollutants include sulphur dioxide (SO_2), particulate matter (PM2.5) and nitrogen dioxide (NO_2).

These trees reduce water runoff by over 12,300 m^3 per year from the drainage system whilst providing vital cooling to the urban streets, a volume equivalent to nearly 5 Olympic swimming pools, and is worth an estimated £11,700 in avoided surface runoff treatment cost.

In total, the trees store over 27,200 tonnes of carbon and sequester a further 1,000 tonnes of carbon annually - with associated values of around £6.8 million and £270,000 respectively.

Trees also confer many other benefits such as habitat provision, soil conservation and noise reduction which currently cannot be valued, but should be considered in conjunction with this document to shape policy or strategy documents.

195 species of tree are recorded within Greenwich's tree inventory, with a relatively even spread that shows no reliance to a single species dominance. The most common tree species are Sycamores (*Acer platanoides* and *Acer pseudoplatnus*) with 1,600 and 1,500 trees respectively, as well as Common Lime (Tilia x europaea) at an excess of 1,500 trees, and European Ash (Fraxinus excelsior) with over 1,400 trees.

The Royal Borough of Greenwich performs well in terms of its structure, with a wide variety of species, which is a good indication that the urban forest will be resilient to pests and diseases. The most prominent threats in this regard are Ash Dieback, Asian Longhorned Beetle, Ramorum disease and *Phytophthora kernoviae*.

The amenity value of the street and park trees were calculated to be £455 million, as determined using an amended CAVAT valuation approach, and have a replacement cost of an estimated £19 million.

Highlights

Structure and Composition Headline Figures	
Number of trees	22,931 (+ 125 Ha woodland)
Number of species recorded	195
Most common tree species	*Acer platanoides, Acer pseudoplatanus, Tilia x europaea*
Replacement Cost (CTLA) (inc woodlands)	£39 million
Amenity Valuation (CAVAT) (inc woodlands)	£850 million

Ecosystem Services Headline Figures		
Annual Carbon Storage	**7,400 tC/yr** (parks & streets)	£6.8 million
	8,300 tC/yr (tree groups & woodlands)	£7.7 million
Annual Carbon Sequestration	**290 t/yr** (parks & streets)	£270,000
	320 t/yr (tree groups & woodlands)	£296,000
Annual Pollution Removal	**1.1 t/yr** (parks & street trees)	£330,000
	1.3 t/yr (tree groups and woodlands)	£380,000
Annual Avoided Runoff	**12,300 m³/yr** (parks & street trees)	£11,700
	15,700 m³/yr (tree groups and woodlands)	£15,000
Total Annual Benefits	**£1,302,700**	

[1] Thames Water, 2021

Table 1. Headline Figures

Number of trees: 22,931 records were used in this analysis of the public inventory of 39,645. Exclusions detailed in Appendix V.

Replacement Cost: value based on the physical resource itself (e.g., the cost of having to replace a tree with a similar tree) using the Council of Tree and Landscape Appraisers Methodology guidance from the Royal Institute of Chartered Surveyors.

Amenity Valuation (CAVAT): Capital Asset Valuation for Amenity Trees (CAVAT) is a method developed in the UK to provide a value for the public amenity that trees provide.

Carbon storage: the amount of carbon bound up in the above-ground and below-ground parts of woody vegetation.

Carbon sequestration: the annual removal of carbon dioxide from the air by plants. Carbon storage and carbon sequestration values are calculated based on figures jointly published by the Department for Energy Security and Net Zero, and the Department for Business, Energy & Industrial Strategy, at a sum of £252 per metric tonne of CO_2e for 2023.

Pollution removal: This value is calculated based on the UK social damage costs; £64.773 per kg (nitrogen dioxide), £7.064 per kg (sulphur dioxide), £1,252,102 per tonne (particulate matter less than 2.5 microns).

Avoided runoff: Based on the amount of water held in the tree canopy and re-evaporated after the rainfall event. The value is based on an average volumetric charge of £0.9488 per cubic metre by Thames Water.[1]

Data processed using iTree Eco Version 6.0.32

1. Introduction

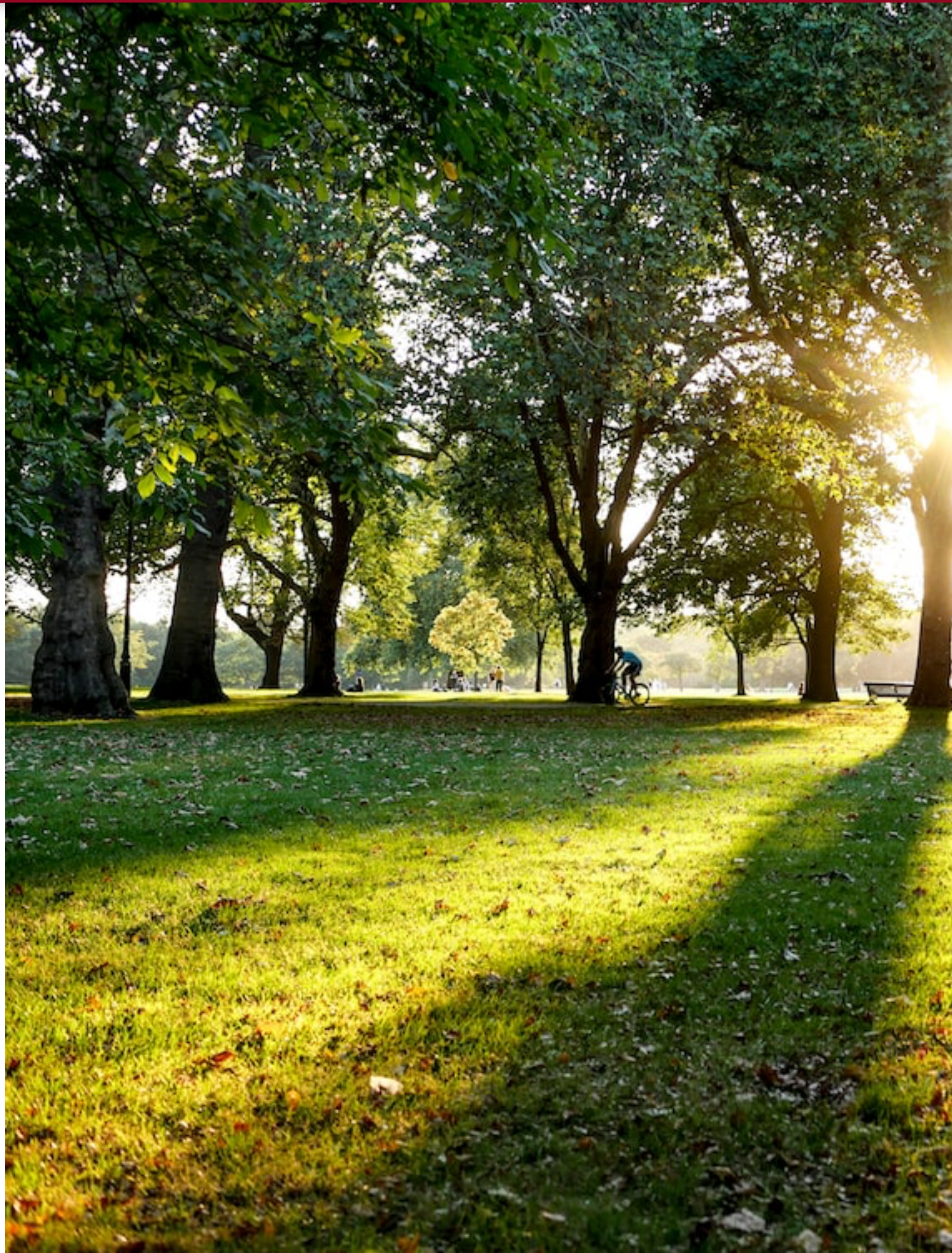
1.1 Background

The pressure on our natural environment, especially in areas where ‘the green meets the grey’, is increasing.

Yet, ’green infrastructure’ is often poorly understood and undervalued, and the benefits it provides can be inadequately described and quantified. Consequently, our urban forests are rarely seen as the asset they are and the benefits, public goods or ecosystem services they provide remain poorly expressed.

Economic valuation of those benefits can help to mitigate this undervaluation. Furthermore, with improved information on the performance of our natural assets, we can make better informed decisions. A first step to improve the management of our urban forests is to evaluate their current structure and distribution, obtaining a baseline from which to set goals and to monitor any changes.

This 2023 i-Tree Eco study was commissioned by the Royal Borough of Greenwich, and provides detailed information on the scale of benefits provided by the publicly owned trees within Greenwich, expressing the economic value of some of those benefits in monetary terms.



2. Urban Forest Characteristics

2.1 Tree Diversity

16.4% of the 22,931 street and park trees in the inventory are *Acer*. Overall, Greenwich exhibits a good distribution of species which is relatively even across wards, although higher populations can be seen in larger wards with more significant green space, such as Abbey Wood.

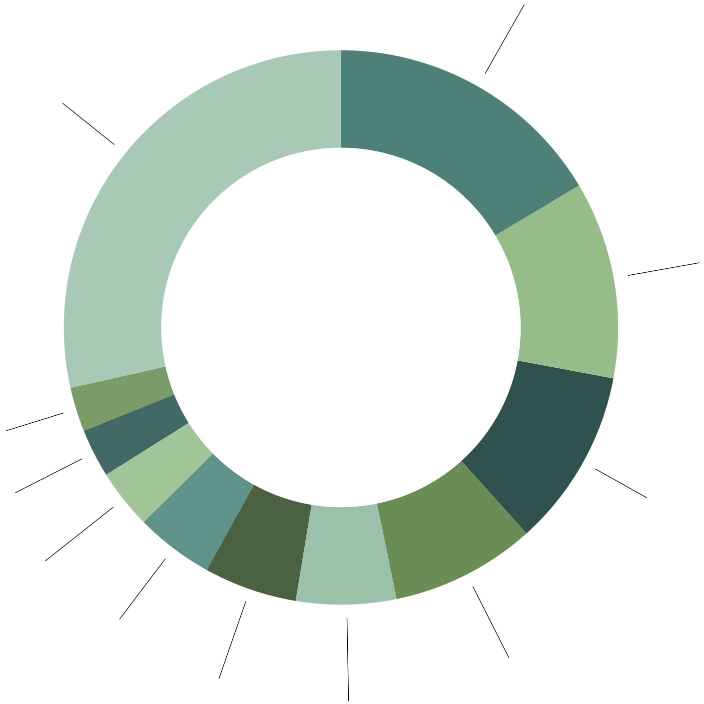


Figure 1. Tree population shares by genera
*excluding woodlands

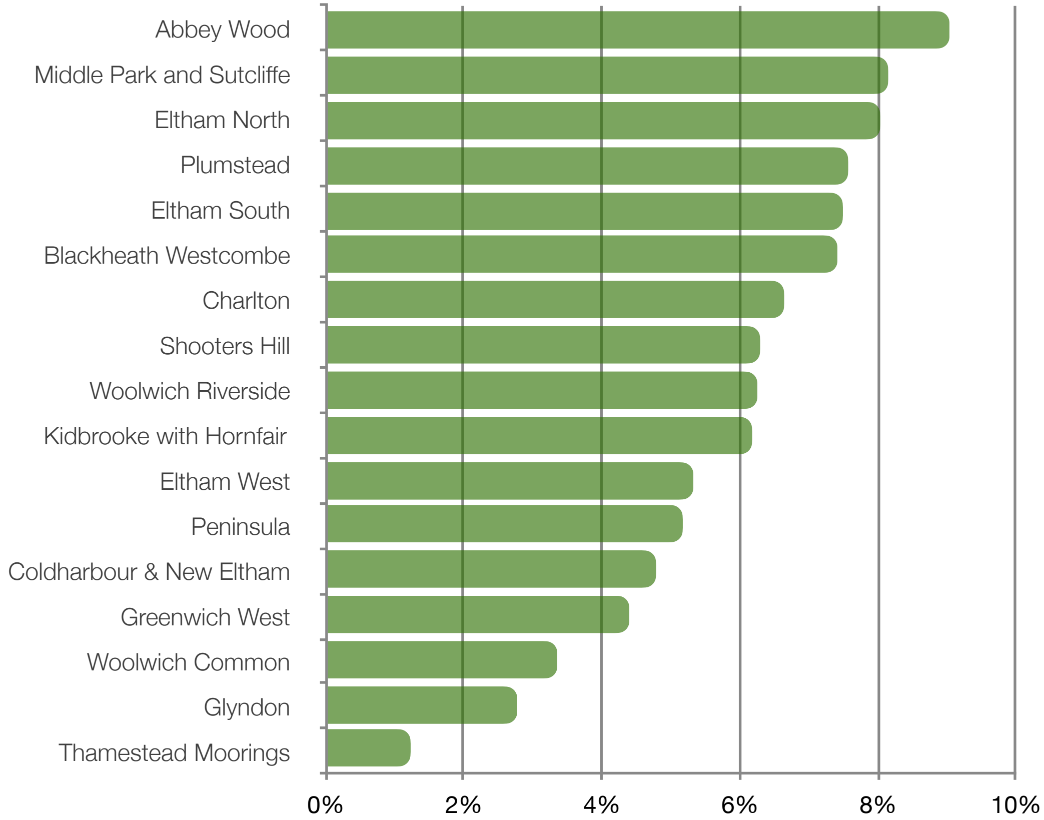


Figure 2: Tree population share by ward

2.2 Managing for Diversity

Greenwich's urban trees exhibit a good breadth of species diversity. Acer is the most dominant genus, with a 16% share of the population. The *Sapindaceae* family, which includes *Acer* (Maple), *Aesculus* (horse chesnut), and *Prunus* (Plum) make up 31% of all trees, and accounts for the highest share of leaf area - a metric that is more closely aligned with ecosystem service benefits. Interestingly, despite having a lower population, *Acer pseudoplatanus* accounts for over double the amount of leaf cover than *Acer platanoides*, likely indicative of its a healthy tree population.

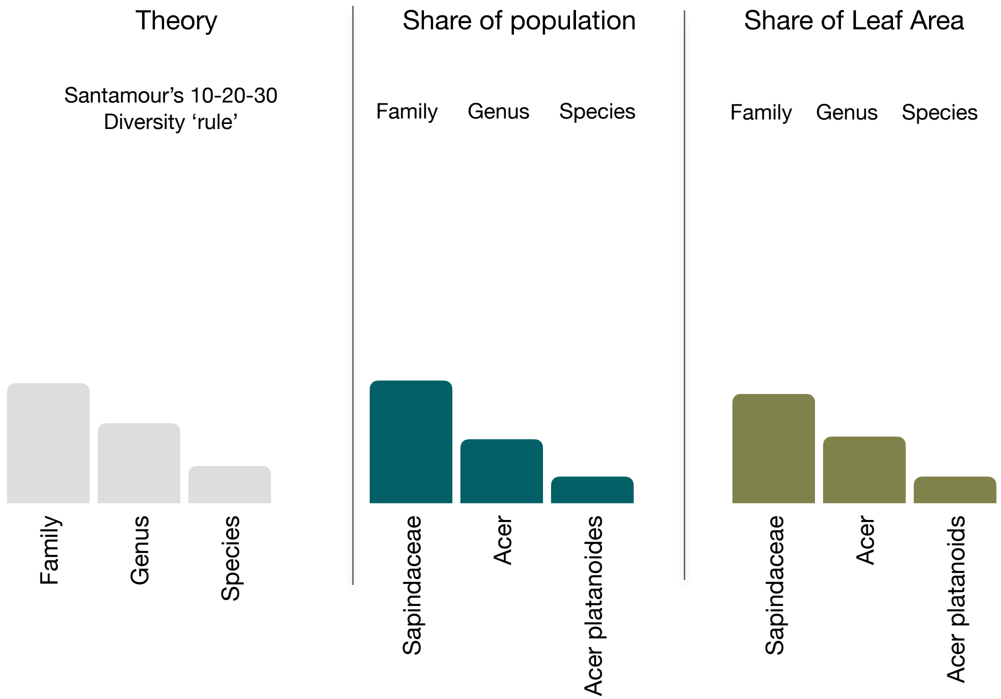


Figure 3. Santamour's tree diversity rule, comparing tree numbers with leaf area

Whilst the breadth of the species range across Greenwich should enable a level of resilience against pests and diseases, concentrations of species within individual wards should be noted. Setting upper limits, as suggested by Santamour[2], is a simple means to capture the diversity management challenge as it aligns well with other more sophisticated metrics - such as the Shannon[3] Diversity index - for established parks and cities[4].

