



WOOLLAHRA STREET TREE MASTER PLAN



2014

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Acknowledgements:

Woollahra Council would like to acknowledge the following people for their contribution to the production of this Street Tree Master Plan, 2014.

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The Vision

"Friendship is a sheltering tree."

Samuel Taylor Coleridge



The Vision

Street trees are one of Woollahra's most important natural assets. The Street Tree Master Plan 2014 recognises the collective ecological, environmental, economic, cultural and social contributions of our street trees.

This Master Plan is a guide to aid in the maintenance and provision of street trees across the entire municipality. The objective of this Master Plan is to provide a sustainable and strategic framework that is used for the management of Woollahra's street tree canopy. The Plan will contribute to the collective urban forest for the benefit of all through good planning, maintenance, enhancement and reinforcing our ongoing commitment to the protection of trees.

With this Master Plan, Woollahra will continue to provide a population of healthy street trees which will beautify and define our urban environment today and will become an important legacy for future generations.

1.0 Introduction

1.1 How to Use This Plan

This document is one part of Woollahra's suite of documents used to proactively manage its tree resources. Trees like all living things, grow, age and eventually die. It is therefore important that we have a strategy and a plan to deal with our street trees. The Plan will outline where trees are planted and what species are to be used to replace trees when they eventually reach the end of their useful life. In short, this document is intended to guide the future of all street tree planting throughout Woollahra.

The general rule the Council has followed in developing this plan is to continue the existing street characters and tree planting as much as possible, unless there are specific problems to address or clear opportunities for improvement. Council will seldom remove a healthy street tree. If a certain type of tree is proposed for a street, it does not mean that Council will remove the existing street trees in the short term to implement any proposed new species. This will only happen over time, as trees need replacing or if an opportunity exists to plant a new tree in an otherwise vacant area.

Existing street trees will typically be left to grow for their natural life and will only be removed once they become a safety issue and an unacceptable hazard. The exception to this may be when major street improvements or upgrade works are required or it is planned to revitalise a specific area, but even then tree removal will be avoided where possible.

As a member of the community, the way you might use this plan is outlined below.

1. Read Part 2 & 3 on tree species selection to understand the many complex considerations involved in selecting any street tree and its placement.
2. Refer to Part 4 which has a map of the entire Woollahra Local Government Area (LGA) area and identify the precinct that your street lies within.
3. Once you have located the precinct in which your street lies, you should then refer to that precinct's summary page and the proposed Tree Species listings for each street. The list shows what species of trees are proposed for each street within the precinct.
4. If you are unfamiliar with the tree species, you may want to refer to Part 5 at the end of the document where a brief Tree Data Sheet is provided for all the tree species proposed, giving a photograph, a brief description of the trees and outlining their key features.

We hope you find this document useful and share our passion in making Woollahra a green, sustainable and beautiful area.

1.2 Our Core Values

As custodians of street trees, Woollahra Council bases its street tree management and planning around its core values which include:

- Providing outstanding customer service and a safe and beautiful area in which to live, work and visit;
- Encouraging public participation and education through appropriate community consultation and engagement;
- Selecting the most appropriate planting, based on current knowledge, that respects the needs of the wider community and the environment while minimising undesirable impacts on individual residents and businesses;
- Providing high quality tree care by ensuring that appropriately qualified tree management officers and consultants undertake the assessment of tree related issues and;
- Utilising professional and best-practice industry standards, together with the latest technology, to ensure the highest quality tree planting and ongoing management is undertaken.



Figure 1.1- Bay Street, Double Bay - The great streets of the future are dependent on how we plan our street planting today. (Photo Arterra)

1.3 Context & History

The Woollahra LGA has a rich heritage of street trees planted since the early development of the area. These trees provide a backdrop to the area and form part of the beauty, character and history that continue to make the area such a desirable place to live and work.

It is located on a peninsula of land immediately east of the City of Sydney, with the beautiful Sydney Harbour to the north and western side and the Pacific Ocean to the east. It is home to the southern side of the prominent headlands which define the entry to Port Jackson, otherwise known as Sydney Harbour. It is bound by The City of Sydney LGA to the west, Waverley LGA to the east and south and a small area near Bondi Junction bounded by the Randwick LGA.

Originally, much of the area was dominated by low and windswept native heathlands with some taller open forests in the more protected areas. The indigenous inhabitants were the 'Cadigal' people and their territory stretched along the southern sides of Sydney Harbour from South Head through to what is now known as Petersham. They were a part of the wider 'Eora' group of aborigines. They had a close affinity with the Harbour and a strong affinity with the land that they were tied to by ancestral and religious feelings. The fine balance and way of life of the indigenous community was soon lost with the arrival of the first European settlers.

The development of the area began in the early 1800's. Being so close to the fledgling colonial township of Sydney it was one of the early areas of wider Sydney to be developed. Initially this was through relatively large areas of land being granted to prominent colonial figures to build extensive mansions and villas. Some scattered outposts and fishing villages also occurred in the various sheltered bays and coves, together with market gardens and dairying on the deeper soils by the Harbour. By the mid 1800's Sydney was expanding rapidly and pressures to house the growing population close to the City saw the development of the suburb of Paddington and the beginning of redevelopment and subdivision of the early land grants for more intensive residential development. Towards the later part of the 1800's expansion became very rapid with the expansion of tram services and the Woollahra LGA became a very desirable residential location.

The area was seen as a 'dress circle' position given its relation to the Harbour, and quickly gained prestige as a desirable area in which to reside. The character of the developing suburbs was typified by the allotments ranging from the 20 feet terrace frontages of the workers cottages of West Woollahra and Paddington to villas and mansion sites of 1 acre or more, seen in such locations as Woollahra, Bellevue Hill and Darling Point. Factories and industrial uses in the area were rare which added to the desirability of the area.



Figure 1.2 Woollahra - Local Government Area and Context Plan



Figure 1.3- O'Sullivan Road, Rose Bay (Photo Arterra)



Figure 1.4- View over Bellevue Hill from Kulgoa Road illustrating what a significant contribution trees and gardens make to the municipality (Photo Arterra)



Figure 1.5- View over Double Bay circa 1874 with New South Head Road in the foreground and the then wooded hills of Bellevue Hill and Point Piper in the background (Source: State Library of NSW :a08950h.jpg)



Figure 1.6- View over Vaucluse and Watsons Bay circa 1929 with the reservoir at the end of Black Street in the foreground and the newly developed and rather treeless suburbs towards Watsons Bay in the background (Source: Pictorial History of the Eastern Suburbs, Sharpe 1999)

A steady increase in generously proportioned suburban-style housing spread from the southern areas such as Woollahra and Darling Point towards the areas of Double Bay, Rose Bay and Bellevue Hill. By the early 1900's intensive subdivision and residential development had occurred throughout the remainder of the municipality with Watsons Bay and Vaucluse built out by the early 1930's with housing similar to what we see today.

Some areas such as Edgecliff, Double Bay and Darling Point have seen more intensive development occur past these initial periods, with commercial expansion and numerous apartments being built from the mid 1960's through to the 1980's. Now days, most development in the municipality is restricted to redevelopment of aging individual residences and replacement with ever-more impressive modern dwellings. Some relatively small-scale urban infill apartment construction is also occurring.

The Woollahra LGA is physically characterised as a broad sandstone plateau cut in two by a low lying sand filled valley between Bondi to the south-east and Rose Bay to the north-west. The sand was an extensive deposit of naturally unstable dunes. Extensive heath and scrub covered the more exposed sandstone plateaus. As late as 1909 a considerable amount of heath and woodland vegetation still remained in Vaucluse and Watsons Bay. As housing spread, little thought was given to retaining or replanting any of the original vegetation and today most has gone, except for areas around The Gap and South Head (Benson & Howell 1990).

On the more sheltered Harbour hillsides and gullies taller woodland and forest was more common and would have been dominated by Scribbly Gum (*Eucalyptus haemastoma*), Forest Red Gum (*Eucalyptus tereticornis*), Blackbutt (*Eucalyptus pilularis*) and Smooth-barked Apple (*Angophora costata*). A substantial swampy and sandy area behind Rose Bay was dominated by Broadleaf Paperbark (*Melaleuca quinquenervia*) (Benson & Howell 1990).

The important endemic species that occurred in Woollahra and are relevant to this Master Plan include the following:-

Botanic Name	Common Name
<i>Angophora costata</i>	Smooth-barked Apple
<i>Angophora hispida</i>	Dwarf Apple
<i>Banksia integrifolia</i>	Coastal Banksia
<i>Banksia serrata</i>	Old Man Banksia
<i>Eucalyptus tereticornis</i>	Forest Red Gum
<i>Corymbia gummifera</i>	Red Bloodwood
<i>Eucalyptus piperita</i>	Sydney Peppermint
<i>Eucalyptus pilularis</i>	Blackbutt
<i>Eucalyptus botryoides</i>	Bangalay
<i>Eucalyptus robusta</i>	Swamp Mahogany
<i>Eucalyptus resinifera</i>	Red Mahogany
<i>Eucalyptus haemastoma</i>	Scribbly Gum
<i>Livistona australis</i>	Cabbage Tree Palm
<i>Melaleuca quinquenervia</i>	Broadleaf Paperbark
<i>Acmena smithii</i>	Creek Lilly Pilly
<i>Glochidion ferdinandi</i>	Cheese Tree
<i>Elaeocarpus reticulatus</i>	Blueberry Ash
<i>Synoum glandulosum</i>	Scentless Rosewood

Climate

The climate of the coastal areas of Sydney is a very mild frost-free, warm temperate climate with warm summer temperatures and a relatively mild winter. The average annual rainfall is over 1200mm. This mild climate with good rainfall allows for a great range of species to grow, however, of most importance now is the microclimate of specific locations. This has a significant influence on how well a tree will grow in a particular location.

A major factor for the more coastal areas are the strong and often salt laden winds and the impact these can have on tree health and vigour. Areas with direct exposure to these coastal winds are typically better served by the use of very hardy and salt tolerant species. Tree species intolerant to salt exposure may survive but usually produce poor quality trees with stunted growth and are prone to pest and disease.

1.4 The Street Tree Master Plan

Street tree planting is a very significant component in the appearance of our streets and is a critical factor in the overall impression one has of the public domain. The most significant factor that makes "a place" is often its street tree planting. The development of this Street Tree Master Plan gives recognition to the immense range of issues that are associated with the planting and management of street trees. Street tree management is fundamentally important to the social, environmental and economic well being of the area.

Trees can transform a street, creating definition and consistency in urban character. They can be as important as the built forms in many locations. Interestingly, most "great streets" commonly have evenly and closely spaced trees. The use of a single species usually has the greatest impact on people's positive perception of a street. Deciduous trees are also often considered more appropriate for smaller and narrower urban streets as they permit sun light to reach the streets and adjoining homes in winter.

Street trees play a myriad of functions and roles in the urban setting that effect our daily lives. The Street Tree Master Plan is a plan for the effective short and long term management of this important asset. This document establishes clear directions for the future development, planting and management of street trees within the Woollahra LGA.

The key objectives of the Street Tree Master Plan are to:

- Promote and capitalise on the benefits of Woollahra's existing urban forest whilst minimising the ongoing costs of maintenance;
- Provide direction on the most appropriate species and planting techniques;
- Establish an appropriate street tree species palette that is suited to the environmental conditions of the public realm;
- Maintain, and increase where appropriate, the number of trees and overall canopy coverage of the municipality in line with the values and objectives of the NSW Local Government Association (LGA) Urban Forest Policy;
- Improve street tree establishment and survival rates;
- Guide the maintenance and management of existing and new trees to ensure that they survive and thrive in harsh urban conditions;
- Improve the community's knowledge and understanding of good urban tree and forest management;
- Maintain, reinforce and enhance the leafy characteristics of identified precincts by selecting the most appropriate trees that are suited to the character of the location and relevant site constraints;
- Guide Council decision making and provide a transparent and accountable processes for planting, maintenance, customer requests and development application assessments;
- Assist the Council in the planning, budgeting, implementation, and maintenance of street tree planting by providing guidance on suitable species, locations and planting patterns and
- To recognise risk management principles together with the aims and objectives of the Statewide Best Practice Manual for Trees and Tree Root Management (2003).



Figure 1.7 - Cambridge Ave one of the significant historic avenues of street trees in Vacluse (Photo Arterra)

1.5 The Strategic Framework

The Street Tree Master Plan 2014 is only one part of the Woollahra Tree Management documentation, which provides the necessary tools to effectively manage street trees in the area. The Woollahra Tree Management documents also comprise:-

- Tree Management Policy
- Tree Preservation Order
- Register of Significant Trees
- Street Tree Master Plan
- Individual Open Space Plans of Management

Figure 1.8 shows the relationship between the tree management documentation.

Woollahra Tree Management Policy

The Woollahra Tree Management Policy is the over arching and guiding document regarding trees. It outlines the key principles and processes the Council uses in maintaining its public and private trees, in a safe, healthy and environmentally sensitive way.

It recognises that many people are attracted to live in Woollahra LGA due to the trees and landscape character and that the future environmental benefits of trees may become even more important.

This Policy guides the Street Tree Master Plan by recognising and outlining the following key points:-

- That trees are dynamic living assets that can be difficult to manage;
- Woollahra's tree population is diverse and stems from a variety of periods;
- The leafy character of Woollahra should be maintained and promoted;
- That significant cultural and historic planting is recognised and continued;
- That local resident needs should be considered and that they should not be unreasonably impacted by Council tree planting;
- That there equally needs to be an appropriate balance between public and private amenity;
- Tree replacement programs allow for the emergence of new significant characters and future significant trees;
- That tree maintenance is regular and best-practice and the risks to persons and property are kept within acceptable limits.

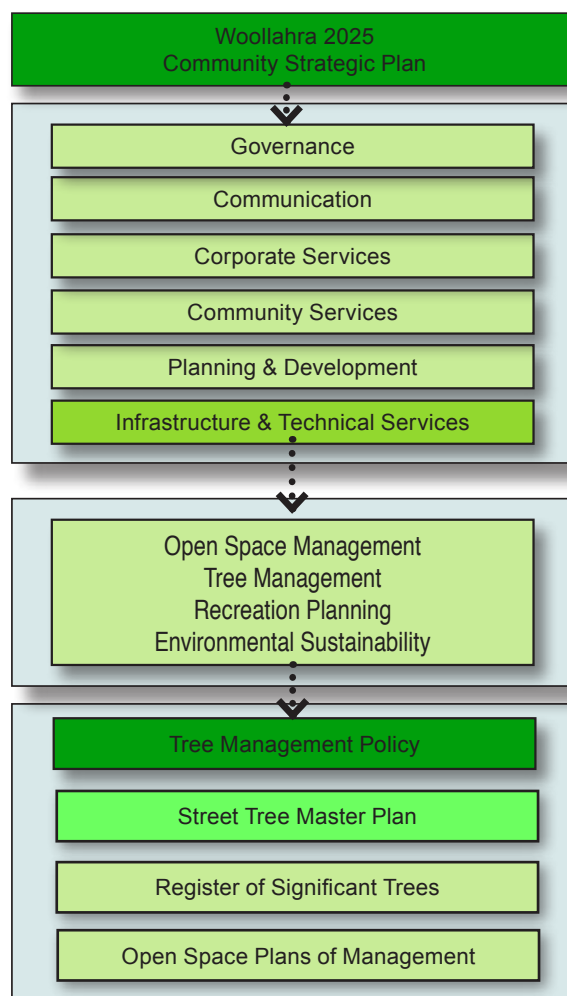


Figure 1.8- Woollahra Strategic Framework

Woollahra Register of Significant Trees

To recognise trees of heritage significance the Council has developed a Register of Significant Trees. This document is a systematic listing of trees, public and private which are identified as being significant under the following assessment criteria:

- Historic and commemorative associations
- Social associations
- Ecological values
- Botanic and scientific values
- Visual and aesthetic qualities

Significant groups of trees, often with very noteworthy individual trees occur throughout the municipality. They are usually related to the original historic estates or older subdivisions. There are also fragmented stands of remnant indigenous vegetation.

A number of street trees are listed in the Council's Register of Significant Trees. Significant trees seldom occur in isolation; rather they form part of a broader context and are important elements in defining the character of the wider landscape and relationships to historic buildings.

The management and protection of trees in NSW are also governed by other various laws and regulations.

Noxious weeds Act 1993

Species that have been declared as noxious plants under the Noxious Weeds Act 1993 or prescribed for Woollahra Local Government area should not be planted within the road reserves and should be removed upon identification.

Existing street tree species, such as Camphor Laurel (*Cinnamomum camphora*), may be listed under the Noxious Weeds Act but are not prescribed for the Woollahra LGA, thereby exempting them from removal without consent.

Roads Act 1993

The removal or pruning of street trees is permitted in association with approved road works under sections 88, 107, 138 and 139 of the Roads Act 1993. Council is largely responsible for all planting, removal and maintenance of street and roadside trees. Declared main arterial or 'State' roads are the responsibility of the Roads and Maritime Services (RMS) (previously the Roads and Traffic Authority).

The municipality of Woollahra contains three 'State' roads that fall under the jurisdiction of the Roads and Maritime Services (RMS). They include New South Head Road, Oxford Street and Old South Head Road (south of its intersection with New South Head Road).

Electricity Supply and the NSW Electricity Supply Act 1995 No 94

Ausgrid is the state owned corporation responsible for the electricity network that provides power to over 1.6 million homes and businesses throughout Sydney, the Hunter and the Central Coast.

The act and relevant regulations require street trees to be trimmed to ensure there is a minimum safety clearance between trees and powerlines. Ausgrid is responsible for doing this work. Where a tree on private property is entering the safety clearances of wires in the street, Ausgrid will also trim the tree for residents, free of charge, to meet their safety obligations. In residential areas the vegetation safety clearance is typically 1.5m around bare, low voltage overhead wires and 2m around the power poles. The safety clearance, however, depends on the voltage of the overhead wire and higher voltage lines may require larger clearances.

If trees are within 3m of Ausgrid powerlines, only vegetation management workers authorised by Ausgrid are permitted to carry out the work. Trimming is carried out by contractors who follow the Australian Standard AS4373-2007 Pruning of Amenity Trees. Ausgrid also employs qualified arborists to audit the work of their contractors. Each contractor also employs arborists to monitor standards and ensure they are maintained.

Woollahra Council and Ausgrid have an ongoing program to convert some conventional overhead wires to Aerial Bundled Conductors (ABC). From the ground ABC looks like a single thick cable however ABC contains the normal group of overhead services bundled together to reduce the cross sectional area necessary for the provision of overhead services. This method

of cabling reduces conflict with trees. Pruning requirements are usually reduced and branches can be trained around the ABC more easily. Priority for ABC conversion is given to major roads and particular problem streets where the conflicts between trees and overhead services are identified.

Green Web

Green Web Sydney was an initiative of the combined Sydney Regional Organisations of Council's (SROC) that promoted the establishment of a 'web' of native vegetation corridors throughout the wider Sydney Region. These corridors aimed to protect, conserve and enhance remnant bushland and as a result improve biodiversity values, habitat quality and connectivity across the Sydney region. The Sydney Metropolitan Catchment Management Authority took over responsibility for the program in 2003 and since then have been working with local Councils, State Government and private landholders to continue implementing the Green Web program.

The protection of 'core' bushland and habitat areas remains of central importance for the conservation of biodiversity, however 'corridors' play an important role in a highly fragmented landscape like Sydney where they are used to link 'core' areas of bushland and habitat.

Woollahra Council has developed plans that identify various streets and other foreshore areas that are considered significant corridors. These have been considered in the preparation of this Street Tree Master Plan and where feasible and practical, the species suggested for these areas gives preference to endemic native species. (Refer Figure 1.9)

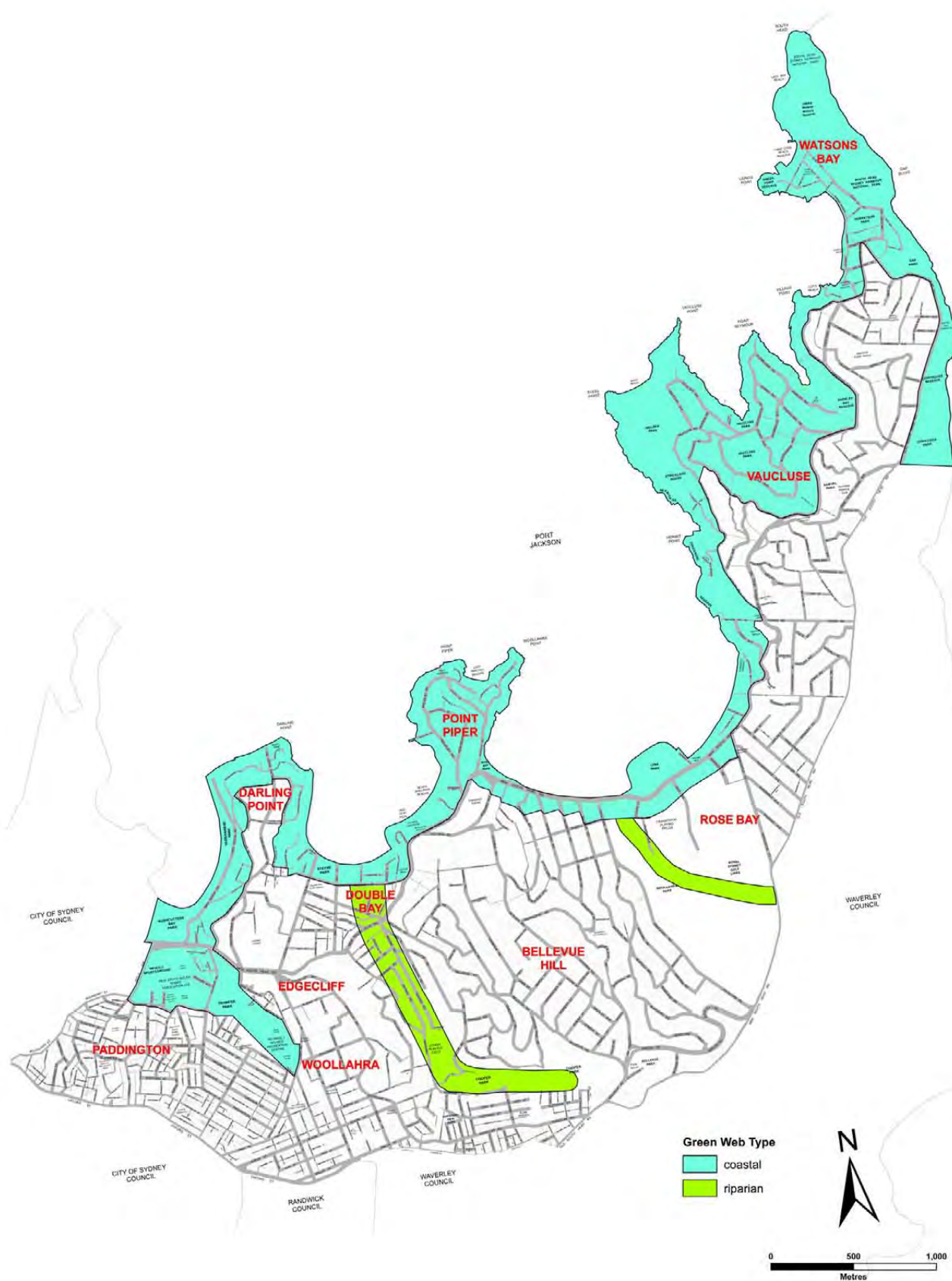


Figure 1.9- Map of the identified Green Web areas of Woollahra

Sydney Harbour Catchment Regional Environmental Plan

Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005 (Harbour REP) covers all the waterways of the Harbour, the foreshores and entire catchment. It establishes a set of planning principles to be used by councils in the preparation of planning instruments relating to the hydrological catchment of the Harbour.

The Harbour REP includes a range of matters for consideration by consent authorities assessing development within the Foreshores and Waterways Area of the Plan. These are aimed at ensuring better and consistent development decisions and include such issues as ecological and scenic quality, built form and design, maintenance of views, public access and recreation and working harbour uses. The Harbour REP includes provisions relating to heritage conservation and wetlands protection and provides planning controls for strategic foreshore sites.

The provisions of the plan have been considered during the planning of street tree matters close to the Harbour and within visually prominent areas fronting the Harbour as the maintenance of scenic quality is a key component of the above Plan in Figure 1.9.

Heritage Act 1977 (amended 1998)

Under the Heritage Act 1977 (amended 1998), the Heritage Branch of the NSW Office of Planning (formerly the NSW Heritage Office) administers and maintains the State Heritage Register (SHR), a register of items and places that are considered to have heritage significance at a state level.

The Heritage Branch also compiles a Heritage Database, which is a collated database of all places listed on statutory heritage lists, including Local Environmental Plans. Listing on the Database has no statutory implications for development at the listed place and simply reflects the listing of the place on the relevant LEP's.

1.6 Benefits of Street Trees

Street trees are a vital urban and suburban element that can transform the character of streets and provide numerous environmental, aesthetic, cultural and economic benefits. In the long term, they often create a very real 'sense of place' and enhance the public domain. Trees are living things that work all day, every day, for all of us to improve our environment and quality of life.

Some of the **environmental** benefits of street tree planting include:-

- Carbon sequestration and storage. A single mature tree can absorb carbon dioxide at a rate of 21 kg/year and release enough oxygen back into the atmosphere to support 2 people's needs.
- Shading of pavement, cars and buildings, thereby reducing our energy consumption. Shading of asphalt pavements can also extend its life.
- Removal of many gaseous pollutants by absorbing them with normal air components through the stomates in the leaf surface. (eg. Sulfur Dioxide, Ozone, Nitrogen Oxide).
- They also capture and help remove particulate matter and dust from the air.
- Acting as natural pollution filters. Their canopies, trunks, roots, and associated soil, filter polluting particulate matter out of stormwater flows and away from drains and creeks. They also slow and reduce the flow of runoff, reducing the amount of pollution that is washed into a drains and ultimately the Harbour. Trees also take up and utilise nutrients like nitrogen, phosphorus, and potassium which can otherwise pollute streams.
- Intercepting and reducing raindrop impact and runoff and thereby reduce erosion of soils and siltation of creeks and drains.
- Providing habitat and a food source for urban fauna.

Some of the **economic** benefits of street tree plantings include:-

- Improving economic performance by increasing the attractiveness of businesses and tourism areas. People typically linger, shop and dine longer in tree-lined streets.
- Reducing energy consumption, through shading and reductions in the "urban heat island" effects.
- Shops, apartments and housing in well planted areas usually attract higher rents and sale prices.

Some of the **social and psychological** benefits of street tree plantings include:-

- Calming traffic, slowing speeds, and providing a buffer between pedestrians and cars. They are also useful in delineating and signifying curves in a street.
- Improved sociological benefits with studies showing strong correlation of well planted areas with reduced social services, domestic violence, and strengthened community ties.
- Creation of feelings of relaxation and well-being. Hospital patients, for example, are shown to recover quicker and with fewer complications when in rooms with views of

trees. Workers and students are also shown to be more productive when their environments have views to trees.

- Improving comfort and general amenity as street tree canopies can shade pedestrians, diminish traffic noise, screen unwanted views and reduce glare.
- Defining precincts and links with history. Tree lined streets can provide orientation, and contribute to the overall urban character.
- Providing a human scale that contrasts with apartments and larger buildings that can otherwise dominate some streets.
- Providing seasonal interest and natural beauty through foliage and their interesting leaf patterns, flowers, bark, fruit and canopy.
- Providing a link to nature and a source of delight.

1.7 Street Trees and the Urban Environment

Although trees present a myriad of benefits we have to recognise that they may also present problems, costs and risks, particularly if poorly planned, planted or managed. A tree is a dynamic living organism and can be a potentially large 'structure'. Every species is genetically determined to achieve certain proportions, within the limits imposed by its immediate environment. A tree gets bigger as it grows and so its mature size has to be accounted for when planning any new planting or when designing new structures close to existing trees.

The interactions between trees and structures are often complex and there are likely to be many factors contributing to any given situation. It is not beneficial to focus concern entirely onto the tree or tree species when developing a tree management strategy.

There is no such thing as the 'perfect' street tree that will fulfil all aspects of our selection criteria. Trees are living entities that can present a variety of forms and habits even within the one species type and within the one street. We must remember that we are planting trees in an artificial and constructed environment that is far removed from its natural habitat. In this situation there are bound to be some negative aspects associated with trees in the urban environment. However, it is generally considered that the benefits that trees contribute to our wider environment usually far outweigh many of the negative aspects.

Woollahra has a wide and varied population of residents, living in apartments, terrace houses, small and large lot suburban housing. Each resident will have a different perspective and interaction with street trees and the wider urban forest. The community as a whole also includes business owners and employees who may visit and engage with the area and its trees every day. As such, Woollahra encompasses many people with an extremely diverse range of interests and attitudes towards street trees. These views are influenced by an equally diverse range of factors such as the persons age, income, education, cultural background and previous exposure to natural environments. At the extreme, some may have an irrational fear of trees, even though statistically

there is far greater chance of being killed by lightning than dying or being injured due to a tree failure.

The most common causes of problems and concerns with trees, including street trees, are:-

- cracking and lifting of pavement and walls;
- clogging of pipes and services;
- obstruction of views;
- obstruction of pedestrian and vehicle access and street signage;
- dropping of leaves and fruit;
- attraction of animals and birds that may cause mess and irritation;
- shedding of larger branches;
- excessive shading or blocking of sunlight.

These are all valid concerns and often they will need to be addressed. People need to be educated and informed about the most appropriate ways to deal with these issues. It also needs to be understood that unnecessary tree removal and the repercussions of individual actions can threaten the long term viability and sustainability of the urban forest. Often many of the common issues can be adequately addressed without tree removal. Appropriate maintenance and pruning can often alleviate most concerns, and appropriate repair or redesign of infrastructure can also be undertaken with little impact to the tree and the tree can continue its valuable contribution for many decades.

It is also important that people recognise, and are informed about, the need for change. Trees are living organisms and as such will grow, mature and eventually die. As trees age they will typically require maintenance and then eventually require removal and replacement. In a natural ecosystem this happens gradually and with little problem or impact to people. In an urban environment an aging or hazardous tree can not be left until it completely fails as is the case in natural areas.

Tree removal can be traumatic and emotional. Often trees have been there for many decades, people have grown up with them and become attached to their presence, their size and their aesthetic appeal. The trees may also represent associations and links to past events and historical places. For these and many other reasons, some parts of the community often have expectations of trees being retained for very long periods. They may even entertain retaining street trees no matter what the costs. There will come a time, however, when the benefit of keeping an individual tree is far outweighed by the risk to life or property and the monetary cost of maintaining it.

In summary, when managing and establishing an urban forest the needs of the 'many' may often have to over ride the desires of the 'few'.

Street trees can evoke a negative perception within the community. The most commonly raised topics are discussed in the sections below.

Allergies

Concern is sometimes raised that particular tree species cause allergies/ irritation and respiratory problems. It is important to note there is a difference between an allergic reaction and an irritation. All flowering plants including grasses produce pollen. Generally species that rely on wind pollination create a greater pollen load to ensure continuation of the species. Pollen in the air can contribute to hayfever, eye allergies and other respiratory problems.

Grass species are by far the most prevalent pollen producers and have a long pollen season. Grasses rely on wind to disperse their microscopic pollens, which are produced in vast quantities. In Sydney the grass pollen season goes from September into January or February depending on prevailing weather.

Plane Trees are often cited as a primary cause for allergies or irritations, however, it is difficult to isolate their contribution to urban pollen levels when there are many different species including grasses producing pollen at the same time. Plane Trees do produce pollen, but they have a limited season of pollen production of only a few weeks in Spring. The young leaves of Plane Trees do also have fine pointed hairs which are gradually shed as the leaves mature. Similarly, the round fruits tend to drop and shatter in autumn. The leaves and seeds have hairs called trichomes which may cause allergic reactions to some people.

The latest research into Plane Tree allergies indicates they may not be the allergen they are anecdotally believed to be. A study titled *“London Plane Tree bioaerosol exposure and allergic sensitisation in Sydney, Australia”* (Dr Euan Tovey MSc, PhD, et al 2011 Dec) indicates that other allergens are more likely to be causing symptoms than *Platanus* pollen. Sixty-four subjects with self-reported *Platanus* symptoms were recruited from inner-urban Sydney. Allergic sensitisation was determined by skin prick test to 13 allergens. Airborne concentrations of *Platanus* pollen, trichomes, and achene fibres, and other pollen and fungal spores, were measured over the spring and summer of 2006-2007. The subjects' allergic symptoms were monitored concurrently.

It was found that *Platanus* pollen constituted 76% of total pollen between July 2006 and April 2007. While Plane Trees were the major pollen source, the season was brief and did not correlate with the subjects' symptoms and only 25% of the test subjects were found to have an allergic reaction to Plane Tree pollen.

The fine spiky hairs (trichomes) from Plane Tree leaves may however play a role as a respiratory and skin irritant. Even though the science may dispel some of the concerns regarding Plane Trees and their contribution to allergies, the perception by the community will always be very different, especially when such debris loads are seen every day throughout the growing and fruiting seasons.

There is no such thing as the perfect street tree. On balance the structural and other characteristics of the Plane tree, its tolerance to difficult conditions and the benefits it provides as a large street tree can often outweigh its negative attributes. Eye allergy symptoms may be reduced by wearing wrap around sunglasses and a hat. This has the potential to exclude the majority of pollen grains affecting the eyes.

Leaf and fruit droppings

All trees, including evergreen species, drop leaves. Strategies that can be employed to reduce the impact of leaf litter in our streets will be the coordination of our street sweeping resources to target problem areas and seasons.

Species with fleshy fruits or leaves that become slippery on decomposition will typically be avoided for selection, particularly in paved areas.

Damage to pavements and structures

Many old established trees in our area can and have caused footpath uplift and cracking. These trees are generally the vigorous and larger growing species. In adhering to the principle of the 'right tree for the right location' future tree selection will be mindful of the potential of various tree species to cause pavement damage.

An important factor is site preparation and the establishment techniques used for new tree planting. To minimise pavement damage, the use of nature strips, median planting, and in-road blisters (where possible) will be considered. , Also maximising the size of the planting 'cut outs' in pavements and the use of flexible pavements will assist.

Factors that commonly contribute to negative interactions between trees and structures include:

- The soil type, structure and depth;
- The tree species and its genetic disposition that influences its size and shape;
- The design of the nearby structures;
- The construction materials, quality of installation and methods adopted;
- The age of the structure (as with trees, most structures have a 'useful life span' and have to be maintained and then replaced within a set time frame); and
- The type of previous land use (eg. industrial sites where soil contamination and/or layers of fill can impede normal biological processes).

Whilst trees do not 'think' - they do react. Despite popular opinion, roots do not have intentions and they cannot 'seek' out resources as is commonly believed. Roots are opportunistic and they do not act 'aggressively'. Root growth occurs via extension at the very end of the root tip and it can only occur when there is sufficient soil oxygen and moisture.

Roots will not grow if there is too much water, not enough oxygen, or if the spaces in the soil are too small or compacted. Knowledge of root growth characteristics can be used in the design of infrastructure in proximity to trees. Equally important is the provision of sufficient space for the growth of healthy trees.

Tree roots are also storage organs and they do have the potential to generate new roots after being cut. In most cases, a tree will generate new roots when roots are cut cleanly, but if roots are torn or crushed then they are most likely to decay and die leading to a potential loss of tree stability.

Property Clearances, Views and Solar Access Pruning

The Council will prune trees to maintain a reasonable and safe clearance between trees and pedestrians, vehicles and private property. Refer to the Woollahra Tree Management Policy 2011, Section 2.7 for detailed guidelines whereby tree pruning applications will be considered.

The Council has developed specific guidelines with regard to tree pruning for clearances and to maintain views and solar access. Refer to the Woollahra Tree Management Policy 2011, Section 2.7 for a diagram that graphically illustrates the proposed clearances and offsets for tree pruning. Refer also 2.12 and 2.13 for the detailed guidelines whereby tree pruning applications will be accepted.

In summary, Council has adopted a policy that allows a 'user pays' system to prune a tree for pre-existing views or solar access. Council will avoid pruning practices which disfigure the tree or are detrimental to its healthy and safe condition.

When planting new street trees Council will consider the impact the mature tree may have on surrounding residents views and will, as far as practicable and reasonable, avoid planting overly large trees that will block previously unencumbered views.

If an existing large trees is removed, any replacement tree will be similar in scale and form and will be planted in close proximity to the original tree. It will be allowed to reach its natural potential unless a pre-existing pruning right is clearly established. In this case Council will consider planting a smaller growing species to limit the need for frequent, ongoing and unsustainable pruning practices.



Figure 1.10 -Infrastructure damage is one of the most common impacts of street tree planting (Photo Arterra)



Figure 1.11 - Views are an integral concern when planning street tree planting in much of the municipality (Photo Arterra)



Figure 1.12 - Despite views there are often opportunities to install small trees that allow views over without excessive and ongoing view pruning (Photo Arterra)

Identified Tree Risks and Hazard Abatement

The degree of risk and hazard a tree poses will vary greatly depending on the size of the tree, the type and location of the defect, the tree species, and the nature of the target areas around the tree. Council undertakes an annual inspection regime of all publicly owned trees in their streets and parks.

The following table outlines some of the strategies that Woollahra Council employs to monitor and reduce risks and hazards associated with its street trees. If a problem is identified, a visual assessment will typically be undertaken by Council officers, and if required, a formal hazard assessment will then be performed and the appropriate risk management strategy determined. Some of the common approaches to hazard abatement are outlined below.

Hazard Abatement Strategy	Description
Monitor trip points	Where no other practical method can be employed to prevent this occurring, a regular trip point inspection program should be instigated and pavement replaced or repaired as necessary.
Flexible pathways	Use of flexible material such as bitumen, paving, or rubber compounds for footpaths and tree surrounds, will reduce the occurrence of trip points and is less expensive and easier than concrete to maintain or replace when necessary.
Re-direct pathways	Where space allows, pathways should be re-directed away from trees/tree roots. It may also be beneficial to reduce the newly directed pathway width.
Bridging Footpaths	Self-supporting construction methods, such as pier and beam could be used to raise pathways above the roots, allowing for root expansion without damaging the pavement. Timber bridges are an effective option.
Root pruning	Non-structural roots could be pruned on a predetermined basis under the guidance of a qualified arborist. This practice could be combined with installation of root barriers where appropriate.
Root barriers	Where future problems can reasonably be foreseen or damage by tree roots can be proven, barriers in specific cases may be installed to deflect roots away from structures or services. These are typically very site-specific and are not encouraged except as a last resort.
Tunnelling for services	Tunnelling (directional boring) rather than open trenching for underground service installation, will greatly reduce public risk as well as reducing injury to tree roots. If located deeply, root contact with the pipelines may be minimised as the majority of roots of most species will remain within the top 1 metre of soil (based on a soil with medium texture).
PVC welded piping	Replacement of old earthenware pipes with PVC or polyurethane will significantly reduce the potential for tree root entry.
Preventative tree maintenance	Trees in public areas should be regularly inspected and maintenance activities, such as dead-wooding and formative pruning carried out as prescribed. Pruning should always be undertaken in accordance with AS 4373-2007.
Raising pathways	Where appropriate, pathways could be raised to reduce direct root pressure on the pavement. Care must be taken not to build up soil against the trunk of a tree. Aeration piping, in conjunction with geotextile fabric and gravel should be installed between root zone and new pavement to aid with gas exchange to roots. Care should be taken to shape the new surface to drain water away from the trunk of the tree.
Insulated (ABC) cabling	Replacement of uninsulated overhead powerlines with insulated and bundled cables will reduce both the clearances needed and the pruning costs and severity.
Undergrounding of power and communications cables	The initially high cost of installing power underground may in fact be a practical option when compared with the projected cost of repeated pruning, the risk that this work involves to operators, the negative impact on tree health, loss of public amenity and of urban forest economic contributions.

1.8 Tree Removals, Replacements and Implementation Strategies

Overview

Trees like all living things, must grow, age and eventually die. Council aims to continue existing street characters and tree planting as much as possible, unless there are specific issues or problems to address or there are clear opportunities for streetscape improvement.

As per Woollahra Tree Management Policy 2011 Section 2.11 Council will generally not consider leaf, fruit, sap or bark drop or bird and bat droppings as valid reasons to prune or remove a street tree. These are natural processes of normal tree growth and wildlife.

Council will seldom remove a healthy street tree. If a certain type of tree is proposed for a street within this Plan, it does not mean that Council will remove the existing street trees in the short term to implement any new species. This will only happen gradually over time, as trees need replacing or if a specific opportunity exists to plant a new tree in an otherwise vacant area.

As such, existing street trees, regardless of species will normally be left to grow for their natural life and will only be removed once they have become a safety issue and an unacceptable hazard and ongoing remedial tree or infrastructure works are unviable. The exception to this policy may be when major street improvements or upgrade works are required or there is plan to revitalise a specific area. Even then, unnecessary tree removal will be avoided where possible.

Street Tree Removals and Replacements

As per Council's Tree Management Policy, Council will aim to maintain and conserve the overall canopy coverage within the LGA. Where a street tree is removed, Council will install a replacement tree at or very close to the removal site. They will follow the spacing and placement guidelines outlined in this document and may locally adjust the placement as needed. The replacement species shall be as outlined for that particular street in the Master Plan. Where a choice of species is provided the species selected will take into consideration the localised environmental and functional and aesthetic aims. The species selected shall be at the discretion of the Council.

Where practicable and feasible the Council shall notify the affected residents of planned tree removals and replacements. If the proposed tree(s) being removed are particularly prominent or significant trees the Council shall also more widely advertise the planned removal at least 2 weeks prior.

Proposed New Street Tree Planting Strategy

The implementation of any new street tree planting needs to be carefully planned and considered.

New street planting will typically not be installed under the canopy or within very close proximity to larger and overhanging trees (either street, park or private). The resulting habit and condition of the newly planted tree is severely compromised, often resulting in a substandard tree form and future maintenance issues. This sort of conflict will be assessed by Council officers prior the finalisation of any planting program.

Unauthorised Planting on Council Land

As defined in the Council's Tree Management Policy 2011, Council may identify situations where resident's plant trees on the Council managed road reserve without the written approval of Council. Although these are sometimes suitable trees, there are a range of issues relating to insurance, public safety, environment and the integrity of overhead and underground services that must be considered.

Council does not permit planting of trees on Council land by persons other than Council staff or contractors and Council may remove any such trees.



Figure 1.13 - New in-road tree planting in Gipps Street, Paddington (Photo Arterra)

2.0 Tree Species Selection

2.1 Overview

The trees selected for our streets may occupy their planting sites for between 50 to 150 years, so species selection is vitally important as they are long term assets. In contrast, most residents will only occupy their houses for 5-10 years.

Most of Woollahra's streets are already planted with well established trees. If these trees are performing well, are in-scale with the street and the surroundings, and provide a consistent and distinctive streetscape character, then generally the Street Tree Master Plan will follow and continue the existing pattern and species.

However, the Council adheres to the principle of the 'right tree for the right location' and some exceptions to this general policy will occur. These include species that have performed poorly, are considered out of scale with the street, or have proven themselves to be particularly damaging to pavements, kerbs, gutters, structures or underground services in that location.

This provides the opportunity to introduce additional tree species to our area and also trial new and better trees and cultivars that show promise as urban street trees.

Importantly, research has consistently shown that the greatest benefits are typically provided by medium to large trees compared to small trees. Large to medium sized trees will typically:-

- Create more shade per tree due to a larger and wider canopy spread;
- Create better shade to buildings as they are taller and can

- cast shadow over adjoining roofs and walls of buildings;
- Intercept larger amounts of particulate pollutants and rainfall due to significantly larger leaf surface areas.
- Absorb more gaseous pollutants;
- Provide canopy cover with potentially less intrusion at the ground level from stems, trunks and lower branches;
- Be less susceptible to careless or malicious vandalism by passers-by once established;
- Be pruned to provide higher canopy clearances over roadways, parking lots and pedestrian footpaths;
- Contribute more to calming and slowing traffic on local streets than small trees.

Large trees may cost more to maintain and remove towards the end of their life. However, the cost to install a tree and then look after it in the first few years to establishment, are essentially the same regardless of whether the tree ultimately grows to a large or small size. Medium and larger growing trees are also commonly longer lived than small trees. Large trees do require larger soil volumes and more physical space above and below ground than small trees, but the ultimate benefits to the community are often exponentially increased over their lifetime. This increased soil volume should be designed and factored in to any new planting. Nevertheless, we must remember that some minor and reasonable infrastructure damage should be tolerated in return for the substantial benefits the trees provide.

Using the paradigm of right tree for the right location, a large tree will only be specified and planted for an area where there is obviously sufficient space, and the growing conditions are suitable for the foreseeable life span of the tree. Smaller trees will also have a place in Woollahra's urban forest for areas where physical space, views or exposure are overriding factors.



Figure 2.1 - Queen Road, Paddington (Photo Arterra)

2.2 Species Mix and Diversity

Species diversity is a critical component in managing sustainable urban forest. The wider the range of botanical species and families, the lower the likelihood of canopy cover degradation and loss in the event of unexpected pest and disease outbreak, or from impacts such as climate change. Increased diversity also helps to support more diversity of fauna, by providing a variety of food and habitat throughout different times of the year.

Species diversity is often measured by the percentage of the tree population in particular families, genera and species. Commonly accepted maximums to aim for are in the range of:-

- 30% - 40% for any one particular family;
- 20% - 30% for any one particular genus and
- 5% - 10% for any one particular species.

The Council's current street tree palette consists of more than 230 different tree species. The species diversity in private properties is likely to be substantially higher, as the constraints on planting (overhead and underground utilities, soil conditions, reduced water availability etc) are substantially reduced.

Whilst the number of the different species is high, it is important to consider the concentration of family and species numbers. A wide range of tree species helps to mitigate the potential impact from any new pest or disease incursion, ensuring any canopy cover loss from such an event is minimised to manageable levels.

The Council aims to achieve species diversity in its street trees by:-

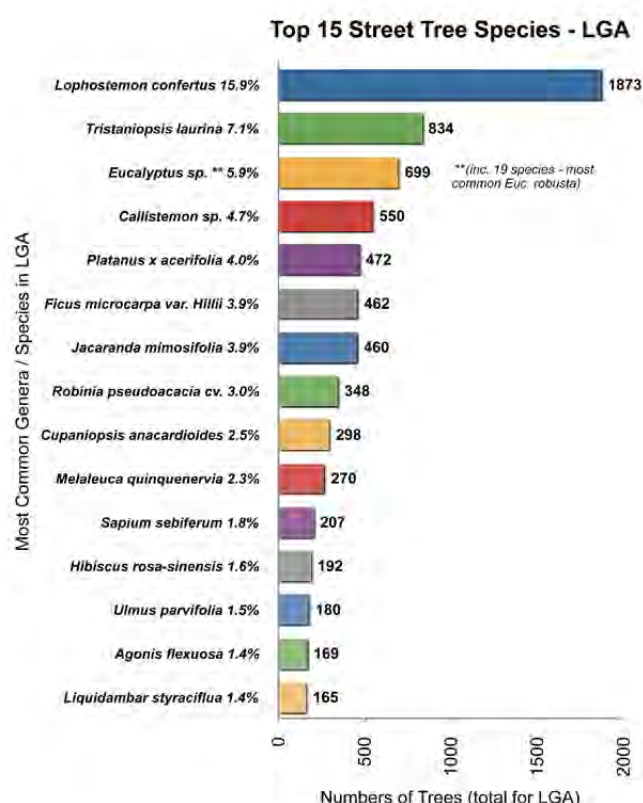
- Implementing the relevant tree species selection and planting guides including this Street Tree Master Plan for all new street tree planting;
- Selecting the trees species for planting depending on their suitability for the site, aesthetic, functional and biological attributes, performance and potential to contribute to the environment, using the philosophy of the "right tree for the right location";
- Assessing Development Applications to ensure that any proposed tree selection is compatible with desired canopy cover levels, biodiversity needs and landscape character for particular precincts or villages;
- Selecting tree species to meet the accepted diversity standards of no more than 40% for families, 30% genera and 10% for any one species;
- Considering known pest and disease impacts when selecting new tree species and managing tree replacements.

An assessment of the Council's street trees species has been undertaken, as outlined in the graph below. In terms of families, it shows that Myrtaceae at more than 38% of the total tree population, is the most common and is used extensively throughout the LGA. This is understandable; this family is native to Australia and includes more than 80 different species planted in the streets and parks alone. This includes trees such as the Eucalypts, Paperbark, Brush Box, Angophora, Corymbia, Turpentine and Lilly Pilly's to name but a few.

In relation to individual species, the Brush Box (*Lophoetmon confertus*) is the most common tree with 15.9% of the total population, followed by Water Gum (*Tristaniopsis laurina*) at 7.1% and Bottlebrush (*Callistemon sp.*) at 4.7%. As the Council is reaching the top of the range considered acceptable for these species, careful ongoing species selection will be required. This becomes more pronounced in individual precincts. For example the use of Brush Box within Bellevue Hill and Rose Bay exceeds 28%, but in Paddington and Edgecliff they represent less than 5% of the street tree population. This means that it may be appropriate to specify the use of Brush Box in suburbs where their current use is low, but may not be as wise to increase their use in suburbs where they already dominate.

This must be balanced by the species that are also planted in private property. These usually included a far more diverse mix of species and usually includes trees that are not commonly planted in the streets. This aids in the dilution of the overall populations noted above, when one considers the urban forest as a whole.

It is important to remember that this is a guiding principle and desire for increased diversity should not override the more appropriate requirement to select the right tree for the right place.



2.3 Street Tree Planting in The Past

Formalised street tree planting in Woollahra by the Council dates back to 1889 when Woollahra Council first passed a resolution to require builders and developers to plant trees as part of the beautification works for the newly developing area as it began to change from a predominantly market gardening and dairying land use to a residential area. Great emphasis on street beautification works continued well into the 20th century.

In 1918 a special committee advised by the Director of the Sydney Botanic Gardens, Joseph Maiden, distributed 321 Indian Laurel Figs (*Ficus microcarpa nitida*) and Brush Box (*Lophostemon confertus*) trees throughout the municipality that year. In 1919 an additional 300 Brush Box were planted together with 150 Camphor Laurels (*Cinnamomum camphora*), mainly throughout Bellevue Hill.

Other notable planting included the continued use of Indian Laurel Fig (*Ficus microcarpa nitida*) in 1921-22 planting programs along with London Plane (*Platanus x acerifolia*) and other deciduous varieties. Maiden also recommended Plum Pine (*Podocarpus elata*) to alternate with Figs on the wider sections of New South Head Road near Cranbrook.

Developers recognising the desirability of the area seized the opportunity with the construction of residential flats, greatly increasing the population in the inter-war period 1920-1945.

Woollahra Council, recognising the pressures of its fast developing area, maintained its tree planting programs and the requirement that developers plant street trees to avoid a hard urban conurbation that was devoid of greenery.

As noted in 'The Urban Garden' by the 1930's, "the Harbourside suburbs of Double Bay and Rose Bay had developed into intensely urban spaces but the built landscape had been softened by rows of trees, gardens and rockeries that had been planted in the streets by Council".

Other notable street tree species planted either by Council or by private individuals in the period from 1890 to 1930 included many:-

- Moreton Bay Fig (*Ficus macrophylla*);
- Port Jackson Fig (*Ficus rubiginosa*);
- Norfolk Island Pine (*Araucaria heterophylla*);
- Cook Pine (*Araucaria columnaris*);
- Red Apple (*Syzygium ingens* syn. *Acmena brachyandra*);
- Coral Tree (*Erythrina x sykesii*);
- Camphor Laurel (*Cinnamomum camphora*)

Trees even in this early period proved to be contentious as evidenced by requests to Council to act on issues such as the blocking of views and leaf and fruit drop which generated heated debate among locals.



Figure 2.2- Wilberforce Avenue, Rose Bay with its row of mature Camphor Laurels (Photo Arterra)

From the 1920's tree planting slowly became more varied with species such as Crepe Myrtle (*Lagerstroemia*), Hill's Weeping Fig (*Ficus microcarpa* var. *hillii*), Golden Privet (*Ligustrum*), common Olive (*Olea europea*) and Ti-tree (*Leptospermum* sp.) as well as more palms being used, such as Canary Island Date Palms (*Phoenix canariensis*) and Washington Palms (*Washingtonia robusta*). The palms were later judged to be too large or inappropriate for some road-side planting, with those planted in O'Sullivan Road being removed in 1929.

