Ashfield Council

Street Tree Strategy

2015

For
Adoption
14 October 2015

Contents

Acknowledgements:
The Ashfield Council would like to acknowledge the following people for their contribution to the production of this Street Tree Strategy, 2015.

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The Vision

Councillor Lucille McKenna
Mayor Ashfield

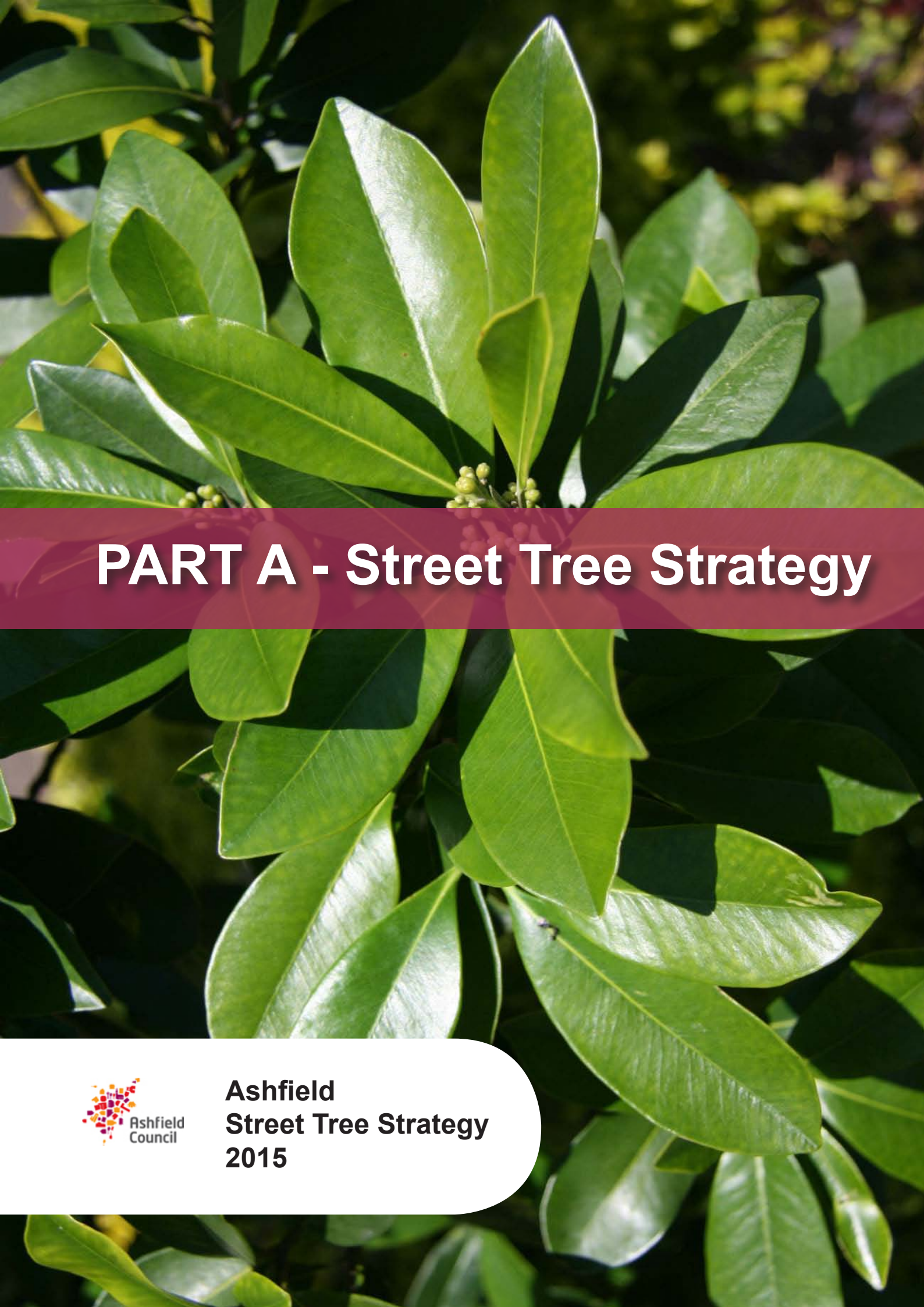
Street trees are an important natural asset that improve the amenity of our local streets and add to the value and character of local streetscapes. The Ashfield Street Tree Strategy 2015 has been developed to ensure that the ongoing greening of our local streets occur in a manner that is reflective of the needs of local residents. The Strategy considers the collective ecological, environmental, economic, cultural and social contributions of Ashfield's street trees.

This Strategy is a guide to aid in the management, maintenance and future planting of street trees across the entire Local Government Area. The objective of the Strategy is to provide a sustainable and strategic framework for the greening of Ashfield. The Strategy will work to ensure appropriate street tree planning, maintenance, enhancement and reinforcement of Ashfield's ongoing commitment to the protection and planting of trees.

Through the implementation of this Strategy, Council will continue to provide a population of street trees which beautify and define our urban environment today and into the future.

"They are beautiful in their peace, they are wise in their silence. They will stand after we are dust. They teach us, and we tend them."

Galeain ip Altiem



PART A - Street Tree Strategy

Ashfield Council

Ashfield
Street Tree Strategy
2015

1.0 Introduction

1.1 Introduction - The Future

This Strategy is a comprehensive suite of documents that outlines the proposed street tree planting principles and practices to be followed and identify the proposed future street tree species to be used throughout the Ashfield Local Government Area (LGA).

Trees are a vital part of our urban environment. They provide a substantial contribution to the “sense of place”, and character of an area. They can have historical significance and provide numerous environmental and psychological benefits to visitors and residents. Like our predecessors, we need a strategic and long term vision for certain streets and other key areas. It is hoped that the trees will mature gracefully and provide a long lasting legacy for future generations and make Ashfield a memorable and beautiful place.

Some benefits that a tree can offer to the community include:-

- reducing urban heat island effects and moderation of other weather extremes
- providing cooling and shading to pedestrians and buildings
- lowering energy use (due to the above)
- increasing longevity of shaded pavements and road surfaces
- interception of rainwater / stormwater through their leaves and roots
- production of atmospheric oxygen and uptake of carbon dioxide
- filtering of particulate matter and polluting gases
- shading of parked cars and reduction in hydrocarbon emissions
- storage of carbon
- provision of habitat for native fauna, birds and insects
- general human health, calming and well being

Trees are living organisms and a long term inter-generational investment.
Trees can take decades to mature and can live for many more decades. Most of the benefits of trees are exponentially increased, the larger the tree is. It is therefore important to try and establish the largest but still appropriate tree, within the reasonable limits of the surrounding infrastructure and resident tolerance.

We must also remember that while trees take decades to grow and mature, most residents will increasingly occupy their homes on average for only a 5-10 year time frame. Even if a resident plants a tree or wants a particular species, it is highly likely they will not be there to appreciate it or manage it when it reaches anywhere near its maturity.

Trees must be given the necessary requirements to sustain life - that is, space, air, water, nutrients, light and soil. Trees, to survive, must grow, and in doing so will inevitably shed leaves, bark, fruit, flowers and even branches. Their roots will grow and their trunks will expand. The challenge is to select the species for a given street that maximises the benefits and minimises the negative impacts to residents, infrastructure and road users. Compromise is always needed when one is dealing with trees in a busy and densely populated urban environment.

Finally, the key role of a street is to convey vehicles, pedestrians and utility services throughout the community. There is often opportunity for tree planting as well, but not in all cases. It must be remembered that poor and inappropriate tree planting may actually detract from a streets function and residents enjoyment, and potentially create a serious burden on Council resources both now, and well into the future.

The key principles for the street tree planting in the Ashfield Local Government Area shall be to:-

- Provide safe and attractive street trees that enhance the amenity of pedestrians and buildings and are sensitive to the landscape, infrastructure and environmental conditions of the locality.
- Utilise trees to provide shade for street users in summer and when appropriate allow maximum solar access in winter.
- Create a recognisable identity & individual character for streets and help identify special precincts or villages.
- Expand and contribute to the overall urban forest and canopy coverage of Ashfield.
- Contribute to the long term sustainability and efficient management of the Ashfield LGA.

To achieve the above objectives, Council shall focus on specifying a greater number of appropriate 'medium' sized trees (10-15m height with 10-15m spread) and larger trees only where space permits. We will also identify new street tree planting opportunities, and provide best practice planting techniques to ensure the health and longevity of each tree is maximised.

Figure 1.1 - The future of our streets depends on what we do today. Ashfield has a rich legacy of excellent street planting (Photo - Arterra)

1.2 How to Use This Plan

This document is one part of the Ashfield'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 proper plan to deal with our street trees.

The Strategy is divided into 3 main Parts.

Part A - Street Tree Strategy

This section outlines the broad framework under which street trees are to be managed and the physical and historical factors that affect street trees within the LGA.

Part B - Street Tree Management Guidelines & Policies

This section outlines the more detailed requirements for street tree planting including how the tree species are selected, their physical placement in the streets, how they can be used to define important civic spaces and precincts and how the Strategy is to be implemented over time.

Part C - Street Tree Technical Guidelines, Details and Specifications

This final section provides a series of technical appendices that provide specifications on how trees are to be pruned, planted and managed. It also includes street by street listings of the proposed species for each identified precinct.

Council aims to continue the existing street characters and tree planting as much as possible, unless there are specific problems to address or opportunities for improvement and increased canopy cover. 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 the proposed new species. This change will typically only happen over an extended time, as trees need replacing or when opportunity arises to plant a new tree in an otherwise vacant area.

Existing street trees will normally be left to grow for their safe useful life and will only be removed once they become an unacceptable hazard or are clearly failing to provide worthwhile streetscape amenity. 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 existing tree removal will normally be avoided where possible.

As a member of the community, the way you might use this Strategy is outlined below:-

1. Refer to Part B on detailed tree management, tree species selection and placement to understand the many complex considerations involved in selecting any street tree and its placement.
2. Refer to Part B - Section 6 that has maps of the Ashfield Local Government Area (LGA) area and identify which precinct 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 species maps.
4. If you are unfamiliar with the tree species, you may want to refer to Section 8.6 in Part C where a brief Tree Data Sheet is provided for all the tree species proposed, giving a photograph, a brief description of the trees and an outline of their key features.

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

Figure 1.2 Overview of the typical extent of canopy cover in Ashfield. It is contributed to by private trees, street trees and park trees. Together they operate as the urban forest.

Figure 1.3 Haberfield Road, one of the historic and signature streets

1.3 The Street Tree Strategy Objectives

The Street Tree Strategy is a plan for the effective short and long term management of the Council owned and managed street trees. This document establishes a clear direction for the future development, planting and management of street trees within the Ashfield LGA.

The principle aim of the Street Tree Strategy is to create " *a caring community of linked villages inspired by its rich history, heritage and diversity*" in accordance with the Community Strategic Plan - a sustainable, safe, thriving community.

The key objectives of the Street Tree Strategy are to:-

- Promote and capitalise on the benefits of Ashfield's existing urban forest whilst minimising the ongoing costs of street tree and infrastructure 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 Ashfield's public domain;
- Improve any new street tree establishment, habits and survival rates;
- Guide the maintenance and management of existing and new trees to ensure that they survive and flourish in otherwise harsh and unnatural urban conditions;
- Support and enhance the biodiversity values in the local area;
- Improve the Council's wider community's knowledge and understanding of good urban tree and forest management;
- Guide Council's decision making and provide a transparent and accountable processes for planting, maintenance, customer requests and development application assessments and
- Assist Council staff in the planning, budgeting, implementation, and maintenance of street tree planting by providing consistent guidance on suitable species, locations and planting patterns.

1.4 Strategic Vision, Framework and Council Policies

Ashfield Council currently has a number of Council documents that provide some guidance on how urban trees are to be managed, these include:

- Ashfield - Community Strategic Plan - Ashfield 2023-Our Place, Our Future.
- Ashfield Local Environment Plan 2013 – in particular :-
  - Clause 5.9 Preservation of Trees and Vegetation and
  - Clause 5.10 Heritage Conservation
- Ashfield Interim Development Assessment Policy 2013 - Ashfield Town Centre Strategy
- Ashfield Interim Development Assessment Policy 2013 - Outdoor Dining and Footpath Trading Policy
- Ashfield Development Control Plan
  - Part C7 - Haberfield Heritage Conservation Area
  - Part C10 Heritage Conservation
- Ashfield Heritage Study 1998
- Footpath Repair and Maintenance Policy 2000
- Guidelines for Converting Paved Footpaths to Grass Verges 2014
- Policy - Planting Additional Trees & Shrubs in Parks and Reserves 1998
- Sustainable Ashfield: An Ecologically Sustainable Development Policy 2011
- Tree Preservation Policy 2013
- Noxious Weeds Policy 2012

Some others documents of relevance include:-

- Roads Act 1993;
- Electricity Supply and the NSW Electricity Supply Act 1995 No 94;
- Greenway Corridor - Cooks River to Iron Cove - Master Plan and Coordination Strategy 2009;
- New Parramatta Road - Draft Parramatta Road Urban Renewal Strategy 2014;
- Where are all the trees - 202020 Vision;
- Environmental Protection and Biodiversity Conservation Act 1999;
- NSW Threatened Species Conservation Act 1995;
- Statewide Best Practice Manual - Trees and Tree Root Management 2006 & 2011
- Marrickville Street Tree Master Plan 2014.

Ashfield - Community Strategic Plan - Ashfield 2023-Our Place, Our Future.

This is the over arching document for the Ashfield LGA. It strives to create “a caring community of linked villages inspired by its rich cultural history, heritage and diversity”. It is based around the following principles:-

- a creative and inclusive community
- unique and distinctive neighbourhoods
- safe and connected and accessible places
- sustainable living
- thriving local economy
- an active and lively town centre
- engaging and innovative local democracy

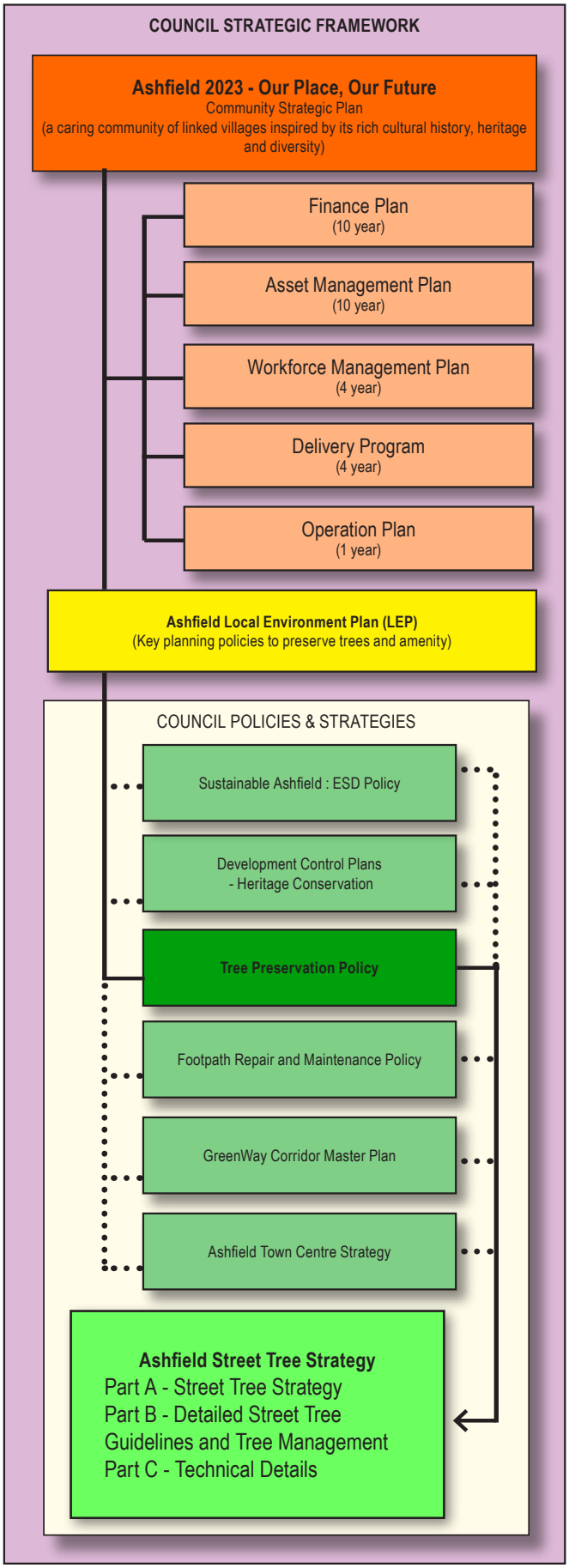


Figure 1.4 - The Ashfield Street Tree Strategy and the strategic framework and its relationship to the Council's Community Strategic Plan and other key planning documents

The street tree strategy (STS) supports many of these policies and legislative requirements by:-

- Protecting and celebrating the **past landscaping styles** and historically important streets. The STS documents the continuation and protection of significant and historically important in-road planting and heritage avenues.
- The identification of many **new and replacement planting opportunities** within the LGA, particularly the continuation and expansion of further strategic in-road planting/ kerb extensions, or planting in currently under treed streets. This also offers opportunities to implement Water Sensitive Urban Design and passive irrigation improvements.
- Helping to achieve more **attractive and visually distinct local Town Centres** through coordinated tree planting and gateway definition. Well treed and attractive streets have been shown to promote visitation and that shopper's and diners tend to dwell longer, than in streets that are not well treed or attractive.
- Helping to deliver better streets that in turn will engender civic pride and **encourage non-car forms of transport** such as walking and cycling.
- A larger inclusion in the STS of medium sized tree species (and larger trees wherever technically possible), to improve the **overall LGA canopy cover**. In many cases existing small trees have been suggested to be replaced, over time, with medium sized trees particularly on the side of the road opposite overhead wires.
- The introduction of more locally indigenous and native tree species to provide for increased ecological benefits and **biodiversity** particularly along the identified Greenway Corridors. This will also improve the overall diversity of the street tree population.
- Selection of the best species to maximise the benefits of shading and solar access - **right tree for the right place**. This will help reduce energy use and urban heat island effects, intercept stormwater, and extend pavement life and reduce maintenance of road surfaces.
- Provision of a variety of improved planting details for various situations providing technical details on tree planting, their positions and soil conditions to ensure the health and longevity of each tree is maximised. This helps to ensure **waste and maintenance inputs are minimised** in the future.

Figure 1.5 - Street trees are important assets in an urban environment. (Photo - Arterra)

1.5 What Makes a Great Street?

What makes a great street? In the widely recognised book 'Great Streets' by Allan Jacobs he studied what people commonly consider 'great streets', and found they typically comprise a number of definite physical qualities. The most significant factor that makes "a place" is often the street tree planting.

Interestingly it has been found that evenly spaced trees using a single species usually has the greatest impact on peoples perception of a 'great street'.

Trees have the ability to transform a street and create definition within a street and can be just as important as the built forms in many locations. Many streets throughout the LGA should be targeted to improve the consistency of planting and thereby the aesthetic impact and overall appeal to the wider community.

Figure 1.6 - Great streets often have excellent tree planting that provides an over arching canopy and use a consistent palette of species. (Photo - Arterra)

Figure 1.7 - An example like David Street, Marrickville provides a memorable and desirable residential street with in-road planting, an over arching canopy and the use of a consistent palette of one species (Photo - Arterra)

1.6 Context, History and Street Tree Planting in Ashfield

Overview

Ashfield has a population of approximately 44,000 (ERP 2013) is approximately 829 hectares in area and is between 6-9km from the Sydney CBD. It is known as the inner west of Sydney. It contains the whole of the suburbs of Ashfield, Summer Hill, Haberfield and parts of Croydon, Hurlstone Park and Ashbury.

It is bordered by Iron Cove to the north, and the now attenuated Hawthorne Canal and Iron Cove Creek to the east and Dobroyd Canal to the west (fomerly known as Long Cove). It is mostly developed, predominantly with low density residential housing, but with numerous blocks of apartments now scattered throughout.

Figure 1.8 Ashfield - The Local Government Area and Context Plan (Source: NearMap November 2014)

Table 1 - GENERAL COMPARISON OF ASHFIELD LGA WITH OTHER SIMILAR COUNCILS							
LGA	Area (ha)	Aprrox. Population	Average Population Density LGA (people/ha)	No. Equivalent Assessed Streets	Median House Price	% o f Property Turned over in last 5 yrs	Comments
Ashfield	829	44,175	53	299	$ 987,000	38.7%	Mostly suburban streets and detached housing or low rise apartments/ terraces, consistent street types and widths variety of environmental conditions, pollution, in-road planting, heritage. Extensive power line conflict.
City of Sydney	2674	169,500	63	747	$920,000	53.7%	CBD/ Inner city streets & suburbs/ terraces, variety of environmental conditions, pollution, narrow verges, heritage.
Marrickville Council	1655	81,689	49	615	$855,000	41.0%	Inner suburbs, large amount of narrow verges, extensively clay soils, extensive power line conflict.
Woollahra Municipal Council	1220	52,160	42	356	$2,000,000	41.0%	Diverse range of street types, and widths exposure, many areas with power UG, views. Heritage.
Lane Cove Municipal Council	1056	31,510	33	326	$1,350,00	35.4%	Large areas of bush land, extensive history of native street planting, wide verges, power line conflict.
City of Botany Bay	1419 (excluding airport/Port Botany)	42,317	30 (excluding airport/Port Botany)	294	$825,000	34.1%	Sandy impoverished soils, high water table, consistent street types and widths, power line conflict. Large areas of industrial development.

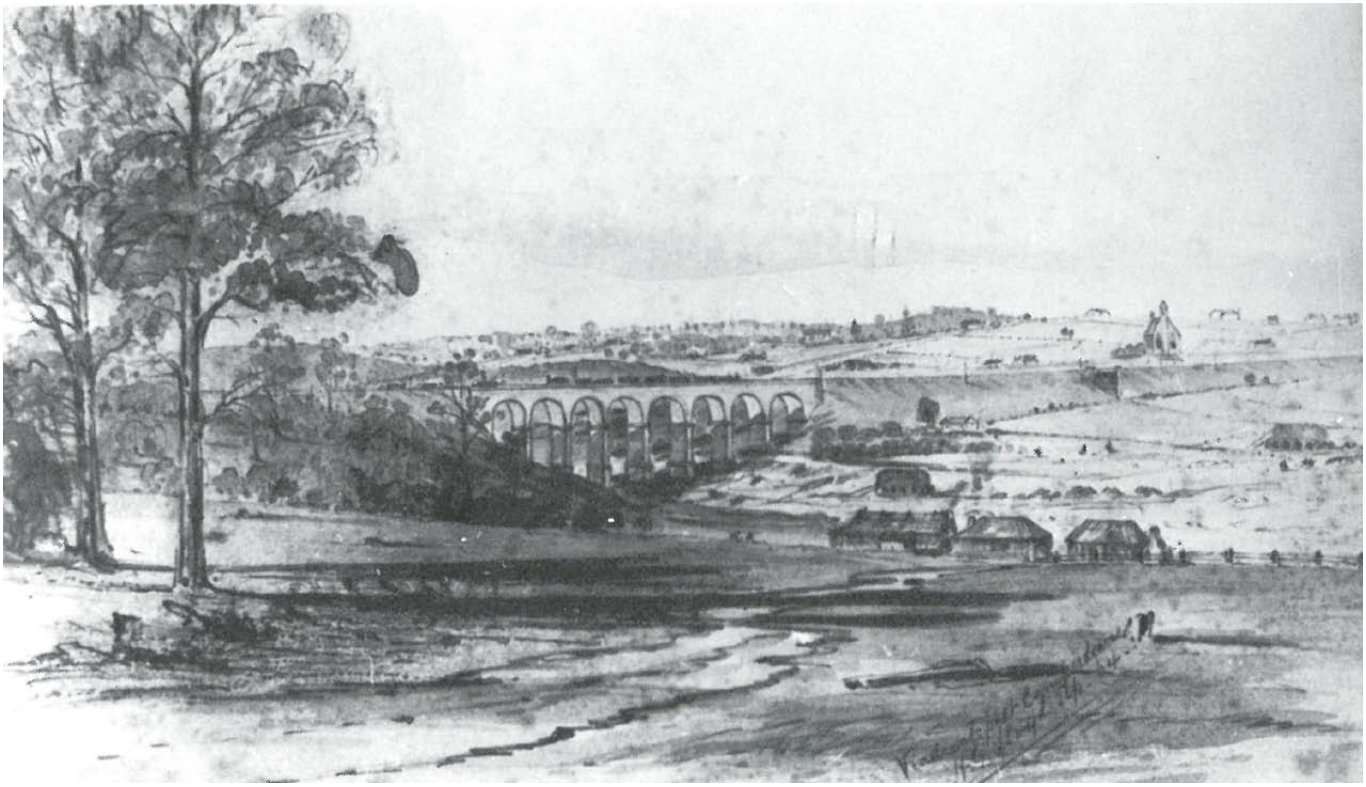


Figure 1.9 Long Cove Viaduct in 1864, showing the then very rural nature of Ashfield and its surrounds (Source: Coupe, 1988)

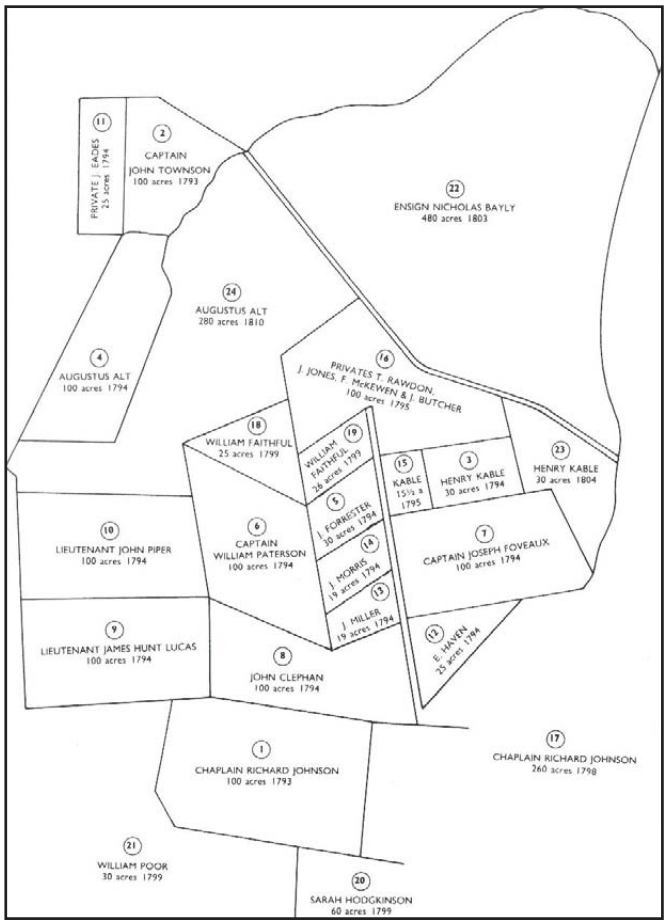


Figure 1.10 - Map showing the approximate location and size of land grants made near Ashfield between 1793 and 1810. The circled numbers indicate the order in which the grants were issued (Source: Coupe, 1988)

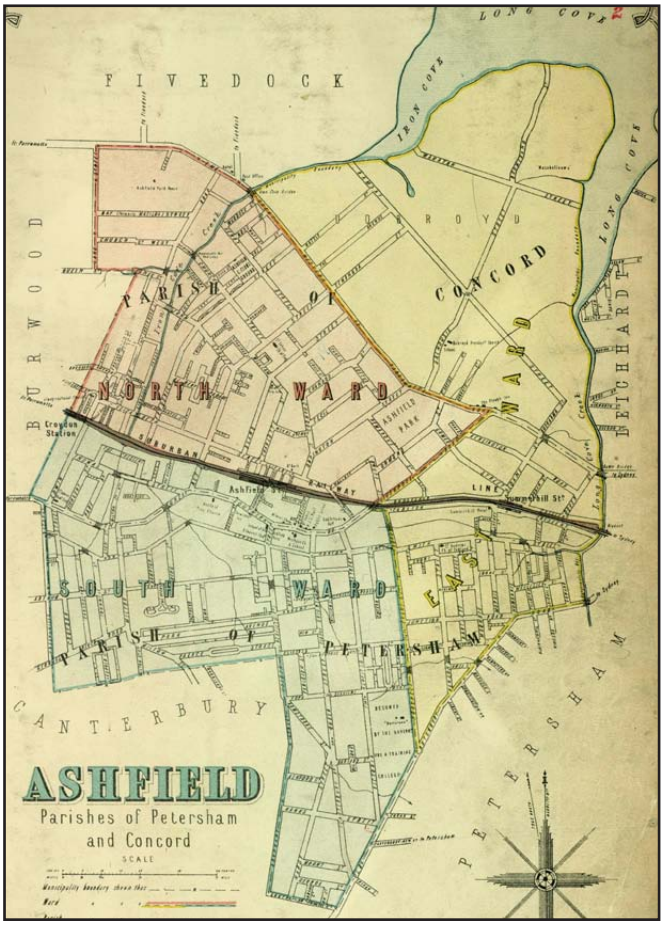


Figure 1.11 - Map showing the development of Ashfield LGA circa 1886. Note that Ashfield, Croydon and Summer Hill have been developed to the street pattern that exists today. Apart from Ramsay Street, Haberfield and Dobroyd Point was largely undeveloped and the remnants of Ashfield Park Estate in Croydon remained in the far upper left. (Source: Historical Atlas of Sydney - CoS Archives)

Figure 1.12 Ashfield Park c1850, one of the first homesteads within the area and most certainly contributing the current name of the municipality (Source: Pollon, 1996)

Ashfield's Historical Context

Originally well timbered with native forests, the area began to be cleared after 1790 as the rough tracks, later to become known as Parramatta Road and Liverpool Road, were cleared. The area was soon used for crops, fruit growing and grazing, given the relatively fertile land and proximity to the fledgling Sydney. In these early times it was an attractively undulating area with fine vistas which lead to many grand residences being established. Many new and historically significant species of plants, both native and exotic, were introduced into these gardens including:-

- *Araucaria cunninghamii* (Hoop Pine)
- *Araucaria heterophylla* (Norfolk Island Pine)
- *Araucaria bidwillii* (Bunya Pine)
- *Cinnamomum camphora* (Camphor Laurel)
- *Quercus spp.* (Oaks)
- *Ficus spp.* (primarily Morton Bay, Port Jackson and Hill's Weeping Figs)

The Camphor Laurel remains one of the most prominent remnants of the Victorian era landscaping, although many of the others are still easily seen in many older gardens and parks within the LGA.

A village started to grow along Liverpool Road in 1838. The arrival of the railway in 1855 brought Ashfield within easy reach of the city and a village started to expand. This was part of the celebrated and original estate known as 'Ashfield Park'. Ramsay's Bush out on Dobroyd Point was the last remnant of native vegetation in the district and was cleared in the early 1900's for the development of the 'Garden Suburb' Haberfield.

Alt Street was one of the first streets created between Parramatta Road and Liverpool Road, together with Bland and Elizabeth Street. Other early streets included John, Church, Holden, Norton and Milton Streets. In 1841 further subdivision of southern Ashfield was made, offering allotments for 'Gardeners Homes' showing their use for market gardens and the like, with good soil and good road access to Sydney. 1840 saw the erection of the Church on Alt Street, opposite Church Street, known as 'Church of John the Baptist' (now St Johns).

1855 saw increasing development of salubrious suburban retreats for wealthy city businessmen. The coming of the railway involved the construction of the Long Cove Viaduct, which was one of the largest bridges that had been so far built.

The death of Elizabeth Underwood in 1858 saw the subdivision of the Ashfield Park Estate near Parramatta Road. Ashfield then began to be an area of grand houses from 1870's onwards. There was a marked increase in building activity in the late 1880's, including numerous churches and schools.

During the period between the onset of the depression of the 1890's and the Great War in 1914 there was a significant change in the physical and social characteristics of Ashfield and its surroundings. Larger and smaller estates were being subdivided to accommodate smaller and humbler dwellings. Both Ashfield and Summer Hill became thriving and important commercial centres. In early 1891 the Ashfield Post Office was completed and the Town Hall, with the later being extensively remodelled only 50 years later in 1937.

Kerbing and asphalting of streets began in the late 1890's after the depression of the earlier years. Ashfield's population grew steadily from the 1880's and into the early 1900's. The first decade of the 1900's saw more than 1700 new houses built. The original wealthy land owners either died or moved elsewhere with their homes coming up for sale and sometimes subdivided.