2 Santamour 1990

3 Shannon 1948, Magurran 1998

4 Kendal 2014

2.3 Tree Origins

Tree diversity is an important aspect of tree population management. Tree diversity increases overall resilience in the face of various environmental stress inducing factors, including individual diversity within (i.e. genetic diversity of seedlings) and between species of trees in terms of different genera or families (e.g. *Acer* (Maple family); *Ligustrum* (Olive family)).

A more diverse tree population is better able to deal with possible changes in climate or potential pest and disease impacts. The tree population within Greenwich represents a diverse community of trees given the area, with 195 species of tree identified.

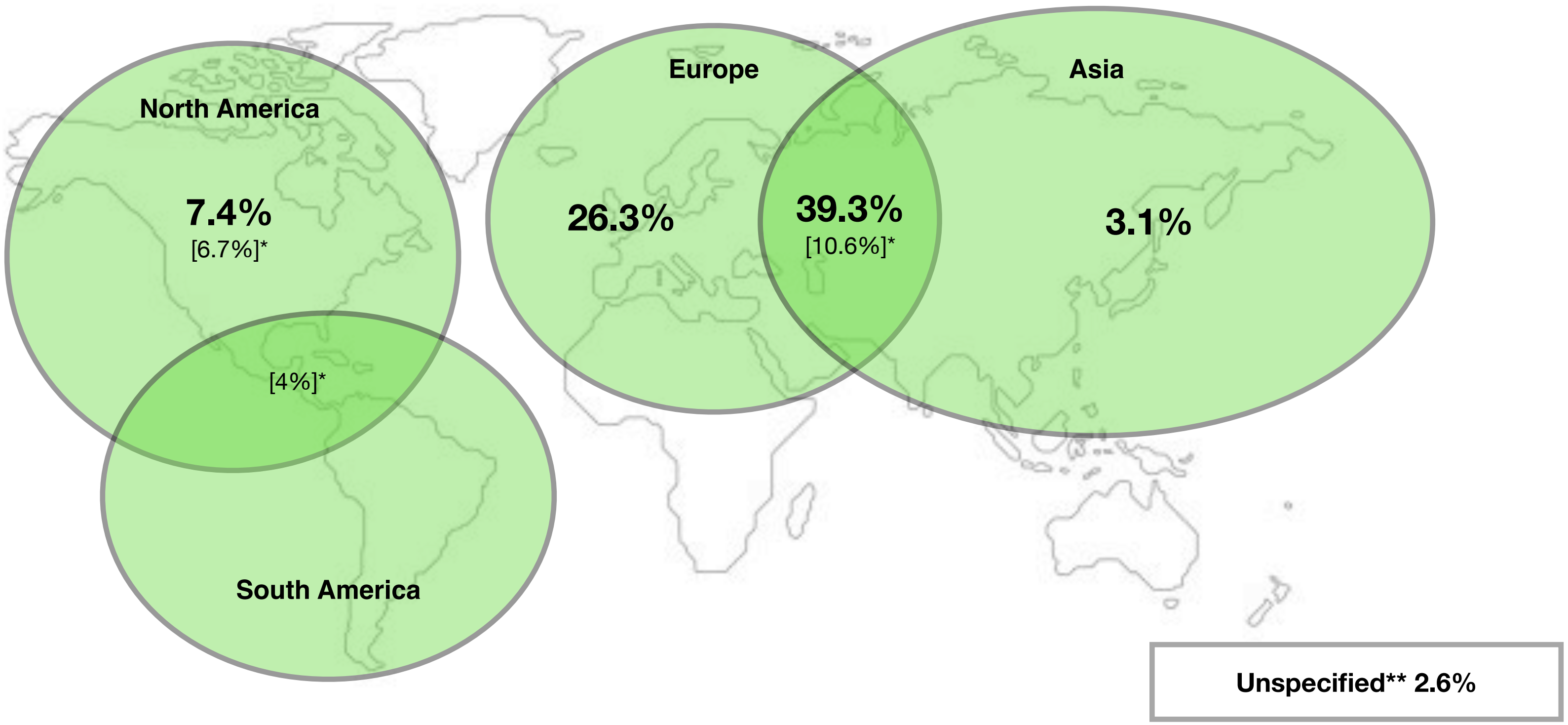


Figure 4: Origin of Tree Species; share of trees native to different geographical regions.
Overlaps indicate origins within both continents

*In these cases, where only genus is available, the proportion in brackets may include additional regions.
**Whilst there are still a few species whose origin remains unknown, the vast bulk of this number is made up of the hybrid *Platanus x acerifolia*, with a likely parentage from two zones (*Platanus occidentalis* [North America] and *Platanus orientalis* [Europe & Asia]) rendering the concept of regional origin mute.

2.3 Future Species Suitability

The Climate Assessment Tool (CAT)[5] asserts the likely suitability of taxa to predicted future climate scenarios - informing which of these species will be most vulnerable, and best suited to these anticipated changes in climate. Of the 195 species, 132 were analysed under RCP 4.5 by 2050, and RCP 7.0 by 2090*. By comparing 3 climates, a suitability score can be generated, determining how likely the species is to occur at the mean annual temperature for each selected pathway.

Table 2 highlights the top 10 populous species and their suitability to future climates. Some species, such as certain *Tilia* and *Prunus* species, have no change in their climate rating under projected climates, indicating their species suitability for the near-future.

However, 105 of the recorded species in Greenwich's street tree inventory are projected to decline in suitability under RCP 4.5 and RCP 7.0, and therefore more detail should be considered when selecting species for longer term tree and parkland strategies in order to maintain a healthy, diverse and resilient tree population. See Appendix IV for full species list.

- Species mostly occurs at this temperature
- Species known to occur at this temperature
- At the edge of the known temperature for the species
- Species not known to occur at this temperature

Species	% of Tree Population	Today	RCP 4.5*	RCP 7.0*
Acer platanoides	7.8%			
Acer pseudoplatanus	6.8%			
Tilia x europaea	6.4%			
Fraxinus excelsior	4.9%			
Quercus robur	3.7%			
Betula pendula	2.9%			
Populus nigra	2.0%			
Prunus cerasifera	2.3%			
Carpinus betulus	2.2%			
Aesculus hippocastanum	2.2%			

Table 2. Future species suitability of the 10 populous tree species

Climate Assessment Tool based purely upon temperature and does not take into account precipitation.

[5] Climate Assessment Tool (2023)
*See Appendix IV

2.4 Size Distribution

Size class distribution is an important aspect to consider in managing a sustainable and diverse tree population, as this helps ensure that there are enough young trees to replace those older specimens that are eventually lost through old age or disease. It is also relevant in terms of benefit delivery, as generally larger trees deliver greater benefits.

In this inventory, trees are sized by their stem diameter at breast height (DBH) - approximately 1.5m. Figure 5 shows the share of tree population within each DBH class.

The size class distribution of trees within Greenwich's street trees are well balanced within the higher classes, largely following the J-curve that might be expected in a natural context[6]. However, increasing the proportion of smaller and young stature trees should be considered to sustain structural diversity and the overall resilience of the tree stock.

Where the goal is to continually maintain tree cover within a landscape, a guiding principle is an inverse J-curve of age going from many young to few mature trees (Figure 6). DBH can be considered a proxy for age, bearing in mind species and potential ultimate size and form.

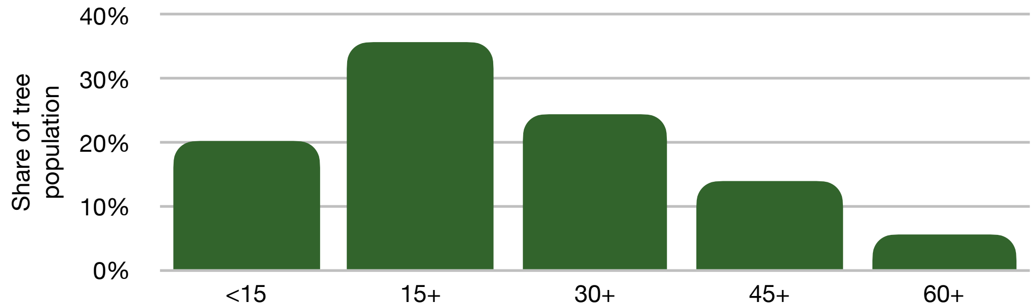


Figure 5. Tree Population by DBH Class (cm)
*exc woodlands

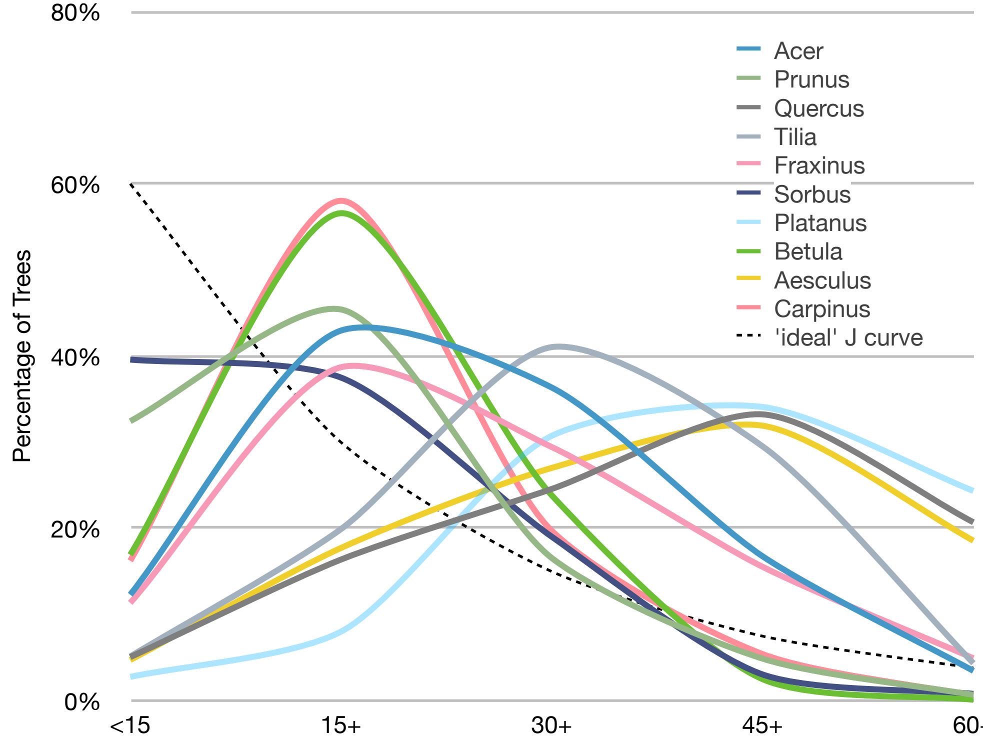


Figure 6. Spread of size classes amongst the top ten genera

[6] Kimmins, 2004
[7] Britt & Johnston, 2008

2.5 Leaf Area and Population

Leaf area is an important metric as the total photosynthetic area of a tree's canopy is directly related to the amount of benefits provided. The larger the canopy and its surface area, the greater the volume of air pollution or stormwater which can be captured in the canopy of the tree.

The total leaf area is estimated at 522 Ha. If all the layers of leaves within the tree canopies were spread out, they would cover an area 7 times the size of Greenwich Park. The most dominant genera in terms of leaf area are *Acer*, which has 16.4% of the total leaf area for all street and park trees. Interestingly, *Platanus* displays more than double the % leaf area compared to its share of the tree population, indicating a healthy tree population.

Figure 7 shows the top ten dominant genera of trees' contributions to total leaf area. Representing over 68% of the population, these contribute to almost 80% of the total leaf area.

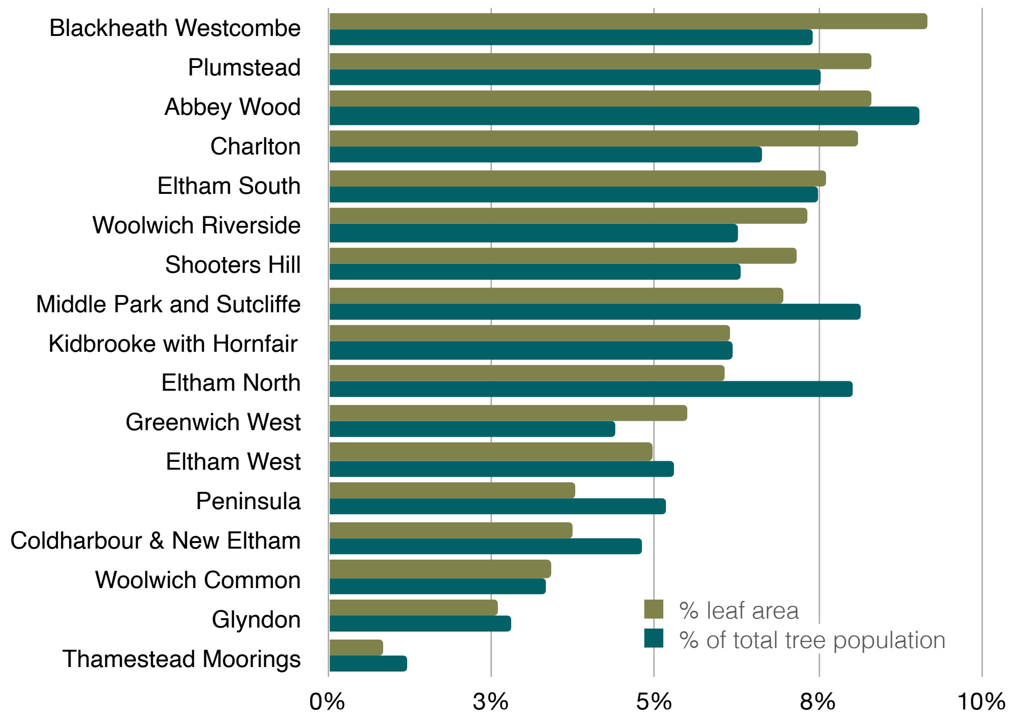


Figure 8. Share of Leaf Area vs Population by ward

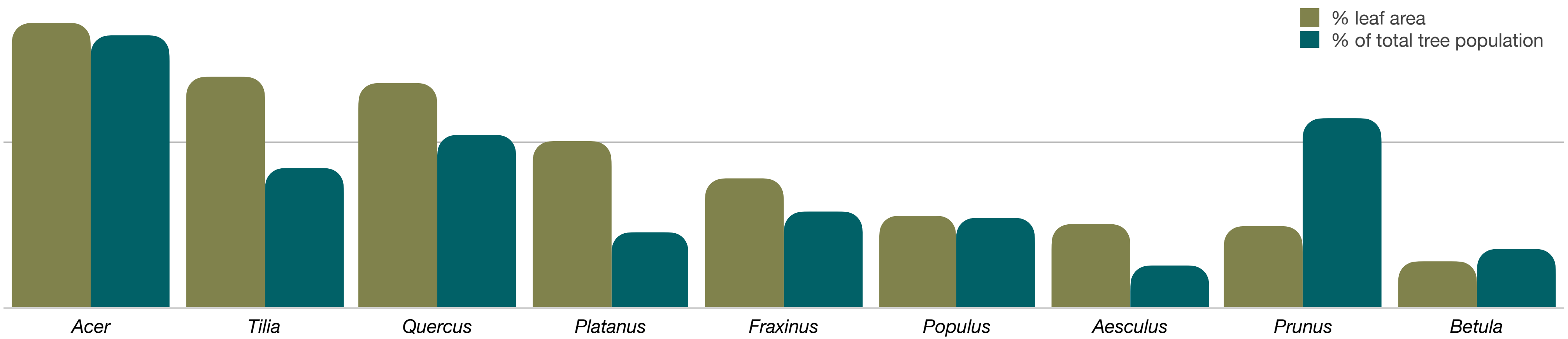


Figure 7. Share of leaf area vs share of population for the top ten genera

2.6 Dominance

Numerous benefits derived from trees are directly linked to the amount of healthy leaf surface area that they have. A high value shows which species are currently delivering the most benefits based on their population and leaf area. These species currently dominate the forest structure and are therefore the most important in delivering benefits.

