Foreword

London is one of the greenest cities in the world – viewed from the air, more than half of the area is lush green space or water. This is a wonderful and precious asset that I am determined we protect to improve quality of life.

Expanding tree cover is a vital part of my vision to create a safer, stronger, greener and cleaner London. Through my RE:Leaf London campaign I aim to increase London’s tree cover by 5% by 2025. This will provide a myriad of benefits helping to cool the city, provide shading, sweeten the air by reducing air pollution and generally add to a more pleasing, attractive urban aesthetic.

In addition to taking steps to increase the numbers of new trees being planted, we must also ensure that we reverse the decline of existing mature trees that has occurred over recent years and seek opportunities to encourage a growth in their numbers.

This is a comprehensive and invaluable guide to how we can work together to achieve this.

Boris Johnson, Mayor of London
Our towns and cities are under pressure. Environmental, social and economic demands are making it difficult for us to create healthy, liveable and economically resilient places.

As we strive to improve our urban environments and tackle city pressures, we are discovering the extent to which trees are a significant contributory factor in achieving these aims.

In the last few years a growing body of research has made it clear that trees are a cost-effective way of bringing a wide range of benefits to the environment, to individual people and to society as a whole. At the same time, studies have shown that in urban areas all over England our trees are under threat. Large trees are being cut down and are being replaced by much smaller varieties. The wrong type of trees are being planted in the wrong places. We need to reverse this trend. This guide will help you to do that and to create healthier, more liveable and more successful places.
Trees are facing enormous pressures in the Capital today; in places their very existence is threatened and scope for new planting increasingly constrained. The London Assembly’s “Chainsaw Massacre” report highlighted the loss of street trees in London indicating that more large species trees are being cut down than are being replaced.

The value of trees is rarely considered in the cost-benefit analysis of developments. This is unfortunate and surprising, as many trees will outlive these new developments and their owners.

We all have a relationship with the natural environment and recognize that nature and greenery are good for our well-being. As well as our intuitive connection with trees, there are proven benefits that have been identified by professionals.

Insurance
5-10 percent of the trees cut down in London (2008-2009) were removed due to insurance claims.

Neglect
Most trees planted will outlive us, so invest in their preparation and maintenance and they could repay you and future generations.

Fear/Ignorance
Falling branches, subsidence, fruit drop, poisonous seeds and other natural events caused by trees can all be managed if you select the right place for the right tree.

Vandalism
Trees and especially young trees are prone to vandalism. Good maintenance and adequate tree protection measures are key in reducing vandalism.

Developments
Some trees may be lost to developments, but our guidance is intended to reduce this loss and assist in finding sites for new trees.

Road Alignment
Street trees can fall victim to carriageway realignment. When they are replaced, the new trees should be of equal merit and also able to grow to their full size.

Climate Change
Some tree species such as Silver Birch may be less successful in the future. We say broaden the range of trees planted and remember right place, right tree.

Old Age
We all get old and trees are no different. However, their life-spans can be extended with good preparation and maintenance during their lifetime.

“By following best practice and taking advice from arboricultural professionals, we can accommodate larger trees in the public realm.”

Dana Skelley, Director of Roads, Transport for London
Green Benefits

Biodiversity
An increase in tree diversity will benefit a host of insects, birds and mammals in our towns and cities.

Aesthetic
Most Architects and Planners would agree that trees bring a sense of place and maturity to schemes, whilst larger species trees help to create a more human scale to old and new developments.

Energy Saving
It has been proven that large trees located alongside buildings can act as a secondary insulating layer, regulating temperatures around buildings. Deciduous trees can also help keep buildings cool in the summer and warmer in the winter.

Air Quality
Trees can help to filter fine particles from the air.

Landscape Screening
Not everything in cities is aesthetically pleasing and in some instances, trees and other vegetation can be of assistance in screening undesirable views.

Property Value
Tree lined streets have been proven to increase house prices by as much as 15%. Most people choose to live in and/or around trees wherever possible.

Cooling
Trees provide cooling by shade and evaporation from their leaves, which means that larger canopy species are better. All trees require adequate rooting space and a water source. Direct contact with the earth is preferable.

Micro Climate
Trees help to reduce extremes of temperature.