The streets of Woollahra LGA are now a legacy of the often well-meaning but inconsistent and ad-hoc approach to street tree planting that has occurred from the mid 20th century. From the earliest days of development of the municipality, Woollahra Council encouraged tree planting to avoid a barren suburban landscape and was quite visionary to the extent of wanting to achieve a verdant garden municipality. To achieve this ideal Council either supplied trees to residents or supplemented the costs of tree planting. These were based on a thematic approach to plantings which were largely carried through well into the 20th century.

Divergent planting variations began to appear from the late 1920's from the original concepts of the 1918 committee resulting from resident complaints regarding the type and size of some plantings. The palette of plants expanded after the removal of Canary Island Date Palms in 1929 from O'Sullivan Rd, mentioned previously, following the donation by Lady Fairfax of large numbers of Jacarandas, Poplars, Hibiscus, Flame Trees, Silky Oaks and Port Jackson Figs for the replanting of O'Sullivan Road and other sites nominated by her.

Following this development the Council expanded the number of species used for street tree plantings with the introduction of Kurrajongs, Eugenias, Jacarandas, Ti-trees, Plantain Bananas, Common Olives, Flowering Gums, Wattles and New Zealand Christmas Trees. It also grew and planted a large number of London Plane trees from its own nursery.

The inter-war years saw a further expansion of street tree plantings as Council kept pace with the development of the municipality and with the continued requirement for builders and developers to plant street trees and the added impetus of state wide tree planting campaigns, such as the visit of HRH Prince Henry Duke of Gloucester, which saw an additional 5000 trees planted in Woollahra between 1936 and 1938.

The decision to adopt a more arbitrary approach to tree species and an opportunistic approach to plantings, combined with ongoing removal of street trees has often led to many incohesive and inconsistent streetscapes, which has only in recent times started to be addressed by Woollahra Council.

There are still remnants of some of the significant trees of these earlier periods that remain and the management of these trees now presents an ongoing concern for Council as they age and decline.

Resident Planting

Residents have contributed to the development of the street tree legacy Woollahra has today. This was achieved through Council encouragement via the free distribution of trees during the early developing years, and later by the urge to plant something personally desirable on the street outside private property. This is reflected in the diversity of tree species and in the distinctively verdant but sometimes compromised character of many of Woollahra's streets.

Despite the often good intentions of residents, this legacy has created its own tree management problems as many trees have been planted without regard to the impact that the mature trees will have on nearby services, property, footpaths, kerb and gutters and the consistency of the streetscape vegetation.

Historically Significant Street Trees

The Street Tree Master Plan will advance the process of addressing streetscape planting cohesion by analysis of the existing planting characters and recommendations for future tree planting species. Some of the historically significant streets that warrant maintaining a similar character are outlined below. They may not be replaced with the exact same species, if they are likely to cause significant problems, but the continuation of trees that present a similar look and character should be used. These streets include:

- O'Sullivan Road – Figs
- Bennett Ave – Phoenix Palms
- South Avenue – Camphor Laurel
- Vickery Ave – Norfolk Island Pines
- Rosemount Ave – London Plane Trees
- Paddington St – Planes and Hill's Weeping Figs
- Ocean Avenue – Figs, Norfolk Island Pines, Candlenut
- Rosebay Ave – Phoenix Palms
- Holland Road – Mixed Palms

2.4 Right Tree, Right Location

One of our key tree selection objectives is to ensure the selection of the 'right tree for the right location'. In other words, to ensure that the selection of the species is appropriate to the local environmental conditions and the constraints of the planting location. The selection of species aims to ensure that the tree makes a long term and positive contribution to environmental, amenity, aesthetic and heritage values of the area and any negative aspects and future hazards are minimized.

There is no 'perfect' street tree, so every selection has some compromise between positive and negative values. This often means providing a balanced decision between native and exotic species, deciduous and evergreen species and the ultimate size of the tree.

The Street Tree Master Plan tree selection criteria is divided into three main considerations :-

- Environmental issues;
- Functional requirements and;
- Aesthetic and design requirements.

Consideration of the criteria outlined in this section should ensure the selection of the species with the most desirable and appropriate characteristics, no matter what their origin or type.

In order to ensure the health and longevity of street trees, aesthetic and design considerations will be accommodated only where optimum conditions for plant growth are available.

The proven performance of the species, in particular to environmental conditions and functional requirements, will be the prime considerations for the proposed street tree selections.

2.5 Environmental Issues

The capacity of trees to establish and grow successfully depends heavily on the environmental conditions at the planting location being within the tolerance range of the species selected. Climate, exposure, soils, landform, pests and diseases, habitat, climate change, diversity and ecology are basic considerations in selecting any tree.

Unlike other street infrastructure trees are living organisms. They need to grow to survive and their behaviour is not always completely predictable or consistent. Being a living thing they:-

- Will typically all need to shed leaves, bark, fruit, flowers at some point throughout the year;
- Need to, and will, respond individually to the natural prevailing conditions;
- Can be easily damaged, disfigured and vandalised (particularly when young);
- Can be severely affected by pests and diseases that can kill or increase the stress on the trees.

Climate

In general the climate experienced in Woollahra is typical of subtropical east-coast Australia. We experience a warm, wet Summer and Autumn and a cool, drier Winter and Spring. The predominant wind in summer is north-easterly and in winter it is southerly with regular strong westerly winds during late winter & spring. Mean daily maximum temperatures (25°C) occur between December and March with mean daily minimum (<10°C) between June and August. Street trees selected will need to be able to tolerate these temperate and climatic conditions.

More important however is the consideration of microclimate for particular locations. Particularly, salt laden onshore winds, exposure, overshadowing caused by taller buildings, wind tunnel effects and reflected heat result in the need for tree species that are particularly hardy and resilient to such adverse conditions.

Geology and soils

The underlying geology and soil provides nutrients and water as well as physical support for trees. Soils differ in the conditions they provide in terms of quantities of nutrients, drainage characteristics and depth.

Woollahra LGA has a mix of soil types and conditions ranging from deep sandy alluvial loams, sandy and skeletal sandstone derived soils through to disturbed soils and landfills of varied and often unknown qualities. Generally the original soil types are derived from Hawkesbury Sandstone with sands or clay subsoils or dune sands over underlying Hawkesbury Sandstone. These are of varying depths which was reflected in the original vegetation cover and the ability of existing trees to grow and maintain good health and vigour.

Soil types greatly influence the health and vigour of trees, with some species more sensitive to soil types than others. Trees will usually grow best in soil types similar to the soils found in their original habitat. However most trees benefit from growing in well drained sandy loams and these are found widely in the Woollahra LGA.

An occasional occurrence found in Woollahra LGA is very shallow soils, where rock is found close to the surface and overlaid by a relatively thin layer of soil. This has considerable impact on the health and vigour of trees, often resulting in stunted growth and trees that succumb to pest and disease attack. Species that can readily adapt to shallow soils will be preferred in these areas. These tend to be the more adaptable Australian native species such as Brush Box (*Lophostemon confertus*), *Angophora* sp. and *Banksia* sp.

We must remember that many areas are also extremely disturbed and have had the original soil stripped and replaced by building debris and landfill materials including garbage. This is particularly common around the Harbour foreshores and the more commercial areas. Trees that adapt to a wide range of soil types and conditions are preferred in these areas.

Topography

The varied topography of Woollahra's LGA has a strong influence on species selection from the more exposed ridge lines of Oxford Street and Old South Head Road to the flat or gently undulating basins of the Rose Bay and Double Bay areas with a backdrop of the elevated escarpments of Victoria Road and Edgecliff Road. Consideration will be given to the original water courses and creeks that flowed through the area that may benefit species that originated from these environments.

At a local level, topography can affect street tree establishment with steeper slopes being better drained than gentler ones, and slopes facing north and west receiving more sunlight and thus being hotter and drying out faster than those facing south or east. Deeper soils also typically accumulate down slope, with up slope areas and ridge lines often having very thin soils.

Tolerance in paved areas

Selected street trees need to tolerate the site conditions of fully paved areas. These trees must have the ability to adapt to lower than optimum soil oxygen levels and compacted and highly modified soil conditions.

Drought tolerance and climate change

Although Woollahra experiences good rainfall averages, and is close to the coast, it is expected that the pattern of water use restrictions and lower than average rainfall that Sydney recently experienced in the early 2000's will be repeated in the long term. Street trees therefore should be capable of surviving an average drought period in reasonable condition without irrigation or reliance on town water supplies. Passive irrigation through the use of Water Sensitive Urban Design may assist with additional water being available to trees. However, in reality many existing streets are not able to be retrofitted without impacting the tree and major infrastructure changes.

Tolerance of pests and diseases

The selected tree species should be resistant to pests and disease. A diversity of species is also important in reducing the potential impact of any devastating diseases on specific tree species.

At the time of drafting this 2014 Master Plan, several major pest and disease threats hang over the Council's tree population. These are typically introduced pests and diseases that can potentially have devastating impacts on certain species of trees.

Specifically this includes pests such as:-

- Sycamore Lace Bug
- Myrtle Rust
- Fusarium Wilt
- Armillaria
- Phytophthora

Overseas precedents show that widespread infestations of harmful pests and diseases can have devastating consequences on parts of our urban tree populations.

Tolerance of atmospheric pollution

The more urban environment and areas traversed by busy arterial roads are subject to high levels of photochemical pollution produced by vehicle exhaust systems. Trees selected for these areas need to be able to tolerate vehicle emissions.

Deciduous trees are generally considerably more tolerant than evergreen species due to the duration over which different species retain their leaves. The longer the life of a leaf the greater the likelihood that the threshold levels for pollutant damage will be exceeded.

Native wildlife habitat

Trees provide shelter, food and other habitat resources for a range of fauna species. Wherever possible, consideration will be given to planting trees which expand on and provide a connection between open spaces or other important vegetated areas, particularly those identified as priority habitat areas in the Council's Green Web areas. This increases the area of available habitat and assists in the movement of native fauna species between those areas. Although native trees are preferable in this regard, exotic species also have some habitat value and should not be discounted altogether. A mix of species may be used where appropriate.

Balance between native and exotic street tree selection

There is much debate about the use of locally indigenous species, that is, species that originally grew within the area. Whilst locally indigenous species may be the most appropriate for local environmental conditions, the growing conditions within the urban environment are often now very different, particularly in a street situation. Disturbed soil profiles, compaction, higher nutrient status, altered drainage patterns and paved surfaces are just a few of the problems with which urban trees must contend. When addressing this issue, a more useful division may be to view this point three ways :-

- Locally indigenous natives;
- Natives from other parts of Australia;
- Exotics trees being from outside of Australia.

Local natives have the advantage of being climatically suited and live in some equilibrium with native pest organisms such as insects and fungi. Use of local natives promotes biodiversity and creation of wildlife corridors, reinforces an 'Australian' sense of place, and can be very drought and exposure resistant.

Natives from other regions may also be climatically adapted and may enjoy freedom from local pest organisms but if they become infested are likely to succumb faster. Exotics may be almost completely free of native pests and diseases but run the risk of being devastated if other exotic pests are accidentally introduced.

Regarding local, or at least NSW east coast native species, and their suitability as inner urban and suburban street trees, the species that are best adapted are usually from drier rainforest and rainforest margins, particularly littoral rainforests where most trees are long lived and shade tolerant or from freshwater

swamps and other areas that are poorly drained and aerated. Species from these later environments are highly resistant to root rot organisms and their root systems are well adapted to adverse soil conditions.

Many of the familiar natives such as Eucalypt trees are from the more open and drier vegetation communities. These species seem to perform poorly as street trees in the more urban areas due to more specialised physiology. They are often adapted to soils of very low nutrient status but with perfect drainage where rot organisms are at a disadvantage. Consequently these species are less tolerant to interference with their root system, including compaction, waterlogging and human damage. Depending on the design principles sought, natives can also display a somewhat variable habit or form which makes it difficult to establish and maintain a formal planted avenue, particularly in close proximity to roads and power lines.

Also they are highly adapted to fire and as a consequence they often 'bolt' in growth for brief periods when post-fire soil nutrients are temporarily higher. As this bolting of growth continues in a high nutrient, fire free environment the tree may become structurally weak and the foliage and bark becomes susceptible to attack by insects and other pests.

An important advantage of exotics in the urban context is that they include many useful deciduous trees which provide greater solar access to the streets through the winter months. Some natives are deciduous but generally in spring or early summer (an inheritance of their monsoonal origins). The red and white cedars (*Toona ciliata*, *Melia azedarach*) are the closest native trees we have to winter deciduous but both suffer from severe pest problems under urban conditions and are unreliable performers.

Many exotic deciduous species have the advantage of hundreds of years of selective breeding which ensures quality stock. They are pollution tolerant, more resilient to root area compaction and damage during construction works. The canopy shape and branch architecture of many exotics also facilitate the pruning and shaping required for urban infrastructure and narrow footpaths.

In summary, both natives and exotics have their strengths and weaknesses for use as street trees. The Street Tree Master Plan will aim to select the right trees for the right locations, for the right reasons and strike an appropriate balance between all the competing factors.

2.6 Functional Issues

Species selected for street tree planting also need to fulfil certain functional criteria to ensure successful establishment and reduced ongoing maintenance and management issues. Ability to provide suitable clearances, the form, and size of the tree are all particularly important to the selection. One must also consider solar access, potential mess from leaf, fruit, flower and bark, drop, the propensity of limb drop, longevity, and contribution to allergies. The ease of maintenance, commercial availability, ability to deal with pruning for overhead power lines and narrow street verges must also be considered.

Proven performance record

Proven performance of the species under the environmental conditions of the locality is vitally important. Trees are a long term investment and substantial amounts of money are often invested in their purchase, planting and maintenance. New species should be trialed on smaller scales before implementing their more widespread use. Similarly, premature failure in one given situation should not necessarily rule out further trials being undertaken of particularly promising new species.

Readily available and transplantable at advanced sizes

The selected plant species must be able to be commercially grown and available in a suitable size for street planting. Generally the tree nursery stock used will be super advanced stock to provide high initial impact and adequate resistance to casual or intentional vandalism.

Acceptable leaf and fruit fall characteristics

The selected species must have an acceptable level of nuisance created by the shedding of leaves and fruit for a street environment. Those with large or heavy seed pods, excessive leaf drop, or fleshy fruit or flowers which may lead to slip hazards will typically be avoided, particularly in paved environments.

Low risk of becoming an environmental weed

Some species are known to be, or have the potential to be serious environmental weeds due to their ability to readily self propagate and invade bushland areas. Species with known weed potential shall typically be avoided, particularly near bushland.

Not prone to major limb shear

Limb loss occurs on an occasional basis for most trees, sometimes due to wind induced mechanical breakage and sometimes for self regulated removal. This is a natural process and must be expected to occur from time to time. Some trees that are particularly renowned for having brittle branches and regular branch drop will typically be avoided for use as street trees.

Long lived

Many of the costs associated with the management of trees in the urban environment are at the early establishment period and over-maturity phases. Using long lived species will help minimise tree management costs over time and lengthens the period where a tree requires minimal financial and resource inputs. The useful life of the tree is also extended.

Capacity to lift pavements and kerbing

No guarantees can be given that a particular street tree species will not interact with nearby kerbs and pavements. However, species that are renowned for vigorous or particularly large root systems that have the potential to cause pavement uplift will be avoided. The exception to this may be where prevailing soil conditions, such as deep sands, mean this damage is less likely. The Council will also investigate the use of alternative footpath materials and designs to minimise tree root / paving interaction.

Low maintenance

Trees preferred by Council will be those that require minimal maintenance after the establishment phase. Trees with excessive maintenance requirements or need to be regularly treated for pest and diseases will not be selected.

Overhead Power Lines

The most significant functional factor that can limit a tree's contribution to the streetscape is the potential conflict with overhead power cables. One solution to this problem is to select very small tree species. This is viable for narrow streets, however with wide streets these small trees are often out of scale with the surrounding streetscape and present a poor environmental, social and aesthetic outcome.

Another solution is to install Aerial Bundled Conductors (ABC). These consist of a number of insulated wires bundled into a single cable which then eliminates the need for the wide stringing assemblies that are the greatest problem from a street tree perspective. The ABC also allows for reduced line clearance standards resulting in less pruning and less impact on the establishing tree canopies.

Where ABC has been installed, Council may review existing tree performance and the nominated species within this plan. Planting larger trees may maximise the benefits received from the ABC. A number of streets warranting the installation or expansion of ABC are outlined in Appendix 5.2.

Underground services and structures

High pressure gas mains and electricity easements sometimes prohibit establishment of trees due to the depth of the service and potential liabilities if the service is damaged. Similarly underground structures, wall footings and the like may also limit the ability of a tree to be planted and successfully grow. These issues are often very localised and do not affect the whole street. Each identified planting site will be assessed by Council officers on its merits to determine the feasibility of establishing the trees with consideration to underground services and structures.

Narrow footpaths and verges

A critical factor in species selection is the width of the footway or verge. Trees planted in a footpath less than 1500mm wide (from building/ boundary line to the back of the kerb) force pedestrians, particularly those with strollers, to walk on the road. As it is far safer to encourage pedestrians to stay on the footpaths, trees will not be planted in verges less than 1500mm in width, unless alternative means of pedestrian thoroughfare can be provided. (eg. one side of the street is provided with a footpath but the opposite side is available to be planted.) In streets with footpaths less than 1500mm, that may already support tree planting, then in-road or shared zone options will be explored for any new tree planting, if possible.

Where site constraints limit the optimum size of street plantings, consideration may be given to mechanisms which minimise or remove the impact of these constraints. These could include for example, replacing overhead power lines with Aerial Bundle Conductors (ABC), planting trees within a median strip or within the road carriageway (where footpaths are narrow but streets are sufficiently wide) and increasing the root zone soil volume by use of vaulted pavements, structural cells, structural soils or similar technologies.



Figure 2.3 - Pruning for power lines has a major influence on street trees with some species more suited to under wire planting than others. The Plum Pines of Leura Road, Double Bay are now less than desirable specimens. (Photo Arterra)

2.7 Aesthetic and Design Issues

Woollahra is primarily a constructed cultural and urban landscape consisting of streets, buildings, parks and some remnant more naturalistic areas. Trees play an important role in enriching the cultural experience of the place and so the aesthetic characteristics of the trees need to be an important selection consideration. We must also consider the trends in property turnover. Increasing residents only stay in the one house for a short time which is evidenced by the fact that more than 42% of residents in Woollahra have moved house in the last 5 years. This is slightly higher than the greater Sydney average. In short, people move houses, but trees are there for 50-150 years and have wider public benefits

Views

As a Harbour-side area, Woollahra LGA contains many areas with either elevated or Harbour edge properties that offer prestigious views to the Harbour and City skylines. The average property price paid in Woollahra is substantially higher than the Sydney average and reflects the value people are prepared to place on such views, the Harbour settings and the proximity to the Sydney CBD. Views are therefore treasured and must be considered as a very valuable commodity.

The interaction between street trees and property values presents a series of very complex considerations. People pay top dollars for views and therefore do not want trees growing up into views and blocking them. In many instances, however, there are still opportunities for small trees to be planted in the street, with houses overlooking trees while retaining their views. Woollahra Council offers a view pruning service in existing cases, please refer to the Woollahra Tree Management Policy 2001 Section 2.12.

Relationship with distinctive landscape characters

The selection of species may be made to reinforce specific historical, cultural or natural associations from our past, particularly the Victorian and Federation era landscape planting.

Ultimate size of tree canopies

Very large trees in confined spaces often result in unacceptably high management costs and impacts to residents. Conversely small growing trees in broad streets rarely contribute significantly to visual quality or canopy coverage.

Trees selected will typically be in scale with the streetscape and where appropriate, Council will utilise the largest appropriate species possible for the given location. The optimum range is not so small that it does not make any contribution to the amenity of the street, and not so large as to dominate and cause significant problems in the mature stages of the tree. Species will be selected such that the ultimate mature size of the tree is appropriate to the street giving consideration to the site constraints, such as verge width, overhead power lines, building alignments and vehicle clearances.

In some instances the constraints imposed by the particular

street, or even a particular location, along the street will limit the optimum size of street tree or even restrict street tree planting altogether. This is the case with the majority of narrow lane ways and narrow footpaths throughout the area.

Form of tree canopies

Selected species should have an appropriate and predictable form, usually with an upright trunk and stable branch structure. Street trees usually need to have a form that allows traffic and pedestrian movements around and under the tree. In the urban areas desirable tree forms include trees with a single straight main trunk supporting a domed crown, or columnar form.

Deciduous versus evergreen

The street tree list includes both evergreen and deciduous trees. Evergreen species provide year round screening, greenery and shelter from winds. Deciduous trees provide stimulating seasonal events whilst maximising winter light.

In residential areas deciduous trees are useful to maximise summer shading and winter light, particularly for buildings located on the southern side of a narrow street with small set backs.

Palms

Woollahra has history of utilising palms within its streets. The continued and strategic use of some palm species may be warranted in some locations, particularly in view sensitive areas or in very tight streets. They can be useful trees in a street as they are typically very space efficient, contribute less to view impacts, and provide or continue a distinctive character.

2.8 Master Species Listing

The following schedule provides a list of the proposed species to be used in the streets of Woollahra. The listing is divided into native trees and exotic species then separates deciduous from evergreen species in each of those broader categories and is further broken down into small medium and large. Some species have very wide applications, while others will only be used in very specific locations.

There are a total 72 street tree species proposed for ongoing use in the Woollahra LGA:-

Tree Origin

28 (39%) are exotic species;
44 (61%) are native species of which;
30 (42% of all tree types) are endemic to the Sydney area.

Tree Types

52 of the species are evergreen trees,
13 of the species are deciduous trees,
7 of the species are palms.

Tree Sizes

24 (33%) are large trees
27 (38%) are medium tree,
21 (29%) are small trees

NATIVE TREES

Botanical Name	Common Name	Canopy Size	Origin	Endemic	Type
<i>Angophora hispida</i>	Dwarf Apple	Small	Native	Endemic	Evergreen
<i>Backhousia citriodora</i>	Lemon Scented Myrtle	Small	Native		Evergreen
<i>Banksia integrifolia</i>	Coast Banksia	Small	Native	Endemic	Evergreen
<i>Banksia serrata</i>	Old Man Banksia	Small	Native	Endemic	Evergreen
<i>Buckinghamia celsissima</i>	Ivory Curl Flower	Small	Native		Evergreen
<i>Elaeocarpus reticulatus</i>	Blueberry Ash	Small	Native	Endemic	Evergreen
<i>Synoum glandulosum</i>	Sentless Rosewood	Small	Native	Endemic	Evergreen
<i>Syzygium luehmannii</i>	Riberry	Small	Native		Evergreen
<i>Acacia binervia</i>	Coastal Myall	Medium	Native	Endemic	Evergreen
<i>Acmena smithii</i>	Creek Lilly-Pilly	Medium	Native	Endemic	Evergreen
<i>Brachychiton acerifolius</i>	Illawarra Flame Tree	Medium	Native	Endemic	Deciduous
<i>Casuarina glauca</i>	Swamp She-Oak	Medium	Native	Endemic	Evergreen
<i>Corymbia eximia</i>	Yellow Bloodwood	Medium	Native	Endemic	Evergreen
<i>Corymbia gummifera</i>	Red Bloodwood	Medium	Native	Endemic	Evergreen
<i>Cupaniopsis anacardioides</i>	Tuckeroo	Medium	Native	Endemic	Evergreen
<i>Elaeocarpus eumundi</i>	Eumundi Quandong	Medium	Native		Evergreen
<i>Eucalyptus haemostoma</i>	Scribbly Gum	Medium	Native	Endemic	Evergreen
<i>Eucalyptus robusta</i>	Swamp Mahogany	Medium	Native	Endemic	Evergreen
<i>Glochidion ferdinandi</i>	Cheese Tree	Medium	Native	Endemic	Evergreen
<i>Harpullia pendula</i>	Tulipwood	Medium	Native		Evergreen
<i>Melaleuca bracteata</i>	Black Tea-Tree	Medium	Native		Evergreen
<i>Stenocarpus sinuatus</i>	Firewheel tree	Medium	Native		Evergreen
<i>Syzygium paniculatum</i>	Magenta Cherry	Medium	Native	Endemic	Evergreen
<i>Tristania laurina</i>	Water Gum	Medium	Native	Endemic	Evergreen
<i>Angophora costata</i>	Sydney Red Gum	Large	Native	Endemic	Evergreen
<i>Angophora floribunda</i>	Rough-barked Apple	Large	Native	Endemic	Evergreen
<i>Argyrodendron actinophyllum</i>	Black Booyong	Large	Native		Evergreen
<i>Corymbia citriodora</i>	Lemon Scented Gum	Large	Native		Evergreen
<i>Corymbia maculata</i>	Spotted gum	Large	Native	Endemic	Evergreen
<i>Eucalyptus botryoides</i>	Bangalay	Large	Native	Endemic	Evergreen
<i>Eucalyptus paniculata</i>	Grey Ironbark	Large	Native	Endemic	Evergreen
<i>Eucalyptus pilularis</i>	Blackbutt	Large	Native	Endemic	Evergreen
<i>Eucalyptus piperita</i>	Sydney Peppermint	Large	Native	Endemic	Evergreen
<i>Eucalyptus tereticornis</i>	Swamp Mahogany	Large	Native	Endemic	Evergreen
<i>Ficus microcarpa</i> var. <i>hillii</i>	Hill's Weeping Fig	Large	Native		Evergreen
<i>Ficus rubiginosa</i>	Port Jackson Fig	Large	Native		Evergreen
<i>Flindersia australis</i>	Native Teak / Crow's Ash	Large	Native		Evergreen
<i>Lophostemon confertus</i>	Brush Box	Large	Native		Evergreen
<i>Melaleuca quinquenervia</i>	Broad-Leaf Paperbark	Large	Native	Endemic	Evergreen
<i>Syncarpia glomulifera</i>	Turpentine	Large	Native	Endemic	Evergreen
<i>Syzygium ingens</i> (syn. <i>Acmena brachyandra</i>)	Red Apple	Large	Native		Evergreen
<i>Waterhousea floribunda</i> "Green Avenue"	Green Avenue Lilly Pilly	Large	Native		Evergreen

EXOTIC TREES

Botanical Name	Common Name	Canopy Size	Origin	Endemic	Type
<i>Arbutus unedo</i>	Strawberry Tree	Small	Exotic		Evergreen
<i>Fraxinus griffithii</i>	Evergreen Ash	Small	Exotic		Evergreen
<i>Gordonia axillaris</i>	Fried-Egg Plant	Small	Exotic		Evergreen
<i>Magnolia grandiflora</i> 'Exmouth'	Bull Bay Magnolia	Small	Exotic		Evergreen
<i>Murraya paniculata</i>	Mock Orange	Small	Exotic		Evergreen
<i>Pyrus calleryana</i> 'Chanticleer'	Callery Pear	Small	Exotic		Deciduous
<i>Xylosma senticosum</i>	Xylosma	Small	Exotic		Evergreen
<i>Caesalpinia ferrea</i>	Leopard Tree	Medium	Exotic		Deciduous
<i>Celtis australis</i>	Nettle Tree	Medium	Exotic		Deciduous
<i>Hibiscus tiliaceus</i>	Coast Cottonwood Tree	Medium	Exotic		Evergreen
<i>Jacaranda mimosifolia</i>	Jacaranda	Medium	Exotic		Deciduous
<i>Koelreuteria bipinnata</i>	Chinese Rain Tree	Medium	Exotic		Deciduous
<i>Lagerstroemia indica</i>	Crepe Myrtle	Medium	Exotic		Deciduous
<i>Pyrus ussuriensis</i>	Manchurian Pear	Medium	Exotic		Deciduous
<i>Sapium sebiferum</i>	Chinese Tallow Tree	Medium	Exotic		Deciduous
<i>Tipuana tipu</i>	Pride of Bolivia	Medium	Exotic		Deciduous
<i>Zelkova serrata</i> 'Green Vase'	Green Vase Zelkova	Medium	Exotic		Deciduous
<i>Araucaria columnaris</i> (syn. <i>A. cookii</i>)	Captain Cook's Pine	Large	Exotic		Evergreen
<i>Araucaria heterophylla</i>	Norfolk Island Pine	Large	Exotic		Evergreen
<i>Cinnamomum camphora</i>	Camphor Laurel	Large	Exotic		Evergreen
<i>Platanus x acerifolia</i> 'Bloodgood'	London Plane	Large	Exotic		Deciduous
<i>Podocarpus elatus</i>	Brown Pine, Illawarra Pine	Large	Exotic		Evergreen
<i>Ulmus parvifolia</i>	Chinese Elm	Large	Exotic		Deciduous

PALM TREES

Botanical Name	Common Name	Canopy Size	Origin	Endemic	Type
<i>Archontophoenix cunninghamiana</i>	Bangaly Palm	Small	Native	Endemic	Palm
<i>Livistona australis</i>	Cabbage Palm	Small	Native	Endemic	Palm
<i>Butia capitata</i>	Wine Palm	Small	Exotic		Palm
<i>Howea forsteriana</i>	Kentia Palm	Small	Exotic		Palm
<i>Washingtonia filifera</i>	American Cotton Palm	Small	Exotic		Palm
<i>Washingtonia robusta</i>	Mexican Fan Palm	Small	Exotic		Palm
<i>Phoenix canariensis</i>	Canary Island Date Palm	Medium	Exotic		Palm

3.0 Street Tree Design Guidelines

3.1 Overview

As a collective asset, street trees are considered and planted to reinforce public realm and landscape design principles, in particular to:-

- Provide more consistency and visual uniformity for each street;
- Enhance the local character of distinct streets or areas by introducing a precinct based planting approach;
- Reinforce and celebrate key corridors and nodal intersections;
- Enhance key cultural and commercial sites;
- Permit solar access to smaller scale residences and narrow streets;
- Facilitate and retain views to the Harbour and city skylines where appropriate and such views already exist and
- Allow the adjoining landscape to take precedence over street tree planting where existing parks adjoin the street.

In adhering to these design principles consideration must be given to site specific site conditions that will determine an individual tree's placements. These include footpath and verge widths, sight line clearances, underground utilities, overhead wires etc. Some of these are more fully outlined in Appendix 5.3 Street tree supply and installation specifications and 5.5 standard tree planting details.

Consistency and visual uniformity for each street

The intention of this principle is to establish a more uniform visual character for each street, creating a sense of identity or 'sense of place' that compliments the surrounding architectural forms and provides streets with a distinctive and recognisable character. Inconsistent street plantings with a large number of different species may be appropriate and can add interest to some streetscapes. However, they are also more difficult to manage and may be inappropriate in some locations or may have a negative impact on the amenity of the street.

In most cases the proposed species will be an extension or continuation of the dominant existing species, if that species has been deemed to be suitable in scale and growth habit.

Precinct based approach

Related to the principles of a more consistent and coordinated theme for individual streets is the concept of 'precinct' planting. All new planting will be based on a precinct approach where tree species selection and planting will help reinforce the distinct physical character of each area and be responsive to its more unique environmental conditions.

Mixed Species

Most streets have been designed to have a small mixture of species. This may, for example, be in the form of one side of the street being a smaller species to fit under overhead wires and a larger species on the other side where absence of services and verge space permit.

The number of species in each street has been limited as the management of single or relatively few species per street is far more efficient for Council. Issues such as tree supply, tree planting, tree maintenance and street cleaning frequency are all more difficult with highly mixed species streets. Having some flexibility however does provide some benefits in allowing Council to select the most appropriate tree for a given location and to deal with changes that often occur, even along the length of the same street in terms of views, verge widths, and service locations, etc.

Some streets may also benefit from a planned alternating mix of species. These are usually designed to cater for the continuation of a pre-existing street condition and importantly to balance the provision of native and exotic trees and/ or deciduous and evergreen trees. Attempts will be made to alternate the two (or more) species to provide for the designed intention of the mixed species street.

The selection of which of the species to plant and the exact location within the street shall be at the sole discretion of the Council. Individual requests by adjoining residents for one or other of the species will typically not be accommodated.

3.2 Precincts

The Local Government Area of Woollahra occupies 1219.7 ha or 12.19 km². It contains 10 recognised suburbs. The precincts defined in the Street Tree Master Plan are based on the suburb boundaries with some minor adjustments to avoid streets being split longitudinally. The suburb boundaries do conform generally to the demarcations of important historical and physical boundaries such as landform, major streets and the dominant character of the built context.

There are 10 precincts. The location and extent of the precincts are displayed on Figure 4.1. They include the following:

Precinct Name	Area (ha)	% of total area
Bellevue Hill	237.1	19.4
Darling Point	66.7	5.5
Double Bay	77.9	6.4
Edgecliff	30.7	2.5
Paddington	116.1	9.5
Point Piper	35.6	2.9
Rose Bay	202.7	16.6
Vaucluse	264.6	21.7
Watsons Bay	62.2	5.1
Woollahra	126.1	10.3

3.3 Street Typology Summary

Streets are varied throughout the municipality, as one would expect, given the range of periods in which the suburbs were developed. There are also many streets that, rather unusually for inner suburban Sydney, have had the electricity supply undergrounded. This is particularly related to the Harbour side suburbs such as:

- Point Piper
- Darling Point
- Double Bay
- Rose Bay (parts)

There are just over 355 separate streets within the municipality (excluding minor laneways). Some are not capable of being planted with street trees due to space restrictions, however most do have opportunities or are currently planted with street trees.

In analysing the current street verges:

- 18% have verges wider than 5m and would be considered large.
- 26% have verges that are 3.5-5.0m wide and would be considered a medium or average size.
- 42% have verges that are between 1.8 - 3.5m wide and would be considered small.
- 14% have verges less than 1.8m wide and would be described as narrow.

The most common street typology within the LGA is a verge that is approximately 3.5 m wide with a 1.5m wide concrete path located on at least one side, and usually both sides, leaving a 1.5m wide grass strip in which to plant street trees. This leaves a reasonable opportunity to plant a wide variety of trees that are set 750mm from the road edge and 750mm from the adjoining path.

There are many particularly narrow verges that are only 1.5-1.8m wide particularly in the Paddington area and portions of Woollahra that are fully paved and represent a considerable challenge to street tree planting.

It is extremely noticable, however, that the area is also blessed with some extremely generous verges (18%) that suit continued large scale tree planting with minimal likely impacts to surrounding infrastructure and buildings. This is a relatively high proportion for early developed suburbs so close to the city.

Reinforcement of major boulevards and avenues

The State and Regional roads in our area include some of the more major roads in eastern Sydney. These major roads form corridors of movement through the area and are often considered somewhat separate in character to the precincts and suburbs they traverse, divide or bound. A key initiative of this Master Plan is to strengthen and re-define the character and role of these streets with a more consistent and unified tree planting schemes for the decades to come.

The main street corridors through the Woollahra LGA are:-

- New South Head Road
- Old South Head Road (typically one side controlled by Waverley Council)
- Oxford Street (typically one side controlled by City of Sydney)
- Hopetoun Avenue
- Victoria Road
- Bellevue Hill Road
- Glenmore Road
- Darling Point Road
- Edgecliff Road
- Ocean Street
- Dover Street

Enhance key cultural and commercial areas

The LGA has a few key commercial and cultural areas such as Double Bay, Rose Bay and Oxford Street. These commercial strips will typically be enhanced and distinguished through special tree planting.

Permit solar access

Species should be selected, where appropriate, that will provide an appropriate level of solar access to dwellings. This applies especially to the more urban areas and terrace houses and smaller dwellings on the southern side of the carriage way during winter. In meeting this objective, consideration needs to be given to other principles such as species diversity and the pre-existing street character.

Allow the borrowed landscape to take precedence around existing parks

Many of the LGA's parks, such as Rushcutters Bay Park-Darling Point, Steyne Park-Double Bay, Lyne Park-Rose Bay, Woollahra Park-Rose Bay and Roberstson Park-Watsons Bay have very prominent boundary tree canopies that often extend well over the adjoining streets. Introduction of competing street tree planting along these streets is usually discouraged in order to avoid intrusive impacts on the park and minimise future canopy conflicts. This also allows major trees along the park edges to 'read' from the street.

3.4 Locating Street Trees

Overview

There are many limitations to the positioning of street trees on footways immediately behind the kerb. Distances from infrastructure elements such as intersections, light and electricity poles, stormwater inlets, underground service pits and bus stops, are important in determining final planting locations. Typically this will require individual site assessment and will be determined on a case by case basis.

Spacing of street trees

Taking into account other relevant clearance requirements, street trees are to be typically planted as follows:

- small trees – spaced at 7 to 10 metre intervals
- medium trees – spaced at 10 to 15 metre intervals
- large trees – spaced at 15 to 20 metre intervals

Width of footpaths and verges

An essential factor in species selection is the width of the footpath proposed for street tree planting. Too small a tree in a wide verge free of obstructions is a lost opportunity for a large shade tree that would greatly add to the appearance of the streetscape. Conversely a tree with too large an ultimate size for the width of the footpath can become both an expensive maintenance item, and a danger to pedestrians and infrastructure.

The Woollahra verges consist primarily of a concrete pathway with a grass strip, or a concrete/asphalt paving from building line to kerb line in the older and more densely populated areas or



Figure 3.1- Old South Road, Woollahra (Photo Arterra)



Figure 3.2- Sometimes the borrowed landscape of adjoining significant open spaces and private trees should take precedence over street tree planting (Photo Arterra)

in commercial precincts. Some areas such as Double Bay have specially designed and detailed stone and concrete unit paving.

For the purposes of street tree planting the Council footways can be divided into four categories:

- very narrow - less than 1500mm;
- narrow - 1500 to 3500mm;
- medium - 3500 to 5000mm and usually a combination of grassed verge and paved footpath;
- wide - greater than 5000mm and usually a combination of grassed verge and paved footpath.

Narrow footways (less than 1500mm)

For the comfortable passage of pedestrians in single file, a clear width of at least 900mm is needed between the back of the tree pit and the building/ boundary line. As the minimum practical width of tree pits is usually 600mm, the minimum width of footway that can be safely planted is 1500mm (600mm plus 900mm), subject to the following conditions: -

- that there are no obstructions overhanging the building line from the front yard of the adjacent property (eg. shrubs, vines, awnings) and;
- that the lower branches of the tree can be pruned to a height of at least 2000mm.

Further problems occur on narrow roads where parking is restricted to one side only. Larger vehicles tend to ride up over the kerb onto the footway to avoid parked cars. In this case trees can only be planted on one side of the street even if the footway is sufficiently wide.

Trees planted in footways less than 1500mm wide (from building line to back of kerb) force pedestrians, particularly those with strollers, to walk on the road. As it is far safer to encourage pedestrians to stay on the footway, trees will not be planted in footways less than 1500mm in width.

It should be noted however that existing trees that have been planted in footways less than 1500mm wide will not be removed (unless considered unsafe), but more trees will not be added to the footway. In streets with footpaths less than 1500mm, which already support or warrant significant tree planting, in-road or shared zone options will be explored for any new trees.

Wide verges with significant grassed portions

Council footpaths with a grassed verge are generally constructed with a 1200-1500mm wide concrete path and 1800mm-5000mm of grass up to the kerb. Trees have traditionally been planted half way between the kerb and the edge of the concrete footway. This method of planting allows a large area of water penetration to the roots of the tree and avoids some of the problems of pavement lifting by the roots of the tree.

In this type of footpath species selection is based upon the overall width of the verge from the building/ boundary line to the back of the kerb, i.e. small trees in narrow footpaths, medium trees in medium footpaths and large trees in wider verges.

Obstructions and other considerations

Overhead Wires and Aerial Bundled Conductors (ABC) - In streets with overhead services, smaller trees will typically be specified to facilitate planting that fits below the cables. Where ABC is already present or is likely to be reasonable to achieve, larger trees may be specified to take advantage of the ABC opportunities.

In-road planting opportunities

Many roads throughout the LGA have opportunities for additional and larger street tree planting, if the planting is located within the vehicular carriage way rather than the verge. This allows trees to be planted in streets that have narrow footpaths or where overhead wires present great challenges to achieving successful tree planting. Any in-road street planting will take into consideration the existing traffic, lot access and parking issues, underlying soil conditions and services. Council will aim to minimise disruptions to, or excessive removal, of parking spaces. Special attention will be paid to achieving appropriate drainage to the tree planting together with adequate soil volumes, road pavement protection, and trunk protection via bollards or barrier kerbs.

Views

In streets where existing views are obviously obtained by residents, Council will endeavour to not unreasonably impact impact on these views with street planting. In these streets often a small scale tree will be provided as a listed option and Council will consider using this smaller growing species in order to maintain views, in line with the Woollahra Tree Management Policy directives. This will still allow tree planting without excessive or unreasonable ongoing view pruning and impact to residents. Often these issues change along the length of any particular street and where views don't exist in parts of a street, Council will seek to install the listed larger growing trees.

3.5 Future Pest and Diseases

Overseas experience shows that widespread infestations of harmful pests and diseases can have devastating consequences on parts of our urban tree populations.

The impact of pest and disease on our urban forest is only likely to increase. This is due to a range of factors, such as climate change - with increased temperatures, storm events, greater or lower rainfall events, and with the increase in international travel and commodity importation with the risk of a pests 'hitching a ride' to Sydney.

At the time of drafting this 2014 Master Plan, several major pest and disease threats hang over Sydney's tree population. These are typically introduced pests and diseases that can potentially have devastating impacts on certain species of trees.

This includes pests such as:-

- Australian Honey Fungus (*Armillaria luteobubalina*)
- Plane Tree Anthracnose (*Apiognomonia veneta*)
- Cuban Laurel Thrips (*Gynaikothrips ficorum*)
- Fig Psyllid (*Mycopsylla fici*)
- Figleaf Beetle (*Poneridia australis*)
- Fusarium Wilt (*Fusarium oxysporum*)
- Painted Apple Moth (*Teia anartoides*)
- Pink Wax Scale (*Ceroplastes rubens*)
- White Rot (*Phellinus* sp.)
- Phytophthora dieback (*Phytophthora cinnamomi*)
- Sycamore Lace Bug (*Corythucha ciliata*)
- Winter Bronzing Bug (*Thaumastocoris* sp.)
- Lantana Bug (*Aconophora compressa*)
- Myrtle Rust (*Uredo rangellii*)

Tree species selection is an important part of managing the risk from pest and diseases. The more diversification, the less risk of canopy cover loss from a major pest or disease event. Similarly, trees once thought to be 'bullet proof' (such as London Plane Trees) can be severely debilitated by previously unknown pests and diseases. Some recently arrived pest and diseases are likely to be impossible to eradicate and treatments so far have proved to be relatively expensive, difficult to apply in street situations or limited in their efficacy.

A tree's ability to cope with a pest or disease depends in-part on the environment in which it is growing. Generally those growing in very tough environments, already coping with compacted soils, shade, wind, pollution, limited water, constricted root system and regular pruning make it difficult for the tree to also deal with pests and diseases.

The selected tree species should be resistant to pests and disease as far as practicable. A diversity of species is also important in reducing the potential impact of any devastating diseases on specific tree species and reducing the likelihood of pest building up and sustaining plague proportions. Two of the more serious pests that are likely to influence the Street Tree Master Plan are outlined below.

Sycamore Lace Bug

Sycamore Lace Bug (*Corythucha ciliata*) is an insect pest introduced from North America that mostly affects Plane Trees. It was most probably introduced to NSW in 2006 and prefers to feed on Plane Trees (*Platanus x acerifolia*). The tiny adults and nymphs feed on the underside of the leaves, causing bronzing, chlorosis and premature leaf drop. Severe infestations can cause complete defoliation. Several consecutive years of infestation may kill affected trees. Control is difficult and expensive.

It is now widespread in the Sydney basin and evidence suggests it is spreading along major transport routes. Establishment of young trees in affected areas is proving to be particularly difficult.

The ultimate affect of this pest on Sydney's Plane Tree population is still unknown but attempts have been made in this 2014 Master Plan to reduce the reliance on Plane Trees. Early evidence from City of Sydney trials into insecticide injections of affected trees is proving promising and should be further assessed and considered for Woollahra.



Figure 3.3 - Sycamore Lace Bug - Adult Stage (Source : www.flickr.com/photos/xx_chaton_xx/5139448467/sizes/l/in/photostream/ - accessed 5/3/11)

Myrtle Rust

Myrtle Rust (*Uredo rangeli*) is a particularly serious fungal disease native to South America. It was first detected in Australia on the Central Coast of NSW in April 2010. This fungus can affect plants belonging to the family Myrtaceae which includes many of the very common native species such as Eucalypts, Paperbarks, Myrtles, Lilly Pillies, Bottlebrush and Water Gums. These trees represent a very large proportion of Woollahra's street trees and native vegetation communities.

It is very easily spread and the NSW Department of Agriculture, Fisheries and Forestry have now advised that they do not believe it can be effectively contained or eradicated. It has recently been listed as a Key Threatening Process under the NSW Threatened Species Act 1995.

When severely infected, young plants and new growth may become stunted and in worst case the plant may die. Little is currently known about the disease and its impacts to plants under wider Australian conditions.

Treatment using various fungicides may be possible, but this will usually prove unviable on trees in public areas. Control will really only apply to smaller plants and controlled nursery environments and the like. The ultimate affect of this disease is currently unknown.

Possible Consequences to the 2014 Street Tree Master Plan

If either of the above pests or diseases, or other such outbreaks, prove to substantially alter the viability of any of the existing or proposed street tree species within the Plan, then the Council shall reserve the right to alter the species shown for planting on any given street to a species that is either immune or less susceptible to the pest or disease. All attempts shall be made to match the species with that of a similar form, size and habit.



Figure 3.4 - Illustration of the purple discolouration and distortion of the leaves and the prominent yellow fruiting spores of the Myrtle Rust. (Source : www.flickr.com/photos/48395196@N05/5402288905/sizes/ol/in/photostream/ - accessed 5/3/11)

4.0 Precinct Plans

This section of the Street Tree Master Plan provides the main guide for future tree planting in Council's streets. The precinct approach addresses local issues and provides appropriate treatments for each precinct on an individual street by street basis.

The design objectives for each precinct are outlined, the precinct conditions are described and the nominated tree species have been provided for every street.

Figure 4.1 indicates the location and extent of precincts across the Local Government Area.

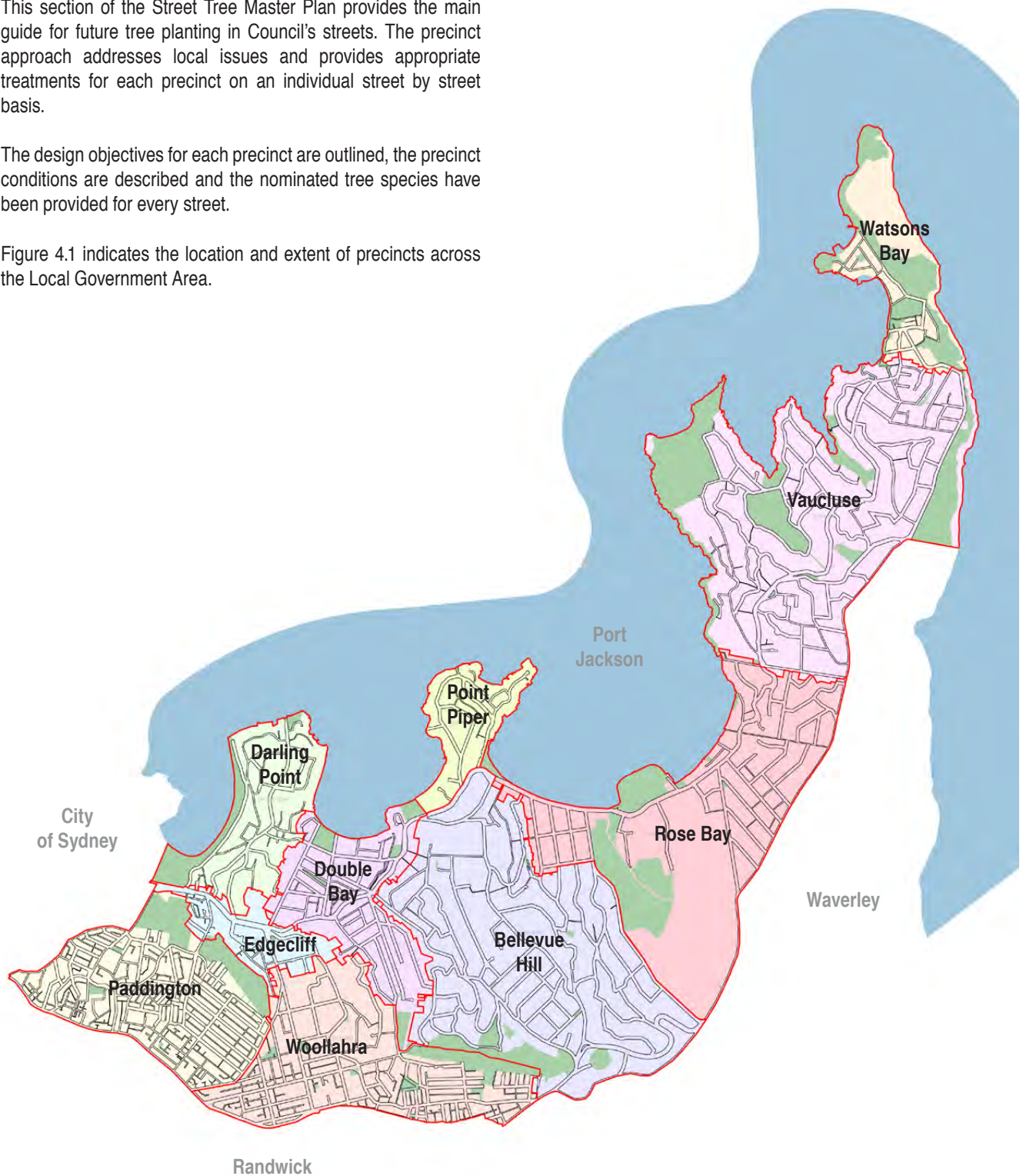


Figure 4.1- Map of the Precincts that have been used throughout the Street Tree Master Plan

4.1 Bellevue Hill

History and Context

Bellevue Hill is an established residential area, set on a high and hilly area. Bellevue Hill, meaning “a beautiful view” was named by Governor Macquarie in 1820. Bellevue Hill is renowned for its numerous grand and gracious estates and historic residences such as Leura, Barford, Caerlon, Aspinall House, McIntyre and Fairfax House and many more. Two of Australia's most prominent architects in the first half of the 20th century, F.Glen Gilling and Professor Leslie Wilkinson also left their gracious influences on many homes in the area.

Settlement of the area dates from 1820 when the first land grants were made, although population was minimal until the 1850's. This land was used mainly for grazing and farming. Growth took place in the later 1800's, with rapid development in the early 1900's, particularly during the 1920's. Expansion continued during the interwar period and the immediate post-war years. Major features of the area include Cooper Park named after Sir William Cooper, Scots College, and Cranbrook School for Boys. The house “Cranbrook” was built in 1848 for Sir Robert Tooth, brewery magnate, and in the early 1900's was the residence of three successive NSW Governors. Sir Samuel Hordern bought the site in 1917 with the aim of establishing the Cranbrook school.

Physical Influences

Bellevue Hill at 237.1ha (19.4% of total area) is one of the largest precincts and contains approximately 2500 street trees (21% of total population).

Bellevue Hill is 5.5kms from the CBD of Sydney and is positioned on hilly land with commanding views of both Sydney Harbour and the Pacific Ocean. As a consequence the terrain is steep with frequent exposed ridges, rock outcrops and sandy soils. However, good examples of street tree plantings can be found in many streets.

Bellevue Hill's dominant soil type is the coastal sand dune fields, with an original vegetation type that would have been marshes and wetlands on the low lying areas and health lands and scrub on the more elevated areas. The soil is characteristically sand to sandy loams.