The Dominance Value is calculated taking into account the leaf area and relative abundance of the species. In Greenwich, the most dominant species are *Acer pseudoplatanus*, *Tilia x europaea*, and *Acer Platanoides,* predominantly because they contribute the largest leaf areas (Figure 10).

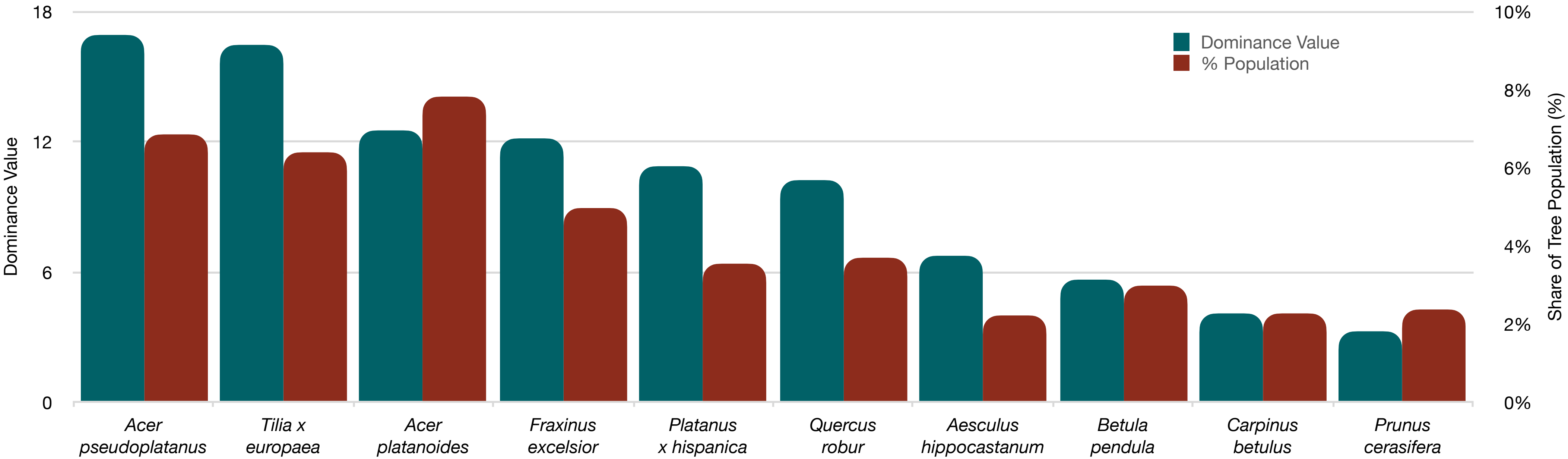


Figure 9. Dominance of the ten most common taxa

3. Urban Forest Ecosystem Services

3.1 Carbon Storage and Sequestration

The main driving force behind climate change is the concentration of carbon dioxide (CO_2) in the atmosphere. Trees can help mitigate climate change by storing and sequestering atmospheric carbon (C) as part of the carbon cycle. Since about 50% of wood by dry weight is comprised of carbon, tree stems and roots can store up carbon for decades or even centuries[8].

Over the lifetime of a tree, several tons of atmospheric carbon dioxide can be absorbed[9]. The street trees in Greenwich's inventory store 7,400 tC/yr, with a value of £6.8 million annually. Many factors influence storage capacity, such as the age, size and species of a tree, and therefore it can be assumed from Figure 10 that this is what causes the Acer species dominance.

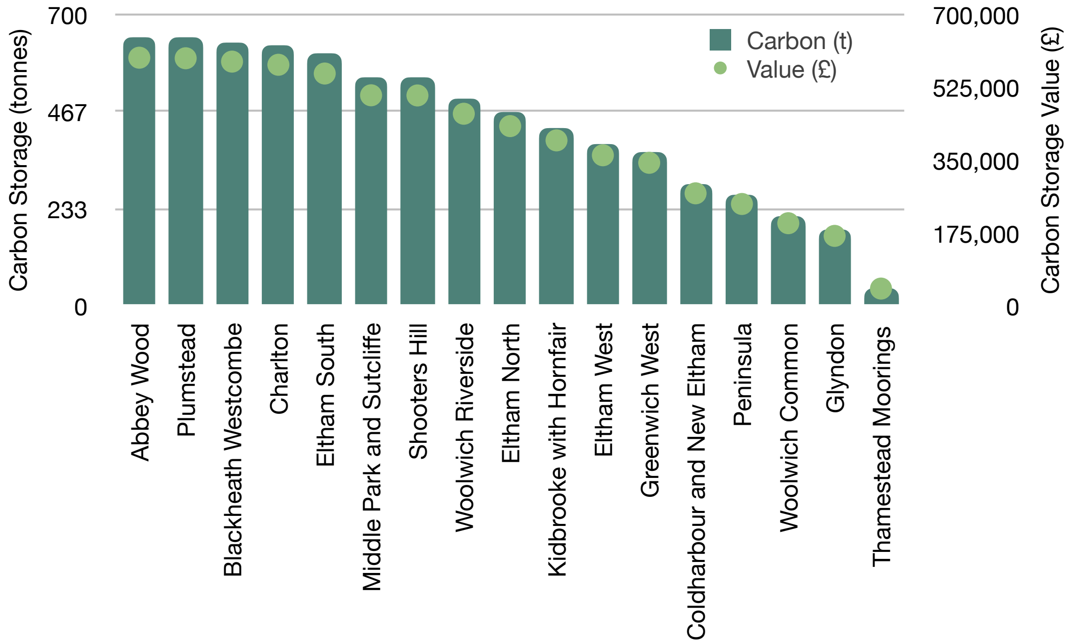


Figure 11. Carbon stored & value by ward

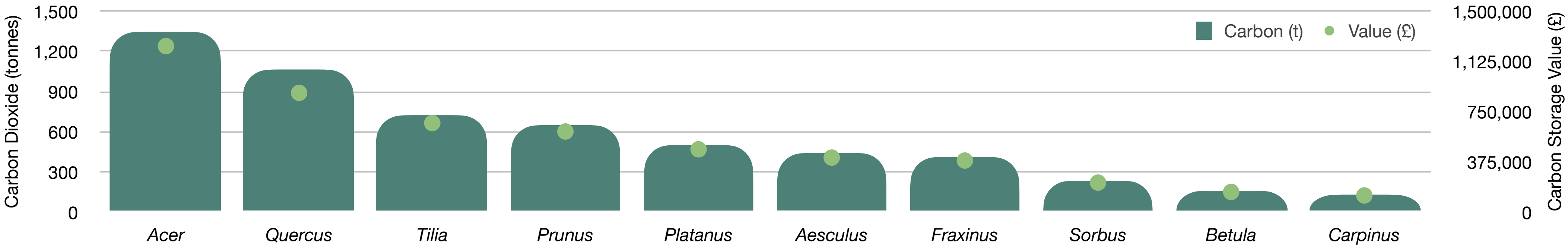


Figure 10. Carbon stored & value by genus

[8] Kuhns 2008

[9] McPherson 2007

Carbon sequestration is an annual metric calculated from tree measurements, climatic data, and predicted growth rates. It is measured and reported as tonnes of carbon (C), which is converted to the equivalent amount of carbon dioxide (CO_2e), which is then valued using government published figures. The current UK social cost for carbon is £252/tonne.[10]

Greenwich's street trees annually sequester nearly 300 tonnes of carbon, with a value of £270,000. Figure 12 shows the ten tree genera that sequester the most carbon per year and the value of the benefit derived.

The ward with the highest carbon storage is Abbey Wood, which currently stores over 600 tonnes of carbon per year (Figure 11). This is to be expected with its dominant share of the tree population. Even though some wards have significantly fewer trees than others, the amount of carbon they store may be higher. Plumstead has a tree population of 7%, yet stores more carbon than Middle Park & Sutcliffe, and Eltham North, both of which have a higher % share of the tree population. This highlights the importance of the age, size, health and species in affecting carbon values.

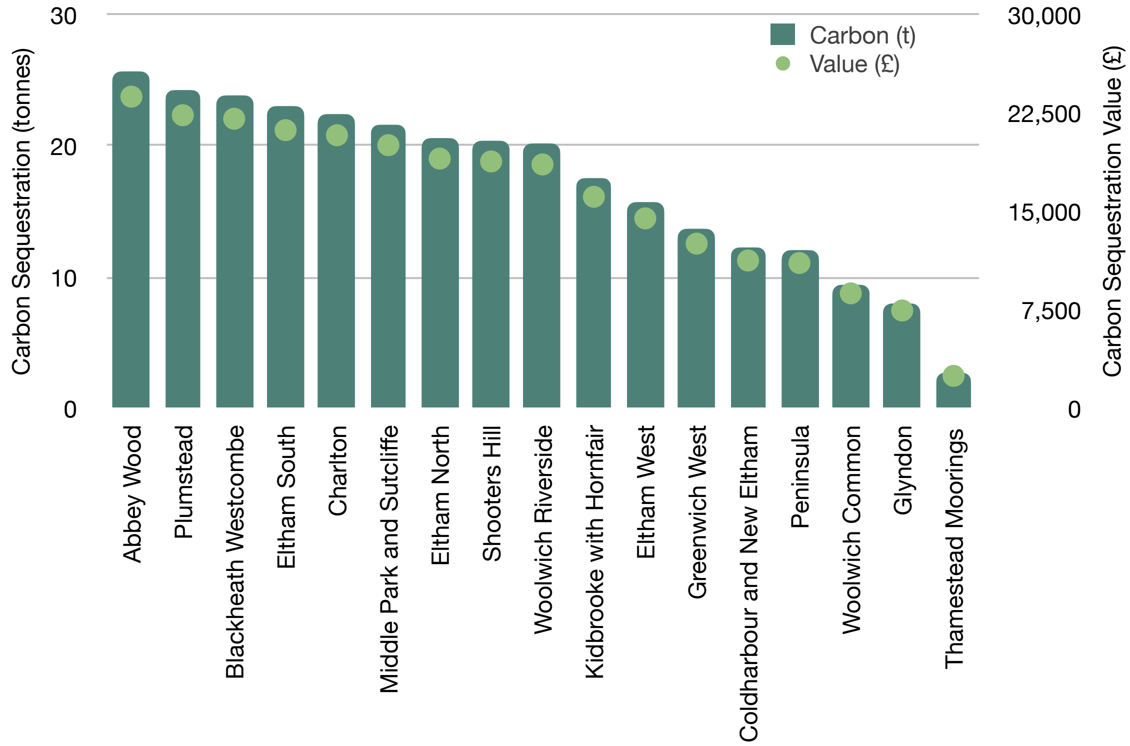


Figure 13. Carbon sequestrated & value by ward
*exc woodlands

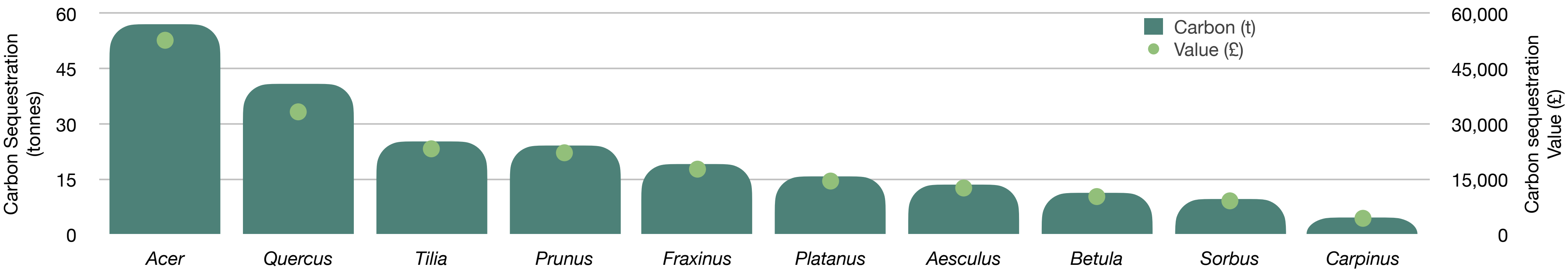


Figure 12. Carbon sequestered annually & value by genus
*exc woodlands

[10] DBEIS (2019)

3.2 Air Pollution Removal

Poor air quality is a common problem in many urban areas and along road networks. Air pollution caused by human activity has become a problem since the beginning of the industrial revolution. With the increase in population and industrialisation, large quantities of pollutants have been produced and released into the urban environment. The problems caused by poor air quality are well known, ranging from human health impacts to damage to buildings.

Urban trees can help to improve air quality by reducing air temperature and by directly removing pollutants from the air[11]. They intercept and absorb airborne pollutants through leaf surfaces[12]. In addition, by removing pollution from the atmosphere, trees reduce the risks of respiratory disease and asthma, thereby contributing to reduced health care costs[13].

Greater tree cover, air pollution concentrations and leaf area are the main factors influencing pollution filtration and therefore increasing tree planting has been shown to make further improvements in air quality[14]. As filtering capacity is closely linked to leaf area it is generally the trees with larger canopy potential that provide the most benefits.

Figure 15 shows the breakdown for the top ten pollution removing tree genera in Greenwich, with the species contributing the most noted in brackets. As different species can capture different sizes of particulate matter, a broad range of species should be considered.