We appreciate that it is not possible to retain or locate trees in every new development but we hope that good tree solutions will be incorporated wherever possible.
In reality, trees have to balance with many other considerations that are placed on a project. Whilst the constraints and problems are well known, some of the benefits of trees are less publicised. The following points highlight the broader benefits of trees.

**Cost Reduction**
Trees help improve the environmental performance of buildings – a well planted development can lower heating and cooling costs by 20%.

**Safer Streets**
Tree-lined streets promote calmer driving so are safer for pedestrians and thus enhance both walking and cycling.

**Asset Value Increase**
Maximise your investment. Trees have the potential to increase property values by 7% to 15%.

**Health and Well-being**
Trees improve the urban environment. Trees and urban greening have been shown to reduce stress levels and so increase feelings of well-being.

**Environmental Enhancements**
Turn off the air conditioning and turn down the heating. Urban trees help reduce temperature extremes.

**Stabilising Storms**
Trees help reduce the effects of flash flooding by intercepting rainfall and can readily absorb water through their fibrous roots.

**Social Improvements**
Evidence has shown that in some locations areas with high numbers of trees experience less crime. Trees also help to reduce noise pollution, absorbing and deflecting sound.

**Wildlife Enhancements**
Tree planting is a great way of increasing biodiversity. They are a major element in creating urban green links and wildlife corridors, as part of green infrastructure.

**Create a Sense of Place**
Trees help to improve local identity. Large species trees equal big improvements. Trees can encourage social activities in areas with higher tree numbers, creating stronger and friendlier communities.

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**Environment**
Adapting Cities for Climate Change: the Role of the Green Infrastructure. Built Environment 33 (1) pp 115-133

**Economic**
Anderson LM and Cordel HK (1988)
Influence of Trees on Residential Property Values in Athens, Georgia: A Survey Based on Actual Sales Prices, Landscape and Urban Planning 15: 153-164

**Morales DJ (1980)**
The Contribution of Trees to Residential Property Value: Journal of Arboriculture 6 (11): 305-308

**CABE Space (2005)**

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“The insurance industry understands the importance of urban trees. We believe they can play an important role in keeping our cities cool as climate change takes effect and have taken pro-active steps such as advising on safe distances from buildings for new plantings.”

Swenja Surminski, Association of British Insurers
Technical Solutions

Street Trees
Streets present the best opportunity within the urban realm for larger species trees to grow to maturity. Suitable soil volume and root space is required. Developers and designers should always seek advice from an arboriculturist, highways and structural engineers.

Utilities
Locating new street trees in London is notoriously difficult. Do not rely on ground radar to find all of the utilities. Wherever possible, dig trial holes to avoid disappointment. Most tree roots grow in the first 600mm depth of soil. Services should be located outside this zone.

Newly Constructed Central Reservations
Footways can be a difficult places to locate street trees due to utilities and other obstacles. Therefore, planting in the central reservation can be an alternative solution for street tree planting.

Structural Landscape
These constrained locations should only occur where attempts to plant trees directly into the soil have failed. Maxmise the soil depth, propose the right tree for the location, and always seek professional advice from a landscape architect, arboriculturist and a structural engineer.

Roof Gardens
Although more complex, trees can be planted on roofs in some locations. Developers and designers must seek advice from an arboriculturist and a structural engineer.

Micro Climates/Wind Tunneling
Trees make a significant contribution to improving the microclimate in terms of urban cooling, rain interception and storm water management as well as aiding the environmental performance of buildings.

Planters
Avoid where possible. Planters need more intensive maintenance and can limit tree growth. As always, right place, right tree.

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Key
- Expense of installation
- Benefit
- Maintenance

Time in Years
- 30
- 20
- 10

Developers and designers should always seek advice from an arboriculturist, highways and structural engineers.
In many situations planting trees above structures is the only way to include trees in new developments. The larger growing species offer the greatest benefits for the future of our cities and it is hoped that trees in structured landscapes can be retained to grow to maturity through adequate provisions at an early stage in the development process.

**Build a Green Structural Team**
Involve engineers, architects, landscape architects, arboriculturists and other specialist consultants in an integrated, joined up approach.