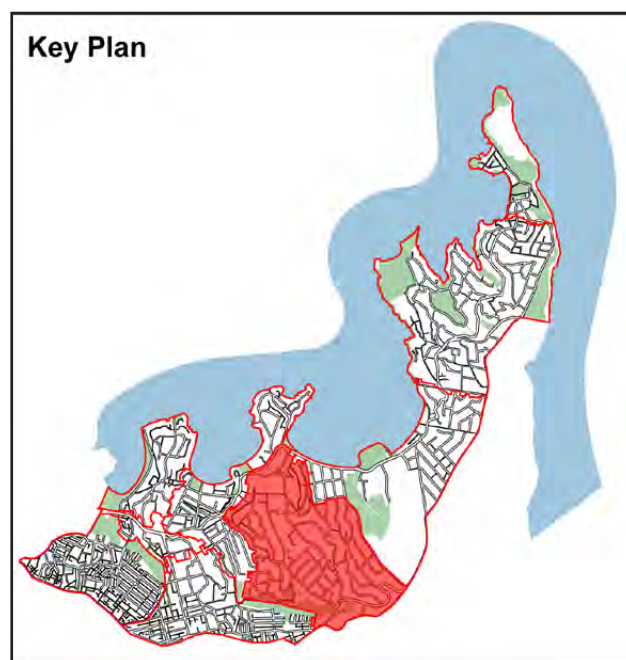


Figure 4.2 - Victoria Road, Bellevue Hill (Photo Arterra)

Existing Streetscape Character

From European settlement the original landscape has been dramatically transformed and very little remains to be found. Today, there are some remnants of earlier grand avenue planting including Outeniqua Yellow-wood (*Afrocarpus falcatus* syn. *Podocarpus falcatus*), Canary Island Date Palms, Washington Palms and other palms, along with the more contemporary planting of Brush Box, Hill's Weeping Fig, Camphor Laurel and Water Gums.

Bellevue Hill is primarily a privileged suburb for families. Large homes, large gardens and two of Australia's most exclusive private boys schools - Cranbrook and Scots dominate. It is characterised by a large variety of established trees in the numerous great gardens. The streetscapes reflect a similar character with many significantly sized street trees.

Bellevue Hill is defined by:

- Relatively steep hillsides and escarpments;
- Relatively exposed aspects to the east and north
- Exclusive private schools;
- Remnant larger estates and mansions, many houses set well back from the street boundary and with wide frontages;
- Wide and curvilinear style streets running broadly across the slopes;
- Frequent elevated views to the Harbour and golf courses in the valley;
- Influenced by large adjoining open spaces such as Woollahra Park, Woollahra and Royal Sydney Golf Courses as well as Cooper Park with its accompanying large trees;
- Significant numbers of streets planted with established Brush Box;
- Many remaining Hill's Weeping Figs of very large proportions.

Current dominant species

- | | |
|--|--------------------|
| • <i>Lophostemon confertus</i> | Brush Box |
| • <i>Tristanopsis laurina</i> | Water Gum |
| • <i>Ficus microcarpa</i> var. <i>hillii</i> | Hill's Weeping Fig |
| • <i>Jacaranda mimosifolia</i> | Jacaranda |
| • <i>Callistemon</i> sp. | Bottlebrush |

Precinct Objectives

- To enhance the streetscapes with street trees of more appropriate scales and form.
- Respect and facilitate pre-existing views in some streets with small sized trees that allow overlooking when mature and reduce the reliance on recurrent view pruning.
- To reinforce the established street tree character but reduce the reliance on Brush Box within the precinct.
- To reinforce the residential and historic character through a mix of deciduous and evergreen tree planting.



Figure 4.3 - View over Bellevue Hill from the highest point in Bellevue Park (Photo Arterra)

Species List – Bellevue Hill

Street Name	Main Issue	Verge Width	Power	Surround Type	Existing Dominant Species	Proposed Species	Critical Comments
Arthur Street		Large (>5m)	Overhead (Odd)	Grass & Path	Mixed	<i>Backhousia citriodora</i> (under wires) <i>Buckinghamia celsissima</i> (under wires) <i>Corymbia maculata</i>	Excellent example of Spathodea and Backhousia citriodora on street. Wires swap to even in upper portion of street. No dominant theme to-date, could be a mix of species with increased canopy coverage.
Ashton Gardens / Ashton Place	Views	Small (<3.5m)	UG	Fully Paved	Jacaranda mimosifolia	<i>Jacaranda mimosifolia</i>	Semi-mature Jacarandas dominate lower portion of street. Very narrow verge.
Balfour Road		Large (>5m)	UG	Grass & Path	Lophostemon confertus	<i>Lophostemon confertus</i>	
Banksia Road		Large (>5m)	Overhead (Even)	Grass & Path	Mixed	<i>Banksia integrifolia</i> (under wires) <i>Angophora costata</i> (west side) <i>Lophostemon confertus</i> (west side)	
Bellevue Gardens	Native	Small (<3.5m)	Overhead (Even)	Grass & Path	Mixed	<i>Synoum glandulosum</i>	
Bellevue Park Road	Exposure	Large (>5m)	Overhead (Odd)	Grass & Path	Ficus microcarpa var. hillii	<i>Ficus rubiginosa</i> <i>Waterhousea floribunda</i> 'Green Avenue' <i>Tristaniopsis laurina</i> (under wires)	Large verge width on school, non-power side.
Bellevue Road		Medium (3.5-5m)	Overhead (Even)	Grass & Path	Mixed	<i>Ulmus parvifolia</i> (Rivers St-New South Head Rd only) <i>Lophostemon confertus</i> <i>Angophora costata</i> <i>Elaeocarpus eumundi</i> (in commercial area)	Wires mostly ABC or underground near commercial area. Rest of street not ABC. Major through road, collector road and should be reinstated with large trees. ABC a priority to allow this to happen on both sides.
Bennelong Crescent	Views Exposure	Large (>5m)	Overhead (Even)	Grass & Path	Mixed	<i>Buckinghamia celsissima</i> <i>Corymbia eximia</i> <i>Lophostemon confertus</i>	ABC a priority.
Beresford Crescent	Views	Small (<3.5m)	UG	Grass & Path	Mixed	<i>Tristaniopsis laurina</i> <i>Buckinghamia celsissima</i>	
Beresford Road	Views	Medium (3.5-5m)	UG	Grass & Path	Mixed	<i>Ulmus parvifolia</i> <i>Tristaniopsis laurina</i> <i>Podocarpus elatus</i>	Views an issue towards top of street.
Birriga Road	Views	Large (>5m)	Overhead (Even)	Grass & Path	Lophostemon confertus	<i>Lophostemon confertus</i>	Wires mostly ABC. Mostly Brush Box, excellent street and space, should continue strong theme of Brush Box.
Blaxland Road	Views	Large (>5m)	Overhead (Even)	Grass & Path	Lophostemon confertus	<i>Lophostemon confertus</i> <i>Tristaniopsis laurina</i> (under wires if unable to ABC)	ABC a priority.
Boronia Road	Views	Large (>5m)	Overhead (Even)	Grass & Path	Mixed	<i>Podocarpus elatus</i> <i>Tristaniopsis laurina</i>	One of the better streets of Podocarpus, should continue. Substantial Figs present at return portion near O'Sullivan.
Bradley Avenue	Exposure	Large (>5m)	Overhead (Odd)	Grass & Path	Lophostemon confertus	<i>Lophostemon confertus</i>	Asymmetrical verge - wider side with power line.

Street Name	Main Issue	Verge Width	Power	Surround Type	Existing Dominant Species	Proposed Species	Critical Comments
Bulkara Road	Views	Medium (3.5-5m)	Overhead (Even)	Grass & Path	Lophostemon confertus Ficus microcarpa var. hillii	<i>Lophostemon confertus</i> <i>Cupaniopsis anacardioides</i> <i>Ficus rubiginosa</i>	
Buller Street		Large (>5m)	Overhead (Odd)	Grass & Path	Lophostemon confertus	<i>Lophostemon confertus</i>	
Bundarra Road	Exposure Views	Large (>5m)	Overhead (Even)	Grass & Path	Mixed	<i>Lophostemon confertus</i> <i>Corymbia eximia</i> <i>Angophora costata</i> <i>Tristaniopsis laurina</i> (for views and under wires)	ABC a priority.
Bunyula Road	Views	Large (>5m)	Overhead (Odd)	Grass & Path	Mixed	<i>Lophostemon confertus</i> <i>Buckinghamia celsissima</i>	
Carrington Avenue	Views	Large (>5m)	UG	Grass & Path	Ficus microcarpa var. hillii	<i>Syzygium paniculatum</i> <i>Lagerstroemia indica</i>	
Cooper Park Road	Views	Small (<3.5m)	Overhead (Even)	Grass & Path	Mixed	<i>Eucalyptus tereticornis</i> <i>Angophora costata</i> <i>Glochidion ferdinandi</i>	Powerlines swap over to odd side at Park
Cranbrook Lane	Views Space	Small (<3.5m)	UG	Grass & Path	Mixed	<i>Elaeocarpus eumundi</i>	
Cranbrook Road	Space	Small (<3.5m)	UG	Grass & Path	Mixed	<i>Lophostemon confertus</i> <i>Syzygium paniculatum</i> <i>Syzygium luehmannii</i>	
Drumalbyn Road	Views	Large (>5m)	Overhead (Odd)	Grass & Path	Mixed	<i>Tristaniopsis laurina</i> <i>Fraxinus griffithii</i> <i>Ficus rubiginosa</i>	Unify street with more consistent planting on both sides, over time, of Tristaniopsis.
Fairfax Road	Views	Small (<3.5m)	Overhead (Odd)	Fully Paved	-	-	Verge only 1.8m. Very little room for trees, and conflict with powerlines.
Fairweather Street	Views	Large (>5m)	Overhead (Even)	Grass & Path	Mixed	<i>Lophostemon confertus</i>	
Foster Avenue	Views	Large (>5m)	Overhead (Even)	Grass & Path	Mixed	<i>Washingtonia robusta</i> <i>Livistona australis</i> <i>Phoenix canariensis</i> <i>Pyrus ussuriensis</i>	Existing mature and mixed palms dominate street character. It would be good to continue. Suggest to keep spacing informal. try and implement palms on other side of street also. Interplant with small deciduous tree to maintain views.
Ginahgulla Road	Space Heritage	Small (<3.5m)	Overhead (Odd)	Fully Paved	-	-	Verge only 1.8m. Adjoining property trees contribute greatly to the streetscape. Very little room for trees. Planting likely to be unsuccessful.

Street Name	Main Issue	Verge Width	Power	Surround Type	Existing Dominant Species	Proposed Species	Critical Comments
Holland Road		Large (>5m)	Overhead (Odd)	Grass & Path	Mixed	<i>Washingtonia robusta</i> <i>Butia capitata</i> <i>Livistona australis</i> <i>Phoenix canariensis</i> <i>Tristaniopsis laurina</i>	Unique mixed palms dominate street. Maintain informal spacing and arrangement as a relatively unique street and reflective of historic planting style in eastern suburbs.
Kambala Place		Large (>5m)	Overhead (Odd)	Grass & Path	Mixed	<i>Ulmus parvifolia</i>	Only short length of ABC to cover whole street. Suggest using wide spreading and smaller deciduous tree to provide canopy over street.
Kambala Road	Views	Medium (3.5-5m)	Overhead (Odd)	Grass & Path	Mixed	<i>Ulmus parvifolia</i> <i>Lophostemon confertus</i> <i>Gordonia axillaris</i>	Very wide road carriageway. Verge width variable, mostly very wide with space for trees, particularly on northern side. Short steep section after Kambala Place. Suggest looking at in-road planting for new planting to avoid wires.
Kulgoa Road	Views	Medium (3.5-5m)	Overhead (Odd)	Grass & Path	Lophostemon confertus Tristaniopsis laurina	<i>Lophostemon confertus</i> <i>Tristaniopsis laurina</i> <i>Gordonia axillaris</i>	
Lamb Street	Views	Large (>5m)	Overhead (Even)	Grass & Path	Mixed	<i>Corymbia citriodora</i> <i>Ulmus parvifolia</i>	ABC a priority before new planting under wires. Suggest alternate planting of high branching Corymbia and deciduous Ulmus. Wide street with wide verge. Can tolerate large trees.
Latimer Road	Views	Large (>5m)	UG	Grass & Path	Mixed	<i>Lophostemon confertus</i> <i>Tristaniopsis laurina</i> <i>Cupaniopsis anacardioides</i>	
Lennox Street	Exposure	Medium (3.5-5m)	Overhead (Odd)	Grass & Path	Lophostemon confertus	<i>Lophostemon confertus</i> <i>Tristaniopsis laurina</i>	
Mansion Road		Small (<3.5m)	Overhead (Even)	Grass & Path	Mixed	<i>Jacaranda mimosifolia</i> (north end) <i>Backhousia citriodora</i> (south end) <i>Lagerstroemia indica</i> (south end)	
March Street	Views Exposure	Large (>5m)	Overhead (Even)	Grass & Path	Mixed	<i>Lophostemon confertus</i> <i>Angophora costata</i> <i>Tristaniopsis laurina</i> (under wires)	
New South Head Road between Victoria Rd and Rose Bay Ave	Heritage	Large (>5m)	UG	Grass & Path	Afrocarpus falcatus	<i>Podocarpus elatus</i>	Historic conifer planting. Maintain existing character. Busy street, with very wide verges.
Northland Road	Native	Medium (3.5-5m)	Overhead (Odd)	Grass & Path	Mixed	<i>Corymbia maculata</i> <i>Angophora costata</i> <i>Tristaniopsis laurina</i>	
O'Sullivan Road between Plumer Road and Old South Head Road		Small (<3.5m)	Overhead (Even)	Grass & Path	Ficus microcarpa var. hillii	<i>Waterhousea floribunda</i> 'Green Avenue' <i>Lophostemon confertus</i> <i>Tristaniopsis laurina</i> <i>Ficus microcarpa</i> var. <i>hillii</i> (eastern side)	Powerlines over verge from Golf course entry southwards, on golf course side of road. Retain existing character with slightly smaller trees.
Old South Head Road between Edgecliff Rd and O'Sullivan Rd	Space Exposure	Small (<3.5m)	Overhead (Even)	Grass & Path	Mixed	<i>Lophostemon confertus</i>	ABC a priority and then reinstate larger evergreen trees again. Maintain a single species to provide a strong collector road character.

Street Name	Main Issue	Verge Width	Power	Surround Type	Existing Dominant Species	Proposed Species	Critical Comments
Ranfurley Road	Views	Large (>5m)	Overhead (Even)	Grass & Path	Mixed	<i>Waterhousea floribunda</i> 'Green Avenue' <i>Tristanopsis laurina</i>	
Riddell Street		Medium (3.5-5m)	Overhead (Odd)	Grass & Path	Lophostemon confertus	<i>Lophostemon confertus</i> <i>Buckinghamia celsissima</i> (under wires where no ABC)	Wires very low, suggest ABC.
Rivers Street	Exposure	Large (>5m)	Overhead (Odd)	Grass & Path	Lophostemon confertus	<i>Lophostemon confertus</i>	
Rose Bay Avenue	Exposure Views	Medium (3.5-5m)	UG	Grass & Path	Mixed	<i>Phoenix canariensis</i> <i>Angophora costata</i> <i>Corymbia maculata</i>	
Rosslyn Street	Exposure Views	Large (>5m)	Overhead (Even)	Grass & Path	Lophostemon confertus	<i>Lophostemon confertus</i> <i>Angophora costata</i> <i>Angophora hispida</i> (under wires)	
Rupertswood Avenue	Exposure Views	Large (>5m)	Overhead (Even)	Grass & Path	Jacaranda mimosifolia	<i>Jacaranda mimosifolia</i> <i>Magnolia grandiflora</i> 'Exmouth' (under wires)	
Salisbury Road	Views	Large (>5m)	UG	Grass & Path	Mixed	<i>Lophostemon confertus</i> <i>Corymbia maculata</i> <i>Angophora costata</i> <i>Ulmus parvifolia</i>	No overhead wires and generous verges. Plant large trees.
Sheldon Place	Views Space	Small (<3.5m)	ABC	Fully Paved	-	-	Verge only 1.8m. Adjoining property trees contribute to the streetscape. Very little room for trees. Views critical.
Streatfield Road		Large (>5m)	Overhead (Odd)	Grass & Path	Mixed	<i>Angophora costata</i> (south of Warren Rd) <i>Banksia integrifolia</i> (south of Warren Rd) <i>Lophostemon confertus</i> (north of Warren Rd) <i>Ulmus parvifolia</i> (north of Warren Rd)	Bushland near street at eastern end. Suggest native planting near Cooper Park.
Suttie Road		Medium (3.5-5m)	Overhead (Odd)	Grass & Path	Mixed	<i>Syzygium paniculatum</i> <i>Angophora costata</i> <i>Corymbia maculata</i> <i>Synoum glandulosum</i>	
Tarrant Avenue	Views	Medium (3.5-5m)	Overhead (Odd)	Grass & Path	Robinia pseudoacacia 'Frisia' Gleditsia triacanthos cv.	<i>Zelkova serrata</i> 'Green Vase'	In-road planting opportunity in central sections of street
Tralee Road		Medium (3.5-5m)	Overhead (Even)	Grass & Path	Ficus microcarpa var. hillii Cinnamomum camphora	<i>Waterhousea floribunda</i> 'Green Avenue'	

Street Name	Main Issue	Verge Width	Power	Surround Type	Existing Dominant Species	Proposed Species	Critical Comments
Victoria Road	Exposure Views Heritage	Medium (3.5-5m)	Overhead (Odd)	Grass & Path	Mixed	<i>Lophostemon confertus</i> <i>Ulmus parvifolia</i>	Powerlines swap briefly to other side near Scots College. Major through road deserves to become a more consistently planted street to signify importance. Suggest planting as an alternating avenue of deciduous and evergreen species. ABC a priority to allow larger planting without overly deforming pruning.
Vivian Street	Views Exposure	Large (>5m)	Overhead (Even)	Grass & Path	Mixed	<i>Washingtonia robusta (both sides)</i> <i>Lophostemon confertus (south side)</i> <i>Tristaniopsis laurina (under wires)</i>	
Warren Road		Large (>5m)	Overhead (Even)	Grass & Path	Lophostemon confertus	<i>Lophostemon confertus</i>	ABC suggested for any new planting under wires.
Yamba Road		Small (<3.5m)	Overhead (Even)	Grass & Path	Lophostemon confertus	<i>Lophostemon confertus</i>	ABC suggested for any new planting under wires.

4.2 Darling Point

History and Context

Darling Point is an established residential area with a small maritime services area and associated marina. Darling Point is 4.0kms from the CBD of Sydney and is a waterfront peninsula suburb that has always been a prestigious area due to its geography and proximity to The City of Sydney. As Sydney developed, the population grew eastward and Darling Point was settled by the wealthy elite of the 19th century. It continues to be an enclave of wealth, with property values being some of the highest in Australia. Originally known as Yarranabe, it was called Mrs Darling's Point by Governor Ralph Darling (Gov. 1825-1831). After New South Head Road was built in 1831, timber getters felled most of the trees and the area was sub-divided with most home plots taken up by 1833-1838. Thomas Mitchell (1792-1855), the colonial surveyor general built a grand home called 'Carthona'.

Major features of the area include McKell Park, Rushcutters Bay Park, Yarranabbe Park, 'Swifts' historic house, Darling Point Wharf, The Cruising Yacht Club and Jean Colvin Hospital. Significant further development occurred during the immediate post-war years, with many high-rise apartments and other forms of higher-density housing being built. The population and dwelling types have been relatively stable since the later 1900's.

Physical Influences

At 66.7ha (5.5% of total area) is a relatively small precinct and is graced with approximately 450 street trees (4% of total population). The precinct is a densely populated residential area with a high percentage of intact Victorian and Federation dwellings together with many more modern apartments. It is dominated by the underlying Hawkesbury Sandstone and appears to have reasonable sandy soils with some alluvial and disturbed soils located on the lower slopes. The shallower soils and sandstone outcroppings are located towards the central ridge line defined by Darling Point Road. The former marshy foreshore areas at Rushcutters Bay have been filled with imported material.

Existing Streetscape Character

Darling Point has an extensive street tree canopy highly visible to Sydney Harbour. There are many remnant plantings of the early 19th century grand mansions such as Swifts, Lindsay, Canonbury, Bishops Court and St Mark's Church. Heritage listed trees such as Morton Bay Figs, Norfolk Island Pines, Camphor Laurels and Canary Island Date Palms are prominent and often contribute to the adjoining streetscapes.

It also has some very well established avenue plantings. The existing mixed and varied street tree planting within Darling Point is highly reflective of the differing eras of street tree planting within the municipality. The mid 20th century planting is characterised by Brush Box (*Lophostemon confertus*) Hill's Weeping Figs (*Ficus microcarpa* var. *hillii*), Peppercorn Tree (*Schinus ariera*) and Kaffir Plum (*Harpephyllum caffrum*). The later 20th century planting is predominantly a broad palette of common native species such as Melaleuca and Callistemon.

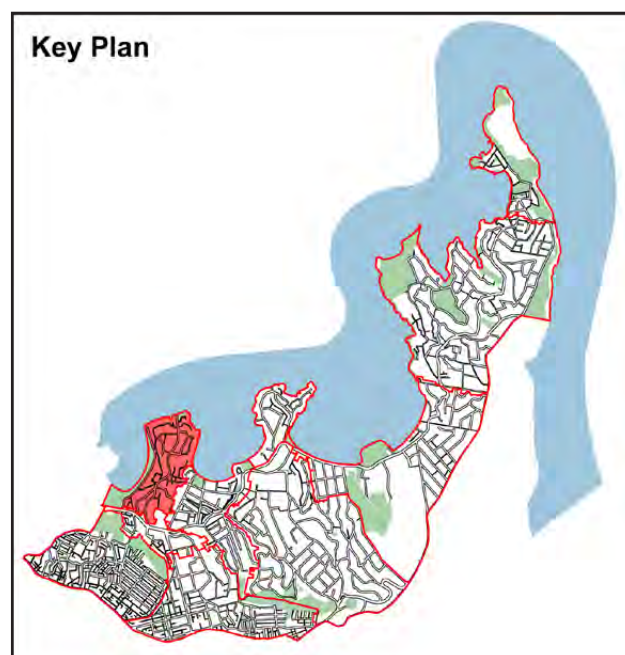


Figure 4.4 - Bennett Ave, Darling Point (Photo Arterra)

Darling Point is defined by:

- Relatively steep hillsides and escarpments;
- Relatively exposed aspects to the west and north;
- Remnant larger estates and mansions as well as high rise apartments, many set well back from the street boundary and with wide frontages;
- Very mixed width of streets and verges but mostly curvilinear running broadly across the slopes;
- Main central collector road, Darling Point Road running along the ridge of the peninsula;
- Frequent lower level and elevated panoramic views to the Harbour;
- Prominent adjoining open spaces such as Yarranabe Park and Rushcutters Bay Park with their existing large and significant trees;
- Significant number of the streets planted with well established Brush Box;
- Many remaining Hill's Weeping Figs that are now reaching large proportions;
- Numerous evergreen and rainforest species with dark and dense canopies.

Current dominant species

- | | |
|--|---------------------|
| • <i>Lophostemon confertus</i> | Brush Box |
| • <i>Ficus microcarpa</i> var. <i>hillii</i> | Hill's Weeping Fig |
| • <i>Callistemon</i> sp. | Bottlebrush |
| • <i>Melaleuca quinquenervia</i> | Broadleaf Paperbark |
| • <i>Tristaniaopsis laurina</i> | Water Gum |

Precinct Objectives

- To enhance the streetscape with street trees of appropriate scale and form.
- Reinforce and unify the street planting of Darling Point Road as the main street within the precinct.
- Respect and facilitate pre-existing views in some streets with small sized trees that allow overlooking when mature and reduce the reliance on recurrent view pruning.
- To reinforce the residential and historic character through a mix of deciduous and evergreen tree planting that does not substantially increase the reliance on Brush Box.



Figure 4.5 - Darling Point Road, the main spine road of Darling Point (Photo Arterra)

Species List – Darling Point

Street Name	Main Issue	Verge Width	Power	Surround Type	Existing Dominant Species	Proposed Species	Critical Comments
Annandale street	Views Exposure Space	Small (<3.5m)	UG	Fully Paved	-	-	Narrow verge, fully paved with little opportunity for planting. Private planting does contribute marginally to street.
Bennett Venue	Views Exposure Heritage	Medium (3.5-5m)	UG	Grass & Path	Phoenix canariensis (west side only)	<i>Phoenix canariensis (west side only)</i> <i>Jacaranda mimosifolia (east side only)</i> <i>Araucaria columnaris (both sides)</i>	Good grassed verge width could tolerate much larger planting. Should continue historic Date Palms and Cook Pines. Expand use of Araucaria if Date Palms succumb to Fusarium Wilt in the future.
Darling Point Road		Medium (3.5-5m)	UG	Grass & Path	Mixed	<i>Lophostemon confertus</i>	Almost one of everything currently planted, but mostly Brush Box. Strong evergreen theme dominates. Could be a grand defining Avenue for precinct. Suggest any replacement planting is undertaken with a single species. Replace any listed historic trees with same or similar species.
Eastbourne Road	Exposure Views Space	Small (<3.5m)	UG	Fully Paved	-	-	Little space, existing private trees quite significant to streetscape. Variable street verge widths, views and space likely to be an issue for any planting. Suggest maintaining larger private trees as a priority.
Etham Avenue	Heritage	Medium (3.5-5m)	UG	Grass & Path	Mixed	<i>Lophostemon confertus</i> <i>Jacaranda mimosifolia</i> <i>Angophora costata (south end only)</i>	Split level street near Mitchell Road. Suggest implementing an informally alternating avenue of deciduous and evergreen trees, with Brush Box remaining dominant species.
Goomerah Crescent	Views Exposure Space	Small (<3.5m)	UG	Grass & Path	-	<i>Harpullia pendula</i> <i>Backhousia citriodora</i> <i>Buckinghamia celsissima</i> <i>Elaeocarpus eumundi</i>	Private trees contribute greatly to streetscape. Only minor opportunities for planting. Short street, could be mixture of species to good effect. Suggest theme of rainforest species to continue historic themes in this precinct.
Greenoaks Avenue	Heritage Views Space	Medium (3.5-5m)	UG	Grass & Path	Mixed	<i>Ulmus parvifolia</i>	Verge type and size variable, private trees contribute greatly to street. Large spreading tree suggested to continue overhead canopy character to street where trees need replacement.
Hampden Avenue	Exposure Views	Small (<3.5m)	UG	Grass & Path	Jacaranda mimosifolia	<i>Jacaranda mimosifolia</i>	Strong contribution by private trees on east side of street. Space for larger trees. Jacaranda reasonably dominant.
Lindsay Avenue	Views Heritage Space	Small (<3.5m)	UG	Fully Paved	-	<i>Buckinghamia celsissima</i> <i>Elaeocarpus eumundi</i>	Trees in adjoining properties contribute to street. Currently no planting. Space for some small trees in the footpath in a few locations.
Loftus Road	Views Space	Small (<3.5m)	UG	Fully Paved	-	<i>Washingtonia filifera</i>	Very narrow verge, no space for street planting. Maintain historic Washingtonia palm planting at western end.
Marathon Avenue	Space	Small (<3.5m)	UG	Fully Paved	Platanus x acerifolia	<i>Koelreutaria bipinnata</i>	Very short street, with attractive canopy from London Planes. Similar character should be continued if Planes need replacing.
Marathon Road	Space	Small (<3.5m)	UG	Fully Paved	-	<i>Elaeocarpus eumundi</i> <i>Harpullia pendula</i>	Some room for minor planting in northern end before Marathon Ave. Private tree planting from apartment developments contribute to streetscape.
Mitchell Road	Space Views Exposure	Small (<3.5m)	UG	Fully Paved	Lophostemon confertus Harpephyllum caffrum	<i>Lophostemon confertus (in-road on north side only)</i>	Continue Brush Box in road on north side of street.
Mona Road	Views Space	Medium (3.5-5m)	UG	Grass & Path	Ficus microcarpa var. hillii	<i>Waterhousea floribunda 'Green Avenue'</i>	Signature street in area but Figs too large. Suggest replacement with similar character but smaller growing species.

Street Name	Main Issue	Verge Width	Power	Surround Type	Existing Dominant Species	Proposed Species	Critical Comments
New Beach Road	Views Exposure	Medium (3.5-5m)	UG	Grass & Path	Ficus microcarpa var. hillii Lophostemon confertus	<i>Lagerstroemia indica x fauriei cv.(east side only)</i> <i>Ficus rubiginosa (park side only)</i> <i>Western side should be large trees planted in park area (Refer Park Master Plan and PoM)</i>	Views critical, subject of major debate. Figs previously pruned to facilitate views.
St Marks Rd/ Octagon Road	Space	Small (<3.5m)	UG	Fully Paved	Ulmus parvifolia	<i>Ulmus parvifolia</i>	Currently dominated by Ulmus parvifolia, likely to survive for many years with minimal issues. Continue as species for any replacements.
Sutherland Crescent	Views Exposure Space	Small (<3.5m)	UG	Fully Paved	Mixed	-	Narrow verge, fully paved, limited opportunity for planting. Private trees contribute to streetscape
Thornton Street	Heritage Views	Small (<3.5m)	UG	Fully Paved	-	-	Narrow verge, fully paved, limited opportunity for planting. Private trees contribute to streetscape
Yarranabbe Road	Views Exposure Space	Small (<3.5m)	UG	Fully Paved	Buckinghamia celsissima	<i>Buckinghamia celsissima</i>	In road planting currently undertaken and a few other limited footpath areas where space permits. Views an issue restricting selection to small tree.

4.3 Double Bay

History and Context

Double Bay is very established residential area, that also includes a relatively large commercial centre by Woollahra standards. Double Bay, only 4.2kms from the CBD of Sydney, is characterised as an affluent, relaxed & casual retail area, adjacent to the Harbour, with a strong European influence. Originally known as Kelties Bay, it was eventually named Double Bay around the 1820's due to the bays shoreline being interrupted by a small point. A well known botanist Michael Guilfoyle (who migrated to Sydney in 1849) introduced many exotic plants to the area and established a nursery on the corner of Ocean Avenue and South Avenue. Double Bay has endeavoured to cultivate its image as an exclusive shopping centre and retain its village atmosphere.

Settlement of the area dates from 1790, although the population was minimal until the 1830's when a village centre was established. Until this time the land was used mainly for farming, market gardens and fishing. Rapid growth took place during the 1880's and 1890's and further expansion continued in the 1920's and 1930's, when many apartments and bungalows were built. Significant developments also occurred in the post-war years, particularly during the 1950's.

Physical Influences

At 77.9ha (6.4% of total area) the precinct is a modest size and is home to approximately 830 street trees (7% of total population). The area is characterised as a basin like landform formed by the ridgelines of Edgeliff Road, Bellevue Hill, and New South Head Road. The creek from Cooper Park flows into the Harbour through Double Bay. Most of the area is reasonably flat and is the remnant of the fluvial floodplain with what would have been characterised by deep black and friable silty loams and loamy sands.

Existing Streetscape Character

Adjacent to the business area there are mixed residential areas of older and new apartments as well as free standing and semi detached housing, parks and a small public school. The streets are characterised by the many large trees, some of which are of heritage significance. Prominent street tree examples are found on Ocean Avenue, South Street, Epping Road and Manning Road. Ocean Avenue is particularly significant with a number of trees listed on the Woollahra Register of Significant Trees.

Early remaining examples of late 19th Century Australian rainforest species survive through Morton Bay Figs (*Ficus macrophylla*), Port Jackson Figs (*Ficus rubiginosa*) Crow's Ash (*Flindersia australis*) and Black Bean (*Castanospermum australe*). The early 20th century is represented by Canary Island Date Palm (*Phoenix canariensis*) and Washington Palm (*Washingtonia robusta*) planting.

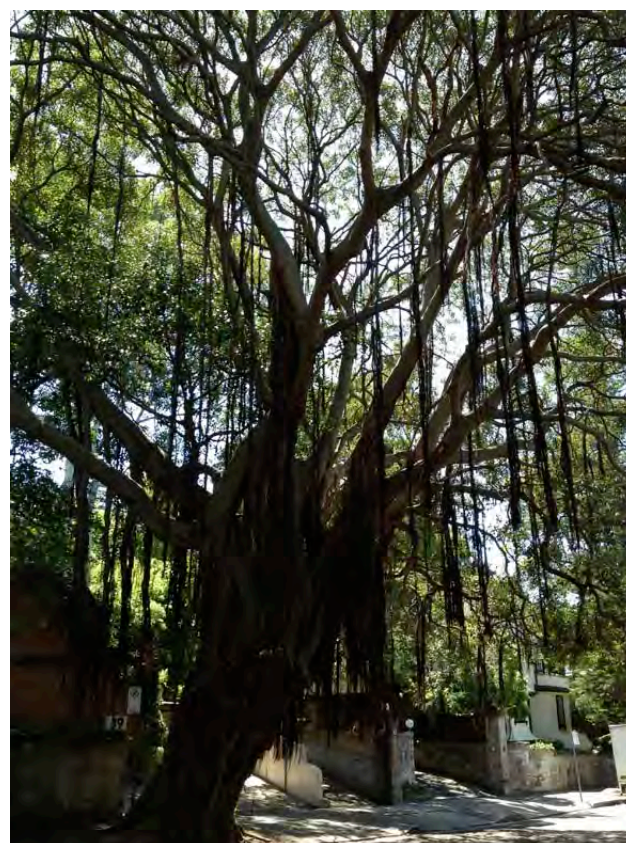


Figure 4.6 - One of the many historic fig trees along Ocean Ave, Double Bay (Photo Arterra)

The mid 20th century planting is characterised by the Brush Box (*Lophostemon confertus*), the Hills Weeping Fig (*Ficus microcarpa* var. *hillii*), Camphor Laurels (*Cinnamomum camphora*) and Kaffir Plum (*Harpephyllum caffrum*). Some remnant early plantings of Hibiscus (*Hibiscus rosa-sinensis*) occur near Steyne Park.

Late 20th century planting include Melaleuca's and Gum Trees such as Lemon-scented Gums (*Corymbia citriodora*) and Spotted Gums (*Corymbia maculata*).

The business district, away from New South Head Road, has a relatively unhurried pedestrian friendly streetscape, which is now characterised by the relatively recent street tree plantings of Chinese Elms (*Ulmus parvifolia*). These replaced the earlier Fig and Plane Trees and now many of these attractive street trees gracefully arch over the road with uplifted canopies to facilitate vehicle movement.

Current dominant species

- | | |
|--------------------------------|-------------------|
| • <i>Lophostemon confertus</i> | Brush Box |
| • <i>Platanus x acerifolia</i> | London Plane Tree |
| • <i>Ulmus parvifolia</i> | Chinese Elm |
| • <i>Jacaranda mimosifolia</i> | Jacaranda |
| • <i>Podocarpus elatus</i> | Plum Pine |

Precinct Objectives

- To reinforce the affluent, relaxed and village character of the Double Bay outdoor dining, shopping and retail precinct.
- To enhance the streetscape with street trees of appropriate scale and form.
- To respect the established street tree character without increasing the reliance on Brush Box.
- To reinforce the riparian and coastal native planting through an appropriate mix of endemic tree planting.
- Respect and retain the early plantings influenced by Michael Guilfoyle.



Figure 4.7 - Transvaal Street, Double Bay (Photo Arterra)



Figure 4.8 - The commercial area of Bay Street, Double Bay (Photo Arterra)

Street Name	Main Issue	Verge Width	Power	Surround Type	Existing Dominant Species	Proposed Species	Critical Comments
Pearce Street		Small (<3.5m)	UG	Grass & Path	<i>Jacaranda mimosifolia</i> <i>Syzygium luehmannii</i>	<i>Jacaranda mimosifolia</i> <i>Syzygium luehmannii</i>	Working well, should continue.
Sherbrooke Avenue	Heritage	Large (>5m)	UG	Grass	<i>Liquidambar styraciflua</i>	<i>Eucalyptus piperita</i> <i>Angophora costata</i> <i>Eucalyptus robusta</i>	Unique split street, with median style planting. Could contribute greatly to extending Kiaora Road planting and expanding the native corridor from the Harbour to Cooper Park. Suggest replacing with native trees and also endemic understorey planting as Liquidambars decline.
South Avenue	Space Heritage	Small (<3.5m)	UG	Fully Paved	<i>Cinnamomum camphora</i> <i>Ficus microcarpa</i> var. <i>hillii</i>	<i>Cinnamomum camphora (in-road)</i>	Historic and now relatively unique planting within wider Sydney. In-road planting should be continued, rather than footpath for replacements.
Spring Street	Space	Small (<3.5m)	UG	Fully Paved	-	-	Too narrow for planting.
Stafford Street	Space	Small (<3.5m)	UG	Fully Paved	<i>Tipuana tipu</i>	<i>Tipuana tipu</i>	A rather unique street although there is a very narrow verge only 1.8m. Planting has been successful and should be continued.
Transvaal Avenue		Small (<3.5m)	UG	Fully Paved	Mixed	<i>Lophostemon confertus</i> <i>Ulmus parvifolia</i>	Median planting mainly. Suggest a deciduous tree for winter sun to cafe dining area. Keep footpaths clear.
William Street	Space	Small (<3.5m)	UG	Grass & Path	<i>Lophostemon confertus</i>	<i>Lophostemon confertus</i>	Major cross street, deserves strong and consistent theme planting. Dominated by Brush Box at present and should continue.
Wiston Gardens	Views	Small (<3.5m)	UG	Grass & Path	Mixed	<i>Angophora hispida</i> <i>Banksia integrifolia</i>	No strong theme, views important. Road reserve variable. Short street and relatively minor traffic and visitation. Planting not critical.

Species List – Double Bay

Street Name	Main Issue	Verge Width	Power	Surround Type	Existing Dominant Species	Proposed Species	Critical Comments
Anderson Street	Space	Small (<3.5m)	UG	Grass & Path	<i>Platanus x acerifolia</i>	<i>Lophostemon confertus</i>	Subject to a redevelopment at present.
Bay Street	Space	Medium (3.5-5m)	UG	Fully Paved	<i>Ulmus parvifolia</i> (commercial precinct)	<i>Ulmus parvifolia</i> (commercial precinct) <i>Jacaranda mimosifolia</i> (Cross St to William St) <i>Waterhousea floribunda</i> 'Green Avenue' (north of William St)	Very large verge in northern end near park otherwise usually fully paved in commercial area.
Beach Street	Views	Small (<3.5m)	UG	Fully Paved	<i>Nerium oleander</i>	<i>Backhousia citriodora</i>	Very narrow.
Carlotta Road		Medium (3.5-5m)	Overhead (Even)	Grass & Path	Mixed	<i>Ulmus parvifolia</i> <i>Lophostemon confertus</i> <i>Angophora costata</i>	Space for larger species. ABC a priority for any new planting under the wires.
Cooper Street	Space	Small (<3.5m)	UG	Fully Paved	<i>Ficus microcarpa</i> var. <i>hillii</i> <i>Lophostemon confertus</i>	<i>Lophostemon confertus</i> <i>Ulmus parvifolia</i>	
Court Road		Small (<3.5m)	UG	Grass & Path	Mixed	<i>Jacaranda mimosifolia</i>	Make a short feature street of single flowering species such as Jacaranda which currently dominate.
Cross Street		Medium (3.5-5m)	UG	Fully Paved	<i>Ulmus parvifolia</i> (Bay St to New South Head Rd) Brush Box (Bay St to Ocean Ave)	<i>Ulmus parvifolia</i> (Bay St to New South Head Rd) <i>Lophostemon confertus</i> (Bay St to Ocean Ave)	In road planting similar to Bay Street. In road trees need better impact protection. Brush box in western end.
Epping Road	Space	Small (<3.5m)	Overhead (Even)	Grass & Path	<i>Platanus x acerifolia</i> <i>Syzygium luehmannii</i>	<i>Zelkova serrata</i> 'Green Vase' <i>Tristaniopsis laurina</i> <i>Syzygium luehmannii</i>	Eventually replace London Plane Trees with a more appropriately sized but spreading deciduous species. ABC should be undertaken when any new planting is undertaken but not a priority now.
Forest Road	Space	Small (<3.5m)	Overhead (Odd)	Grass & Path	<i>Platanus x acerifolia</i>	<i>Ulmus parvifolia</i>	Eventually replace London Plane Trees with a more appropriately sized but spreading deciduous species. ABC should be undertaken when any new planting is undertaken but not a priority now.
Gladwood Gardens	Space Views	Small (<3.5m)	UG	Grass & Path	<i>Tristaniopsis laurina</i> <i>Callistemon viminalis</i> cv.	<i>Tristaniopsis laurina</i> <i>Buckinghamia celsissima</i>	Very narrow planting strips.
Glendon Road		Medium (3.5-5m)	Overhead (Even)	Grass & Path	<i>Lophostemon confertus</i>	<i>Lophostemon confertus</i> <i>Angophora costata</i>	Complete the ABC of entire street.
Guilfoyle Avenue	Heritage	Medium (3.5-5m)	UG	Grass & Path	Mixed	<i>Ulmus parvifolia</i> (footpaths) <i>Waterhousea floribunda</i> 'Sweeper' (centre park only) <i>Melaleuca quinquenervia</i> (centre park only) <i>Washingtonia robusta</i> (centre park only)	<i>Ulmus parvifolia</i> a recent overlay doing well and tie in with Bay Street. <i>Salix</i> in median Park should be replaced as they decline with <i>Melaleuca</i> and <i>Waterhousea</i> . Heritage palms should be continued as a connection with original Guilfoyle plantings.

Street Name	Main Issue	Verge Width	Power	Surround Type	Existing Dominant Species	Proposed Species	Critical Comments
Henrietta Street	Space	Small (<3.5m)	UG	Fully Paved	-	-	Street too narrow for planting, private trees contribute greatly to street.
Holt Street	Space	Small (<3.5m)	UG	Fully Paved	-	-	Street verge very narrow only 2m. Adjoining private trees contribute greatly to streetscape.
Kiaora Road	Native	Medium (3.5-5m)	Overhead (Odd)	Grass & Path	Mixed	<i>Angophora costata (Court Rd to New South Head Rd only)</i> <i>Eucalyptus pilularis</i> <i>Eucalyptus botryoides</i> <i>Eucalyptus robusta</i> <i>Syncarpia glomulifera</i> <i>Melaleuca quinquenervia</i> <i>Casuarina glauca</i> <i>Acacia binervia</i>	Drainage corridor, much native planting which should be continued and enhanced as a native corridor. Continue native theme via a single species planting of <i>Angophora costata</i> between Court Rd and New South Head Road.
Knox Lane	Space	Small (<3.5m)	UG	Fully Paved	-	<i>Caesalpinia ferrea</i>	Suggest some in-road planting. Potted Ficus only at present.
Knox Street	Space	Small (<3.5m)	UG	Fully Paved	<i>Platanus orientalis</i>	<i>Zelkova serrata 'Green Vase'</i>	Small potted Hills Figs. Replace Oriental Planes with alternative species if they decline. Explore opportunity to expand median and mid-road planting and provide structural soil options beneath road surface to increase canopy cover.
Leura Road		Small (<3.5m)	Overhead (Odd)	Grass & Path	<i>Tristaniopsis laurina</i>	<i>Tristaniopsis laurina</i> <i>Lophostemon confertus (in-road only)</i> <i>Angophora costata (in-road only)</i>	ABC a priority for any new planting under wires. Major opportunity for in-road planting and creation of perpendicular parking between tree blisters.
Manning Road between New South Head Rd and Epping Rd	Space	Small (<3.5m)	UG	Grass & Path	<i>Platanus x acerifolia</i> <i>Syzygium luehmannii</i>	<i>Zelkova serrata 'Green Vase'</i> <i>Tristaniopsis laurina</i> <i>Syzygium luehmannii</i>	Suggest an alternating avenue of deciduous and evergreen trees, with Zelkovas as a more appropriate scaled replacement for the Plane Trees.
Marathon Mews		Large (>5m)	UG	Grass & Path	<i>Jacaranda mimosifolia</i>	<i>Jacaranda mimosifolia</i>	Short street already populated by Jacaranda which should be continued.
Marine Parade	Views	Small (<3.5m)	UG	Grass & Path	-	-	Views are critical in this street. Doubtful whether any introduced planting would be accepted and survive. Nil suggested, retain as open area. Could possibly plant one signature tree in adjoining Reserve to contribute to street.
New South Head Road between Ocean Ave and Victoria Rd	Space Views	Medium (3.5-5m)	UG	Grass & Path	<i>Eucalyptus microcorys</i> <i>Corymbia citriodora</i>	<i>Corymbia maculata</i> <i>Angophora costata</i>	Access and ability to dead wood some of the existing Eucalypt planting is a challenge due to major road. Generous verge and extends Green Web corridor from Kiaora Road.
Ocean Avenue	Heritage	Medium (3.5-5m)	UG	Grass & Path	Very mixed	<i>Waterhousea floribunda 'Green Avenue'</i> <i>Flindersia australis</i> <i>Lophostemon confertus</i> <i>Buckinghamia celsissima (western side north from Marathon Mews only)</i> <i>Lophostemon confertus</i>	Numerous heritage listed trees and large Figs. Large variety of species. Leafy avenue character a signature of Double Bay and should be continued. Steyne Park trees contribute north of William Street.
Patterson Street	Space	Small (<3.5m)	UG	Grass	<i>Platanus x acerifolia</i>	<i>Lophostemon confertus</i>	Currently undergoing a major redevelopment

4.4 Edgecliff

History and Context

Edgecliff is an established residential and commercial hub only 3.5kms from the CBD of Sydney. Major features of the area include the Edgecliff Centre, a significant commercial area within the LGA, and Ascham Private School for Girls. Settlement of the area dates from the early 1800's, although population was minimal until the 1860's. Substantial growth took place in the 1880's and 1890's, continuing into the early 1900's. The Edgecliff Post Office was built in the 1890's and a cable tram to Edgecliff opened in 1894. Further significant development occurred during the immediate post-war years and the Eastern Suburbs railway branch line was opened in 1979. A number of new dwellings have been added to the area in recent years, but there has been a general decline in the average number of persons living in each dwelling.

Physical Influences

At only 30.7ha (2.5% of total area) it is the smallest precinct and contains an equally small proportion of street trees being approximately 200 street trees (2% of total population). Edgecliff is situated on the rocky escarpment between Woollahra and Bellevue Hill with Double Bay and Darling Point situated between it and Sydney Harbour. Many of the streets are steep as they negotiate the difficult terrain. Characteristically Edgecliff is primarily residential with a mix of older and new apartments and generally small housing allotments.

As many of Edgecliff's streets are on rocky hillsides the street trees are subject to generally poorer and shallower soils which can limit growth.

Existing Streetscape Character

Edgecliff is reflective of the differing eras of street tree planting within the locality and its dominance as a busy hub for roads and public transport. The existing trees are a mixed and varied palette, however the majority of the trees reflect a later 1900's planting palette that gave preference to Australian native trees such as Lemon-scented Gums (*Corymbia citriodora*), Wallangarra White Gums (*Eucalyptus scoparia*), Tallowwoods (*Eucalyptus microcorys*), Broad-leaf Paperbarks (*Melaleuca quinquenervia*) and Spotted Gums (*Corymbia maculata*).

A mixture of common exotic deciduous trees favoured for narrow urban streets also dominate the more recent planting and include Robinia, Jacaranda and Sapiums. Edgecliff Road is dominated by Hill's Weeping Fig's (*Ficus microcarpa* var. *hillii*) and London Planes (*Platanus x acerifolia*) that were most likely planned to soften the numerous apartment buildings that lined the western reaches of Edgecliff Road.

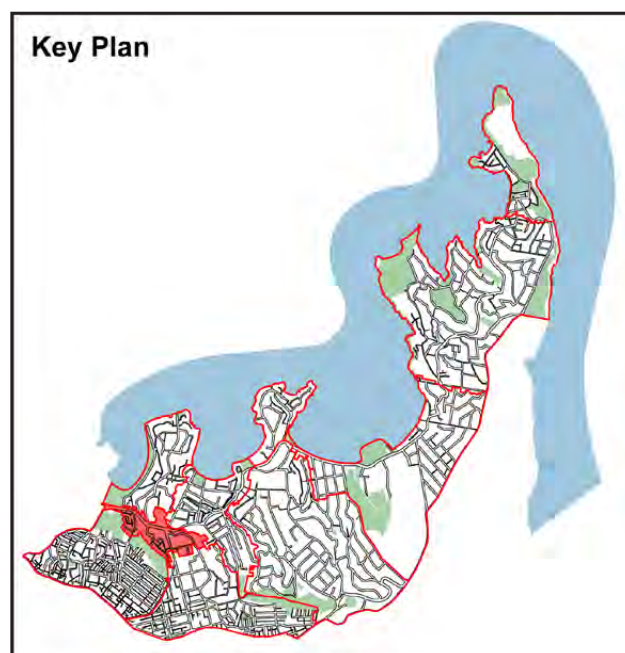


Figure 4.9- New South Head Rd through the busy commercial hub of Edgecliff (Photo Arterra)



Figure 4.10- Historic Morton Bay Fig on Ocean Street, Edgecliff (Photo Arterra)

The main roads of Edgecliff include New South Head Road, which is one of the most urban of streets within the LGA, with extensive through traffic. It also includes Ocean St and Edgecliff Road, however, these are relatively short portions of these street corridors that are more extensively covered under the adjoining precinct of Woollahra. Many of the residential streets in Edgecliff are very narrow and have limited street tree planting opportunities unless in-road planting programs are employed.

Edgecliff is defined by:

- Major transport and circulation corridors and infrastructure with many urbanised and major street corridors such as New South Head Road, Edgecliff Road and Ocean Street traversing the precinct;
- Areas of older small lot and terrace style housing with very narrow and fully paved verges and narrow road carriage ways, many with limited opportunities to plant street trees;
- Some existing large scale trees such as the Figs occur along Ocean Street, and Edgecliff Road and mature Eucalypts around the Edgecliff Centre and along Glenmore Road.

Current dominant species

- | | |
|--------------------------------|---------------------|
| • <i>Robinia sp.</i> | Black Locust |
| • <i>Jacaranda mimosifolia</i> | Jacaranda |
| • <i>Sapium sebiferum</i> | Chinese Tallow Tree |
| • <i>Corymbia citriodora</i> | Lemon-scented Gum |
| • <i>Callistemon sp.</i> | Bottlebrush |

Precinct Objectives

- To enhance the streetscape with street trees of appropriate scale and form.
- To reinforce the commercial hub and identity of the Edgecliff Centre commercial and retail precinct.
- Explore in-road planting initiatives to increase the urban canopy and provide attractive and desirable residential streets, despite narrow footpath constraints.