Perhaps most significantly, in 1901 Richard Stanton, headed a syndicate that purchased a large part of Dobroyd Estate, that belonged to the Ramsays, and calling it the Haberfield Estate. The hallmark of the development was the covenants that controlled what was built and the cost of the buildings erected – villas, kerbed streets and Brush Box (*Lophostemon confertus*) lined streets became the norm. The aesthetic appeal of the suburb was further enhanced by the home-owners careful landscaping, planting and the maintenance of the tree lined streets, which was an essential aspect of the 'Garden Suburb'. Brush Box (*Lophostemon confertus*) was overwhelmingly the predominant species used, although others also define this era of planting including the Jelly Palm (*Butia capitata*), Camphor Laurel (*Cinnamomum camphora)* and Port Jackson Fig (*Ficus rubiginosa*).

Between 1903 and 1912 the company bought and developed 3 more estates. Together with other such estates that developed in competition, Haberfield as a whole developed with an architectural and streetscape homogeneity that makes it, today, one of Sydney's finest repositories of Federation Style suburban residences. Most of the well developed street trees that exist today, hark from this early 1900's period.

Figure 1.13 - Aerial view circa 1930's - Haberfield and Parramatta Road with Yasmar House at the centre (Source: SLNSW). Note the majority of streets are planted with street trees at this time which was relatively rare for most other parts of Sydney.

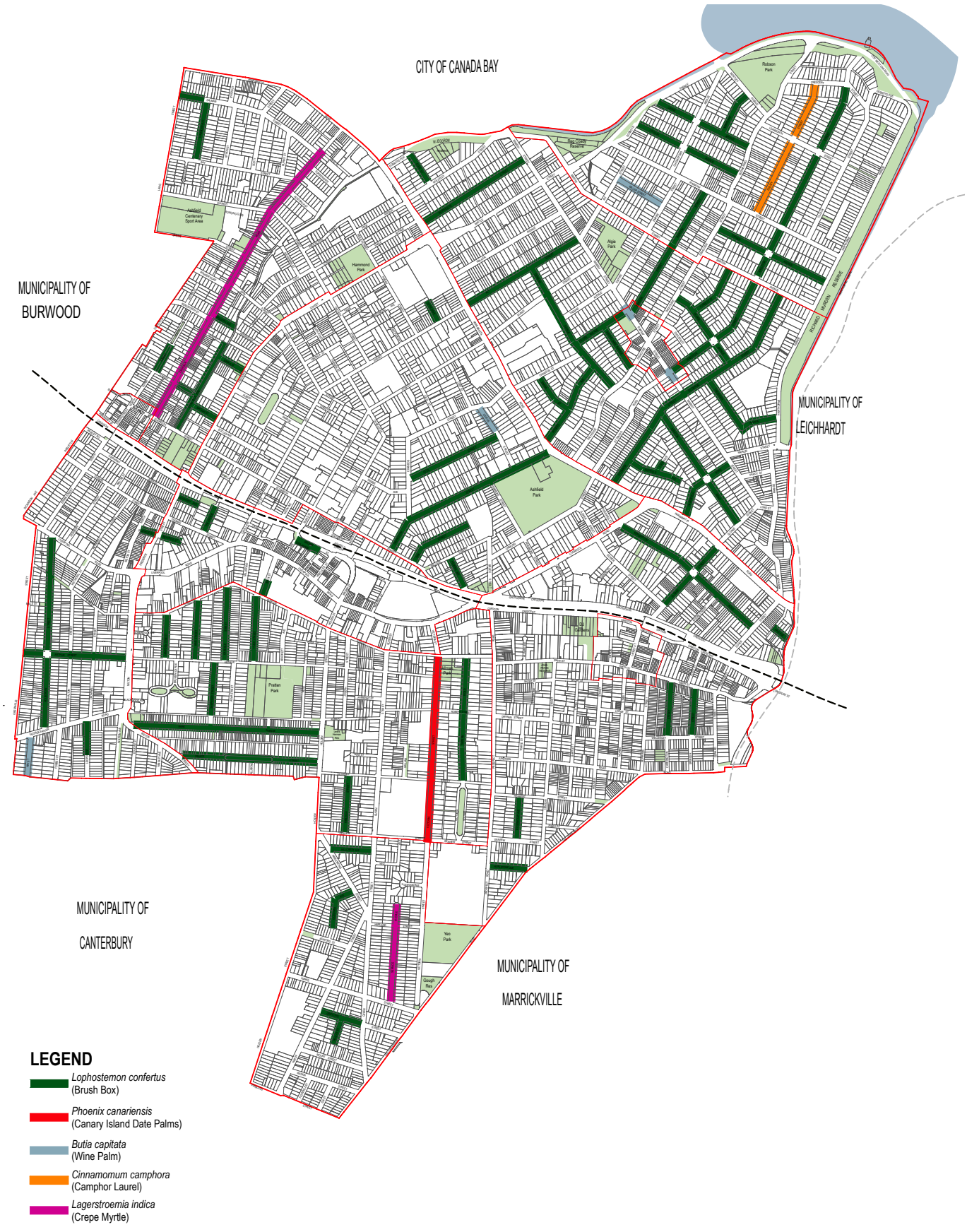


Figure 1.14 - Map illustrating the currently existing important and historic street tree avenues within the LGA, which should be reinforced and continued to maintain Ashfield character.

Figure 1.15- Turner Ave, Dobroyd Point circa 1912 - the architecture and style of planting. Note the roadways were still relatively conducive to tree planting being dirt finish (Source: Historic Houses Trust)

Figure 1.16 Turner Avenue, Dobroyd Point - Lophostemon confertus (Brushbox) (Photo-Arterra)

Figure 1.17 Tintern Road, Ashfield South - Lophostemon confertus (Brushbox) (Photo-Arterra)

Figure 1.18 Victoria St, Ashfield South - Canary Island Date Palms (Photo-Arterra)

Figure 1.19 Victoria St, Hurlstone Park - Jelly Palms (Photo - Arterra)

Figure 1.20- Aerial view circa 1943 - Haberfield (Source: NSW Land Dept. - Six Viewer). Note the majority of streets planted with street trees at this time which was relatively rare for most other parts of Sydney.

Figure 1.21 - Tintern Road, Ashfield circa 1920 - early photo of the extensive tree lined streets that still dominate Ashfield even today. (Source: Coupe 1988)

Climate

The municipality is approximately 13km inland from the coast, and therefore shares the general climate of the Sydney region with moderate temperatures, good rainfall and minimal climatic and weather extremes. It is typically described as a 'temperate' climate with hot to warm summers and cold winters, with relatively uniform rainfalls greater than 800mm / year. There is no distinct dry season.

The nearest weather recording station is taken as Sydney Airport AMO, approximately 4.2km away from Ashfield centre. It has an average annual rainfall of 1083mm, fairly evenly spread across the year but with a slightly drier period from July - October. The highest rainfall usually occurs in June with an average of 120mm and the driest month is September with an average of 60mm.

Maximum average daily temperatures, recorded range from 26.5ºC in January and to 17ºC in July. The minimum average daily temperatures range from a high of 19ºC in February down to lows of 7.2ºC in July. The primary wind direction is from the northeast to southeast in the afternoons while it is predominantly from the west and northwest in the mornings. This is common of coastal areas dominated by 'sea breeze' affects. The strongest winds (>30km/h) are normally experienced from the southeast and southerly directions and later in the day. (Source : Australian Bureau of Meteorology).

In comparison with other areas of the greater western Sydney region that experience much higher maximum temperatures, lower minimum temperatures and substantially lower annual rainfall, the Ashfield area enjoys a very comfortable climate which in turn lends itself to a very diverse range of tree species that will happily grow in the area. There are no noticeable microclimatic influences in the area and frosts are rare.

Geology and Soils

The majority of the municipality is a residual landscape comprising of gently undulating rises on Wianamatta Group Shales (covering Ashfield, Summer Hill, most of Croydon and Hurlstone Park). The result being that shale derived clay or clay loam soils dominate in these areas, generally having reasonable nutrient and water holding capacities which provide favourable conditions for street tree planting. The potential for compaction of these types of soil however is also great.

Small pockets of Hawkesbury Sandstone geology are located in the northern parts of Haberfield and in particular Dobroyd Point. These areas typically contain shallower and sandy soils or sandy loams. In some cases rock outcrops are even evident along the ridge lines. Street tree planting in these areas is more limited, and consideration of the species selection should allow for hardier species that can tolerate poorer quality soils and frequent drought conditions. Tree sizes will typically be smaller and more stunted than they may be on the better clay soils.

Parts of Croydon and the edges of the Canals near Hawthorne Canal are alluvial or floodplains areas, dominated by silty clay loams derived from the upstream shales. Highly disturbed soils and land fill areas are located along the harbour edge and associated with the reclamation of the creeks and mangroves. Generally these are the areas that were previously swamps, estuaries and wetlands and have been subject to filling where the soil origin or quality is completely unknown. Tree species selected should be hardy and more tolerant of variable and most likely poor soil qualities.

Topography

The topography of the Ashfield LGA is typically one of gently rolling hills. A broad crest runs north-south through the centre of the LGA with the general aspects on either side either facing north-west for the western suburbs or easterly for the eastern suburbs.

There are very few prominent topographical features other than the two flanking creeks that define the eastern and western boundaries of the LGA.

Figure 1.22 Hennessey St, Croydon - relatively good clay based soils dominate much of the area. These are easily compacted but have good water holding capacity and depth for tree establishment. (Photo: Arterra)

Figure 1.23 Learmonth St, Dobroyd Point - sandstone based soils that typically have shallow and impoverished soils with bedrock often impeding proper drainage. (Photo: Arterra)

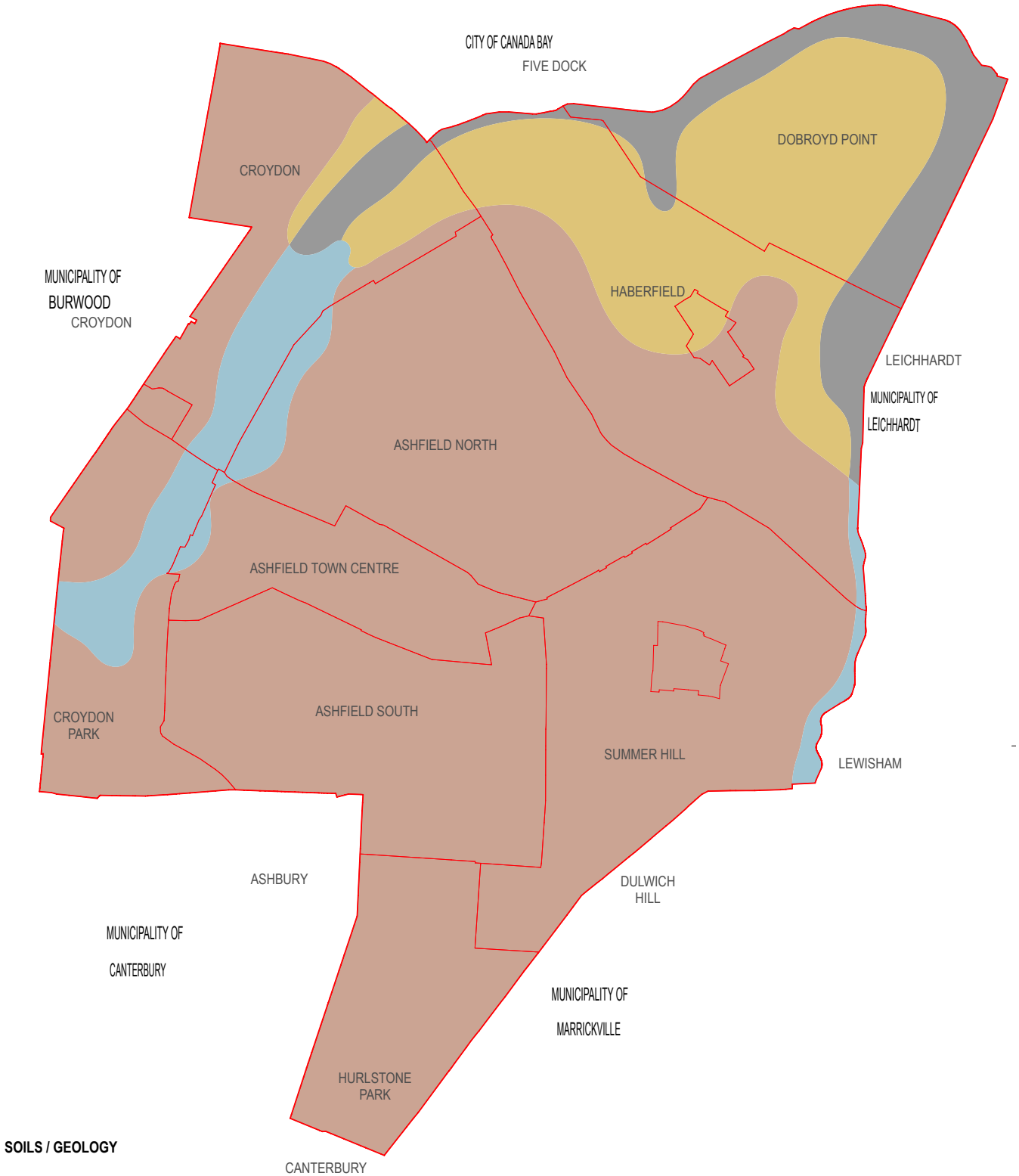


Figure 1.24 Map of Soils / Geology across Ashfield LGA

Residential and Development Typology

The area has a fairly uniform development of suburban residential housing, developed mostly between 1890-1930. It is characterised by:-

- Houses are typically detached, set back, with driveways and most with off street car parking.
- Scattered apartment developments, some older, but most from the 1970's and a few more modern examples.
- Most commercial areas restricted to major roads including Parramatta and Liverpool Road.
- Some minor pockets of terraces, with narrow frontages.
- Some harbour front land and other raised areas that offer district and attractive views.
- Some very well established and attractive Parks and open spaces.

Figure 1.25 Canterbury Road, Hurlstone Park - commercial development (Photo - Arterra)

Figure 1.26 Victoria St, Hurlstone Park - example of early style mansion (Photo - Arterra)

Figure 1.27 King St, Ashfield South - example of modern flat buildings (Photo - Arterra)

Figure 1.28 Lion St, Croydon - early workers style terraces (Photo - Arterra)

Figure 1.29 Holborow St, Croydon - typical housing (Photo - Arterra)

Figure 1.30 Kensington Street, Summer Hill - typical housing (Photo - Arterra)

Figure 1.31 Victoria Sqr, Ashfield South - typical housing (Photo - Arterra)

Street Typology and Verges

The street typology of Ashfield LGA is fairly consistent across most of the precincts, particularly when compared to other nearby Council areas. There are always some exceptions but on the whole most roads have a verge that is approximately 2.4-3.5m wide with a grassed strip adjoining the road carriage way and a concrete pedestrian footpath close to the property boundary.

There are a few streets that are very narrow and these usually have fully paved verges. These are often difficult to plant and usually represent the streets that currently have little or no street tree planting. Where footpaths are fully paved it is usually related to a narrow verge or a shopping or commercial area.

There are also a number of streets with very generous verges or median style parks in excess of 5m in width with matching generous grassed areas that can, and often do, support the planting of larger trees. These should be treasured and continued.

Figure 1.32 Typical narrow verge, Knocklayde Street, Croydon North (Photo - Arterra)

Figure 1.33 Cromwell St, Croydon South - example of narrow grass verge (Photo - Arterra)

Figure 1.34 Typical fully-paved verge with tree planting, Dougan Street, Croydon South (Photo - Arterra)

Figure 1.35 Typical in-road tree planting, Arthur Street, Croydon South (Photo - Arterra)

Figure 1.36 Typical 3.5m+ wide verge Griffiths Street, Hurlstone Park (Photo - Arterra)

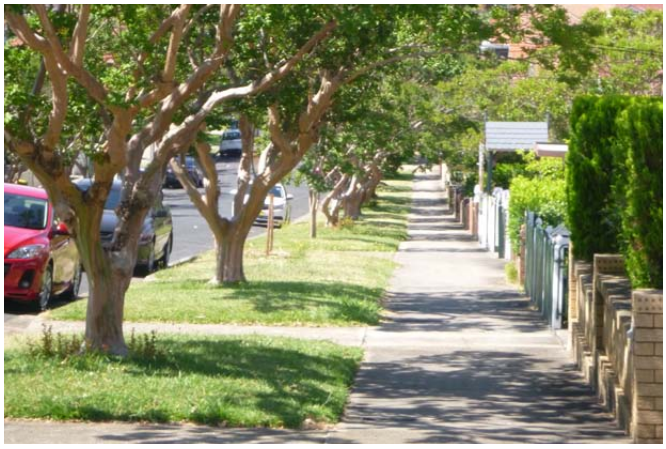


Figure 1.37 Typical 5m+ wide verge, Service Avenue, Hurlstone Park (Photo - Arterra)

Heritage and Street Tree Significance

The Ashfield LGA contains some of the 'great' streets in Sydney that typify an era when street planting and beautification was really just starting to take hold in a meaningful way. These streets need to be retained and protected as significant heritage elements and also for the contribution they make to the Ashfield urban forest and canopy coverage.

Many have been diluted and lost over the years. Some are relatively intact but are starting to be diluted by planting of new species and smaller trees. It is important that the main avenues are identified and the existing heritage planting maintained. Some may need to be changed in species (eg. Camphor Laurels) but the character should be retained using similar evergreen and rainforest style species that were common of that era.

There are also several more modern streets that represent some excellent examples of modern day street planting. (eg. Service Avenue, Hurlstone Park and Croydon Road, Croydon)

Related to the heritage above, there is an extremely strong history of in-road planting, particularly of Brush Box, Palms and Camphor Laurels. This presents a unique quality that is still found in only a few other inner city Councils such as Marrickville, Burwood, and Strathfield. It is important that these existing in-road plantings are protected and continued along these streets to ensure the historical character of the street and area is not diluted.

Much of the in-road planting we see today was installed in a different era, one where carriageways were dirt roads and the road edges were far more informal and conducive to street tree establishment. Modern engineering practices and standards now dictate a road construction approach that is often in direct contrast with the needs of street tree planting. Any new in-road plantings must be installed with great care and with well considered tree pit design. Well prepared tree pits should take into consideration improved soil/rooting volumes, trunk and vehicle conflict protection and adequate drainage.

The streets within parts of the Ashfield LGA are the epitome of an early 1900's era of landscaping within Sydney. In summary:-

- Together with Daceyville in the City of Botany Bay and some areas of Burwood and Strathfield they define the 'Garden Suburb' movement.
- Ashfield contains some excellent and extensive in-road tree planting examples which many Councils are now striving for and paying large amounts of money to recreate.
- The in-road location of many of the trees provides excellent canopy coverage and better deals with numerous tree and resident issues that are common when trees are planted closer to private property and power lines.
- The heritage of palms as street trees is an increasing rarity in many residential streets - there is a need to pick the best example streets and continue the character and use of the palms for as long as possible, as an important historical record.
- Species consistency is key in many historically significant streets. There should not be a change from the original planting lightly. Brush Box (*Lophostemon confertus*) are one of the truly great urban trees from a hardiness and success point of view and they also define the character of the area.
- It is also some of the only suburbs in wider Sydney where certain species have been used such as the Weeping Paper Bark (*Melaleuca leucadendra*).

Figure 1.38 Service Ave, Hurlstone Park (Photo - Arterra)

Figure 1.39 Victoria St, Ashfield South (Photo - Arterra)

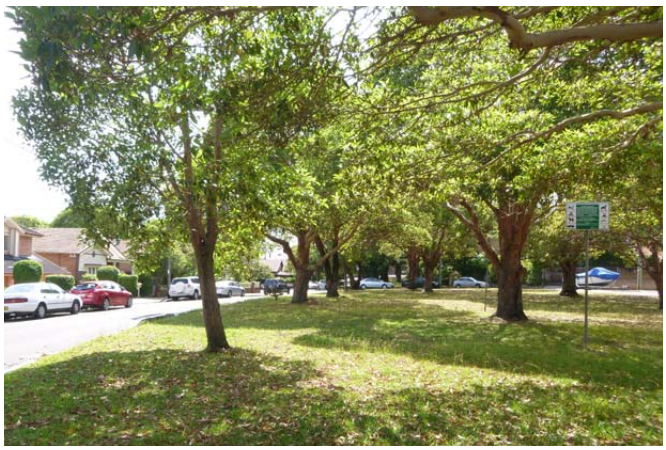


Figure 1.40 Brunswick Parade, Ashfield South (Photo - Arterra)

Figure 1.41 Sloane Street, Summer Hill (Photo - Arterra)

Table 2 - EXISTING STREETS WITH IN-ROAD PLANTING
01. Ashfield Town Centre
Beatrice Street
Heighway Avenue (East of Frederick Street)
Knox Street
Miller Avenue
The Avenue
02. Ashfield North
Benalla Avenue
Bruce Street
Cecil Street
Chandos Street
Eccles Avenue
Federal Avenue
John Street
Loftus Street
Oak Street
Orpington Street
Pembroke Street
Rectory Avenue
Webbs Avenue
03. Ashfield South
A'Beckett Avenue
Alma Street
Brunswick Parade
Carlisle Street
Farleigh Street
Hampden Street
Hugh Street
King Street
Park Avenue
Shepherd Street
Tintern Road
Victoria Street (between Norton St and Seaview Street)
William Street
04. Croydon North/Ashfield West
Banks Street
Dalmar Street
Hammond Avenue
Mackay Street
Scott Street
Vine Street
05. Croydon South/Croydon Park
Arthur Street (between Greenhills St and Milton St)
Beatrice Street (between Milton St North and Frederick St)
Edwin Street South
Heighway Avenue
Holborow Street
Leopold Street
Wetherill Street

Table 2 - (cont.)
06. Croydon Village
Edwin Street North (between Liverpool Rd and Norton St)
Elizabeth Street
07. Dobroyd Point
Barton Avenue
Chelmsford Avenue
Crane Avenue
Dudley Street
Empire Street (between Waratah St and Martin St)
Kingston Street
Learmonth Street
Loudon Avenue
Miller Street
Minto Street
Mortley Avenue
Rawson Street (between Waratah Street and Martin Street)
Tillock Street
Turner Venue
08. Haberfield
Alt Street (between Ramsay and Parramatta Road)
Bland Street (between Ramsay Street and Parramatta Road)
Cove Street
Deakin Avenue
Denman Avenue
Empire Street (between Ramsay Street and Martin Street)
Forrest Street
Gillies Avenue
Haberfield Road
Hawthorne Parade (between Parramatta Rd and Marion Street)
Kingston Street (between Ramsay Street and Barton Avenue)
Logan Avenue
Nicholls Avenue
Northcote Street
O'Connor Street (between Ramsay and Parramatta Road)
O'Connor Street
Rawson Street
Rogers Avenue
Sloane Street (between Ramsay Street amd Parramatta Road)
St Davids Road
Stanton Road
Tinana Street
Walker Avenue
Winchcombe Avenue
Wolseley Street

Table 2 - (cont.)
09. Haberfield Village
Ramsay Street
10. Hurlstone Park
Goodwin Avenue (north section)
Griffiths Street
Hillcot Street
Hillcrest Avenue
Victoria Street (between Seaview Street and Old Canterbury Road)
11. Summer Hill
Carrington Street
Drynan Street
Gower Street
Haig Avenue
Hurlstone Avenue
Junction Road
Kensington Road
Moonbie Street
Morris Street
Nowraine Street
Spencer Street
Wellesley Street

1.7 Biodiversity & The GreenWay Corridor

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. Ashfield contains an important element of the Green Web, known as the 'GreenWay'.

The GreenWay is a 5km urban green corridor connecting the Cooks River to Iron Cove. It involves the conversion of a weed infested rail corridor to local provenance species, resulting in elimination of a major local source of noxious weeds, and management and protection of the corridor. It is a rare green corridor in inner western Sydney. It contains an endangered population of Long Nose Bandicoots.

Figure 1.42 The GreenWay (Photo-Arterra)

Figure 1.43 Entrance to the GreenWay through Cadigal Reserve, off Grosvenor Cresent, Summer Hill (Photo-Arterra)

Figure 1.44 - Diagram illustrating the Greenway corridor linking between Cooks River and Iron Cove. (Source Greenway.org.au)

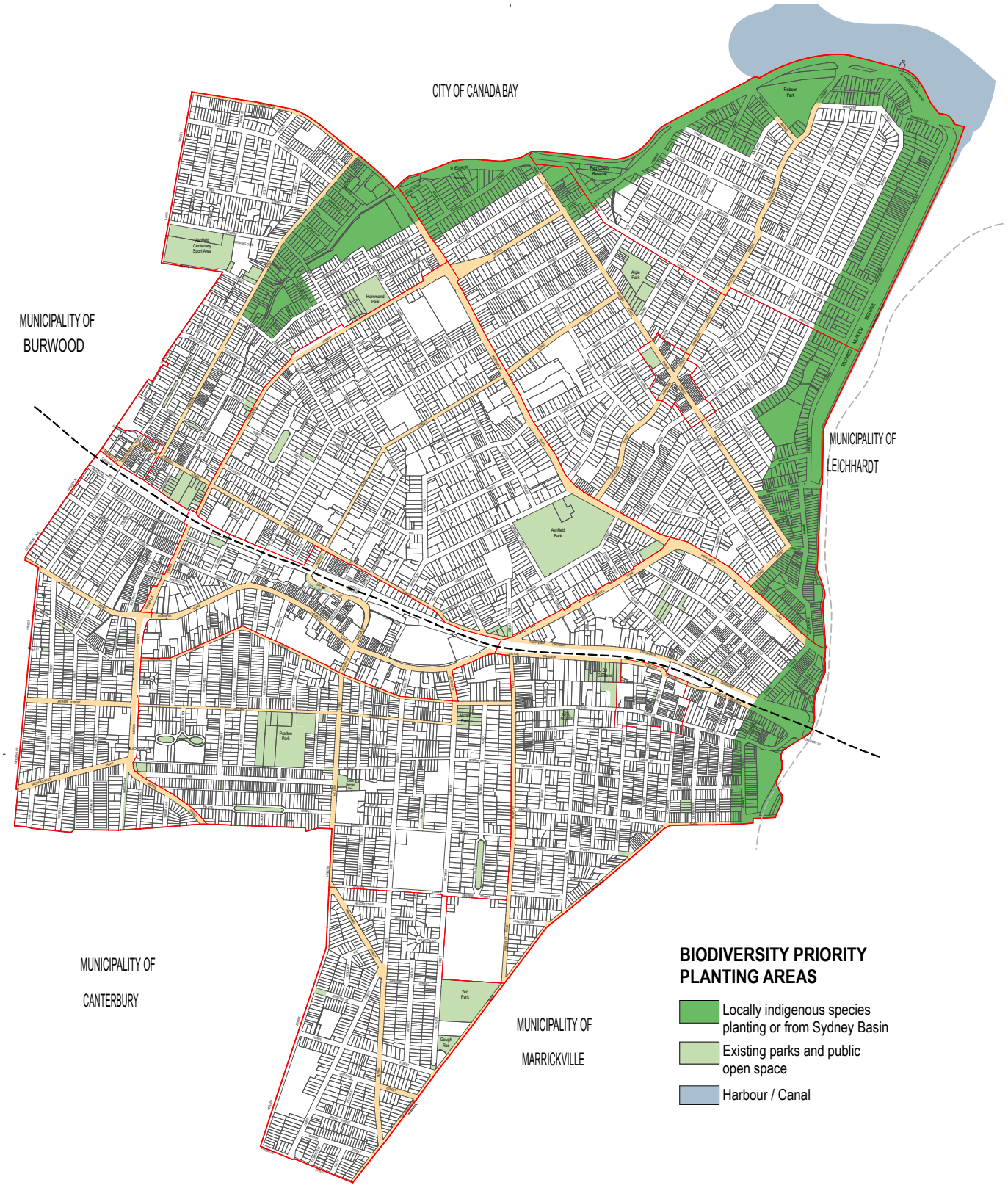


Figure 1.45 Map highlighting the proposed Biodiversity Priority Planting Corridors within the Ashfield LGA. These areas will typically be planted with a more diverse range of endemic species to help expand and promote the biodiversity initiatives associated with the GreenWay, the Parramatta River foreshore and the Iron Cove Creek.

It follows the light rail line from Leichhardt to Dulwich Hill. It links the Hawthorne Canal in the north to the Cooks River in the south. Both these ends have substantial connections to wider open space networks. It also seeks to combine and provide a shared cycleway/ pedestrian path along its length.

There are numerous active bushcare sites (eg. Marion St, Grosvenor Crescent & Hawthorne Park near Lord Street.)

There are opportunities to enhance the habitat and biodiversity potential on some streets adjoining the Greenway corridor that would compliment the “Creating a Bush Link” work, and to encourage sympathetic revegetation and other planting more broadly within the GreenWay catchment.

The GreenWay Area has been considered in preparation of the STS, by promoting a native dominated planting along a number of critical streets. These corridors are predominantly located along the GreenWay corridor and the railway line through Haberfield. (Refer to Figure 1.45)

These corridors provide an opportunity to link in with other Council initiatives. Where the streets are located within the biodiversity priority area the proposed future street trees shall be a locally indigenous species wherever possible, (or at the very least a species from the Sydney Basin area).

However, where a main road corridor runs through a biodiversity priority area, it is recommended that the proposed species for the main road corridor still takes precedence - the reason being that the main road corridor usually extends through a number of precincts / suburbs and should read visually despite traversing the corridor.

Adherence to the above native dominance may also become an issue when needing to select a suitable deciduous tree species, given the limited native choices available. The selection of an exotic species may be more appropriate in some very tough environments where there is a lot of constraints, particularly planting beneath power lines. Heritage conservation may also need to be considered in some streets.

Figure 1.46 Hawthorne Canal and the Greenway Corridor from Marion Street Bridge (Photo - Arterra)

1.8 Community Involvement in Our Street Trees

Ashfield Council are committed to working with local residents, businesses and community groups in all matters to improve Council services and facilities. In order to ensure maximum input from the community the Street Tree Strategy 2015 was put on public exhibition for a period of 4 weeks to allow community members, residents, business owners and visitors to review the plan and provide feedback to the Council.

Council reviewed all of the feedback received and considered the comments made before finalising the strategy.

Feedback from residents has also been received through informal conversations with the Mayor, Councillors and Council staff and through other platforms such as social media.

The involvement of the local community in the planting and management of street trees is an important concern for the Council. Community involvement in street tree planting and management, however, does raise many serious issues and liabilities for Council. The Council is ultimately responsible for the activities that are undertaken on public streets and liable for the **long term maintenance and management of all street trees**.

We must remember that trees may be present and growing for many decades, long after the residents who originally saw it installed have ceased to live in the area or have become unable or unwilling to care for it.

The ways that residents will be encouraged to have involvement in the Council's street trees are to:-

- Look out for opportunities in which to plant further street trees in your locality and report them to Council.
- Report any problems with, or damage to, existing trees that you notice.
- Assist Council with watering around the base of newly planted street trees and maintain the immediate tree surrounds in a neat and tidy condition.
- Report concerns regarding trees that may need pruning or are potentially causing clearance issues, damage to public or private infrastructure.
- Participate in supervised community planting days, where particular areas and streets may be targeted for new street tree installations and the community can participate in preparation, planting, staking and early establishment of the young trees.

If a resident wishes to have a tree planted in front of their property they should contact Council and either fill in a standard application form and mail it to Council or fill in the on-line form requesting a street tree to be planted. Council officers will then assess the site conditions and advise on the outcome of the assessment and the species that will be chosen.

If the season is appropriate for planting and the species is available in suitable sizes and quality, the planting will be undertaken normally within a 6-8 week period, or as otherwise noted. Typically, requests for alternative species, not listed in this Strategy for that street, will not be accommodated, due to the importance of achieving the over-arching goals of this Strategy.

Conclusions from Community Feedback

The responses received, confirm that Council's main focus should be planting the 'right trees' in the 'right places'. They also confirm that the majority of respondents were generally supportive of Council's Street Tree Strategy.