**Grow the Team Together**
Early involvement of all consultants is needed to ensure that the technical requirements are fully and adequately integrated – e.g. slab design, drainage, and irrigation systems.

**Know Your Trees and Substrate**
Ensure adequate soil volumes for the selected species so they can grow to maturity. This will require that sufficient soil preparation is undertaken.

**Right Place, Right Tree**
Identify appropriate size of trees for planting to promote longevity.

**Irrigation Maintenance Plan**
Include sustainable water management systems.

**Design and Manage Growth**
Access for regular maintenance operations needs to be provided.

**Invest in Green Futures**
Prepare management plan and costs for long term tree care, allowing for the removal and replacement of failed trees.

“With good planning and design, large trees can assist with the energy efficiency of individual buildings and benefit local areas in our towns and cities by improving local temperatures, wind conditions, and providing water storage.”

*Sarah Cary, Sustainable developments executive, British Land*
“Trees improve the street environment in which Londoners live and work so I will do all I can to save the trees we have and campaign for more trees to protect London’s open spaces.”
Boris Johnson, Mayor of London

“Trees are an essential part of the urban public realm, both practically and aesthetically. They bring many things including focus, shade, calm or simply a view on the changing seasons.”
Robert Noel, Managing Director, London Portfolio, Land Securities

“In any civilised society access to high-quality public space should be a fundamental human right. Everyone should be able to see a tree from their window, sit on a bench, walk to a square and cycle to a park.”
Lord Rogers of Riverside, Rogers Stirk Harbour Partnership

“Trees make a difference to the way we all respond to a particular place and help to create a much needed sense of identity.”
Ann Skippers, President RTPI 2010
St Andrews, Bromley-by-Bow
Developer Approach
(Building for Life 2010 award winner)

St Andrews is a landmark regeneration scheme being delivered in partnership by Barratt Homes, the London Development Agency, the Homes and Communities Agency and Circle Anglia.

The development, currently under construction, will bring 964 high-quality new homes, a brand new NHS health care facility, one hectare of gardens and parks and a new community facility.

“It is crucial for our residents that we provide a pleasant environment for people to live and play and we value the contribution that well-designed open space and greenery can bring in enhancing the quality of our developments.

When completed, the St Andrews development will be a fantastic amenity for the entire local community, providing safe and accessible green space which is a welcome counterbalance to the nearby A12.”

Alastair Baird, Regional Managing Director of Barratt London

**Official Title**
St Andrews, Bromley-by-Bow

**Location**
Bromley-by-Bow, Tower Hamlets

**Owners**
Barratt Homes

**Designed by**
Masterplanned by Allies and Morrison.
Phases 1, 4 and 5 designed by Allies and Morrison.
Phase 2 designed by Maccreanor Lavington.
Phase 3 designed by Glenn Howells

**Development Stage**
Under construction
Maggie’s Centre
Designer Approach

Rogers Stirk Harbour + Partners and the Dan Pearson Studio completed the Maggie’s Cancer Caring Centre in Hammersmith 2008. The building did not impact on a nearby London Plane tree and additional trees/plants were planted creating a comfortable, uplifting space for visitors.

“Maggie’s London is on a very busy corner of the Fulham Palace Road, with one of the only remarkable features being the line of mature London plane trees that form the perimeter boundary of Charing Cross Hospital. The interaction between the building and its surroundings was integral to the design, with views both into and out of the building being carefully managed with the help of courtyard gardens and external landscape. Over 80 new trees now envelop the building to shelter it from the noise and pollution of the busy main road with the positioning of the building being greatly influenced by the line of existing trees. The entrance pathway winding through the existing plane trees instigates a transition between the main hospital and the non-institutional environment of Maggie’s.”

Will Wimshurst, Project Architect, Rogers Stirk Harbour + Partners

Case Study

Official Title
Maggie’s Cancer Caring Centre

Location
Charing Cross Hospital, Hammersmith

Owners
London Borough of Hammersmith PCT

Designed by
Rogers Stirk Harbour + Partners

Development Stage
Completed 2009 and awarded the RIBA Stirling Prize and other awards
Bankside Urban Forest
Planning Approach


Bankside Urban Forest is about making Bankside a better place to live, work and visit. It is a strategy for enhancing public spaces – including streets, pavements, squares and parks – in the Bankside area:

- It encourages investment in public spaces.
- It encourages imaginative and high-quality improvements.
- It also helps to coordinate individual projects with an overall vision. Too often public space projects fail to join up with each other, creating confusing and chaotic places.