Figure 4.11 - Narrow verges and power lines affect planting opportunities such as Glenmore Road, Edgecliff (Photo Arterra)



Figure 4.12- Many streets in Edgecliff are narrow and parking is a critical issue, but numerous streets would benefit from exploring in-road planting opportunities to improve the street and canopy cover of the area such as Thorne Street, Edgecliff (Photo Arterra)

Species List – Edgecliff

Street Name	Main Issue	Verge Width	Power	Surround Type	Existing Dominant Species	Proposed Species	Critical Comments
Albert Street	Space	Small (<3.5m)	Overhead (Odd)	Fully Paved	-	-	Very narrow verge, no space for trees. Private planting contributes to streetscape.
Artlett Street	Space	Small (<3.5m)	Overhead (Even)	Fully Paved	-	-	Very narrow verge, no space for trees. Private planting contributes to streetscape.
Cameron Street	Space	Small (<3.5m)	Overhead (Odd)	Fully Paved	<i>Corymbia citriodora</i> <i>Jacaranda mimosifolia</i>	<i>Melaleuca bracteata</i> <i>Backhousia citriodora (under wires)</i>	Verge only 1.8m. Limited opportunities for planting
Edgecliff Road between Ocean St and Albert St	Views Space	Medium (3.5-5m)	ABC	Grass & Path	<i>Ficus microcarpa</i> var. <i>hillii</i>	<i>Ulmus parvifolia</i> <i>Lophostemon confertus</i>	Continue ABC and plant more Ulmus.
Glebe Street	Space	Small (<3.5m)	Overhead (Odd)	Fully Paved	-	-	Very narrow verge, no space for trees. Private planting contributes to streetscape.
Glenmore Road	Space	Small (<3.5m)	Overhead (Even)	Fully Paved	<i>Flindersia australis</i> <i>Corymbia citriodora</i>	<i>Corymbia maculata</i> <i>Flindersia australis</i> <i>Buckinghamia celsissima (under wires)</i>	Overhead wires at southern end. Suggest alternating avenue of Flindersia and Eucalyptus
Great Thorne Street/Thorne Street	Space	Small (<3.5m)	Overhead (Odd)	Fully Paved	Mixed	<i>Zelkova serrata 'Green Vase' (in-road only)</i>	Verge only 1.8m wide. Consider in-road planting on non wire side using deciduous species for solar access
High Street	Space	Small (<3.5m)	Overhead (Even)	Fully Paved	-	-	Too narrow and wires. Maybe continue in-road planting if done in adjoining Thorne Street.
Mahoney Lane/Reddy Street	Space	Small (<3.5m)	Overhead (Even)	Fully Paved	-	-	No real space for planting except for in road. Industrial, commercial little benefit from planting.
New Mclean Street		Small (<3.5m)	UG	Fully Paved	<i>Eucalyptus microcorys</i>	<i>Corymbia maculata</i>	Most trees in private property adjoining street.
New South Head Road between Ocean Ave and Neild Ave	Space Exposure	Medium (3.5-5m)	UG	Fully Paved	Mixed	<i>Washingtonia robusta</i> <i>Lophostemon confertus</i>	Verge variable, very urban setting, many services. Overhead wires in western end on south side. Median planting opposite Rushcutters Bay Park.
Ocean Street between Albert St and New South Head Rd	Heritage Space	Small (<3.5m)	UG	Fully Paved	<i>Ficus macrophylla</i>	<i>Flindersia australis</i>	Verge width variable, little space
Quambi Place	Space	Small (<3.5m)	ABC	Grass & Path	Mixed	<i>Brachychiton acerifolius</i> <i>Angophora costata</i>	Brachychiton doing well, should continue. Angophora in verge but planted close to property dominate. Quiet street.
South Street	Space	Small (<3.5m)	Overhead (Even)	Fully Paved	-	-	Too narrow
Walker Avenue		Medium (3.5-5m)	Overhead (Odd)	Fully Paved	<i>Jacaranda mimosifolia</i> <i>Melaleuca quinquenervia</i>	<i>Jacaranda mimosifolia</i> <i>Buckinghamia celsissima</i>	Eclectic mix, no need for footpath to be fully paved. Could be any species. Jacarandas dominant but young Paperbarks also planted.

4.5 Paddington

History and Context

Paddington is 4.2kms from the CBD of Sydney and is a well established residential area, with numerous commercial facilities, particularly along Oxford Street. It lies on what were the paddocks adjacent to Victoria Barracks. It is now surrounded by the wealthy homes of Double Bay, Point Piper and Woollahra and has lost all hope of Harbour views. Settlement of the area dates from the 1810's when the first land grants were made, although population was minimal until the late 1830's. Up until this time the land was used mainly for farming and market gardening.

The area assumed its current identity following the 1848 completion of the Barracks. Paddington Estate, the original 100 acre grant became attached to the suburb. Once soldiers and their families moved into the barracks, shopkeepers followed and builders erected 3800 houses between 1860-1890. These were primarily terrace style houses. Juniper Hall, built in 1822 stood alone with panoramic views over Paddington. It was later renamed Ormond House and is now one of Sydney's oldest surviving houses.

Expansion of Paddington continued in the early 1900's, particularly during the 1920's. Some limited development took place in the post-war years, due mainly to gentrification of the previous working class suburb. The population has now declined slightly from the late 1900's.

Physical Influences

Paddington is 116.1ha (9.5% of total area) and includes approximately 2050 street trees (17% of total population). The soils of the area are dominated by the sandstone and windblown sand derived soils typical of the gentle slopes leading south to Botany Bay, but are likely to be high disturbed by the intensive development. The topography consists of broadly undulating slopes rising to the Oxford Street ridge line. It has a primarily northerly aspect sloping towards the lower lying parklands of White City and Trumper Park.

Existing Streetscape Character

The established streetscape character is strongly Victorian with some grand avenues and mature early and mid 20th century plantings. Paddington as a suburb has the broadest range of species within the municipality representing all fads and eras in street tree planting. The predominance of smaller species, narrow streets and small block depths also means it has a relatively high number of streets and street trees compared to its land area. Oxford Street is a major regional street and Paddington contains a well renowned fashionable retail shopping strip with minimal opportunities for street planting due to frequent awnings and narrow footpaths.

Paddington's street tree population can be best described as an eclectic mix of traditional native and exotic deciduous species. With the exception of a limited number of streets, most of Paddington's streets were not designed with the intention of creating tree-lined avenues. Many of the streets and pedestrian pavements are relatively narrow and fully paved with terrace



housing built to the front boundary. Study of 1943 aerial photos of the suburb reveal that almost all streets had no planting undertaken before this time.

The only early 20th century plantings include the Canary Island Date Palm (*Phoenix canariensis*) of Alma Street. The mid to later 20th Century plantings are characterised by existing Hill's Weeping Figs (*Ficus microcarpa* var. *hillii*) and London Plane (*Platanus x acerifolia*) in the precinct's most notable street, Paddington Street. It also includes the few remaining Lombardy Poplar (*Populus nigra* "Italica") in Jersey Road, and Kaffir Plums (*Harpephyllum caffrum*) of Suffolk Street. Numerous Jacaranda (*Jacaranda mimosifolia*) occur along Glenveiw Street and Willow Myrtles (*Agonis flexuosa*) along Cascade Street.



Figure 4.13 - In contrast to much of the Woollahra LGA Paddington is dominated by fully paved and narrow verges with terrace houses close to the street frontage such as Ormond Street, Paddington (Photo Arterra)

Late 20th Century and early 21st century planting consist primarily of a very broad palette of native and exotic trees including Ivory Curl Flower (*Buckinghamia celsissima*) in Cascade Street, Weeping Bottlebrush (*Callistemon viminalis*) in Underwood Street, Chinese Tallow Tree (*Sapium sebiferum*) within Glenmore Road and Goodhope Street, Tuckeroo (*Cupaniopsis anacardioides*) and Riberry (*Syzygium leuhmannii*) in Hargrave Street.

Paddington is defined by:

- The major circulation corridor and urbanised setting of Oxford Street bounding the precinct;
- Mostly older, small lot housing and terrace style housing with very narrow, fully paved verges and narrow road carriage ways, many with limited opportunities to plant street trees;
- Some prominent streets such as Paddington Street with large scale and fully canopied character.

Current dominant species

- | | |
|---------------------------------|---------------------|
| • <i>Tristaniaopsis laurina</i> | Water Gum |
| • <i>Sapium sebiferum</i> | Chinese Tallow Tree |
| • <i>Callistemon sp.</i> | Bottlebrush |
| • <i>Jacaranda mimosifolia</i> | Jacaranda |
| • <i>Flindersia australis</i> | Crows Ash |

Precinct Objectives

- To enhance the streetscape with street trees of appropriate scale and form.
- To respect desirable and established street tree characters.
- To reinforce the residential character through a mix of deciduous and evergreen tree planting that respond to the narrow street profiles, small building setbacks and the need for solar access.
- Investigate further opportunities for in-road planting to allow appropriate street planting without limiting the use of narrow footpaths and without impact on adjoining terrace houses.
- Where appropriate, provide plantings that are sympathetic to the heritage values of importance, in some Paddington streets.



Figure 4.14- The important major road corridor of Oxford Street runs though and bounds the Paddington precinct (Photo Arterra)

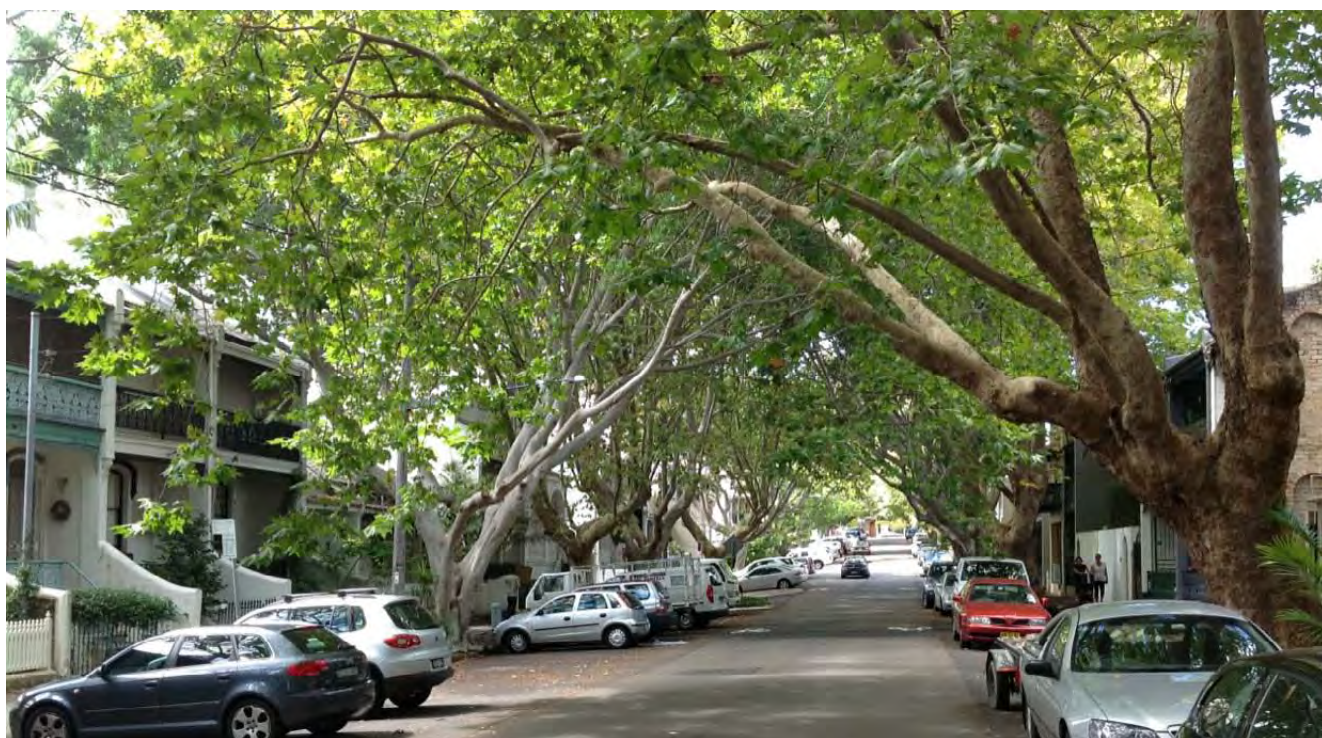


Figure 4.15- One of the historic and signature avenues of Paddington with its mixed planting of Figs, Syzygium and Plane Trees - Paddington Street, Paddington (Photo Arterra)

Species List – Paddington

Street Name	Main Issue	Verge Width	Power	Surround Type	Existing Dominant Species	Proposed Species	Critical Comments
Alma Street	Space Heritage	Small (<3.5m)	Overhead (Even)	Fully Paved	<i>Phoenix canariensis</i>	<i>Waterhousea floribunda</i> 'Green Avenue' <i>Washingtonia robusta</i> <i>Tristaniopsis laurina</i> (footpath and under wires)	Heritage listed palms, replace with evergreen spreading tree or an alternative palm species, if they decline.
Bates Avenue	Space	Small (<3.5m)	Overhead (Even)	Fully Paved	-	-	Verge only 1.8m. Private trees contribute to street.
Bennets Grove Avenue	Space	Small (<3.5m)	Overhead (Odd)	Fully Paved	<i>Syzygium luehmannii</i>	<i>Lagerstroemia indica</i>	Verge 1.8m.
Boundary Street		Medium (3.5-5m)	UG	Fully Paved	Mixed	<i>Flindersia australis</i> <i>Harpullia pendula</i>	Mixed rainforest themed character should be continued and tie in with City of Sydney side.
Brodie Street	Space	Small (<3.5m)	UG	Fully Paved	<i>Eucalyptus scoparia</i>	<i>Corymbia maculata</i>	No overhead power, can tolerate taller growing trees. Continue Eucalypt theme.
Broughton Street	Space	Small (<3.5m)	Overhead (Even)	Fully Paved	-	-	Verge 1.8m, road narrow, buildings close to street. No real planting opportunity.
Brown Street	Space	Small (<3.5m)	Overhead (Even)	Fully Paved	Mixed	<i>Elaeocarpus eumundi</i>	Verge only 1.8m. Power line conflict, swaps to odd on north side near Oxford Street.
Caledonia Street	Space	Small (<3.5m)	Overhead (Odd)	Fully Paved	-	-	Verge less than 1m. Too narrow for trees.
Cambridge Street	Space	Small (<3.5m)	Overhead (Odd)	Fully Paved	Mixed	<i>Lophostemon confertus</i>	ABC a priority for any new planting.
Campbell Avenue		Small (<3.5m)	Overhead (Odd)	Fully Paved	Mixed	<i>Flindersia australis</i> (east) <i>Koelreuteria bipinnata</i> (east) <i>Backhousia citriodora</i> (west) <i>Buckinghamia celsissima</i> (west)	
Cascade Street	Space	Small (<3.5m)	Overhead (Even)	Fully Paved	Mixed	<i>Flindersia australis</i> <i>Buckinghamia celsissima</i>	
Cecil Street	Native	Small (<3.5m)	Overhead (Even)	Fully Paved	<i>Ficus microcarpa</i> var. <i>hillii</i> <i>Platanus x acerifolia</i>	<i>Angophora costata</i> <i>Backhousia citriodora</i> (under wires)	Close to Trumper Park, suggest native species rather than exotic.
Comber St & Little Comber St	Space	Small (<3.5m)	Overhead (Odd)	Fully Paved	Mixed	<i>Pyrus calleryana</i> 'Chanticleer'	Verge only 1.8m.
Cooper Street	Space	Small (<3.5m)	Overhead (Even)	Fully Paved	Mixed	<i>Pyrus calleryana</i> 'Chanticleer' <i>Elaeocarpus eumundi</i>	Verge only 1.8m
Dillon Street		Small (<3.5m)	Overhead (Odd)	Fully Paved	<i>Afrocarpus falcatus</i>	<i>Zelkova serrata</i> 'Green Avenue' <i>Jacaranda mimosifolia</i> <i>Buckinghamia celsissima</i> (under wires)	Opportunity for in-road planting blisters to plant a few larger trees on the north side.

Street Name	Main Issue	Verge Width	Power	Surround Type	Existing Dominant Species	Proposed Species	Critical Comments
Duxford Street		Small (<3.5m)	Overhead (Odd)	Fully Paved	<i>Flindersia australis</i> <i>Sapium sebiferum</i>	<i>Flindersia australis</i> <i>Buckinghamia celsissima</i>	ABC a priority.
Elizabeth Street		Small (<3.5m)	Overhead (Even)	Fully Paved	<i>Jacaranda mimosifolia</i>	<i>Tristaniopsis laurina</i> <i>Buckinghamia celsissima</i>	Verge and street width variable. Too narrow for trees west of Underwood. Use one species to unify as a principle collector on both sides.
Flinton Street		Small (<3.5m)	UG	Fully Paved	<i>Platanus x acerifolia</i>	<i>Zelkova serrata</i> 'Green Avenue'	If Plane Trees fail or decline, replace with smaller but similar character species.
Forbes Street	Heritage	Medium (3.5-5m)	ABC	Fully Paved	<i>Afrocarpus falcatus</i> <i>Podocarpus elatus</i>	<i>Podocarpus elatus</i>	A relatively unique street of Podocarpus and Afrocarpus. Short street so should continue.
George Street	Space	Small (<3.5m)	Overhead (Even)	Fully Paved	-	<i>Caesalpinia ferrea</i> (in-road planting only)	Verge only 1.5m. Too narrow for trees unless in road planting is adopted on west side.
Gipps Street	Space	Small (<3.5m)	Overhead (Even)	Fully Paved	<i>Sapium sebiferum</i>	<i>Sapium sebiferum</i> (in-road only)	In road planting only, very tight street. Verge 1.8m or less, narrow street, buildings on boundary. ABC a priority before new trees get higher.
Glen Street	Space	Small (<3.5m)	Overhead (Even)	Fully Paved	<i>Elaeocarpus reticulatus</i>	<i>Caesalpinia ferrea</i>	Verge only 1.8m.
Glenmore Road		Small (<3.5m)	Overhead (Even)	Fully Paved	Mixed	<i>Koelreutaria bipinnata</i> (Oxford St - Gurner St only) <i>Pyrus calleryana</i> 'Chanticleer' (Oxford St - Gurner St only) <i>Backhousia citriodora</i> <i>Tristaniopsis laurina</i> <i>Corymbia maculata</i> (northern end)	Suggest block style planting of various deciduous trees similar to south-western end, trending to more natives towards northern end.
Glenview Street		Small (<3.5m)	Overhead (Odd)	Fully Paved	Mixed	<i>Jacaranda mimosifolia</i> <i>Tristaniopsis laurina</i>	
Goodhope Street		Medium (3.5-5m)	Overhead (Odd)	Fully Paved	<i>Sapium sebiferum</i>	<i>Corymbia maculata</i> <i>Tristaniopsis laurina</i>	A few senescent old Eucalypts. ABC a priority before new plantings get higher.
Gosbell Street		Small (<3.5m)	Overhead (Odd)	Fully Paved	<i>Tristaniopsis laurina</i> <i>Flindersia australis</i>	<i>Flindersia australis</i> (south and in-road) <i>Zelkova serrata</i> 'Green Vase' (south and in-road) <i>Buckinghamia celsissima</i> (north under wires)	Opportunity for in-road planting. Alternate deciduous and evergreen trees for solar access.
Gurner Street		Small (<3.5m)	Overhead (Even)	Fully Paved	<i>Ficus microcarpa</i> var. <i>hillii</i> <i>Celtis australis</i>	<i>Ulmus parvifolia</i>	
Hampden Street	Space	Small (<3.5m)	Overhead (Even)	Fully Paved	<i>Ficus microcarpa</i> var. <i>hillii</i>	<i>Backhousia citriodora</i> (under wires) <i>Waterhousea floribunda</i> 'Green Avenue'	Verge 2.4m. Close to Trumper Park, suggest native species rather than exotic.
Hargrave Street		Small (<3.5m)	ABC	Fully Paved	Mixed	<i>Jacaranda mimosifolia</i> <i>Cupaniopsis anacardioides</i> <i>Syzygium luehmannii</i>	

Street Name	Main Issue	Verge Width	Power	Surround Type	Existing Dominant Species	Proposed Species	Critical Comments
Harris Street		Small (<3.5m)	ABC	Fully Paved	Mixed	<i>Acmena smithii</i> (in centre only) <i>Tristaniopsis laurina</i> (footpath)	Verge only 1.8m. Split carriageway, bushland style landscape in batter.
Heeley Street	Space	Small (<3.5m)	Overhead (Even)	Fully Paved	Mixed	<i>Koelreutaria bipinnata</i>	No major current theme. Verge only 1.8m. Suggest ABC a priority and a long term implementation of a deciduous spreading tree to create a future canopied and desirable corridor street, similar to Queen Rd.
Hoddle Street	Space	Small (<3.5m)	Overhead (Even)	Fully Paved	-	<i>Elaeocarpus eumundi</i>	Verge only 1.8m, but could accommodate planting.
Hopetoun Street	Space	Small (<3.5m)	ABC	Fully Paved	<i>Tristaniopsis laurina</i>	<i>Tristaniopsis laurina</i>	
Hopewell Street		Small (<3.5m)	Overhead (Even)	Fully Paved	Mixed	<i>Lophostemon confertus</i> <i>Zelkova serrata</i> 'Green Avenue'	Suggested alternating avenue of deciduous and evergreen trees with further investigation for inroad planting to avoid overhead wires.
Jersey Road	Space	Small (<3.5m)	Overhead (Odd)	Fully Paved	Mixed	<i>Lagerstroemia indica</i> <i>Caesalpinia ferrea</i>	Verge only 1.8m. Poplars in decline.
Lawson Street		Medium (3.5-5m)	Overhead (Odd)	Fully Paved	Mixed	<i>Ulmus parvifolia</i> <i>Pyrus ussuriensis</i>	Powerlines quite low. ABC a priority
Liverpool Street	Space	Small (<3.5m)	Overhead (Even)	Fully Paved	Mixed	<i>Ulmus parvifolia</i> <i>Pyrus ussuriensis</i>	Maintain spreading evergreen character.
Macdonald Street		Small (<3.5m)	Overhead (Odd)	Fully Paved	Mixed	<i>Pyrus calleryana</i> 'Chanticleer' <i>Buckinghamia celsissima</i>	
McGarvie Street	Heritage Space	Small (<3.5m)	UG	Fully Paved	-	<i>Caesalpinia ferrea</i> (in-road planting only)	Verge 1.8m. Suggest similar treatment to nearby George Street if in-road planting is possible on east side.
Neild Avenue		Medium (3.5-5m)	Overhead (Odd)	Fully Paved	<i>Platanus x acerifolia</i> <i>Lophostemon confertus</i>	<i>Lophostemon confertus</i>	
Norfolk Street	Space	Small (<3.5m)	Overhead (Odd)	Fully Paved	<i>Lophostemon confertus</i> <i>Jacaranda mimosifolia</i>	<i>Lophostemon confertus</i> <i>Jacaranda mimosifolia</i>	Powerlines affecting trees. ABC a priority.
Olive Street	Space	Small (<3.5m)	ABC	Fully Paved	Mixed	<i>Jacaranda mimosifolia</i>	Verge only 1.8m. Could make a feature of this small street with a single type of flowering tree species.
Ormond Street	Exposure Heritage	Small (<3.5m)	Overhead (Even)	Fully Paved	<i>Sapium sebiferum</i>	<i>Sapium sebiferum</i> <i>Pyrus calleryana</i> 'Chanticleer' <i>Pyrus ussuriensis</i>	Verge only 2.5m. Powerlines overhead, ABC a priority.
Oxford Street	Space	Medium (3.5-5m)	UG	Fully Paved	<i>Platanus x acerifolia</i>	<i>Platanus x acerifolia</i> 'Bloodgood'	<i>Celtis australis</i> suggested in CoS STMP for Oxford Street.

Street Name	Main Issue	Verge Width	Power	Surround Type	Existing Dominant Species	Proposed Species	Critical Comments
Paddington Street	Heritage	Small (<3.5m)	ABC	Fully Paved	<i>Platanus x acerifolia</i> <i>Ficus microcarpa</i> var. <i>hillii</i>	<i>Platanus x acerifolia</i> 'Bloodgood' <i>Syzygium ingens</i> (syn. <i>Acmena brachyandra</i>) <i>Aggyrodendron actinophyllum</i>	Suggest any new planting is done in-road. Maintain an alternating avenue of deciduous and evergreen trees to retain existing theme.
Quarry Street		Small (<3.5m)	ABC	Fully Paved	<i>Lophostemon confertus</i> <i>Jacaranda mimosifolia</i>	<i>Lophostemon confertus</i>	Verge only 1.8m
Queen Road	Space	Small (<3.5m)	Overhead (Even)	Fully Paved	<i>Koelreutaria bipinnata</i>	<i>Koelreutaria bipinnata</i>	Verge 1.8m. ABC a priority. Maintain as a relatively unique narrow Koelreutaria street.
Royston Street	Native Heritage	Small (<3.5m)	Overhead (Odd)	Fully Paved	<i>Platanus x acerifolia</i>	<i>Angophora costata</i> <i>Backhousia citriodora</i> (under wires)	Close to Trumper Park, suggest native species rather than exotic.
Shadforth Street	Space	Small (<3.5m)	Overhead (Even)	Fully Paved	<i>Sapium sebiferum</i>	<i>Pyrus ussuriensis</i> <i>Pyrus calleryana</i> 'Chanticleer'	In-road planting only, very tight. Verge 1.8m or less, street narrow, buildings on boundary.
Stafford Street	Views	Small (<3.5m)	Overhead (Even)	Fully Paved	<i>Tristaniopsis laurina</i> <i>Jacaranda mimosifolia</i>	<i>Ulmus parvifolia</i> <i>Jacaranda mimosifolia</i> <i>Syzygium paniculatum</i> <i>Buckinghamia celsissima</i> (if under wires)	Massive street, excellent in-road planting opportunities. Larger trees possible. Alternating avenue of deciduous and evergreen trees suggested.
Stephen Street	Space	Small (<3.5m)	Overhead (Even)	Fully Paved	Mixed	<i>Zelkova serrata</i> 'Green Vase' <i>Buckinghamia celsissima</i> (under wires)	Too narrow in south end. Very mixed existing palette.
Suffolk Street	Space	Small (<3.5m)	Overhead (Odd)	Fully Paved	<i>Harpephyllum caffrum</i>	<i>Lophostemon confertus</i> <i>Tristaniopsis laurina</i> <i>Buckinghamia celsissima</i>	ABC a priority. Suggest changing from Harpephyllum.
Sutherland Street	Native	Small (<3.5m)	ABC	Fully Paved	Mixed	<i>Corymbia maculata</i> <i>Backhousia citriodora</i> <i>Flindersia australis</i> <i>Caesalpinia ferrea</i>	In road planting opportunities.
Underwood Street	Heritage Space	Small (<3.5m)	Overhead (Odd)	Fully Paved	<i>Jacaranda mimosifolia</i> <i>Callistemon viminalis</i> cv.	<i>Backhousia citriodora</i> <i>Pyrus calleryana</i> 'Chanticleer'	Verge 1.8m, roadway narrow. In-road planting opportunities.
Union Street / Albert Street	Space	Small (<3.5m)	Overhead (Odd)	Fully Paved	<i>Tristaniopsis laurina</i>	<i>Tristaniopsis laurina</i> (under wires) <i>Lophostemon confertus</i>	Wide street capable of larger trees. Consider widening footpaths.
Vialoux Avenue		Medium (3.5-5m)	Overhead (Odd)	Fully Paved	Mixed	<i>Syzygium luehmannii</i> <i>Buckinghamia celsissima</i> <i>Eucalyptus pilularis</i>	Syzygium and Buckinghamia doing well. Maintain large trees in centre island.
Victoria Street	Space	Small (<3.5m)	Overhead (Even)	Fully Paved	-	<i>Elaeocarpus eumundi</i> <i>Fraxinus griffithii</i>	Planting possible if undertaken in-road.
Wentworth Street	Space	Small (<3.5m)	Overhead (Even)	Fully Paved	Mixed	<i>Elaeocarpus eumundi</i> <i>Caesalpinia ferrea</i> (in-road planting only)	Verge 1.5m. In-road planting opportunities similar to George Street and McGarvie Street.

Street Name	Main Issue	Verge Width	Power	Surround Type	Existing Dominant Species	Proposed Species	Critical Comments
West Street	Space	Small (<3.5m)	ABC	Fully Paved	<i>Robinia pseudoacacia</i> 'Frisia' <i>Syzygium luehmannii</i>	<i>Pyrus calleryana</i> 'Chanticleer' <i>Syzygium luehmannii</i>	Verge only 1.8m. Planting on non-power side only.
William Street		Small (<3.5m)	Overhead (Odd)	Fully Paved	-	<i>Zelkova serrata</i> 'Green Avenue' (in-road planting only)	Verge only 1.5m, commercial and too narrow for trees in footpath. Could consider deciduous trees in-road on eastern side.
Windsor Street		Small (<3.5m)	Overhead (Odd)	Fully Paved	Mixed	<i>Tristanopsis laurina</i> <i>Syzygium luehmannii</i>	
Young Street	Space	Small (<3.5m)	ABC	Fully Paved	-	<i>Zelkova serrata</i> 'Green Avenue' (in-road planting only)	Verge 1m only. Could do in road planting like Gipps street.

4.6 Point Piper

History and Context

Point Piper is an established residential Harbour side peninsula similar to its western neighbour, Darling Point. This visually prominent area overlooks Double Bay to the west and Rose Bay to the east. Significant development occurred in the early 1900's, with Point Piper becoming a very prestigious area in which to live. Point Piper is located 5.8kms east of the CBD of Sydney and accessed off the northern side of New South Head Road.

Point Piper, was once known as Elizabeth Point, but was later named after Captain John Piper (1773-1851) who built a mansion there on 190 acres in 1816. He named it Henrietta Villa after Governor Macquarie's wife. It was completed in 1822 and was said to be one of the most expensive houses built in Australia at the time. It was demolished in 1883 and Woollahra House was built in its place. The area was further subdivided and is now home to many wealthy people.

Physical Influences

At 35.6ha (2.9% of total area) it is the second smallest precinct, behind Edgecliff, and contains approximately 320 street trees (3% of total population). It is a typical narrow sandstone promontory, similar to many other headlands that divide Port Jackson's many coves.

It is dominated by the underlying Hawkesbury Sandstone and appears to have sandy soils some with frequent exposed rock escarpments visible on the sides of streets when running along the contours. The soils are likely to be shallow.

Existing Streetscape Character

Point Piper is a prestigious Harbour promontory with an historically intense pressure on views. As a result there has been a history of large park and street trees being poisoned and many newly planted trees being vandalised and removed before they have had a chance to establish. Numerous larger street trees are also regularly pruned to maintain views, leading to unnatural and unsympathetic tree forms. Electricity supply is underground which means that trees may be planted without fear of being pruned for line clearance.

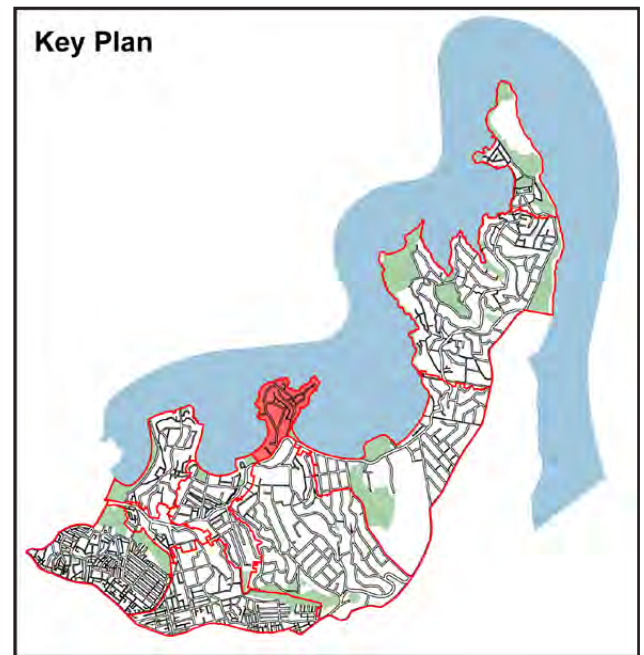


Figure 4.16- Views are a critical consideration for the street tree planting around the prestigious Point Piper (Photo Arterra)



Figure 4.17- One of the historic street trees along Wentworth Street, Point Piper (Photo Arterra)

The main circulation road servicing Point Piper is Wolseley Road, which runs typically mid-slope around the peninsula, broadly following the contours with houses and apartments overlooking the street to the Harbour and beyond. The street has numerous species and trees, many of which are relatively small. Most other streets have quite narrow verges with a narrow grassed strip and concrete path towards the lot boundaries.

Point Piper is defined by:

- Generous width streets but with relatively narrow verges, typically with a grass strip and narrow footpath;
- Most streets have poorly defined character with a large mixture of species;
- Larger and visually dominant trees are from the early 1900's planting of Morton Bay Figs, Hill's Weeping Figs, Camphor Laurels, Brush Box and Norfolk Island Pines; They now occur rather sporadically and don't present a unified or distinguishing character to the streets;
- Numerous older and larger tree planting are now becoming aged and frequently lopped to provide for views;
- The main heritage trees are associated with Dunara Gardens which contains numerous visually significant groupings;
- Larger tree planting is likely to be strongly resisted by residents where it is likely to affect pre-existing views.

Current dominant species

• <i>Tristanopsis laurina</i>	Water Gum
• <i>Cinnamomum camphora</i>	Camphor Laurel
• <i>Lophostemon confertus</i>	Brush Box
• <i>Cupaniopsis anacardioides</i>	Tuckeroo
• <i>Jacaranda mimosifolia</i>	Jacaranda

Precinct Objectives

- To enhance the streetscape with street trees of appropriate scale and form while respecting existing Harbour views.
- To improve consistency of planting to re-established a more unified street tree character.



Figure 4.18- Wolseley Road, one of the main roads servicing Point Piper, with its eclectic mix of street tree species (Photo Arterra)

Species List – Point Piper

Street Name	Main Issue	Verge Width	Power	Surround Type	Existing Dominant Species	Proposed Species	Critical Comments
Buckhurst Ave	Exposure	Medium (3.5-5m)	UG	Grass & Path	<i>Ficus microcarpa</i> var. <i>hillii</i>	<i>Cupaniopsis anacardioides</i> (footpath) <i>Waterhousia floribunda</i> 'Green Avenue' (centre)	Median planting, maintain big trees.
Dunara Gardens	Heritage Views Exposure Space	Small (<3.5m)	UG	Fully Paved	Mixed	<i>Livistona australis</i>	Views, no real planting opportunities.
Longworth Avenue	Views Exposure Space	Small (<3.5m)	UG	Grass & Path	Mixed	<i>Xylosma senticosum</i>	Views, minimal verge width.
St Mervyns Ave	Views Exposure Space	Small (<3.5m)	UG	Fully Paved	-	-	Too narrow for trees
Wentworth Place	Heritage Views Exposure Space	Small (<3.5m)	UG	Fully Paved	-	-	Too narrow for trees
Wentworth Street	Heritage Views Exposure	Medium (3.5-5m)	UG	Grass & Path	Mixed	<i>Jacaranda mimosifolia</i> <i>Xylosma senticosum</i> <i>Angophora costata</i>	Very wide street, in road planting opp. Trees pruned for views. Replace largunaria
Wingadal Place	Views Exposure	Small (<3.5m)	UG	Grass & Path	-	<i>Murraya paniculata</i>	Views, minimal verge width.
Wolseley Crescent	Views Exposure Space	Small (<3.5m)	UG	Mulch	-	-	Too narrow for trees.
Wolseley Road	Views Exposure	Medium (3.5-5m)	UG	Grass & Path	Mixed	<i>Angophora costata</i> <i>Glochidion ferdinandi</i> <i>Lophostemon confertus</i> <i>Jacaranda mimosifolia</i> <i>Ulmus parvifolia</i>	Great views typically. Native escarpment with Port Jackson Figs Good Camphora Laurels towards southern end and historic Norfolk Pines. Very diverse and eclectic mix of trees throughout street. Suggest alternating planting of Jacaranda and Angophora North of first Wentworth Street intersection. Glochidion wherever this is not accepted. Alternating planting of Brush Box and Ulmus parvifolia south of Wentworth Street first intersection.
Wunulla Road	Views Exposure Space	Small (<3.5m)	UG	Fully Paved	Mixed	<i>Angophora costata</i> (where space and views permit) <i>Ulmus parvifolia</i> <i>Tristanopsis laurina</i> <i>Jacaranda mimosifolia</i>	In road planting opportunities northern in peninsula past Longworth ave.
Wyuna Road	Heritage Views Exposure	Medium (3.5-5m)	UG	Grass & Path	Mixed	<i>Syzygium paniculatum</i> <i>Jacaranda mimosifolia</i>	Rather eclectic mix of species

4.7 Rose Bay

History and Context

Rose Bay is 7.0kms from the CBD of Sydney and is an established residential area, with some small commercial areas along the main roads. It is traversed by New South Head Road which offers many excellent views to the Harbour. Major features of the area include the large open spaces of Royal Sydney Golf Club and Woollahra Golf Club, Rose Bay Marina, Lyne Park, Rose Bay Park, Woollahra Park, Cranbrook Sports Ground, Woollahra Playing Fields, Cranbrook Junior School, Kambala Anglican Girls School and two other schools. There are also various small commercial retail areas along New South Head Road and Old South Head Road.

Rose Bay was named by Governor Phillip to honour his friend George Rose who was a wealthy businessman of the 1830's who considered the area desirable. Large estates were established in the early 1800's amongst the market gardens, which continued until the 1920's. The remaining swampy areas were eventually drained and residential development ensued, particularly with the expansion of tram services to the area. Rose Bay contains many well-known private schools. Kambala, originally known as Tivoli, was part of an 1812 land grant to Samuel Blackwell.

Physical Influences

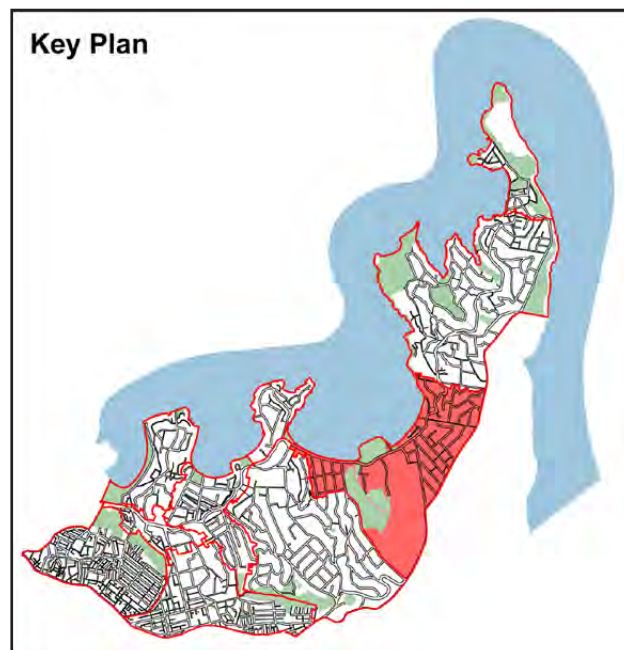
At 202.7ha (16.6% of total area) it is one of the larger precincts and is home to approximately 1300 street trees (11% of total population). Much of the area is situated on the flat and low lying sand dunes that once connected through from Bondi to the Harbour. Some elevated areas exist in the northern parts of the precinct south of Towns Road, leading to the more elevated areas of adjoining Vaucluse.

The stormwater drainage from Bellevue Hill and parts of Waverley flows into the Harbour through Woollahra Park / Golf Course. Most of the area is reasonably flat and is characterised by gentle slopes and deep sandy soils and loamy sands with excellent drainage. This presents excellent conditions for the establishment of trees but may be prone to drought issues in prolonged periods without rain due to poor water holding capacity of these soils. Nutrients are also easily leached from the soils. The relatively low lying nature of the area can lead to localised areas with high water tables and salinity. It is the largest area within the LGA where in-road planting opportunities can be easily achieved because of the deep sandy soil profile.

Existing Streetscape Character

Much of Rose Bay is a prestigious Harbour side suburb with streets strongly influenced by surrounding open spaces and parks. Many streets, particularly towards the Harbour have the electricity supply underground which means that trees may be planted without fear or being pruned for clearances. Numerous streets also have extremely generous verge widths which facilitate the growth and establishment of very large street trees.

Rose Bay's street tree population is dominated mostly by very traditional native and exotic species. Study of 1943 aerial photos of the suburb reveal that almost all streets had substantial street



planting undertaken before this time. These early 20th century plantings included the Hill's Weeping Figs (*Ficus microcarpa* var. *hillii*), Brush Box (*Lophostemon confertus*) and London Plane (*Platanus x acerifolia*) in the precincts most notable streets such as, Plumer Road, O'Sullivan Rd and Balfour Rd. There are also many remaining Plum Pines (*Podocarpus elatus*). Norfolk Island Pines were commonly and successfully used towards the Harbours edge.

New South Head Road dominates as the main corridor street through the precinct and contains numerous impressive specimens of Hill's Weeping Figs (*Ficus microcarpa* var. *hillii*). The more commercial areas contain latter planting of Eucalypts, many of which are now out of scale with their surroundings and fully paved retail environment. A more recent replacement of Tulipwood (*Harpullia pendula*) presents an attractive street presence and now defines the commercial areas.



Figure 4.19- Filtered and picturesque views towards the harbour, framed by the street trees are offered throughout Rose Bay such as Cranbrook Road, Rose Bay (Photo Arterra)



Figure 4.20- Many roads within Rose Bay offer some of the widest verges in the municipality and combined with the sandy soil profiles offer great scope for signature planting of large trees, such as Beresford Road, Rose Bay (Photo Arterra)



Figure 4.21- One of the great streets of Sydney New South Head Road, through Rose Bay, with its defining avenue of Hills Weeping Figs and other historic trees. This is one of the streets within the municipality where Hill's Figs will be continued due to their defining character and civic scale (Photo Arterra)

Old South Head Road defines the more exposed eastern side of the precinct and indeed the LGA area, and as a result Woollahra only controls one side. Substantial portions are bounded by the Royal Sydney Golf Course and the large trees of the golf course perimeter contribute greatly to the streetscape. North of Newcastle Street however, Old South Road has a diverse and eclectic mix of older and young tree planting. Many of the older and small trees are now in relatively poor condition and in need of replacement. Opportunity exists to create a more unified vision for Old South Road through a more strategic planting program.

Rose Bay is defined by:

- Strong maritime and open space influences;
- Generous width streets often with equally generous verges, typically with a wide grass strip and narrow footpath and deep sandy soils;
- Most streets have very well defined canopied characters with a small mixture of species dominating, particularly Brush Box;
- Larger and visually dominant trees are from the early 1900's planting of Hill's Weeping Figs, Plane Trees, Camphor Laurels, Brush Box and Norfolk Island Pines. They often present a very unified and distinguishing character to the streets;
- Rose Bay typically has an extensive tree canopy that is highly visible from Sydney Harbour;
- Due to the flat topography views are not as great an issue in the lower lying streets compared with many areas of Woollahra. They do become an issue in the more northerly and elevated areas, where soils and exposure also become important street tree selection factors.

Current dominant species

- | | |
|--|---------------------|
| • <i>Lophostemon confertus</i> | Brush Box |
| • <i>Ficus microcarpa</i> var. <i>hillii</i> | Hill's Weeping Fig |
| • <i>Tristanopsis laurina</i> | Water Gum |
| • <i>Melaleuca quinquenervia</i> | Broadleaf Paperbark |
| • <i>Agonis flexuosa</i> | Willow Myrtle |

Precinct Objectives

- To enhance the streetscape with street trees of appropriate scale and form.
- To respect the established and desirable street tree characters.
- To reinforce the residential character through a mix of deciduous and evergreen tree planting that respond to the wide street profiles and large building setbacks.
- Reinforce and promote civic scaled street planting that defines the main corridors of New South Head Road and Old South Head Road
- Define and unify the commercial hubs through appropriate and unique street tree planting.
- Where appropriate, provide plantings that are sympathetic to the heritage values of some of the Rose Bay streets.



Figure 4.22- Plumer Road, Rose Bay with its generous verges and mix of large tree species such as Hills Weeping Figs and Plane Trees. Despite providing a fantastic street character, when the figs and other trees decline, they will be replaced, over time, with trees of similar characters but more appropriate species such as Weeping Lilly Pilly and Jacarandas (Photo Arterra)

Species List – Rose Bay

Street Name	Main Issue	Verge Width	Power	Surround Type	Existing Dominant Species	Proposed Species	Critical Comments
Albemarle Avenue		Medium (3.5-5m)	Overhead (Odd)	Grass & Path	<i>Lophostemon confertus</i>	<i>Lophostemon confertus</i>	
Balfour Street between New South Head Rd and Plumer Rd		Large (>5m)	UG	Grass & Path	<i>Lophostemon confertus</i> <i>Ficus microcarpa</i> var. <i>hillii</i>	<i>Lophostemon confertus</i>	Generous verges could tolerate large trees, very varied palette at present.
Bayview Hill Road	Views Space	Small (<3.5m)	UG	Grass & Path	-	<i>Backhousia citriodora</i> <i>Xylosma senticosum</i>	Could plant Xylosma in grass side verge.
Beresford Road between New South Head Rd and Plumer Rd		Large (>5m)	UG	Grass & Path	Mixed	<i>Lophostemon confertus</i> <i>Podocarpus elatus</i> <i>Ulmus parvifolia</i>	Asymmetrical verges, wider to south.
Caledonian Road	Views	Medium (3.5-5m)	UG	Grass & Path	<i>Ficus microcarpa</i> var. <i>hillii</i>	<i>Angophora costata</i> <i>Cupaniopsis anacardioides</i>	
Carlisle Street	Views	Medium (3.5-5m)	ABC	Grass & Path	Mixed	<i>Angophora costata</i> <i>Eucalyptus haemastoma</i> <i>Corymbia eximia</i>	
Cecil Road	Views Exposure	Large (>5m)	Overhead (Odd)	Grass & Path	-	<i>Angophora hispida</i> <i>Banksia serrata</i>	View and exposure a consideration.
Chamberlain Avenue	Views Exposure	Large (>5m)	Overhead (Odd)	Grass & Path	<i>Melaleuca quinquenervia</i>	<i>Banksia integrifolia</i> <i>Buckinghamia celsissima</i> <i>Angophora hispida</i>	Melaleuca subject to ongoing view pruning, unsustainable.
Churchill Road	Views Exposure	Large (>5m)	Overhead (Odd)	Grass & Path	Mixed	<i>Lagerstroemia indica</i> <i>Murraya paniculata</i> <i>Arbutus unedo</i>	
Collins Avenue	Views Exposure	Small (<3.5m)	UG	Fully Paved	-	<i>Corymbia eximia (in road)</i>	Back lane to shops, little room for planting. Cupaniopsis in park contribute greatly to street. In-road planting on shop side to soften street.
Conway Avenue	Views Exposure	Large (>5m)	Overhead (Even)	Grass & Path	Mixed	<i>Angophora costata</i> <i>Banksia integrifolia</i>	
Courtenay Road	Views	Large (>5m)	Overhead (Odd)	Grass & Path	<i>Lophostemon confertus</i>	<i>Lophostemon confertus</i>	Brush Box with ABC as a priority.
Dover Road		Medium (3.5-5m)	Overhead (Even)	Grass & Path	<i>Lophostemon confertus</i> <i>Harpullia pendula (northern end only)</i>	<i>Lophostemon confertus</i> <i>Harpullia pendula (northern end only)</i>	ABC a priority. Harpullia should be continued near shops.
Dudley Road		Medium (3.5-5m)	Overhead (Odd)	Grass & Path	Mixed	<i>Ulmus parvifolia</i> <i>Tristanopsis laurina</i> <i>Lophostemon confertus</i>	ABC a priority.

Street Name	Main Issue	Verge Width	Power	Surround Type	Existing Dominant Species	Proposed Species	Critical Comments
Dumaresq Road	Views Space	Small (<3.5m)	UG	Fully Paved	<i>Ficus microcarpa</i> var. <i>hillii</i>	<i>Backhousia citriodora</i>	Very narrow verge, limited planting opportunities.
Ebsworth Road		Large (>5m)	Overhead (Odd)	Grass & Path	<i>Lophostemon confertus</i> <i>Ficus microcarpa</i> var. <i>hillii</i>	<i>Lophostemon confertus</i> <i>Ulmus parvifolia</i>	Suggest alternating avenue of deciduous and evergreen trees.
Elanora Street	Exposure	Large (>5m)	UG	Grass & Path	<i>Tipuana tipu</i>	<i>Eucalyptus sideroxylon</i>	Large verge. Plane Trees in golf course.
Faraday Avenue		Medium (3.5-5m)	Overhead (Even)	Grass & Path	<i>Lophostemon confertus</i>	<i>Lophostemon confertus</i>	ABC a priority to allow successful Brush Box planting on both sides.
Fernleigh Avenue	Space	Small (<3.5m)	Overhead (Even)	Fully Paved	-	-	Very narrow, no street planting opportunities.
Hamilton Street		Large (>5m)	Overhead (Odd)	Grass & Path	<i>Lophostemon confertus</i> <i>Callistemon viminalis</i> cv.	<i>Lophostemon confertus</i> <i>Tristaniopsis laurina</i>	
Ian Street	Views	Large (>5m)	Overhead (Even)	Grass & Path	<i>Lophostemon confertus</i>	<i>Lophostemon confertus</i> <i>Murraya paniculata (eastern end)</i>	
Iluka Street		Small (<3.5m)	UG	Grass & Path	<i>Robinia</i> sp.	<i>Caesalpinia ferrea</i>	Green Robinia reverting to type, not performing well. Alternate planting.
Kent Road		Large (>5m)	UG	Grass & Path	<i>Jacaranda mimosifolia</i> <i>Ficus microcarpa</i> var. <i>hillii</i>	<i>Waterhousea floribunda 'Green Avenue'</i> <i>Jacaranda mimosifolia</i>	Can tolerate larger tree planting. Suggest alternating avenue of Jacaranda and Waterhousea.
Manion Avenue		Medium (3.5-5m)	UG	Grass & Path	Mixed	<i>Eucalyptus sideroxylon (on eastern side only)</i> <i>Angophora hispida</i>	Asymmetrical verge, narrow on golf course side.
Mitchell Road		Medium (3.5-5m)	Overhead (Odd)	Grass & Path	<i>Lophostemon confertus</i>	<i>Lophostemon confertus</i>	ABC as a priority for any new planting
New South Head Road between Rose Bay Ave and Towns Rd		Large (>5m)	UG	Grass & Path	<i>Ficus microcarpa</i> var. <i>hillii</i> <i>Eucalyptus microcorys</i>	<i>Ficus microcarpa</i> var. <i>hillii</i> (Rosebay Ave – Norwich Rd) <i>Araucaria heterophylla</i> (Lyne Park) <i>Harpullia pendula</i> (Norwich Rd – Caledonian Rd) <i>Corymbia maculata</i> <i>Angophora costata</i> <i>Lagerstroemia indica</i>	
Newcastle Street		Medium (3.5-5m)	UG	Grass & Path	Mixed	<i>Lophostemon confertus</i> <i>Angophora costata</i>	Golf course planting contributes to streetscape. Overhead power lines on even side in southern end are restricting planting. ABC a priority.

Street Name	Main Issue	Verge Width	Power	Surround Type	Existing Dominant Species	Proposed Species	Critical Comments
Norwich Road		Large (>5m)	UG	Grass & Path	<i>Lophostemon confertus</i> (east side) <i>Melaleuca quinquenervia</i> (west side)	<i>Lophostemon confertus</i> (east side) <i>Melaleuca quinquenervia</i> (west side)	Massive Norfolk Island Pine at south end.
O'Sullivan Road between New South Head Rd and Plumer Rd		Medium (3.5-5m)	UG	Grass & Path	<i>Ficus microcarpa</i> var. <i>hillii</i> <i>Tristaniaopsis laurina</i>	<i>Waterhousea floribunda</i> 'Green Avenue' <i>Tristaniaopsis laurina</i> <i>Ficus microcarpa</i> var. <i>hillii</i> (eastern side)	Golf Course adjoining, not as much room as other nearby streets.
Old South Head Road between O'Sullivan Rd and Hamilton Street	Space	Medium (3.5-5m)	UG	Grass & Path	Mixed	<i>Lophostemon confertus</i> <i>Flindersia australis</i> (commercial areas)	
Old South Head Road between Hamilton St and Towns Rd	Space	Medium (3.5-5m)	UG	Grass & Path	Mixed	<i>Angophora costata</i>	
Plumer Road		Large (>5m)	UG	Grass & Path	<i>Ficus microcarpa</i> var. <i>hillii</i> <i>Platanus x acerifolia</i>	<i>Waterhousea floribunda</i> 'Green Avenue' <i>Jacaranda mimosifolia</i>	
Powell Road		Large (>5m)	UG	Grass & Path	<i>Lophostemon confertus</i>	<i>Waterhousea floribunda</i> 'Green Avenue' <i>Jacaranda mimosifolia</i>	
Rawson Road	Views	Medium (3.5-5m)	Overhead (Odd)	Grass & Path	Mixed	<i>Xylosma senticosum</i> <i>Lagerstroemia indica</i>	
Richmond Road	Heritage	Large (>5m)	UG	Grass & Path	<i>Lophostemon confertus</i> <i>Cinnamomum camphora</i>	<i>Lophostemon confertus</i> <i>Waterhousea floribunda</i> 'Green Avenue'	Mixed alternating avenue of species. Should continue but substitute Camphor Laurel with <i>Waterhousea</i> when replacement is required.
Salisbury Road between New South Head Rd and Plumer Rd		Large (>5m)	UG	Grass & Path	<i>Ficus microcarpa</i> var. <i>hillii</i> <i>Ulmus parvifolia</i>	<i>Lophostemon confertus</i> <i>Ulmus parvifolia</i> <i>Tristaniaopsis laurina</i>	
Spencer Street	Heritage	Medium (3.5-5m)	Overhead (Even)	Grass & Path	<i>Lophostemon confertus</i> <i>Tristaniaopsis laurina</i>	<i>Lophostemon confertus</i> <i>Tristaniaopsis laurina</i>	Very nice street. Continue with current theme, ABC as a priority.
Tivoli Avenue	Exposure Views Space	Large (>5m)	UG	Grass & Path	<i>Lagerstroemia indica</i> <i>Melaleuca quinquenervia</i>	<i>Ulmus parvifolia</i> <i>Lagerstroemia indica</i>	Variable and asymmetrical verge
Vickery Avenue	Exposure	Large (>5m)	UG	Grass & Path	<i>Araucaria heterophylla</i>	<i>Araucaria heterophylla</i> <i>Cupaniopsis anacardioides</i>	
Wilberforce Avenue		Medium (3.5-5m)	Overhead (Even)	Grass & Path	<i>Lophostemon confertus</i>	<i>Lophostemon confertus</i> <i>Waterhousea floribunda</i> 'Green Avenue'	Good Avenue. Historic Camphor Laurels at Newcastle end.