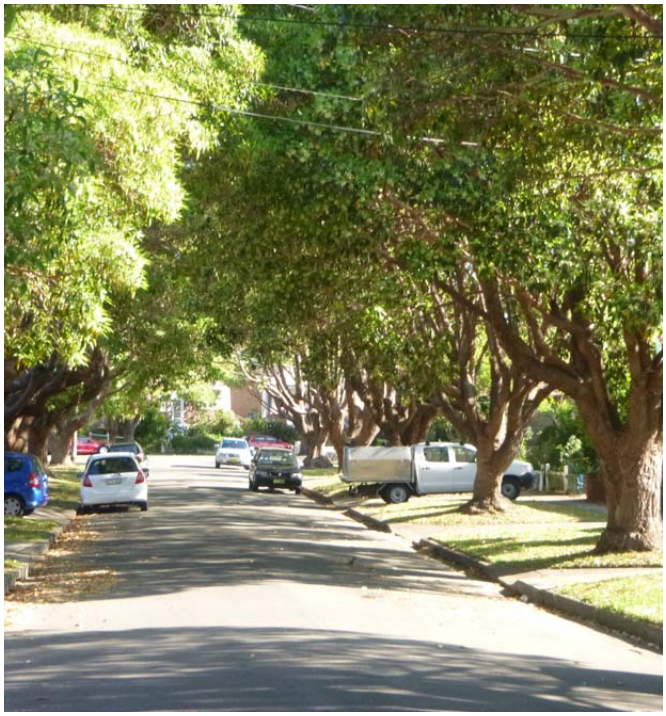


Figure 1.47 - Streets that most of the population seem to relate with as being attractive, are streets that have single species dominance, with larger canopies arching over and meeting or almost meeting across the road and fairly regular spacing, (not too close or too far apart). These are often the streets people desire and aspire to live in, and linger and shop longer in. (Photo - Arterra)

Figure 1.48 - A more consistent row of Brush Box along Tintern Road, Ashfield South. This is a good example of using large to medium sized trees (where space permits) that contribute greatly to the character of the area and the overall urban canopy cover. (Photo - Arterra)

2.0 Street Trees and the Ashfield Urban Forest

2.1 Overview

We must remember that streets are typically extremely artificial environments. Streets and the developments that they service are 'human' constructs that have largely altered the natural environment, hydrology, soils and even the microclimate. Many of our native tree species have adapted over aeons to exposure, impoverished soils, bushfire regimes and interactions with other naturally occurring plants, fungi and animals - most of which, if not all, have been permanently altered.

We also live and work in very close proximity to the street and the street trees they contain. By necessity we interact with them closely and on a daily basis. Although ideologically it may be preferable to lean towards the naturally occurring trees and shrubs of the area, the reality often severely limits this desire. Street trees often live within an entirely artificial and human focused environment and **the best tree for a given situation should be selected, regardless of its origin**.

We must also remember that although non-native trees may not support wildlife and local fauna to the same extent as an indigenous species, often they do still offer food, refuge, and shelter to many birds and fauna and still continue to provide numerous environmental benefits - often even better and for longer than endemic species.

Figure 2.1 Grainger Street, a semi-mature Robinia performing well in a narrow verge and providing an excellent character and seasonal interest to this urban street (Photo-Arterra)

Figure 2.2 Prospect Road, a recently planted Caesalpinia performing well in a narrow verge (Photo-Arterra)

2.2 The 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 dramatically enhance the public domain. The benefits of street tree planting can be viewed in the following categories.

Environmental Benefits

- 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 gaseous pollutants by absorbing them with normal air components through the stomates in the leaf surface. (eg. Sulphur Dioxide, Ozone, Nitrogen Oxide), plus capture and removal of particles such as 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 also slow and reduce the flow of runoff, reducing the amount of pollution that is washed into drains and catchment areas. Trees also take up and utilise nutrients like nitrogen, phosphorus, and potassium that can otherwise pollute streams.
- Intercepting and reducing raindrop impact and runoff and thereby reduce erosion of exposed soils and siltation of creeks and drains.
- Providing habitat, roosting and food sources for urban fauna.

Figure 2.3 - Hercules Street, Ashfield Town Centre. A well treed street can have excellent benefits for commercial areas. Research consistently shows that appropriate street planting adds to peoples perception of the area and people have a tendency to linger longer and shop and dine within such streets. (Photo - Arterra)

Economic Benefits

- Improving economic performance by increasing the attractiveness of business and tourism areas. It has been shown that 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.

Social and Psychological Benefits

- Trees provide 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, define road hierarchy, 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.

2.3 Street Trees and Their Interaction With 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's mature size has to be accounted for when planning any new planting and when designing new structures that are close to existing trees.

Despite the above, and our best intentions, trees can present a variety of forms and habits even within the one species and within the one street. Street trees are often planted within an artificial and constructed environment that is far removed from its natural habitat, which in turn leads to some negative aspects. However, it is generally considered that the benefits that trees contribute to our wider environment most often outweigh many of their negative aspects.

The Ashfield LGA 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, Ashfield encompasses many people with an extremely diverse range of interests and attitudes towards street trees.

The most common causes of problems and concerns with 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;
- obscuring of street lighting or traffic signals;
- 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.

Many of theses common issues can be adequately addressed without tree removal. Appropriate and timely maintenance and pruning can often alleviate most concerns, and appropriate repair, realignment or redesign of nearby 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. As trees age they will typically require increasing maintenance and then eventually will 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 cannot 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 to past events and historical places. For these and many other reasons, some parts of the community often have unrealistic expectations of trees being retained for very long periods. 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 any 'urban forest' the needs of the 'many' may often have to override the desires of the 'few'.

Street trees can also evoke a very negative perception within the community. Based on feedback from some residents and related surveys, the three main concerns raised are damage to public infrastructure such as footpaths and drainage, leaf and branch drop on cars, houses and footpaths, and their potential to cause allergies and irritation. Each of these are discussed in a little more detail below.

Figure 2.4 - Disfiguring pruning for overhead power clearances. (Photo - Arterra)

Figure 2.5 - All trees, even evergreen tree like Lophostemon will drop leaves and fruit. This needs to be accepted and managed. (Photo - Arterra)

Damage to pavements and structures

Many old and established trees (often the more vigorous and larger growing species) can, and have, caused footpath and kerb uplift and cracking. In adhering to the principle of the 'right tree for the right location' any future pavement damage can be significantly minimised by planting trees that are less likely to cause these issues.

Another important factor is site preparation, planting and the establishment techniques used for new tree planting. To minimise pavement damage, the use of expanded planting pits, and in-road blisters or kerb extensions (where possible) should also be considered. Also maximising the size of the planting 'cut outs' in the pavement and the use of flexible pavements and other devices such as the “Tripstop™” jointing system will assist in minimising future issues.

Other factors that commonly contribute to negative interactions between trees and structures include:-

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

Whilst roots are opportunistic they do not act ‘aggressively’ as often believed. 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. They 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. If sufficient space is not provided at the time of planting, roots will typically occupy the spaces directly under the pavement surface, increasing the risk of pavement lifting within quite short timeframes.

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 the 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 and ingress of unwanted pathogens.

Figure 2.6 - Although street trees have many benefits, large trees can also often cause disruption to surrounding infrastructure, particularly when they are planted close to kerbs and guttering. This can also cause disruption to drainage and lead to further road degradation. In quiet streets this can often be rectified through kerb extensions or the creation of rain gardens and the like, while still retaining the tree. (Photo - Arterra)

Figure 2.7 - Water Gums are excellent smaller urban trees and have been extensively and successfully used for many decades. Even these trees produce flowers and fruit capsules which some find a problem. We must accept this in return for the substantial benefits they provide. (Photo - Arterra)

Leaf, fruit and branch droppings

All trees, including evergreen species, drop leaves. Likewise nearly all trees will at some time during the year drop fruit, flowers and bark. Strategies that can be employed to reduce the impact of leaf and fruit litter in our streets will be the coordination of our street sweeping resources to target problem areas and seasons.

Species that are known to develop excessive fruit production or very fleshy fruits or leaves that become slippery on decomposition will typically be avoided for selection, particularly in paved or heavily trafficked commercial areas.

Likewise, trees that are particularly susceptible or currently known to shed large limbs on a semi-regular basis will typically be avoided. It must be remembered that all trees can shed limbs from time to time, as a result of mechanical breakage in strong winds, or pest and disease attack. Appropriate preventative maintenance and formative pruning can substantially reduce the risks associated branch failures.

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. Eye allergy symptoms may be reduced by sufferers wearing wrap around sunglasses and a hat. This has the potential to exclude the majority of pollen grains affecting the eyes.

2.4 The Current Street Tree Population

Prior to the STS project, Council has undertaken a rudimentary street tree inventory of the existing street trees. This has been further compiled and analysed and identifies that the LGA contains approximately 9,000 street trees.

Species Diversity

A total of 151 different species were found growing in Ashfield Streets. (This is much less than nearby Marrickville which recorded 363 different species). Despite 151 sounding like a large diversity, most of the less common species are represented by only few individual specimens. Like many other similar Councils the top five most-represented species equate to over 68% of the total species mix. The breakdown is:-

- *Lophostemon confertus* (Brush Box) (23.77% of total mix)
- *Callistemon sp.* (Bottle Brushs) (16.16% of total mix)
- *Melaleuca sp.* (Paperbarks) (15.52% of total mix)
- *Lagerstroemia indica* (Crepe Myrtle) (7.24% of total mix)
- *Tristaniopsis laurina* (Water Gum) (5.74% of total mix)

This is a relatively low overall diversity, especially compared to nearby Marrickville that had only 45% of the street trees represented by the top 5 species. Council's aim is to increase the species mix, so that the future reliance is not as weighted on just a few species. Increasing the distribution of the species mix will support Council's objective to increase the diversity of suitable tree species and will include locally endemic, indigenous and exotic species. However, the overriding principle must be that the tree species selected be, most importantly, inherently suitable to the chosen planting site and the street typology.

Figure 2.8 - Lophostemon confertus (Brush Box) is one of the hardiest and most successful street trees within wider Sydney and elsewhere. (Photo - Arterra)

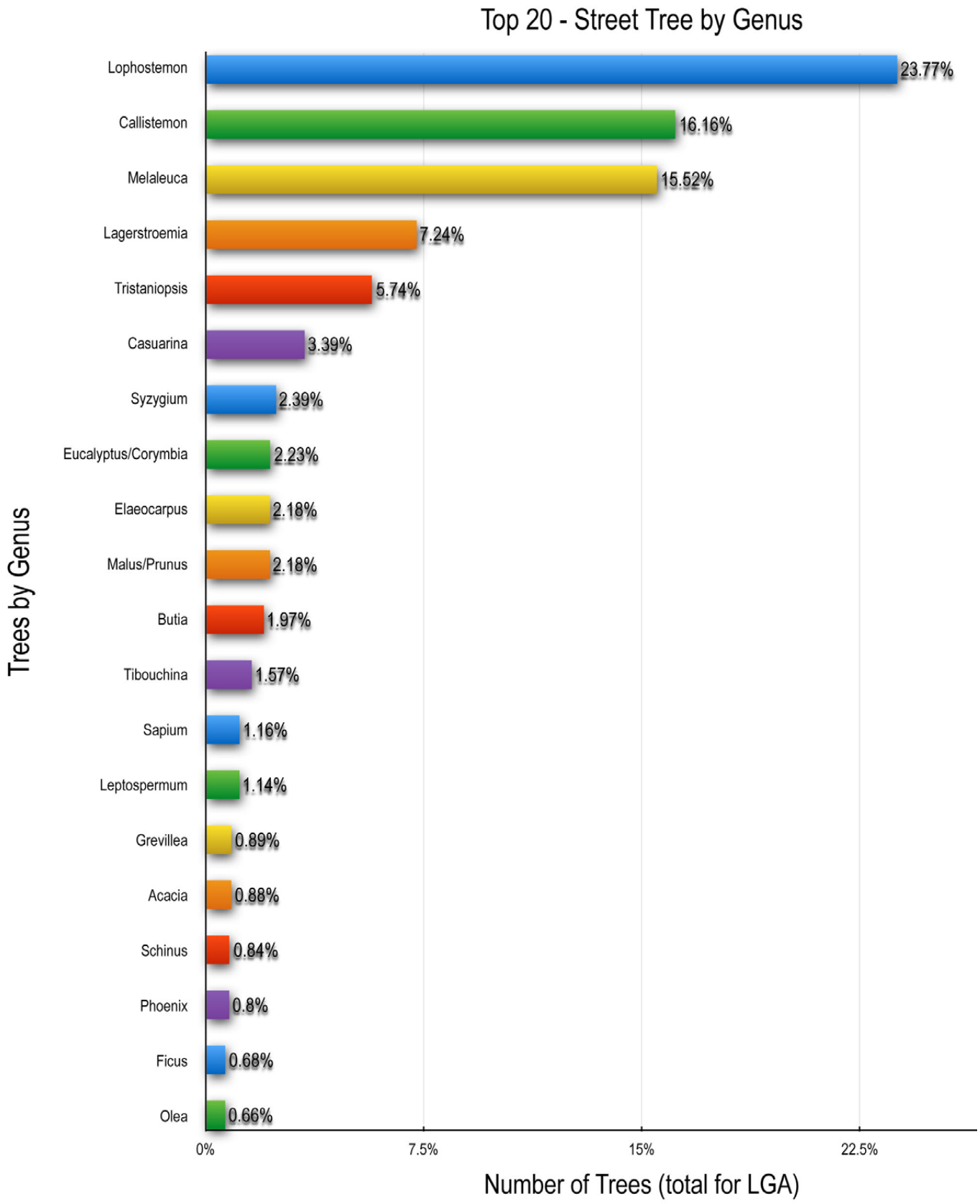
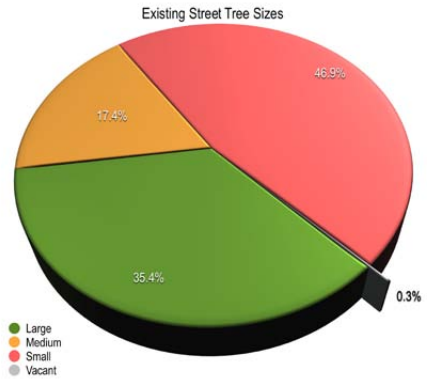
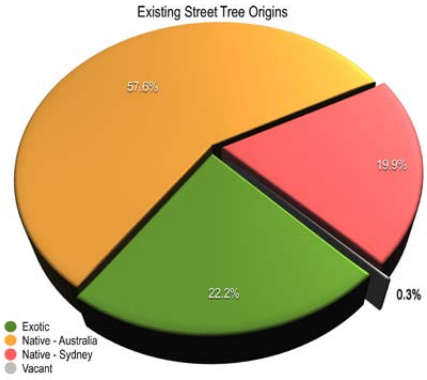
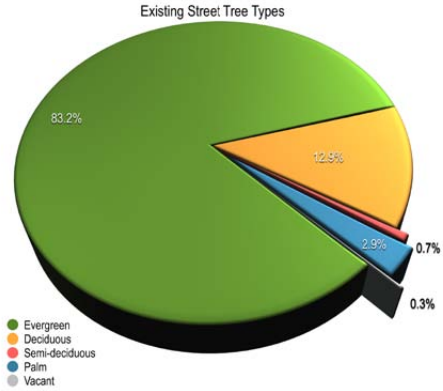


Figure 2.9- The top 20 Street Trees by Genus based on the current Street Tree Inventory Data. Note the overwhelming predominance of the top 5 species and in particular the Lophostemon confertus (Brush Box)







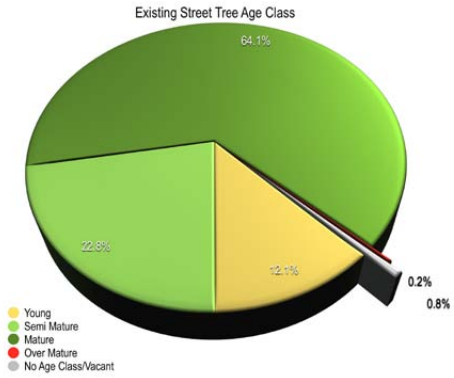


Figure 2.10- Various graphs demonstrating the break up of the existing street tree population with regard to various criteria

Species Sizes

The inventory illustrates that there is a predominance of smaller growing trees, with nearly 50% of all street trees being trees that are likely to achieve only 6-8m height and spread. However there is also a very good percentage of larger trees, most likely due to the very high percentage of Brush Box that have been planted in-road. The STS shall aim to use a few more medium sized tree species wherever possible, which will increase the average street tree dimensions. There are many instances where larger trees could be planted on the non-wire side of streets, while small trees could be maintained on the wire-side. In general terms the aim should be to have small, medium and large trees more equally represented at about 30% each.

Species Origins

The current species mix, based on the trees origin, is:-

- •Australian Native (not from Sydney): 58%
- •Australian Native (from Sydney Area): 20%
- •Exotic: 22%

The existing species mix is very good and fairly consistent with the general community views. There are often issues that arise in relying solely on native trees when it is desirable to use deciduous trees or in very tough and specialised urban conditions, where many native trees are not suited. A balanced strategy will always include a suitable mix of exotic trees as well as native.

Tree Types

The current inventory indicates the following tree type breakup:-

- •Evergreen: 83%
- •Deciduous: 13%
- •Semi-Deciduous: 0.7%
- •Palms: 3%

This is a reasonable and desirable breakup and does not raise any particular concerns. It does reflect that 4 out of the 5 most common species are evergreen and particularly the dominance of the Brush Box in many streets. Adding deciduous trees to the population should not cause any great issue and in fact will help balance the population of trees. Alternating planting of evergreen and deciduous trees may be a very favourable solution for many streets, particularly where the Brush Box Avenues may already be highly degraded.

Tree Age Class

The current inventory indicates the following age class breakup:-

- •Young: 12%
- •Semi Mature: 23%
- •Mature: 64%
- •Over-Mature: <1%

This is a reasonable and desirable breakup and does not raise any particular concerns. It indicates that the older trees are being well managed and that there has been adequate numbers of young and replacement trees planted in the LGA over recent years. Council should maintain a proactive program to replace failing and aging trees to maintain a diverse age population, moving forward, and limit the opportunity for catastrophic replacement or maintenance burdens in the future.

2.5 Current Street Tree Related Issues

Overhead Power Lines Extremely Common

Virtually all streets (96%) of streets are impacted by overhead power lines, which greatly affects tree planting on at least one side of the street. When combined with typically narrow grass strips or verges this means that street trees have to be planted under the wires on one side unless in-road planting exists or is explored. Only approximately 7% of Ashfield streets have any ABC installation, which allows for larger trees to be planted beneath and minimises disfiguring pruning. This is a relatively low percentage but generally in line with most other Councils except for the City of Botany Bay. The compensating factor for Ashfield is the much higher percentage of in-road planting that has been undertaken compared to most other Council areas.

For comparison with other nearby Councils refer below:-

Table 3 - OVERHEAD AND ABC POWER COMPARISONS

LGA	Streets with OH Power Conflicts	Streets with ABC Power Installed
Ashfield	96%	7.0%
Marrickville	89%	7.3%
Woollahra	61%	8.7%
Lane Cove	81%	7.4%
City of Botany Bay	74%	19.7%

Over-reliance on a Relatively Few Species and Families

Species diversity is often measured by the percentage of the tree population in particular families, genera and species. Accepted rules of thumb for a sustainable street tree population are in the range of no more than:-

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

The largest concern at the moment is the extreme over representation of plants from the Myrtaceae family. Although this dominance is often very common, few Councils have such a large representation. The issue becomes serious when one considers the still unknown and longer term effects of the recently introduced disease, Myrtle Rust.

The existing tree species palette relies too heavily on 3-4 species, being *Lophostemon confertus*,(Brush Box) *Callistemon sp. & cultivars* (Bottle Brush), *Melaleuca sp.* (Paperbarks & Black Tea Tree) and *Tristaniopsis laurina* (Water Gum).

(Brush Box) *Lophostemon confertus* makes up 23.7%. This tree, however, is an extremely useful and historically important native tree, particularly when in-road and near powerlines. It is

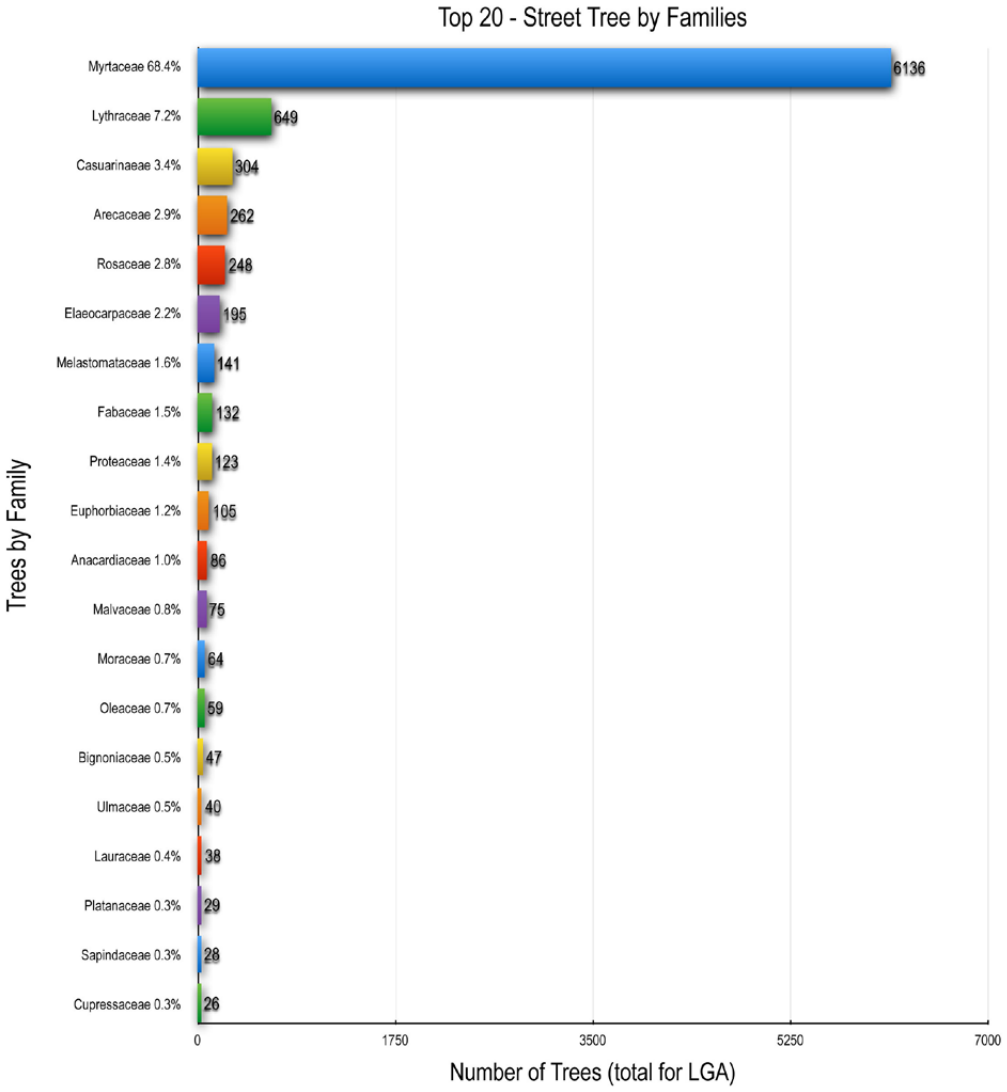


Figure 2.11 - The top 20 Street Trees by family based on the current Street Tree Inventory Data. Note the overwhelming dominance of the Myrtaceae Family. This is common in many Council areas, but seldom to this extreme.

Figure 2.12 - Watson Avenue, Croydon South. Pruning for wire clearance is usually undertaken by Ausgrid contractors and is out of the direct control of Council. As a result many medium and larger trees grown under wires can be substantially disfigured by clearance pruning. Some trees will be more suited to training of branches around such obstacles. Appropriate formative pruning from a young age can also radically improve the shape and clearances of trees under the wires, avoiding the need for major and disfiguring pruning in later life. (Photo - Arterra)

Figure 2.13 - Alt Street, Dobroyd Point. Pruning for wire clearance is usually undertaken by Ausgrid contractors and is out of the direct control of Council. As a result many medium and larger trees grown under wires can be substantially disfigured by clearance pruning. Some trees will be more suited to training of branches around such obstacles. Appropriate formative pruning from a young age can also radically improve the shape and clearances of trees under the wires, avoiding the need for major and disfiguring pruning in later life. (Photo - Arterra)

suggested to continue this species for all important avenues, but avoid any new and expanded uses. Some streets could be converted to other similar character species over time.

Callistemons (*C. viminalis, C. citrinus C. salignus* and other unidentified cultivars) make up 16.16% of the total species mix. It is recommended this species is maintained at no more than what currently exists, and ideally reduced in overall proportion by minimising any new or expanded use.

Melaleucas (*M. quinquenervia, M. bracteata M. styphelioides and M. leucadendra*) make up 15.52% of the total species mix. M. bracteata represents 9.88% alone. This is approaching the commonly accepted maximum figure. The larger growing M. quinquenervia should be almost completely discontinued due to the demostrated infrastructure damage and resident impacts. The smaller growing species are more benign and represent species that have proved to be very good trees that have performed well in the Ashfield LGA. It is recommended these species are maintained at no more than what currently exists, and any new or expanded uses are minimised. Careful consideration needs to be given to *M. leucadendra*. It should be maintained where possible but not in areas where infrastructure damage is likely to be unacceptable.

Crepe Myrtles (*Lagerstroemia indica*) makes up 7.24% of the total species mix which is an acceptable number. This tree is an extremely useful small deciduous tree, particularly under powerlines. It is suggested to continue this species, but care needs to be exercised to not over do its use in every difficult situation or where it may dilute a more desirable street character.

Water Gum (*Tristaniopsis laurina*) makes up 5.74% of the total species mix which is an acceptable number. This tree is a useful small native tree, particularly under powerlines. It is recommended to continue this species, but be careful about excessive or expanded uses.

Figure 2.14 - Edwin Street, Croydon South is an example of large trees being planted in relatively narrow grass strips, that are now causing increasing issues for both Council's street tree management and local residents. (Photo - Arterra)

Generally Diversely Planted Streets

Despite the above mentioned issue, typically many of the non-Brush Box dominated streets have quite a diverse mixture of street tree species due to periods of minimal control and/or strategic coordination of street tree planting. This has also manifested itself when Council have tried to change over from the Brush Box dominated streets. This has resulted in many streets having a very diluted street planting character with a great many species occurring on any one street.

Table 4 - STREET TREE DIVERSITY COMPARISON SUMMARY

Street Planting Consistency	Number of Streets	% of Streets
Diverse Mix	144	48.2%
Single Species	77	25.8%
Two Species	30	10.0%
No planting	48	16.0%
Grand Total	299	100.00%

Wide Streets and Streets with a Lack of Canopy Cover

There are a number of streets that are now extremely wide for the amount of traffic that they carry. They may have worked well when in-road planting was present but now seem overly wide and visually barren. Similarly, there are a few examples where streets have wide verges and could be provided with excellent canopy trees, particularly if ABC is implemented concurrently.

Inappropriately Positioned Larger Trees

Conversely, there are a number of street tree species that have proved to be too large for narrow streets and narrow grass strips. Combined with overhead power lines this can cause multiple problems. The most problematic species appear to be *Melaleuca quinquenervia, Melaleuca leucadendra, Corymbia citriodora*, *Ficus hillii and Eucalyptus nicholli.* These have, or are now causing, many conflicts with infrastructure and residents.

In comparison *Melaleuca bracteata and Callistemon sp.* are often good trees with a good scale and relationship to most of the streets however they too are often disfigured by pruning for overhead power lines.

Figure 2.15 - Opportunity for installation of street planting and even verge gardens or a turf strip to improve the aesthetics of this street, Bland Street - Ashfield Town Centre (Photo-Arterra)

Narrow Verges & Streets

Typically verges with less than 2.0-1.8 metres width are quite common in some of the longer streets within Ashfield LGA., such as Arthur Street, Alt Street, Bland Street, Norton Street, and Elizabeth Street.

This becomes an issue for street tree planting in regard to pavement damage, pedestrian access, and impacts with houses, vehicles and overhead wires. Tree planting in these streets needs to be very carefully evaluated and either restricted to the non-wire side of the street or to strategically positioned in-road blisters.

A problem also exists due to street trees historically being planted into too small a space or within relatively narrow grassed strips. The prevailing soil conditions have meant that some trees have been able to achieve sizable proportions but this has often also resulted in excessive pavement damage and lifting.

This has been most noticeable with the following species:-

- *Melaleuca quinquenervia* (Broad-laved Paperbark)
- *Casuarina glauca* (Swamp She-oak)
- *Eucalyptus botryoides* (Bangalay)
- *Eucalyptus saligna* (Blue Gum)
- *Eucalyptus grandis* (Flooded Gum)
- *Harpephyllum caffrum* (Kaffir Plum)
- *Platanus x acerifolia* (London Plane Tree)
- *Corymbia citriodora* (Lemon-scented Gum)

This is not to say these species are inherently unsuitable for street planting, it just indicates that far greater care is needed in their planting and placement to ensure they are given enough room to properly expand and grow over time. Expanded tree pits and surrounds would be a positive move towards correcting this.

Young trees should also be mulched around their bases to aid in their establishment and prevent whipper-snipper damage. Better approaches to planting and establishment may cost extra in the short term but in the longer term should reduce costs in pavement replacement, tree maintenance and removals.

Views

Although not a large problem in Ashfield there are areas where views are afforded to residents and street planting, where reasonable, should consider the retention of those views, by using lower trees or very high branching trees with thinner canopies or trees with thinner and narrower canopies.

Tree Spacing Often Too Close and Resident Planting

Typically, Council's policy has been to plant street trees at 1 tree per lot frontage but sometimes there are more trees, that are very closely spaced. Often it is the adjoining resident who is responsible for this, but in some cases it may have been intentional planting by the Council or a developer. This means that some street trees may be too close together. This can create a visual wall along the street, a lot of shading and overcrowding of trees, that when mature, are either suppressed or malformed. It also results in trees fighting with each other for otherwise limited resources.

A far better approach is to space each tree with more concern for the ultimate size to which it will grow. Many streets look better with a little more spacing between the trees which allows sufficient shade but also a little natural light to reach the pavement. This is also better for street lighting outcomes

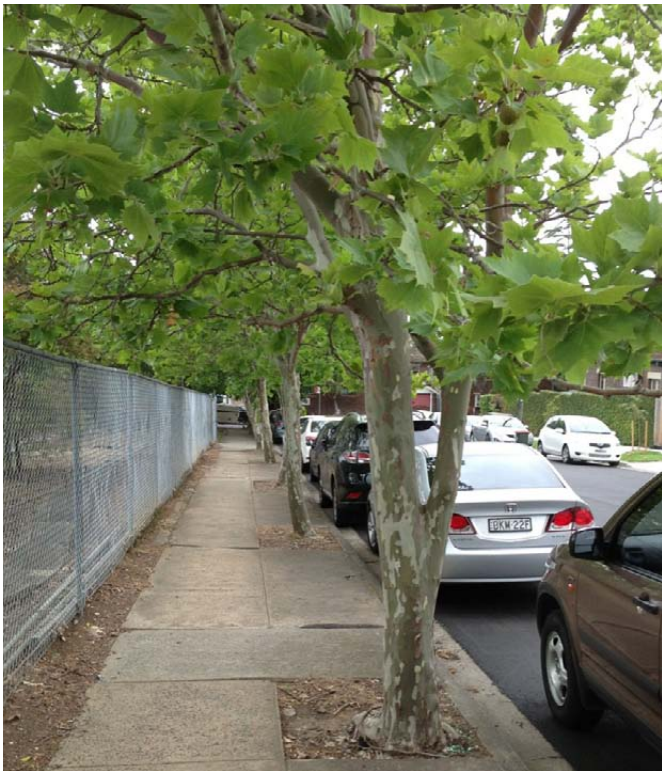


Figure 2.16 - Illustration of potentially large trees planted in too small planting areas and potentially too close together (Photo-Arterra)

Figure 2.17- Harbour views from higher areas in northern Dobroyd Point (Photo-Arterra)

Figure 2.18 - Illustration of too many trees planted and inappropriate species (Photo-Arterra)

and views to and from the street and adjoining park. It may also result in less complaints from residents who may not want so many trees impacting their property. The following spacings have been determined from analysis and measuring successful street planting in mature situations.

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

- small trees – spaced at a minimum of **7 to 10** metre intervals.
- medium trees – spaced at a minimum of **10 to 15** metre intervals.
- large trees – spaced at a minimum of **15 to 20** metre intervals.

This may still work very closely to the policy of one tree per property, but not always. Council officers will assess each planting scenario and determine the finals spacings based on a number of factors. Where appropriate, trees will be located near the centre of the adjoining lots to maintain flexibility for future or existing lot access.

Figure 2.19- Loudon Ave, Dobroyd Point illustrating appropriate planting and spacing of trees. (Photo - Arterra)

Street Trees and Park Planting Conflict

Planting of street trees in front of park frontages is often inappropriate. A better approach is to have the larger and better formed trees set well within the park and let them contribute to the streetscape (as they often do). Adjoining residences would profit from better views to the park, and more often than not, the street trees are suppressed and malformed by the better and larger trees growing adjacent in the park.

It is recommended to refrain from further street tree planting in front of parks, unless the park trees are set well back and verges are wide enough for successful street tree planting.

Figure 2.20- Boomerang St, Dobroyd Point illustrating appropriate park planting strategy where the park trees are allowed to contribute to the streetscape without intervening and usually compromised smaller street trees. (Photo - Arterra)

2.6 Pests, Diseases & Climate Change

Climate Change

Climate change is the change in the average pattern of weather over a long period of time. There is clear evidence that our climate is changing, due largely to human activities.