[11] Tiwary et al., 2009
[12] Nowak et al., 2000
[13] Peachey et al., 2009, Lovasi et al., 2008
[14] Escobedo and Nowak., 2009

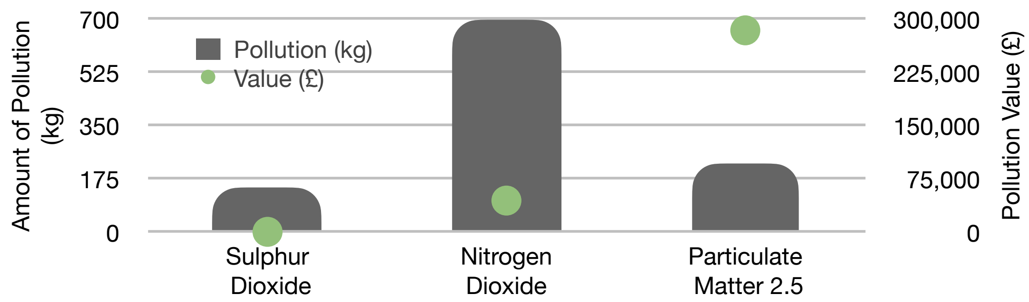


Figure 14: Value and quantity of the pollutants removed annually

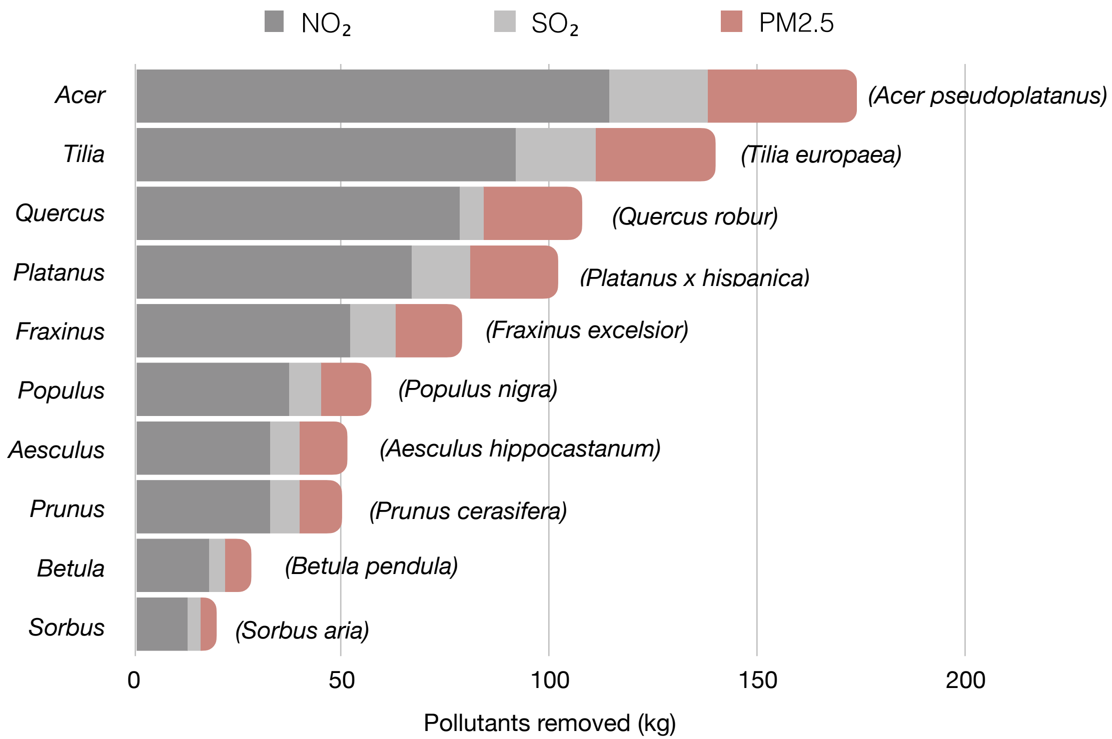


Figure 15: Pollution removed for top ten genera
(top species for each in brackets)

3.3 Avoided Run-Off

Surface run-off can be a cause for concern in many areas as it can contribute to pollution in streams, wetlands, rivers, lakes, and oceans. During precipitation events, a portion of the precipitation will be intercepted by vegetation (trees and shrubs) while a further portion reaches the ground. Precipitation that reaches the ground and does not infiltrate into the soil becomes surface run-off[15].

The trees of Greenwich help to reduce run-off by an estimated 12,300 cubic meters a year with an associated value of £11,700. *Acer* intercepts the most water, removing over 200m^3 of water per year, a service worth over £2,000 (Figure 16). This is due to its canopy size and relatively high population. Of all wards in Greenwich, Blackheath Westcombe provides the highest avoided runoff at 1,100 m^3 per year, likely due to its larger share of leaf area.

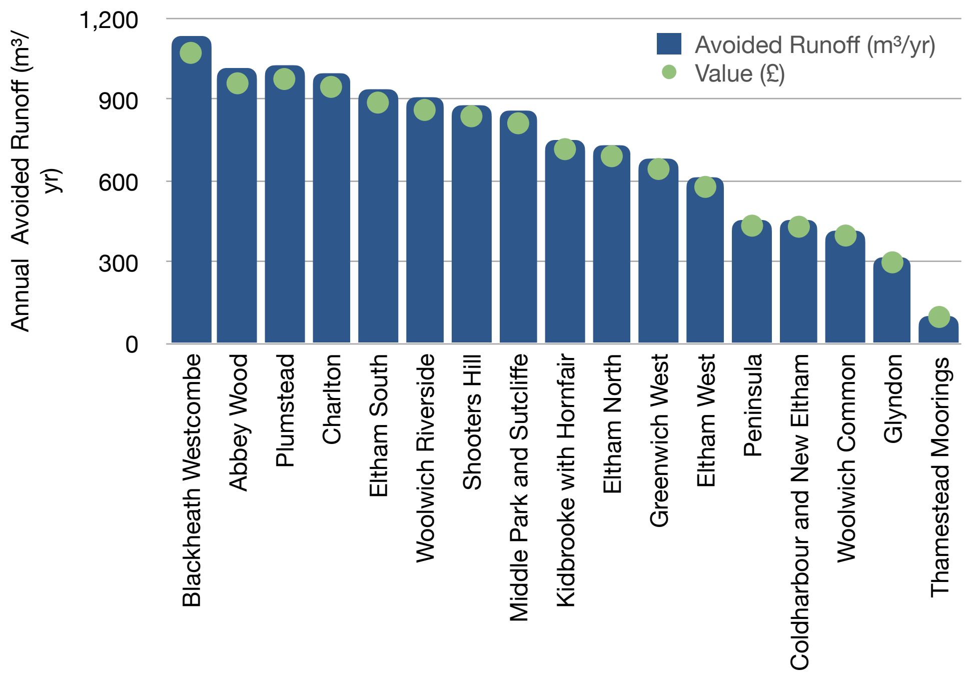


Figure 17: Avoided surface runoff by Ward

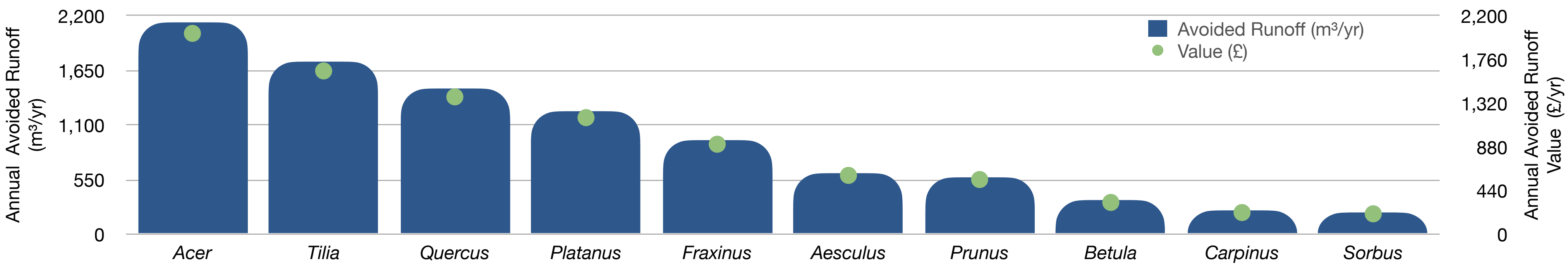


Figure 16: Top genera for avoided surface runoff

15 Hirabayashi., 2012

4. Greenwich's Woodlands

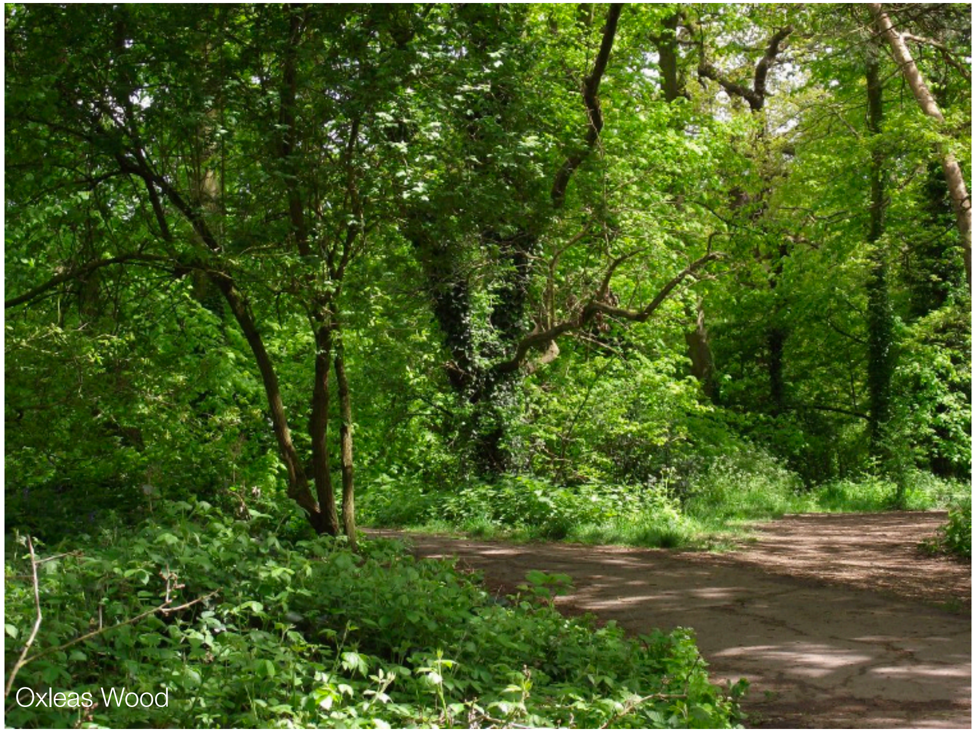
The contents of this tree inventory study exclusively consider the publicly owned trees in Greenwich that do not exceed a tree count of 10.

A total of 39,645 individual trees were submitted to i-Tree for the purpose of this report, many of which were trees documented as 'woodlands' with a species composition drawn from woodland samples. To avoid dulling the detail available within the street and park trees, these extensively managed woodland areas have been treated separately. By concentrating on urban trees of smaller groups, which equate to 22,931 trees, this study can better derive recommendations for street trees' intensive management, addressing individual species' requirements, whilst still acknowledging the value of woodlands and their principles of extensive management.

To underscore the significance of the benefits provided by Greenwich's woodlands, Table 3 provides the baseline figures of their ecosystem services. Annually, Greenwich's woodlands store an impressive 8,300 tonnes of carbon and sequester an additional 320 tonnes, generating an estimated economic value of £7.7 million and £298,000, respectively. Further benefits can be determined through annual avoided runoff and pollution removal, the cumulative economic benefits of which contribute to an estimated £690,000.

Woodland Headline Figure		
Replacement cost (CTLA)		£20,000,000
Amenity valuation (CAVAT)		£394,000,000
Annual carbon storage	**8,300 tC/yr**	£7.7 million
Annual carbon sequestration	**320 tC/yr**	£296,000
Annual avoided runoff	**15,700m³/yr**	15,000
Annual pollution removal	**1.3 t/yr**	380,000
Total		**691,000**

Table 3. Woodland Headline Figures



5. Results - Other Evaluations

5.1 Replacement Cost and Amenity Valuation

In addition to estimating the environmental benefits provided by trees, i-Tree also provides a structural valuation. In the UK this is termed the 'Replacement Cost'. It is a depreciated replacement cost, based on the Council of Tree and Landscape Appraisers (CTLA) intended to quantify what it might cost to replace any or all of the trees (taking account of species suitability, depreciation and other economic considerations) should they become damaged or diseased for instance.

In contrast, CAVAT (Capital Asset Valuation for Amenity Trees) attempts to place a value of trees to the local population, accounting for the level of public access and population density, thus establishing a value for the public amenity that trees provide and is in use by many local authorities across the country.

Replacement cost is relatively constant irrespective of location, whereas a CAVAT valuation is highly dependent upon trees' proximity to people.

For Greenwich, the estimated public amenity asset value (CAVAT) for street and park trees is £455 million, and a further £394 million for woodlands. This number reflects the magnitude of mature trees in a publicly accessible location within the bounds of a densely populated city. It should be noted that this calculation has been made for the tree population as a whole. Values for individual trees would require a more detailed site survey. *Acer* exhibits the highest CAVAT valuation (figure 18), as would be expected from its dominant share of population.

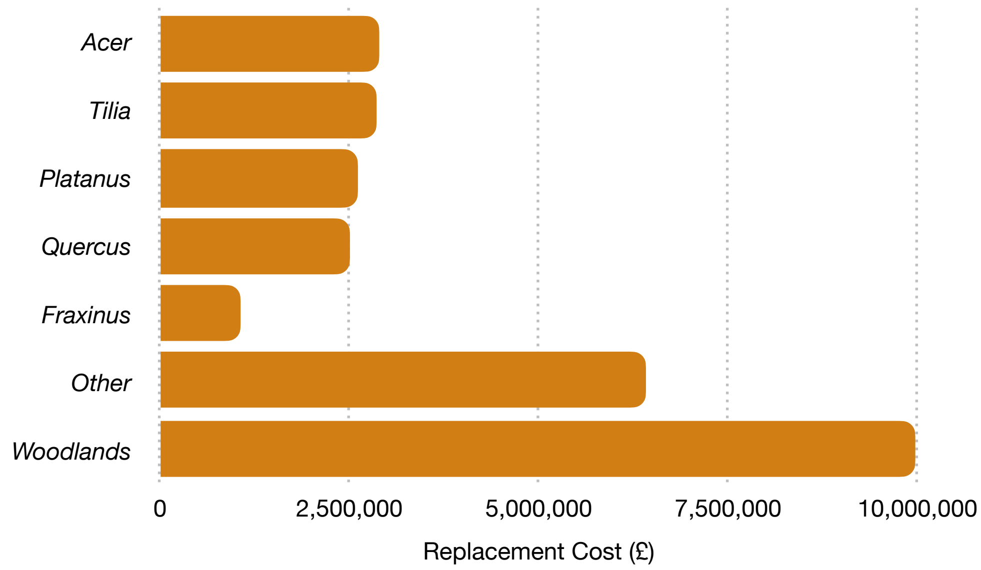


Figure 18: Replacement cost for the top five genera

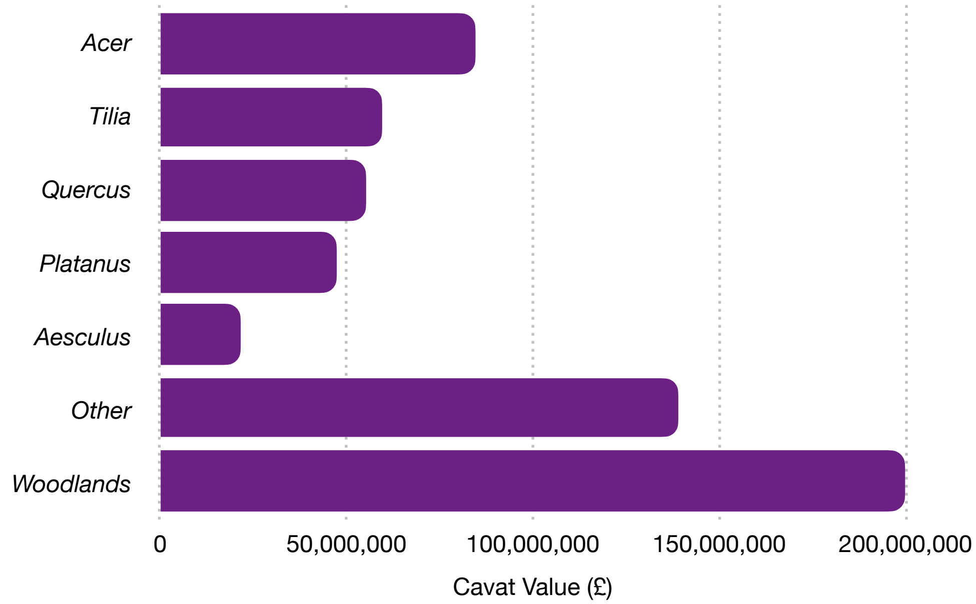


Figure 19: CAVAT valuation for the top five genera

6. Pests and Diseases

6.1 Potential threats

Pests and diseases are a serious threat to urban forests, with risks exacerbated by our changing climate. The importation of trees, particularly large landscape trees, and wooden packaging for other goods can increase the risk of diseases being introduced to the UK. The 'Plant Health Portal' run by DEFRA provides information, guidance and management strategies in relation to management and reduction of impacts from pests and diseases within the UK. Stringent importation rules are in place to reduce the risk factor, and actions needed to protect plant health are set out in 'Protecting Plant Health - A Plant Biosecurity Strategy for Great Britain'[16].