4.8 Vaucluse

History and Context

Vaucluse is 9.0kms from the CBD of Sydney and offers many charming and elevated views to the Harbour and is home to many fine houses. Vaucluse was named after Vaucluse House, which was the home of William Charles Wentworth (1790-1872) for 26 years from 1827 through to 1853. By 1915, almost all of the Vaucluse estate was sold off. One of the finest homes is the Greycliffe House built by John Reeve, whose father was Charles Wentworth. Greycliffe Avenue honours this house and Hopetoun Avenue commemorates Australia's first Governor General, General Lord Hopetoun.

Settlement of the area dates from 1793, although population was extremely sparse until the later 1800's. Land was used mainly for farming and fishing. Rapid growth took place during the 1880's and 1890's. Significant development occurred during the early 1900's and up to the 1950's. The population has been relatively stable since this time.

Physical Influences

At 264.6ha (21.7% of total area) it is the largest precinct in the LGA. It contains a similarly large proportion of street trees with approximately 2300 (19% of total population). Vaucluse is positioned on hilly land with a predominately westerly aspect and commanding views of Sydney Harbour and its northern shores. Unlike Bellevue Hill that has a high proportion of soils derived from deep sand dune material, Vaucluse is dominated by the underlying Hawkesbury sandstone geology. As a consequence the terrain is steep with frequent exposed rock outcrops and ridges with relatively shallow sandy soils. Good examples of street tree plantings can still be found in many streets, although exposure and salt laden coastal breezes often stunts larger trees growth in the higher reaches. This exposure is particularly prominent in the higher ridge top associated with Old South Head Road. Maintenance of views is often a very critical consideration.

Two valleys feed into the Harbour and their lower portions are dominated by the extensive native tree planting and remnant bushlands associated with Parsley Bay and Vaucluse Park.

Existing Streetscape Character

From European settlement the original landscape has been dramatically transformed apart from the larger open spaces of Neilsen Park, Vaucluse Park, Parsley Bay Reserve and small portions in Christison Park/ Signal Hill Reserve.

Vaucluse is primarily a privileged suburb for families. Large homes and large gardens dominate. Street trees generally become larger and more visually dominant towards the Harbour's edge due to the more protected environment and deeper soils. The road pattern is dictated greatly by the physical barriers and steep slopes, with a serpentine and informal, irregular pattern throughout. Many streets run broadly across the slopes with houses overlooking the street to their views.

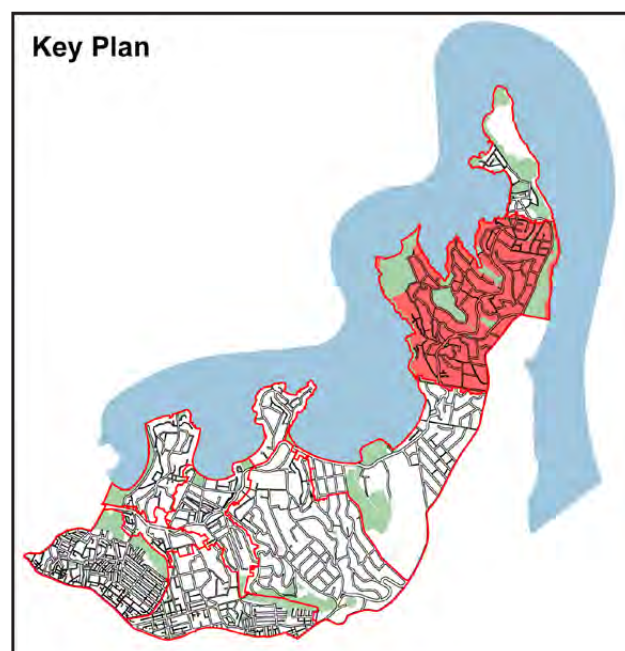


Figure 4.23- Some of the most spectacular views in Sydney are presented from the prestigious streets and houses of Vaucluse such as Queens Avenue. (Photo Arterra)



Figure 4.24- The main corridor, New South Head Road through Vaucluse presents significant street tree planting challenges. A more consistent and long term approach is warranted to help define this as the primary road through the municipality. (Photo Arterra)

The main corridor traversing and servicing Vaucluse is Hopetoun Avenue, Old South Head Road and New South Head Road. None of these main corridors currently retain a strong or unified street planting theme.

Vaucluse is defined by:

- Relatively steep hillsides and frequent rocky escarpments;
- Relatively exposed aspects towards the west;
- Mostly larger houses and mansions, many set well back from the street boundary and with wide frontages;
- Wide streets and informally arranged curvilinear streets running broadly across the slopes;
- Frequent elevated views to the Harbour and forested areas in the valley;
- A significant number of the streets planted with well established Brush Box (*Lophostemon confertus*);
- A significant number of the streets with well established and informal arrangements of endemic native trees such as Forest Red Gums (*Eucalyptus tereticornis*), Smooth-barked Apple (*Angophora costata*), Bangalay (*Eucalyptus botryoides*), Swamp Mahogany (*Eucalyptus robusta*) and Cheese Tree (*Glochidion ferdinandi*).

Current dominant species

- | | |
|------------------------------------|--------------|
| • <i>Lophostemon confertus</i> | Brush Box |
| • <i>Robinia sp.</i> | Black Locust |
| • <i>Callistemon sp.</i> | Bottlebrush |
| • <i>Tristaniopsis laurina</i> | Water Gum |
| • <i>Cupaniopsis anacardioides</i> | Tuckeroo |

Precinct Objectives

- To enhance the streetscapes with street trees of appropriate scales and form.
- Respect and facilitate pre-existing views in some streets with small sized trees that allow overlooking when mature and reduce the reliance on recurrent view pruning.
- To reinforce the established native and endemic street tree characters, particularly around the Harbours edge and associated remnant bushland areas such as Vaucluse Park and Parsley Bay Reserve.
- To reinforce and unify the character of the main corridor street through a more consistent approach to street tree planting.



Figure 4.25- In the lower portions of Vaucluse significant native street planting is possible in the generous verges, such as afforded in Parsley Road, Vaucluse. (Photo Arterra)



Figure 4.26- Some of the great streets of the municipality occur within Vaucluse such as Captain Pipers Road, Vaucluse. (Photo Arterra)

Species List – Vaucluse

Street Name	Main Issue	Verge Width	Power	Surround Type	Existing Dominant Species	Proposed Species	Critical Comments
Beach Avenue	Exposure	Large (>5m)	Overhead (Odd)	Grass	<i>Robinia pseudoacacia</i> 'Frisia'	<i>Eucalyptus botryoides</i> <i>Angophora costata</i> <i>Corymbia eximia</i> <i>Corymbia maculata</i>	Excessive pruning for powerlines. ABC a priority and plant mixed Eucalypts in any future planting
Belah Avenue	Exposure Views	Medium (3.5-5m)	Overhead (Odd)	Grass & Path	<i>Callistemon viminalis</i> cv.	<i>Angophora hispida</i> <i>Banksia integrifolia</i>	Extreme exposure
Bell Street	Views	Small (<3.5m)	Overhead (Even)	Grass & Path	<i>Metrosideros excelsa</i>	<i>Angophora hispida</i> <i>Banksia integrifolia</i>	Opportunity for in-road planting solutions or widening of the footpath area.
Billong Avenue	Exposure Native	Large (>5m)	ABC	Grass & Path	<i>Mixed</i>	<i>Eucalyptus haemastoma</i> <i>Angophora costata</i> <i>Banksia integrifolia</i>	Street already with ABC and wide verges, can accommodate larger trees.
Black Street	Views	Medium (3.5-5m)	Overhead (Even)	Grass & Path	<i>Mixed</i>	<i>Xylosma senticosum</i> <i>Buckinghamia celsissima</i>	Asymmetrical verge.
Boambillee Avenue		Large (>5m)	Overhead (Odd)	Grass	<i>Mixed</i>	<i>Angophora costata</i> <i>Eucalyptus paniculata</i> <i>Jacaranda mimosifolia</i> <i>Glochidion ferdinandi</i>	Powerlines, but opportunity for larger trees to grow over.
Burrabirra Ave	Views Exposure	Medium (3.5-5m)	Overhead (Odd)	Grass & Path	<i>Lophostemon confertus</i> <i>Tristanopsis laurina</i>	<i>Lophostemon confertus</i> <i>Angophora costata</i> <i>Buckinghamia celsissima (under wires)</i>	
Cambridge Avenue between Hopetoun Ave and Palmerston St	Heritage	Medium (3.5-5m)	Overhead (Odd)	Grass & Path	<i>Lophostemon confertus</i>	<i>Lophostemon confertus</i>	Generous verge, with excellent character which should be maintained. ABC a priority for any new planting on the power side. Could set trees further back from kerb. Eastern end of street very narrow with no planting possible.
Captain Pipers Road	Native Exposure	Medium (3.5-5m)	Overhead (Even)	Grass & Path	<i>Lophostemon confertus</i>	<i>Lophostemon confertus</i>	Asymmetrical road alignment, verge, Southern end past Clarendon too narrow for planting
Carrara Road	Views Space	Small (<3.5m)	Overhead (Odd)	Grass	-	<i>Archontophoenix cunninghamiana</i>	Figs clinging to cliff rock face, contribute to streetscape. Could plant palms where there is space, in informal groupings.
Chapel Road	Views	Large (>5m)	Overhead (Even)	Grass & Path	<i>Angophora costata</i> <i>Glochidion ferdinandi</i>	<i>Angophora costata</i> <i>Eucalyptus tereticornis</i> <i>Glochidion ferdinandi</i>	Strong native elements and character in street. Should be maintained.
Clairvaux Road	Exposure Views	Medium (3.5-5m)	Overhead (Odd)	Grass & Path	<i>Mixed</i>	<i>Archontophoenix cunninghamiana</i> <i>Howea forsteriana</i> <i>Buckinghamia celsissima</i>	Difficult to plant anything near reservoir. Views a major consideration.
Clarendon Street	Views Exposure	Large (>5m)	ABC	Grass & Path	<i>Mixed</i>	<i>Araucaria columnaris</i> <i>Banksia integrifolia</i> <i>Banksia serrata</i>	Very generous verges, surface rock outcrop in eastern lower half of street.

Street Name	Main Issue	Verge Width	Power	Surround Type	Existing Dominant Species	Proposed Species	Critical Comments
Coolong Road	Native Exposure	Medium (3.5-5m)	Overhead (Even)	Grass & Path	<i>Mixed</i>	<i>Eucalyptus tereticornis</i> <i>Angophora floribunda</i> <i>Tristaniopsis laurina</i> <i>Syzygium paniculatum</i>	Very wide ranging collection of species, continue informal native theme.
Dalley Avenue	Views Exposure	Medium (3.5-5m)	Overhead (Even)	Grass & Path	<i>Lophostemon confertus</i> <i>Hibiscus rosa-sinensis</i>	<i>Tristaniopsis laurina</i> <i>Xylosma senticosum</i>	Views and exposure a major consideration.
Davies Avenue	Space	Small (<3.5m)	Overhead (Odd)	Grass & Path	<i>Mixed</i>	<i>Lagerstroemia indica</i>	East-west section fully paved, but could be planted to create an attractive and cohesive street.
Derby Street	Views Exposure Space	Small (<3.5m)	Overhead (Odd)	Grass & Path	<i>Cupaniopsis anacardioides</i>	<i>Cupaniopsis anacardioides</i> <i>Xylosma senticosum</i>	Very narrow verge, views an issue. Extreme exposure.
Fisher Avenue	Native Space	Small (<3.5m)	Overhead (Even)	Grass	<i>Mixed</i>	<i>Angophora costata</i> <i>Corymbia gummifera</i> <i>Tristaniopsis laurina</i>	
Fitzwilliam Road	Views Native Exposure	Medium (3.5-5m)	Overhead (Even)	Grass & Path	<i>Lophostemon confertus</i>	<i>Lophostemon confertus</i> <i>Glochidion ferdinandi</i> <i>Angophora costata</i> <i>Backhousia citriodora (under wires)</i>	
Georges Road	Exposure Views	Large (>5m)	Overhead (Odd)	Grass & Path	<i>Banksia integrifolia</i> <i>Phoenix canariensis</i>	<i>Banksia integrifolia</i> <i>Banksia serrata</i> <i>Angophora hispida</i>	View and exposure a consideration.
Gilliver Avenue	Exposure	Medium (3.5-5m)	Overhead (Even)	Grass	<i>Tristaniopsis laurina</i>	<i>Glochidion ferdinandi</i> <i>Tristaniopsis laurina</i> <i>Cupaniopsis anacardioides</i>	Verge width varies greatly. Shallow soils limit planting.
Girilang Ave	Views Exposure Native	Medium (3.5-5m)	Overhead (Even)	Grass & Path	<i>Mixed</i>	<i>Eucalyptus haemastoma</i> <i>Corymbia eximia</i> <i>Angophora costata</i> <i>Banksia integrifolia</i>	Generous grass verge, very mixed native theme should be continued.
Greycliffe Avenue	Exposure Native	Medium (3.5-5m)	Overhead (Odd)	Grass & Path	<i>Buckinghamia celsissima</i>	<i>Buckinghamia celsissima</i>	Significant avenue planting of Brush Box in the park contributes to street. Power lines on property side.
Hay Street	Views Exposure	Medium (3.5-5m)	Overhead (Odd)	Grass & Path	<i>Mixed</i>	<i>Ulmus parvifolia</i> <i>Angophora costata</i>	Varied species ABC a priority if new planting undertaken.
Hillside Avenue	Views Exposure Space	Small (<3.5m)	UG	Fully Paved	-	<i>Tristaniopsis laurina</i>	Minimal space, only plant if specifically requested by residents.
Hopetoun Avenue between Salisbury Street and Wentworth Rd	Views Exposure	Medium (3.5-5m)	Overhead (Odd)	Grass & Path	<i>Mixed</i>	<i>Lophostemon confertus</i> <i>Angophora costata</i> <i>Tristaniopsis laurina (under wires and where views are an issue)</i>	Figs and Robinias should ultimately be replaced over time.
Jesmond Avenue	Heritage	Large (>5m)	Overhead (Odd)	Grass	<i>Lophostemon confertus</i>	<i>Lophostemon confertus</i>	Generous verge, short street, with excellent character which should be maintained. ABC a priority for any new planting under wires.

Street Name	Main Issue	Verge Width	Power	Surround Type	Existing Dominant Species	Proposed Species	Critical Comments
John Dykes Avenue	Views Exposure	Medium (3.5-5m)	Overhead (Even)	Grass & Path	<i>Callistemon viminalis</i> cv.	<i>Banksia serrata</i> <i>Angophora hispida</i>	
Kings Road	Views	Large (>5m)	Overhead (Even)	Grass & Path	<i>Mixed</i>	<i>Corymbia eximia</i> <i>Angophora hispida</i> <i>Banksia integrifolia</i> <i>Tristaniopsis laurina</i>	Exposure and soils a consideration.
Laguna Street	Space Exposure	Medium (3.5-5m)	Overhead (Odd)	Grass & Path	<i>Tristaniopsis laurina</i>	<i>Tristaniopsis laurina (under wires)</i> <i>Corymbia eximia</i> <i>Ulmus parvifolia</i>	
Loch Maree Place	Exposure Native Views	Small (<3.5m)	Overhead (Odd)	Grass	-	<i>Angophora costata</i>	Space and power lines an issue for placement. Minor opportunities only. ABC a priority if planting undertaken.
Macquarie Road	Views Exposure	Large (>5m)	Overhead (Odd)	Grass & Path	<i>Tristaniopsis laurina</i> <i>Banksia integrifolia</i>	<i>Tristaniopsis laurina</i> <i>Banksia integrifolia</i>	View and exposure a consideration.
Moore Street	Views Exposure	Small (<3.5m)	Overhead (Odd)	Fully Paved	<i>Cupaniopsis anacardioides</i>	<i>Cupaniopsis anacardioides</i>	
Myall Avenue	Views Exposure	Medium (3.5-5m)	Overhead (Odd)	Grass & Path	<i>Mixed</i>	<i>Tristaniopsis laurina</i> <i>Banksia integrifolia</i>	View and exposure a consideration.
New South Head Road between Towns Rd and Old South Head Rd	Views Exposure	Medium (3.5-5m)	UG	Grass & Path	<i>Mixed</i>	<i>Corymbia eximia</i> <i>Tristaniopsis laurina (in commercial precinct)</i> <i>Banksia integrifolia</i>	Fully paved in shopping centre.
Nulla Street	Views Exposure	Medium (3.5-5m)	Overhead (Odd)	Grass & Path	<i>Mixed</i>	<i>Tristaniopsis laurina</i> <i>Banksia integrifolia</i> <i>Cupaniopsis anacardioides</i>	Asymmetrical verge. Views a major consideration.
Nurran Road	Exposure	Large (>5m)	Overhead (Even)	Grass	<i>Mixed</i>	<i>Glochidion ferdinandi</i> <i>Syzygium paniculatum</i> <i>Eucalyptus tereticornis</i>	Very wide verge on north side allows large scale planting. Green web street. Native theme to continue.
Old South Head Road between Towns Rd and Derby St	Exposure Views	Medium (3.5-5m)	Overhead (Even)	Grass & Path	<i>Mixed</i>	<i>Angophora costata</i> <i>Cupaniopsis anacardioides</i> <i>Banksia integrifolia (under wires)</i>	Norfolk Island Pines near cemetery a feature. Power lines in some parts, at southern end.
Olola Avenue	Native Views	Medium (3.5-5m)	Overhead (Odd)	Grass & Path	<i>Angophora costata</i> <i>Eucalyptus botryoides</i>	<i>Eucalyptus tereticornis</i> <i>Eucalyptus pilularis</i> <i>Angophora costata</i> <i>Glochidion ferdinandi</i> <i>Acacia binervia</i>	Green web planting, native species
Olphert Avenue	Views	Large (>5m)	Overhead (Odd)	Grass & Path	<i>Cupaniopsis anacardioides</i>	<i>Cupaniopsis anacardioides</i> <i>Xylosma senticosum</i>	Asymmetrical road verge, huge space for low spreading tree. View and exposure a consideration.
Palmerston Street	Exposure	Small (<3.5m)	Overhead (Even)	Fully Paved	<i>Lagerstroemia indica</i> <i>Tristaniopsis laurina</i>	<i>Lagerstroemia indica</i> <i>Tristaniopsis laurina</i>	Narrow, fully paved verge but <i>Lagerstroemia</i> seem to be doing well. Should continue to other parts of street. <i>Lagerstroemia indica</i> should be continued as per recent young planting with <i>Tristaniopsis</i> as an evergreen component.

Street Name	Main Issue	Verge Width	Power	Surround Type	Existing Dominant Species	Proposed Species	Critical Comments
Parsley Road	Views Exposure	Large (>5m)	Overhead (Odd)	Grass & Path	<i>Eucalyptus tereticornis</i>	<i>Angophora costata</i> <i>Eucalyptus paniculata</i> <i>Eucalyptus tereticornis</i> <i>Tristaniopsis laurina</i>	Heritage palms at end of street. Maintain tall growing Eucalypt character and allow to extend above wires with careful placement and pruning.
Petrarch Avenue	Views Space	Small (<3.5m)	Overhead (Even)	Fully Paved	-	<i>Elaeocarpus eumundi</i>	Little space for trees.
Princes Avenue	Exposure Views	Large (>5m)	Overhead (Even)	Grass & Path	-	<i>Murraya paniculata</i>	Very wide verge, good opportunity to plant street while respecting views over.
Queens Avenue	Views Exposure	Small (<3.5m)	Overhead (Even)	Grass	-	<i>Angophora costata</i> <i>Angophora hispida</i> <i>Banksia serrata</i>	Asymmetrical verge arrangements.
Ray Avenue	Views Exposure	Medium (3.5-5m)	Overhead (Even)	Grass & Path	-	<i>Xylosma senticosum</i>	Asymmetrical verge, generous grass verge could plant something capable of being trimmed to suite view needs.
Russell Street	Exposure Space	Small (<3.5m)	Overhead (Even)	Fully Paved	Mixed	<i>Eucalyptus botryoides</i> <i>Corymbia eximia</i> <i>Buckinghamia celsissima (under wires)</i>	Very wide in southern end could have in road planting to get away from wires.
Serpentine Parade	Views	Medium (3.5-5m)	Overhead (Even)	Grass & Path	<i>Lophostemon confertus</i>	<i>Lophostemon confertus</i> <i>Archontophoenix cunninghamiana (eastern end)</i>	Views at top end. Brush Box, ABC a priority. Suggest palms at top end.
The Crescent	Views Heritage	Medium (3.5-5m)	Overhead (Odd)	Grass & Path	<i>Lophostemon confertus</i>	<i>Lophostemon confertus</i>	Plenty of planting opportunity. Continue with Brush Box and implement ABC as a priority for street.
Towns Road	Exposure	Medium (3.5-5m)	Overhead (Odd)	Grass & Path	Mixed	<i>Tristaniopsis laurina</i> <i>Corymbia eximia</i> <i>Acacia binervia</i>	
Vaucluse Road	Space Exposure	Small (<3.5m)	Overhead (Even)	Fully Paved	-	<i>Livistona australis</i> <i>Archontophoenix cunninghamiana</i> <i>Banksia serrata (near Strickland House)</i>	Very narrow verges, limited planting opportunities. Could plant something small opposite Strickland house.
Village High Road	Exposure Views	Medium (3.5-5m)	Overhead (Even)	Grass & Path	<i>Cupaniopsis anacardioides</i> <i>Ficus microcarpa var. hillii</i>	<i>Cupaniopsis anacardioides</i> <i>Xylosma senticosum</i>	
Village Lower Road	Views Space	Small (<3.5m)	Overhead (Even)	Fully Paved	-	<i>Buckinghamia celsissima</i>	Verge too narrow for planting. Small area of grass at lowest end – suggest planting small tree.
Wentworth Road	Views Native	Medium (3.5-5m)	Overhead (Odd)	Grass	Mixed	<i>Ulmus parvifolia (Hopetoun Ave to Fisher Ave only)</i> <i>Syzygium paniculatum</i> <i>Eucalyptus tereticornis</i> <i>Angophora costata</i>	Powerlines swapping from side to side, even side at south end. Could be planted with just about anything. Maintain primarily native theme.
Wharf Road	Exposure Views Space	Small (<3.5m)	Overhead (Odd)	Grass & Path	<i>Archontophoenix cunninghamiana</i>	<i>Archontophoenix cunninghamiana</i>	Eclectic collection in narrow ride side gardens. Continue with Bangalow Palms as main theme.

4.9 Watsons Bay

History and Context

Watsons Bay is an established residential area, with a large military reserve in the far north, and some substantial parkland areas. Watsons Bay, at 11.4kms from the CBD of Sydney is the most outlying precinct but has some of the most beautiful views in Sydney and is a popular destination for tourist and visitors. It is also the northern most area within the LGA and fronts both the picturesque Port Jackson (Sydney Harbour) as well as the sheer coastal cliffs fronting the Pacific Ocean and the southern headland into Port Jackson. It is named after Robert Watson, harbour master of Port Sydney in 1811 and who was also the superintendent of the South Head Light house in 1816. It began as an outlying village of fisherman and continued in this vain until the 1860's.

Physical Influences

At 62.2ha (5.1% of total area) it is a modest size but with only approximately 125 street trees (1% of total population) it is well under represented with street trees. This is reflective of the streets being quite narrow with very narrow verges that limit the ability to plant trees. The exposed conditions and shallow soils also limit tree planting and establishment. The area is also dominated by open spaces, National Parks and military land which has relatively few residential streets.

Watsons Bay has probably the most extreme physical influences to street and other tree planting within the LGA. It is highly exposed to strong salt laden winds from both the east and west. The geology of the underlying Hawkesbury sandstone is obvious and prominent with many exposed escarpments and steep sided hills. The soil is typically very shallow, sandy, infertile and with a low water holding capacity.

The natural vegetation would have largely been restricted to very low and exposed heath land species, well suited to growing in strong winds, impoverished, shallow and drought prone soils.

Existing Streetscape Character

The Watsons Bay street tree planting is now comprised mainly of species well adapted to the salt laden winds on exposed sites which together with existing housing provides some windbreaks to allow more tender plants to survive on their lee side. They are dominated by endemic species such Smooth-barked Apple (*Angophora costata*), Coast Banksia (*Banksia integrifolia*) and very hardy exotic planting such as Canary Island Date Palm (*Phoenix canariensis*), Norfolk Island Pine (*Araucaria heterophylla*) and Moreton Bay Figs (*Ficus macrophylla*) within the harbour side Parks.

Watsons Bay contains some trees that are listed as historically significant, but these are largely confined to Camp Cove and Robertson Park.



Figure 4.27- Camp Street, Watsons Bay. (Photo Arterra)



Figure 4.28- Cove Street, Watsons Bay. (Photo Arterra)

Watsons Bay is defined by:

- Mostly gently sloping topography but with some exposed and dramatic escarpments and level changes;
- A variety of architectural styles and housing types, many with commanding views to the Harbour;
- High exposure to strong, salt laden winds;
- Thin and inconsistent soil conditions;
- Prominent visual connections with remnant and restored native coastal vegetation;
- Late 19th century and early 20th century tree planting associated with prominent open spaces and parks.

Current dominant species

- | | |
|------------------------------------|-----------------|
| • <i>Elaeocarpus reticulatus</i> | Blueberry Ash |
| • <i>Banksia serrata</i> | Old Man Banksia |
| • <i>Callistemon sp.</i> | Bottlebrush |
| • <i>Cupaniopsis anacardioides</i> | Tuckeroo |
| • <i>Banksia integrifolia</i> | Coastal Banksia |

Precinct Objectives

- Maintain the visual dominance and character of endemic species within the landscape.
- To enhance the streetscapes with street trees of appropriate scales and form capable of withstanding the pronounced local environmental influences.
- Respect and facilitate pre-existing views in some streets with small sized trees that allow overlooking when mature and reduce the reliance on recurrent view pruning.
- Encourage the retention and replacement of historically or culturally significant species reflective of the maritime and 19th and early 20th century history of the area.



Figure 4.29- Old South Head Road, Watsons Bay, with its expansive views, coastal exposure and adjoining native parkland. (Photo Arterra)



Figure 4.30- Robertson Park and its many historic plantings, contribute to the surrounding streets and provides a scenic landmark to the Woollahra and wider Sydney as a major tourist and visitor attraction. (Photo Arterra)

Species List – Watsons Bay

Street Name	Main Issue	Verge Width	Power	Surround Type	Existing Dominant Species	Proposed Species	Critical Comments
Camp Street	Exposure Space	Small (<3.5m)	Overhead (Odd)	Grass	<i>Lagerstroemia indica</i>	<i>Synoum glandulosum</i> <i>Banksia integrifolia</i> <i>Archontophoenix cunninghamiana</i>	
Cliff Street	Space Exposure Native	Small (<3.5m)	Overhead (Odd)	Fully Paved	<i>Mixed</i>	<i>Banksia integrifolia</i> <i>Angophora costata</i>	Next to National Park. In road planting opportunities should be explored. Casuarina previously used in car parking areas causing damage to road surfaces. Plane trees only associated with Camp Cove Car park.
Clovelly Street	Views Exposure Space Heritage	Small (<3.5m)	ABC	Grass	<i>Araucaria heterophylla</i> <i>Ficus rubiginosa</i>	<i>Araucaria heterophylla (in park area only)</i> <i>Ficus rubiginosa (in park area only)</i> <i>Livistona australis</i>	Park planting rather than street side. Continue historically themed Fig planting.
Cove Street	Space Exposure Native	Small (<3.5m)	Overhead (Even)	Fully Paved	<i>Cupaniopsis anacardioides</i>	<i>Cupaniopsis anacardioides</i>	Narrow verge, powerlines. <i>Eucalyptus robusta</i> from Reserve contribute to streetscape. Verge only 1.8m. Continue with Cupaniopsis
Dunbar Street	Exposure Native Space	Small (<3.5m)	ABC	Fully Paved	-	-	No real planting opp. Adjoining National Park Contributes to street.
Gap Road	Exposure Native Space	Small (<3.5m)	ABC	Fully Paved	-	-	No real planting opp. Adjoining National Park Contributes to street.
Hopetoun Avenue between Robertson Pl and Salisbury St	Native Views Exposure Space	Small (<3.5m)	ABC	Fully Paved	-	<i>Angophora costata</i>	No real space in this section, and views critical. Possible in-road planting only.
Marine Parade	Exposure Views	Small (<3.5m)	ABC	Fully Paved	<i>Mixed</i>	<i>Cupaniopsis anacardioides (in parking area)</i> <i>Livistona australis</i>	Norfolk Island Pine radically pruned for views, should be removed and replaced.
Military Road	Exposure Space Heritage Views	Medium (3.5-5m)	ABC	Grass	<i>Mixed</i>	<i>Livistona australis</i>	Park plantings good which contribute to the streetscape.
Old South Head Road between Derby St and Robertson Pl	Native Exposure Views	Small (<3.5m)	Overhead (Even)	Grass & Path	<i>Angophora costata</i> <i>Banksia integrifolia</i> <i>Banksia serrata</i>	<i>Angophora costata</i> <i>Banksia integrifolia</i> <i>Banksia serrata</i>	Coastal influences, and native theme appropriate.
Pacific Street	Space Exposure Native	Small (<3.5m)	Overhead (Even)	Fully Paved	-	-	Narrow footpath, 1.8m. Powerlines on even side. Street side planting in park contributing to street.
Robertson Place	Views	Small (<3.5m)	Overhead (Even)	Grass & Path	<i>Tristaniopsis laurina</i> <i>Banksia integrifolia</i>	<i>Tristaniopsis laurina</i> <i>Banksia integrifolia</i>	Views at western end near Hopetoun.
Salisbury Street	Views Exposure	Medium (3.5-5m)	ABC	Grass & Path	<i>Washingtonia robusta</i>	<i>Tristaniopsis laurina</i> <i>Livistona australis</i>	Tristaniopsis doing well

Street Name	Main Issue	Verge Width	Power	Surround Type	Existing Dominant Species	Proposed Species	Critical Comments
Short Street	Space Exposure Native	Small (<3.5m)	Overhead (Odd)	Fully Paved	-	-	Very short, minor in road planting the only potential solution. Private trees contribute to streetscape at present. Nothing planted at present
Victoria Street	Space Native	Small (<3.5m)	UG	Fully Paved	-	-	Street verge very narrow 1.5m. In road planting the only potential solution

4.10 Woollahra

History and Context

Woollahra is an established residential area, with some small commercial areas and is 4.6kms from the CBD of Sydney. Major features of the area include Cooper Park, Wolper Jewish Hospital, and Reddam House. Settlement of the area dates from the early 1800's, although population was minimal until 1856 when a defined village was established. Rapid growth took place during the 1880's and 1890's. Further expansion continued during the early 1900's and the immediate post-war years, with some gentrification occurring in the 1960's.

Physical Influences

The Woollahra precinct has an area of 126.1ha (10.3% of total area) with approximately 1700 street trees (14% of total population). The topography is relatively flat in most areas and the soils, although sandstone derived do not appear to significantly restrict tree growth.

Existing Streetscape Character

The relatively flat topography of Woollahra has resulted in a more regular and urban pattern of streets creating a more formal townscape character. However overall, there is still a great range of architectural styles, carriageway widths, street arrangements, footpath widths and building setbacks within the precinct. The wide range of architectural styles represent primarily the Victorian era, from the mid to late 19th Century. The mature street planting typically dates from the early to mid part of the 20th century and includes most prominently the Hill's Weeping Figs (*Ficus microcarpa* var. *hillii*), Brush Box (*Lophostemon confertus*), London Plane (*Platanus x acerifolia*) and Outeniqua Yellowwood (*Afrocarpus falcatus*).

The suburb of Woollahra now has an overlay of many street trees, planted over a large period of time as the area has developed. Some of these street plantings have performed well and now make a significant contribution to the amenity and visual character of the area, others have not. Over time, poor performing species, or those causing significant nuisance or problems have been removed and replaced with other species. The end result is a mosaic of tree species, older tree plantings now overlaid with new, both planned and unplanned.

The main thoroughfares defining much of the character associated with Woollahra is Queen Street, which is a mixed planting of the large London Plane Tree (*Platanus x acerifolia*) and Liquidambar (*Liquidambar styraciflua*) and Edgecliff Road which has a very varied and multi-period palette. Oxford Street is a busy regional transport corridor. It bounds the precinct and the LGA and Council only controls one side.

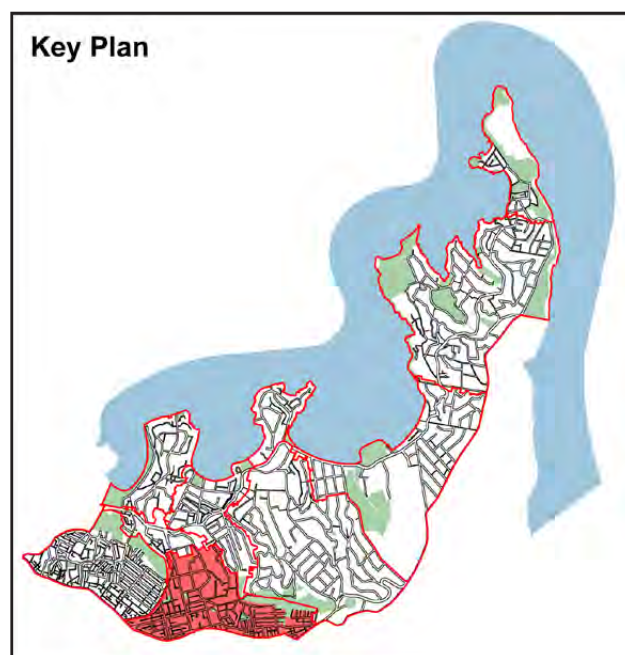


Figure 4.31 - Queen Street, Woollahra, with its overarching canopy of Plane Trees and Liquidambers. (Photo Arterra)



Figure 4.32 - Magney Street, Woollahra, with its unique in-road planting in close proximity to Cooper Park. (Photo Arterra)

Woollahra is defined by:

- Mostly gentle topography;
- Minimal issues regarding maintenance of views;
- Significant and established street tree planting in the wider streets, mostly being large deciduous street trees providing an arching and closed canopy over the streets;
- Mostly larger terrace houses, detached houses and small scale apartments, with many buildings set reasonably well back from the street boundary and with wide frontages;
- Streets on the steeper slopes near the valley of Double Bay are reflective of the style and character of adjoining Bellevue Hill.

Current dominant species

- | | |
|----------------------------------|-------------------|
| • <i>Platanus x acerifolia</i> | London Plane Tree |
| • <i>Lophostemon confertus</i> | Brush Box |
| • <i>Tristanopsis laurina</i> | Water Gum |
| • <i>Liquidambar styraciflua</i> | Liquidambar |
| • <i>Jacaranda mimosifolia</i> | Jacaranda |



Figure 4.33 - Historic Rosemont Ave, Woollahra, one of the earliest avenues in the area. (Photo Arterra)

Precinct Objectives

- To enhance the streetscapes with street trees of appropriate scales and form.
- Reduce the reliance and potential issues associated with larger trees except where their retention is justified because of heritage connections or the verge widths and building setbacks are more appropriate.
- Ensure that plantings are sympathetic to the heritage values of the built environment and the precinct.
- Where appropriate, species selected will provide an appropriate level of solar access to dwellings particularly on the southern side of the road carriageway during winter.
- To reinforce and unify the character of the main corridor street through a more consistent street tree planting.
- To develop opportunities for further in-road or blister planting that allow larger trees to be planted further away from buildings and overhead wires.



Figure 4.34 - Oxford Street, Woollahra (Photo Arterra)

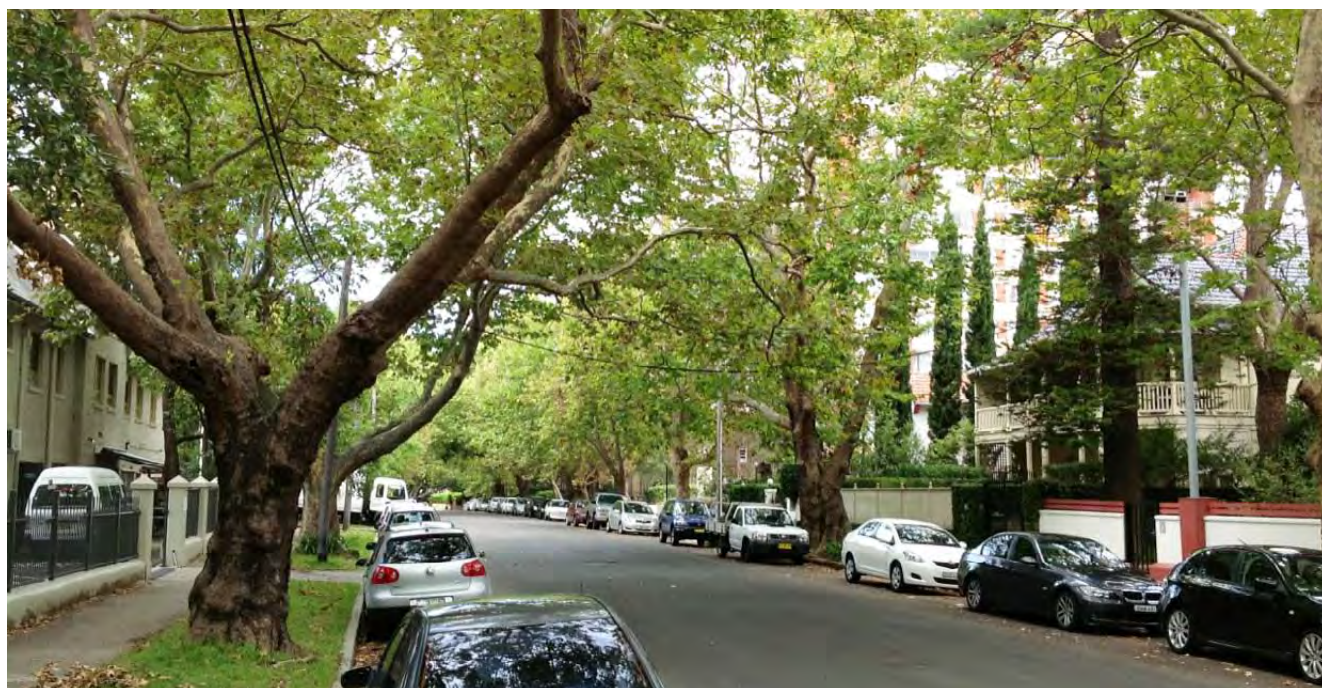


Figure 4.35 - Many streets in Woollahra have generous verges and wide streets that lend themselves to planting broad spreading trees such as Fullerton Street, Woollahra and define the desirable character of this part of Sydney (Photo Arterra)

Species List – Woollahra

Street Name	Main Issue	Verge Width	Power	Surround Type	Existing Dominant Species	Proposed Species	Critical Comments
Adelaide Street	Native Space	Small (<3.5m)	Overhead (Even)	Fully Paved	<i>Tristaniopsis laurina</i>	<i>Tristaniopsis laurina</i>	
Attunga Street	Views Space	Small (<3.5m)	Overhead (Odd)	Grass & Path	<i>Mixed</i>	<i>Archontophoenix cunninghamiana</i> <i>Backhousia citriodora</i>	Very steep street but good opportunities for planting. Views and exposure a consideration.
Bathurst Street	Views	Small (<3.5m)	ABC	Grass & Path	<i>Mixed</i>	<i>Syzygium paniculatum</i> <i>Stenocarpus sinuatus</i> <i>Waterhousea floribunda</i> 'Green Avenue'	Maintain historical references to native rainforest style planting.
Chester Street	Space	Small (<3.5m)	Overhead (Odd)	Fully Paved	-	<i>Angophora costata</i> (in central divide only)	Verge only 1.5m. Too narrow for trees.
Edgecliff Road between Albert St and Old South Head Rd	Space	Small (<3.5m)	Overhead (Even)	Grass & Path	<i>Very mixed</i>	<i>Ulmus parvifolia</i> <i>Lophostemon confertus</i> <i>Lagerstroemia indica</i> (under wires) <i>Backhousia citriodora</i> (under wires)	Wires swap to odd side after Attunga near Wallis street. Very mixed selection of species, should be more unified as a major thoroughfare. Suggest alternating deciduous and evergreen species.
Edward Street	Space	Small (<3.5m)	Overhead (Odd)	Fully Paved	<i>Mixed</i>	<i>Waterhousea floribunda</i> 'Green Ave' <i>Buckinghamia celsissima</i> (under wires)	
Fern Place	Space	Small (<3.5m)	Overhead (Even)	Grass & Path	<i>Lophostemon confertus</i>	<i>Lophostemon confertus</i>	
Fletcher Street	Native	Small (<3.5m)	Overhead (Even)	Grass & Path	<i>Mixed</i>	<i>Angophora costata</i> <i>Banksia integrifolia</i> <i>Buckinghamia celsissima</i>	
Forth Street		Small (<3.5m)	Overhead (Odd)	Grass & Path		<i>Waterhousea floribunda</i> 'Green Avenue' <i>Zelkova serrata</i> 'Green Vase' <i>Tristaniopsis laurina</i> (under wires if ABC not possible)	ABC a priority to facilitate larger planting. Suggest deciduous trees on southern side of street.
Fullerton Street	Heritage	Medium (3.5-5m)	ABC	Grass & Path	<i>Platanus x acerifolia</i> <i>Liquidambar styraciflua</i>	<i>Platanus x acerifolia</i> 'Bloodgood'	
Glencoe Road	Space Views	Small (<3.5m)	Overhead (Even)	Grass & Path	<i>Mixed</i>	<i>Caesalpinia ferrea</i>	
Grosvenor Street	Space	Small (<3.5m)	Overhead (Odd)	Fully Paved	<i>Lophostemon confertus</i>	<i>Lophostemon confertus</i>	
Harkness Street	Views Native	Small (<3.5m)	Overhead (Even)	Fully Paved	<i>Lophostemon confertus</i>	<i>Syncarpia glomulifera</i> (centre) <i>Waterhousea floribunda</i> 'Green Avenue' (centre) <i>Tristaniopsis laurina</i> (footpath)	Verge only 2.0m. Existing planting in centre of road, fully paved. Suggest matching with Magney St.
Holdsworth Street	Space	Small (<3.5m)	ABC	Fully Paved	<i>Platanus x acerifolia</i> <i>Koelreutaria bipinnata</i>	<i>Koelreutaria bipinnata</i>	Substantial planting of <i>Koelreutaria</i> already exists.

Street Name	Main Issue	Verge Width	Power	Surround Type	Existing Dominant Species	Proposed Species	Critical Comments
Jersey Road	Space	Small (<3.5m)	Overhead (Even)	Fully Paved	<i>Mixed</i>	<i>Caesalpinia ferrea</i>	Verge only 1.8m. Very narrow for trees.
John Street		Small (<3.5m)	Overhead (Even)	Fully Paved	<i>Mixed</i>	<i>Ulmus parvifolia</i> <i>Buckinghamia celsissima</i>	ABC a priority. Very mixed palette at Eastern end.
Junction Street		Small (<3.5m)	Overhead (Even)	Grass & Path	<i>Mixed</i>	<i>Angophora costata</i> (east side) <i>Xylosma senticosum</i> (west side)	
Kendall Street	Native	Small (<3.5m)	Overhead (Odd)	Grass & Path	<i>Mixed</i>	<i>Tristaniopsis laurina</i> <i>Angophora costata</i>	
Leswell Street		Medium (3.5-5m)	UG	Grass & Path	<i>Mixed</i>	<i>Zelkova serrata</i> 'Green Vase'	
Linden Ave	Space	Small (<3.5m)	UG	Fully Paved	-	-	Verge only 1.5m. Road also very narrow. Too narrow for trees.
Magney Street	Views Native	Small (<3.5m)	Overhead (Even)	Fully Paved	<i>Cinnamomum camphora</i>	<i>Syncarpia glomulifera</i> (centre) <i>Waterhousea floribunda</i> 'Green Avenue' (centre) <i>Tristaniopsis laurina</i> (footpath)	Verge only 2.0m. Existing planting in centre of road, fully paved. Suggest matching with Harkness St.
Manning Road		Small (<3.5m)	Overhead (Odd)	Grass & Path	<i>Robinia pseudoacacia</i> 'Frisia' <i>Melaleuca quinquenervia</i>	<i>Angophora costata</i> <i>Tristaniopsis laurina</i>	Park contributes to streetscape.
Milton Avenue	Space	Small (<3.5m)	Overhead (Even)	Grass & Path	<i>Mixed</i>	<i>Lagerstroemia indica</i> <i>Buckinghamia celsissima</i>	
Moncur Street		Medium (3.5-5m)	Overhead (Even)	Fully Paved	<i>Lophostemon confertus</i> <i>Platanus x acerifolia</i>	<i>Lophostemon confertus</i> <i>Ulmus parvifolia</i>	Suggest alternating avenue of deciduous and evergreen
Morrell Street	Space	Small (<3.5m)	Overhead (Odd)	Fully Paved	-	-	Park contributes to streetscape, too narrow for other trees
Nelson Street		Small (<3.5m)	Overhead (Odd)	Fully Paved	<i>Mixed</i>	<i>Ulmus parvifolia</i> (north of Queen St) <i>Waterhousea floribunda</i> 'Green Avenue' <i>Jacaranda mimosifolia</i> (south of Queen St)	More space north of Queen street. Suggest alternating avenue of deciduous and evergreen.
Newland Street		Small (<3.5m)	UG	Grass & Path	<i>Corymbia maculata</i>	<i>Corymbia maculata</i>	
Ocean Street	Heritage	Small (<3.5m)	Overhead (Even)	Fully Paved	<i>Platanus x acerifolia</i>	<i>Platanus x acerifolia</i> 'Bloodgood' <i>Lophostemon confertus</i>	Alternating avenue of Brush Box and Plane Trees similar to Bourke Street Surry Hills. ABC a priority for any new planting to allow new trees to develop properly.

Street Name	Main Issue	Verge Width	Power	Surround Type	Existing Dominant Species	Proposed Species	Critical Comments
Old South Head Road between Fern Place and Edgecliff Rd	Space	Small (<3.5m)	UG	Fully Paved	-	<i>Lophostemon confertus</i>	Opportunity to redo footpath and plant much larger and more successful trees.
Oxford Street	Exposure	Small (<3.5m)	UG	Fully Paved	<i>Platanus orientalis</i>	<i>Platanus x acerifolia</i> 'Bloodgood'	Plane Trees dominate streetscape and are performing well, should be continued in this harsh urban landscape.
Queen Street	Heritage	Medium (3.5-5m)	UG	Fully Paved	<i>Liquidambar styraciflua</i> <i>Platanus x acerifolia</i>	<i>Zelkova serrata</i> 'Green Vase' <i>Lophostemon confertus</i>	Native planting starts on eastern side of Ocean Street. Alternating avenue of deciduous and evergreen. Refer also to the Queen Street Woollahra Strategic Master Plan (Draft).
Raine Street	Native	Small (<3.5m)	ABC	Grass & Path	Mixed	<i>Corymbia eximia</i> <i>Angophora floribunda</i>	
Rosemont Avenue	Heritage	Small (<3.5m)	ABC	Grass & Path	<i>Platanus x acerifolia</i>	<i>Platanus x acerifolia</i> 'Bloodgood'	Heritage listed street, with long standing planting of Plane Trees which should be continued when they decline.
Roslyndale Avenue	Space	Small (<3.5m)	Overhead (Odd)	Fully Paved	-	<i>Elaeocarpus eumundi</i>	Verge only 1.5m. Too narrow for trees. Maintain very large trees at turning head end. May undertake plant via in-road blisters
Rowe Street	Space	Small (<3.5m)	ABC	Fully Paved	-	<i>Zelkova serrata</i> 'Green Vase'	Verge only 1.5m. Too narrow for trees. Suggest in-road planting on eastern side.
Rush Street		Small (<3.5m)	Overhead (Odd)	Fully Paved	<i>Buckinghamia celsissima</i>	<i>Buckinghamia celsissima</i> <i>Caesalpinia ferrea</i>	Suggest alternating avenue of deciduous and evergreen trees.
Russell Street	Space	Small (<3.5m)	Overhead (Odd)	Fully Paved	<i>Lophostemon confertus</i>	<i>Waterhousea floribunda</i> 'Green Avenue' (centre) <i>Tristaniopsis laurina</i> (footpath)	Verge only 1.8m. Too narrow for large trees. Maintain large trees in centre of road.
Saber Street		Large (>5m)	ABC	Grass & Path	Mixed	<i>Waterhousea floribunda</i> 'Green Avenue'	
Small Street	Views Native	Medium (3.5-5m)	Centre	Grass & Path	Mixed	<i>Corymbia eximia</i> <i>Angophora floribunda</i>	Split road, powerlines in the middle. Could plant larger more spreading trees
Stanley Street	Views Space	Small (<3.5m)	Overhead (Odd)	Grass & Path	<i>Cupaniopsis anacardioides</i>	<i>Cupaniopsis anacardioides</i>	
Tara Street	Space	Small (<3.5m)	Overhead (Odd)	Fully Paved	<i>Elaeocarpus reticulatus</i>	-	Verge only 1.5m. Mainly too narrow for trees.
Trelawney Street	Space	Small (<3.5m)	Overhead (Odd)	Grass & Path	Mixed	<i>Ulmus parvifolia</i> <i>Lophostemon confertus</i>	Street currently lacks continuity. Suggest alternating avenue of spreading deciduous and evergreen trees.
Vernon Street	Space	Small (<3.5m)	Overhead (Odd)	Grass & Path	<i>Lophostemon confertus</i>	<i>Tristaniopsis laurina</i> <i>Backhousia citriodora</i>	
Victoria Avenue		Medium (3.5-5m)	Overhead (Odd)	Fully Paved	<i>Liquidambar styraciflua</i> <i>Platanus x acerifolia</i>	<i>Koelreutaria bipinnata</i>	

Street Name	Main Issue	Verge Width	Power	Surround Type	Existing Dominant Species	Proposed Species	Critical Comments
View Street	Views Native	Small (<3.5m)	Overhead (Odd)	Grass & Path	<i>Mixed</i>	<i>Syzygium luehmannii</i> <i>Syzygium paniculatum</i> <i>Corymbia maculata</i> <i>Angophora floribunda</i>	
Wallaroy Crescent	Views Space	Small (<3.5m)	UG	Grass & Path	<i>Lophostemon confertus</i>	<i>Syzygium paniculatum</i> <i>Lophostemon confertus</i>	
Wallaroy Road	Views Space	Small (<3.5m)	UG	Grass & Path	<i>Lophostemon confertus</i>	<i>Syzygium luehmannii</i> <i>Lophostemon confertus</i>	Verge only 1.5m. Too narrow for trees in south/western section near Edgecliff Road. Room for planting elsewhere.
Wallis Street		Small (<3.5m)	Overhead (Odd)	Fully Paved	<i>Mixed</i>	<i>Lophostemon confertus</i> <i>Zelkova serrata</i> 'Green Vase'	Powerlines swap to even side past Ocean Street (City end). Suggest an alternating avenue of deciduous and evergreen trees. Brush Box already dominant and should be continued.
Weeroona Avenue	Views Space	Small (<3.5m)	Overhead (Even)	Fully Paved	<i>Mixed</i>	<i>Caesalpinia ferrea</i>	Verge only 1.5-1.8m. Very narrow for trees. Need small upright trees.
Wellington Street	Space	Small (<3.5m)	ABC	Grass & Path	<i>Platanus x acerifolia</i> <i>Ficus microcarpa</i> var. <i>hillii</i>	<i>Ulmus parvifolia</i> <i>Waterhousea floribunda</i> 'Green Avenue'	Suggest an alternating avenue of deciduous and evergreen trees similar to Trelawney Street
Woods Avenue	Space	Small (<3.5m)	Overhead (Even)	Fully Paved	<i>Tristaniopsis laurina</i>	<i>Tristaniopsis laurina</i> (at entry only)	Verge only 1.5m. Too narrow for trees. Power lines on south side.