Climate change is not just about warming. The science indicates that the climate will be altered in many other ways. For example, there will be changes in rainfall patterns and ocean currents, changes to the intensity and frequency of extreme events such as storms, droughts and floods, rising global sea levels and ocean acidification (AGCCD 2011).

The impacts of climate changes are often talked about at the global level. However there are real and tangible impacts at a federal, state and local government level. The Climate Commission, an independent body that provides information on climate change to the Australian people and Government, has produced numerous reports on climate change. Key issues from their report titled The Critical Decade: New South Wales climate impacts and opportunities (2011) found that NSW is becoming hotter and drier. Record-breaking hot days have more than doubled across Australia since 1960 and heatwaves in the greater Sydney region, especially in the western suburbs, have increased in duration and intensity. The period from 2000-2009 was the state's hottest decade on record.

What does this mean for Ashfield and our street trees? The following is a summarised snap shot of the key risks and impacts from climate change on the urban forest.

Climate Change

Over many decades thousands of scientists have painted an unambiguous picture: the global climate is changing and humanity is almost surely the dominant cause. The risks have never been clearer and the case for action has never been more urgent.

Our Earth's surface is warming rapidly and we can already see social, economic and environmental impacts in Australia. Failing to take sufficient action today entails potentially huge risks to our economy, society and way of life into the future. This is the critical decade for action.

Climate Commission, 2011

	2008	2030	2070	2100
SYDNEY	3.3	4.4	9	14

Figure 2.21 - Numbers of days expected to exceed 35° in the coming decades (Source: Climate Commission - The Critical Decade New South Wales climate impacts and opportunities 2012. - originally from CSIRO, and cited in Garnaut, 2008)

Higher than average temperatures

- Decline in health for the existing trees species suited to Sydney's current (cooler) climate.
- Increased impact from pests, as their life cycle and reproduction rates increase, coupled with improved ability to survive over winter, will increase the detrimental impact on tree health.
- Increase in the range of pests or other pathogens that can extend their geographical range to include Sydney, effectively increasing urban forest vulnerability.
- Increase in the range of tree species from northern NSW, QLD that may now be more suitable for planting in the changing climate.

Heatwaves

- Premature death of some trees / species, not tolerant to heat or associated water stress. This will be particularly evident in young trees, that have not built up the stored energy or resources required to survive such events.
- Trees' leaves are scorched, leading to decline in tree health.

Long-term drought and decreased rainfall

- Increase premature tree deaths, and detrimental impacts to tree health, particularly in the older and younger trees.
- Impact on the number of new trees able to be planted in the event of water restrictions.

Flood and increased rainfall intensity

- Heavy rains can lead to tree stability issues, and health impacts where inundation occurs over longer periods.
- Disease impacts may also worsen, with inundation improving the environment for pathogens that cause root rot or decay in trees.

Extreme weather events

- High winds and heavy rains can lead to increased branch and whole tree failures. Importantly, this can impact trees that are in otherwise perfect health and condition.
- Increased risk, claims and litigation, from any damage caused by tree failure.
- Increased community concern about large canopy trees, due to perceived risk impacts. Desire by many to remove trees, which only worsens urban heat island and climate change impacts. (City of Sydney, UFS 2013)

Pests 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 the 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, coupled with the increase in international travel with the risk of a pest 'hitching a ride' to Sydney.

Current pest and diseases impacting most Council's trees include;

- Australian Honey Fungus (*Armillaria luteobubalina*)
- Plane 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.*)
- Myrtle Rust (*Uredo rangelii*)

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.

Incursion of pests and outbreaks of disease can take tree managers by surprise. Trees once thought to be 'bullet proof' can be severely debilitated by previously unknown pests and diseases. Sycamore Lace Bug and Myrtle Rust are two such examples. Some recently arrived pests and diseases, such as these, will be impossible to eradicate and treatment has proved to be expensive, difficult or limited in its efficacy.

A tree's ability to cope with a pest or disease depends in part on the environment in which it is growing. The Ashfield LGA's street trees, especially in the commercial and more urban areas, are growing in very tough environments. Coping with compacted soils, exposure, wind, pollution, limited water, constricted root system and regular pruning for wire and building clearances makes it difficult for trees to also deal with pests and diseases.

This represents a key challenge to future street planting. To improve biodiversity, reduce the risk of canopy cover loss from pest or disease, we need to ensure the species selected are able to thrive and provide the canopy cover the LGA needs.

Figure 2.22 - Illustration of the purple discolouration and distortion of leaves and the prominent yellow fruiting spores of the Myrtle Rust. The long term implication of this disease is still unknown, but places more emphasis on using a range of hardy species from a range of families, to spread the risk over the urban forest.
(Source: www.flickr.com/photos/48395196@N05/5402288905/sizes/o/in/photostream/ - accessed 5/3/11)

Figure 2.23 - A row of Phoenix canariensis (Canary Island Date Palm) along Victoria Street, Ashfield South. Although they will be retained for as long as possible, their future ongoing use is now doubtful due to the continuing spread of the incurable Fusarium Wilt disease throughout wider Sydney. (Photo - Arterra)

Figure 2.24 - Sycamore Lace Bug damage to London Plane Tree illustrating the premature death of some leaves, the attempt by the tree at secondary foliage growth late in the season and the subsequent chlorosis also occurring to those new leaves as a result of the pest. (Photo-Arterra)

2.7 Dealing With Large or Problematic Street Trees

Although trees present a myriad of benefits we have to recognise that they may also present problems, costs and risks. To deal with these Council will follow a systematic process to evaluate the issues. Refer to the following flow charts that outline the 3 step process to dealing with any trees that are potentially causing problems for the Council or the community. Reference should also be made to Part B-Section 7.3 of the Strategy.

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 limitations imposed by its immediate environment. A tree's mature size should be accounted for when planning any new planting or when designing or modifying structures that are close to an existing tree.

We also need to address trees that were planted often long ago and perhaps without adequate thought for their ultimate proportions. Despite the best intentions, trees can also present a variety of forms and habits even within the one species type and within the one street. Although it is generally considered that the social, environmental and economic benefits trees contribute to our wider environment usually outweighs many of the more minor negative aspects - when the issues become severe we have to weigh up the importance of keeping the tree versus its potential removal.

Figure 2.25 - A Fig that is now reaching the end of its useful urban life and will soon require removal (Photo-Arterra)

Often many of the common issues associated with street trees 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. The issue of problematic streets trees, however, can be complex and many layered.

The following street tree assessment flowcharts provide an outline of the Council's systematic approach to making an assessment regarding any problematic street trees. It is divided into 3 basic parts:-

- First we must assess the trees' wider significance;
- Second we must consider how long the tree may continue to safely contribute to the street and
- Finally we must consider the available options and practicality of designing around the existing tree.

The assessment of the trees should be based on an educated arboricultural assessment. Decisions to either remove or retain a problematic tree shall be made by Council, following advice and consideration from either their in-house or an independent Arborist (minimum AQF Level 5).

For particularly complex or high-profile trees Council shall engage the services of an independent and qualified consulting Arborist (AQF level 5).

Assessments of problematic trees :-

Step 1 - RETENTION VALUE

This involves the allocation of a "retention value" or significance rating for the tree, so that the tree is rated as either a High, Medium or Low Retention Value tree.

Step 2 - SAFE USEFUL LIFE EXPECTANCY AND THE NATURE OF PROBLEM

Following on from Part 1 we must then consider the realistic useful life expectancy of the tree and the feasibility of retaining the tree if rectification and disturbance works should occur around the tree. The nature of the problem, in relation to the street tree, is then also broken down into one of three categories for further analysis, including:-

1. Overhead wires;
2. Growing area size; and
3. Private property damage

Step 3 - HAZARD ABATEMENT

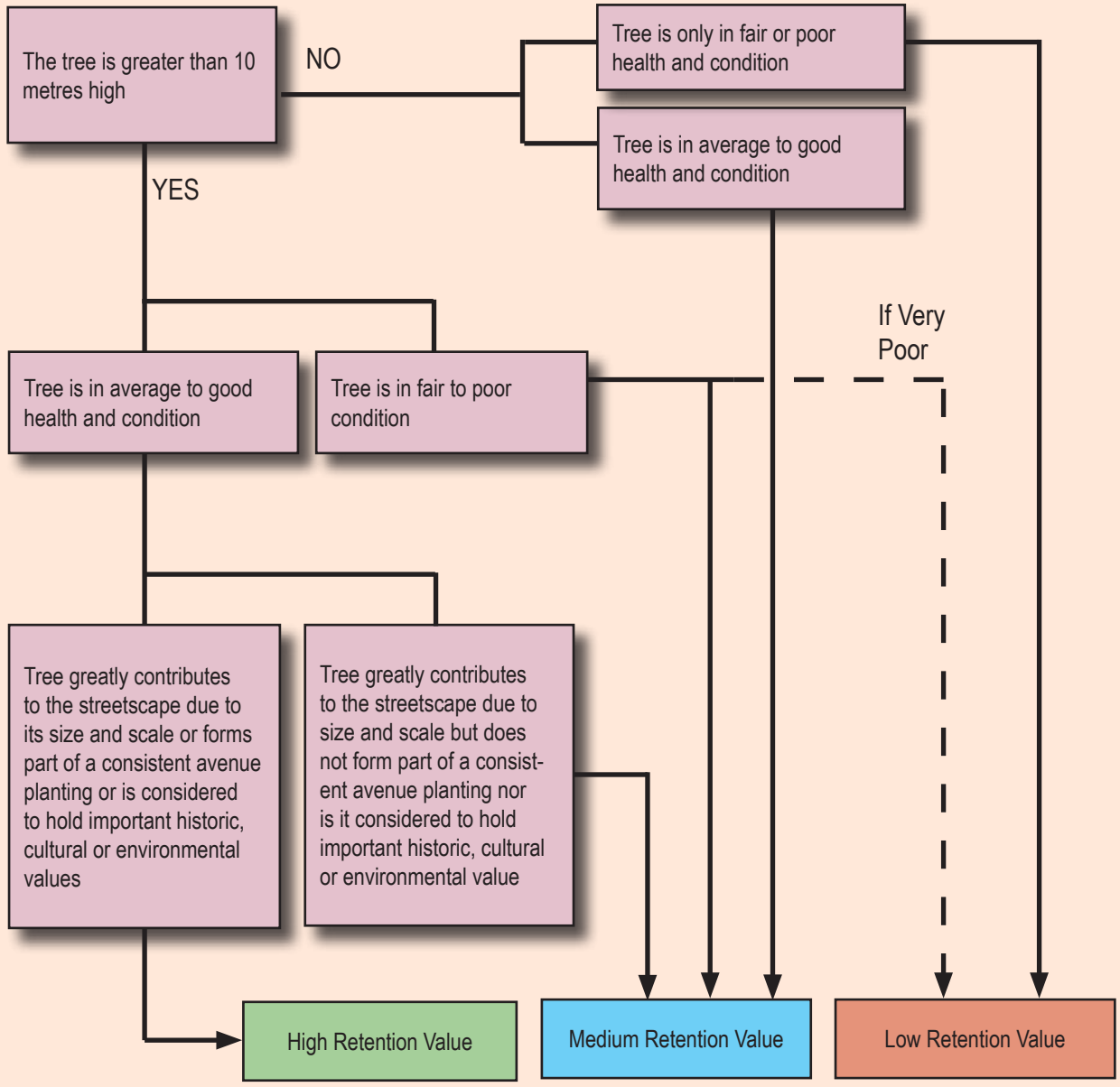
This assessment process is broken into two charts, referring to the two main problems associated with Council street trees. These include a flowchart for:-

(A) Trees under overhead wires – which helps to make a decision with regard to ABC installation, or removal and replacement of the tree with a more suitable species.

(B) Growing Area Size – which helps analyse whether the size of the tree pit or surrounds be increased to reduce damage to kerb and pavement or whether the tree should be removed and replaced with a more suitable species or in a better location or with a different planting detail.

In both of the final flowcharts, new in-road planting may be a solution that Council should also consider, which may address multiple issues and be a better long term outcome.

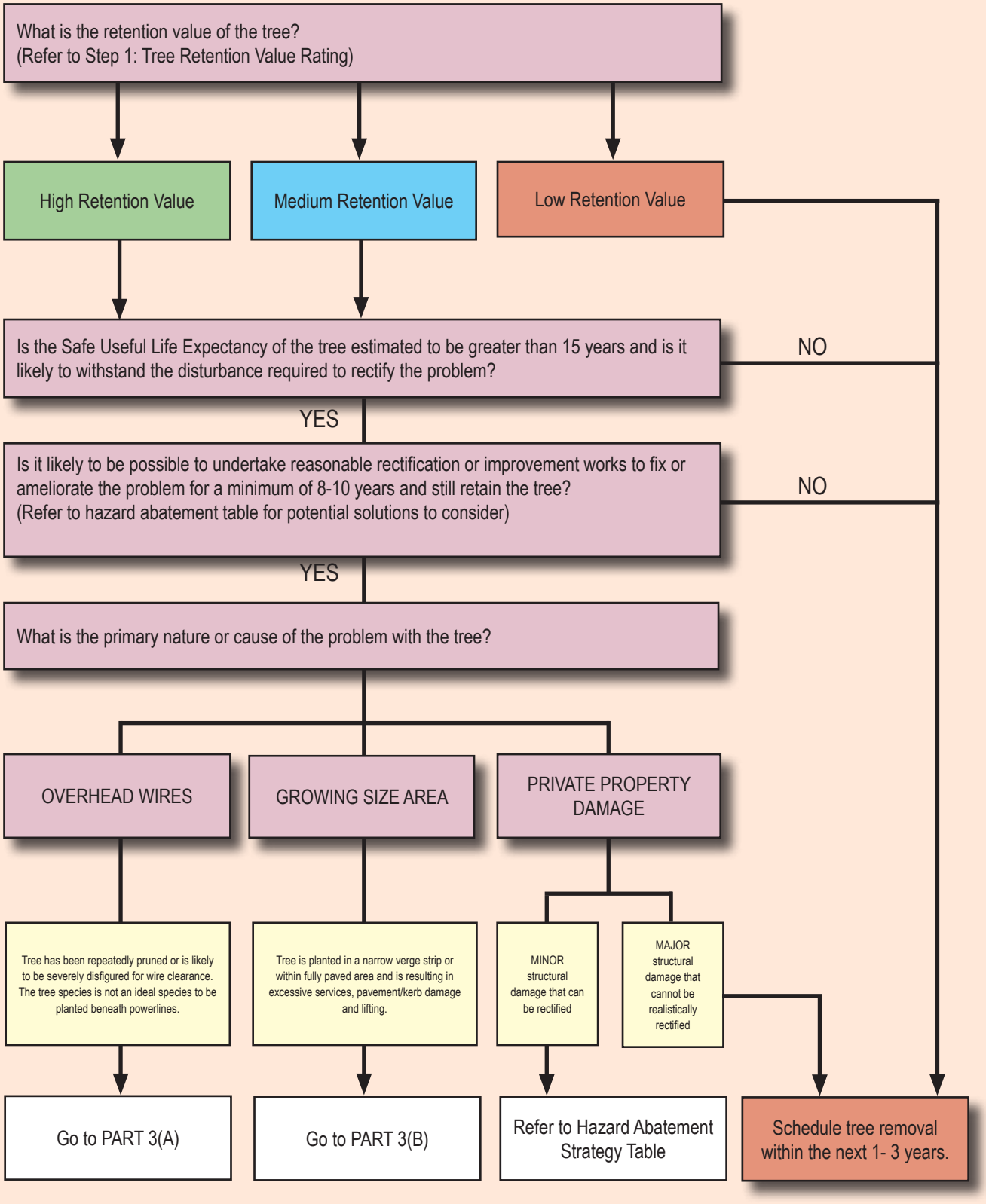
STEP 1: TREE RETENTION VALUE RATING

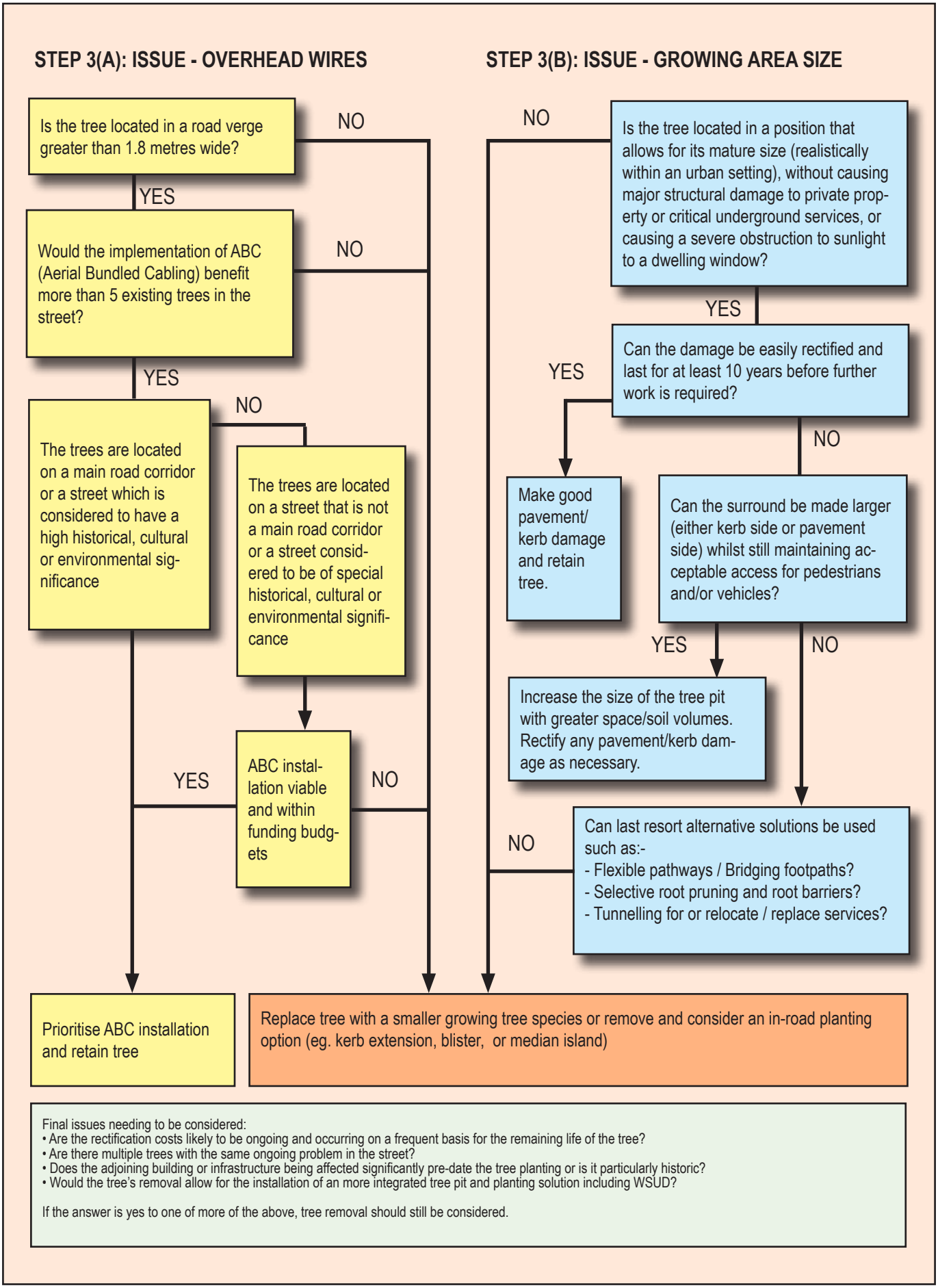


IMPORTANT ADDITIONAL NOTE :
A tree's value may be moved to the next lower Retention Value for the following reasons:

- It is an exempt species under the Council's Tree Preservation Order
- It is a recognised invasive weed species
- It has serious structural defects or major decay present, is hazardous or is in irreversible decline
- Is obviously causing unacceptable damage to significant private property structures or to critical infrastructure. (Refer to Part B -Section 7.3 for further definition and explanation)

STEP 2: SAFE USEFUL LIFE EXPECTANCY and NATURE OF PROBLEM




STEP 3(A): ISSUE - OVERHEAD WIRES
Is the tree located in a road verge greater than 1.8 metres wide?
NO
YES
Would the implementation of ABC (Aerial Bundled Cabling) benefit more than 5 existing trees in the street?
NO
YES
The trees are located on a main road corridor or a street which is considered to have a high historical, cultural or environmental significance
NO
The trees are located on a street that is not a main road corridor or a street considered to be of special historical, cultural or environmental significance
YES
ABC installation viable and within funding budgets
NO
Prioritise ABC installation and retain tree
STEP 3(B): ISSUE - GROWING AREA SIZE
NO
Is the tree located in a position that allows for its mature size (realistically within an urban setting), without causing major structural damage to private property or critical underground services, or causing a severe obstruction to sunlight to a dwelling window?
YES
Can the damage be easily rectified and last for at least 10 years before further work is required?
YES
Make good pavement/ kerb damage and retain tree.
NO
Can the surround be made larger (either kerb side or pavement side) whilst still maintaining acceptable access for pedestrians and/or vehicles?
YES
Increase the size of the tree pit with greater space/soil volumes. Rectify any pavement/kerb damage as necessary.
NO
NO
Can last resort alternative solutions be used such as:-
- Flexible pathways / Bridging footpaths?
- Selective root pruning and root barriers?
- Tunnelling for or relocate / replace services?
Replace tree with a smaller growing tree species or remove and consider an in-road planting option (eg. kerb extension, blister, or median island)
Final issues needing to be considered:
• Are the rectification costs likely to be ongoing and occurring on a frequent basis for the remaining life of the tree?
• Are there multiple trees with the same ongoing problem in the street?
• Does the adjoining building or infrastructure being affected significantly pre-date the tree planting or is it particularly historic?
• Would the tree's removal allow for the installation of an more integrated tree pit and planting solution including WSUD?
If the answer is yes to one of more of the above, tree removal should still be considered.

2.8 General Hazard and Issue Abatement Strategies

The table below outlines some of the common tree impacts and hazards and the issues raised regarding street trees. It outlines how Council may approach resolution of these issues. Refer also to Part B - Section 7.3 of this Strategy.

Table 5 - TREE IMPACT AND ISSUE ABATEMENT STRATEGIES FOR TREE RELATED ISSUES	
Identified Issue	**Description of Approach / Issue Abatement Strategy**
Excessive Leaf or Fruit Drop	Council to maintain a regular and ongoing program of street cleaning targeting areas and seasons where fruit and leaf drop may cause unacceptable issues. Council may consider a gradual change over to more suitable species if such a change is recommended under this Strategy, subject to financial and other work priorities.
Wildlife	Wildlife (including birds, bats, bees, spiders, ants, termites and other insects and caterpillars) that cause problems for residents are not tree issues and will not be considered as a reason to remove or prune a street tree. Where possible and feasible, the management of wildlife issues will be carried out by appropriately trained wildlife/animal officers or pest controllers.
Sap Drop / Sooty Moulds	Falling sap and/or sooty mould from street trees is typically not considered a reason for street tree removal or pruning. These problems are usually seasonal in nature and best managed by protective covers, relocation of parked cars or increased cleaning regimes.
Leaf and Bark Litter Blocking Drainage	Council to maintain a program of street cleaning targeting areas and seasons where fruit and leaf drop may cause unacceptable issues. Council to maintain a regular program of stormwater pit cleaning, particularly in areas where blockage may cause unacceptable inundation.
Monitor trip points	Enlarge tree pit/ planting areas to remove uplifted pavement. Where no other practical method can be employed to prevent this occurring, a regular trip point inspection program will be instigated and pavement replaced or repaired as necessary.
"Tripstop™" jointing system	Install pavement jointing system that helps prevent creation of trip hazards even when minor displacement of concrete footpaths occur due to roots.
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.
Wall cracking and displacement - Bridging Footings	Repair and or replace damaged masonry walls with a pier and beam style of footing that may be able to bridge existing major roots and allow trees to retained with minimal root loss.
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 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.

Table 5 cont. - HAZARD ABATEMENT STRATEGIES FOR TREE RELATED ISSUES	
Identified Issue	**Description of Approach / Hazard Abatement Strategy**
Powerline Clearances	Pruning for powerline clearance is the responsibility of Ausgrid. Only approved Contractors are allowed to work within 3m of power lines. Council can initiate formative pruning to set up form and branching habits that keep tree canopies clear of power lines for much longer and then facilitate easier training of canopies around wires when ABC may be achieved. Trees that are excessively disfigured by clearances pruning should be removed and replaced with more suitable species.
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. This work may also be implemented as part of Development Consents related to adjoining property redevelopment.
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.
Tree Hazards and Failures (both perceived and real)	Council to maintain a documented program of preventative inspection and maintenance of all street trees over 6m tall. (Refer preventative tree maintenance above) This should be done on a rotational basis using the Precincts established under this Plan. Councils shall also initiate a website page that describes typical tree hazards and educates residents that the risks from tree failures are typically very low, but that Council will take all concerns seriously and if necessary undertake inspections using a qualified arborist for any trees specifically identified by a resident as causing concern.

Figure 2.26 - Trees can cause issues, but in many instances these are relatively minor and can be managed without tree removal. When damage is to minor or ancillary structures such as landscape walls, the retention of the tree should be given priority using some of the strategies listed in Table 5. (Photo-Arterra)

2.9 New Development and Management of Street Tree Impacts

New developments can significantly impact on existing street trees adjacent to the development. Tree removal should be a last resort, unless the tree(s) has clearly reached the end of its safe useful life expectancy.

When new development is likely to have an impact on an existing street tree, the developer/ adjoining owner needs to clearly demonstrate that alternative design solutions have been explored to preserve the existing street trees, before being allowed to remove an otherwise healthy street tree.

Driveway Access

Where there is a request to expand an existing driveway or install a new driveway (or other access) to a private property and it requires the removal of a street tree, the following considerations shall be assessed in Council reaching a determination.

- Are there alternatives or options to relocate the driveway elsewhere?
- How significant and prominent is the tree and its contribution to the local streetscape?
- Is the tree healthy and vigorous?
- Are there suitable alternative locations for a replacement street tree?
- Allocation of removal and replacement costs if removal and a replacement tree is agreed.

Tree Protection Measures

Once it has been agreed or conditioned that an existing street tree needs to be protected, the developer/ adjoining owner must ensure that suitable measures are implemented to protect the tree(s) throughout the life of the construction phase. Protection measures shall generally be required to follow the guidelines as outlined in the AS4970-2009 *Protection of Trees on Development Sites*.

All new development must adhere to the Ashfield Street Tree Strategy for any new and replacement street planting. If the new development has demonstrated that the tree must be removed and the removal has been approved by Council, then replacement of the street tree will follow the species selection as outlined in this document. The supply of the tree, the tree pit preparation and the methods of planting the tree shall follow the technical guidelines, specifications and the appropriate details as shown in Part C of the strategy.

Pruning for Site Access

Street trees will typically not be allowed to be pruned for temporary or construction related access. The developer/ adjoining owner must ensure that suitable measures are implemented to protect the tree(s) throughout the life of the construction phase. If no other alternatives are available, the Council may approve minor pruning, in which case this is to be strictly in accordance with AS4373-2007 *Pruning of Amenity Trees*. Pruning is only to be undertaken by qualified arborists (under the supervision of a person with AQF Level 4 or above).

Figure 2.27 - An example of the minimum tree protection that would be required around an existing street tree while work is undertaken on an adjoining property (Photo: Arterra)

Figure 2.28 - Depending on the nature of the development Council may also require suitable temporary tree protection fencing and signage (Photo: Arterra)

2.10 Street Tree Risk Management

Trees are living organisms and will eventually decline as they age. Urban trees are also often growing in harsh and unnatural environments and may be subject to damage or other influences that could lead to increased risk of tree failure. They are also growing in close proximity to people, traffic and structures.

Any tree may fail, and often the causes may not be evident or identifiable before the failure. It is also important to not become overly risk averse. All risks, including tree related risks must be managed in an appropriate and balanced way. When Council manage their tree risks it is important to not only consider the **absolute worst** that could happen if a tree was to fail, but rather more importantly consider what is the **most likely outcome** from a tree failure.

Council shall typically apply a probabilistic method to tree risk assessment that properly quantifies the risk of significant harm from tree failures. Such a system applies established and accepted risk management principles to tree safety management. An example of this sort of system is the internationally recognised 'Quantified Tree Risk Assessment' (QTRA) method that has been developed by Mike Ellison in the United Kingdom. This is the preferred method that the Council will apply to most tree risk assessments.

Firstly, the targets (people and property) upon which trees could fail are assessed and quantified, enabling tree managers to determine whether or not, and to what degree of rigour, a detailed inspection of the trees is required. Where necessary, the tree, or branch, is then considered in terms of both impact potential (size) and the probability of failure. Values derived from the assessment of these three components (target, impact potential and probability of failure) are then combined to statistically calculate the probability of significant harm.

In summary, the Council will maintain a proactive regime to manage the risks associated with its street tree population. In summary the main risk mitigation strategies that the Council shall employ are:-

- any known or identified street tree structural or health issues shall be checked by Council staff in a timely fashion using the QTRA system.
- identified and documented senescent or over-mature street trees shall be targeted for replacement ahead of other less pressing trees.
- general 'windshield' inspections of the street tree population shall be made after any major storm events to check for broken limbs or other serious defects.
- a regular update of the existing street tree inventory is to be undertaken to identify and manage any underlying structural issues that may be evident in street trees as they are inspected and recorded.
- a program of formative pruning for all newly installed street trees is to be implemented to remove obvious structural defects at an early age before they manifest into more serious hazards and when pruning wounds are small and easily sealed over.
- any third party reports of tree failures or structural issues shall be dealt with and inspected in a timely fashion.
- records shall be kept of all of the above to allow reference in the case of any incidents involving injury, or damage.

Figure 2.29 - Trees can and do fail, however, the reality is that most failures do not result in serious injury or damage and it is important to assess tree risks in a balanced, informed and systematic way. It is important for tree managers to consider the acceptable risks that can reasonably be tolerated. It is not realistic to remove all risk, particularly given the substantial benefits provided to the wider community. (Photo: Arterra)

2.10 Transplanting of Street Palms

Ashfield has a unique opportunity. There is a number of palms currently occurring in streets within Ashfield. Some of these are well matured and still have many decades of useful life, but may no longer be part of a legible avenue. This section discusses the policy of transplanting existing palms to other appropriate locations within the Ashfield LGA, as approved by Council.

Although historically used in numerous streets some of those street characters are now substantially changed and the original intention of the palm avenues all but lost. Some palms are also starting to grow into, and cause impacts to, the overhead power lines. It would be a shame to simply remove the trees when they could be relatively successfully transplanted and used elsewhere.

There is an opportunity to relocate some of these existing palms within streets that now have a diluted character and move them into critical streets that have been identified within the strategy. This allows the maintenance of the existing and more important heritage avenues, with palms of similar age and size. It also provides a continued use for the palms where they may provide greater benefits, such as for gateway planting and park embellishment.

Transplanting of the palms must adhere to the technical guidelines and specifications contained in Part C - Section 8.4 Palm Transplants. Typically, palms will only be transplanted and used within the Ashfield LGA. It is not the desire of the Council to allow the palms to be sold for private development or exported outside of the area. It is important the landscape asset is used for the benefit of the local community only, and thereby maintain the heritage and connection with their original locations and use.

The ground conditions, tree pit and methods of lifting, and protecting the palm during the entire phase of the transplant operation will follow guidelines and shall be monitored by an appropriately qualified aborist or landscape professional.

The new location of the Palm must be approved by Council prior to any works occurring.