Figure 20 Shows the proportion of trees at risk for each of the most critical invasive pests and diseases of concern to the UK according to Observatree[17], led by Forest Research. Potential impact varies based on climate and weather, tree health, local tree management, and individual young tree procurement policies. One long term tool for mitigating such impacts is building resilience through population diversity, whether at the family, genus or species level.

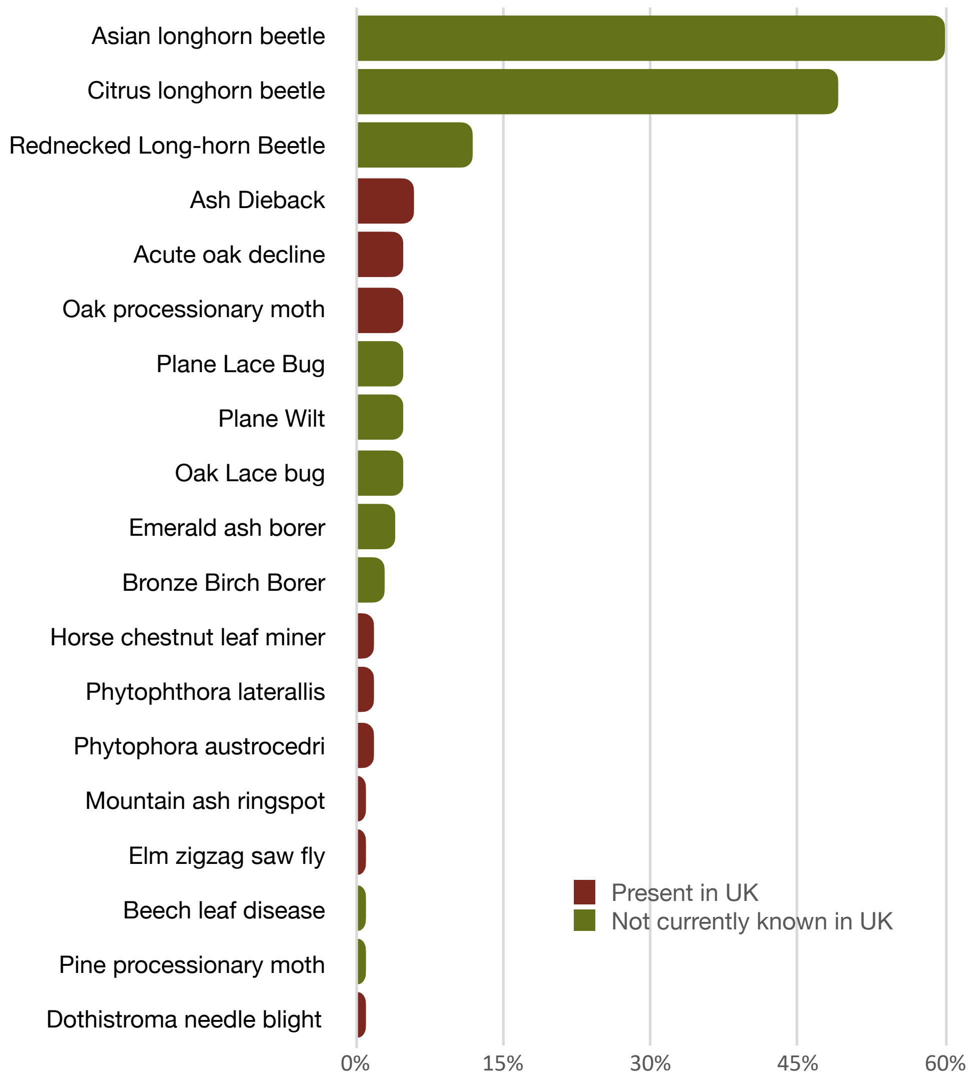


Figure 20: Share of tree population under threat from named pests of highest concern at time of publication (Observatree, 2022).
*exc woodlands

[16] Defra, 2014
[17] Observatree, 2022

6.2 Tree Condition

By far the most important factor when dealing with any potential pest or disease impact is to consider the health of the tree. Tree condition was measured as part of the survey and figure 21 shows the overall health of the street and park trees in the Royal Borough of Greenwich. Tree condition also directly affects the ecosystem services each tree provides.

The vast majority of the trees within Greenwich are in good condition. However, out of all species documented, trees of the genus *Aesculus* appear to be in the worst condition, with 25% in either fair or poor health. This could due to the leading species, *Aesculus hippocastanum* (horse chestnut) and *Aesculus x carnea* (red horse chestnut) being subject to pests and diseases including horse chestnut leaf miners, oriental chestnut gall wasps, and bleeding canker.

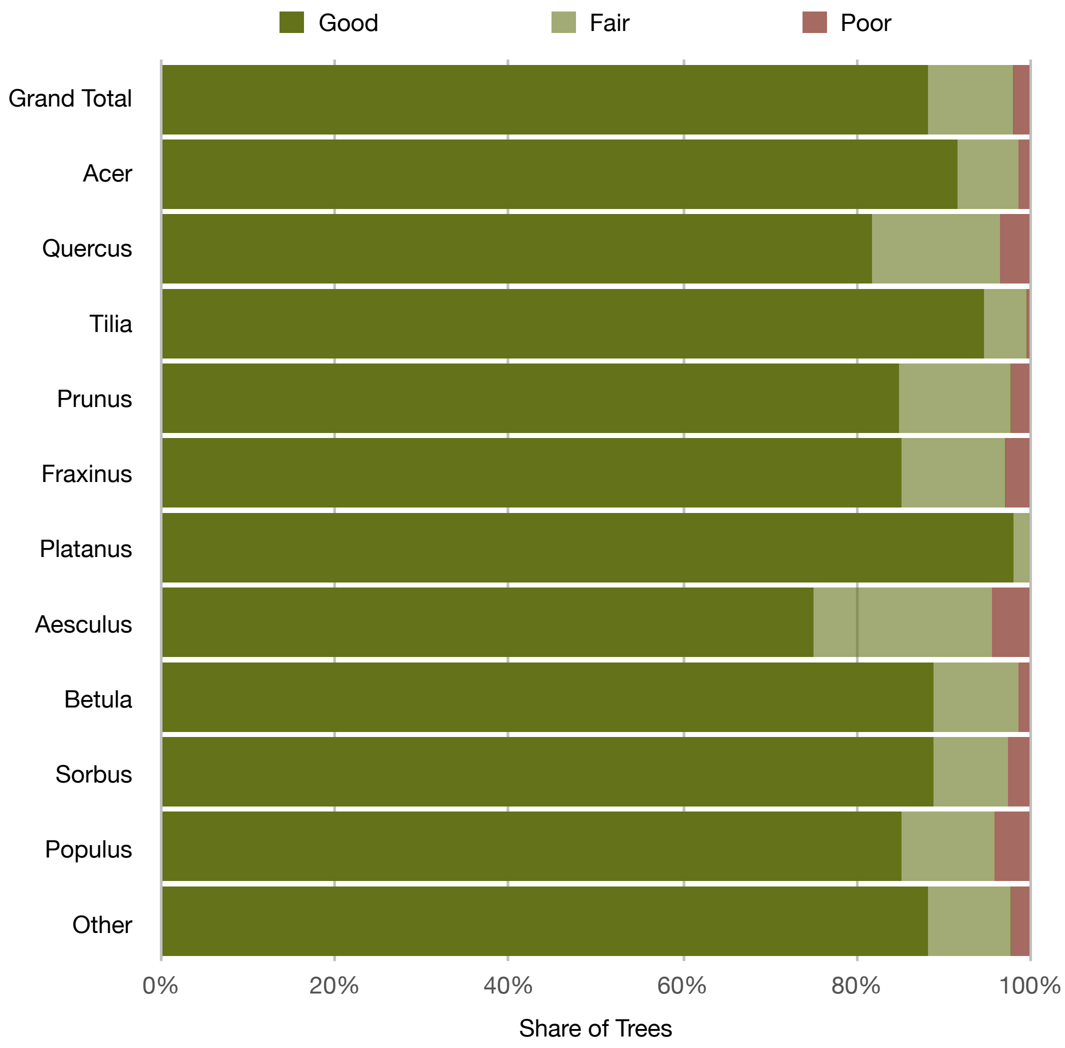


Figure 21. Tree condition by genera. Top ten shown.
*exc woodlands

7. Conclusions

The street tree population within Greenwich generally has a good species and age diversity. This will provide resilience from possible future influences such as climate change and pest and disease outbreaks. The role of Greenwich's trees in complementing peoples health is clear - providing a valuable public benefit - at least £455 million in ecosystem services each year.

In terms of structural diversity, all tree species are well represented. Greenwich benefits by having a wide variety of species within a broad range of DBH classes, which will offer resilience within the tree population and increase the continued ecosystem services should trees be lost to damage, drought or disease. There is scope to increase the proportion of smaller and young stature trees to align with an optimal structural diversity.

Furthermore, the values presented in this study represent only a portion of the total value of the trees within Greenwich because only a proportion of the total benefits have been evaluated. Trees confer many other benefits, such as contributions to our health and well being that cannot yet be quantified and valued. Therefore, the values presented in this report should be seen as conservative estimates.

As the amount of healthy leaf area equates directly to the provision of benefits, future management of the tree stock is important to ensure canopy cover levels continue to be maintained or increased. This may be achieved via new planting, but the most effective strategy for increasing average tree size and the extent of tree canopy is to preserve and adopt a management approach that enables the existing trees to develop a stable, healthy, age and species diverse, multi-layered population.

Climate change could affect the tree stock in Greenwich in a variety of ways, and there are great uncertainties about how this may manifest. Further study into this area would be useful in informing any long term tree and parkland strategies, such as species choice for example.

The challenge now is to ensure that policy makers and practitioners take full account of the Royal Borough of Greenwich's trees in decision making. Not only are trees a valuable functional component of our landscape, they also make a significant contribution to peoples quality of life. A follow-up report considering how Greenwich's trees could be fully considered in council decision making and a sustainable urban forest masterplan is recommended.

8. Recommendations

The information in this report on the structure, composition and value of Greenwich's Tree Inventory can be used to make more informed decisions on how these trees can be managed to provide long-term benefits to communities. This is one of the key outcomes of undertaking a project such as this.

1. Policy Review

Leverage tree benefits for other council agendas. Carry out an internal policy review to identify policies where trees have a significant role to play and ensure alignment across all departments and policy documents adopted by the council. This includes policy areas within highways, health and education as well more obvious ones such as sustainability, planning and environment.

2. Pro-actively manage species diversity

Continue to introduce a wide variety of species. Consider contract growing to ensure supply of unusual or untried species to maintain high levels of diversity. Take opportunities to increase the proportion of smaller and young stature trees to sustain structural diversity and the overall resilience of the tree stock. Identify trees that can grow to full maturity and reach their optimal canopy size (given any site specific restrictions) and contribute the most benefits to the surrounding urban communities. Pay particular attention to those species which are predicted to be least adaptable to climate change, as forecast for London's latitude and longitude.

3. Engage the public

Use the report's content to inform and advise local communities about the trees in their streets and the measurable benefits they provide. Public engagement has been shown to improve tree establishment as residents are more willing to contribute personal time and effort to looking after them.

4. Cost benefit analysis

Use the data for cost benefit analysis to inform decision making, such as for securing water supplies through tree pits linked to SuDS are recovered as benefits accrue.

5. Embrace private trees

Consider a broader borough-wide study encompassing all trees, both private and public. Such trees are a vital aspect of a borough-wide approach to securing the long-term benefits of trees, especially those related to climate change mitigation such stormwater attenuation or shade/cooling in the context of the urban heat island effect. Private back gardens and larger open land such as golf courses all have a role to play.

Appendix I. Communicating Tree

Communicating technical information to the public can be challenging, particularly with large scale values. Creating comparisons can help to break down data and concepts for people to understand more easily. The following statistics account for both street and woodland trees.

Carbon storage is equivalent to:

- Amount of carbon emitted in Greenwich in 5 days
- Annual carbon (C) emissions from 12,300 cars
- Annual C emissions from 5,030 single-family houses

Nitrogen dioxide removal is equivalent to:

- Annual nitrogen dioxide emissions from 236 cars
- Annual nitrogen dioxide emissions from 106 single-family houses

Sulphur dioxide removal is equivalent to:

- Annual sulphur dioxide emissions from 3,720 cars
- Annual sulphur dioxide emissions from 10 single-family houses

Annual carbon sequestration is equivalent to:

- Annual C emissions from 500 cars
- Annual C emissions from 200 single-family houses

Image: Greenwich Park

Appendix II. Dominance Ranking List

Species	% Population	% Leaf Area	DV [a]
Acer Pseudoplatanus	6.8	10.1	16.9
Tilia x europaea	6.4	10.1	16.5
Acer platanoides	7.2	5.3	12.5
Fraxinus Excelsior	5.0	7.2	12.1
Platanus Hybrida	3.6	7.3	10.9
Quercus robur	3.7	6.5	10.3
Prunus	6.5	3.0	9.6
Aesculus Hippocastanum	2.2	4.5	6.7
Populus nigra	2.0	4.7	6.7
Betula pendula	3.0	2.6	5.6
Sorbus	3.3	1.3	4.6
Carpinus Betulus	2.3	1.8	4.1
Platanus	1.0	2.7	3.7
Prunus Cerasifera	2.4	0.9	3.3
Chamaecyparis Lawsoniana	2.0	1.1	3.1
Robinia Pseudoacacia	1.4	1.5	2.9
Tilia	0.9	1.9	2.8
Fagus Sylvatica	0.8	1.8	2.6
Pyrus Calleryana	2.0	0.4	2.4
Cupressocyparis leylandii	1.3	0.9	2.3
Tilia Cordata	0.9	1.4	2.3
Malus	1.7	0.4	2.1
Acer Campestre	1.4	0.6	2.0
Crataegus Monogyna	1.5	0.4	2.0
Prunus Avium	1.2	0.6	1.8
Ilex	1.3	0.5	1.7
Sorbus aucuparia	1.4	0.3	1.7
Ailanthus Altissima	0.6	0.9	1.5

Species	% Population	% Leaf Area	DV [a]
Acer saccharinum	0.6	0.9	1.5
Quercus Cerris	0.4	0.9	1.3
Salix	0.5	0.7	1.2
Malus Sylvestris	0.8	0.4	1.2
Castanea Sativa	0.5	0.7	1.2
Pinus Nigra	0.5	0.6	1.1
Sorbus aria	0.7	0.3	1.1
Fraxinus	0.6	0.4	1.0
Crataegus	0.9	0.1	1.0
Alnus Glutinosa	0.4	0.5	0.9
Quercus Ilex	0.3	0.6	0.9
Taxus baccata	0.7	0.3	0.9
Populus Alba	0.3	0.5	0.8
Liquidambar Styraciflua	0.7	0.1	0.8
Sambucus Nigra	0.7	0.1	0.7
Ulmus	0.5	0.2	0.7
Tilia platyphyllos	0.2	0.5	0.7
Aesculus X Carnea	0.3	0.4	0.7
Pinus Sylvestris	0.4	0.3	0.7
Salix Alba	0.3	0.3	0.6
Cedrus	0.3	0.3	0.6
Parrotia Persica	0.4	0.1	0.5
Fallopia japonica	0.5	0.0	0.5
Prunus domestica	0.4	0.2	0.5
Quercus Rubra	0.2	0.3	0.5
Prunus padus	0.3	0.2	0.4
Eucalyptus Gunnii	0.1	0.3	0.4
Cedrus deodara	0.2	0.2	0.4