5.0 Appendices

5.1 References

Aitken, R and Looker, M 2002, *The Oxford companion to Australian gardens*, Oxford University Press, South Melbourne, VIC.

Australian Bureau of Meteorology – *Climatic Statistics Sydney*
http://www.bom.gov.au/climate/averages/tables/cw_066047.shtml (Accessed 16/5/2013)

Baker, Margret Corringham, Robin and Dark, Jill. 1989. *Native plants of the Sydney region*. Three Sisters Publications, Winmalee. NSW.

Beadle, N.C.W. et al. 1986. *Flora of the Sydney Region* 3rd Ed. Reed Books. Frenchs Forest, NSW.

Benson, D and Howell, J 1995, *Taken for granted – the bushland of Sydney and its suburbs*, Kangaroo Press in association with the Royal Botanic Gardens Sydney, Kenthurst, NSW.

Benson, D. and Howell, J. and McDougall, L. 1996, *Mountain Devil to Mangrove - a guide to natural vegetation in the Hawkesbury - Nepean catchment*. Royal Botanic Gardens Sydney. Sydney, NSW.

Benson D. & Howell, Jocelyn 1994, *Natural Vegetation of the Sydney Area Map*, 1:100,000 Series – Sydney, Royal Botanic Gardens, Sydney NSW.

Chapman, G.A and Murphy, C.L 1989, *Soil Landscapes of the Sydney 1:100 000 Sheet Report*, Soil Conservation Service of NSW, Sydney.

Chapman, G.A Murphy, C.L Tille, P.J Atkinson, G and Morse, R.J 1989, *Soil Landscapes of the Sydney 1:100 000 Sheet Map*, Soil Conservation Service of NSW, Sydney.

City of Sydney 2011, *Street Tree Master Plan*, Unpublished document of the City of Sydney, Sydney by Arterra Design Pty Ltd.

Lane Cove Council 2013, *Street Tree Master Plan*, Unpublished document of Lane Cove Council, Sydney by Arterra Design Pty Ltd.

Pollon, Frances 1998, *The book of Sydney suburbs*, Harper Collins Publishers, Sydney, NSW.

Robinson, L 1991, *Field guide to the native plants of Sydney*, 2nd ed. Kangaroo Press, Maryborough, Vic.

Sharpe, A. Lawrence, Joan. 1999, *Pictorial history of eastern suburbs*, Kingsclear Books, Crows Nest, Sydney, NSW.

Standards Australia, 2007, AS 4373-2007 *Pruning of amenity trees*. Standards Australia, Sydney, NSW.

Tovey E, et al. 2011, *London Plane Tree bioaerosol exposure and allergic sensitisation in Sydney, Australia* (Dr Euan Tovey MSc, PhD, et al 2011 Dec).

5.2 ABC Priority Streets

During fieldwork and review for the preparation of the Street Tree Master Plan 2013 the following streets were identified as 'priority' streets for the expansion or the introduction of Aerial Bundled Conductor overhead wiring. This has been based primarily on identifying streets where existing tree health and forms would be substantially improved or where recent street tree planting has been undertaken and the introduction of ABC will prevent the need for disfiguring pruning practices needing to be employed as the tree encroaches on the wires.

Precinct Name	Street Name
1.Bellevue Hill	Bellevue Road
1.Bellevue Hill	Bennelong Crescent
1.Bellevue Hill	Blaxland Road
1.Bellevue Hill	Bundarra Road
1.Bellevue Hill	Kambala Place
1.Bellevue Hill	Kulgoa Road
1.Bellevue Hill	Lamb Street
1.Bellevue Hill	Old South Head Road
1.Bellevue Hill	Riddell Street
1.Bellevue Hill	Rivers Street
1.Bellevue Hill	Rosslyn Street
1.Bellevue Hill	Victoria Road
3.Double Bay	Carlotta Road
3.Double Bay	Epping Road
3.Double Bay	Glendon Road
3.Double Bay	Leura Road
4.Edgecliff	Edgecliff Road
5.Paddington	Cambridge Street
5.Paddington	Duxford Street
5.Paddington	Gipps Street
5.Paddington	Goodhope Street
5.Paddington	Gurner Street
5.Paddington	Heeley Street
5.Paddington	Hopetoun Street
5.Paddington	Lawson Street
5.Paddington	Liverpool Street
5.Paddington	Norfolk Street
5.Paddington	Ormond Street
5.Paddington	Queen Road

Precinct Name	Street Name
7.Rose Bay	Courtenay Road
7.Rose Bay	Dover Road
7.Rose Bay	Dudley Road
7.Rose Bay	Faraday Avenue
7.Rose Bay	Mitchell Road
7.Rose Bay	Newcastle Street
7.Rose Bay	Spencer Street
7.Rose Bay	Wilberforce Avenue
8.Vaucluse	Beach Avenue
8.Vaucluse	Cambridge Avenue
8.Vaucluse	Greycliffe Avenue
8.Vaucluse	Hay Street
8.Vaucluse	Hopetoun Avenue
8.Vaucluse	Jesmond Avenue
8.Vaucluse	Old South Head Road
8.Vaucluse	Serpentine Parade
8.Vaucluse	The Crescent
10.Woollahra	Forth Street
10.Woollahra	John Street
10.Woollahra	Nelson Street
10.Woollahra	Ocean Street
10.Woollahra	Trelawney Street
10.Woollahra	Wallis Street

5.3 Street Tree Supply and Installation Specifications

1. Technical Guidelines Overview

Planting trees within streets is a complex operation that can involve removal and reinstatement of existing pavements, excavation, disposal of spoil, supply and planting of the tree, mulching, and installation of final tree surrounds. When carried out on major roads, professional vehicle and pedestrian traffic control measures will be required including the potential scheduling of work in the early mornings or on weekends.

This considerable effort can be wasted if the tree dies shortly after planting and then must be replaced. It is therefore essential that the tree is in optimal condition when planted, and the methods of planting, protection and maintenance is of a high standard.

This part of the document outlines the required measures and requirements of Woollahra Council with regard to street tree planting. This Section will act as a specification for the purchase, installation and maintenance of street trees for use by the Council itself or any developers required to carry out work in the public domain.

Key factors that will be considered include:

- Purchase of trees of the specified size and quality
- Tree installation specification - including size of tree pit, and backfill provisions
- Street planting technical details
- Specification and installation of tree guards
- Maintenance requirements

2. Street Tree Supply Specification

2.1 General conditions and quality

All trees to be provided to the Council are to conform to the NATSPEC guide and "*Guide for assessing the quality of and purchasing of landscape trees*" by Ross Clark 2003. The following specification details the specific requirements for the supply and transportation of trees.

Nursery stock shall meet design criteria for minimum dimensions, container size and shape, plant shape or special pruning requirements outlined in this document and the table below.

Container Volume	Height (m) above container	Calliper at 300mm	Clear trunk height (m)
45 Litre	1.9 - 2.3	30-35 mm	1.2
75 Litre	2.2 - 2.4	40-45 mm	1.4
100 Litre	2.4	> 50 mm	1.5
200 Litre	3.5	> 60 mm	1.5
300 Litre	4.2	> 70 mm	1.5
400 Litre	5.5	> 70 mm	1.5
Palm trees	-	n/a	5.0

Definitions for the terms used within this specification shall be in accordance with the NATSPEC guide.

2.2 Labelling of stock

Clearly label individual trees and batches with the species name and cultivar / variety / provenance if appropriate. The label is to withstand transit without erasure or misplacement.

2.3 True to type

The trees supplied and planted shall be the species, and variety or cultivar that the Council has specified.

2.4 Health and vigour

The trees supplied shall be healthy and vigorous at the time of delivery and planting. Supply trees with foliage size, texture and colour at the time of delivery consistent with the size, texture and colour shown in healthy specimens of the nominated species. Supply trees with extension growth consistent with that exhibited by vigorous specimens of the nominated species.

2.5 Pest and disease

Trees shall not be diseased or show evidence of pest attack that could affect the long term health of the tree or adjoining plantings. Supply trees with foliage and soil free from attack by pests and diseases. For Australian native trees with a history of attack by native pests (eg. *Ficus macrophylla* & *Eucalypts*), evidence of previous attack must be restricted to less than 15% of the foliage and there must be no actively feeding insects or evidence of fungi.

2.6 Injury

Supply only trees free from injury and wounds.

2.7 Self supporting

Supply only trees that are self supporting.

2.8 Stem taper

Supply trees where the calliper at any given point on the stem is greater than the calliper at any point higher on the stem.

2.9 Pruning

Trees are not to be pruned into a saleable shape just prior to shipment. All pruning shall be a clean-cut at the branch collar, no lopping or topping of trees is to be carried out and the diameter of any wound must not exceed 50% of the calliper immediately above the point of pruning.

Clean stem height: trees shall be supplied with a clean stem height of 35-40% of total tree height. For example a 5m tree is to be pruned to 2m maximum (clean stem height must not exceed 40% of total tree height).

Pruning wounds: Restrict fresh cuts (i.e recent, non-calloused) to <20% of total tree height.

Type: Ensure a clean-cut at the branch collar that complies with AS4373-2007:Pruning of Amenity Trees.

2.10 Crown symmetry

The symmetry of the crown is an important aspect of the presentation and appearance of the tree in the landscape. Difference in crown distribution on opposite sides of the stem axis must not exceed 20%.

2.11 Stem structure

Species with an excurrent form: Supply trees with a defined central leader and the apical bud intact. Trees that have had their leaders cut or damaged will not be accepted. Supply trees with a single stem roughly in the centre of the tree with any deviation from vertical <15°.

Species with decurrent form: Supply trees where the central stem is not divided at any point lower than the clean stem height nominated, and that the stem junction at the point of division is sound.

All species: Ensure that branch diameter is less than or equal to one-half of the calliper immediately above the branch junction.

2.12 Included bark

Supply trees where the branch/stem bark ridges at junctions between stems and branches and between co-dominate stems are convex, except for species prone to include bark that are known to remain strong (as approved by Council).

2.13 Trunk position

Supply trees with the distance from the centre of the trunk to any extremity of the rootball is not varying by >10%.

2.14 Compatibility of graft unions

When purchasing named cultivars propagated by grafting, it is critical that the graft union is sound and that the scion and root stock are compatible. The union between the scion and the root stock must be sound for the entire perimeter of the graft. The diameter of the scion immediately above the graft must be equal to the diameter of the rootstock immediately below the graft (+or -20%).

2.15 Indication of north

Trees in containers >100 litres: Indicate the northerly aspect during growth in the nursery and ensure it is marked so to withstand transit without erasure or misplacement.

3.16 Root division

Trees in containers >45 litre: Primary division of roots is to have occurred within the outer 50% of the rootball at <100mm intervals.

2.17 Root direction

Ensure that roots, from the point of initiation, generally grow in outwards (radial) or downwards direction, and that any deviation from the established direction <45°.

2.18 Root ball occupancy

Soil Retention: On shaking or handling of the unsupported rootball at least 90% of the soil volume shall remain intact.

2.19 Rootball depth

Rootball depth assessment for containers/rootballs 45 litres or larger must:

- have a depth of less than or equal to the maximum depth specified for palms;
- have a diameter greater than or equal to their depth; and
- rootballs (regardless of size) must not exceed 550mm in depth (except for palms).

2.20 Height of root crown

Ensure that the trees root crown is at the surface of the rootball and free from suckering.

2.21 Non-suckering rootstock

Grafted cultivars/varieties: Supply trees grafted onto non-suckering rootstock.

2.22 Rejection of non-conforming specimens

Any tree not conforming to the specifications and standards listed in this specification shall be rejected and suitable replacements provided. If non-conforming trees are provided, the Council require new stock that complies to be supplied and planted, or alternatively may provide replacement specimens and deduct the costs from any applicable bank guarantee or bond.

3. Street Tree Installation Specification

3.1 General

This specification describes the appropriate techniques to be used to install new street trees within the Council local government area.

There may be allowance for some variation in the techniques to be used, however any change to the techniques from those described here must be submitted in a Work Method Statement for approval by the Council prior to any work being carried out.

Tree planting works shall be undertaken by an Arborist or Horticulturist with minimum certification in accordance with Australian Qualifications Framework Level 2.

3.2 Typical scope of work

The scope of work for tree installation work typically comprises:-

- (a) Demolition of existing tree pit or cutting of the existing footway.
- (b) Excavation of subgrade for tree pits.
- (c) Supply and installation of imported and existing soil mixes.
- (d) Installation of trees.
- (e) Supply and installation of wooden stakes, ties and guys where required to maintain stability.
- (f) Installation of supplied tree guards where specified.
- (g) Supply and installation of various style tree bases, to the Councils specification, after an initial six (6) month soil settlement and tree establishment period.
- (h) Reinstatement of pavement in any aborted tree pits.
- (i) Maintenance of planted trees for a specified period following completion of planting.

3.3 Standards

All works shall be in accordance with the relevant standards. The following standards are referred to in this section:-

- AS 4419-2003 Soils for landscaping and garden use;
- AS 4454-2003 Compost, soil conditioners and mulches;
- AS 4373-2007 Pruning of amenity trees.

3.4 Statutory requirements

The installer is responsible for compliance with all relevant statutory requirements.

The installer shall apply for a Road Opening Permit and be able to demonstrate clear working programs and sequences. Site specific pedestrian and vehicular traffic control plans are to be submitted as part of this application and shall conform to NSW Roads and Maritime Services guidelines and any other statutory requirements. These plans shall include any requirements for parking of work site vehicles and the delivery of materials.

Approval from the NSW Police Traffic Management Centre and NSW Roads and Maritime Services may be required when the work has an impact on traffic flow on major roads.

3.5 Environmental controls

The installer shall ensure that all materials and the execution of the work are ecologically sound, environmentally benign and consistent with the principles of sustainable development.

The installer shall take all practical precautions to ensure that dust and noise caused by the works are kept to a minimum. The installer shall take all practical precautions to prevent the spread of dirt and mud along roads and paths. The installer shall be responsible for all localised sediment and erosion control of work and stockpiles under their control and use.

The installer must comply, and make sure that sub-contractors comply, with the general provisions of this clause and any other environmental protection provisions within the requirements of any statute, by-law, standard and the like related to environmental protection.

3.6 Inspections

Provide not less than 48 hours notice so that a Council Representative can make the following inspections:-

- (a) Tree stock prior to planting.
- (b) Plant materials set out and placed in tree pits before backfilling.
- (c) Tree planting completed.
- (d) Footpath reinstated.
- (e) Periodic inspections during maintenance period.
- (f) Completion of plant establishment period.

3.7 Site investigations, existing services and structures

The installer shall confirm with the Council the exact location of all tree pits associated with tree planting works.

In accordance with NSW electricity and gas supply regulations, all excavations for tree planting require the review of underground service plans sourced from Dial Before You Dig service. Specialist

service location tools or expertise may be required when underground service plans are insufficiently detailed or where plans indicate that services are close to the intended planting location. The installer shall be responsible for the rectification of all pavement surfaces where inspections have been undertaken including the making good of any excavation or site markings.

The installer shall notify the Council immediately upon discovery of services or obstructions that prevent any planned tree planting. All services shall be considered live until determined otherwise. No liability is accepted, by the Council or the Service Authorities, for accidents resulting from contact or disturbance to services.

In the event of any damage to any service, the installer shall immediately notify the relevant authority and the Council and satisfy all requirements of the authority concerned.

The installer shall be liable for all damage caused by the tree installation works to all existing buildings and structures. The installer shall make good all damage at their expense.

3.8 Spoil

Surplus excavated material must be immediately removed from the site. This includes debris resulting from site clearance and excavated material not reusable as topsoil, filling, mulch or the like, unless otherwise specified or directed. Existing topsoil with any stump grinding debris incorporated within it will be removed from site and not re-used in the new planting site.

The installer shall be solely responsible for the safe and harmless disposal of material away from the site. Surplus excavated material shall not be permitted to remain in place overnight.

Existing tree base materials, such as unit pavers or stone tiles, can be recycled and reused in the new tree bases as long as specifications allow.

3.9 Extent of excavations

Excavate to an equivalent depth of the new tree rootball measured from the underside of any concrete base slabs, or as shown on the details. Do not disturb services, and excavate by hand around any existing services as required.

The installer shall measure the rootball depth of each tree to determine the appropriate tree pit depth. Allow additional depth to achieve specified falls for subsoil drainage lines and to satisfy finished levels.

Safety precautions must be in place to prevent public entry to work site area.

3.10 Existing pavement

The existing pavement shall be cut by a road-saw or other suitable tool to the dimensions shown in the details. Cutting shall only be at right angles and parallel to the kerb. The cut shall have a neat straight edge and smooth face. Kerbs must not be cut under any circumstances. In the case of cutting unit paving, ensure that the cuts are made along the joints without damage to the surrounding pavers. Unit paving may be dismantled rather

than cut if this option minimises damage.

3.11 Subgrade preparation

Cultivate or rip the subgrade at the base and sides of tree pits to a depth of 100mm. During cultivation, thoroughly mix in any materials required to be incorporated into the subsoil. Remove stones exceeding 70mm and any rubbish or other deleterious material brought to the surface during cultivation. Grade the base of tree holes to the required design levels and shapes after cultivation.

3.12 Root control barriers

Root barriers will typically not be required, and shall only be installed when specifically instructed by the Council.

3.13 Soil mixes

TYPE A Soil mix: Commercially available premium grade manufactured sandy loam organic garden mix conforming to AS4454.

TYPE B Soil mix: Blended soil mix comprising 50% recovered existing site topsoil (or imported premium grade top soil) and 50% Type A.

COURSE SAND: Shall be washed, sharp coarse river sand 0.25 to 2.0mm in diameter, free of weeds, debris or other deleterious material.

3.14 Soil stockpiling

Do not establish stockpiles of soil on the site. All materials are to be moved directly from carrier to the hole. The pavement surface is to be maintained in a clean and tidy state at all times.

3.15 Soil testing

Upon excavation, if the tree site appears to show poor subterranean condition (poor drainage or anaerobic conditions), the installer shall immediately notify the Council. Site specific soil testing or subsoil drainage may be specified and approved.

3.16 Drainage

Subsoil drainage is to be installed as per Council requirements and will be determined on a site by site basis.

3.17 Bad ground

Bad ground shall be ground considered unsuitable for the purpose of the works, including filling liable to subsidence, ground containing cavities, faults or fissures, ground contaminated by harmful substances or ground which is, or becomes soft, wet and unstable and the like.

If bad ground is encountered in, or adjacent, to any tree pit during the work, notify the Council immediately and obtain instructions before carrying out any further work in the affected area.

3.18 Planting conditions

Do not plant in unsuitable weather conditions such as extreme heat, cold wind or rain. Avoid planting where unseasonable and adverse weather is forecast within 24 hours of the operations. No trees are to be planted on days exceeding temperatures of

30° Celsius. Generally tree planting is preferred during the cooler months from March to October.

3.19 Watering

Thoroughly water the tree rootballs before planting and then immediately after planting. Prevent the rootballs from drying out during the transportation or planting phase.

Apply water so as not to disturb the soil. Raise the moisture within the root zone to field capacity. Ensure potted rootball is thoroughly wet through the entire soil profile. Continue watering at a rate and frequency as required to avoid water stress in the plant.

3.20 Lifting of trees

It is preferred that all trees are carried or slung via the root ball. In the event that the trees have to be repositioned or lifted by the trunk, the installer shall provide adequate soft padding to the trunk in the form of underfelt, carpet or rubber wrapping and use only soft slings during the lifting. Serious damage to the cambium tissue of the stem as a result of poor lifting techniques will require replacement of the tree.

3.21 Placement

When the tree pit is excavated and the hole is the correct size, place the rootball in its final position. Ensure the trees are centred and plumb and the top of the rootball level with the finished surface of the surrounding soil mix.

Do not use the trunk of the tree as a lever in positioning or moving the tree in the planting hole.

3.22 Alignment and orientation

Position the tree at the setout distances as indicated in the details. Ensure trunks are set vertically and aligned with other new or existing trees.

Orientate the trees trunk north where indicated by supplied markings where applicable. (+or- 20o). Adjust within the above tolerances so that the primary lowest branches are generally aligned parallel with the kerb and road way (NOT extending out into roadway).

3.23 Root trimming

All trees shall have the outer 10-25mm of the external root ball faces pruned or sliced away using secateurs or a suitably sharp and clean spade. Avoid excessive disturbance to the remaining rootball during this trimming and discontinue if excessive rootball soil begins to fall away. Do not leave the rootballs exposed for extended periods. Cover the rootball with moist hessian if backfilling can not occur immediately.

3.24 Backfilling

Backfill with soil mix as specified in soil mixes and in accordance with the details and specification. Lightly compact the soil to ensure all voids around rootballs are filled and that no air pockets are retained.

Ensure that the backfill soil is not paced over the top of the potted

rootball. The top of the rootball and plant stem must be kept level with the top of the backfill.

3.25 Mulch

Mulch shall be free of deleterious and extraneous matter, including soil, weeds, rocks, twigs and the like. Lay mulch to maximum 75mm depth. Place the mulch so that it is not in direct contact with the trunk. Feather mulch away from trunk at base of root ball.

Mulch the areas in accordance with the details. The mulch types to be used are as follows:-

- Decomposed granite brown colour, lightly compacted and installed as shown in the relevant standard details.
- Weed free timber chippings or recycled (no fines) wood waste.

4. Tree Establishment and Maintenance

4.1 Tree establishment period

The tree establishment period commences at the date of practical completion for a period specified by the Council.

All trees shall also be maintained immediately following their installation, as per the specifications below, up until the above tree establishment period commences. Tree maintenance works shall be undertaken by an Arborist or Horticulturist with minimum certification in accordance with Australian Qualifications Framework Level 2.

The installer shall submit a program prior to the commencement of the tree establishment period. The program shall detail all works required during the planting establishment period including:-

- (a) Rectification of defects;
- (b) Provision of materials;
- (c) Watering;
- (d) Fertilising;
- (e) Control of weed growth;
- (f) Replacement of dead, damaged or stolen plants.

The installer shall provide 7 days notice of any works to replace trees as part of planting establishment. Throughout the tree establishment period, the installer must continue to maintain new trees and carry out maintenance work including, but not limited to:-

- weeding and rubbish removal from tree surrounds;
- fertilising;
- pest and disease control;
- replanting (on approval from Council);
- adjustment, removal or replacement of stakes & ties;
- formative and selective pruning to AS 4373 and;
- mulching to maintain and reinstate to depth specified.

Watering - Allow for 10% of the planted container volume to be applied every 2 days for the first 2 weeks and then 20% of the container volume once per week for 3-4 months. Despite above guideline, installer is to monitor and maintain soil moisture during summer months ensuring the rootball does not dry out and causes wilting. Ensure the bottom of the tree planting hole does

not become saturated. (The above is based on Spring to Early Autumn planting – the above frequency may be halved for winter plantings).

Inspection results and the maintenance procedures shall be recorded and submitted to the Council every 2 months. The various ongoing maintenance practices shall be carried out to the satisfaction of Council.

4.2 Tree guards and supports

The installer shall supply and install 3 wooden stakes with hessian ties per tree, for all trees planted up to 200 litre in size. Where advised by the Council, the installer shall allow to supply and install metal tree guards on specified trees.

4.3 Fertilising

The following table details the required fertiliser program.

Timing	Product and application rate
At time of planting	Slow Release landscape fertiliser suitable for trees and shrubs, 9 to 12 months release time. Osmocote or approved equivalent applied according to manufacturers directions.
6 months after planting and then monthly through to end of plant the establishment period.	Organic liquid fertiliser. Seasol or approved equivalent applied to soil as per manufacturers directions.

4.4 Aeration pipe

Only where detailed, the aeration pipe will be 50mm slotted 'Ag-Pipe'. These will be without a geotextile sleeve. Any surface grates will be separately specified by Council, where necessary.

4.5 Tree bases

Tree bases surrounded by permeable pavements or flagging etc. shall be left as soil or filled with a thin layer of decomposed granite for the first six (6) months to allow for any settlement of the rootball and backfill soil.

Following the six (6) month settlement period, the tree base as specified in the detail is to be installed.

The tree base is to be maintained in a safe and level condition at all times.

Failure of the tree bases prior to agreed practical completion timing will require rectification by the installer. This failure equates to any area of the tree base slumping/lifting/cracking or creating a trip hazard (variation of more than 10mm) and will require rectification by the installer.

4.6 Pavement rectification

Reinstate and make good to match exactly the surrounding pavement, to the satisfaction and approval of the Council, all pavement, paving, concrete, brick or other surface damaged or affected by the tree planting and tree base installation works.

Existing materials salvaged from the site must be approved by the Council for reuse and must match existing pavement. Where temporary asphalt topping is required, approval of the Council shall be sought.

4.7 Tree replacements

Where trees are damaged or die or fail to maintain vigorous growth typical of the species due to neglect or inadequate maintenance, the installer shall replace, replant and maintain trees of the same species, size and quality.

5. Tree Planting Details

Technical details have been developed to ensure Council staff, developers and Council contractors provide an appropriate and consistent treatment for street tree planting throughout the variety of street environments typically encountered.

The Appendix 5.5 illustrate the typical details to be applied.

In-road planting details and median strip details will be dependent on the individual street widths, traffic and services and will therefore require site specific designs to be employed, however the following 'ideal practice' details have been included here to provide general expectations for tree planting in these instances.

The use of continuous planting trenches, structural soil, structural cells, suspended pavements and other tree planting technology will be considered based on specific site conditions. Actual designs shall be developed by Council or submitted to Council for consideration prior to any installation.

5.4 Street Tree Pruning Specifications

1. Overview

Pruning has a direct impact on the health, structure and viability of a tree. All pruning of live tissue results in a wound to the tree, which the tree has to attempt to seal and compartmentalise. Incorrect pruning techniques can lead to decay and disease within the tree, much the same as a wound in animals can lead to disease and infection.

Pruning of the canopy also has the consequence of removing valuable foliage, which in-turn removes an essential source of energy production from the tree. The tree will then also spend considerable reserves of energy in trying to regrow the losses of the removed foliage. Branches and trunks also hold important transport and storage tissues within the tree.

As per Woollahra Tree Management Policy 2011 Section 2.11 Council will generally not consider leaf, fruit, sap or bark drop or bird and bat droppings as valid reasons to prune or remove a street tree.

2. Canopy Pruning

Pruning of branches of street trees shall be as directed by the Council Tree Management Officer. Pruning is only to be undertaken by a qualified arborist (under the supervision of a person with AQF Level 4 or above). Work is to be in strict accordance with to AS4373-2007 *Pruning of Amenity Trees*. Wounds are not to be treated.

Generally, evaluate the existing plant habit and form together with the desired habit, clearances and form as determined by Council and gain approval prior to any pruning. Minimise the size and number of wounds resulting from all pruning.

Use crown maintenance techniques on all protected trees to improve health and appearance. Use crown modification techniques on all protected trees to accommodate adjacent proposed structures and future construction access. Ensure remaining canopy is balanced with appropriate weight and crown distribution.

Use only clean, sharp pruning implements for all pruning work, ensuring that cuts are made without damage, tearing or bruising of vascular tissue.

Deadwooding

Remove all dead branches greater than 30mm in diameter as required on young trees less than 5m in height. Remove all dead branches of greater than 50mm diameter for existing mature trees greater than 5m in height.

Formative Pruning

Selectively remove branches as required to promote proper form and branching habit, typical for the natural growth habit of the species. For species with an excurrent branching habit, ensure the development of a dominant central leader. Remove lesser competing leaders where required. Ensure that no greater than

15-20% of the total foliage area is removed at any one time. Trees occurring below new or existing overhead power lines shall be pruned to create a lower and multi-branched canopy well below minimum clearances in line with Ausgrid guidelines.

Selective and Reduction Pruning

Remove identified branches for building clearance requirements. These should be removed to a suitable internal lateral branch at least 1/3 the diameter of the branch removed or to the branch collar at the stem. Also remove any broken, damaged and defective branches as required. Remove crossing and rubbing branches and branches with included bark at their junction to ensure proper form and branching habit as required.

Crown Lifting

Remove the lower branches as required to create adequate vehicular and pedestrian clearance up to a minimum height of 2.4m on the pedestrian side or over parking lanes and 4.5m on the trafficable roadside lanes (at 1 metre radius from the centre of the main trunk and outward). Ensure that at least 50% of the foliage arises from the lower two-thirds of the trunk.

Epicormic Growth and Suckers

Typically remove all epicormic growth occurring on the main trunks or basal suckers as and when they occur. If major pruning was undertaken it may be necessary to manage and allow some epicormic growth to mature to provide necessary foliage cover.

Palms

Only remove the old and spent fruits and fronds. Never remove the terminal shoot. To avoid transmission of diseases, tools shall be thoroughly disinfected between trees.

3. Root Pruning

Pruning roots of Council managed trees shall only be as directed by the Council. The Council shall use only a qualified arborist (AQF Level 4 or above) to undertake the pruning.

Prior to any excavation, check that there are no existing underground services along the proposed cut line that may be damaged. Roots are not, under any circumstances to be cut using normal excavation machinery of any sort. This usually results in splitting and massive disturbance well past the intended line of cut.

Preliminary root pruning using a high pressure water knife or air spade is allowable along an alignment of the final cut. Using a high pressure water jet, cut through the soil and tree roots from the surface down to the nominated depth or rock, whichever comes first and in the location(s) as shown on the drawing(s). All roots are to be hand excavated and pruned if necessary to provide clean cuts.

When required to cut roots, use sharp hand tools (e.g. secateurs, hand saw) such that the remaining root system is preserved intact and undamaged. Roots are to be cut back by hand square to the edge of the excavation. Do not cut any tree roots exceeding 100mm diameter unless permitted by Council and after evaluation by a AQF Level 5 arborist.

Excavations within root zones should be kept open for as short a period as possible. Any excavated face containing roots is to be supported immediately after cutting, where necessary, to prevent soil loss from around the retained roots.

4. Post Root Pruning Care

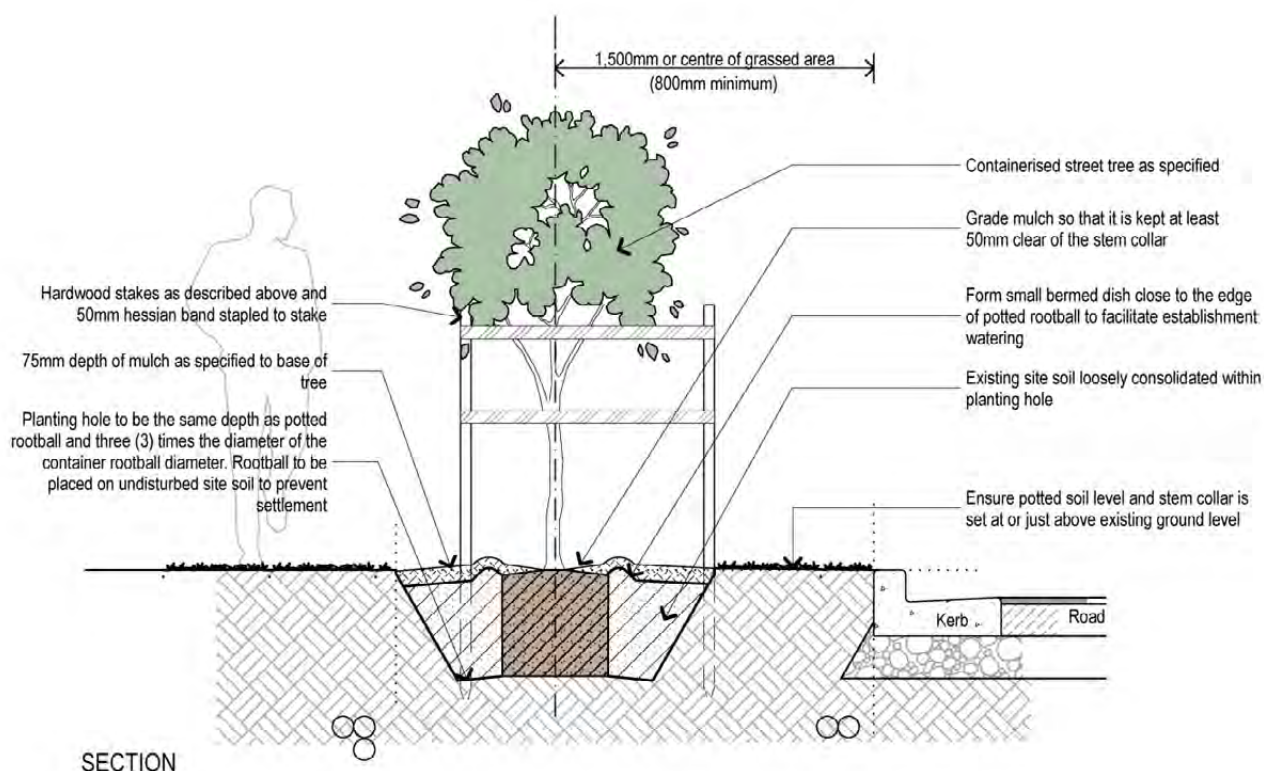
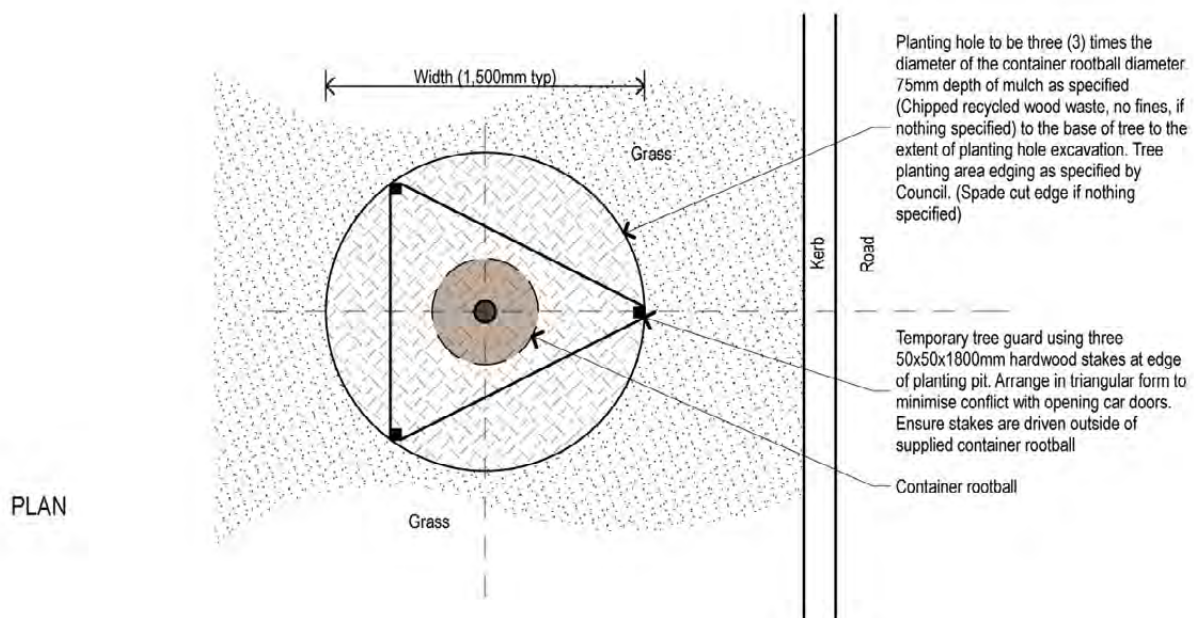
Cover the cut face of the roots with moist hessian or jute immediately after pruning. Maintain in moist state until permanent or temporary backfilling can be achieved.

If no temporary measures are required and finished levels can be achieved, backfill all excavations around tree roots with a mixture consisting of one part by volume of site soil and three parts of washed coarse sand with a neutral pH value, free from weed growth and harmful materials. Place the backfill in 150-200mm layers and thoroughly water the root zone surrounding the tree.

Apply root inducing hormone, Auxinone by Barmac Industries (or approved equivalent) at a rate of 1 part Auxinone to 50 parts water together with a soil wetting agent to the area around the cut root surfaces once per week for 10 weeks.

5.5 Typical Street Planting Details

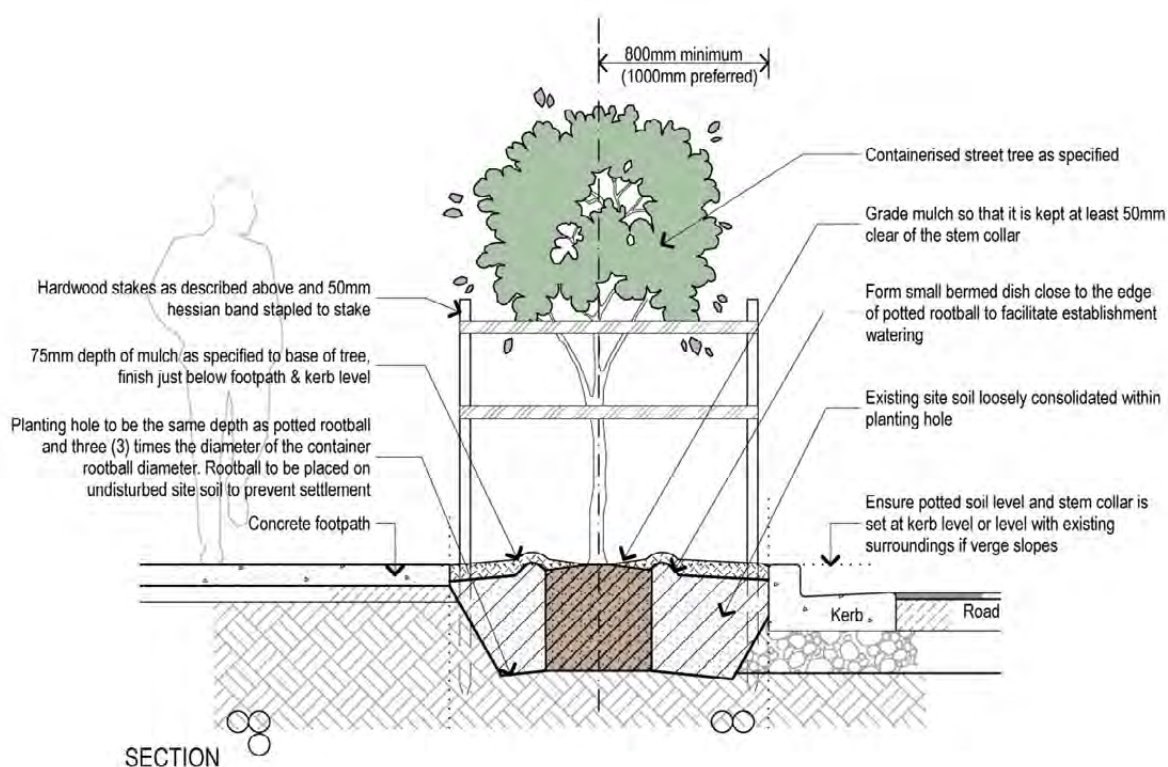
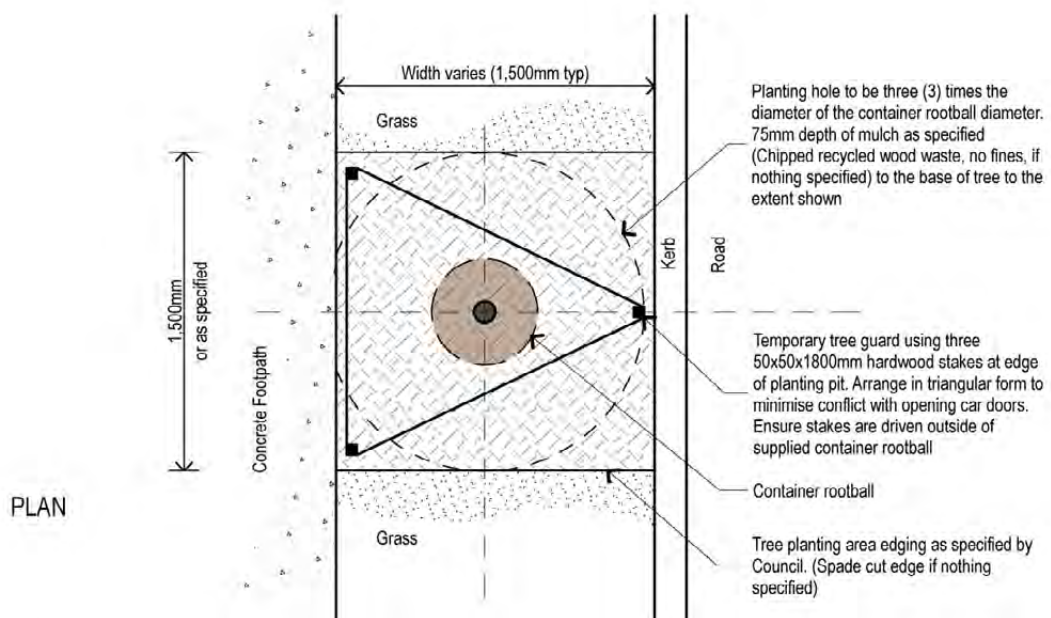
Refer to the following pages for the standard typical street tree installation and planting details to be applied to all planting within the Woollahra area.



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DETAIL 1 - TREE PLANTING IN GRASSED VERGE WITH NO PATH NEARBY

Woollahra Council

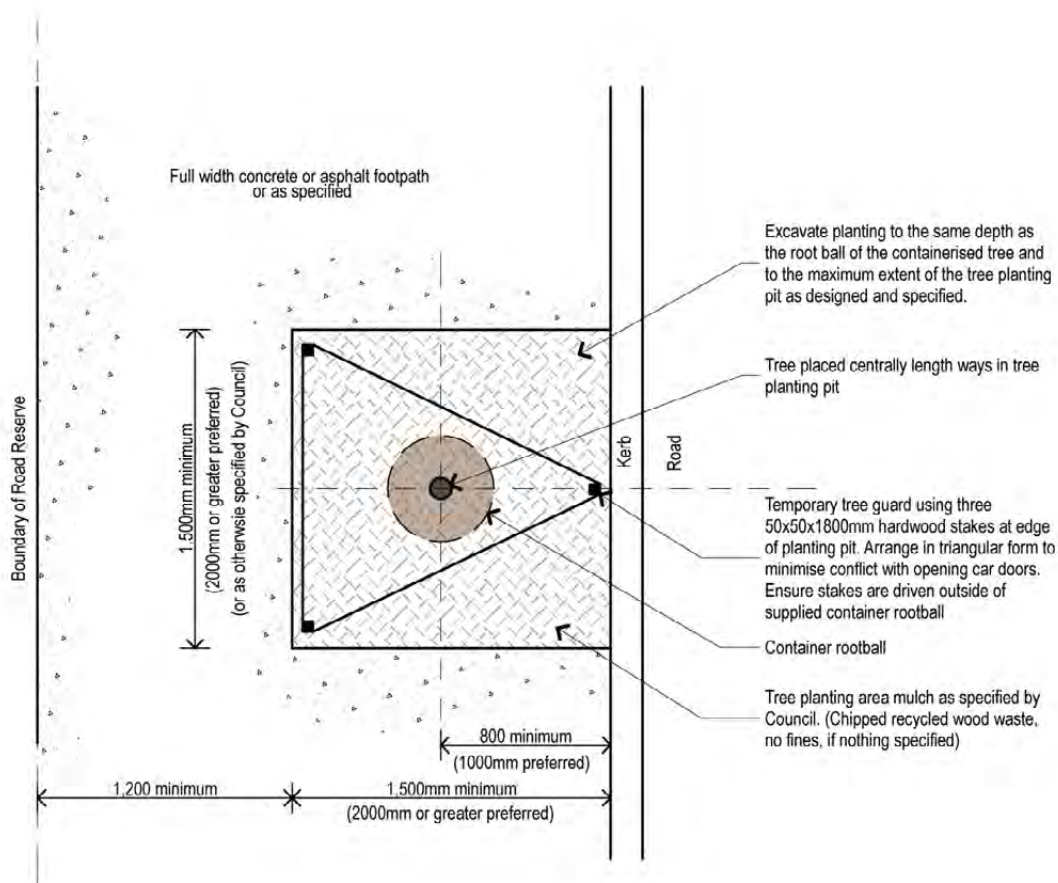


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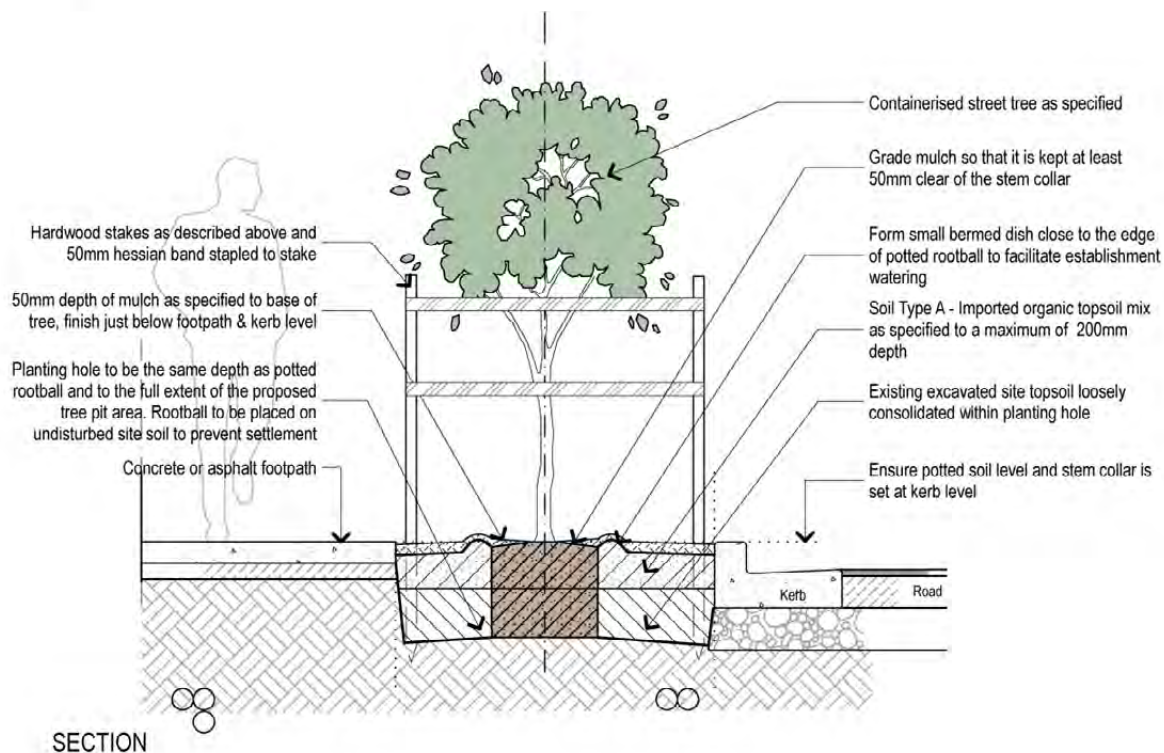
0 500 1000mm