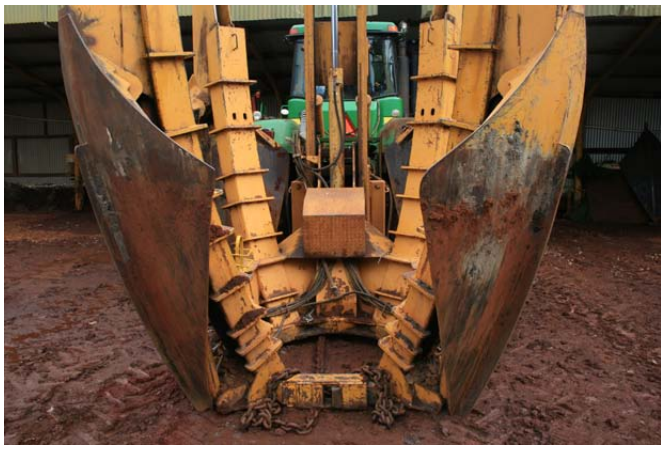
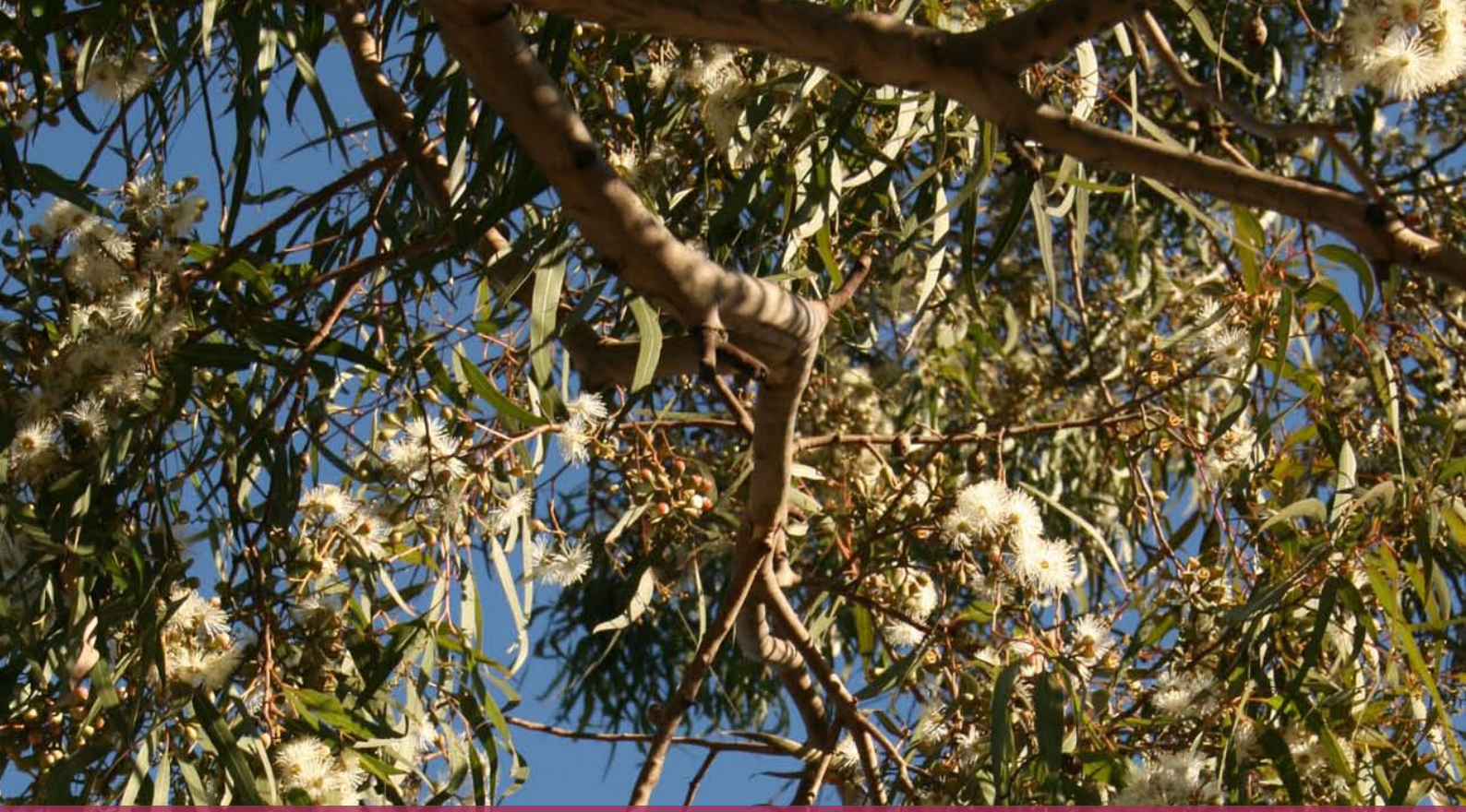


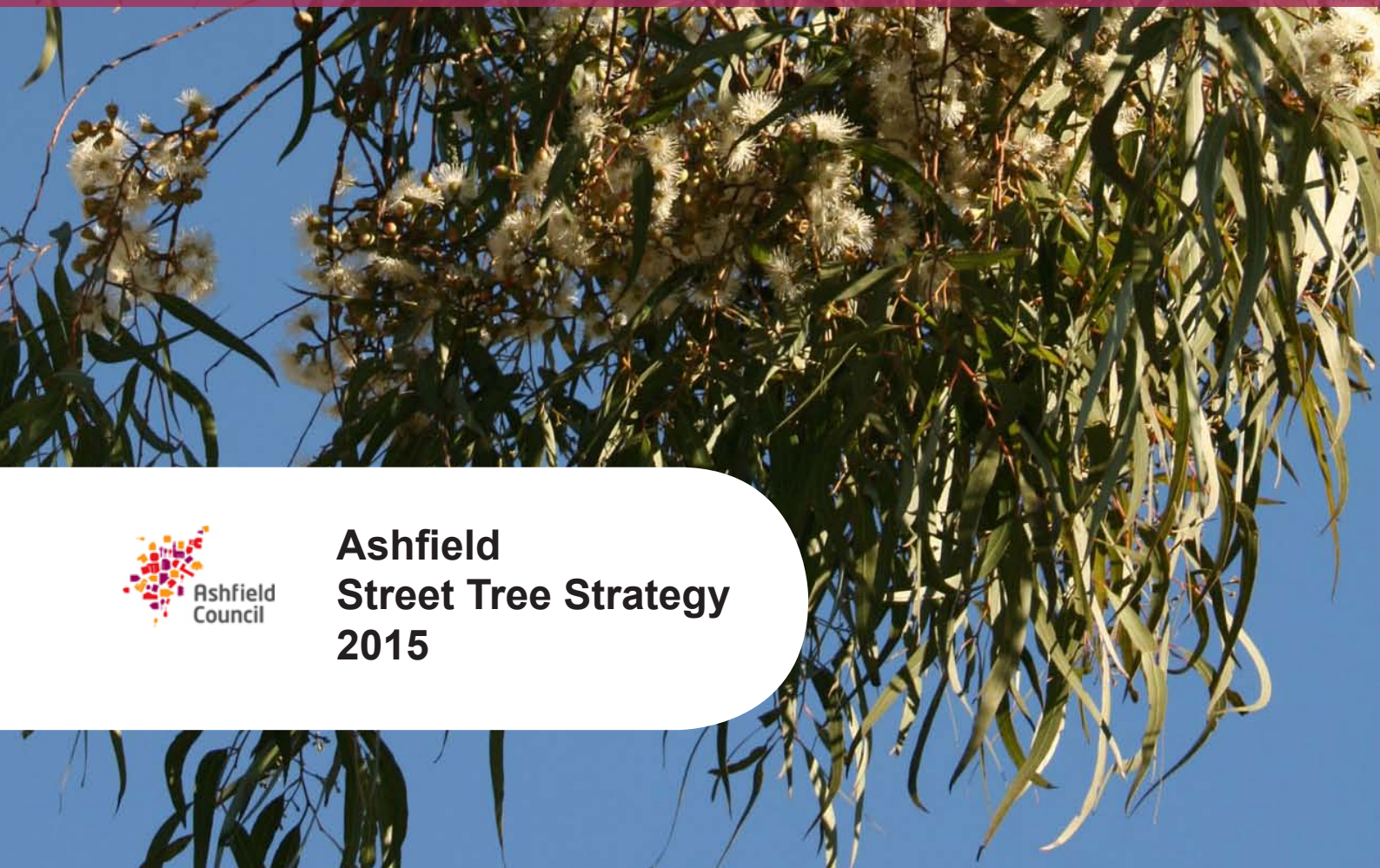
Figure 2.30 - Transplanting palms - an example of a mechanised tree spade that could be used to transplant palms with minimal disturbance or impact to the surroundings (Photo-Arterra)

Figure 2.31- Martin Street, Dobroyd Point- it has taken almost 100 years but now even the slow growing Jelly Palms are causing an issue. A good approach is to transplant these to other areas or undertake ABC. (Photo-Arterra)

Figure 2.32 - Transplanting palms - boxed and craned (Photo-Arterra)



PART B - Street Tree Management Guidelines & Policies



Ashfield Council

Ashfield
Street Tree Strategy
2015

3.0 Trees Species Selection

3.1 Street Tree Selection Criteria

Street trees are long term assets and investments that may live for between 50 to 120 years, so species selection is vitally important. In contrast, most residents will only occupy their houses, on average, for a 5-10 year period.

Most of Ashfield'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 Strategy will follow and continue the existing pattern and species.

However, the Council adheres to the principle of the 'right tree for the right location'. Some exceptions to the above general policy will therefore occur. These include trees and species:-

- that have performed poorly,
- are considered out-of-scale with the street, or
- have proven themselves to be particularly damaging to pavements and other structures 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.

Research has consistently shown that medium to large trees provide the greatest ecological and community benefits in comparison with small trees. They create more canopy spread and shading benefits, absorption of more gaseous pollutants, lower levels of tree vandalism, and achieve higher canopy clearances, than very small trees. 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, which needs to be designed and factored in to any new plantings. However the ultimate benefits to the community are often exponentially increased over their lifetime.

Using the paradigm of 'right tree for the right location', a medium to 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 the urban forest for areas where physical space, overhead wires, parking and traffic restrictions or exposure present overriding factors.

Our key tree selection objective is therefore to ensure the future 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 particular planting location.

However, there is no ‘perfect’ street tree, so every selection will have some compromise between positive and negative impacts. Council needs to make a balanced decision between native and exotic species, deciduous and evergreen species and the ultimate size of the tree.

Council's tree species selection criteria is divided into three main considerations :-

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

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 primary considerations for the proposed street tree selections.

Figure 3.1 - Kensington Street, Summer Hill, one of the numerous historic and consistently planted streets (Photo Arterra)

3.2 Environmental Issues

Some basic environmental considerations in selecting a street tree are outlined below.

Climate

Street trees selected will need to be able to easily tolerate the prevailing temperate and climatic conditions. More importantly is the consideration of microclimate for particular locations. 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.

Street trees selected should be capable of surviving an average drought period in reasonable condition without irrigation or reliance on potable 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 cannot be retrofitted without impacting the trees and requiring major infrastructure changes.

Climate change also dictates that we need to be particularly mindful when selecting future tree species. Typically the trees selected in this Strategy are species that have a reasonable potential to resist and survive increased average temperatures, increased heat-wave conditions and longer drought periods.

Geology & Soils

The underlying geology and soil provides nutrients and water as well as physical support for trees. Soil characteristics such as nutrient levels, drainage and depth greatly influence the potential health and vigour of trees, with some species more sensitive to soil types than others. Ashfield has a mix of soil types, the dominant being a shale-derived clay loam soil which provides favourable growing conditions for most trees providing it is well drained.

Smaller pockets of Hawkesbury Sandstone derived soil are found in the northern parts of Haberfield and in particular Dobroyd Point. These are typically more shallow and sandy soils or sandy loams. This can produce frequent drought-like conditions for trees, unless they are in an area where they can seek out and access the more reliable groundwater reserves. Plants that are subject to prolonged or frequent water stress can be more susceptible to pests and diseases unless they are well adapted to these conditions. Species that can readily adapt to shallow soils will be preferred in these areas. These tend to be the adaptable Australian native species such as *Corymbia sp. Eucalyptus sp. Angophora sp. and Banksia sp.*

We must remember that many areas and streets are also extremely disturbed and have had the original soil stripped and replaced by road construction materials, building debris and landfill materials. Trees that adapt to a wide range of soil types and conditions are preferred in most areas.

Biological Influences

The selected tree species should be resistant to known and commonly encountered pests and disease. A broad mix of species will help reduce the potential impact of a new pest or disease may have on the urban forest. There are a variety of pests and diseases which have been identified in the Sydney area including (but not limited to) Sycamore Lace Bug, Myrtle Rust, Fusarium Wilt, *Armillaria*, and *Phytophthora*. Overseas precedents show that widespread infestations of harmful pests and diseases can have devastating consequences on parts of our urban tree populations.

The selected species should also have a low risk of becoming an environmental weed. Those species with known weed potential due to their ability to readily self propagate shall typically be avoided, particularly when near bushland.

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 native vegetation corridors or open spaces. Although native trees are preferable in this regard, exotic species also have some habitat value and should not be discounted altogether. A mix of native and exotic species may be used where appropriate.

Other Physical Influences

It is particularly important the tree species selected can tolerate vehicle emissions, particularly in areas traversed by busy arterial roads that are subject to high levels of photochemical pollution produced by vehicle exhaust systems. 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.

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 often compacted and highly modified soil conditions. They also need to tolerate the increased radiant heat loads often imposed by these fully paved environments.

Species Diversity

Species diversity is a critical component in managing a 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 outbreaks, or from impacts such as climate change and prolonged droughts. Increased diversity also helps to support more diversity of fauna, by providing a variety of food and habitat throughout different times of the year.

Native versus Exotic

Both native and exotic tree species have their strengths and weaknesses for use as a street tree. Ultimately the Street Tree Strategy aims to strike an appropriate balance between the use of native and exotic tree species.

There is frequently much community 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 have often substantially changed resulting in highly disturbed soil profiles, compaction, higher nutrient status, altered drainage patterns and paved surfaces, etc. Often these native trees are also not highly suited to use as urban street trees.

Many of the familiar natives such as *Eucalyptus* species are from open and drier vegetation communities, and do not always perform well as a street tree in an urban area. Whilst they tend to be adaptable to low nutrient soils, they usually require excellent drainage and have low tolerance to interference with their root system, including compaction, waterlogging and human damage. Native trees can also display a somewhat more variable habit or form that makes it difficult to establish and maintain clearances and a formal planted avenue, particularly when planted in close proximity to roads and power lines.

Exotic trees (ie. being trees that originate from outside of Australia) do provide an important advantage in the urban context in that they include many deciduous trees, which provide greater solar access to the streets through the winter months. There are only a limited number of native species that are deciduous and most of these lose their leaves in spring or early summer (an inheritance of their monsoonal origins). *Toona ciliata* (Red Cedar) and *Melia azedarach* (White Cedar) are the closest native trees that are winter deciduous but both suffer from severe pest problems under urban conditions and can be unreliable performers.

An advantage of using exotic species is that the quality of stock is usually very good due to sometimes hundreds of years of selective breeding. In addition, some are pollution tolerant, more resilient to root area compaction and damage during construction and repair works. The canopy shape and branch architecture of many exotics also facilitate the pruning and shaping required for urban infrastructure within narrow footpaths and under wires.

3.3 Functional Issues

Species selected for street tree planting also need to fulfill certain functional criteria to ensure successful establishment and reduced ongoing maintenance and management issues. Some important functional criteria are outlined below.

Safety and Maintenance Considerations

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 more heavily used paved environments.

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

The selected species will not be 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 in all trees. Some trees that are particularly renowned for having brittle branches and regular branch drop will typically be avoided for use as a street tree, particularly on major roads.

Species that are renowned for large root flares or particularly large root systems that have the potential to cause pavement uplift will be avoided. We must bear in mind that no guarantee can be given that a particular street tree species will not interact with nearby kerbs and pavements. The Council may also investigate the use of alternative footpath materials and planting pit designs to minimise tree root / paving interaction when planting medium to large trees.

Above and Below Ground Infrastructure

One of the greatest functional issues to consider with street tree selection is the presence of overhead power lines. One solution to this problem is to select very small tree species, which is viable for narrow streets, however with wide streets these small trees are often out of scale with the surrounding streetscape. The installation of Aerial Bundled Conductors (ABC) allows for reduced line clearance resulting in less pruning, and in turn, less impact on the tree canopies. Where ABC has been installed, larger trees can be planted and the canopy extend into and past the wires. A number of streets warranting the installation or expansion of ABC are outlined in Section 7.10.

High pressure gas mains and electricity easements sometimes prohibit establishment of trees due to the depth of the services and potential liabilities if the services are 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 on its merits to determine the feasibility of establishing the trees with consideration to underground services and structures.

Verge and Footpath Widths

The width of a verge and footpath is an essential consideration in the selection of an appropriate tree species and street tree planting detail. A small 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 and the LGA's canopy coverage. Conversely a tree with too large an ultimate size for the width of the footpath can become both an expensive maintenance burden, and a danger to pedestrians and public and private infrastructure.

Tree Species Availability and Performance

Proven performance of the species under the environmental conditions of the locality is vitally important. New species should be trialled on smaller scales before implementing their widespread use. Similarly, premature failure in one given situation should not necessarily rule out further trials being undertaken of particularly promising new species.

The selected plant species must be able to be commercially grown and available in a range of suitable sizes 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.

Figure 3.2 - Croydon Road, illustrating excellent example of consistent modern day street planting (Lagerstroemia indica) that works well even under wires. (Photo-Arterra)

Many of the costs associated with management of trees in the urban environment are at the early establishment 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.

3.4 Aesthetic & Design Issues

Tree Form and Scale

Tree species will be selected so that the ultimate mature size of the tree canopy is appropriate to the particular street giving consideration to the site constraints, such as verge width, overhead power lines, building alignments and vehicle clearances. Council will use the largest appropriate species possible for the given location.

Selected species should have an appropriate and predictable form, usually with an upright trunk and stable branch structure. Street trees need to have a form that allows traffic and pedestrian movements easily around and under the tree.

Tree Type

The street tree list includes both evergreen and deciduous trees. Evergreen species provide year round screening, greenery and shelter from winds. Deciduous trees provide seasonal interest whilst maximising summer shading and winter light. This is particularly relevant for buildings located on the southern side of a narrow street with small set backs.

The Ashfield LGA has only a few streets with remnant palm tree plantings. They are typically very space efficient, contribute less to view impacts, and provide or continue a distinctive streetscape character. Whilst palms can be useful trees in a street, their continued and strategic use will be limited due to limited canopy coverage, potential pest and disease influences and the need for regular spent or dead frond removal.

The best and most historically significant streets will typically be targeted for their continuation. Elsewhere they may be phased out over time.

Figure 3.3 - Although fruit trees are a worthy aspiration they are better placed in private gardens or designated community based gardens. The canopy provided by a medium sized street tree has far wider community benefits and should be the priority (Photo Arterra)

3.5 Fruit Trees

The desire for planting fruit trees in a verge often arises, particularly in built up urban areas. This could be where residential allotments are small and open space areas are often limited to confined courtyards or a cultural desire to plant trees such Olive Trees. Whilst fruit trees can be highly desirable, they are not typically appropriate for use as urban street trees due to a range of factors which are outlined below. It is better to accommodate the desire for edible fruit trees within either individual private yards or in designated 'community gardens' where there is greater freedom and their management obligations are clearly defined.

The main implications in using fruit trees as street trees are: -

- A fruit tree is usually small growing, and does not achieve the desired and endorsed urban tree canopy outcomes. They also tend to be relatively short lived compared to many other tree species that would otherwise be utilised. Often a fruit tree only has a productive life for the production of fruit of 15 to 25 years before it is replaced in an orchard situation.
- Generally speaking, for a fruit tree to successfully grow and produce edible fruit they require very favourable growing conditions. Typically, urban trees face a much harsher growing environment than is suited for a fruit tree to grow, thrive and produce good fruit.
- The level of maintenance required for a fruit tree is much greater than many other species of trees. Most fruit trees need regular and expert pruning and fruit thinning to succeed. The onus of cleaning up spoiled fruit, spraying for pests and diseases, etc. and the ultimate responsibility and liability regarding the fruit is also unclear, and can lead to numerous legal complications. Owners who may diligently tend to the tree initially may also move away, and maintenance falls back on the Council.
- The financial cost involved to maintain and manage a fruit tree would ultimately be greater and would fall back to Council, even if residents initially offer to maintain the trees.

Although Council do not typically support the use of fruit trees for street tree planting, as outlined above, there may be some special circumstances when a fruit tree may be planted. Ultimately the decision to plant a fruit tree will be determined by Council on a case-by-case basis, and only when the other overall objectives of the Street Tree Strategy are not compromised and canopy coverage in the street is already well catered. Refer also to comments under Unique Planting Opportunities in the following section.

3.6 Unique Planting Opportunities

With any community and area as historically and environmentally diverse as Ashfield, there will often be some small streets, planting islands, roundabouts and special circumstances that permit or dictate variations to the normal street planting.

Often these are manifested in small, left over areas or isolated street widenings, resulting from atypical street intersections or other such infrastructure. These 'atypical' areas and situations may present unique opportunities to introduce or continue trees that are different, are features or are species that are not normally considered appropriate to most street tree locations.

These unique spaces and planting opportunities should be celebrated. They may allow isolated use of larger or civic-scaled trees, incorporation of surrounding gardens or use of trees that are no longer common in our streets. It is not practical for the Street Tree Strategy to identify or document every one of these circumstances.

Council shall consider special circumstances (either existing or created in the future) on their merits and shall retain, protect and continue any existing unique and special street trees in these locations, as long as they don't create unreasonable hazards or environmental impacts.

Figure 3.4 - Variegated Figs at the corner of Frederick Street and Liverpool Road in Ashfield. There are always unique areas with larger spaces that would allow more unique or special civic trees to be planted. These opportunities should be embraced (Photo Arterra)

Figure 3.5 - Areas such as Palace Street, Hurlstone Park, provide a unique opportunity to include more civic-scaled street planting that will provide long term character and a massive contribution to the urban canopy coverage of the area (Photo Arterra)

3.7 Master Species Listing

The following schedules provides a list of the proposed species to be used in the streets of Ashfield. The listing is divided into native and exotic tree species and delineates deciduous from evergreen species. These broader categories are further broken down into small medium and large trees. It is important to note that some species may have very wide applications, while others will only be used in very limited or specific locations.

There are a total 66 street tree species proposed for ongoing use in the LGA:-

Tree Origin
- 29 (42.4%) are exotic species;
- 38 (57.6%) are native species of which;
- 26 (18.2% of all tree types) are endemic to the Sydney area.

Tree Types
- 47 (71.2%) of the species are evergreen trees,
- 15 (22.7%) of the species are deciduous trees,
- 4 (6.1%) of the species are palms.

Tree Sizes
- 12 (18.2%) are large trees
- 31 (47.0%) are medium tree,
- 23 (34.8%) are small trees.

As mentioned, some species will have widespread application, while others will be restricted to more isolated and specialised circumstances. A summary of the use of the proposed species and the anticipated balance of their application within Ashfield's streets is provided below.

Tree Origins	Approx % of streets where they are proposed
Native	70% (36% local)
Exotic	30%

Tree Sizes	Approx % of streets where they are proposed
Small	25%
Medium	47%
Large	28%

Tree Type	Approx % of streets where they are proposed
Evergreen	78%
Deciduous	21%
Palms	2%

Table 6 - PROPOSED MASTER TREE SELECTION LIST FOR ASHFIELD LGA

Botanical Name	Common Name	Origin	Foliage	No. of streets used
LARGER SIZED TREES				
Araucaria columnaris	Cooks Pine	exotic	evergreen	gateways
Araucaria cunninghamii	Hoop Pine	exotic	evergreen	2
Brachychiton discolor	Lacebark	native	deciduous	1
Corymbia maculata	Spotted gum	endemic	evergreen	16
Eucalyptus paniculata	Grey Ironbark	endemic	evergreen	4
Ficus microcarpa var. hillii	Hill's Weeping Fig	endemic	evergreen	2
Ficus rubiginosa	Port Jackson Fig	endemic	evergreen	5
Lophostemon confertus	Brush Box	native	evergreen	62
Schinus areira	Peppercorn Tree	exotic	evergreen	2
Syncarpia glomulifera	Turpentine	endemic	evergreen	1
Ulmus parvifolia 'Todd'*	Chinese Elm*	exotic	deciduous	7
Waterhousea floribunda 'Green Avenue'	Green Avenue Lilly Pilly	endemic	evergreen	22

Table 6 - PROPOSED MASTER TREE SELECTION LIST FOR ASHFIELD LGA (cont.)				
Botanical Name	**Common Name**	**Origin**	**Foliage**	**No. of streets used**
MEDIUM SIZED TREES				
Acacia binervia	Coastal Myall	endemic	evergreen	3
Acmena smithii	Creek Lilly-Pilly	endemic	evergreen	1
Angophora costata	Sydney Red Gum	endemic	evergreen	14
Angophora floribunda	Rough-barked Apple	endemic	evergreen	2
Banksia integrifolia	Coast Banksia	endemic	evergreen	3
Caesalpinia ferrea	Leopard Tree	exotic	deciduous	16
Casuarina glauca	Swamp She-Oak	endemic	evergreen	3
Corymbia eximia	Yellow Bloodwood	endemic	evergreen	12
Cupaniopsis anacardioides	Tuckeroo	endemic	evergreen	3
Elaeocarpus eumundi	Eumundi Quandong	native	evergreen	21
Eucalyptus haemastoma	Scribbly Gum	endemic	evergreen	2
Eucalyptus mannifera cv.	Brittle Gum	native	evergreen	2
Eucalyptus robusta	Swamp Mahogany	endemic	evergreen	4
Fraxinus pennsylvanica	Green Ash	exotic	deciduous	3
Glochidion ferdinandi	Cheese Tree	endemic	evergreen	3
Harpullia pendula	Tulipwood	native	evergreen	13
Jacaranda mimosifolia	Jacaranda	exotic	deciduous	2
Koelreutaria bipinnata	Chinese Rain Tree	exotic	deciduous	6
Lagerstroemia indica cv.	Crepe Myrtle	exotic	deciduous	15
Liriodendron tulipifera	Tulip Tree	exotic	deciduous	1
Melaleuca bracteata	Black Tea Tree	native	evergreen	5
Melaleuca leucadendra	Weeping Paper Bark	native	evergreen	2
Melaleuca styphelioides	Prickly Paperbark	endemic	evergreen	5
Phoenix canariensis	Canary Island Date Palm	exotic	palm	1
Pyrus ussuriensis	Manchurian Pear	exotic	deciduous	6
Robinia pseudoacacia 'Frisia'	Black Locust	exotic	deciduous	3
Sapium sebiferum	Chinese Tallow Tree	exotic	deciduous	3
Syzygium luehmannii	Riberry / Small-leaved Lilly-Pilly	native	evergreen	1
Syzygium paniculatum	Brush Cherry/Magenta Cherry	endemic	evergreen	10
Tristaniopsis laurina	Water Gum	endemic	evergreen	28
Zelkova serrata 'Green Vase'	Green Vase Zelkova	exotic	deciduous	16

Table 6 - PROPOSED MASTER TREE SELECTION LIST FOR ASHFIELD LGA (cont.)				
Botanical Name	**Common Name**	**Origin**	**Foliage**	**No. of streets used**
SMALL TREES				
Acmena smithii var. minor	Dwarf Creek Lilly-Pilly	endemic	evergreen	1
Angophora hispida	Dwarf Apple	endemic	evergreen	5
Backhousia citriodora	Lemon Scented Myrtle	native	evergreen	12
Banksia serrata	Old Man Banksia	endemic	evergreen	1
Buckinghamia celsissima	Ivory Curl Flower	native	evergreen	7
Butia capitata	Jelly Palm	exotic	palm	7
Callistemon viminalis cv.	Bottlebrush	native	evergreen	19
Camellia sasanqua	Camellia	exotic	evergreen	10
Elaeocarpus reticulatus	Blueberry Ash	endemic	evergreen	2
Fraxinus griffithii *	Evergreen Ash*	exotic	evergreen	1
Gordonia axillaris	Fried-Egg Plant	exotic	evergreen	6
Koelreutaria paniculata	Golden Rain Tree	exotic	deciduous	3
Livistona australis	Cabbage-tree Palm	endemic	palm	gateway (option)
Magnolia grandiflora 'Exmouth'	Bull Bay Magnolia	exotic	evergreen	3
Murraya paniculata	Mock Orange	exotic	evergreen	5
Photinia x fraseri 'Robusta'	Photinia	exotic	evergreen	3
Prunus cerasifera 'Nigra'	Purple Leaf Cherry	exotic	deciduous	6
Pyrus calleryana 'Chanticleer'	Callery Pear	exotic	deciduous	1
Synoum glandulosum	Scentless Rosewood	endemic	evergreen	7
Tibouchina lepidota 'Alstonville'	Lasiandra	exotic	evergreen	3
Washingtonia robusta	Mexican Fan Palm	exotic	palm	gateway (option)
Xanthostemon chrysanthus	Golden Penda	native	evergreen	2
Xylosma senticosum	Xylosma	exotic	evergreen	3

* *Fraxinus griffithii* (Evergreen Ash) and *Ulmus parvifolia* (Chinese Elm) have some environmental weed potential and their use will be more restricted and in areas that are typically not adjacent to any bushland. To further reduce this risk the cultivar *Ulmus parvifolia* 'Todd' has been specified as this is a superior street tree form and reportedly a sterile variety.

4.1 General Design Guidelines

As a collective asset, street trees are considered and planted to reinforce the public realm and various landscape design principles. In a heavily urban context like Ashfield the emphasis is commonly to:-

- Provide more consistency and visual uniformity for each street;
- Enhance the local character of distinctive streets or areas by introducing a precinct based planting approach;
- Reinforce and celebrate key corridors and nodal intersections;
- Enhance key cultural and commercial sites and
- Enhance habitat provision and biodiversity
- Allow the adjoining landscape to take precedence over the street tree planting where existing parks or bushland adjoin the street.

In adhering to these broad design principles consideration must be given to site specific conditions that will determine an individual tree's placements. These include footpath and verge widths, sight-line clearances, underground utilities, overhead wires etc. An overview of these considerations is provided in the following pages. Some of these issues are also outlined in more specific detail in Appendix 8.2 Street tree supply and installation specifications and Appendix 8.3 Typical street planting details.

Consistency and Visual Uniformity for Streets

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 special streetscapes. However, they are often more difficult for Council to manage and may not be appropriate in many locations.

In many 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 both scale and growth habit.

When Mixed Species are Specified

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 typically more difficult with highly mixed species streets.

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

Figure 4.1 - Mount Street, Hurlstone Park is an example of where consistent species have been used to good effect along the street. (Photo - Arterra)

deciduous and evergreen trees. Attempts may 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.

Increased Canopy Coverage

Subject to verge width and constraints such as overhead power lines and building setbacks, larger growing street trees will be selected wherever possible. Too often small trees are planted on both sides of a street, when a larger growing tree could have been planted on the non-wire side of the street. A larger canopy tree contributes to the aesthetics of the street and overall environmental performance.

Planting Adjacent to Parks

Many of Ashfield's parks have very prominent boundary tree canopies that often contribute or even extend over the adjoining streets. Introduction of competing street trees along these streets is usually discouraged in order to avoid intrusive impacts on the park and minimise any future canopy conflicts. This also allows larger and more major trees along the park edges to 'read' from the street.

Figure 4.2 - Street planting inroad planting of large evergreen trees provide excellent canopy coverage and streets that are cooler, shade cars and roads and are more pleasant to walk along during hot summer periods (Photo-Arterra)

General Solar Access

Street tree species should be selected, where appropriate, that will provide an appropriate level of solar access to dwellings. This applies most prominently to the more urban areas and terrace houses and where there are smaller dwellings on the southern side of the carriage ways.

This becomes less of a consideration where lots are larger and houses are set well back from the street. In these instances the street trees typically have smaller influences and the residents have an opportunity to manage and consider their sunshine and shade requirements within their own gardens and open areas.

Unreasonable requests for tree removal or excessive pruning for solar access will typically be rejected by Council.

4.2 Solar panels or Digital Data Receiver Access Considerations

Council shall consider this factor when planning any new tree planting. If a resident already has legally installed solar panel collectors or a digital data receiver and their performance is significantly diminished by a street tree, the pre-existing arrangement should stand. That is, was the tree there first or was the receiver/ panel prior to any street tree planting.

Even if the tree was small when the panels or receiver were installed, if it was reasonable for the mature size of the tree to be estimated and considered, then Council shall not be expected to prune the tree to maintain it at a smaller size.

If a resident currently relies on solar access for the operation of such a device Council will typically avoid planting a new tree that will unreasonably shadow the device. They may do this by repositioning the tree or planting a smaller tree species. Similarly, if an existing street tree pre-dates the installation of a solar collection or digital receiver device, the Council will typically not prune or remove the tree to provide for increased solar access. The same will apply for any replacement tree planting. If the tree was originally large and shadowed the receiver, any replacement tree shall be also allowed to reach similar proportions without Council being expected or required to prune it.

Figure 4.3 - Solar collectors (Photo-Arterra)

4.3 A Precinct Based Approach

To aid in the overall management of street trees in the LGA and to allow maintenance programs and choices to be provided based on consistent and related streets, a number of discrete precincts for the LGA have been established. A vast multitude of factors have driven the precinct breakups. Twelve (12) precinct areas have been delineated based on the following factors:-

- Reasonably consistent street types, widths and residential characters that broadly define the particular area.
- Key heritage conservation area boundaries.
- Precincts that are neither too big or too small so that they can be presented with reasonably consistent scales and frames of reference.
- Precincts responding to major physical divisions such as the rail lines, as the streets often read and function completely differently on either side of such major divisions.
- Respect, as much as reasonable, the preset 'suburb' boundaries so that residents can still easily relate to the Precinct names and definitions.
- Council's desire for a maximum of 12 precincts which is a reasonable operational concern and objective. This too also drives having precincts that are neither too big or small so that the trees can be managed within similar time frames and resources on a 12 or 24 month rotational program.