A forest is a place with a strong overall character, which allows diverse activities, freedoms and places within it. The aim of the Bankside Urban Forest is to achieve this quality in a city context. The strategy is not literally to turn the area into a forest, although it does create opportunities for greening, using trees, planted walls, and other means.

**Official Title**
Bankside Urban Forest

**Location**
Bankside Southwark

**Owners**
Partnership of above organisations coordinated by Better Bankside

**Designed by**
Witherford Watson Mann

**Development Stage**
Ongoing
This page shows some key documents relating to trees and their implementation in the urban realm. Whilst funding and stakeholders may change over time, the principles for good tree planting are constant and are based on the “right place, right tree” approach and following best practice planting and maintenance guidance as well as seeking advice from experts where relevant.

**Promotion and Funding**
- RE:Leaf (GLA 2011) [www.london.gov.uk/releaf-london](http://www.london.gov.uk/releaf-london)

**London Policy**
- The London Plan
- A Tree and Woodland Framework for London

**Technical Guidance**
- Department for Transport: Manual for Streets I and II
- CLG: Tree Roots in the Built Environment

**Other Guidance**
- CLG: Trees in Towns II
- CABE: From Grey to Green Campaign [www.cabe.org.uk/sustainable-cities](http://www.cabe.org.uk/sustainable-cities)
The Trees & Design Action Group (TDAG) is a pioneering group of individuals, professionals and organisations from both the public and the private sectors who have come together to increase awareness of the role of trees in the built environment throughout the United Kingdom.

The Group shares the collective vision that the location of trees, and all the benefits they bring, can be secured for future generations by influencing the planning, design, construction and management of our urban infrastructure and spaces.

TDAG assists developers, designers and planners in addressing trees issues by seeking to influence policy and pooling existing best practice into one navigable point.

More information about TDAG can be found on www.tdag.org.uk

Organisations and individuals who have contributed to the TDAG include:

- 4D Landscape Design
- Arboricultural Association
- Arup
- Atkins Global
- Barcham Trees
- Barrell Tree Care
- Bennetts Associates
- Blackwood Murray Architects
- Brady Mallalieu Architects
- Bristol Street Trees
- Building Research Establishment (BRE)
- CABE
- Canary Wharf Group
- Capita Symonds
- CgMS Planning Consultants
- CIRIA
- City of London
- City of Westminster
- Civic Trees
- Design for London
- English Heritage
- Environment Agency
- Farreells
- Forestry Commission
- Gardiner & Theobald
- Geosynthetics Ltd
- Glendale Managed Services
- Greater London Authority
- Green Roof Consultancy
- Greening the Gateway Kent & Medway
- Grosvenor
- GVA Grimley
- Hi-Line Consultancy
- ICE (Institution of Civil Engineers)
- ICF (Institute of Chartered Foresters)
- ISA (UK & I Chapter)
- Land Securities
- Landscape Institute
- Leeds Metropolitan University
- London Borough of Hackney
- London Borough of Wandsworth
- London Parks & Green Spaces Forum
- London Tree Officers Association
- Marshell Thompson
- Mouchel
- Myerscough College
- National Association of Tree Officers
- National and London Joint Utilities Groups
- Natural England
- NUAG
- Peter Osborne, Independent Insurer
- Places for People
- RSA Group (formerly Royal and Sun)
- TCPA (Town and Country Planning Association)
- Thames Water
- The Royal Parks
- The Tree Council
- The Woodland Trust
- Torbay City Council
- Transport for London
- Tree and Landscape Evaluation Systems
- Trees for Cities
- Treework Environmental Practice
- University of Essex
- University of Manchester
- Urban Design London
- Victoria BID
- Willerby Landscapes
- Zurich Municipal

... and growing!

The Canopy was written and produced by:

Paul Campbell
Design for London

Sue James
Capita Symonds

Chris Edwards
CABE
“The best friend of man is the tree. When we use the tree respectfully and economically, we have one of the greatest resources on the earth.”

Frank Lloyd Wright