DETAIL 2 - TREE PLANTING IN GRASSED VERGE STRIP WITH ADJOINING PATH

Woollahra Council



PLAN

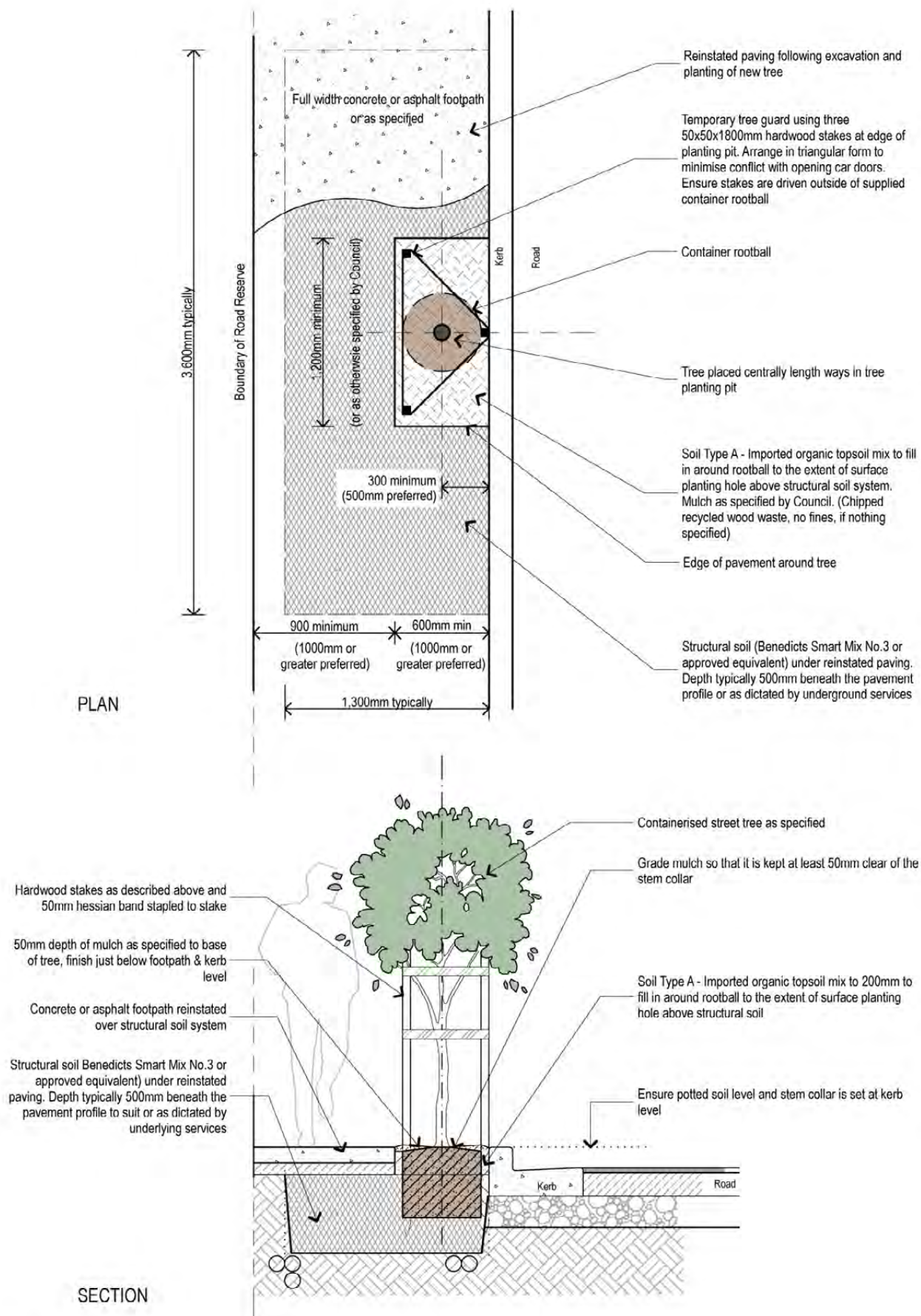


SECTION

Scale 1: 25 @ A3 0 500 1000mm

DETAIL 3 - TREE PLANTING IN FULLY PAVED VERGE WITH DEEP SAND SUBSOILS

Woollahra Council

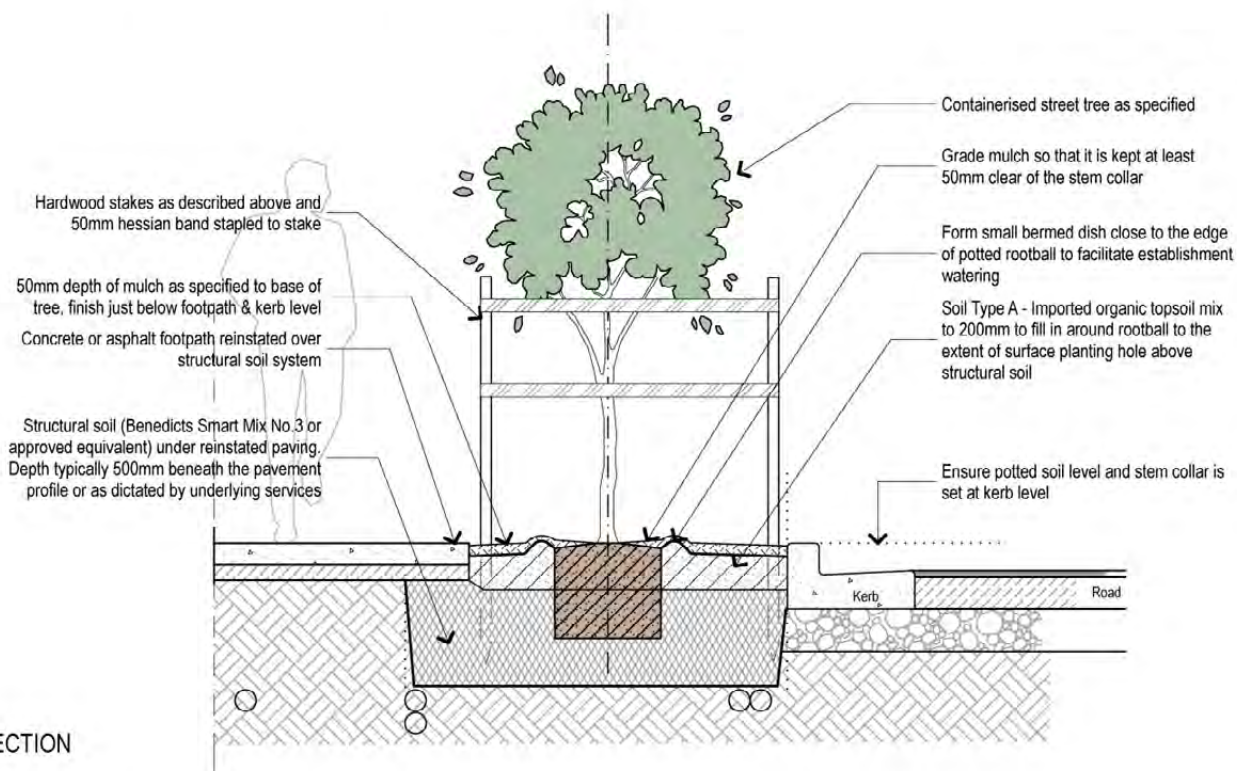
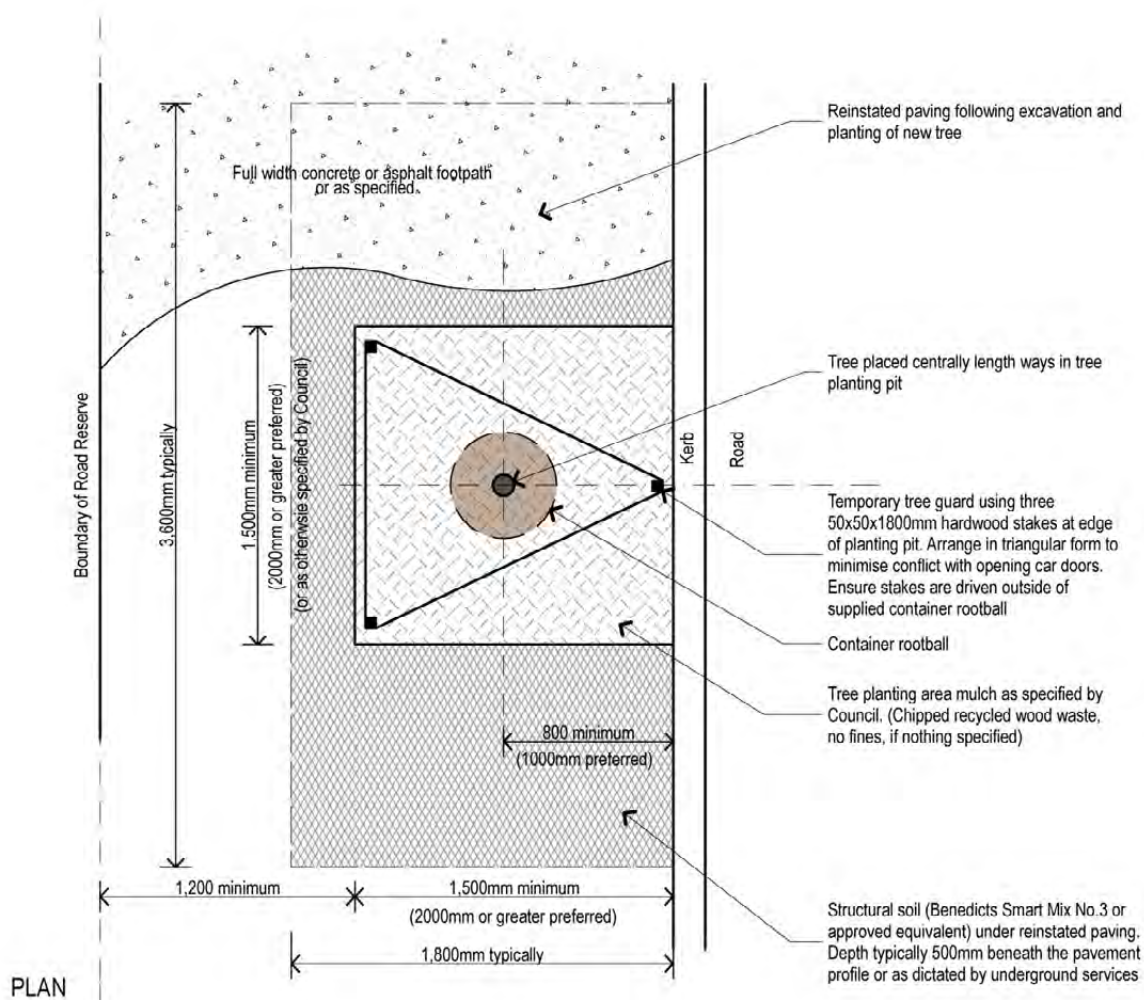


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0 500 1000mm

DETAIL 4 - TREE PLANTING IN NARROW PAVED VERGE WITH EXPANDED SOIL VOLUME

Woollahra Council

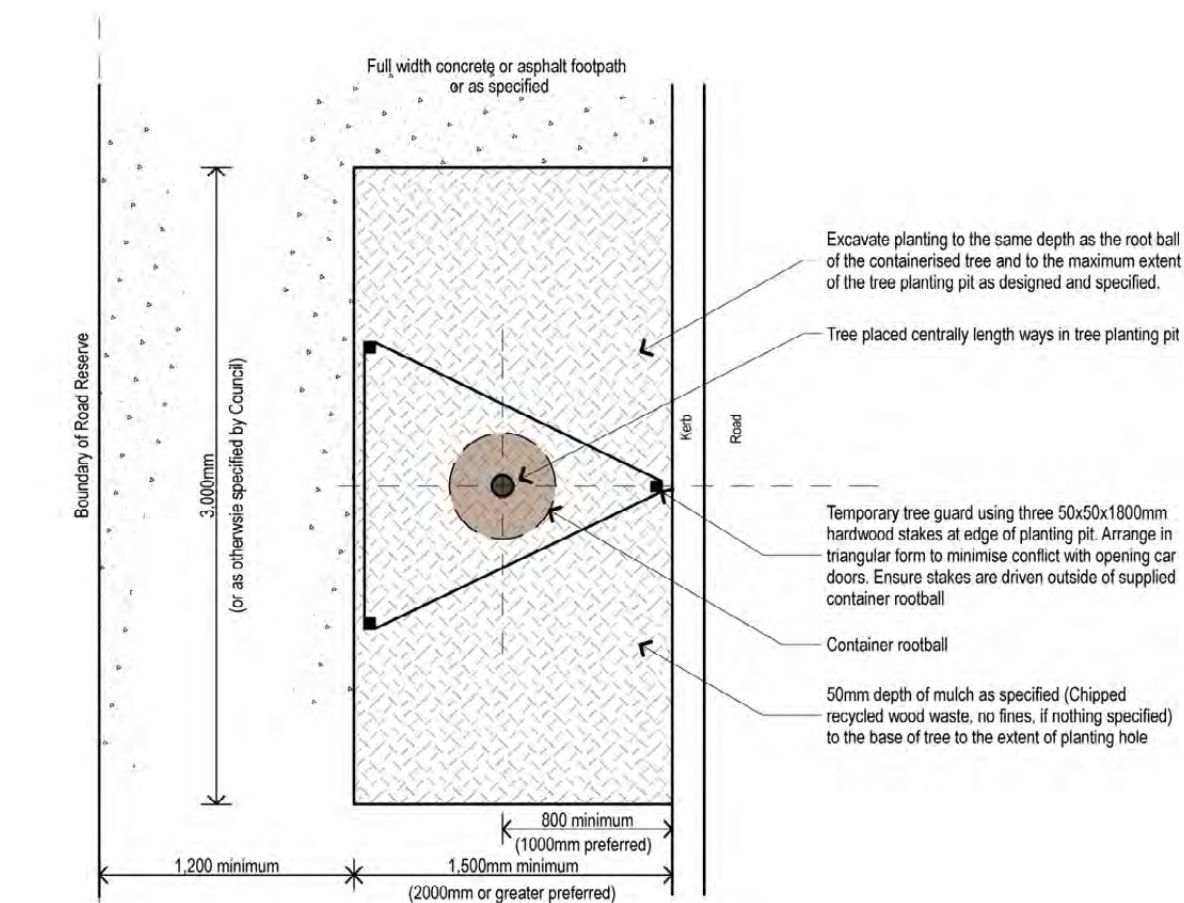


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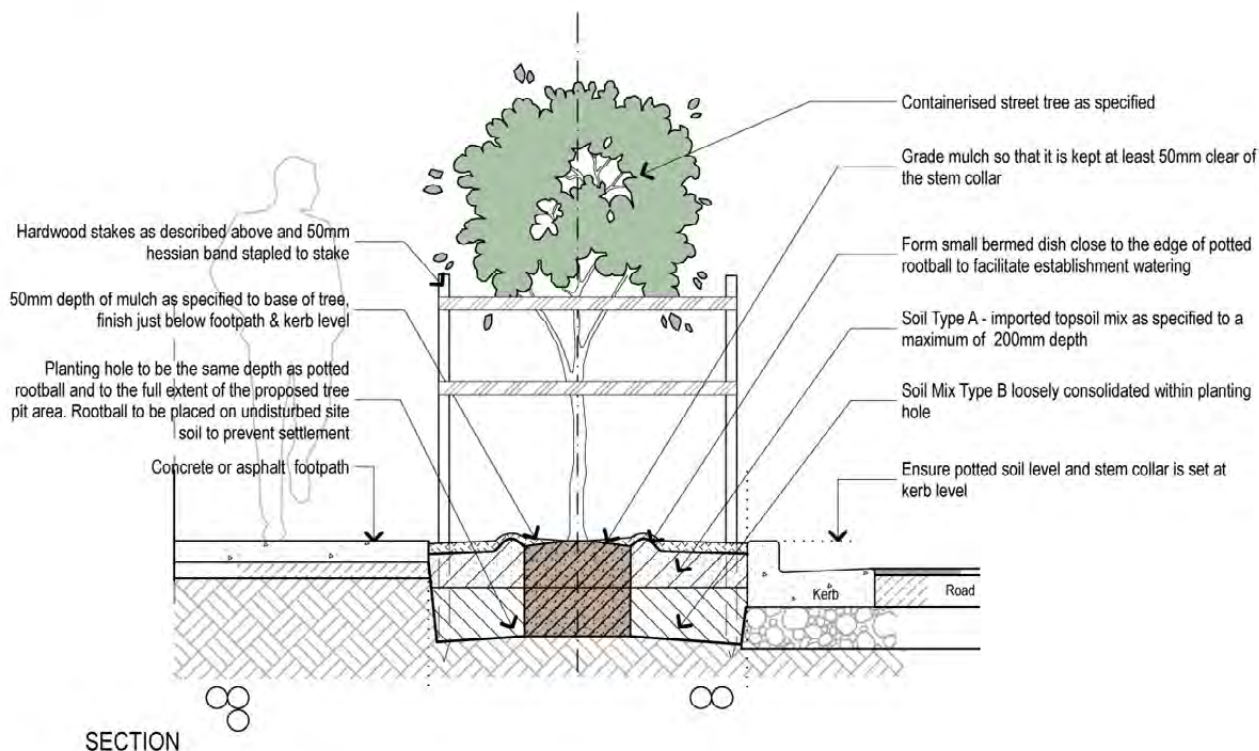
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DETAIL 5 - TREE PLANTING IN FULLY PAVED VERGE WITH EXPANDED SOIL VOLUME

Woollahra Council



PLAN



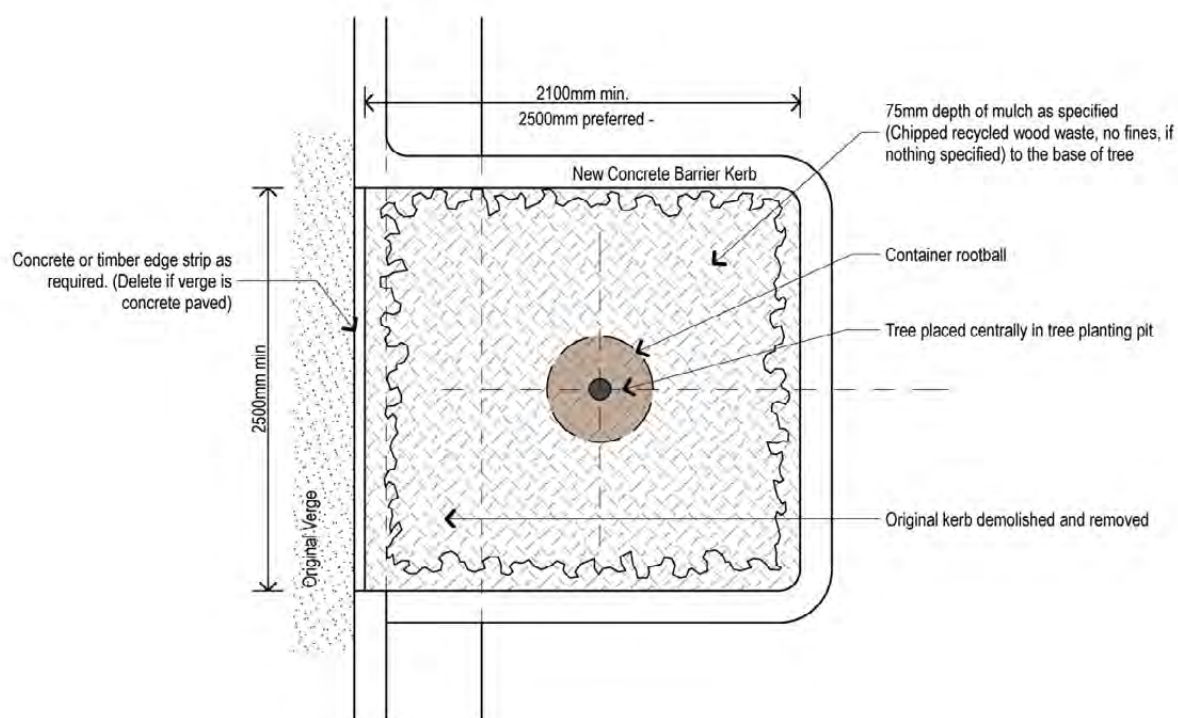
SECTION

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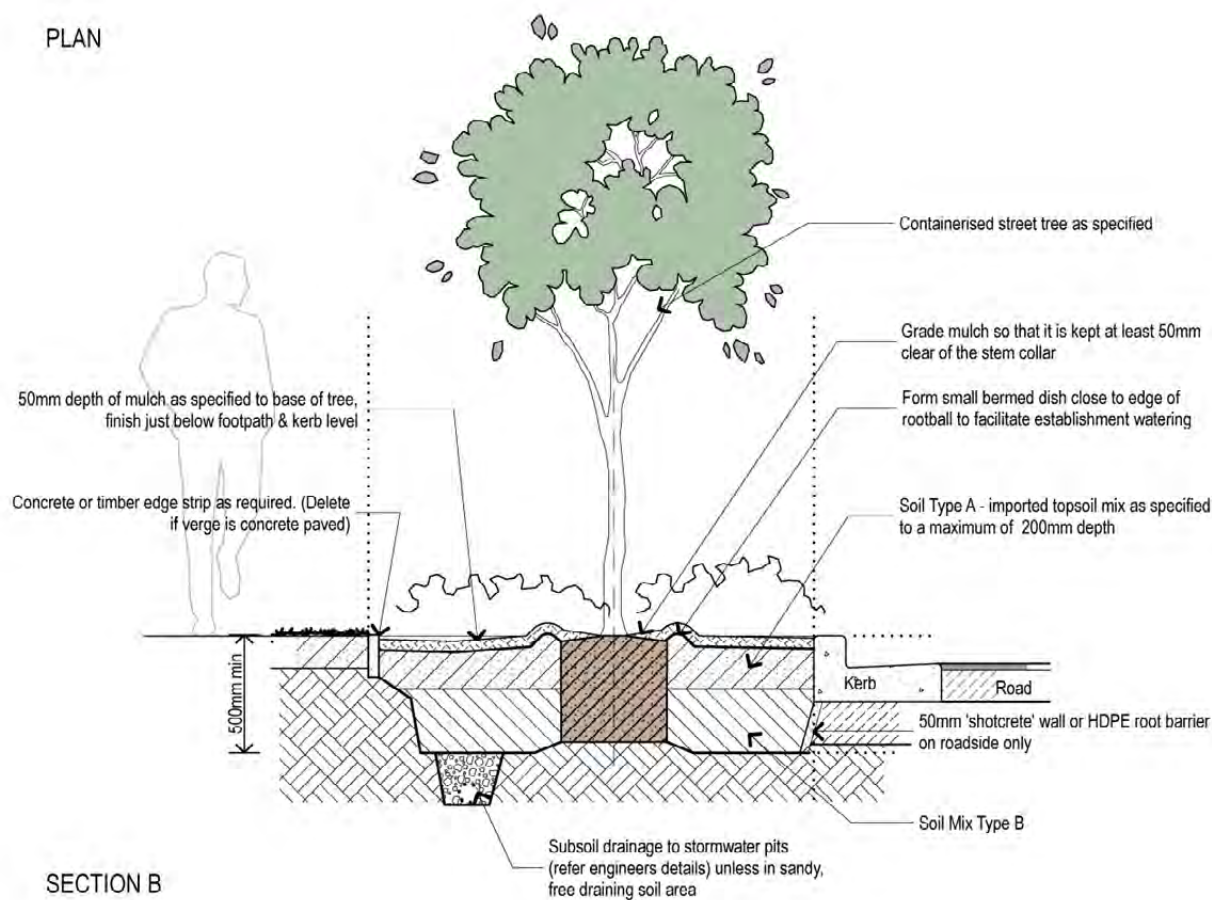
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DETAIL 6 - TREE PLANTING IN FULLY PAVED VERGE WITH EXPANDED TREE PIT GARDEN

Woollahra Council



PLAN



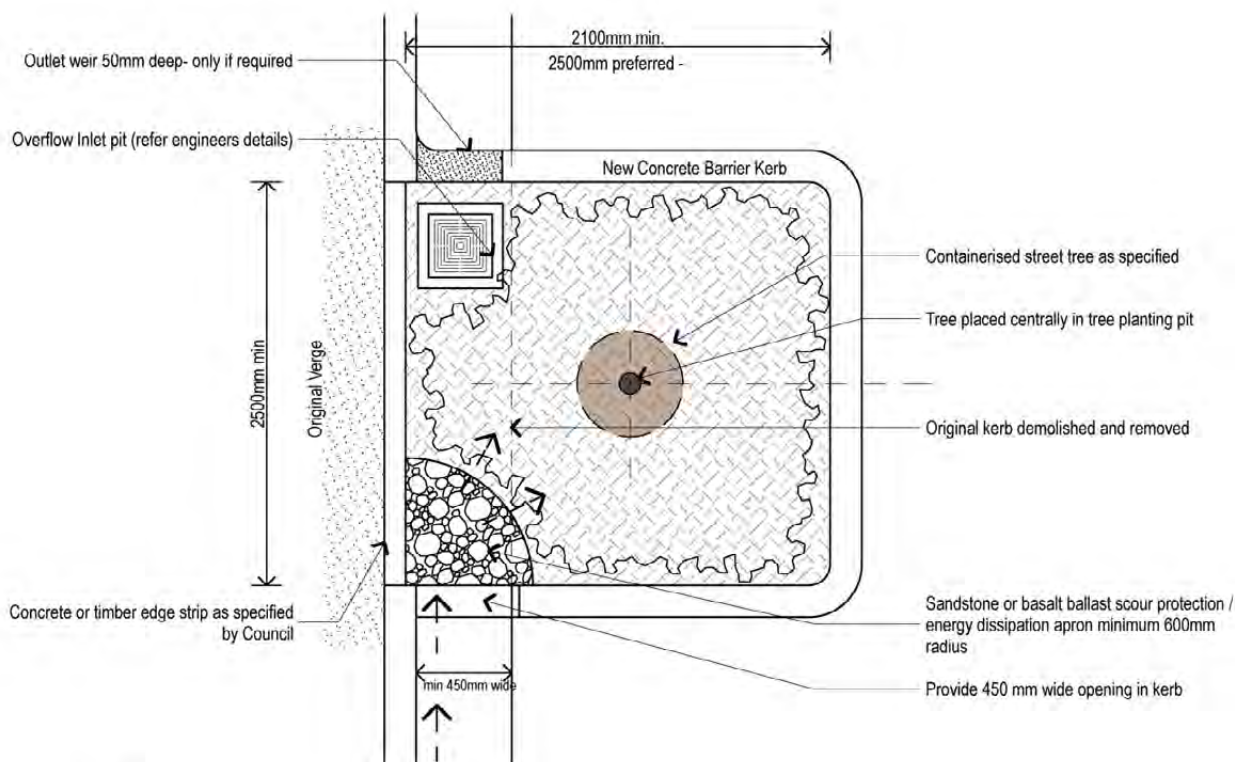
SECTION B

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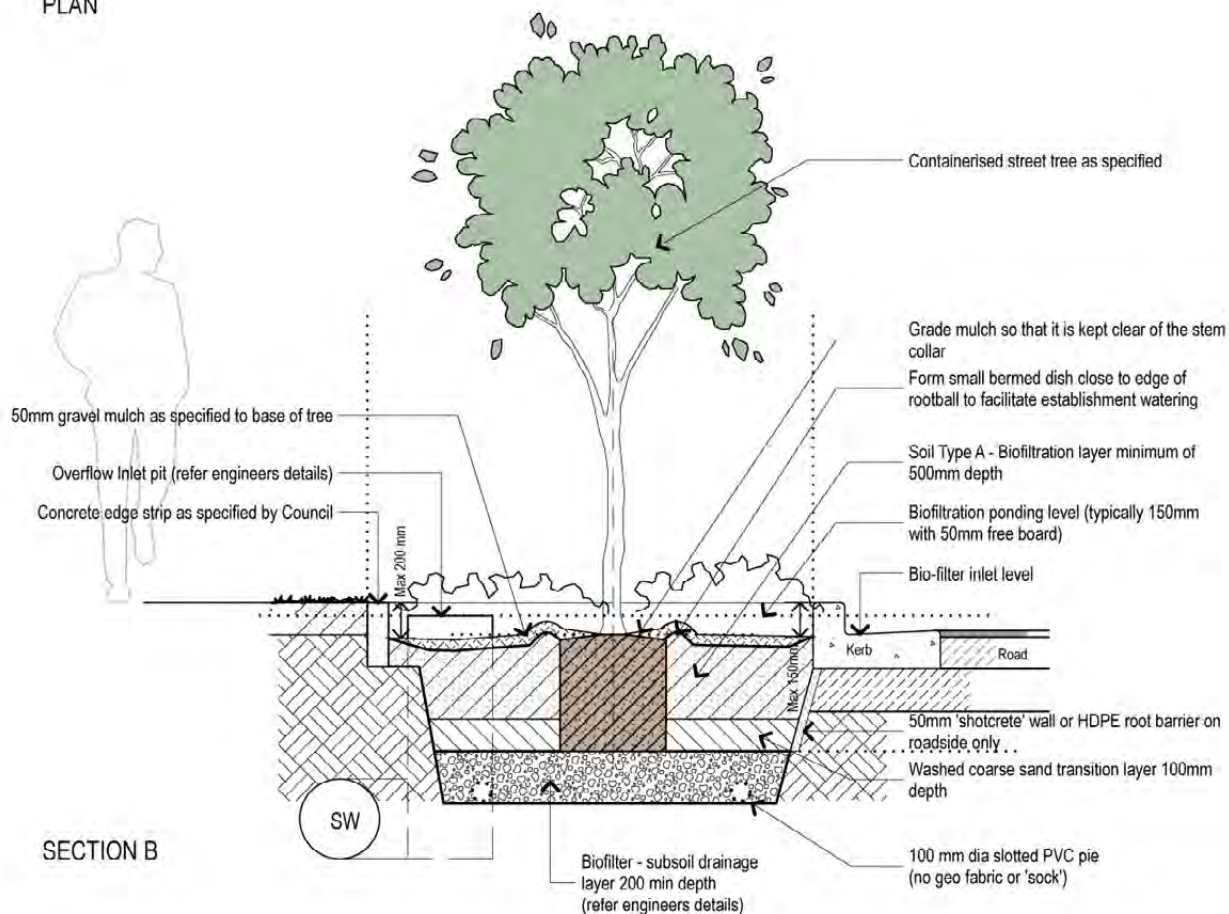
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DETAIL 7 - INDICATIVE IN ROAD PLANTING WITH KERB EXTENSION

Woollahra Council



PLAN



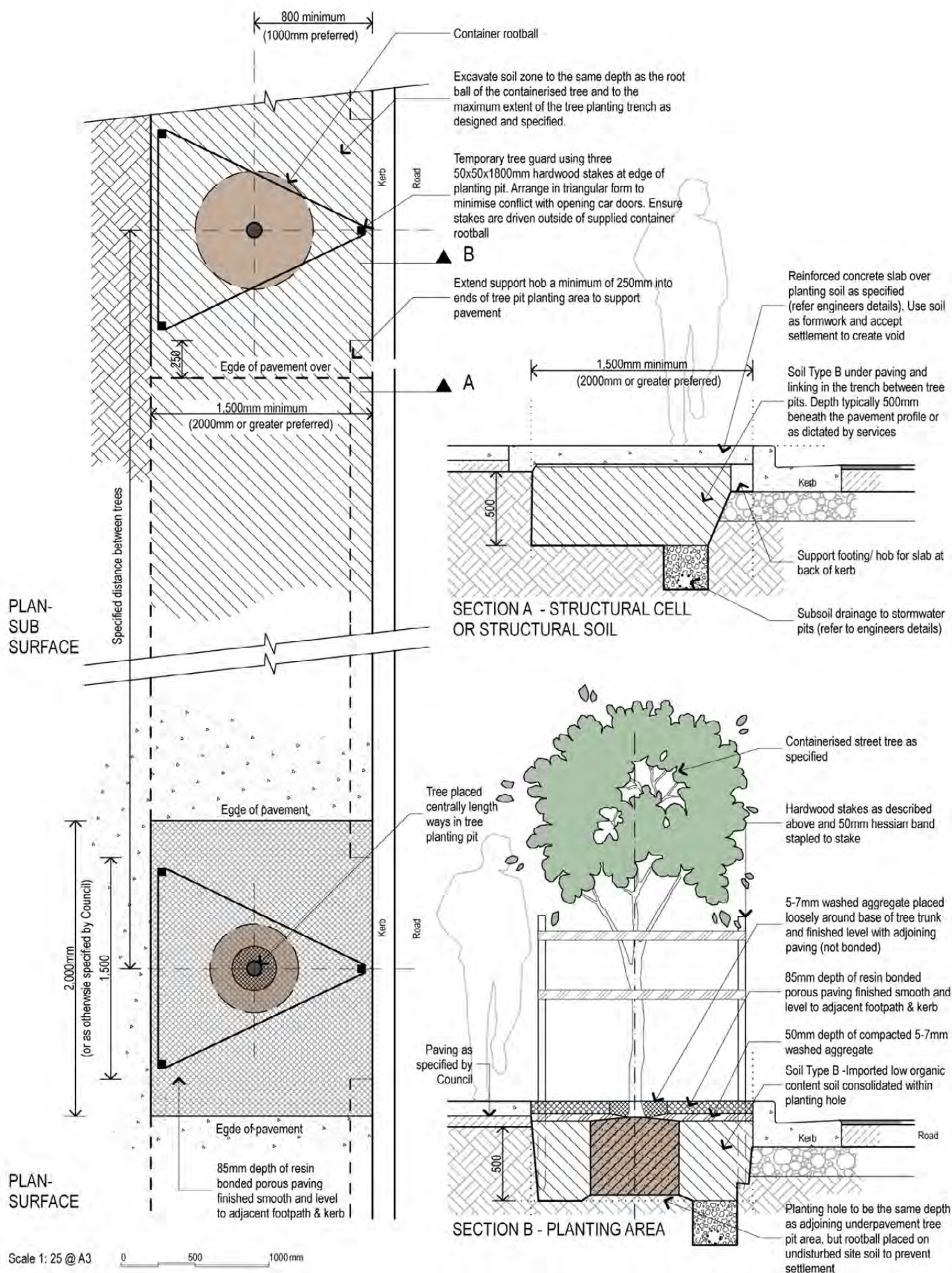
SECTION B

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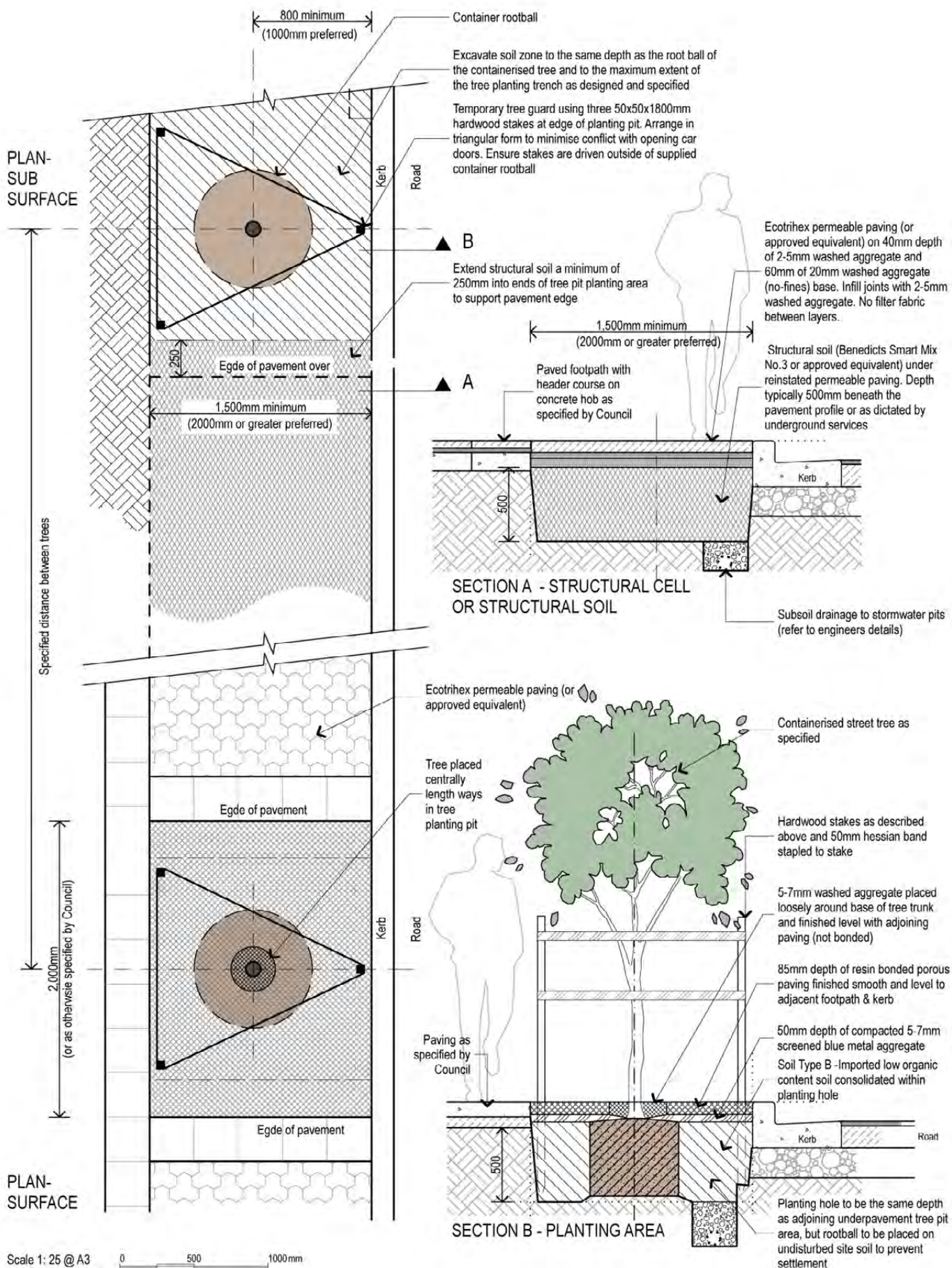
DETAIL 8 - INDICATIVE IN ROAD PLANTING WITH KERB EXTENSION & BIOFILTRATION

Woollahra Council



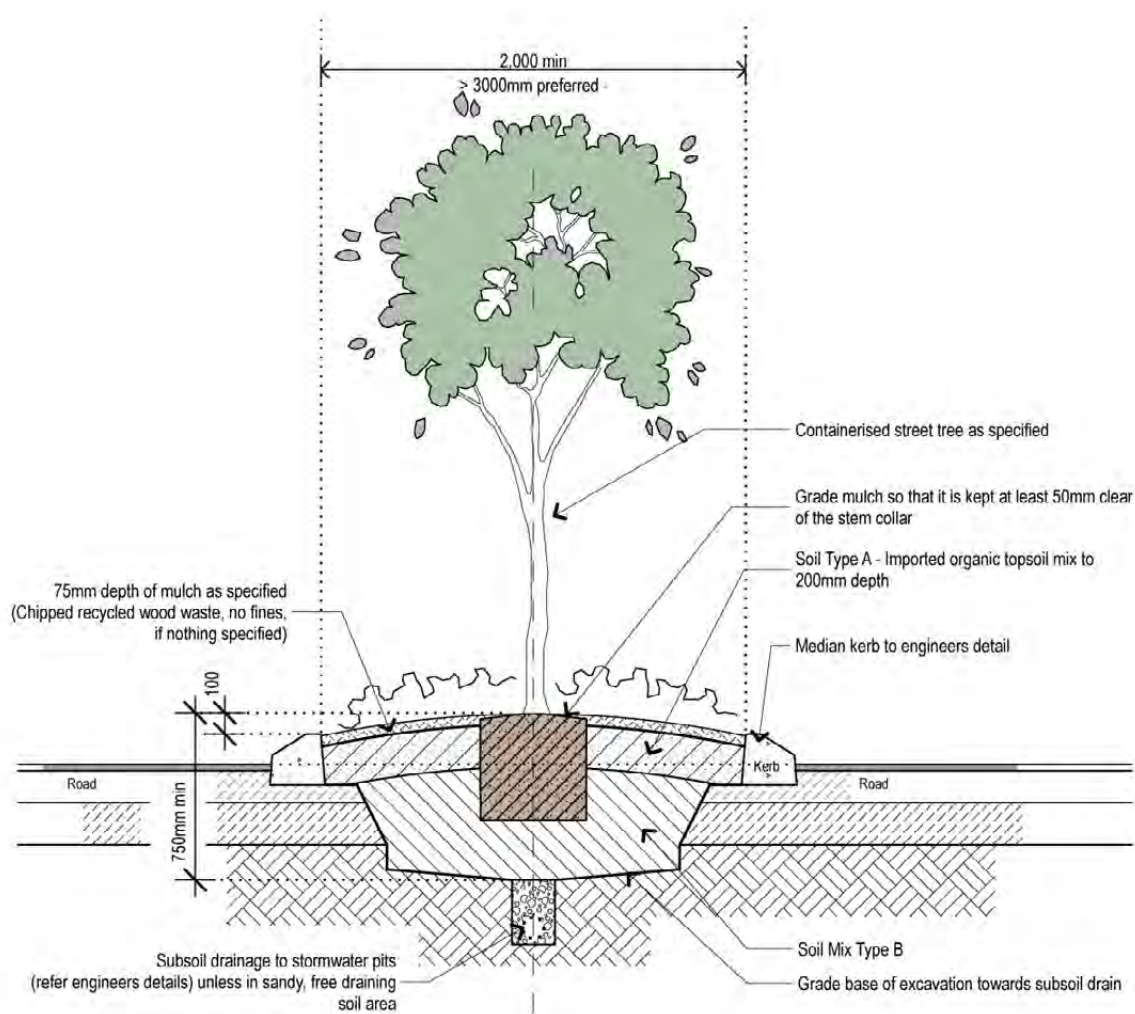
DETAIL 9 - 75-200L TREE PLANTING WITH VAULTED INTERCONNECTED SOIL TRENCH

Woollahra Council



DETAIL 10 - 75-200L TREE PLANTING IN PERMEABLE PAVING WITH STRUCTURAL SOIL

Woollahra Council



Scale 1: 25 @ A3

0 500 1000mm

DETAIL 11 - INDICATIVE IN ROAD CENTRE ISLAND / MEDIAN PLANTING

Woollahra Council

5.6 Street Tree Data Sheets

The following pages are in alphabetical order (by botanical name) and provide illustrations and a brief description of the proposed street tree species for Woollahra.

The descriptions and measurements are a reasonable and indicative guide to the expected typical sizes in an average street environment with average soil conditions and moderate moisture levels.

Please note that some trees may gain larger sizes than suggested in the following data sheets but only in very favourable conditions or in their original and natural forest environments. They will seldom make it to those larger sizes in a normal street planting situation.

Tree Data Sheet



Photo of a mature tree. (Photo. Arterra)



Photo of foliage and flowers. (Photo. Arterra)

Botanic Name:

Acacia binervia (syn. *Acacia glaucesens*)

Common Names:

Coastal Myall

Family:

FABACEAE (sub. fam. MIMOSOIDEAE)

Typical Height:

8-12 metres

Typical Width:

8 metres

Typical Growth rate:

Fast.

Typical Habit:

Dense broad domed and compact crown with dark coloured rough bark.

Foliage:

Silvery grey curved phyllodes (modified leaf).

Flowers:

Bright yellow rod shaped 'wattle' flowers in early spring.

Fruit:

A legume (pea) pod that splits to reveal a hard row of seeds.

Site requirements:

Free draining soil in a full sun position.

Formative pruning required when young to achieve clearances.

Tree Data Sheet



Photo of a mature tree. (Photo. Arterra)



Photo of foliage and fruit. (Photo. Arterra)

Botanic Name:

Acmena smithii (syn. *Syzygium smithii*)

Common Names:

Creek Lilly-Pilly

Family:

MYRTACEAE

Typical Height:

10-15 metres

Typical Width:

8 metres

Typical Growth rate:

Moderate.

Typical Habit:

Hardy and dense evergreen tree with a rounded to broadly columnar shape.

Foliage:

Small glossy green leaves varying in shape from narrow-lanceolate to broad-ovate.

Flowers:

Cream-white staminous flowers in summer.

Fruit:

Creamy-pink round berry-like fruit about 10-20mm in diameter, turning pinky red when ripe.

Site requirements:

Tolerates a wide range of soils in a full sun or part shade position.

Tree Data Sheet



Photo of semi-mature tree. (Photo. Arterra)



Close up photo of flowers. (Photo. Arterra)

Botanic Name:

Angophora costata

Common Names:

Sydney Red Gum/ Smooth Barked Apple

Family:

MYRTACEAE

Typical Height:

12-20 metres

Typical Width:

10 metres

Typical Growth rate:

Fast.

Typical Habit:

Tall native spreading tree with pink bark and twisted, gnarled branches.

Foliage:

Light green, lanceolate and opposite leaves.

Flowers:

White flowers occurring in large fluffy terminal clusters.

Fruit:

Small ribbed woody capsules.

Site requirements:

Prefers well drained to heavy soils in an open sunny position. Drought and frost resistant.

Tree Data Sheet



Photo of mature tree. (Photo. Arterra)



Photo of bark. (Photo. Arterra)

Botanic Name:

Angophora floribunda

Common Names:

Rough-barked Apple

Family:

MYRTACEAE

Typical Height:

15-20 metres

Typical Width:

10 metres

Typical Growth rate:

Moderate.

Typical Habit:

Tall growing spreading tree with rough bark and twisted, gnarled branches.

Foliage:

Light green, lanceolate and opposite.

Flowers:

White flowers occurring in large fluffy terminal clusters late spring.

Fruit:

Small ribbed woody capsules.

Site requirements:

Prefers well drained to heavy soils in an open sunny position. Drought and frost resistant.

Tree Data Sheet



Photo of mature tree. (Photo. Arterra)



Close up photo of flowers. (Photo. Arterra)

Botanic Name:

Angophora hispida

Common Names:

Dwarf Apple

Family:

MYRTACEAE

Typical Height:

5 - 7 metres

Typical Width:

6 metres

Typical Growth rate:

Moderate.

Typical Habit:

Small growing spreading tree with rough bark and twisted, gnarled branches.

Foliage:

Broad stiff, rough and light green, ovate opposite.

Flowers:

White flowers occurring in large fluffy terminal clusters late spring.

Fruit:

Small ribbed woody capsules.

Site requirements:

Prefers well drained sandy soils in an open sunny position. Very drought and frost resistant.

Tree Data Sheet



Photo of a semi-mature tree. (Photo. Arterra)

Botanic Name:

Araucaria columnaris (Syn *Araucaria cookii*)

Common Names:

Cook Pine

Family:

ARAUCARIACEAE

Typical Height:

20-25+ metres

Typical Width:

5-7 metres

Typical Growth rate:

Moderate.

Typical Habit:

Large very symmetrical columnar tree with a pole like trunk and regularly spaced radial branches, usually with a characteristic curved sweep at the trunk base. Classified as a conifer.

Foliage:

Densely crowded spirally arranged leaves.

Flowers:

None.

Fruit:

Cones.

Site requirements:

Free draining deep soil in a full sun position.
Tolerates extreme coastal exposure.

Tree Data Sheet



Photo of a mature tree. (Photo. Arterra)

Botanic Name:

Araucaria heterophylla

Common Names:

Norfolk Island Pine

Family:

ARAUCARIACEAE

Typical Height:

20-25+ metres

Typical Width:

10 metres

Typical Growth rate:

Moderate.

Typical Habit:

Large very symmetrical tree with a pole like trunk and regularly spaced radial branches. Classified as a conifer.

Foliage:

Densely crowded spirally arranged leaves.

Flowers:

None.

Fruit:

Cones.

Site requirements:

Free draining deep soil in a full sun position.
Tolerates extreme coastal exposure.

Tree Data Sheet



Photo of a mature tree. (Photo. Arterra)



Close up photo of flowers. (Photo. Arterra)



Close up photo of foliage and fruit. (Photo. Arterra)

Botanic Name:

Arbutus unedo

Common Names:

Strawberry Tree

Family:

ERICACEAE

Typical Height:

5-8 metres

Typical Width:

4-6 metres

Typical Growth rate:

Slow - moderate.

Typical Habit:

An attractive and hardy evergreen small tree with a rounded spreading crown.

Foliage:

Attractive, slightly serrated foliage, mid to dark green in colour.

Flowers:

Attractive but small pendulous bunches of creamy-white lantern shaped flowers.

Fruit:

Round, marble-sized slightly warty berries turning from green to red when ripe.

Site requirements:

Tolerates a wide range of soils in a full sun position.

Tree Data Sheet



Photo of a mature tree. (Photo. Arterra)

Botanic Name:

Archontophoenix cunninghamiana

Common Names:

Bangalow Palm

Family:

ARECACEAE

Typical Height:

8-15 metres

Typical Width:

3-4 metres

Typical Growth rate:

Moderate.

Typical Habit:

Slender single trunked palm with broadly pendulous light green fronds. Dead fronds typically shed leaving clean trunk.

Foliage:

Light green pinnately divided 3-4m long fronds.

Flowers:

0.8-1.2m long spikes with small white-pink flowers held under the lowest fronds, in Autumn

Fruit:

Small red berry-like round fruits.

Site requirements:

Adaptable to a variety of soil conditions in a full sun to fully shaded position. Tolerates some mild coastal exposure.

Tree Data Sheet



Photo of a semi-mature tree. (Photo. Arterra)



Close up photo of foliage. (Photo. Arterra)

Botanic Name:

Argyrodendron actinophyllum
(syn. *Heritiera actinophylla*)

Common Names:

Black Booyong

Family:

MALVACEAE

Typical Height:

15-18 metres

Typical Width:

10-12 metres

Typical Growth rate:

Moderate.

Typical Habit:

Tall and large evergreen tree with a dense and broadly domed crown, dark grey roughish barked trunk developing buttress roots at its base.

Foliage:

5-9 light green palmately arranged leaflets on a long petiole.

Flowers:

Panicles of small white flowers held at the end of the branches in Autumn

Fruit:

Large winged samara fruits.

Site requirements:

Adaptable to a variety of moist soil conditions in a full sun to part shaded position.

Tree Data Sheet



Photo of a semi-mature tree. (Photo. Arterra)



Photo of foliage. (Photo. Arterra)

Botanic Name:

Backhousia citriodora

Common Names:

Lemon-Scented Myrtle

Family:

MYRTACEAE

Typical Height:

6-9 metres

Typical Width:

3-5 metres

Typical Growth rate:

Moderate.

Typical Habit:

Small native tree with a compact form.

Foliage:

Dense dull green leaves heavily scented with lemon. Oil is used for commercial purposes.

Flowers:

Masses of creamy white lemon scented flowers in Summer.

Fruit:

The fruit is a nut-like capsule which contains small seeds.

Site requirements:

Well drained soil in a full sun position.

Tree Data Sheet



Photo of a mature tree. (Photo. Arterra)



Photo of foliage and flower spike. (Photo. Arterra)

Botanic Name:

Banksia integrifolia

Common Names:

Coast Banksia

Family:

PROTEACEAE

Typical Height:

7-10 metres

Typical Width:

5 metres

Typical Growth rate:

Moderate.

Typical Habit:

Small tree with rough corky bark and sometimes twisted and curvy trunks and stems.

Foliage:

Leathery dull green leaves with a silvery underside.

Flowers:

Pale yellow-green cylindrical flower spikes that are rich in nectar in summer through to winter.

Fruit:

Woody fruit cones.

Site requirements:

Well drained soil in a full sun position. Tolerates extreme drought and coastal exposure.

Tree Data Sheet



Photo of a mature tree. (Photo. Arterra)



Photo of foliage and seed head. (Photo. Arterra)

Botanic Name:

Banksia serrata

Common Names:

Old Man Banksia

Family:

PROTEACEAE

Typical Height:

5-7 metres

Typical Width:

5 metres

Typical Growth rate:

Moderate.

Typical Habit:

Small tree with very rough corky bark and usually twisted and curvy trunks and stems.

Foliage:

Leathery dull green leaves with a lighter underside and saw-tooth margins.

Flowers:

Pale cream-white cylindrical flower spikes that are rich in nectar in summer through to winter.

Fruit:

Woody fruit cones.

Site requirements:

**Well drained soil in a full sun position.
Tolerates extreme drought and coastal exposure.**

Tree Data Sheet



Photo of a semi-mature tree. (Photo. Arterra)



Close up photo of flowers and foliage. (Photo. Arterra)

Botanic Name:

Brachychiton acerifolius

Common Names:

Illawarra Flame Tree

Family:

MALVACEAE

Typical Height:

10-15 metres

Typical Width:

8 metres

Typical Growth rate:

Moderate.

Typical Habit:

Hardy medium sized sub-tropical native tree. It is generally deciduous before the flowers are seen in early summer. However, the deciduous nature of the plant is variable, in some seasons foliage will be retained on all or part of the tree.

Foliage:

Large glossy light green leaves with a variable number of lobes, up to 7.

Flowers:

The showy flowers are bell-shaped and bright coral red. They appear in spring on leafless branches.

Fruit:

Dark seed pod contains numerous seeds embedded in hairs in a honeycomb-like husk.

Site requirements:

Tolerates a wide range of soils but prefers rich moist soil in a full sun or part shade position.

Tree Data Sheet



Photo of semi-mature trees. (Photo. Arterra)



Close up photo of a flower. (Photo. Arterra)

Botanic Name:

Buckinghamia celsissima

Common Names:

Ivory Curl Flower

Family:

PROTEACEAE

Typical Height:

7-9 metres

Typical Width:

5 metres

Typical Growth rate:

Moderate.

Typical Habit:

Small native tree from northern Queensland with a densely foliated crown and compact rounded form.

Foliage:

Large stiff and glossy elliptical leaves with wavy margins. New growth has pink/ bronze colouring.

Flowers:

Large and profuse racemes of cream flowers up to 200mm long occurring at the ends of the branches in late spring to summer.

Fruit:

The fruit is a nut-like capsule which are retained on old stems.

Site requirements:

Tolerates most soils with good moisture and in a full sun position. Drought resistant once established.

Tree Data Sheet



Photo of a group of mature trees. (Photo. Arterra)

Botanic Name:

Butia capitata

Common Names:

Wine Palm or Jelly Palm

Family:

ARECACEAE

Typical Height:

5-7 metres

Typical Width:

4-5 metres

Typical Growth rate:

Slow.

Typical Habit:

Thick single trunked palm with broadly pendulous grey-green curving fronds. Dead fronds typically held and sheath the trunk unless removed.

Foliage:

Grey-green pinnately divided 3-4m long fronds.

Flowers:

Short spikes with small white-cream flowers held amongst the fronds, in Spring.

Fruit:

Bunches of grape sized orange to brown fleshy rounded fruits.

Site requirements:

Adaptable to a variety of soil conditions in a full sun position. Tolerates some coastal exposure.

Tree Data Sheet



Photo of a semi-mature tree. (Photo. Arterra)

Botanic Name:

Caesalpinia ferrea

Common Names:

Leopard Tree

Family:

FABACEAE

(sub. family CAESALPINIOIDEAE)

Typical Height:

8-15 metres

Typical Width:

8-10 metres

Typical Growth rate:

Slow to moderate.

Typical Habit:

An open and slender branched vase-shaped deciduous tree from Brazil with a smooth and attractively mottled bark.

Foliage:

Delicate light green, with fern-like bipinnate leaves.

Flowers:

Bright yellow in Spring.

Fruit:

Thick and waxy flattened dark brown pods.

Site requirements:

Adaptable to a variety of soil conditions in a full sun position. Prefers moist soils with some protection from winds and frosts when young.

Tree Data Sheet



Photo of a mature tree. (Photo. Arterra)



Close up photo of a flower. (Photo. Arterra)

Botanic Name:

Callistemon viminalis

Common Names:

Bottlebrush

Family:

MYRTACEAE

Typical Height:

7-10 metres

Typical Width:

5 metres

Typical Growth rate:

Moderate.

Typical Habit:

Small native tree with a weeping crown and compact form.

Foliage:

Light green narrow scented leaves. New growth has pink/ bronze colouring.

Flowers:

Bright red 'bottlebrush' flower in spring to summer.

Fruit:

The fruit are groups of nut-like capsules which are retained on old flowering stems.

Site requirements:

**Tolerates moist soils in a full sun position.
Drought resistant.**

Tree Data Sheet



Photo of mature trees. (Photo. Arterra)

Botanic Name:

Casuarina glauca

Common Names:

Swamp She-Oak

Family:

CASUARINAEAE

Typical Height:

15-20 metres

Typical Width:

5-8 metres

Typical Growth rate:

Fast.