Opposite is a list of the precincts that have been generated to facilitate the preparation, ongoing management and efficient communication of the STS initiatives. It also outlines their relationships by area and number of streets.

Table 7 - PRECINCTS AND THEIR BASIC STATISTICS

PRECINCT NAME	Area (ha)	Area (%)	Number of Assessed Street Sections	Number of Streets (% of total)
01. Ashfield Town Centre	45.1	5.4%	23	7.7%
02. Ashfield North	124.5	15.0%	37	12.4%
03. Ashfield South	101.6	12.3%	34	11.4%
04. Croydon North/ Ashfield West	88.3	10.7%	41	13.7%
05. Croydon South/ Croydon Park	59.1	7.1%	26	8.7%
06. Croydon Village	2.6	0.3%	7	2.3%
07. Dobroyd Point	94.5	11.4%	24	8.0%
08. Haberfield	137.5	16.6%	40	13.8%
09. Haberfield Village	4.5	0.5%	2	0.7%
10. Hurlstone Park	53.6	6.5%	22	7.6%
11. Summer Hill	111.9	13.5%	41	13.7%
12. Summer Hill Village	5.8	0.7%	2	0.7%
Grand Total	829.1 (8.291 km2)		299	

Figure 4.4 - Some streets and areas are influenced heavily by the history, land use and character of the area and the street planting needs to respect and reinforce the precinct objectives. Similarly new tree planting can help to define special qualities for precincts that don't currently have such character. (Photo -Arterra)

4.4 Street Typology Summary

The street typology of Ashfield LGA is extremely consistent across most of the precincts. There are always some exceptions but on the whole most roads have a verge that is approximately 2.4-3.5m wide with a grassed strip adjoining the road carriageway and a concrete pedestrian footpath close to the property boundary. Very surprisingly there are very few streets with verge widths in the 3.5m-5.0m range. There are a few streets that are very narrow and usually have fully paved verges. These are often difficult to plant and often represent the streets that currently have little or no street tree planting. Where footpaths are fully paved it is usually related to a narrow verge or a strip shopping or commercial area. Importantly there are a number of streets with very generous verges in excess of 5m in width with matching generous grassed areas that can, and often do, support the planting of larger trees. These should be treasured and continued.

In summary the LGA has:-

- 5% streets with verges >5m wide (considered large).
- 3% streets with verges between 5 and 3.5m wide (considered medium).
- 79% streets with verges between 3.5 and 1.8m wide (considered small) with the majority of these being closer to the 3.0 - 3.5m width.
- 12% streets with verges less than 1.8m wide and would be considered very narrow and potentially unsuitable for street tree planting.

Table 8 - EXISTING VERGE TYPE STATISTICS

Verge Type / Tree Surround Type	Number of Streets	% of Streets
Grass and Path	192	64.2%
Full Paved	105	35.1%
Grass Only	2	0.7%
Mulch/Garden	0	0.0%
Grand Total	299	100.00%

4.5 Locating Street Trees

There are many limitations to the positioning of street trees on footways immediately behind the kerb. Distances from infrastructure elements such as intersections, pedestrian crossings, 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.

Street Tree Spacing

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

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

Verge and Footpath widths

For the purposes of street tree planting implications, the Council footways or verges are divided into four categories:

- very narrow - less than 1.5m and usually fully paved;
- narrow – 1.5 to 3.5m may be fully paved or with a narrow grass strip;
- medium – 3.5 to 5.0m and usually a combination of grassed strip and paved footpath;
- wide - greater than 5.0m and usually a combination of large grassed strip with or without a paved footpath.

Where verges have grassed portions, the tree shall typically be 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. It also allows the tree to develop a more natural and radial root pattern. In this instance the 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).

Table 9 - EXISTING VERGE WIDTH STATISTICS BASED ON PRECINCT

Precinct	Large (>5m)	Medium (3.5-5m)	Small (<1.8-3.5m)	Narrow (<1.8m)	Totals
01. Ashfield Town Centre	-	2	21	-	23
02. Ashfield North	1	-	26	10	37
03. Ashfield South	-	2	26	6	34
04. Croydon North/Ashfield West	4	-	30	7	41
05. Croydon South/Croydon Park	3	-	22	1	26
06. Croydon Village	-	-	5	2	7
07. Dobroyd Point	-	-	24	-	24
08. Haberfield	2	1	36	1	40
09. Haberfield Village	-	-	2	-	2
10. Hurlstone Park	4	5	11	2	22
11. Summer Hill	2	-	33	6	41
12. Summer Hill Village	-	-	1	1	2
TOTALS	16	10	237	36	299
	5%	**3%**	**79%**	**12%**	

Laneways Typically Not Suitable for Planting

The Ashfield LGA comprises a number of lane way / rear access style streets, which are concentrated in the suburbs of Summer Hill and Ashfield. In almost every situation, there is no existing street trees, nor any opportunity for street tree planting. Given the narrow width of the lane ways and very narrow verge (if any) there shall be no street tree planting within lanes recommended.

Sight Lines and Distances from Infrastructure and Signage

It is important that trees are placed within a street with regard to existing or proposed road elements and infrastructure. It is important that trees are placed within the streets to maintain acceptable clearances and sight lines to intersections, signs, light poles, crossings and other road elements. The following table outlines the standards that Council will typically apply with regard to tree placement. These dimensions are for typical streets and may need to be increased depending on the design speed (speed limits) of more major streets.

Council may consider alterations to these dimensions when the placement of the tree can be shown to not adversely affect safety or the future integrity of nearby infrastructure. Consideration shall also be given to pre-existing street trees and site conditions. Council will not normally remove a mature tree that has historically been planted within these distances unless the impacts of retaining the tree are found to be unacceptable and can not be otherwise mitigated through appropriate pruning.

Table 10 - TREE PLACEMENT GUIDELINES

Road and Layout Element	Typical Street Tree Planting Clearance
Street intersection - distance from projected line of the intersecting kerb line on approach side	10m
Street intersection - distance from projected line of the intersecting kerb line on non-approach side	7m
Stormwater inlet pit - distance from nearest edge of pit structure	2m
Driveway - distance from driveway edge on approach side	3m
Driveway - distance from driveway edge on non-approach side	2m
Traffic Lights - distance from signal pole on approach side	> 10m
Pedestrian crossings - distance from outer edge of crossing on either side	10m (on approach) 7m (on departure)
Street lighting pole - minimum distance from pole to centre of tree trunk (unless there are other light sources to consider)	3m
Cycle ways - clearance from edge of cycleway path to centre of tree trunk	0.5m
Street and traffic signs - minimum distance from sign to centre of tree trunk or obscuring foliage	3m
Parking signs - minimum distance from sign to centre of tree trunk or obscuring foliage	2m

Where possible, street trees should be located at least 3m (or 5m on 80km/h roads) from the edge of nearby travel lanes, but only when the verge is currently wide enough for this to reasonably occur. The width of roadside opportunities for parking or otherwise marked travel lanes can be taken into consideration when assessing this distance and does not necessarily mean the tree needs to be 3m from the edge of the "kerb". This distance is also a measurement to the centre of the new tree and not to the estimated edge of future trunk growth.

Bus Stops

Clearances and setbacks for trees near bus stops are to be determined typically on a case by case basis.

When a bus stop is proposed by other authorities to be installed in a street that currently has not had a bus stop or a bus stop is proposed to be relocated within a street, the existing street trees should be considered as a material constraint.

Existing street trees should not be unreasonably removed to facilitate a new bus stop unless all other possible alternatives have been explored. Where a bus stop is positioned adjacent to an existing street tree, the impacts to the trees roots and canopy shall be minimised to maintain the trees health and vitality.

Tree Pit Dimensions

As an absolute minimum, an access width of 900mm is needed between the back of any tree pit and the building or boundary line. Since the minimum practical width of any tree pits is usually 600mm, the minimum width of a footpath that can be safely planted is 1500mm (600mm plus 900mm). This is also subject to the following other conditions: -

- that there are no obstructions overhanging the building line from the front yard of the adjacent property (eg. other trees, shrubs, vines, awnings) and;
- that the lower branches of the tree can be pruned to a height of at least 2400mm.

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

4.6 Trees & Power Lines

Priority shall be given to some streets for ABC installation to allow larger trees to be planted or continue the growth of newly planted trees unimpeded by the wires. The table in Section 7.10 lists the streets that have been identified as a priority for a continued ABC program.

Priority is typically given to streets to allow larger trees to be planted or to allow existing trees to continue unimpeded under wires before disfiguring pruning is undertaken. Trees that have already been trained around the wires should not be targeted, as the conversion of these streets will have limited benefits.

Relevant Legislation Regarding Powerlines and Roads

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 Ashfield LGA contains several 'State' roads that fall under the jurisdiction of the Roads and Maritime Services (RMS). Most of these roads are identified and noted in Section 5 - Main Road Corridors.

Ausgrid is the state owned corporation responsible for the electricity network that provides power to Sydney homes. Under the NSW Electricity Supply Act 1995 No.94, Ausgrid are responsible for ensuring street trees (as well as private property trees) are trimmed to maintain a minimum safety clearance between the tree and power lines. The typical safety clearance distance is 1.5m around bare, low voltage overhead wires and 2m around the power poles. This safety clearance distance may be greater on higher voltage lines.

If trees are within 3m of Ausgrid power lines, only vegetation management workers authorised by Ausgrid are permitted to carry out the pruning work. In theory, 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 is also supposed to employ arborists to monitor standards and ensure they are maintained.

Periodically Ausgrid may amend their policies, environmental codes and work practices. Recent examples of this include their adoption in 2015 of the Vegetation Management Common Requirement (Version 7.4) dated October 2014 and the Private Service Wire Defect Notifications Policy 2015. If residents receive correspondence from Ausgrid, or their authorised representatives, about requests for the pruning of trees and vegetation around private service wires, they should contact Ausgrid directly for any further information or clarification required. Council's Customer Service staff or Tree Management staff may also be able to provide limited advice and/or assistance to resolve resident's concerns.

Figure 4.5- Deakin St, Haberfield - example of ABC installation (Photo - Arterra)

Figure 4.6 - The installation of ABC cabling above street trees may assist with retaining trees that may otherwise need to be heavily pruned or removed as a result of power line clearances. (Example - Martin Street, Dobroyd Point) (Photo - Arterra)

Figure 4.7 - The installation of ABC cabling above street trees is an excellent way to achieve medium sized trees while maintaining the health, vigour and form of the trees. Formative pruning can achieve appropriate branching structures well before the lines are reached. This is a successful example of trees and ABC on the north side of Gardeners Road, in Rosebery (Photo - Arterra)

Installation of 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. Ashfield Council and Ausgrid maintain an ongoing program to convert some conventional overhead wires to Aerial Bundled Conductors (ABC), however the cost of this conversion is considerable and is not favoured by Ausgrid due to the reduced life expectancy of the cables.

4.7 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 footpath or verge. This also allows trees to be planted in streets that have narrow grass strips or where overhead wires would otherwise present great challenges to achieving successful tree planting.

Any in-road street planting proposed will need to take into consideration the existing traffic and signage visibility, 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 towards the tree planting together with adequate soil volumes, road pavement protection, and trunk protection where necessary via bollards or preferably barrier kerbs.

Table 16 in Section 7.11 lists the streets that have been identified as streets having an option to plant within the road carriageway. The objective here would be to plant larger canopy street trees that are away from overhead power lines and provide a more aesthetically pleasing street. This also allows trees to be planted further away from adjoining houses, reducing any impact of street trees on adjoining residents. Many of these opportunities could be combined with rearrangement of parking and provisions of perpendicular or angled parking to minimise any parking loss.

Water Sensitive Urban Design (WSUD) opportunities have also been identified, subject to the installation of tree pits, drainage and rain gardens parameters.

Note, the viability of in-road planting / WSUD installation to each of the streets identified is **subject to further investigation** and detailed design including the confirmation and location of underground services, drainage issues, and traffic considerations.

Figure 4.8 - Photomontage of Hanks Street, Hurlstone Park, illustrating the concept of pocket median planting of larger trees to shade and soften the street while maintaining access for driveways. (Image - Arterra)

Figure 4.9 - Greater use of in road planting can achieve substantial outcomes for canopy coverage and tree planting away from wires. It also can help to calm traffic and provide shade for parked cars. [Hughes St,Ashfield]

Figure 4.10 - The idea of pocket medians has been successfully used in other areas such as shown here at Rawson Street, Epping (Photo-Arterra)

Figure 4.11 Photomontage of Wood Street, Ashfield Town Centre. (Image - Arterra)

4.8 Narrow Streets & Verges

Council shall typically adopt new planting pit design and practices that are closer to best practices for tree planting, particularly for streets where space is constrained. This should improve overall plant establishment and result in healthier and more robust trees. It should also reduce infrastructure damage and resident complaints in the future.

Verges with less than 1.5-1.8 metres width occur in some streets. This becomes an acute issue for street tree planting in regard to pavement damage, pedestrian access, and impact with adjoining houses and overhead wires.

If the verge width is less than 1.5 metres from back of kerb to boundary, the following options are proposed to be adhered to in the future:-

(i) If currently no trees (or only a very small number of trees) then discontinue tree planting unless it can be done as in-road planting;

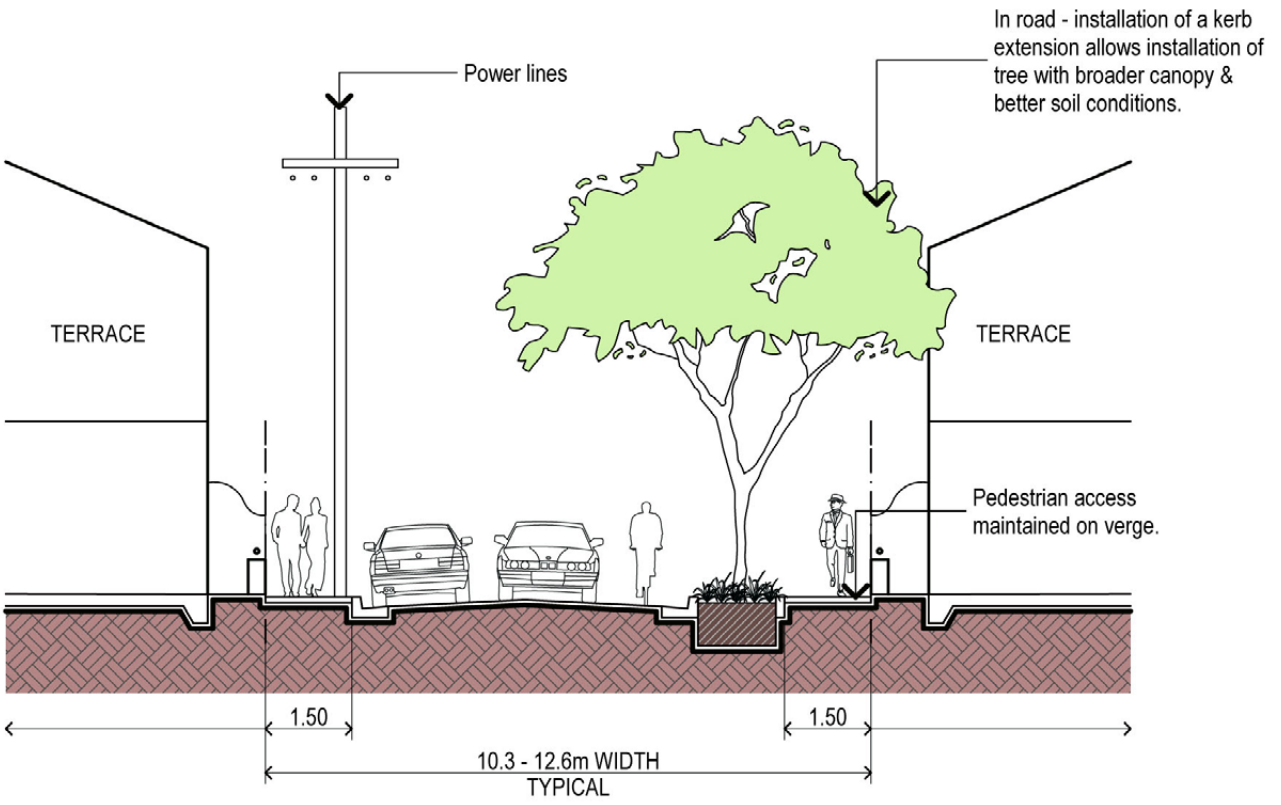
(ii) If already planted with trees then provide a replacement tree when necessary but only on one side of the road and only where the tree can be placed away from the wires, thereby keeping a treed character. Ensure that the new replacement tree is installed with better overall pavement and soil conditions, thus allowing one side of the street to be the main “accessible” walkway;

(iii) Convert to in-road planting with potential minor parking reductions but with the ability to provides fully accessible pathways on both sides of street and less infrastructure damage to pavement and adjoining houses. In-road planting usually allows the use of a medium sized tree that may provide an attractive canopy to the whole street, and may even increase the canopy cover compared to numerous small and poorly formed trees that may already exist.

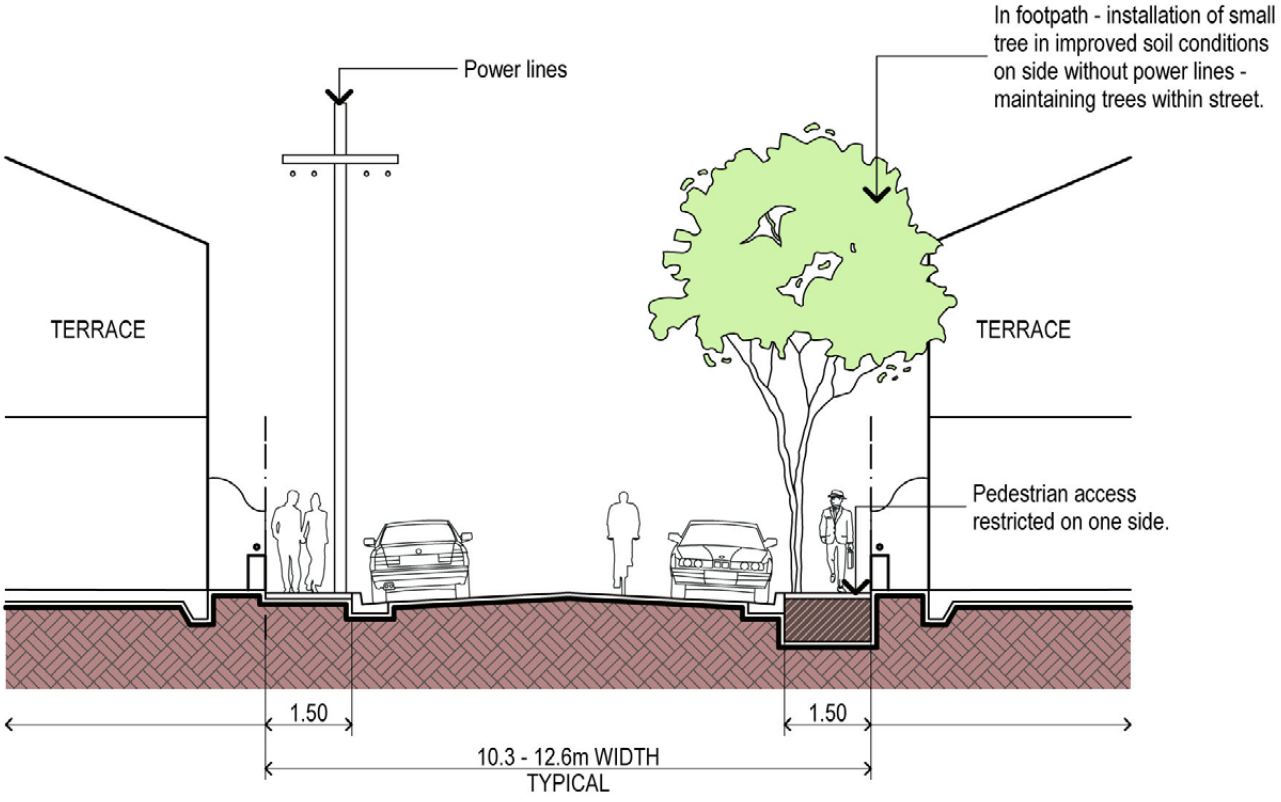
The proposed tree species palette for such instances referred to in (ii) may include:-

- *Melaleuca bracteata*
- *Caesalpinina ferrea*
- *Elaeocarpus eumundi*
- *Tristaniopsis laurina*
- *Synoum glandulosum*
- *Pyrus ussuriensis*
- *Lagerstroemia indica*
- *Zelkova serrata* ‘Green Vase’
- *Robinia pseudoacacia* ‘Frisia’

Figure 4.12 - Photomontage of Knocklayde Street, Croydon North, illustrating the concept of pocket median planting of larger trees to shade and soften the street while maintaining access for driveways. (Image - Arterra)



Narrow Verge - In road planting solution



Narrow Verge - In footpath planting solution

Figure 4.13- Proposed approach to narrow verge and street planting

4.9 Vehicle Sensitive In-Road Street Tree Protection

As identified in Part A - Section 1.6, there are many streets within the LGA that contain significant trees that were planted many decades ago. A great many of these have street trees that are located within the carriageway. These trees are now very mature and there is little ability to undertake pruning that allows clearances for larger trucks and busses without disfiguring or seriously impacting the trees' form and health.

The table below and map on the following page identifies the streets where preference will be given to protecting the existing street trees and their branching structure. For these streets Council will implement special management and access requirements where possible. These will typically include the following:-

- nominated restrictions on vehicle height and weight limits, particularly refuse collection trucks, to minimise the instance of branch-vehicle conflicts and damage.
- signage or line marking to indicate restrictions on street access for larger vehicles.
- nomination within Development Application consent conditions indicating special considerations that may be needed with regard to construction access, deliveries and cranage operations.
- Reminder notices to residents to place rubbish bins past line of trees for collection.

Table 11 - VEHICLE SENSITIVE STREETS	
Street Name	**Between Streets**
01. Ashfield Town Centre	
Beatrice Street	
Heighway Avenue	East of Frederick Street
Knox Street	
The Avenue	
02. Ashfield North	
Cecil Street	
Eccles Avenue	
Federal Avenue	
Grainger Avenue	North of Elizabeth Street
Oak Street	
Orpington Street	
Rectory Avenue	
Webbs Avenue	
03. Ashfield South	
Alma Street	
Carlisle Street	
Farleigh Street	
Hampden Street	
Hugh Street	
King Street	
Park Avenue	
Shepherd Street	
Tintern Road	
04. Croydon North/Ashfield West	
Banks Street	
Hammond Avenue	
Mackay Street	
Arthur Street	Greenhills Street and Milton Street
Beatrice Street	Milton Street North and Frederick Street
Holborow Street	
Leopold Street	
07. Dobroyd Point	
Barton Avenue	
Chelmsford Avenue	
Crane Avenue	
Dudley Street	
Empire Street	Waratah Street and Martin Street
Kingston Street	
Learmonth Street	
Loudon Avenue	
Minto Street	
Rawson Street	Waratah Street and Martin Street
Tillock Street	
Turner Avenue	
08. Haberfield	
Alt Street	Ramsay and Parramatta Road
Cove Street	
Deakin Avenue	
Denman Avenue	
Empire Street	Ramsay Street and Martin Street
Forrest Street	
Gillies Avenue	
Haberfield Road	
Hawthorne Parade	Parramatta Rd and Marion Street
Kingston Street	Ramsay Street and Barton Avenue
Logan Avenue	
Nicholls Avenue	
Northcote Street	
O'Connor Street	
Rawson Street	
Rogers Avenue	
Stanton Road	
Walker Avenue	
Winchcombe Avenue	
10. Hurlstone Park	
Goodwin Avenue	(north section only)
Griffiths Street	
Hillcot Street	
11. Summer Hill	
Carrington Street	
Hurlstone Avenue	
Kensington Road	
Sloane Street	Grosvenor Cres and Parramatta Road
Spencer Street	
Wellesley Street	

Figure 4.14- Map illustrating the Vehicle Sensitive In-Road Streets

5.0 Civic Planting, Gateways and Main Road Corridors

5.1 Overview

As with all urban areas, there is a hierarchy of roads from minor access streets through to major arterial roads. The design and operation of the more major roads is often controlled by the state government through the Road and Maritime Services (RMS) (formerly known as the RTA). These roads represent the public face of Ashfield. Most residents will have to use them and great volumes of traffic pass through them every day to get to parts of the City or to Greater Sydney. These roads are usually experienced from a vehicle and at speed. The planting needs to be a simple palette to read strongly in the landscape, be well spaced for visability, and to make an impact be as large and significant as possible.

These are often difficult environments for street planting. Greater distances are often required away from the travel lanes for safety reasons. Large vehicles such as trucks and buses use the kerb side lanes and therefore greater clearances are required for trees close to the road. They are also often conduits for major trunk services such as water, telecommunications and electricity. Often they may have started as wide road reserves, but over the years with the increasing volumes of traffic - lanes have been added or carriage ways widened, now making space for trees more challenging and difficult.

For the main road corridors, it is recommended that a long term vision be adopted with regard to tree planting. Whilst a strategic direction can take decades to achieve the desired impact in the long term, if consistently adhered to, can make the vision a reality and leave a legacy that defines Ashfield and indeed this era of tree planting. It is proposed the main connector roads are defined with a traditional planting approach using a constrained species palette to create better definition and continuity. By adhering to a more constrained palette, it will enhance the character of the road, and help visually define it as a main corridor and provide a strong landscape theme to Ashfield.

Since the streets are major through roads, with traffic travelling faster and in kerb side lanes, new trees should be positioned away from the edge of the road, at least 900mm (if not more). On RMS controlled roads, trees may need to at least 3m away. The tree species selected shall also need to be able to grow above the traffic (4.5m clear trunk), and be supplied and planted in larger sizes to allow for formative pruning and robustness. Where there are overhead wires, ABC should be undertaken as a priority, and wherever possible, to allow the installation and growth of the larger sized trees without the need for future disfiguring pruning. The species palette is to be robust, proven and a larger size for the best long term effects.

5.2 Gateway and Civic Tree Planting

Historically, special planting has often been used to signify the approach and entry to towns and define important areas. It can also serve as memorial planting commemorating special events. To serve the function of a gateway or marker, the tree planting needs to be of a size, form and scale that distinguishes it from the background. It also needs to be long lived to fulfil this purpose.

Most of the suggested gateway planting is located near adjoining open spaces and the placement of the tree may straddle the boundary between the road reserve and the public open spaces to allow the larger tree to be located further away from foot paths and infrastructure.

Figure 5.6 illustrates the major corridor planting together with the proposed key nodes and gateways that are to be planted with special or signature tree planting. This will:-

- Define, together with potential signage, the major entries to the Ashfield LGA and
- Provide a substantial legacy to following generations and hark back to an era where such planting and species were more commonly used.

So that people can interpret and read the gateways, and other civic planting, it is proposed to restrict the planting to two types of long lived, stately and tall, vertical trees. They need to be different in form and scale, and not commonly used except in the special corridors or gateways. The species proposed are:-

- *Araucaria columnaris* (Cook Pine)
- *Washingtonia robusta, Livistona australis or Butia* capitata (Mexican Fan Palm, Cabbage Tree Palms or Jelly Palm)

These are the few species that have proved to achieve a good proportion in the area with minimal impacts. Most other trees achieve only moderate proportions in the tough soil conditions or have too great an impact on surrounding infrastructure or residents.

Figure 5.1 - At key locations, signature civic scaled planting is proposed to mark the key entrance points into the LGA

Figure 5.2 - Photomontage of the park at the corner of Liverpool Road and Parramatta Road, illustrating the concept of civic planting of Cook Pine to define the key entries to the Ashfield LGA. (Image - Arterra)

Figure 5.3 - Photomontage of Carlton Crescent at Smith Street, illustrating the concept of civic planting of Cook Pine to define the key entries to the Ashfield LGA. (Image - Arterra)

Figure 5.4 - Photomontage at the corner of Liverpool Road and Victoria Street, illustrating the concept of civic planting of palms to define the key entries to the Ashfield Town Centre Precinct. (Image - Arterra)

Figure 5.5 - Photomontage of the park at the corner of Marion Street and Hawthorne Parade, illustrating the concept of civic planting of Cook Pine to define the key entries to the Ashfield LGA. Note that this ties in with Hoop Pine planting which has already been undertaken and shown in more mature form in this image (Image - Arterra)

5.3 State & Major Roads

The main road corridors throughout the municipality have been identified on Figure 5.6 and are highlighted in green and purple. Liverpool Road and Parramatta Road are both State Roads managed by RTA / RMS. The following vehicle movements have been identified:-
- Parramatta Road - 65,000-90,000 (vehicles per day) vpd.
- City West Link - 30,000-60,000 vpd.
- Liverpool Road 25,000-30,000 vpd.

For the main road corridors highlighted (other than Parramatta Road), it is recommended that a long term vision be adopted with regard to tree planting. Whilst a strategic direction can take decades to achieve its desired impact, in the long term if consistently adhered to, it can make the vision a reality. It is proposed the main connector roads are defined with a more traditional approach using primarily a single species palette to create definition and continuity. By adhering to a more constrained palette, this will enhance the character of the road, and help visually define these streets as main corridors.

On main roads, new trees should be positioned away from the edge of the road by at least 800-900mm. The tree species selected shall be able to grow above kerb side traffic, and be supplied in larger sizes to allow formative pruning and robust installation. ABC should be undertaken wherever possible. Importantly the chosen species palette is to be robust, proven and of medium to larger size for best effect.

Table 12 - MAJOR ROADS WITHIN ASHFIELD LGA	
RMS Controlled Streets	**Council Controlled Streets**
Parramatta Road	Thomas Avenue
City West Link Road	Griffith Street (short part only)
Liverpool Road	Bland Street
Old Canterbury Road	Sloane Street
Frederick Street	Croydon Road
Georges River Road	Elizabeth Street
Norton Street	Edwin Street North
Milton Street	Hennessy Street
Marion Street	Arthur Street
Mortley Avenue	Brown Street
Dobroyd Parade	Grosvenor Crescent
Boomerang Street	Carlton Crescent
Dalhousie Street	Queen Street
Wattle Street	Holden Street
Ramsay Street	Prospect Road
Victoria Street (short part only)	Armstrong Street

5.4 Other Regional & Local Collector Roads

These other slightly less major roads also define the urban fabric of Ashfield. These roads may not be as well known or trafficked as the major roads, but they serve as collector roads feeding from the more residential areas, and leading residents and visitors into and throughout the area.

These are important roads to define from a landscape and tree planting perspective. Again they can serve to set the long term landscape 'tone' of the community. A long term and strategic approach to planting will signify Ashfield's commitment to street planting, canopy coverage and the urban forest as a whole. From an urban design perspective a holistic and more consistent approach to their planting will also serve to better define the roads as collector roads and assist the legibility of the area for visitors and locals alike.

We must remember, however, these are also primarily 'residential' streets rather than commercial, so we must consider the needs of adjoining residents. Too large a tree will merely make a maintenance burden for Council and residents and will increase the likelihood of it being diluted over time due to vandalism, forced removals and resident requests. The roads are still busy roads and we need to consider implications of potential tree failures or branch drop on busy streets. These streets are also more difficult to maintain than minor back streets, often involving special traffic considerations and traffic control during maintenance operations.

The most suitable species that have been proposed include :-
Lagerstroemia indica (Crepe Myrtle)
Elaeocarpus eumundi (Eumundi Quandong)
Caesalpinia ferrea (Leopardwood)

5.5 Commercial Centres

There are a number of small village centres and commercial areas through the LGA. Most of these are dealt with in the street listings that follow. Ashfield Town Centre is also currently subject to a detailed urban design study.

The Council may address the streetscape design of these specifically on a case by case basis and may implement a more specialised tree planting to highlight the centre or provide a site specific response for business or community needs or site constraints such seating areas, drop off zones, and awnings. Although consideration will be given to the objectives of this Strategy, tree species that are not specifically covered or nominated in this Strategy for these streets may be utilised in these relatively unique sites.