Species	% Population	% Leaf Area	DV [a]
Metasequoia glyptostroboides	0.3	0.1	0.4
Fraxinus oxycarpa	0.2	0.1	0.4
Betula	0.3	0.1	0.4
Liriodendron tulipifera	0.3	0.1	0.4
Salix caprea	0.2	0.1	0.3
Prunus Serrulata	0.3	0.0	0.3
Pyrus Communis	0.2	0.1	0.3
Ginkgo Biloba	0.3	0.0	0.3
Gleditsia tricanthos	0.2	0.1	0.3
Prunus subhirtella	0.2	0.1	0.3
Catalpa Bignonioides	0.2	0.1	0.3
Cupressus Macrocarpa	0.1	0.1	0.3
Laurus nobilis	0.2	0.1	0.2
Acer Negundo	0.1	0.1	0.2
Malus Baccata	0.2	0.0	0.2
Salix Fragilis	0.1	0.1	0.2
Populus	0.1	0.1	0.2
Robinia	0.1	0.1	0.2
Populus tremula	0.1	0.1	0.2
Pyrus	0.2	0.0	0.2
Aesculus	0.1	0.1	0.2
Celtis australis	0.2	0.0	0.2
Pinus	0.1	0.1	0.2
Juglans Nigra	0.1	0.1	0.2
Salix Matsudana	0.1	0.1	0.2
Picea Abies	0.1	0.1	0.2
Alnus cordata	0.1	0.1	0.2
Pinus Pinea	0.1	<0	0.2
Quercus Coccinea	0.1	0.1	0.1
Chamaecyparis	0.1	<0	0.1

Species	% Population	% Leaf Area	DV [a]
Juglans Regia	0.1	<0	0.1
Quercus petraea	<0	0.1	0.1
Thuja Plicata	0.1	<0	0.1
Acer saccharum	0.0	0.1	0.1
Cuppressus	0.1	<0	0.1
Acer rubrum	0.1	<0	0.1
Prunus Persica	0.1	<0	0.1
Taxodium Distichum	0.1	0.1	0.1
Laburnum Anagyroides	0.1	<0	0.1
Corylus	0.1	<0	0.1
Corylus Colurna	0.1	<0	0.1
Acer palmatum	<0	<0	0.1
Sophora Japonica	0.1	<0	0.1
Lagerstroemia	0.1	<0	0.1
Ligustrum	0.1	<0	0.1
Betula papyrifera	0.1	<0	0.1
Crataegus X Lavallei	0.1	<0	0.1
Tilia x Euchlora	<0	<0	0.1
Populus x canescens	0.0	0.1	0.1
Betula Pubescens	0.1	<0	0.1
Juniperus	0.1	<0	0.1
Betula Nigra	0.1	<0	0.1
Quercus Palustris	<0	<0	0.1
Malus Floribunda	0.1	<0	0.1
Sequoiadendron Giganteum	<0	<0	0.1
Amelanchier lamarckii	0.1	<0	0.1
Nothofagus antartica	0.1	<0	0.1
Acer	<0	<0	0.1
Sequoia Sempervirens	<0	<0	0.1
Magnolia	<0	<0	0.1

Species	% Population	% Leaf Area	DV [a]
Prunus Lusitanica	0.1	<0	0.1
Rhus typhrina	0.1	<0	0.1
Betula utilis	<0	<0	0.1
Cercis Siliquastrum	<0	<0	0.1
Pinus Radiata	<0	<0	0.1
Fagus	<0	<0	0.1
Laburnum	<0	<0	0.1
Acer cappadocium	<0	<0	0.1
Amelanchier arborea	<0	<0	<0
Prunus Dulcis	<0	<0	<0
Ulmus Procera	<0	<0	<0
Tilia Petiolaris	<0	<0	<0
Ficus carica	<0	<0	<0
Olea europaea	<0	<0	<0
Prunus Sargentii	<0	<0	<0
Fraxinus Americana	<0	<0	<0
Tamarix tetrandra	<0	<0	<0
Ulmus glabra	<0	<0	<0
Quercus	<0	<0	<0
Arbutus unedo	<0	<0	<0
Abies	<0	<0	<0
Thuja	<0	<0	<0
Pterocarya Stenoptera	<0	<0	<0
Larix	<0	<0	<0
Hedra Helix	<0	<0	<0
Malus Pumila	<0	<0	<0
Pseudotsuga menziesii	<0	<0	<0
Ulmus minor	<0	<0	<0
Cornus	<0	<0	<0
Cedrus Libani	<0	<0	<0

Species	% Population	% Leaf Area	DV [a]
Alnus incana	<0	<0	<0
Juniperus Virginiana	<0	<0	<0
Acer capillipes	<0	<0	<0
Cotoneaster	<0	<0	<0
Morus Alba	<0	<0	<0
Morus Nigra	<0	<0	<0
Amelanchier	<0	<0	<0
Prunus Yedoensis	<0	<0	<0
Larix	<0	<0	<0
Zelkova Serrata	<0	<0	<0
Tilia Americana	<0	<0	<0
Paulownia Tomentosa	<0	<0	<0
Prunus spinosa	<0	<0	<0
Magnolia Grandiflora	<0	<0	<0
Hibiscus	<0	<0	<0
Fraxinus pennsylvanica	<0	<0	<0
Buddleja	<0	<0	<0
Magnolia x soulangiana	<0	<0	<0
Pterocarya fraxinifolia	<0	<0	<0
Populus Balsamifera	<0	<0	<0
Tilia Tomentosa	<0	<0	<0
Acer davidii	<0	<0	<0
Pinus Contorta	<0	<0	<0
Eucalyptus	<0	<0	<0
Magnolia Acuminata	<0	<0	<0
Koelreuteria Paniculata	<0	<0	<0
Pittosporum tenuifolium	<0	<0	<0
Mespilus germanica	<0	<0	<0
Carya Ovata	<0	<0	<0
Davidia	<0	<0	<0

Species	% Population	% Leaf Area	DV [a]
Rhamnus cathartica	<0	<0	<0
Quercus Suber	<0	<0	<0
Davidia involucrata	<0	<0	<0
Buxus	<0	<0	<0
Alnus Rubra	<0	<0	<0
Picea Breweriana	<0	<0	<0
Cryptomeria Japonica	<0	<0	<0
Photinia serrulata	<0	<0	<0
Araucaria	<0	<0	<0
Chitalpa x tashkentensis	<0	<0	<0
Elaeagnus umbellata	<0	<0	<0
Acacia dealbata	<0	<0	<0
Acer japonicum	<0	<0	<0
Tsuga Canadensis	<0	<0	<0
Cercidiphyllum Japonicum	<0	<0	<0
Syringa vulgaris	<0	<0	<0
Sorbus X Thuringiaca	<0	<0	<0
Rhus potaninii	<0	<0	<0
Pseudolarix Amabilis	<0	<0	<0
Trachyparus	<0	<0	<0
Unknown Species (Quercus)	5.6	5.0	10.6

Table 4. Dominance Ranking List

Appendix III. Tree Values by Genus and Species

Genus	Species	Tree Count	Carbon stored (tonnes)	Carbon sequestered (tonnes)	Avoided Runoff (m3/yr)	Pollution removal (kg/yr)	Replacement Cost (£)
Abies							
	Abies	4	1.18	0.03	2	152	£4,700.44
Abies Total		**4**	**1.18**	**0.03**	**2**	**152**	**£4,700.44**
Acacia							
	Acacia dealbata	1	0.05	0.00	0	8	£320.36
Acacia Total		**1**	**0.05**	**0.00**	**0**	**8**	**£320.36**
Acer							
	Acer	8	2.10	0.10	3	282	£5,051.50
	Acer Campestre	322	34.39	1.13	69	5,917	£79,050.89
	Acer capillipes	4	0.64	0.03	1	94	£1,447.21
	Acer cappadocium	8	1.06	0.03	2	156	£2,375.79
	Acer davidii	3	0.03	0.01	0	5	£99.63
	Acer japonicum	1	0.12	0.01	0	7	£290.52
	Acer Negundo	25	10.07	0.41	17	1,355	£27,006.56
	Acer palmatum	11	3.21	0.04	5	398	£8,525.62
	Acer platanoides	1647	559.29	29.05	636	53,684	£1,219,817.49
	Acer Pseudoplatanus	1570	658.83	23.82	1,278	102,193	£1,355,985.01
	Acer rubrum	24	1.84	0.15	1	63	£4,214.00
	Acer saccharinum	137	60.81	2.14	113	9,000	£187,004.87
	Acer saccharum	10	8.80	0.18	9	730	£16,266.65
Acer Total		**3770**	**1341.20**	**57.11**	**2,132**	**173,884**	**£2,907,135.74**
Aesculus							
	Aesculus	19	7.20	0.28	13	1,103	£18,525.59
	Aesculus Hippocastanum	509	401.77	12.37	562	45,639	£714,068.78
	Aesculus X Carnea	64	31.35	1.07	50	4,112	£96,160.03
Aesculus Total		**592**	**440.32**	**13.72**	**625**	**50,853**	**£828,754.40**
Ailanthus							

Genus	Species	Tree Count	Carbon stored (tonnes)	Carbon sequestered (tonnes)	Avoided Runoff (m3/yr)	Pollution removal (kg/yr)	Replacement Cost (£)
	Ailanthus Altissima	145	94.61	4.13	107	8,825	£205,061.06
Ailanthus Total		**145**	**94.61**	**4.13**	**107**	**8,825**	**£205,061.06**
Alnus							
	Alnus cordata	23	2.63	0.15	8	633	£13,271.99
	Alnus Glutinosa	98	21.74	0.92	61	5,021	£113,370.25
	Alnus incana	5	0.34	0.02	1	54	£1,101.14
	Alnus Rubra	1	0.09	0.01	0	30	£339.89
Alnus Total		**127**	**24.80**	**1.10**	**70**	**5,738**	**£128,083.27**
Amelanchier							
	Amelanchier	5	0.35	0.03	0	18	£831.28
	Amelanchier arborea	11	0.11	0.02	0	16	£549.70
	Amelanchier lamarckii	14	0.44	0.05	0	31	£1,285.78
Amelanchier Total		**30**	**0.91**	**0.10**	**0**	**66**	**£2,666.76**
Araucaria							
	Araucaria	1	0.10	0.01	0	16	£339.89
Araucaria Total		**1**	**0.10**	**0.01**	**0**	**16**	**£339.89**
Arbutus							
	Arbutus unedo	6	1.11	0.03	1	75	£2,625.83
Arbutus Total		**6**	**1.11**	**0.03**	**1**	**75**	**£2,625.83**
Betula							
	Betula	62	4.33	0.33	11	883	£8,896.24
	Betula Nigra	15	0.21	0.04	0	55	£682.69
	Betula papyrifera	13	1.73	0.17	2	191	£3,381.49
	Betula pendula	687	152.55	10.45	318	26,576	£297,890.81
	Betula Pubescens	12	1.80	0.12	3	219	£3,612.66
	Betula utilis	8	2.18	0.10	3	232	£3,483.47
Betula Total		**797**	**162.80**	**11.20**	**338**	**28,156**	**£317,947.36**
Buddleja							
	Buddleja	3	0.17	0.01	0	38	£523.85
Buddleja Total		**3**	**0.17**	**0.01**	**0**	**38**	**£523.85**

Genus	Species	Tree Count	Carbon stored (tonnes)	Carbon sequestered (tonnes)	Avoided Runoff (m3/yr)	Pollution removal (kg/yr)	Replacement Cost (£)
Buxus							
	Buxus	2	0.02	0.00	0	2	£63.94
Buxus Total		**2**	**0.02**	**0.00**	**0**	**2**	**£63.94**
Carpinus							
	Carpinus Betulus	517	134.30	4.81	230	18,634	£323,191.57
Carpinus Total		517	**134.30**	**4.81**	230	18,634	£323,191.57
Carya							
	Carya Ovata	1	0.46	0.01	1	50	£942.97
Carya Total		**1**	**0.46**	**0.01**	**1**	**50**	**£942.97**
Castanea							
	Castanea Sativa	108	42.16	1.41	87	7,171	£162,719.87
Castanea Total		**108**	**42.16**	**1.41**	**87**	**7,171**	**£162,719.87**
Catalpa							
	Catalpa Bignonioides	44	3.68	0.22	10	917	£16,576.11
Catalpa Total		**44**	**3.68**	**0.22**	**10**	**917**	**£16,576.11**
Cedrus							
	Cedrus	58	35.08	0.88	39	3,157	£91,170.72
	Cedrus deodara	41	24.63	0.80	27	2,170	£64,257.25
	Cedrus Libani	3	1.45	0.04	2	153	£3,767.70
Cedrus Total		**102**	**61.17**	**1.72**	**68**	**5,480**	**£159,195.67**
Celtis							
	Celtis australis	38	0.69	0.06	2	201	£5,538.06
Celtis Total		**38**	**0.69**	**0.06**	**2**	**201**	**£5,538.06**
Cercidiphyllum							
	Cercidiphyllum Japonicum	1	0.00	0.00	0	2	£38.63
Cercidiphyllum Total		**1**	**0.00**	**0.00**	**0**	**2**	**£38.63**
Cercis							
	Cercis Siliquastrum	11	0.55	0.06	1	84	£1,356.74
Cercis Total		**11**	**0.55**	**0.06**	**1**	**84**	**£1,356.74**
Chamaecyparis							

Genus	Species	Tree Count	Carbon stored (tonnes)	Carbon sequestered (tonnes)	Avoided Runoff (m3/yr)	Pollution removal (kg/yr)	Replacement Cost (£)
	Chamaecyparis	22	2.91	0.14	4	326	£6,960.77
	Chamaecyparis Lawsoniana	456	88.00	3.56	143	11,645	£226,016.80
Chamaecyparis Total		**478**	**90.91**	**3.70**	**147**	**11,971**	**£232,977.57**
Chitalpa							
Chitalpa x tashkentensis	*Chitalpa x tashkentensis*	1	0.55	0.02	0	9	£1,000.47
Chitalpa Total		**1**	**0.55**	**0.02**	**0**	**9**	**£1,000.47**
Cornus							
	Cornus	6	0.31	0.03	0	22	£715.08
Cornus Total		**6**	**0.31**	**0.03**	**0**	**22**	**£715.08**
Corylus							
	Corylus	19	1.08	0.08	2	212	£2,757.09
	Corylus Colurna	16	1.08	0.06	2	180	£3,896.25
Corylus Total		**35**	**2.16**	**0.15**	**4**	**392**	**£6,653.34**
Cotoneaster							
	Cotoneaster	5	0.57	0.03	0	45	£1,280.95
Cotoneaster Total		**5**	**0.57**	**0.03**	**0**	**45**	**£1,280.95**
Crataegus							
	Crataegus	199	11.48	0.81	12	1,260	£31,208.09
	Crataegus Monogyna	355	49.63	2.03	45	4,199	£92,656.81
	Crataegus X Lavallei	15	1.30	0.09	1	100	£3,090.50
Crataegus Total		**569**	**62.42**	**2.93**	**58**	**5,559**	**£126,955.40**
Cryptomeria							
	Cryptomeria Japonica	1	0.08	0.01	0	19	£294.44
Cryptomeria Total		**1**	**0.08**	**0.01**	**0**	**19**	**£294.44**
Cuppressus							
	Cuppressus	22	2.64	0.14	2	181	£4,863.39
	Cupressus Macrocarpa		17.33	0.19	1	1,363	£7,467.00
Cuppressus Total		**22**	**19.97**	**0.33**	**2**	**1,544**	**£4,863.39**
Cupressocyparis							