Typical Habit:

Extremely hardy, medium to large upright native tree with a sparsely foliated canopy with long and weeping needle-like branchlets and rough dark grey-brown bark.

Foliage:

Dull dark green needle-like branchlets with tiny unseen clasping leaves. New growth has pink/ bronze colouring.

Flowers:

Inconspicuous rusty-pink furry covering to some outer branchlets

Fruit:

The fruit is a woody cone-like capsule which is retained on the younger woody stems.

Site requirements:

Tolerates a vast variety of soils in a full sun position. Drought and waterlogging resistant.

Tree Data Sheet



Photo of mature tree. (Photo. Arterra)

Botanic Name:

Celtis australis

Common Names:

Southern Hackberry

Family:

ULMACAEAE

Typical Height:

10-15 metres

Typical Width:

6-9 metres

Typical Growth rate:

Moderate.

Typical Habit:

Deciduous small to medium sized tree with smooth or slightly rough light grey bark. Generally they are a shapely and long lived low maintenance specimen tree.

Foliage:

Broadly lance-shaped, serrated edge leaves that are dull and mid to dark green and rough to touch on the upper surface.

Flowers:

Insignificant flowers.

Fruit:

Small, hard purple black fruit which fall in autumn.

Site requirements:

Well drained soil in full sun to part shade locations.

Tree Data Sheet



Photo of an avenue of mature trees. (Photo. Arterra)



Photo of a mature tree. (Photo. Arterra)

Botanic Name:

Cinnamomum camphora

Common Names:

Camphor Laurel

Family:

LAURACEAE

Typical Height:

15-20 metres

Typical Width:

12-15 metres

Typical Growth rate:

Fast.

Typical Habit:

Evergreen medium to large spreading tree with fissured light grey bark, native to eastern Asia. Generally they are a shapely and long lived low maintenance specimen trees.

Foliage:

Broadly elliptic, bright and light-mid green, glossy leaves that are wavy edged, with 3 distinctive veins spreading from the base.

Flowers:

Insignificant small clusters of cream-green flowers in Spring.

Fruit:

Small, fleshy purple-black berry-like fruit which fall in Autumn.

Site requirements:

Well drained soil in full sun to part shade locations. Extremely tolerant of urban conditions and poor soils. Propensity to self seed and become weedy within bushland and derelict sites has lead to use only in historically important situations.

Tree Data Sheet



Photo of a mature tree. (Photo. Arterra)



Close up photo of foliage and flowers. (Photo. Arterra)

Botanic Name:

Corymbia citriodora

Common Names:

Lemon Scented Gum

Family:

MYRTACEAE

Typical Height:

18-25 metres

Typical Width:

10-15 metres

Typical Growth rate:

Fast.

Typical Habit:

Large native open-crowned evergreen tree with an attractive smooth white trunk.

Foliage:

Long narrow leaves with a strong lemon fragrance.

Flowers:

Bears fluffy white flowers in summer to autumn.

Fruit:

Urn shaped woody capsule.

Site requirements:

Tolerates a wide range of soils in a full sun position. Very drought tolerant.

Tree Data Sheet



Photo of mature trees. (Photo. Arterra)



Photo of bark. (Photo. Arterra)

Botanic Name:

Corymbia eximia

Common Names:

Yellow Bloodwood

Family:

MYRTACEAE

Typical Height:

10-18 metres

Typical Width:

8 metres

Typical Growth rate:

Fast.

Typical Habit:

An erect and typically well proportioned hardy native tree with a prominently yellowish-brown flaky bark.

Foliage:

Glossy grey-green, curved lanceolate up to 18cm long.

Flowers:

Creamy yellow flowers, appearing late spring to summer.

Fruit:

Globose green capsules.

Site requirements:

Prefers well drained Hawkesbury Sandstone or sandy soils in an open sunny position, but appears tolerant of a variety of soil types. Drought resistant but frost tender.

Tree Data Sheet



Photo of a semi-mature tree. (Photo. Arterra)



Photo of bark. (Photo. Arterra)

Botanic Name:

Corymbia gummifera

Common Names:

Red Bloodwood

Family:

MYRTACEAE

Typical Height:

15-20 metres

Typical Width:

10 metres

Typical Growth rate:

Fast.

Typical Habit:

A tall but sometimes twisted and irregular branching native tree with fibrous brown to grey bark.

Foliage:

Stiff green and curved discolourous leaves up to 10-15cm long.

Flowers:

Creamy yellow flowers, appearing late spring to summer.

Fruit:

Woody green urn-shaped capsules.

Site requirements:

Prefers well drained Hawkesbury Sandstone soils in an open sunny position. Drought resistant but frost tender.

Tree Data Sheet



Photo of mature tree. (Photo. Arterra)



Photo of bark. (Photo. Arterra)

Botanic Name:

Corymbia maculata

Common Names:

Spotted Gum

Family:

MYRTACEAE

Typical Height:

18-25 metres

Typical Width:

10 metres

Typical Growth rate:

Fast.

Typical Habit:

A tall growing native tree with smooth and straight trunk with attractively mottled, blue-grey, cream and sometimes pink or brown bark.

Foliage:

Large glossy dark green, curved lanceolate up to 30cm long.

Flowers:

White flowers occurring in winter to spring.

Fruit:

Urn-shaped woody capsule.

Site requirements:

Tolerates a wide range of soils in an open sunny position. Drought resistant, but frost tender before two years of age.

Tree Data Sheet



Photo of a mature tree. (Photo. Arterra)



Close up photo of foliage. (Photo. Arterra)

Botanic Name:

Cupaniopsis anacardioides

Common Names:

Tuckeroo

Family:

SAPINDACEAE

Typical Height:

8-10 metres

Typical Width:

5-8 metres

Typical Growth rate:

Moderate.

Typical Habit:

Medium sized native evergreen tree with a rounded and dense crown and neat form.

Foliage:

Leathery and glossy leaves with bronze coloured new growth.

Flowers:

Large clusters of small yellow flowers in spring to summer.

Fruit:

Orange 3-part fruit capsules.

Site requirements:

Tolerates a wide range of soils including poor modified sites. Full sun position. Salt and drought tolerant.

Tree Data Sheet



Photo of a semi-mature tree. (Photo. Arterra)



Close up photo of foliage with prominent new growth. (Photo. Arterra)

Botanic Name:

Elaeocarpus eumundi

Common Names:

Eumundi Quondong

Family:

ELAEOCARPACEAE

Typical Height:

10-12 metres

Typical Width:

3-5 metres

Typical Growth rate:

Moderate.

Typical Habit:

Small native evergreen tree with a upright narrow form and dense glossy canopy.

Foliage:

Dark green glossy leaves with deep bronze-red new growth.

Flowers:

Bird attracting cream sweetly scented flowers in summer.

Fruit:

Dark blue round berries.

Site requirements:

Tolerates a wide range of soils but prefers rich moist soil in a full sun position.

Tree Data Sheet



Photo of a semi-mature tree. (Photo. Arterra)



Close up of foliage and flowers. (Photo. Arterra)

Botanic Name:

Elaeocarpus reticulatus

Common Names:

Blueberry Ash

Family:

ELAEocarpaceae

Typical Height:

7-10 metres

Typical Width:

3-5 metres

Typical Growth rate:

Moderate.

Typical Habit:

Small native evergreen tree with a typically upright narrow and dense form but somewhat more random canopy shape with age.

Foliage:

Dark green matt leaves with finely toothed edges.

Flowers:

Showy light pink to creamy white flowers in spring to summer.

Fruit:

Bright blue berries that give the tree its name.

Site requirements:

Tolerates a wide range of soils but prefers rich moist soil in a full sun position. Drought tolerant.

Tree Data Sheet



Photo of a mature tree. (Photo. Arterra)



Photo of lower trunk bark. (Photo. Arterra)

Botanic Name:

Eucalyptus botryoides

Common Names:

Bangalay

Family:

MYRTACEAE

Typical Height:

15-20 metres

Typical Width:

10 metres

Typical Growth rate:

Fast.

Typical Habit:

Large native evergreen tree with an open spreading crown and soft corky-fibrous reddish brown bark. Very similar to, and often confused with, *Eucalyptus botryoides*.

Foliage:

Broad and stiff lanceolate leaves.

Flowers:

Showy clusters of creamy white flowers in winter to early summer.

Fruit:

Large urn-shaped capsule.

Site requirements:

Tolerates a wide range of soils in a full sun position. Very drought tolerant.

Tree Data Sheet



Photo of a mature tree. (Photo. Arterra)



Photo of bark. (Photo. Arterra)

Botanic Name:

Eucalyptus haemastoma

Common Names:

Scribbly Gum

Family:

MYRTACEAE

Typical Height:

10-15 metres

Typical Width:

10 metres

Typical Growth rate:

Fast.

Typical Habit:

Medium native evergreen tree with an open spreading crown and smooth white bark, usually with distinctive insect 'scribbles'.

Foliage:

Broad and stiff lanceolate leaves.

Flowers:

Showy clusters of creamy white flowers in winter to early summer.

Fruit:

Small urn-shaped capsule.

Site requirements:

Prefers shallow sandy soils but will tolerate a wide range of soils in a full sun position. Very drought tolerant.

Tree Data Sheet



Photo of a mature tree. (Photo. Arterra)



Photo of bark. (Photo. Arterra)

Botanic Name:

Eucalyptus paniculata

Common Names:

Grey Ironbark

Family:

MYRTACEAE

Typical Height:

20-25+ metres

Typical Width:

10-15 metres

Typical Growth rate:

Fast.

Typical Habit:

Large and typically upright native evergreen tree with an open spreading crown and hard and deeply fissured dark grey-brown bark.

Foliage:

Narrow and broadly pendulous lanceolate leaves.

Flowers:

Showy clusters of creamy white flowers in winter to early summer at end of branchlets.

Fruit:

Urn-shaped capsule.

Site requirements:

Tolerates a wide range of soils in a full sun position. Very drought tolerant.

Tree Data Sheet



Photo of a mature tree. (Photo. Arterra)



Photo of lower trunk bark. (Photo. Arterra)

Botanic Name:

Eucalyptus pilularis

Common Names:

Blackbutt

Family:

MYRTACEAE

Typical Height:

20-25+ metres

Typical Width:

15-20 metres

Typical Growth rate:

Fast.

Typical Habit:

Large native evergreen tree with an open spreading crown with a straight trunk and a sock of dark grey fibrous bark on the lower portions. The Upper trunk and branches have smooth white-grey bark, often shed in ribbons.

Foliage:

Narrow lanceolate leaves.

Flowers:

Creamy white flowers in winter to early summer.

Fruit:

Small urn-shaped capsules.

Site requirements:

Tolerates a wide range of soils in a full sun position. Very drought tolerant.

Tree Data Sheet



Photo of a mature tree. (Photo. Arterra)



Photo of lower trunk bark. (Photo. Arterra)

Botanic Name:

Eucalyptus piperita

Common Names:

Sydney Peppermint

Family:

MYRTACEAE

Typical Height:

15-20+ metres

Typical Width:

10-15 metres

Typical Growth rate:

Fast.

Typical Habit:

Medium to large native evergreen tree with a somewhat variable open spreading crown with a sock of light grey finely fibrous bark to lower trunk. Upper trunk and branches with smooth white-grey bark, often shed in long ribbons.

Foliage:

Narrow lanceolate leaves with a strong peppermint smell when crushed.

Flowers:

Creamy white flowers in winter to early summer.

Fruit:

Small urn-shaped capsule.

Site requirements:

Tolerates a wide range of soils in a full sun position. Very drought tolerant.

Tree Data Sheet



Photo of a mature tree. (Photo. Arterra)

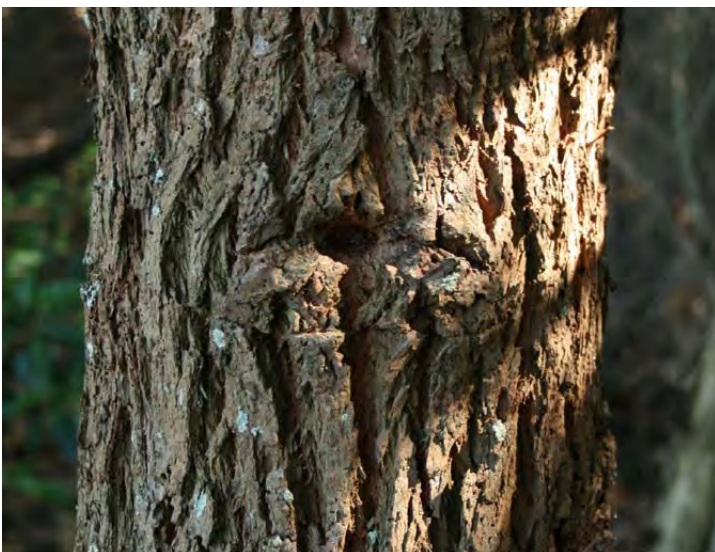


Photo of bark. (Photo. Arterra)

Botanic Name:

Eucalyptus robusta

Common Names:

Swamp Mahogany

Family:

MYRTACEAE

Typical Height:

12-18 metres

Typical Width:

8-12 metres

Typical Growth rate:

Fast.

Typical Habit:

Medium native evergreen tree with a dense canopy and deeply furrowed reddish brown persistent bark. Very similar to, and often confused with, *Eucalyptus botryoides*.

Foliage:

Large dark green leaves with a pale under side.

Flowers:

Bears white nectar rich flowers in spring to autumn.

Fruit:

Urn shaped capsule.

Site requirements:

Tolerates water logged or heavily compacted soils in a full sun position. Drought tolerant.

Tree Data Sheet

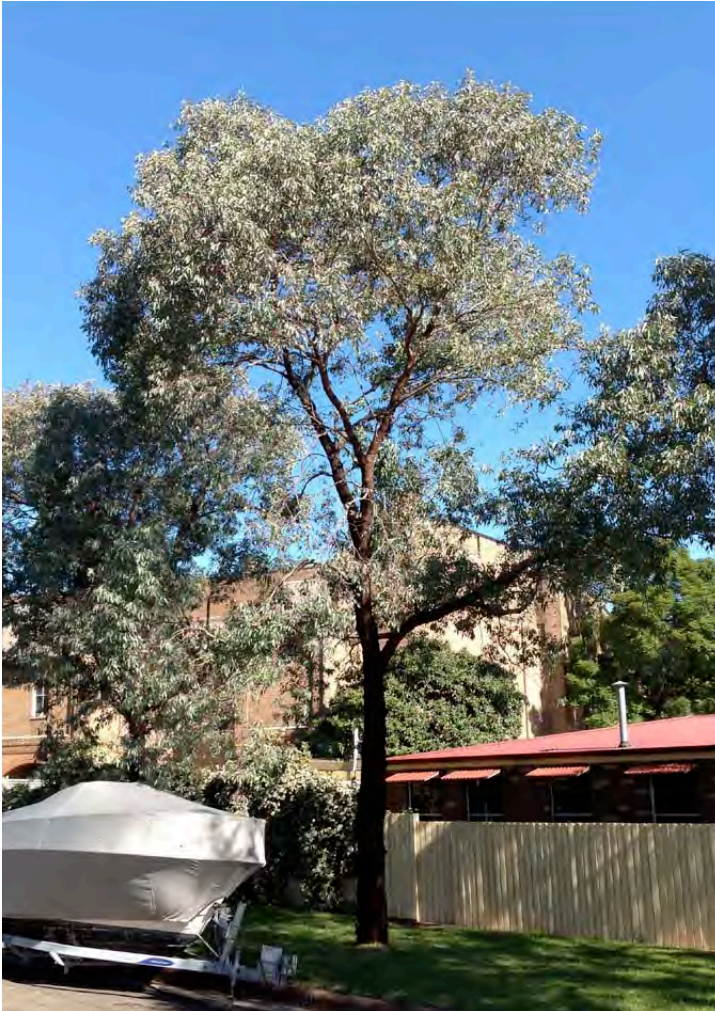


Photo of a semi-mature tree. (Photo. Arterra)



Close up of bark. (Photo. Arterra)

Botanic Name:

Eucalyptus sideroxylon

Common Names:

Red Iron Bark/ Mugga Mugga

Family:

MYRTACEAE

Typical Height:

18-25 metres

Typical Width:

8-12 metres

Typical Growth rate:

Fast.

Typical Habit:

Medium to large native evergreen tree with very dark (nearly black) deeply furrowed bark. Habit can be variable.

Foliage:

Drooping, narrow greyish green to blue leaves.

Flowers:

Showy flowers are usually white, however pink and red flowering forms are also fairly common.

Fruit:

Urn-shaped capsule.

Site requirements:

Tolerates a wide range of heavier soils in a full sun position. Extremely drought tolerant.

Tree Data Sheet



Photo of mature tree. (Photo. Arterra)



Close up of bark. (Photo. Arterra)

Botanic Name:

Eucalyptus tereticornis

Common Names:

Forest Red Gum

Family:

MYRTACEAE

Typical Height:

18-25 metres

Typical Width:

10-15 metres

Typical Growth rate:

Fast.

Typical Habit:

Large native evergreen tree with smooth grey-white trunk with bark that sheds in short ribbons.

Foliage:

Broad tapering grey-green leaves.

Flowers:

Creamy white flowers in summer.

Fruit:

Small urn-shaped capsule.

Site requirements:

Tolerates a wide range of soils but prefers heavier clay soils in a full sun position. Frost and drought tolerant.

Tree Data Sheet



Photo of mature tree. (Photo. Arterra)



Photo of mature tree. (Photo. Arterra)

Botanic Name:

Ficus microcarpa var. 'hillii'

Common Names:

Hills Weeping Fig

Family:

MORACEAE

Typical Height:

20-25 metres

Typical Width:

15-20 metres

Typical Growth rate:

Fast.

Typical Habit:

A large, hardy native evergreen tree with a dense spreading crown and a large and stout trunk and lower branches with light grey bark.

Foliage:

Medium (8cm), glossy leathery bright green leaves with an elliptical shape, slightly pendulous towards the ends of the branches.

Flowers:

Insignificant.

Fruit:

Profuse rosy red or pink, small (1.2cm) round figs appearing in summer.

Site requirements:

Rich, moist soils in a protected, sunny position. Drought resistant but frost tender.

Tree Data Sheet



Photo of a mature tree. (Photo. Arterra)



Photo of a mature street tree. (Photo. Arterra)



Close up photo of fruit and leaves. (Photo. Arterra)

Botanic Name:

Ficus rubiginosa

Common Names:

Port Jackson Fig

Family:

MORACEAE

Typical Height:

15-20 metres

Typical Width:

15-20 metres

Typical Growth rate:

Moderate.

Typical Habit:

An erect, sturdy native tree with a heavy dense crown. The main trunk is buttressed and sometimes aerial roots are produced.

Foliage:

Dark green, smooth and ovate to elliptical shaped leaves up to 10cm long. Often rusty short hairs on the underside of leaf or sometimes smooth and without rusty colour when sourced from tropical northerly populations.

Flowers:

Insignificant.

Fruit:

Pairs of yellow globular figs. Mature in autumn

Site requirements:

Light to medium soils in an open, sunny position. Drought, frost and salt tolerant.

Tree Data Sheet



Photo of a mature tree. (Photo. Arterra)

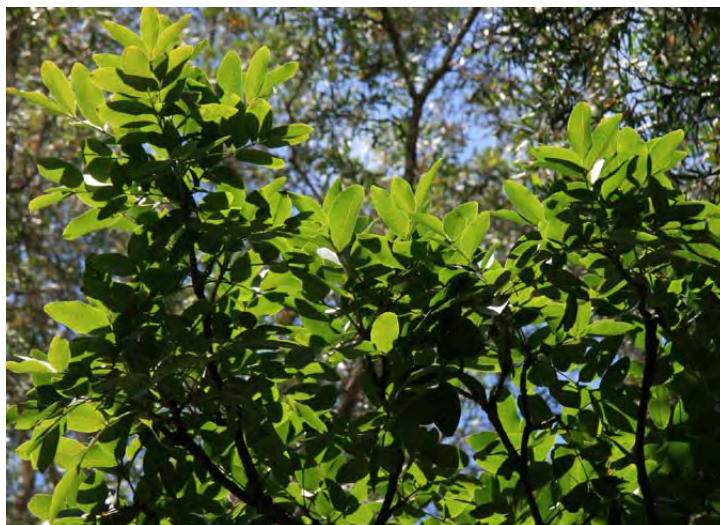


Photo of foliage (Photo. Arterra)

Botanic Name:

Flindersia australis

Common Names:

Crows Ash / Australian Teak

Family:

RUTACEAE

Typical Height:

15-20 metres

Typical Width:

8-10 metres

Typical Growth rate:

Moderate.

Typical Habit:

A tall, sturdy semi-deciduous native rainforest tree with scaly brown bark and densely branching crown. Form can be somewhat variable from very columnar to more spreading.

Foliage:

Large dark green, compound, leaves with 7 to 15 lanceolate slightly serrated margin leaflets.

Flowers:

Small, white with brown centres occurring in dense heads.

Fruit:

Large prickly pods, splitting into 5 boat-like sections.

Site requirements:

Sandy to medium soils in an open, sunny position. Drought and frost tender.

Tree Data Sheet



Photo of a mature tree. (Photo. Arterra)



Close up photo of foliage. (Photo. Arterra)

Botanic Name:

Fraxinus griffithii

Common Names:

Evergreen Ash

Family:

ULMACAEAE

Typical Height:

6-9 metres

Typical Width:

5-7 metres

Typical Growth rate:

Moderate.

Typical Habit:

A small to medium sized sturdy evergreen tree with a compact rounded shape.

Foliage:

Leaves are pale green above and silvery beneath.

Flowers:

White flowers appear in spring in long panicles at the branch tips.

Fruit:

Masses of single seeded winged samaras turning sandy-brown.

Site requirements:

Tolerates a wide range of soils in a full sun or part shade position.

Tree Data Sheet



Photo of a mature tree. (Photo.Arterra)



Photo of a mature tree. (Photo.Arterra)



Close up photo of foliage and fruit. (Photo. Arterra)

Botanic Name:

Glochidion ferdinandi

Common Names:

Cheese Tree

Family:

EUPHORBIACEAE

Typical Height:

8-12 metres

Typical Width:

8 metres

Typical Growth rate:

Medium

Typical Habit:

Medium sized native evergreen tree with a spreading form and dense canopy. Formative pruning may be required to achieve clearances.

Foliage:

Dark green glossy leaves.

Flowers:

Insignificant white flowers in spring.

Fruit:

Small round white fruit in summer that ripen to reddish brown resembling a miniature cheese wheel, but they are not edible.

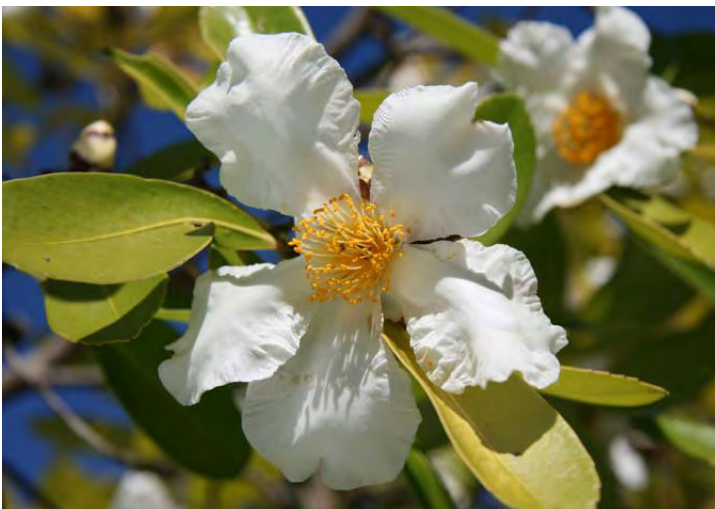
Site requirements:

Full sun to partial shade. Adaptable to most soils but prefer richer moist soil.

Tree Data Sheet



Photo of a mature tree. (Photo. Arterra)



Close up photo of a flower. (Photo. Arterra)

Botanic Name:

Gordonia axillaris

Common Names:

Gordonia/ Fried Egg Plant

Family:

THEACEAE

Typical Height:

5-8 metres

Typical Width:

5 metres

Typical Growth rate:

Slow.

Typical Habit:

Small tree with a broad rounded canopy and smooth mottled grey- brown bark. Formative pruning may be required to achieve suitable clearances.

Foliage:

Large elongated dark green smooth glossy leaves.

Flowers:

The flowers have soft creamy white petals with central bright yellow- orange stamens, which give the appearance of a 'fried egg'.

Fruit:

The fruit is a dry five-valved capsule, with 1-4 seeds in each section.

Site requirements:

Prefers rich moist soils in a full sun or part shade position.

Tree Data Sheet



Photo of a mature tree. (Photo. Arterra)



Close up photo of foliage and fruit. (Photo. Arterra)

Botanic Name:

Harpullia pendula

Common Names:

Tulipwood

Family:

SAPINDACEAE

Typical Height:

8-12 metres

Typical Width:

8 metres

Typical Growth rate:

Moderate.

Typical Habit:

Large native evergreen tree with a dense canopy and light grey to almost white bark.

Foliage:

Dark green glossy leaves.

Flowers:

Greenish-yellow to white flower in summer.

Fruit:

Attractive 2-lobed capsules are yellow-orange to red at maturity and split open to reveal dark glossy black seeds.

Site requirements:

Light to medium soil types in an open sunny position. Prefers moist conditions.

Tree Data Sheet



Photo of a mature tree. (Photo. Arterra)



Photo of a flower. (Photo. Arterra)

Botanic Name:

Hibiscus tiliaceus

Common Names:

Coast Cottonwood

Family:

MALVACEAE

Typical Height:

8-10 metres

Typical Width:

6-8 metres

Typical Growth rate:

Moderate.

Typical Habit:

Medium evergreen tree with smooth grey bark and dense low branching canopy.

Foliage:

Rounded, smooth leathery leaves with small hairs underneath.

Flowers:

Solitary large yellow or white 'hibiscus' flowers with prominent red- brown stamens.

Fruit:

Fruit is a brown capsule with hairs inside.

Site requirements:

Light soil types in an open sunny position. Salt tolerant and drought resistant. Needs formative pruning to provide clearances

Tree Data Sheet



Photo of a mature tree. (Photo. Arterra)

Botanic Name:

Howea forsteriana

Common Names:

Kentia Palm

Family:

ARECACEAE

Typical Height:

8-12 metres

Typical Width:

4-6 metres

Typical Growth rate:

Slow to Moderate.

Typical Habit:

A hardy, slender single trunked palm with broadly pendulous light green fronds, native to Lord Howe Island. Dead fronds typically shed leaving clean and smooth green to brown trunk.

Foliage:

Light green pinnately divided 3-4m long fronds.

Flowers:

Largely inconspicuous short unbranched spikes with small cream-brown flowers held amongst the fronds.

Fruit:

Grape-sized brown-red nut-like fruits that take 3-4 years to fully ripen.

Site requirements:

Adaptable to a variety of soil conditions in a full sun to fully shaded position. Tolerates some limited coastal exposure.

Tree Data Sheet



Photo of a mature tree in full bloom. (Photo. Arterra)



Photo of a mature tree in leaf. (Photo. Arterra)

Botanic Name:

Jacaranda mimosifolia

Common Names:

Jacaranda

Family:

BIGNONIACEAE

Typical Height:

10-15 metres

Typical Width:

8-10 metres

Typical Growth rate:

Fast.

Typical Habit:

A medium sized attractive deciduous tree with an upright but spreading shape.

Foliage:

Fern-like bipinnate mid green foliage, turning yellow in autumn.

Flowers:

Prolific terminal clusters of bell shaped mauve- blue flowers on leafless stems.

Fruit:

Flattened disc-like seed pods.

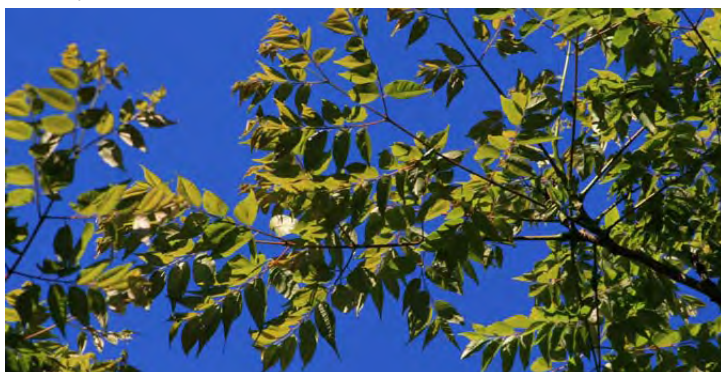
Site requirements:

Tolerates a wide range of soils in a full sun or part shade position.

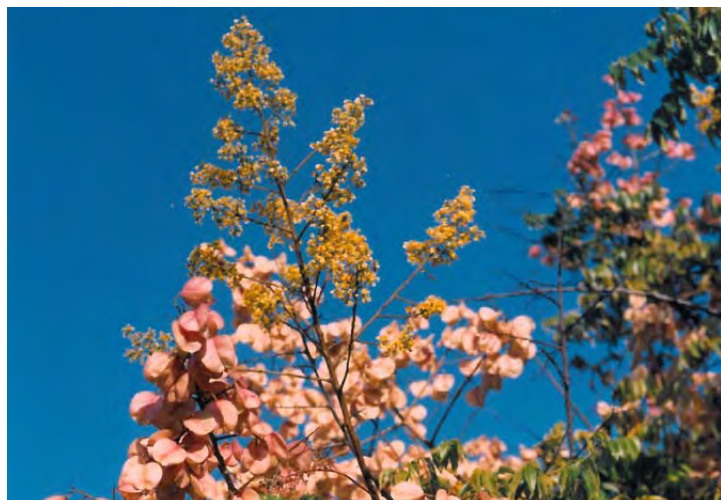
Tree Data Sheet



Photo of a mature tree. (Photo. Arterra)



Close up photo of foliage. (Photo. Arterra)



Close up photo of flowers. (Photo. Arterra)

Botanic Name:

Koelreuteria bipinnata

Common Names:

Chinese Rain tree

Family:

SAPINDACEAE

Typical Height:

10-15 metres

Typical Width:

8-10 metres

Typical Growth rate:

Slow.

Typical Habit:

An attractive medium-sized deciduous and wide spreading tree. It has a domed crown and furrowed bark.

Foliage:

Mid green leaflets turn deep golden yellow to orange in autumn. Bipinnate foliage about 60cm long.

Flowers:

Large cluster of yellow flowers with very large terminal panicles up to 30cm long appear in summer.

Fruit:

Fruit capsule appears as papery bladder-like pinkish brown pods.

Site requirements:

Well drained soil in full to part shade locations. Frost and drought resistant.

Tree Data Sheet



Photo of mature tree. (Photo. Arterra)



Close up photo of flowers. (Photo. Arterra)



Photo of autumn foliage colour. (Photo. Arterra)

Botanic Name:

Lagerstroemia indica cv.

Common Names:

Crepe Myrtle

Family:

LYTHRACEAE

Typical Height:

7-10 metres

Typical Width:

4-7 metres

Typical Growth rate:

Moderate.

Typical Habit:

A small deciduous tree with an open spreading rounded head. It has smooth beige coloured bark streaked red brown. Formative pruning may be required to achieve clearances.

Foliage:

Small oval leaves.

Flowers:

Papery frilly pale mauve, pink or white flowered cultivars. Flower heads appear at the tip of the current season's growth.

Fruit:

Rounded pea-sized woody capsules.

Site requirements:

Well drained soil in full sun locations. Forms a shapely vase-shaped tree without any pruning but also very tolerant of repeated and hard pruning if required.

Tree Data Sheet



Photo of a mature tree. (Photo. Arterra)

Botanic Name:

Livistona australis

Common Names:

Cabbage Tree Palm

Family:

ARECACEAE

Typical Height:

15-20 metres

Typical Growth rate:

Slow.

Typical Habit:

Tall palm tree, with a single study fibrous to smooth grey trunk and a compact head of fan shaped leaves. It has a slender trunk that shows scars left by the shed fronds.

Foliage:

Large semi- circular shiny dark green fronds with drooping tips are located at the apex of the trunk. Often the lower leaves in the crown persist for a short period even though they are dead or have turned brown. The frond stalks are long and have spikes.

Flowers:

Long sprays of yellow cream flowers are borne in spring.

Fruit:

Dull purple-black grape-sized globular fruit.

Site requirements:

Prefers moist but reasonably well drained, neutral acid soils. Will tolerant very shaded positions and coastal exposure.

Tree Data Sheet



Photo of a mature tree. (Photo. Arterra)



Close up photo of leaves and fruit. (Photo. Arterra)



Close up photo of flowers. (Photo. Arterra)

Botanic Name:

Lophostemon confertus

Common Names:

Brush Box

Family:

MYRTACEAE

Typical Height:

15-20 metres

Typical Width:

8-12 metres

Typical Growth rate:

Fast.

Typical Habit:

A tall, sturdy evergreen native tree with rough bark at the base and smooth pinkish bark above peeling in summer to reveal greenish cream new bark. A densely spreading crown with domed head.

Foliage:

Deep green, ovate to acuminate and 15cm long.

Flowers:

White, dainty, 5 petalled and fragrant flowers with long fluffy stamens appearing in spring.

Fruit:

Small woody capsules.

Site requirements:

Sandy to medium soils in an open, sunny position. Drought and frost tolerant.

Tree Data Sheet



Photo of a semi-mature tree. (Photo. Arterra)



Close up photo of the large and fragrant flowers. (Photo. Arterra)

Botanic Name:

Magnolia grandiflora 'Exmouth'

Common Names:

Southern Magnolia/ Bull Bay Magnolia

Family:

MAGNOLIACEAE

Typical Height:

12-15 metres

Typical Width:

5 metres

Typical Growth rate:

Slow.

Typical Habit:

Medium evergreen tree with spreading conical crown.

Foliage:

Glossy green, ovate to oblong, leathery with undulating margins and burgundy brown underside.

Flowers:

Large cup shaped flowers, pale yellow or cream, 25cm across and fragrant, appearing in summer.

Fruit:

Cucumber-like woody pods with bright red seeds.

Site requirements:

Neutral to acid soils in an open, sunny position. Frost resistant but drought tender.

Tree Data Sheet



Photo of a mature tree. (Photo. Arterra)



Close up photo of flowers. (Photo. Arterra)

Botanic Name:

Melaleuca bracteata

Common Names:

Black Tea-Tree

Family:

MYRTACEAE

Typical Height:

8-10 metres

Typical Width:

5-6 metres

Typical Growth rate:

Fast.

Typical Habit:

A small to medium, erect evergreen tree with white to cream papery/ spongy dark coloured bark, spreading pendant branches on older trees and a finely foliated crown.

Foliage:

Small and thin lanceolate leaves, 1-2cm long.

Flowers:

Small white-cream, bottle brush-like flowers appearing throughout spring and summer.

Fruit:

Small woody capsules on a spike.

Site requirements:

Prefers moist soils in an open, sunny position, but tolerates a very wide range of soils and conditions. Drought tolerant.

Tree Data Sheet



Photo of a mature tree. (Photo. Arterra)



Close up photo of leaves. (Photo. Arterra)



Close up photo of bark. (Photo. Arterra)

Botanic Name:

Melaleuca quinquenervia

Common Names:

Broad leafed Paperbark

Family:

MYRTACEAE

Typical Height:

15-18 metres

Typical Width:

5-7 metres

Typical Growth rate:

Fast.

Typical Habit:

A tall, erect evergreen tree with white to cream papery/ spongy bark, spreading twisted pendant branches and a densely textured crown.

Foliage:

Thick lanceolate, sickle-shaped leaves, 10cm long, and prominently veined.

Flowers:

Small cream, bottle brush-like appearing in spring and summer.

Fruit:

Small woody capsules on a spike.

Site requirements:

Prefers moist soils in an open, sunny position, but tolerates a very wide range of soil conditions. Drought tolerant.

Tree Data Sheet



Photo of a mature tree. (Photo. Arterra)



Photo of a semi-mature tree. (Photo. Arterra)

Botanic Name:

Murraya paniculata

Common Names:

Orange Jessamine / Mock Orange

Family:

RUTACEAE

Typical Height:

4-6 metres

Typical Width:

3-4 metres

Typical Growth rate:

Fast.

Typical Habit:

Small tree or large shrub with a broad rounded canopy and smooth mottled grey-brown bark. Formative pruning may be required to achieve suitable tree shape and clearances.

Foliage:

Bright green, smooth and glossy leaves.

Flowers:

The small but fragrant flowers have soft creamy-white petals variously throughout the year.

Fruit:

The inconspicuous small elliptical hairy seeds.

Site requirements:

Prefers rich moist soils in a full sun or part shade position, but adaptable to a very wide range of conditions.

Tree Data Sheet



Photo of a row of mature trees. (Photo. Arterra)



Close up photo of foliage. (Photo. Arterra)



Close up photo of trunk. (Photo. Arterra)

Botanic Name:

Phoenix canariensis

Common Names:

Canary Island Date Palm

Family:

ARECACEAE

Typical Height:

10-15 metres

Typical Width:

6-8 metres

Typical Growth rate:

Slow.

Typical Habit:

Thick trunked palm tree with long fronds that forms a dense rounded crown.

Foliage:

Long fronds that have stiff leaves and sharp spines at the base.

Flowers:

Small yellow flowers grow in clusters amongst the fronds.

Fruit:

Large grape-sized dates up to 8cm long which are cylindrical and orange when ripe.

Site requirements:

Full sun, however will tolerate some shade, and very tolerant of exposure and salt laden winds and poor soils. Now at risk from the spread of Fusarium Wilt which can kill infected trees.

Tree Data Sheet



Photo of a small mature tree. (Photo. Arterra)



Close up photo of leaves and fruit. (Photo. Arterra)

Botanic Name:

Platanus x acerifolia 'Bloodgood'
(syn *Platanus x hybrida*)

Common Names:

London Plane Tree

Family:

PLATANACEAE

Typical Height:

18-25 metres

Typical Width:

10-15 metres

Typical Growth rate:

Fast.

Typical Habit:

A large vigorous and wide crowned deciduous tree with a stout trunk and broadly ascending branches. It has an attractive flaking, mottled bark which is shed in winter.

Foliage:

Large maple like foliage divided into 3, 5 or 7 lobes. The leaves turn yellow to brown in Autumn. Species is currently susceptible to Sycamore Lace Bug and other pests which can cause premature leaf fall..

Flowers:

Insignificant.

Fruit:

Comprises bristly brown seed balls about 3cm across which are carried in groups of 2 - 3 on a short stalk. These are typically held on to the tree after the foliage has fallen in Autumn.

Site requirements:

Very tolerant of a wide range of soil conditions and pollution.

Tree Data Sheet



Photo of a semi-mature tree. (Photo. Arterra)



Close up photo of leaves and fruit. (Photo. Arterra)

Botanic Name:

Podocarpus elatus

Common Names:

Plum Pine

Family:

PODOCARPACEAE

Typical Height:

10-15 metres

Typical Width:

10-15 metres

Typical Growth rate:

Moderate.

Typical Habit:

Broad and densely canopied tree. Classified as a conifer.

Foliage:

Densely crowded dark green elongated leaves.

Flowers:

Although not a flower, male trees do have light brown, catkin-like cone structures arranged in clusters.

Fruit:

Is composed of two segments, a hard, dark inedible seed about 1cm in diameter, and a larger, fleshy, purple-black, seedless, grape-like fruit that is actually a "modified stalk" about 2.5cm in diameter.

Site requirements:

Free draining deep soil in a full sun position. Tolerates coastal exposure.

Tree Data Sheet



Photo of a semi-mature tree. (Photo. Arterra)



Close up photo of leaves and flowers. (Photo. Arterra)

Botanic Name:

Pyrus calleryana 'Chanticleer'

Common Names:

Glens Form Pear/ Callery Pear

Family:

ROSACEA

Typical Height:

6-8 metres

Typical Width:

3-4 metres

Typical Growth rate:

Moderate.

Typical Habit:

A small sized upright deciduous tree. It has attractive foliage and a dense habit.

Foliage:

Lustrous dark green leaves to 8cm long that turn gold to plum in autumn.

Flowers:

Masses of white flowers to 20mm wide produced in spring.

Fruit:

Small, dull gold to russet coloured fruit.

Site requirements:

Frost tolerant, drought tender.

Tree Data Sheet



Photo of a mature tree. (Photo. Arterra)



Close up photo of leaves. (Photo. Arterra)

Botanic Name:

Pyrus ussuriensis

Common Names:

Manchurian Pear

Family:

ROSACEA

Typical Height:

8-12 metres

Typical Width:

8-10 metres

Typical Growth rate:

Moderate.

Typical Habit:

A medium sized spreading deciduous tree. It has attractive foliage and a dense habit.

Foliage:

Lustrous dark green leaves to 8cm long that turn gold to plum in autumn.

Flowers:

Masses of white flowers to 20mm wide produced in spring.

Fruit:

Small, dull gold to russet coloured fruit.

Site requirements:

Frost tolerant, but can be drought tender.

Tree Data Sheet



Photo of a mature tree. (Photo. Arterra)



Photo of autumn foliage. (Photo. Arterra)

Botanic Name:

Sapium sebiferum
(syn. *Triadica sebiferum*)

Common Names:

Chinese Tallow Tree

Family:

EUPHORBIACEAE

Typical Height:

10-12 metres

Typical Width:

6-8 metres

Typical Growth rate:

Fast.

Typical Habit:

An attractive medium sized deciduous tree with a domed spreading crown.

Foliage:

Soft bright green leaves are heart shaped with a pointed tip. Turns to a deep orange-red in autumn. Can be susceptible to white waxy scale.

Flowers:

Spikes of greenish to yellow flowers in late spring.

Fruit:

White round pea sized seed pods.

Site requirements:

Tolerates a wide range of soils in a full sun or part shade position.

Tree Data Sheet



Photo of a mature tree. (Photo. Arterra)



Close up photo of foliage and flower. (Photo. Arterra)

Botanic Name:

Stenocarpus sinuatus

Common Names:

Firewheel Tree

Family:

PROTEACEAE

Typical Height:

8-12 metres

Typical Width:

6 metres

Typical Growth rate:

Moderate.

Typical Habit:

Medium evergreen rainforest tree with smooth grey to brown bark.

Foliage:

Long shiny leathery dark green leaves with a dull green underside.

Flowers:

Deep orange to red flowers in an umbel or wheel like arrangement that gives the tree its name. Summer through to autumn.

Fruit:

The fruit is a long seed pod that contains flat papery seeds.

Site requirements:

Despite its sub-tropical to tropical origin it is adaptable to a range of climates and will even succeed in dry areas. Sunny or partly shaded location. Salt tolerant and drought resistant.

Tree Data Sheet



Photo of a mature tree. (Photo. Arterra)



Close up of bark. (Photo. Arterra)

Botanic Name:

Syncarpia glomulifera

Common Names:

Turpentine

Family:

MYRTACEAE

Typical Height:

12-18 metres

Typical Width:

8-10 metres

Typical Growth rate:

Moderate.

Typical Habit:

Large dense native tree with broadly columnar form with horizontal branching structure.

Foliage:

Stiff and dark dull green leaves with a grey furry underside.

Flowers:

Profuse fluffy white flower clusters in summer.

Fruit:

Hard, marble-sized globular wood capsule.

Site requirements:

Tolerates a wide range of soils but prefers heavier clay based soils in a full sun or part shade position.

Tree Data Sheet



Photo of a semi-mature tree. (Photo. Arterra)



Close up photo of foliage and flower. (Photo. Arterra)

Botanic Name:

Synoum glandulosum

Common Names:

Scentless Rosewood

Family:

MELIACEAE

Typical Height:

6-8 metres

Typical Width:

4-5 metres

Typical Growth rate:

Moderate.

Typical Habit:

Small bushy rainforest margin native tree.
May require formative pruning to achieve clearances and promote a single leader and tree form.

Foliage:

Small glossy mid-green leaves.

Flowers:

Inconspicuous white flowers in late summer.

Fruit:

Reddish three-lobed capsule.

Site requirements:

Tolerates a wide range of soils but prefers rich moist soil in a full sun or part shade position.

Tree Data Sheet



Photo of a mature tree. (Photo. Arterra)

Botanic Name:

Syzygium ingens (syn. *Acmena barchyandra*)

Common Names:

Red Apple

Family:

MYRTACEAE

Typical Height:

10-15 metres

Typical Width:

8-12 metres

Typical Growth rate:

Moderate.

Typical Habit:

Medium to large spreading rainforest native tree.

Foliage:

Glossy dark green leaves with a prominent pointed tip. Flushes of new growth in pale pink to red.

Flowers:

Bird attracting small fluffy white flowers in summer.

Fruit:

Small pink round fleshy fruit.

Site requirements:

Tolerates a wide range of soils but prefers rich moist soil in a full sun or part shade position.

Tree Data Sheet



Photo of a mature tree. (Photo. Arterra)

Botanic Name:

Syzygium leuhmannii

Common Names:

Riberry

Family:

MYRTACEAE

Typical Height:

8-10 metres

Typical Width:

5-6 metres

Typical Growth rate:

Moderate.

Typical Habit:

Small bushy rainforest native tree. May require formative pruning to achieve clearances and promote a single leader and tree form.

Foliage:

Small glossy dark green leaves with a prominent pointed tip. Flushes of new growth in pale pink to red.

Flowers:

Bird attracting small fluffy white flowers in summer.

Fruit:

Small pink pear shaped fleshy fruit.

Site requirements:

Tolerates a wide range of soils but prefers rich moist soil in a full sun or part shade position.

Tree Data Sheet



Photo of a mature tree. (Photo. Arterra)



Close up photo of foliage and fruit. (Photo. Arterra)

Botanic Name:

Syzygium paniculatum

Common Names:

Brush Cherry

Family:

MYRTACEAE

Typical Height:

9-15 metres

Typical Width:

6-9 metres

Typical Growth rate:

Fast.

Typical Habit:

Small to medium bushy rainforest native tree. May require some formative pruning to achieve clearances and promote a single leader and tree form.

Foliage:

Glossy dark green leaves with coppery new growth.

Flowers:

Bird attracting small fluffy white flowers in summer.

Fruit:

Small pink pear shaped fleshy fruit.

Site requirements:

Tolerates a wide range of soils in a full sun or part shade position.

Tree Data Sheet



Photo of a mature tree. (Photo. Arterra)



Close up photo of foliage and flower. (Photo. Arterra)

Botanic Name:

Tipuana tipu

Common Names:

Pride of Bolivia

Family:

FABACEAE (subfamily FABIOIDEAE)

Typical Height:

12-15 metres

Typical Width:

10-12 metres

Typical Growth rate:

Fast.

Typical Habit:

A medium domed spreading deciduous tree with a broadly pendulous habit and grey-brown fissured bark.

Foliage:

Large bipinnate leaves, with numerous bright mid-green leaflets

Flowers:

Clusters of prominent bright yellow flowers occur in leaf-less racemes in Spring.

Fruit:

Large brown winged samara seeds that mature in autumn.

Site requirements:

This is a very hardy tree that tolerates wind, pollution and a wide range of soil conditions.

Tree Data Sheet



Photo of a mature tree. (Photo. Arterra)



Close up photo of foliage and flower. (Photo. Arterra)

Botanic Name:

Tristaniopsis laurina

Common Names:

Water Gum

Family:

MYRTACEAE

Typical Height:

7-10 metres

Typical Width:

5-6 metres

Typical Growth rate:

Moderate to fast.

Typical Habit:

Very hardy small sized native evergreen tree with a dense canopy.

Foliage:

Oblong glossy dark green leaves with a pale underside.

Flowers:

Nectar rich small yellow flowers in summer.

Fruit:

Small round green fleshy fruit.

Site requirements:

Tolerates a wide range of soils in a full sun or part shade position.

Tree Data Sheet



Photo of a semi-mature tree. (Photo. Arterra)



Close up photo of foliage. (Photo. Arterra)

Botanic Name:

Ulmus parvifolia

Common Names:

Chinese Elm

Family:

ULMACEAE

Typical Height:

10-12 metres

Typical Width:

8-10 metres

Typical Growth rate:

Moderate.

Typical Habit:

A medium domed spreading semi -deciduous tree. It has a two toned grey, reddish brown scaly bark.

Foliage:

Small serrated, leathery dark green leaves which are smooth and shiny on top.

Flowers:

Yellow- green papery flowers.

Fruit:

Small brown winged seeds that mature in autumn.

Site requirements:

This is a very hardy tree that tolerates wind, pollution and a wide range of soil conditions.

Tree Data Sheet



Photo of a mature tree. (Photo. Arterra)

Botanic Name:

Washingtonia filifera

Common Names:

American Cotton Palm

Family:

ARECACEAE

Typical Height:

15-20 metres

Typical Growth rate:

Moderate.

Typical Habit:

A tall palm tree with a thick trunk which flares at the base. Spent fronds can persist on the trunk for some time. Older specimens have smooth grey trunks.

Foliage:

Shiny bright green circular fronds with prominent red brown basal sheaths and cottony threads.

Flowers:

Small white flower clusters at intervals on long flowering branches that arch out well beyond the lower fronds.

Fruit:

Tiny brown berry-like fruits.

Site requirements:

Full sun, however will tolerate some shade, and salt laden winds and poor soil.

Tree Data Sheet



Photo of a mature tree. (Photo. Arterra)

Botanic Name:

Washingtonia robusta

Common Names:

Mexican Fan Palm

Family:

ARECACEAE

Typical Height:

20-25 metres

Typical Growth rate:

Moderate.

Typical Habit:

A tall palm tree with a thin trunk which flares at the base. Spent fronds can persist on the trunk for some time. Older specimens have smooth grey trunks.

Foliage:

Shiny bright green circular fronds with prominent red brown basal sheaths and cottony threads.

Flowers:

Small white flower clusters at intervals on long flowering branches that arch out well beyond the lower fronds.

Fruit:

Tiny brown berry-like fruits.

Site requirements:

Full sun, however will tolerate some shade, and salt laden winds and poor soil.

Tree Data Sheet



Photo of a semi-mature tree. (Photo. Arterra)



Close up photo of foliage and flowers. (Photo. Arterra)

Botanic Name:

Waterhousea floribunda 'Green Avenue'

Common Names:

Weeping Lilly Pilly

Family:

MYRTACEAE

Typical Height:

18-20 metres

Typical Width:

10-12 metres

Typical Growth rate:

Fast.

Typical Habit:

Very hardy medium sized native evergreen tree with a dense pendulous canopy. Formative pruning may be required to achieve clearances and promote a single leader and tree form.

Foliage:

Glossy dark green leaves with paler underside and slightly wavy margins.

Flowers:

Nectar rich small white flowers in summer.

Fruit:

Small round and green berry-like fleshy fruit.

Site requirements:

Tolerates a wide range of soils but prefers rich moist soil in a full sun or part shade position.

Tree Data Sheet



Photo of a mature tree (pruned under wires). (Photo. Arterra)



Close up photo of foliage. (Photo. Arterra)

Botanic Name:

Xylosma senticosum
(syn. *Xylosma congestum*)

Common Names:

Xylosma

Family:

SALICACEAE

Typical Height:

6-8 metres

Typical Width:

4-6 metres

Typical Growth rate:

Fast.

Typical Habit:

An attractive evergreen small tree with a rounded spreading crown.

Foliage:

Attractive, weeping, slightly serrated foliage, the orange and bronze tipped new leaves which age to a glossy mid green.

Flowers:

Inconspicuous small fragrant yellow flowers.

Fruit:

Small purple-black berry.

Site requirements:

Tolerates a wide range of soils in a full sun position, and capable of withstanding frequent hard pruning to any shape with minimal impact.

Tree Data Sheet



Photo of a mature tree. (Photo. Arterra)



Photo of bark. (Photo. Arterra)



Close up photo of foliage and flowers. (Photo. Arterra)

Botanic Name:

Zelkova serrata 'Green Vase'

Common Names:

Japanese Zelkova

Family:

ULMACEAE

Typical Height:

10-12 metres

Typical Width:

8-10 metres

Typical Growth rate:

Moderate.

Typical Habit:

An attractive deciduous tree with a wide spreading crown.

Foliage:

Pointed oblong serrated leaves are mid to dark green, turning yellow in autumn.

Flowers:

Small greenish flowers borne in spring and lightly perfumed.

Fruit:

Round insignificant seed pods.

Site requirements:

Tolerates a wide range of soils in a full sun position.

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