The most suitable species will typically include :-
Zelkova serrata 'Green Vase'
Pyrus calleryana cultivars (Callery Pear)
Butia capitata (Jelly Palm)
Livistona australia (Cabbage Tree Palm)
Washingtonia robusta (Mexican Fan Palm)
Harpullia pendula (Tulipwood)

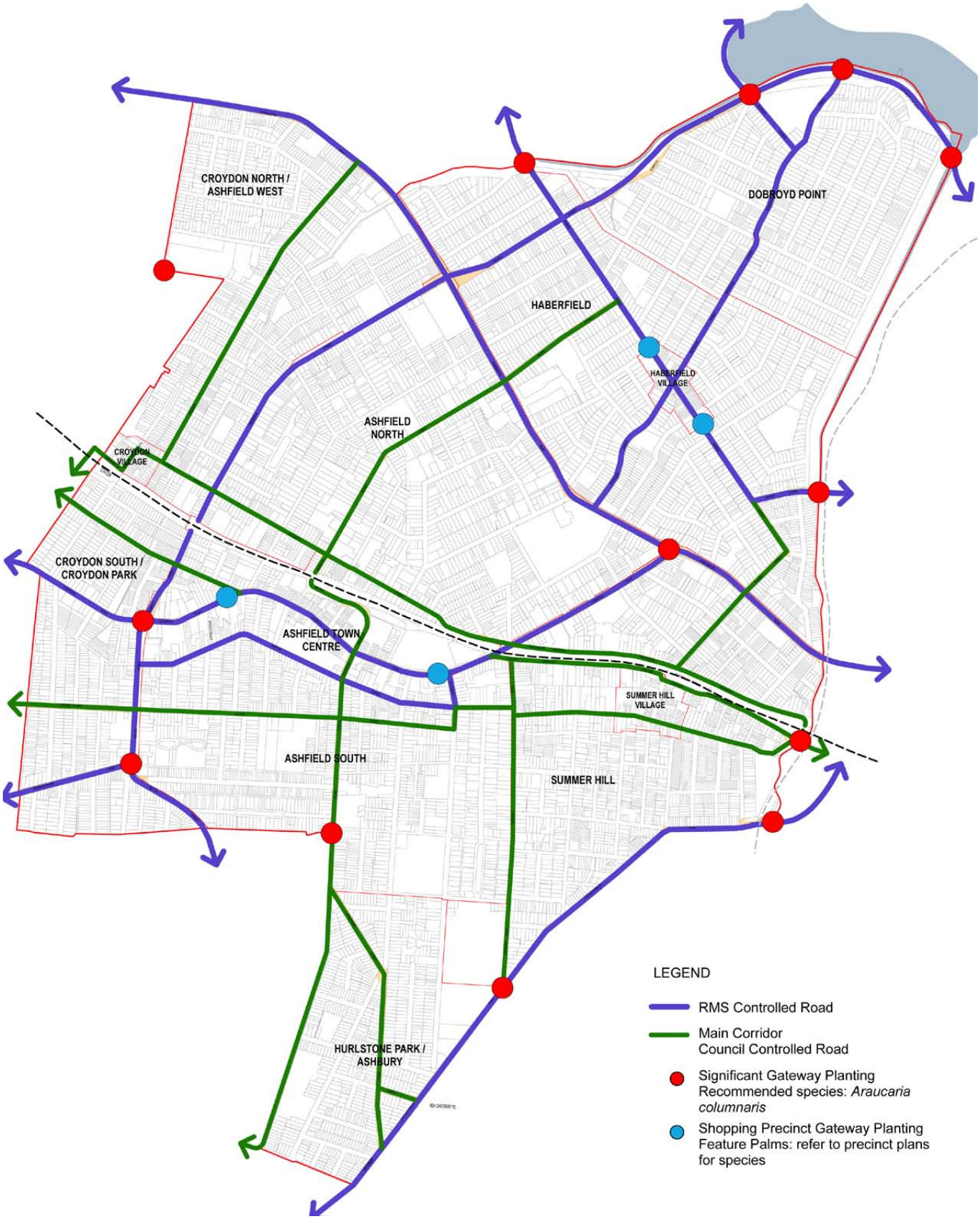


Figure 5.6 - Diagram depicting the main road corridors through Ashfield. With strategic and long term vision these, together with the 'gateways' could be highlighted and transformed into attractive and landmark streets that help define the character, historic quality and beauty of the area.

Figure 5.7- An example of Butia capitata (Jelly Pine) which could be transplanted from a street where its use and historical relevance is greatly reduced and provide new life for it as key gateway planting or to supplement streets with a great deal of palms left to maintain their character for many more years to come. (Photo - Arterra)

Figure 5.8- An example of Butia capitata (Jelly Pine) used in Hays Street, Hurlstone Park, where transplanted specimens from lesser steets could be relocated to maintain its character for many more years to come. (Photo - Arterra)

Figure 5.9 - A Photomontage illustrating the creation of a gateway to Haberfield Village using transplanted palms. (Image - Arterra)

6.0 Precinct Plans and Proposed Street Tree Species

This section of the Street Tree Strategy provides the main guide for future tree planting in Council's streets. The precinct based 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 each street.

An aerial view taken at the same scale for each precinct allows comparison between development types and typical overall existing canopy coverage within each precinct.

Figure 6.1 below indicates the location and extent of the street tree planting precincts across the Local Government Area.

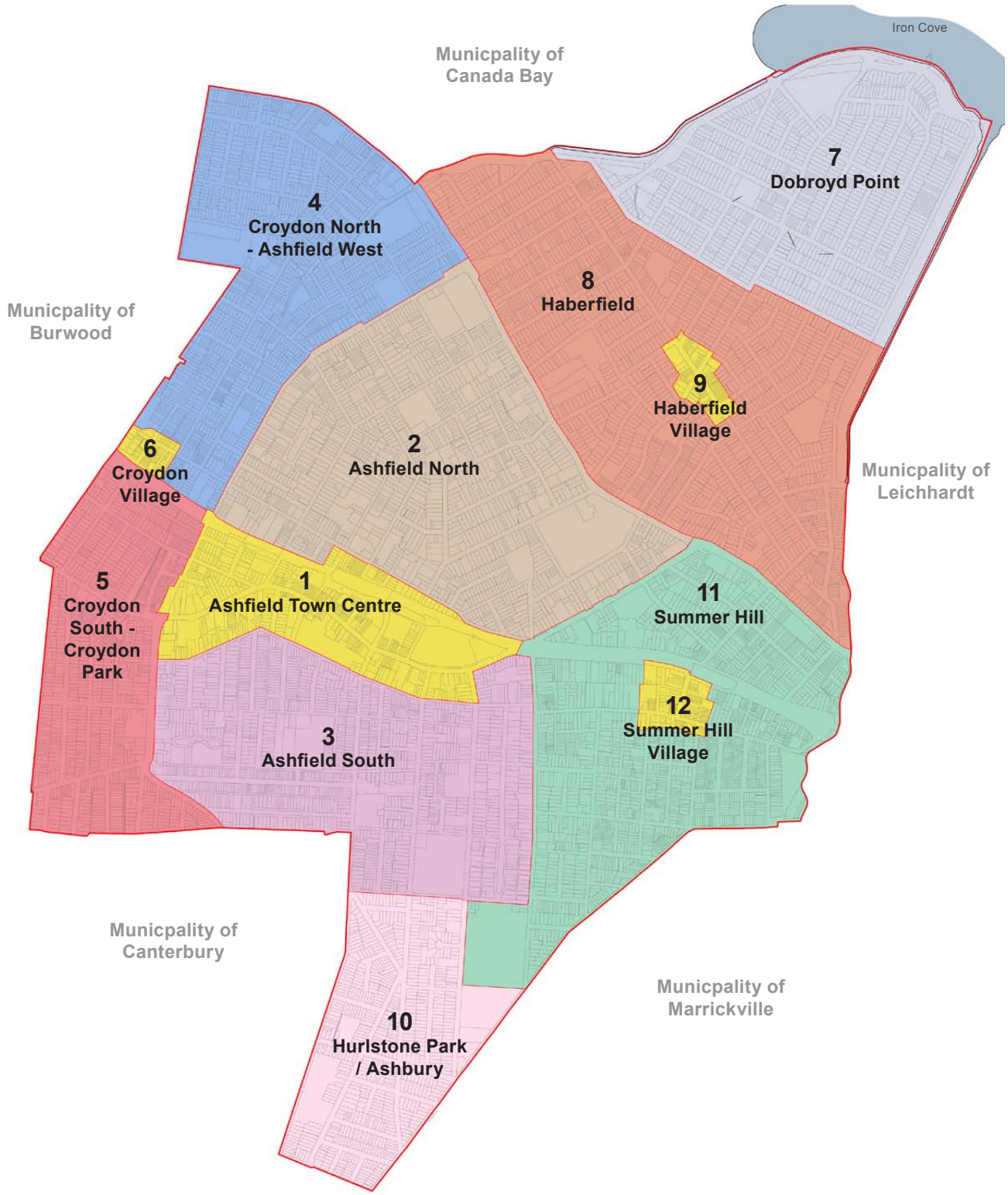


Figure 6.1- Map of the Precincts that have been used throughout the Street Tree Strategy

Figure 6.2 - Some of the great streets in Sydney, such as Kingston Street in Dobroyd Point are held in high esteem due to their regular and bold planting creating a leafy, cool and shaded street, well clear of the adjoining houses and enjoyed by all. They are characterised by the use of one or two species only, regular spacing of trees and the location of the trees within the road carriageway. (Photo - Arterra)

Figure 6.3 - It is increasingly rare for Council's to display the vision and political will to achieve the great streets of the future. Ashfield has some great opportunities to return to an era where such civic planting was undertaken and 'over time' define the landscape character of the area, such as here, in Victoria Street (Photo - Arterra)

6.1 Ashfield Town Centre

Land area: 45.1Ha

Context and History
Located 9km south-west of Sydney, Ashfield Town Centre is an established commercial area, located predominantly south of Ashfield railway station. It is bound by Elizabeth Street and the railway line to the north, Liverpool Road and Victoria Street to the east, Norton Street to the south and Frederick Street to the west.

Settlement of the area dates from 1794 when the first land grants were made. Population was minimal until 1838 when land was subdivided and the Village of Ashfield was established. Ashfield railway station was opened in 1855 and the area developed quickly with a thriving town centre. Growth continued into the early 1900s. Significant development occurred during the post-WWII years when many of the old buildings were demolished and replaced by high-rise units and flats, altering the character of Ashfield.

Ashfield Town Centre has a diverse mix of Victorian style commercial buildings, nestled along side new civic buildings, apartment blocks and some smaller Federation style houses.

Major features
Major features of the area include Ashfield Shopping Centre, Ashfield railway station, Ashfield Boys High School and Western Suburbs League Club.

Streets and Street trees
The town centre contains a mixture of street typologies. The railway line to the north and Norton Street to the south confine the linear arrangement of the town centre. Liverpool Road is the major road running east/west through the town centre, which creates a number of short and segmented streets predominantly running north/south off the main road. The main commercial sector is characterised by two storey mixed-use medium density streets. Over 70% of the streets are fully paved with little or no street tree planting. Hercules Street, however, has an excellent example of successful street tree planting, within a fully paved verge, in a commercial precinct using Chinese Elms (*Ulmus parvifolia)*. This style of street planting complements and greatly enhances the character of the street.

The remaining streets are characterised by lower density residential streets with small <1.8m-3.5m wide verges, 1.5m wide footpaths and a resulting 1-1.5m wide grass strip in which the majority of the street trees are planted.

A small number of the streets have in-road planting, with some excellent examples of the early 1900 in-road street trees still retained, for example along The Avenue and Heighway Avenue. This distinctive heritage planting greatly enhances the character and success of these streets.

Existing Primary Street Trees
- *Brachychiton acerifolius*
- *Lophostemon confertus*
- *Syzygium paniculatum (topiaried)*
- *Ulmus parvifolia*
- *Lagerstromia indica*
- *Tristaniopsis laurina*
- *Melaleuca quinquenervia*
- *Callistemon viminalis cv.*

Figure 6.5 - Hercules Street, illustrating excellent example of street planting (Ulmus parvifolia) which is shown growing successfully within the commercial context. (Photo-Arterra)

Figure 6.4- Aerial view of Ashfield Town Centre illustrating current canopy cover and landuse density and patterns. (Source: 21st November 2014 NearMap)

Figure 6.6 - Charlotte Street, illustrating some potential for strategic street planting. (Photo-Arterra)

SPECIES LEGEND

Evergreen

Bc	*Backhousia citriodora* (Lemon-scented Myrtle)
Ee	*Elaeocarpus eumundi* (Eumundi Quondong)
Wf	*Waterhousea floribunda 'Green Avenue'* (Weeping Lilly Pilly)
Sp	*Syzygium paniculatum* (Brush Cherry)

Deciduous

Kb	*Koelreuteria bipinnata* (Chinese Rain Tree)
Li	*Lagerstroemia indica* (Crepe Myrtle)
Up	*Ulmus parvifolia 'Todd'* (Chinese Elm)
Zs	*Zelkova serrata 'Green Vase'* (Japanese Zelkova)

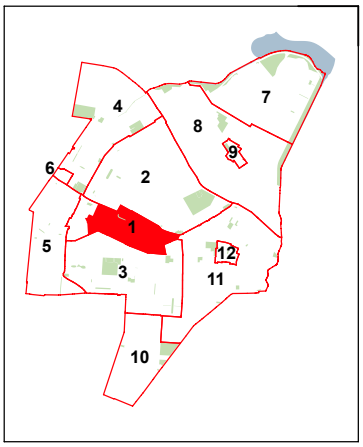
Palms

Bcap	*Butia capitata* (Jelly Palm)

LEGEND

Public open space

Railway



PRECINCT KEY PLAN

Figure 6.7
Precinct 1
Ashfield Town Centre

6.2 Ashfield North

Land area: 124.5Ha

Context and History
Located 9km south-west of Sydney, Ashfield North is an established residential area, with commercial areas along Parramatta Road and near the railway station. It is bound by Parramatta Road to the north, Liverpool Road to the east, Elizabeth Street and the railway line to the south, Frederick Street to the west.

Settlement of the area dates from 1794 when the first land grants were made. Population was minimal until 1838 when land was subdivided and the Village of Ashfield was established. Ashfield railway station was opened in 1855 and the area developed quickly with a thriving town centre and the suburb became an attractive area with Federation style houses, gardens and orchards with several good watering holes popular for family picnics. Growth continued into the early 1900s. Significant development occurred during the post-WWII years when many of the old houses were demolished and replaced by units and flats, altering the character of Ashfield.

Ashfield North has a diverse mix of Federation and Victorian style residential houses, nestled along side apartment blocks and flats. The precinct still retains some of the oldest and most significant open spaces within the LGA.

Major features
Major features of the area include Ashfield Park, Albert Parade Reserve, Bruce Street Reserve, Elizabeth Street Playground, Explorer's Park, Rotary Park, and De La Salle College.

Streets and Street trees
Apart from the major roads, there is a mixture of street typologies. Just over 30% form laneways, narrow streets and high-density residential streets with little or no street tree planting. The large majority of the streets in this area are characterised by low-density residential streets with small <1.8m-3.5m wide verges, 1.5m wide footpaths and a resulting 1-1.5m wide grass strip in which the majority of the street trees are planted. Albert Parade has been designed with a large attractive in-road planting median supporting a number of large trees.

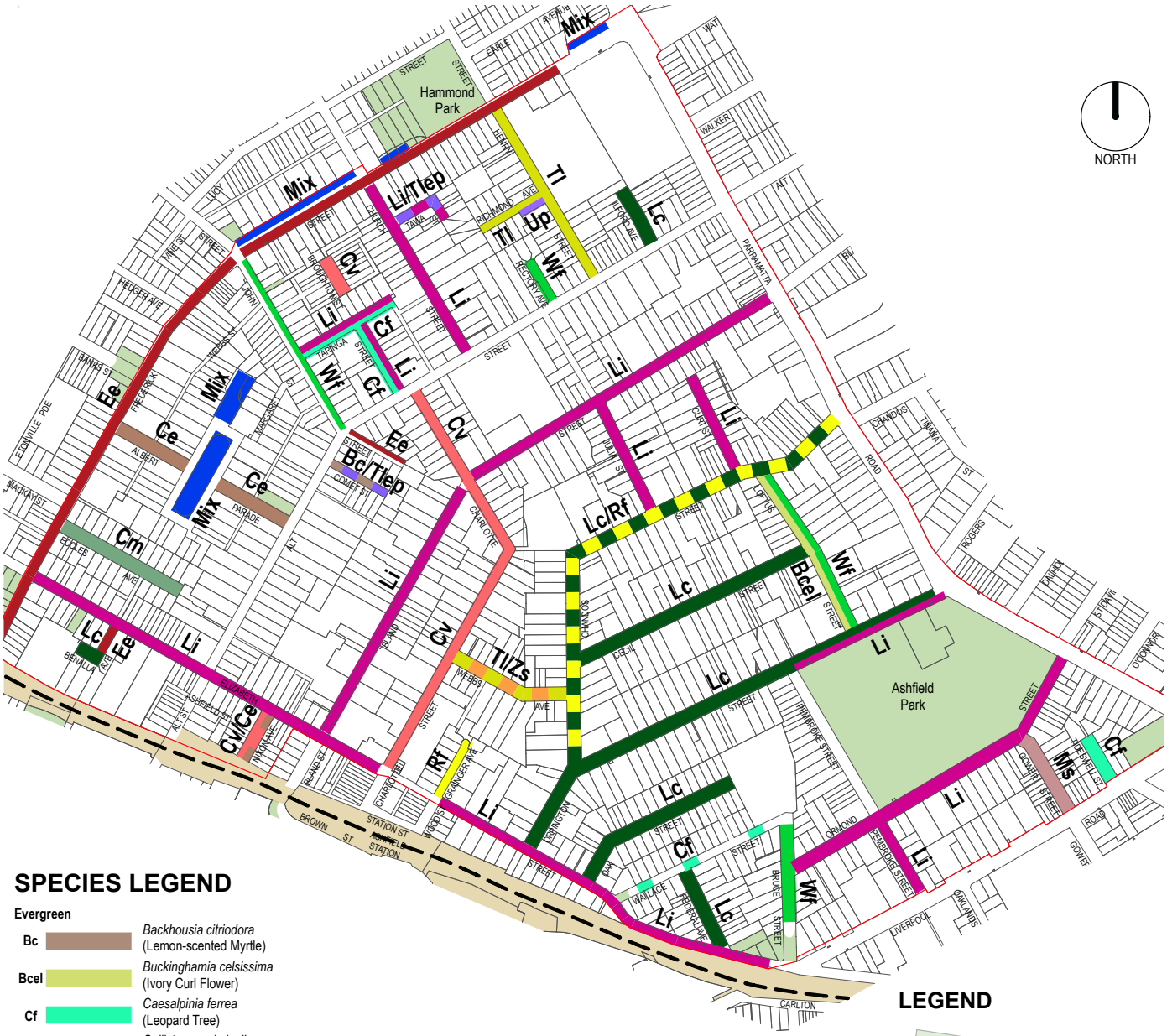
Over 35% of the streets have in-road planting, with some excellent examples of the early 1900s in-road street trees still retained, for example along Cecil Street, Federal Avenue, Oak Street and Orpington Street. This distinctive heritage planting greatly enhances the success and character of these streets.

Existing Primary Street Trees
- *Lophostemon confertus*
- *Callistemon sp.*
- *Melaleuca bracteata*
- *Lagerstromia indica*
- *Tristaniopsis laurina*
- *Melaleuca quinquenervia*
- *Callistemon viminalis cv.*
- *Phoenix canariensis*

Figure 6.9 - Oak Street, illustrating excellent example of historic street planting that has been renovated to meet modern requirements. (Photo-Arterra)

Figure 6.8- Aerial view of Ashfield North illustrating current canopy cover and landuse density and patterns. (Source: 21st November 2014 NearMap)

Figure 6.10 - Albert Parade, illustrating unique planting within the widened street median/ park. This allows valuable and larger scaled street planting without impacting adjoining residents (Photo-Arterra)



SPECIES LEGEND

Evergreen

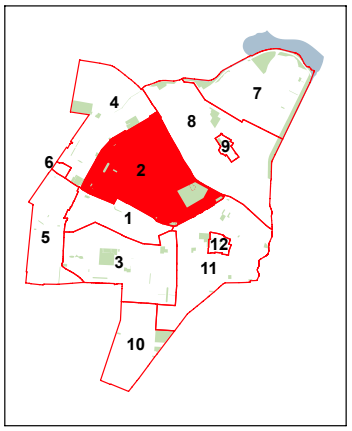
Bc	*Backhousia citriodora* (Lemon-scented Myrtle)
Bcel	*Buckinghamia celsissima* (Ivory Curl Flower)
Cf	*Caesalpinia ferrea* (Leopard Tree)
Cv	*Callistemon viminalis cv.* (Bottlebrush)
Ce	*Corymbia eximia* (Yellow Bloodwood)
Cm	*Corymbia maculata* (Spotted Gum)
Ee	*Elaeocarpus eumundi* (Eumundi Quondong)
Lc	*Lophostemon confertus* (Brush Box)
Ms	*Melaleuca styphelioides* (Prickly Paperbark)
Tlep	*Tibouchina lepidota 'Alstonville'* (Lasiandra)
Tl	*Tristaniopsis laurina* (Water Gum)
Wf	*Waterhousea floribunda 'Green Avenue'* (Weeping Lilly Pilly)

Deciduous

Li	*Lagerstroemia indica* (Crepe Myrtle)
Rf	*Robinia pseudoacacia 'Frisia'* (Black Locust)
Zs	*Zelkova serrata 'Green Vase'* (Japanese Zelkova)

Mixed Species

Mix	*Refer to the street tree species schedule for details on the mixed tree species for this street location*



PRECINCT KEY PLAN

Figure 6.11
Precinct 2
Ashfield North

6.3 Ashfield South

Land area: 101.6Ha

Context and History
Located 9km south-west of Sydney, Ashfield South is an established residential area. It is bound by Norton Street to the north, Prospect Road to the east, Seaview Street and Crimson Lane to the south and Milton Street to the west.

Settlement of the area dates from 1794 when the first land grant was made. The land was mainly used for farming and also formed part of Ashfield Park. The population was small until the land was subdivided and Ashfield railway station was opened in 1855. The area developed quickly with the nearby town centre and the suburb became an attractive area of Federation style houses, gardens and orchards. Growth continued into the early 1900s. Some significant development occurred during the post-war years altering the character when many of the older houses were demolished to make way for apartment dwellings.

Major features
Major features of the area include Pratten Park, Sydney Private Hospital, Brunswick Parade Reserve, Allman Park, Cecile Herman Reserve, Graham Reserve and Rose Street Playground.

Streets and Street Trees
There is a mixture of street typologies. Just over 15% take the form of narrow one-way streets and apartment style residential streets with little street tree planting. The majority of the streets in this area are characterised by lower density residential streets with small <1.8m-3.5m wide verges, 1.5m wide footpaths and a resulting 1-1.5m wide grass strip in which the majority of the street trees are planted. Several streets have also been designed with large attractive in-road planting medians supporting a number of larger trees.

Nearly 30% of the streets have in-road planting, with some excellent examples of the early 1900s in-road street trees still retained for example along Park Avenue, Shepherd Street, Carlisle Street and King Street. This distinctive and successful planting greatly enhances the character of these streets.

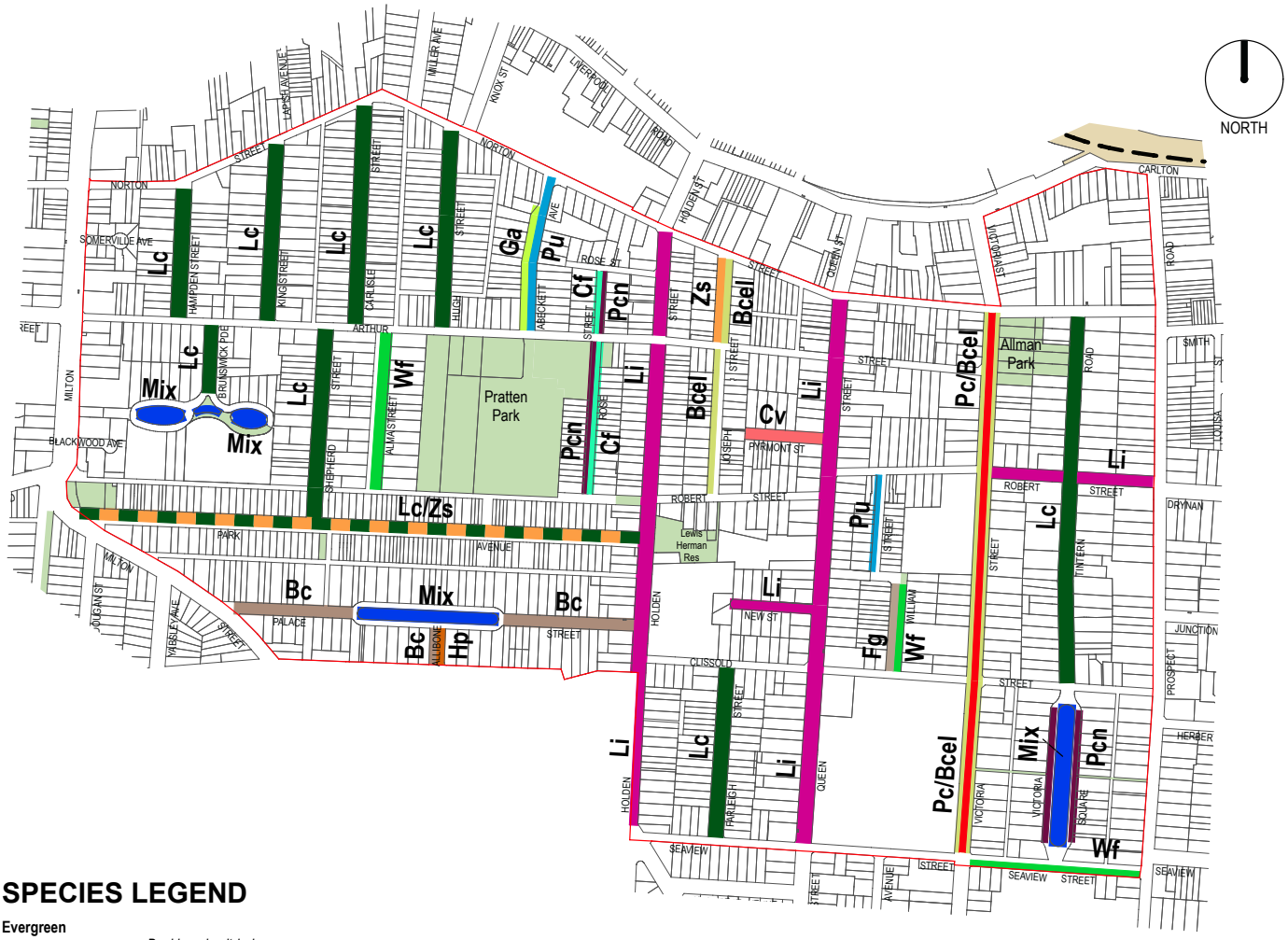
Existing Primary Street Trees
- *Lophostemon confertus*
- *Callistemon sp.*
- *Melaleuca bracteata*
- *Lagerstromia indica*
- *Tristaniopsis laurina*
- *Melaleuca quinquenervia*
- *Callistemon viminalis cv.*
- *Phoenix canariensis*

Figure 6.13 - Prospect Road, illustrating successful modern planting in the narrow verges opposite the wires. (Photo-Arterra)

Figure 6.14 - Tintern Road, illustrating historic Brush Box planting. (Photo-Arterra)

Figure 6.12- Aerial view of Ashfield South illustrating current canopy cover and landuse density and patterns. (Source: 21st November 2014 NearMap)

Figure 6.15 - Victoria Street, illustrating historic Phoenix Palms (Photo-Arterra)



SPECIES LEGEND

Evergreen

Bc	*Backhousia citriodora*	(Lemon-scented Myrtle)
Bcel	*Buckinghamia celsissima*	(Ivory Curl Flower)
Cf	*Caesalpinia ferrea*	(Leopard Tree)
Cv	*Callistemon viminalis cv.*	(Bottlebrush)
Fg	*Fraxinus griffithii*	(Evergreen Ash)
Ga	*Gordonia axillaris*	(Gordonia)
Hp	*Harpullia pendula*	(Tulipwood)
Lc	*Lophostemon confertus*	(Brush Box)
Wf	*Waterhousea floribunda 'Green Avenue'*	(Weeping Lilly Pilly)

Deciduous

Li	*Lagerstroemia indica*	(Crepe Myrtle)
Pcn	*Prunus cerasifera 'Nigra'*	(Purple-leaf Cherry Plum)
Pu	*Pyrus ussuriensis*	(Manchurian Pear)
Zs	*Zelkova serrata 'Green Vase'*	(Japanese Zelkova)

Palms

Pc	*Phoenix canariensis*	(Canary Island Date Palm)

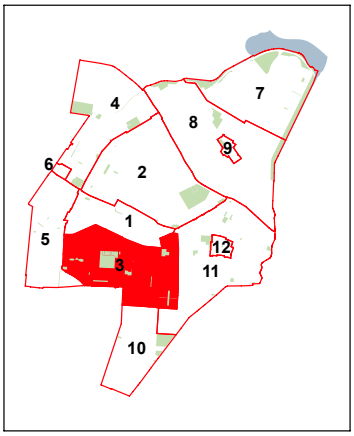
Mixed Species

Mix	*Refer to the street tree species schedule for details on the mixed tree species for this street location*

LEGEND

Public open space

Railway



PRECINCT KEY PLAN

Figure 6.16
Precinct 3
Ashfield South

6.4 Croydon North / Ashfield West

Land area: 88.3Ha

Context and History
Located 11km south-west of Sydney, Croydon North is an established residential area, with extensive commercial areas along Parramatta Road and some near the Croydon railway station. It is bound by Parramatta Road to the north, Frederick Street to the east, the railway line to the south and Queen Street and Lang Street to the west.

Settlement of the area dates from 1794 when the first land grant was made. From the 1860s to the 1890s Croydon, named after the borough in London, was a small village surrounded by large stately homes. The population was minimal until land was subdivided and the Croydon railway station opened in 1875. As the population increased the area was known for its attractive Federation-style bungalows and two-storey, freestanding Victorian terraces. More substantial growth took place in the post-WWII years when many of the old houses were demolished to make way for high-rise dwellings.

Croydon is a quiet suburb and has a diverse character, with a mix of residential types from medium density apartment blocks, to low density Federation style houses set back from the street with off street parking.

Major features
Major features of the area include Hammond Park, Ashfield Aquatic Centre, Centenary Sports Park, Anthony Street Reserve, Bede Spillane Gardens, Bridges Reserve, John Merrick Memorial Garden, J B McCartney Playground and the Croydon railway station.

Streets and Street trees
Apart from the major roads such as Parramatta Road, there is a mixed palette of street typologies. Over 70% of the streets in this area are characterised by low density residential streets with small <1.8m-3.5m wide verges, 1.5m wide footpaths and a resulting <1-1.5m wide grass strip in which the majority of the street trees are planted. In some cases the species selected for these narrow verges are too large for the space, which has started to cause some damage to the surrounding surfaces.