Genus	Species	Tree Count	Carbon stored (tonnes)	Carbon sequestered (tonnes)	Avoided Runoff (m3/yr)	Pollution removal (kg/yr)	Replacement Cost (£)
	Cupressocyparis leylandii	307	115.40	3.87	121	9,502	£240,954.05
Cupressocyparis Total		**307**	**115.40**	**3.87**	**121**	**9,502**	**£240,954.05**
Davidia							
	Davidia	2	0.02	0.00	0	4	£75.04
	Davidia involucrata	2	0.02	0.00	0	2	£55.06
Davidia Total		**4**	**0.03**	**0.01**	**0**	**7**	**£130.10**
Elaeagnus							
	Elaeagnus umbellata	1	0.12	0.01	0	9	£274.17
Elaeagnus Total		**1**	**0.12**	**0.01**	**0**	**9**	**£274.17**
Eucalyptus							
	Eucalyptus	1	0.67	0.03	1	77	£732.28
	Eucalyptus Gunnii	33	32.84	1.42	34	2,757	£33,477.83
Eucalyptus Total		**34**	**33.50**	**1.44**	**35**	**2,833**	**£34,210.11**
Fagus							
	Fagus	4	2.44	0.08	4	356	£5,427.28
	Fagus Sylvatica	177	126.49	2.78	230	18,661	£274,062.28
Fagus Total		**181**	**128.93**	**2.87**	**234**	**19,017**	**£279,489.56**
Fallopia							
	Fallopia japonica	110	3.11	0.28	2	361	£8,946.58
Fallopia Total		**110**	**3.11**	**0.28**	**2**	**361**	**£8,946.58**
Ficus							
	Ficus carica	10	0.67	0.07	0	41	£1,705.61
Ficus Total		**10**	**0.67**	**0.07**	**0**	**41**	**£1,705.61**
Fraxinus							
	Fraxinus	135	21.48	0.96	52	4,392	£62,152.13
	Fraxinus Americana	9	0.35	0.03	0	35	£795.86
	Fraxinus Excelsior	1140	386.56	17.86	884	72,645	£968,758.58
	Fraxinus oxycarpa	52	7.99	0.38	18	1,490	£23,517.28
	Fraxinus pennsylvanica	2	0.19	0.01	1	92	£1,145.08
Fraxinus Total		**1338**	**416.57**	**19.25**	**956**	**78,653**	**£1,056,368.93**

Genus	Species	Tree Count	Carbon stored (tonnes)	Carbon sequestered (tonnes)	Avoided Runoff (m3/yr)	Pollution removal (kg/yr)	Replacement Cost (£)
Ginkgo							
	Ginkgo Biloba	59	1.81	0.06	4	433	£11,870.26
Ginkgo Total		**59**	**1.81**	**0.06**	**4**	**433**	**£11,870.26**
Gleditsia							
	Gleditsia tricanthos	43	7.22	0.49	12	1,031	£20,171.57
Gleditsia Total		**43**	**7.22**	**0.49**	**12**	**1,031**	**£20,171.57**
Hedra							
	Hedra Helix	5	0.86	0.08	1	78	£1,110.66
Hedra Total		**5**	**0.86**	**0.08**	**1**	**78**	**£1,110.66**
Hibiscus							
	Hibiscus	4	0.04	0.01	0	6	£154.52
Hibiscus Total		**4**	**0.04**	0.01	**0**	**6**	**£154.52**
Ilex							
	Ilex	293	45.93	2.25	55	4,681	£117,805.44
Ilex Total		**293**	**45.93**	**2.25**	**55**	**4,681**	**£117,805.44**
Juglans							
	Juglans Nigra	26	5.27	0.29	8	706	£11,582.20
	Juglans Regia	18	2.64	0.20	5	422	£5,485.14
Juglans Total		**44**	**7.91**	**0.48**	**13**	**1,128**	**£17,067.34**
Juniperus							
	Juniperus	15	1.32	0.07	1	69	£3,251.57
	Juniperus Virginiana	5	0.98	0.03	1	53	£2,597.31
Juniperus Total		**20**	**2.30**	**0.10**	**1**	**122**	**£5,848.88**
Koelreuteria							
	Koelreuteria Paniculata	2	0.32	0.01	0	16	£576.84
Koelreuteria Total		**2**	**0.32**	**0.01**	**0**	**16**	**£576.84**
Laburnum							
	Laburnum	11	1.25	0.06	0	40	£2,708.47
	Laburnum Anagyroides	19	3.76	0.26	3	225	£5,492.12
Laburnum Total		**30**	**5.01**	**0.32**	**3**	**265**	**£8,200.59**

Genus	Species	Tree Count	Carbon stored (tonnes)	Carbon sequestered (tonnes)	Avoided Runoff (m3/yr)	Pollution removal (kg/yr)	Replacement Cost (£)
Lagerstroemia							
	Lagerstroemia	19	0.19	0.04	0	15	£733.97
Lagerstroemia Total		**19**	**0.19**	**0.04**	**0**	**15**	**£733.97**
Larix							
	Larix	5	0.03	0.01	0	7	£85.55
	Larix	3	0.87	0.03	2	169	£1,857.68
Larix Total		**8**	**0.90**	**0.04**	**2**	**176**	**£1,943.23**
Laurus							
	Laurus nobilis	40	11.42	0.53	8	696	£11,229.75
Laurus Total		**40**	**11.42**	**0.53**	**8**	**696**	**£11,229.75**
Ligustrum							
	Ligustrum	16	2.04	0.09	2	119	£4,653.13
Ligustrum Total		**16**	**2.04**	**0.09**	**2**	**119**	**£4,653.13**
	Liquidambar						
	Liquidambar Styraciflua	154	7.55	0.65	12	1,148	£34,477.38
Liquidambar Total		**154**	**7.55**	**0.65**	**12**	**1,148**	**£34,477.38**
Liriodendron							
	Liriodendron tulipifera	58	4.71	0.30	11	1,032	£14,713.61
Liriodendron Total		**58**	**4.71**	**0.30**	**11**	**1,032**	**£14,713.61**
Magnolia							
	Magnolia	10	1.00	0.07	2	164	£2,382.67
	Magnolia Acuminata	2	0.13	0.01	0	30	£363.14
	Magnolia Grandiflora	4	0.15	0.01	0	8	£408.61
	Magnolia x soulangiana	3	0.45	0.02	0	27	£1,348.77
Magnolia Total		**19**	**1.73**	**0.11**	**2**	**230**	**£4,503.19**
Malus							
	Malus	399	53.56	2.81	43	3,622	£139,308.78
	Malus Baccata	46	6.12	0.42	5	386	£15,306.49
	Malus Floribunda	12	1.92	0.12	2	138	£4,677.64
	Malus Pumila	5	1.09	0.06	1	77	£2,607.33
	Malus Sylvestris	187	47.28	2.40	47	3,684	£126,173.71

Genus	Species	Tree Count	Carbon stored (tonnes)	Carbon sequestered (tonnes)	Avoided Runoff (m3/ yr)	Pollution removal (kg/ yr)	Replacement Cost (£)
Malus Total		**649**	**109.97**	**5.80**	**97**	**7,905**	**£288,073.95**
Mespilus							
	Mespilus germanica	2	0.49	0.03	0	15	£581.76
Mespilus Total		**2**	**0.49**	**0.03**	**0**	**15**	**£581.76**
Metasequoia							
	Metasequoia glyptostroboides	75	1.71	0.15	6	543	£10,448.59
Metasequoia Total		**75**	**1.71**	**0.15**	**6**	**543**	**£10,448.59**
Morus							
	Morus Alba	4	0.82	0.05	1	81	£1,651.12
	Morus Nigra	5	0.35	0.04	0	26	£727.91
Morus Total		**9**	**1.16**	**0.08**	**1**	**107**	**£2,379.03**
Nothofagus							
Nothofagus antartica	*Nothofagus antartica*	14	0.12	0.02	0	28	£466.62
Nothofagus Total		**14**	**0.12**	**0.02**	**0**	**28**	**£466.62**
Olea							
	Olea europaea	10	0.23	0.02	0	16	£649.24
Olea Total		**10**	**0.23**	**0.02**	**0**	**16**	**£649.24**
Parrotia							
	Parrotia Persica	102	13.64	0.49	9	895	£29,934.59
Parrotia Total		**102**	**13.64**	**0.49**	**9**	**895**	**£29,934.59**
Paulownia							
	Paulownia Tomentosa	4	0.19	0.02	0	28	£956.66
Paulownia Total		**4**	**0.19**	**0.02**	**0**	**28**	**£956.66**
Photinia							
	Photinia serrulata	1	0.17	0.01	0	17	£242.61
Photinia Total		**1**	**0.17**	**0.01**	**0**	**17**	**£242.61**
Picea							
	Picea Abies	24	4.79	0.15	8	655	£12,245.70
	Picea Breweriana	1	0.12	0.00	0	21	£302.89
Picea Total		**25**	**4.91**	**0.15**	**9**	**677**	**£12,548.59**

Genus	Species	Tree Count	Carbon stored (tonnes)	Carbon sequestered (tonnes)	Avoided Runoff (m3/yr)	Pollution removal (kg/yr)	Replacement Cost (£)
Pinus							
	Pinus	18	6.08	0.18	14	1,084	£22,266.88
	Pinus Contorta	1	0.42	0.01	1	88	£1,849.83
	Pinus Nigra	111	39.95	1.14	80	6,427	£157,554.02
	Pinus Pinea	30	1.58	0.08	3	236	£6,267.97
	Pinus Radiata	7	1.49	0.06	3	234	£6,660.91
	Pinus Sylvestris	84	19.38	0.82	39	3,210	£70,463.67
Pinus Total		**251**	**68.90**	**2.30**	**140**	**11,278**	**£265,063.28**
Pittosporum							
	Pittosporum tenuifolium	2	0.14	0.01	0	16	£281.24
Pittosporum Total		**2**	**0.14**	**0.01**	**0**	**16**	**£281.24**
Platanus							
	Platanus	230	128.39	3.70	341	27,468	£690,283.14
	Platanus Hybrida	817	379.22	12.06	897	74,445	£1,912,090.36
Platanus Total		**1047**	**507.61**	**15.76**	**1,238**	**101,912**	**£2,602,373.50**
Populus							
	Populus	21	8.61	0.29	16	1,347	£12,330.49
	Populus Alba	64	30.97	1.35	67	5,457	£45,429.89
	Populus Balsamifera	1	0.59	0.02	1	113	£965.30
	Populus nigra	458	301.57	11.76	573	47,224	£414,793.82
	Populus tremula	18	6.71	0.32	15	1,266	£9,714.04
	Populus x canescens	5	3.47	0.14	7	529	£4,771.02
Populus Total		**567**	**351.92**	**13.89**	**680**	**55,935**	**£488,004.56**
Prunus							
	Prunus	1501	402.01	14.12	349	30,581	£536,015.54
	Prunus Avium	279	86.44	2.35	66	5,736	£121,589.76
	Prunus Cerasifera	549	90.43	4.68	103	8,711	£141,919.31
	Prunus domestica	82	18.17	0.93	19	1,581	£23,886.55
	Prunus Dulcis	9	1.74	0.08	1	104	£2,277.99
	Prunus Lusitanica	12	2.14	0.15	1	76	£3,485.39

Genus	Species	Tree Count	Carbon stored (tonnes)	Carbon sequestered (tonnes)	Avoided Runoff (m3/yr)	Pollution removal (kg/yr)	Replacement Cost (£)
	Prunus padus	59	22.39	0.56	23	1,852	£33,075.19
	Prunus Persica	14	8.17	0.19	6	497	£10,207.45
	Prunus Sargentii	9	0.83	0.08	1	41	£1,192.78
	Prunus Serrulata	65	8.45	0.43	4	295	£11,209.81
	Prunus spinosa	3	0.91	0.04	1	67	£1,190.82
	Prunus subhirtella	51	9.53	0.42	7	613	£12,621.97
	Prunus Yedoensis	5	0.05	0.01	0	8	£129.56
Prunus Total		**2638**	**651.27**	**24.06**	**581**	**50,161**	**£898,802.12**
Pseudolarix							
	Pseudolarix Amabilis	1	0.01	0.00	0	1	£35.49
Pseudolarix Total		**1**	**0.01**	**0.00**	**0**	**1**	**£35.49**
Pseudotsuga							
	Pseudotsuga menziesii	4	0.30	0.01	1	113	£2,421.02
Pseudotsuga Total		**4**	**0.30**	**0.01**	**1**	**113**	**£2,421.02**
Pterocarya							
	Pterocarya fraxinifolia	1	0.59	0.02	1	114	£2,225.57
	Pterocarya Stenoptera	3	1.17	0.05	2	188	£4,125.37
Pterocarya Total		**4**	**1.77**	**0.07**	**4**	**303**	**£6,350.94**
Pyrus							
	Pyrus	35	4.03	0.22	4	402	£11,154.82
	Pyrus Calleryana	460	30.97	2.31	37	3,612	£85,777.49
	Pyrus Communis	49	11.59	0.61	12	996	£30,584.92
Pyrus Total		**544**	**46.59**	**3.14**	**53**	**5,009**	**£127,517.23**
Quercus							
	Quercus	7	0.53	0.04	0	36	£849.82
	Quercus Cerris	98	74.87	2.62	115	9,330	£168,296.75
	Quercus Coccinea	12	6.88	0.31	11	940	£17,978.21
	Quercus Ilex	74	53.49	1.60	74	5,964	£130,469.58
	Quercus Palustris	6	2.95	0.11	5	426	£8,357.23
	Quercus petraea	10	5.52	0.10	9	755	£15,186.06

Genus	Species	Tree Count	Carbon stored (tonnes)	Carbon sequestered (tonnes)	Avoided Runoff (m3/yr)	Pollution removal (kg/yr)	Replacement Cost (£)
	Quercus robur	852	568.01	18.77	808	66,213	£1,588,944.07
	Quercus Rubra	41	28.10	0.85	39	3,183	£72,487.74
	Quercus Suber	2	0.05	0.01	0	3	£83.14
	Quercus	907	223.04	11.67	397	32,771	£492,467.82
Quercus Total		**2009**	**963.44**	**36.09**	**1,458**	**119,621**	**£2,495,120.42**
Rhamnus							
	Rhamnus cathartica	2	0.02	0.00	0	4	£77.26
Rhamnus Total		**2**	**0.02**	0.00	**0**	**4**	**£77.26**
Rhus							
	Rhus potaninii	1	0.01	0.00	0	2	£38.63
	Rhus typhrina	12	0.69	0.05	1	61	£2,004.44
Rhus Total		**13**	**0.69**	0.05	**1**	**63**	**£2,043.07**
Robinia							
	Robinia	28	7.59	0.35	12	934	£12,308.98
	Robinia Pseudoacacia	322	147.68	7.20	192	15,598	£218,925.16
Robinia Total		**350**	**155.27**	**7.55**	**204**	**16,533**	**£231,234.14**
Salix							
	Salix	123	71.37	2.22	86	7,035	£256,208.33
	Salix Alba	69	22.93	0.99	41	3,381	£114,973.27
	Salix caprea	45	7.30	0.33	15	1,200	£25,618.88
	Salix Fragilis	23	16.26	0.51	16	1,298	£54,974.32
	Salix Matsudana	24	6.47	0.25	9	721	£22,639.39
Salix Total		**284**	**124.33**	**4.30**	**166**	**13,636**	**£474,414.19**
Sambucus							
	Sambucus Nigra	154	10.01	0.44	7	792	£34,535.85
Sambucus Total		**154**	**10.01**	**0.44**	**7**	**792**	**£34,535.85**
Sequoia							
	Sequoia Sempervirens	11	0.97	0.05	2	139	£3,981.48
Sequoia Total		**11**	**0.97**	**0.05**	**2**	**139**	**£3,981.48**
Sequoiadendron							

Genus	Species	Tree Count	Carbon stored (tonnes)	Carbon sequestered (tonnes)	Avoided Runoff (m3/yr)	Pollution removal (kg/yr)	Replacement Cost (£)
	Sequoiadendron Giganteum	8	5.45	0.10	4	314	£8,520.98
Sequoiadendron Total		**8**	**5.45**	**0.10**	**4**	**314**	**£8,520.98**
Sophora							
	Sophora Japonica	12	4.42	0.07	4	354	£10,748.15
Sophora Total		**12**	**4.42**	**0.07**	**4**	**354**	**£10,748.15**
Sorbus							
	Sorbus	757	162.11	5.68	151	13,457	£430,607.23
	Sorbus aria	167	46.45	1.61	40	3,465	£117,281.53
	Sorbus aucuparia	320	29.76	2.66	26	2,602	£75,849.02
	Sorbus X Thuringiaca	1	0.01	0.00	0	2	£50.50
Sorbus Total		**1245**	**238.33**	**9.95**	**217**	**19,526**	**£623,788.28**
Syringa							
	Syringa vulgaris	1	0.01	0.00	0	2	£50.50
Syringa Total		**1**	**0.01**	**0.00**	**0**	**2**	**£50.50**
Tamarix							
	Tamarix tetrandra	8	0.45	0.04	0	40	£1,041.12
Tamarix Total		**8**	**0.45**	**0.04**	**0**	**40**	**£1,041.12**
Taxodium							
	Taxodium Distichum	12	2.83	0.12	6	536	£10,976.42
Taxodium Total		**12**	**2.83**	**0.12**	**6**	**536**	**£10,976.42**
Taxus							
	Taxus baccata	151	23.23	0.68	32	2,549	£87,619.99
Taxus Total		**151**	**23.23**	**0.68**	**32**	**2,549**	**£87,619.99**
Thuja							
	Thuja	5	0.58	0.03	1	102	£2,013.64
	Thuja Plicata	19	0.62	0.02	5	351	£6,245.46
Thuja Total		**24**	**1.19**	**0.04**	**6**	**453**	**£8,259.10**
Tilia							
	Tilia	203	118.67	3.58	236	19,187	£481,520.01

Genus	Species	Tree Count	Carbon stored (tonnes)	Carbon sequestered (tonnes)	Avoided Runoff (m3/yr)	Pollution removal (kg/yr)	Replacement Cost (£)
	Tilia Americana	3	0.24	0.02	1	74	£978.60
	Tilia Cordata	197	79.06	2.72	177	14,287	£267,178.92
	Tilia Petiolaris	4	1.71	0.06	4	309	£6,742.72
	Tilia platyphyllos	53	22.78	0.80	57	4,665	£94,570.26
	Tilia Tomentosa	3	0.09	0.01	0	15	£412.36
	Tilia x Euchlora	7	2.21	0.08	5	451	£9,009.94
	Tilia x europaea	1470	494.83	17.97	1,253	101,796	£1,983,635.97
Tilia Total		**1940**	**719.60**	**25.23**	**1,734**	**140,784**	**£2,844,048.78**
Trachyparus							
	Trachyparus	1	0.01	0.00	0	1	£275.50
Trachyparus Total		**1**	**0.01**	**0.00**	**0**	**1**	**£275.50**
Tsuga							
	Tsuga Canadensis	1	0.08	0.00	0	2	£277.52
Tsuga Total		**1**	**0.08**	**0.00**	**0**	**2**	**£277.52**
Ulmus							
	Ulmus	119	13.75	0.67	22	1,952	£33,427.04
	Ulmus glabra	5	0.80	0.06	2	159	£1,833.00
	Ulmus minor	5	0.49	0.02	1	68	£993.84
	Ulmus Procera	5	1.75	0.09	3	277	£4,141.21
Ulmus Total		**134**	**16.79**	**0.85**	**28**	**2,455**	**£40,395.09**
Zelkova							
	Zelkova Serrata	3	0.28	0.01	1	88	£1,345.11
Zelkova Total		**3**	**0.28**	**0.01**	**1**	**88**	**£1,345.11**
Unknown Species		370	105.92	5.10	224	18,362	£237,573.07
Grand Total		**22931**	**7419.94**	**293.01**	**12,290**	**1,012,724**	**£19,214,459.94**

Table 5. Tree values by species & genus *exc woodlands

Appendix IV. Climate Assessment Tool

Species	Today	RCP 4.5	RCP 7.0
Acacia dealbata	3	3	2
Acer campestre	3	2	1
Acer capillipes	3	3	2
Acer davidii	1	2	3
Acer japonicum	3	2	1
Acer negundo	3	3	2
Acer palmatum	3	3	3
Acer platanoides	2	1	0
Acer pseudoplatanus	3	2	1
Acer rubrum	3	2	1
Acer saccharinum	3	3	1
Acer saccharum	1	1	0
Aesculus hippocastanum	3	2	1
Ailanthus altissima	1	2	3
Alnus cordata	3	3	2
Alnus glutinosa	3	2	1
Alnus rubra	3	3	2
Amelanchier arborea	3	3	2
Arbutus unedo	2	2	3
Betula nigra	2	3	3
Betula papyrifera	1	0	0
Betula pendula	3	2	1
Betula pubescens	2	1	1
Betula utilis	1	1	0
Carpinus betulus	3	3	1
Carya ovata	3	3	1
Castanea sativa	3	3	2
Catalpa bignonioides	2	3	3
Cedrus deodara	3	3	3
Cedrus libani	3	3	2
Celtis australis	2	3	3
Cercidiphyllum japonicum	3	3	3
Cercis siliquastrum	2	3	3
Chamaecyparis lawsoniana	3	3	2
Corylus colurna	3	3	2
Crataegus monogyna	3	2	1
Cryptomeria japonica	2	3	3
Cupressus macrocarpa	2	3	3
Davidia involucrata	2	2	3
Eucalyptus gunnii	1	1	0
Fagus sylvatica	3	2	1
Ficus carica	2	3	3
Fraxinus americana	3	2	1

Fraxinus excelsior	3	2	1
Fraxinus pennsylvanica	3	3	3
Ginkgo biloba	1	1	2
Juglans nigra	3	3	3
Juniperus virginiana	3	3	3
Koelreuteria paniculata	3	3	2
Laburnum anagyroides	3	3	1
Laurus nobilis	2	3	3
Liquidambar styraciflua	1	1	2
Liriodendron tulipifera	3	3	3
Magnolia acuminata	3	3	1
Magnolia grandiflora	1	1	1
Malus baccata	3	2	1
Malus floribunda	3	2	1
Malus sylvestris	2	2	1
Mespilus germanica	3	3	2
Metasequoia glyptostroboides	2	3	3
Morus alba	2	2	3
Morus nigra	2	2	2
Olea europaea	1	1	3
Parrotia persica	2	2	3
Paulownia tomentosa	2	3	3
Picea abies	1	1	0
Picea breweriana	2	1	0
Pinus contorta	1	1	0

Pinus nigra	3	3	2
Pinus pinea	1	2	3
Pinus radiata	2	3	3
Pinus sylvestris	1	1	0
Pittosporum tenuifolium	3	3	2
Populus alba	3	3	1
Populus balsamifera	1	1	0
Populus nigra	3	3	2
Populus tremula	2	1	1
Populus ×canescens	3	3	3
Prunus avium	3	2	1
Prunus cerasifera	3	3	3
Prunus domestica	3	2	1
Prunus dulcis	2	2	3
Prunus lusitanica	3	3	3
Prunus padus	1	1	0
Prunus persica	1	1	3
Prunus sargentii	2	2	1
Prunus serrulata	3	3	3
Prunus spinosa	3	2	1
Prunus subhirtella	3	3	2
Prunus ×yedoensis	3	3	3
Pseudolarix amabilis	1	1	2
Pseudotsuga menziesii	3	3	2
Pterocarya fraxinifolia	2	3	3

Pterocarya stenoptera	1	1	2
Pyrus calleryana	1	1	1
Pyrus communis	2	2	1
Quercus cerris	3	3	2
Quercus coccinea	3	3	2
Quercus ilex	3	3	3
Quercus palustris	3	3	2
Quercus petraea	3	2	1
Quercus robur	3	2	1
Quercus rubra	1	1	0
Quercus suber	1	2	3
Rhamnus cathartica	3	2	1
Rhus potaninii	2	3	3
Robinia pseudoacacia	3	3	2
Salix alba	3	2	1
Salix caprea	2	2	1
Salix ×fragilis	2	2	3
Sambucus nigra	3	2	1
Sequoia sempervirens	2	2	3
Sequoiadendron giganteum	2	2	1
Sorbus aria	3	2	1
Sorbus aucuparia	2	1	1
Sorbus ×thuringiaca	1	3	3
Syringa vulgaris	3	3	1
Tamarix tetrandra	1	1	2
Taxodium distichum	1	0	1
Taxus baccata	3	2	1
Thuja plicata	3	3	1
Tilia americana	2	2	1
Tilia cordata	2	1	1
Tilia platyphyllos	3	2	1
Tilia tomentosa	3	3	2
Tilia ×euchlora	3	1	1
Tilia ×europaea	3	3	2
Tsuga canadensis	1	1	0
Ulmus glabra	2	2	1
Ulmus minor	2	2	3
Zelkova serrata	1	2	3

Table 6. Species suitability to projected climates.

Ranking of climate suitability based upon the typical species temperature range, and mean annual temp of South London Botanical Institute. This assumption is based purely on temperature, and therefore does not take into account precipitation events.

- Species mostly occurs at this temperature
- Species known to occur at this temperature
- At the edge of the known temperature for the species
- Species not known to occur at this temperature

Appendix V. Notes on Methodology

- i -Tree

i-Tree Eco is designed to use standardised field data from randomly located plots and local hourly air pollution and meteorological data to quantify forest structure and its numerous effects, including:

- Forest structure (e.g., species composition, tree health, leaf area, etc.).
- Amount of pollution removed hourly by trees, and its associated percent air quality improvement throughout a year. Pollution removal is calculated for ozone, sulphur dioxide, nitrogen dioxide, carbon monoxide and particulate matter (<2.5 microns).
- Total carbon stored and net carbon annually sequestered by trees.
- Effects of trees on building energy use and consequent effects on carbon dioxide emissions from power plants.
- Structural value of the forest, as well as the value for air pollution removal and carbon storage and sequestration.
- Potential impact of infestations by pests, such as Asian Longhorned beetle, emerald ash borer, gypsy moth, and Dutch elm disease.

To calculate current carbon storage, biomass for each tree was calculated using equations from the literature and measured tree data. Open-grown, maintained trees tend to have less biomass than predicted by forest-derived biomass equations[18]. To adjust for this difference, biomass results for open-grown urban trees were multiplied by 0.8. No adjustment was made for trees found in natural stand conditions. Tree dry-weight biomass was converted to stored carbon by multiplying by 0.5.

To estimate the gross amount of carbon sequestered annually, average diameter growth from the appropriate genera and diameter class and tree condition was added to the existing tree diameter (year x) to estimate tree diameter and carbon storage in year x+1.

The amount of oxygen produced is estimated from carbon sequestration based on atomic weights: net O2 release (kg/yr) = net C sequestration (kg/yr) × 32/12. To estimate the net carbon sequestration rate, the amount of carbon sequestered as a result of tree growth is reduced by the amount lost resulting from tree mortality. Thus, net carbon sequestration and net annual oxygen production of trees account for decomposition[19].

Recent updates (2011) to air quality modelling are based on improved leaf area index simulations, weather and pollution processing and interpolation, and updated pollutant monetary values. Air pollution removal estimates are derived from calculated hourly tree-canopy resistances for ozone, and sulphur and nitrogen dioxides based on a hybrid of big-leaf and multi-layer canopy deposition models[20]. As the removal of particulate matter by vegetation is not directly related to transpiration, removal rates (deposition velocities) for these pollutants were based on average measured values

[18] Nowak 1994
[19] Nowak, David J., Hoehn, R., and Crane, D. 2007.
[20] Baldocchi 1987, 1988

from the literature[21] [22] that were adjusted depending on leaf phenology and leaf area. Particulate removal incorporated a 50 percent resuspension rate of particles back to the atmosphere[23]. Annual avoided surface runoff is calculated based on rainfall interception by vegetation, specifically the difference between annual runoff with and without vegetation. Although tree leaves, branches and bark may intercept precipitation and thus mitigate surface runoff, only the precipitation intercepted by leaves is accounted for in this analysis. The value of avoided runoff is based on estimated or user-defined local values. As the local values include the cost of treating the water as part of a combined sewage system the lower, national average externality value for the United States is utilised and converted to local currency with user-defined exchange rates.

Replacement Costs were based on valuation procedures of the Council of Tree and Landscape Appraisers, which uses tree species, diameter, condition and location information[24] [25].

For a full review of the model see UFORE (2010) and Nowak and Crane (2000).
For UK implementation see Rogers et al (2014).
Full citation details are located in the bibliography section.

[21] Bidwell and Fraser 1972
[22] Lovett 1994
[23] Zinke 1967
[24] Hollis, 2007
[25] Rogers et al (2012)

- Data Formatting

The Tables below show the list of edits which were made for this project in order to enable the street tree inventory to be processed. In total, 39,645 trees were processed using i-Tree Eco, 16,714 of these trees were considered 'woodlands', and therefore were not used to formulate the contents of this report. These woodland trees were assumed a split of 70% oak, and 30% sycamore, sweet chestnut, beech, and birch, based upon a sample which was then processed into I-Tree. If the condition of the tree was unknown then a 'fair' (82%) condition was applied.

Reason for Removal	Details	Number of records removed
No Tree	Felled Tree	2,707
	Dead Tree	556
	Invalid location data	94
No DBH or Height		266
TOTAL RECORDS REMOVED		**3,623**

Table 7. Inventory Records removed for use in Eco

Incomplete data	Supplied data	Assumed data for I-Tree	
Records supplied with multiple trees within a single record. iTree required each tree to be considered individually	1,184 records containing 2 to 10 trees each	It was assumed that all duplicate trees had the same DBH, Height and crown spread as for the original record.	
Records supplied with a tree number of 0	18 records	18 individual records were listed with a tree number of 0 where DBH, height, and species were present. It was assumed these trees were a single record.	
Records supplied containing unknown species. Species assigned based on inferred split where named or in line with overall population spread for larger sets.	Generic / Broadleaf	*Quercus*	*70%*
		Castanea sativa	*10%*
		Betula pendula	*10%*
		Fagus sylvatica	*10%*

Table 9. Assignment of species within records containing multiple species, class only or unknown

Data	Assumption
Accessibility	All trees are treated as having 100% accessibility in line with standard CAVAT assumptions for street trees and parks.
Safe Life Expectancy	Factor of 95% or 80% applied for all species (40-80 years) except *Fraxinus* species (30%) and *Prunus* species (55%)
Community Tree Index	Reference level for Greenwich applied of 175%
Amenity Value (Species, Habitat, Setting, Heritage)	Assumed no uplift and no reduction on any parameter

Table 8. CAVAT Assumptions

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