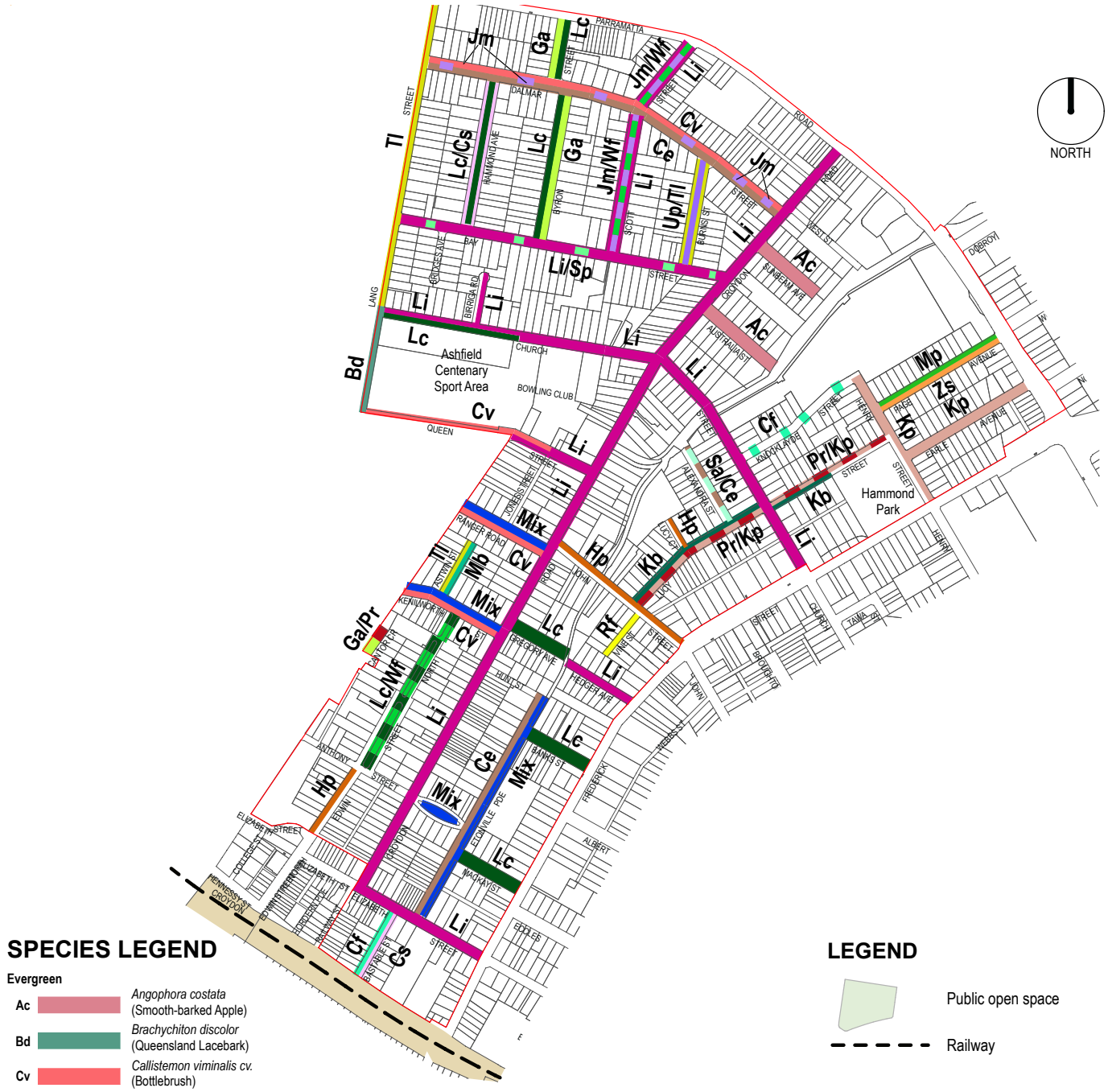
Around 20% are higher density residential streets and have narrow or fully paved footpaths, which typically do not support any street tree planting. A few streets display large verges with generous grass strips in which the street trees are planted. A good example of this is on Mackay Street and Gregory Avenue.

Existing Primary Street Trees
- *Lagerstromia indica*
- *Callistemon sp.*
- *Tristaniopsis laurina*
- *Melaleuca bracteata*
- *Lophostemon confertus*
- *Butia capitata*
- *Tibouchina lepidota 'Alstonville'*
- *Callistemon viminalis cv.*

Figure 6.18 - Croydon Road, illustrating an excellent example of modern street planting (Lagerstroemia indica). (Photo-Arterra)

Figure 6.17- Aerial view of Croydon North / Ashfield West illustrating current canopy cover and landuse density and patterns. (Source: 21st November 2014 NearMap)

Figure 6.19 - Byron Street, illustrating recent realignment of road infrastructure providing useful and suitable areas to create new and integrated street planting. (Photo-Arterra)



SPECIES LEGEND

Evergreen

Ac	*Angophora costata* (Smooth-barked Apple)
Bd	*Brachychiton discolor* (Queensland Lacebark)
Cv	*Callistemon viminalis cv.* (Bottlebrush)
Cs	*Camellia sasanqua cv.* (Camellia)
Ce	*Corymbia eximia* (Yellow Bloodwood)
Cf	*Caesalpinia ferrea* (Leopard Tree)
Ga	*Gordonia axillaris* (Gordonia)
Hp	*Harpullia pendula* (Tulipwood)
Kb	*Koelreutaria bipinnata* (Chinese Rain Tree)
Kp	*Koelreutaria paniculata* (Golden Rain Tree)
Lc	*Lophostemon confertus* (Brush Box)
Mb	*Melaleuca bracteata* (Black Tea-tree)
Mp	*Murraya paniculata* (Mock Orange)
Pr	*Photinia x fraseri 'Robusta'* (Photinia)
Sa	*Schinus areira* (Pepper Tree)
Sp	*Syzygium paniculatum* (Brush Cherry)
Tl	*Tristaniopsis laurina* (Water Gum)

Deciduous

Li	*Lagerstroemia indica* (Crepe Myrtle)
Jm	*Jacaranda mimosifolia* (Jacaranda)
Rf	*Robinia pseudoacacia 'Frisia'* (Black Locust)
Up	*Ulmus parvifolia 'Todd'* (Chinese Elm)
Zs	*Zelkova serrata 'Green Vase'* (Japanese Zelkova)

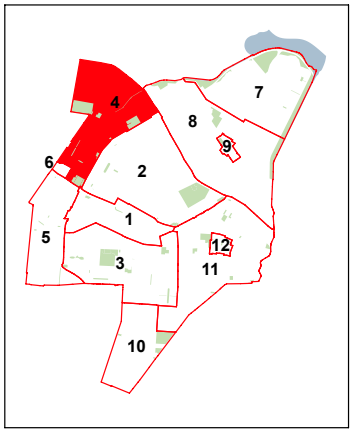
Mixed Species

Mix	*Refer to the street tree species schedule for details on the mixed tree species for this street location*

LEGEND

Public open space

Railway



PRECINCT KEY PLAN

Figure 6.20
Precinct 4
Croydon North / Ashfield West

6.5 Croydon South / Croydon Park

Land area: 59.1Ha

Context and History
Located 11km south-west of Sydney, Croydon (South) - Croydon Park is an established residential area. It is bound by the railway line to the north, Milton Street to the east, New Street in the south and Greenhills Street and Dickinson Avenue to the west.

Settlement of the area dates from 1794 when the first land grant was made. From the 1860s to the 1890s Croydon was a small village surrounded by large stately homes. The population was minimal until land was subdivided and the Croydon railway station opened in 1875. As the population increased the area was known for its attractive Federation-style bungalows and two-storey, freestanding Victorian terraces. More substantial growth took place in the post-WWII years when many of the old houses were demolished to make way for apartments.

Croydon South is a quiet suburb and has a diverse character, with a mix of residential types from apartment blocks, to low-density Federation style houses set back from the street, most with off street parking.

Major features
A major feature of the area is Croydon railway station, Wesley Hospital Ashfield and Sutherland Reserve.

Streets and Street trees
Apart from the major roads, just over 80% of the streets in this area are characterised by lower density residential streets with small 1.8m-3.5m wide verges with 1.5m wide footpath and a resulting 1-1.5m wide grass strip in which the majority of the street trees are planted. In some cases the species selected for these narrow verges have become too large for the space, which has started to cause some damage to the surrounding surfaces. A few streets have wider verges ranging between 3.5-5m+ with generous grass verges in which the street trees are planted.

There is a mixed palette of existing trees, some large and some small, often with little regard to whether they are under the wires or not. As a result, clearance pruning has significantly disfigured many of the larger trees. There is also evidence of street tree planting undertaken by residents in some locations.

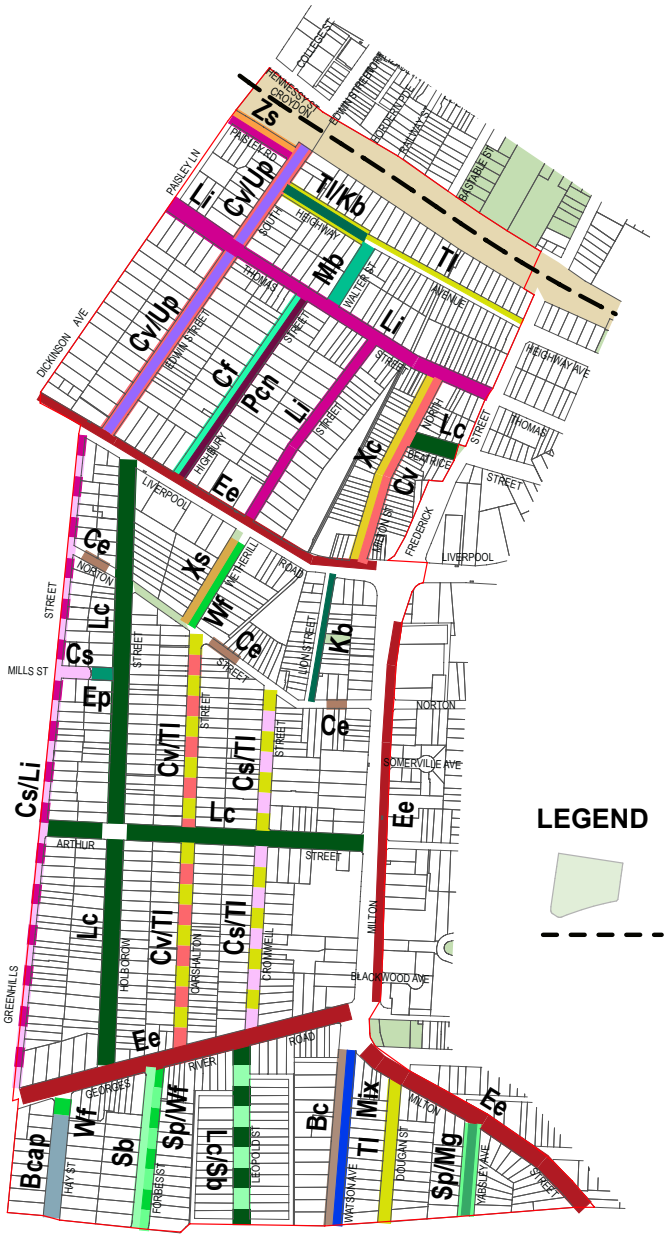
Figure 6.21- Aerial view of Croydon South / Croydon Park illustrating current canopy cover and landuse density and patterns. (Source: 21st November 2014 NearMap)

The existing historic theme of in-road planting has been retained in only a few streets, with good examples of the remnant historical Brushbox in-road planting dating from the 1900s along Holborow Street and Arthur Street. This distinctive and successful planting greatly enhances the character of these streets.

Existing Primary Street Trees
- *Lagerstromia indica*
- *Callistemon sp.*
- *Tristaniopsis laurina*
- *Melaleuca bracteata*
- *Lophostemon confertus*
- *Butia capitata*
- *Tibouchina lepidota 'Alstonville'*
- *Callistemon viminalis cv.*

Figure 6.22 - Arthur Street, illustrating historic Brush Box planting. (Photo-Arterra)

Figure 6.23 - A Photomontage (Norton Street) illustrating installation of a larger tree in an otherwise treeless street. (Image - Arterra)



SPECIES LEGEND

Evergreen

Bc	*Backhousia citriodora* (Lemon-scented Myrtle)
Cf	*Caesalpinia ferrea* (Leopard Tree)
Cv	*Callistemon viminalis cv.* (Bottlebrush)
Cs	*Camellia sasanqua cv.* (Camellia)
Ce	*Corymbia eximia* (Yellow Bloodwood)
Ee	*Elaeocarpus eumundi* (Eumundi Quondong)
Ep	*Eucalyptus paniculata* (Grey Ironbark)
Kb	*Koelreutaria bipinnata* (Chinese Rain Tree)
Lc	*Lophostemon confertus* (Brush Box)
Mg	*Magnolia grandiflora 'Exmouth'* (Bull-bay Magnolia)
Mb	*Melaleuca bracteata* (Black Tea-tree)
Sp	*Syzygium paniculatum* (Brush Cherry)
Tl	*Tristaniopsis laurina* (Water Gum)
Wf	*Waterhousea floribunda 'Green Avenue'* (Weeping Lilly Pilly)
Xc	*Xanthostemon chrysanthus* (Golden Penda)
Xs	*Xylosma senticosum* (Xylosma)

Deciduous

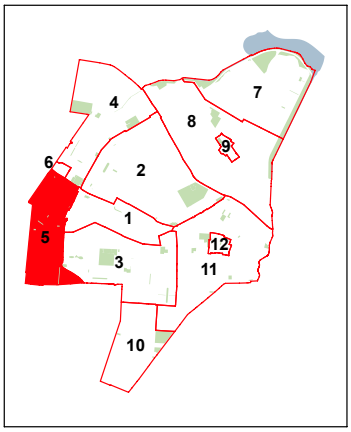
Li	*Lagerstroemia indica* (Crepe Myrtle)
Pcn	*Prunus cerasifera 'Nigra'* (Purple-leaf Cherry Plum)
Sb	*Sapium sebiferum* (Chinese Tallow Tree)
Up	*Ulmus parvifolia 'Todd'* (Chinese Elm)
Zs	*Zelkova serrata 'Green Vase'* (Japanese Zelkova)

Palms

Bcap	*Butia capitata* (Jelly Palm)

Mixed Species

Mix	*Refer to the street tree species schedule for details on the mixed tree species for this street location*



PRECINCT KEY PLAN

Figure 6.24
Precinct 5
Croydon South / Croydon Park

6.6 Croydon Village

Land area: 2.6Ha

Context and History
Located to the north of Croydon railway station, Croydon Village has a well established 'village' character supporting numerous small local businesses along Edwin Street North and Elizabeth Street near the railway station.

Settlement of the area dates from 1794 when the first land grant was made. From the 1860s to the 1890s Croydon was a small village surrounded by large stately homes. The population was minimal until land was subdivided and the Croydon railway station opened in 1875. As the population increased the area was known for its attractive two-storey Victorian terraces and Federation style houses.

Croydon Village is a busy local commercial hub with a diverse character, with a mix of business types.

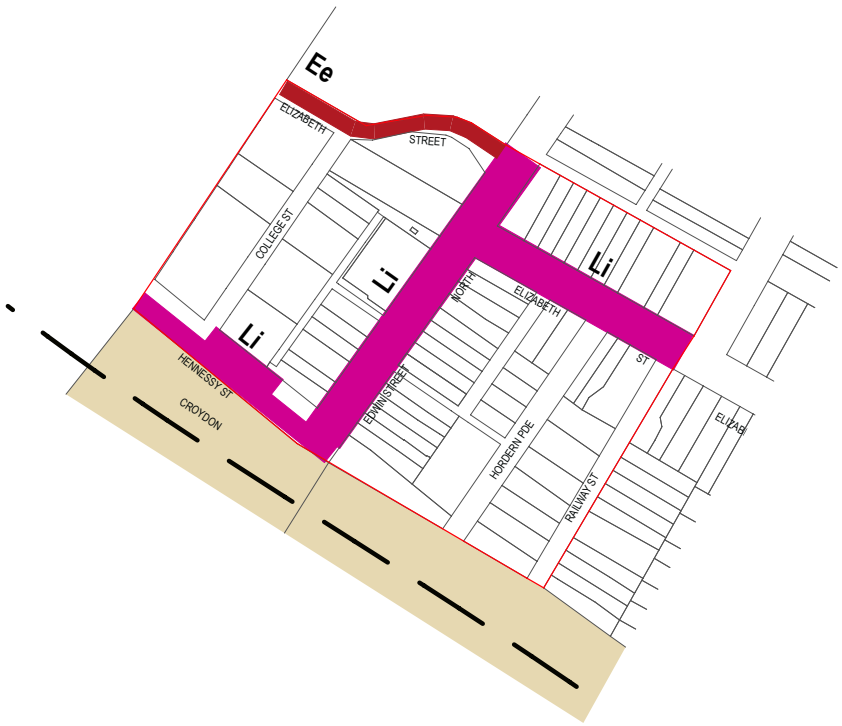
Major features
A major feature is the Croydon railway station and Presbyterian Ladies' College, Croydon.

Figure 6.25 - Edwin street North, illustrating recent street tree planting and street upgrades to define the village precinct. (Photo-Arterra)

Streets and Street trees
The majority of the streets in this area are characterised by mixed-use commercial properties and terrace style residential streets with small <1.8m-3.5m wide fully paved verges, and some street trees planting at key pedestrian crossing points. The remaining street typography are laneways that are too narrow to support tree planting.

Existing Primary Street Trees
- *Lagerstromia indica*

Figure 6.26 - Although outside of the Ashfield Council's jurisdiction, The Strand, within Croydon Village illustrates the appropriate use of signature planting such as these Washingtonia palms to define the commercial centre. (Photo-Arterra)



SPECIES LEGEND

Evergreen

Ee — *Elaeocarpus eumundi* (Eumundi Quondong)

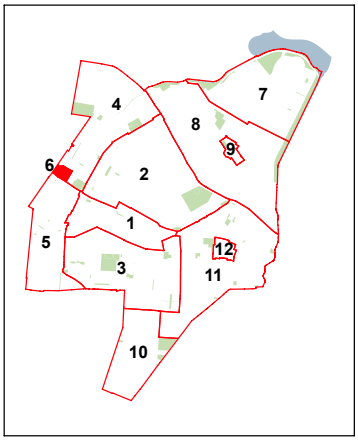
Deciduous

Li — *Lagerstroemia indica* (Crepe Myrtle)

LEGEND

Public open space

Railway



PRECINCT KEY PLAN

Figure 6.27
Precinct 6
Croydon village

6.7 Dobroyd Point

Land area: 94.5Ha
Context and History

Dobroyd Point is a well established residential area located immediately north of Haberfield. Dobroyd Point generally forms a peninsula fronting Iron Cove. It is bound by the Hawthorne Canal to the east, by Barton Avenue and Martin Street to the south, and Reg Coady Reserve and Iron Cove Creek to the west.

Settlement of the area dates from 1803, when Nicholas Bayly acquired the land as part of a grant. He named the area Dobroyd after the Yorkshire village in England where he was born. The land was originally used mainly for farming and a plant nursery. It was said he planted the first Norfolk pines seen in the area.

In the early 1900s the then famous Richard Stanton, appointed an architect to subdivide the area and to create a garden suburb. Each Federation style single-story house was designed, in a garden setting with trees planted along the streets. Dobroyd Point still retains much of this rich heritage of Federation era houses with large gardens, off street parking and established in-road street tree planting.

The entire suburb is heritage listed as a Conservation Area and is part of the Register of the National Estate of Australia.

Major Features
Major features of the area include Robson Park, Reg Coady Reserve and Richard Murden Reserve.

Streets and Street Trees
This area has low to moderate rolling topography with attractive views to Iron Cove. Apart from Dobroyd Parade/ City West Link all of the streets in this area are characterised by low-density residential streets with small <1.8m-3.5m verges with 1.5m wide footpaths and a resulting 1-1.5m wide grass strip. Over two-thirds of the streets have in-road planting, with some excellent examples of the original 1900s in-road Brushbox planting still retained. Examples include Crane Avenue, Kingston Street, Loudon Street and Dudley Street.

Overall there is a high proportion of larger and successful street tree planting.

A few streets have a mixed palette of existing trees, of varying sizes, often planted with little regard to whether they are under the wires or not. As a result clearance pruning has significantly disfigured many of the larger trees on one side of the road.

Existing Primary Street Trees

- *Lophostemon confertus*
- *Callistemon sp.*
- *Casuarina sp.*
- *Lagerstromia indica*
- *Melaleuca bracteata*
- *Tristaniopsis laurina*
- *Melaleuca quinquenervia*

Figure 6.29 - Kingston Street, Haberfield is one of the more historically important and prominent streets within the precinct. (Photo-Arterra)

Figure 6.28- Aerial view of Dobroyd Point illustrating current canopy cover and landuse density and patterns. (Source: 21st November 2014 NearMap)

Figure 6.30 - Hawthorne Parade, Haberfield is a major road and the adjoining open space allows the planting of larger native trees that can also contribute to the biodiversity of the nearby Greenway and help define the streetscape. (Photo-Arterra)

SPECIES LEGEND

Evergreen

Ac	*Angophora costata* (Smooth-barked Apple)
Ah	*Angophora hispida* (Dwarf Apple)
Bcel	*Buckinghamia celsissima* (Ivory Curl Flower)
Cs	*Camellia sasanqua cv.* (Camellia)
Cp	*Cupaniopsis anacardioides* (Tuckeroo)
Ga	*Gordonia axillaris* (Gordonia)
Hp	*Harpullia pendula* (Tulipwood)
Lc	*Lophostemon confertus* (Brush Box)
Mb	*Melaleuca bracteata* (Black Tea-tree)
Ml	*Melaleuca leucadendra* (Weeping Paperbark)
Mp	*Murraya paniculata* (Mock Orange)
Sg	*Synoum glandulosum* (Scentless Rosewood)
Tl	*Tristaniopsis laurina* (Water Gum)
Wf	*Waterhousea floribunda 'Green Avenue'* (Weeping Lilly Pilly)
Xs	*Xylosma senticosum* (Xylosma)

Deciduous

Li	*Lagerstroemia indica* (Crepe Myrtle)
Pcn	*Prunus cerasifera 'Nigra'* (Purple-leaf Cherry Plum)
Pu	*Pyrus ussuriensis* (Manchurian Pear)
Zs	*Zelkova serrata 'Green Vase'* (Japanese Zelkova)

Palms

Bcap	*Butia capitata* (Jelly Palm)

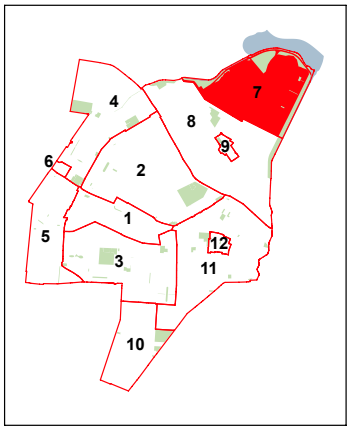
Mixed Species

Mix	*Refer to the street tree species schedule for details on the mixed tree species for this street location*

LEGEND

Public open space

Railway



PRECINCT KEY PLAN

Figure 6.31
Precinct 7
Dobroyd Point

6.8 Haberfield

Land area: 137.5Ha

Context and History
Located 9km south-west of Sydney, Haberfield is an established residential area, with some commercial land use along Ramsay Street and Parramatta Road. It is bound by the Hawthorne Canal to the east, Parramatta Road to the south, Iron Cove Creek to the west and Martin Street and Barton Avenue to the north.

Settlement of the area dates from 1803, when Nicholas Bayly acquired the land as part of a grant. The land was originally used mainly for farming and orchards.

In 1901 Haberfield was subdivided and was marketed as the 'Model Suburb'. Being based upon the City Beautiful Movement, Haberfield soon become known as the 'Garden Suburb' by the early decades of the 20th century. Today Haberfield retains its key 'garden suburb' concepts of its tree-lined streets, neighbourly gardens and period architecture.

The entire suburb is heritage listed as a Conservation Area and is part of the Register of the National Estate of Australia.

Major features
Major features of the area include Algie Park, Jegorow Reserve, Hawthorne Canal Reserve and Richard Murden Reserve.

Streets and Street trees
This area has low to moderate rolling topography. Apart from the major roads, a large majority of the streets in this area are characterised by low-density residential streets with small <1.8m-3.5m verges with 1.5m wide footpaths and a resulting 1-1.5m wide grass strip. A few streets, such as Tressider Street, have large verges with wide generous grass strips > 3.5m within which the majority of the street trees are planted.

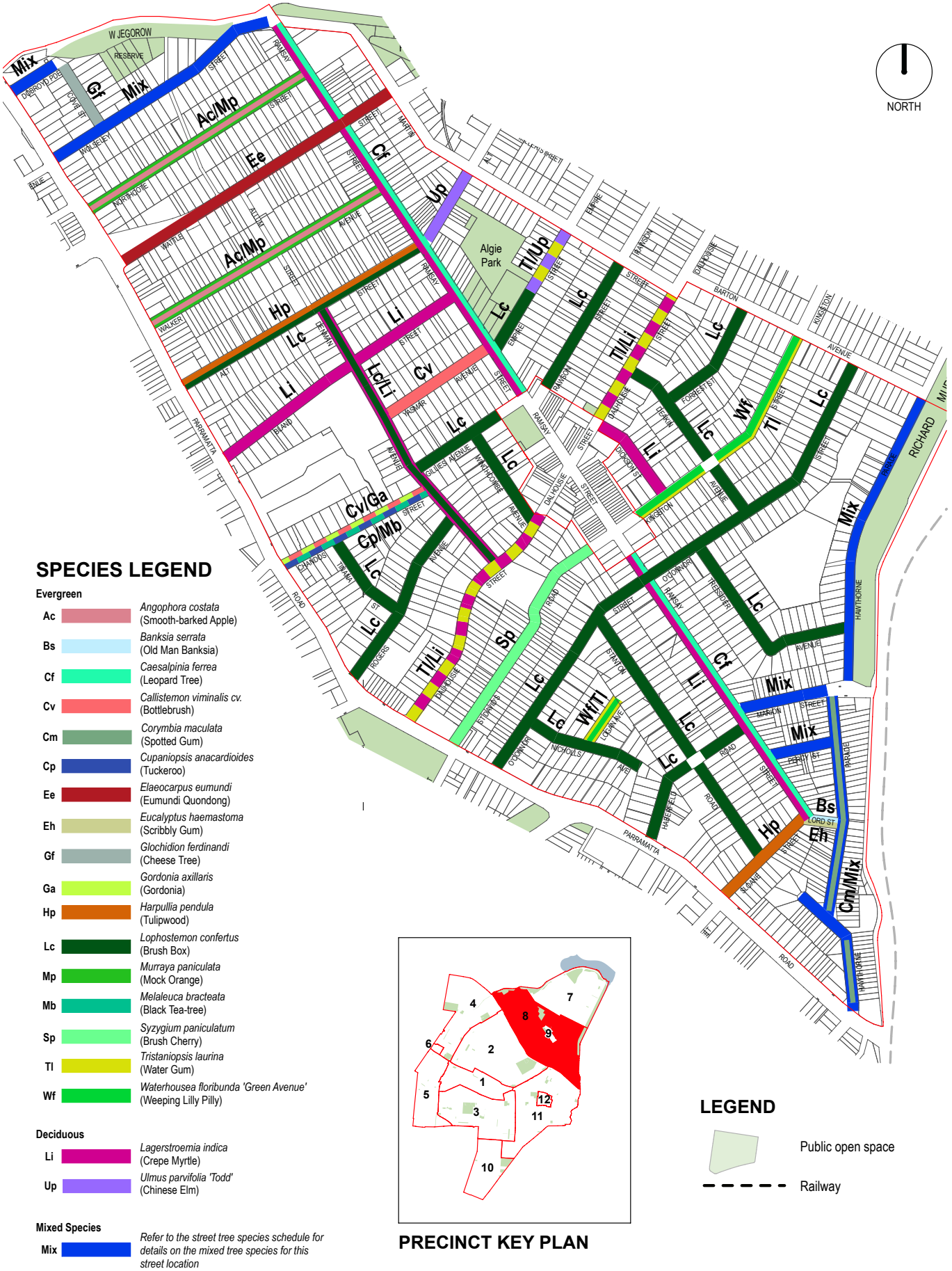
Over two-thirds of the streets have in-road planting, with some excellent examples of the original 1900s in-road street trees still retained on a number of streets for example along Haberfield Road, Kingston Street, Northcote Street and O'Connor Street. This distinctive and successful planting greatly enhances the character of these streets.

Overall there is a high proportion of successful street tree planting.

Existing Primary Street Trees
- *Lophostemon confertus*
- *Callistemon sp.*
- *Casuarina sp.*
- *Lagerstromia indica*
- *Melaleuca bracteata*
- *Tristaniopsis laurina*
- *Melaleuca quinquenervia*

Figure 6.32- Aerial view of Haberfield illustrating current canopy cover and landuse density and patterns. (Source: 21st November 2014 NearMap)

Figure 6.33 - Haberfield Road is an excellent example of the character and style of planting that defines the 'Garden Suburb' of Haberfield, (Photo-Arterra)



SPECIES LEGEND

Evergreen

Ac	*Angophora costata*	(Smooth-barked Apple)
Bs	*Banksia serrata*	(Old Man Banksia)
Cf	*Caesalpinia ferrea*	(Leopard Tree)
Cv	*Callistemon viminalis cv.*	(Bottlebrush)
Cm	*Corymbia maculata*	(Spotted Gum)
Cp	*Cupaniopsis anacardioides*	(Tuckeroo)
Ee	*Elaeocarpus eumundi*	(Eumundi Quondong)
Eh	*Eucalyptus haemastoma*	(Scribbly Gum)
Gf	*Glochidion ferdinandi*	(Cheese Tree)
Ga	*Gordonia axillaris*	(Gordonia)
Hp	*Harpullia pendula*	(Tulipwood)
Lc	*Lophostemon confertus*	(Brush Box)
Mp	*Murraya paniculata*	(Mock Orange)
Mb	*Melaleuca bracteata*	(Black Tea-tree)
Sp	*Syzygium paniculatum*	(Brush Cherry)
Tl	*Tristaniopsis laurina*	(Water Gum)
Wf	*Waterhousea floribunda 'Green Avenue'*	(Weeping Lilly Pilly)

Deciduous

Li	*Lagerstroemia indica*	(Crepe Myrtle)
Up	*Ulmus parvifolia 'Todd'*	(Chinese Elm)

Mixed Species

Mix	*Refer to the street tree species schedule for details on the mixed tree species for this street location*

PRECINCT KEY PLAN

LEGEND

Public open space

Railway

Figure 6.34
Precinct 8
Haberfield

6.9 Haberfield Village

Land area: 4.5Ha

Context and History
Known for its atmosphere, cafes and local food offerings and rich Italian heritage, Haberfield Village is located in the centre of Haberfield at the junction between the major roads of Dalhousie Street and Ramsey Street. The area has a rich heritage and protected local architecture. The village character is well defined and characterised by a diverse mix of small locally independent businesses and wide pedestrian friendly streets.

The entire suburb is heritage listed as a Conservation Area and is part of the Register of the National Estate of Australia.

Streets and Street trees
The main roads are characterised by small commercial businesses with over-hanging awnings and fully paved verges 3.5m wide. Some blister planting is located at the end of the parking bays.

Existing Primary Street Trees
- *Cinnamomum camphora*
- *Lagerstromia indica*
- *Butia capitata*

Figure 6.35 - Dalhousie Street (Photo-Arterra)

Figure 6.36 - Ramsay Street (Photo-Arterra)

Figure 6.37 - Ramsay Street (Photo-Arterra)


Figure 6.38 - Ramsay Street (Photo-Arterra)

SPECIES LEGEND

Evergreen

Lc — *Lophostemon confertus* (Brush Box)

Wf — *Waterhousea floribunda 'Green Avenue'* (Weeping Lilly Pilly)

Deciduous

Li — *Lagerstroemia indica* (Crepe Myrtle)

Palms

Bcap — *Butia capitata* (Jelly Palm)

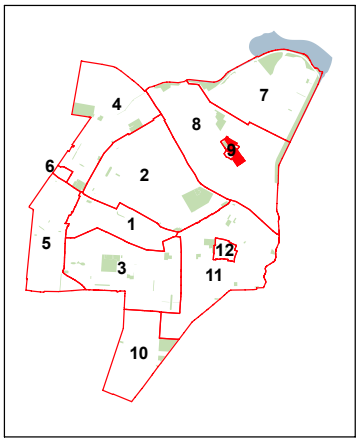
Mixed Species

xx — *Refer to the street tree species schedule for details on the mixed tree species for this street location*

LEGEND

Public open space

Railway



PRECINCT KEY PLAN

Figure 6.39
Precinct 9
Haberfield Village

6.10 Hurlstone Park / Ashbury

Land area: 53.6Ha

Context and History
Located in the south-eastern part of the LGA, Hurlstone Park and Ashbury is an established residential area with a mixture of detached housing and some small areas of commercial development fronting Canterbury Road. It is bound by Seaview Street to the north, Trinity Grammar School, Old Canterbury Road and Canterbury Road to the east, Princess Street in the south, and Holden Street to the west.

The area was first settled in the 1790s, with land being mainly used for farming. Residential growth took place in the late 1800s, following the construction of the main roads and street patterns that still exists today. Further significant residential development occurred during the post-WWII years.

Major features
Major features of the area include Yeo & Gough Park and Canterbury Boys High School.

Streets and Street trees
This area has low to moderate rolling topography. Apart from the major roads, just over 50% of the streets in this area are characterised by lower density residential streets with small 1.8m-3.5m wide verges with 1.5m wide footpath and a resulting 1-1.5m wide grass strip in which the majority of the street trees are planted. The remaining streets have wide verges ranging between 3.5-5m+ with generously wide grass verges.

There is a mixed palette of existing trees, some large and some small, often with little regard to whether they are under the wires or not. As a result, clearance pruning has significantly disfigured many of the larger trees. There is distinct evidence of street tree planting undertaken by residents in some locations.

The existing theme of in-road planting has been retained on a number of streets, with particularly good examples of the remnant historical Brushbox in-road planting from the 1900s being recorded along Goodwin Avenue and Hillcot Street and Jelly Palm (*Butia capitata*) in-road palm planting being retained along Victoria Street.

Service Avenue has an exceptional example of an avenue of single species of Crepe Myrtle (*Lagerstromia indica*) all with a consistent form and habit. This distinctive and successful planting greatly enhances the character of this street.

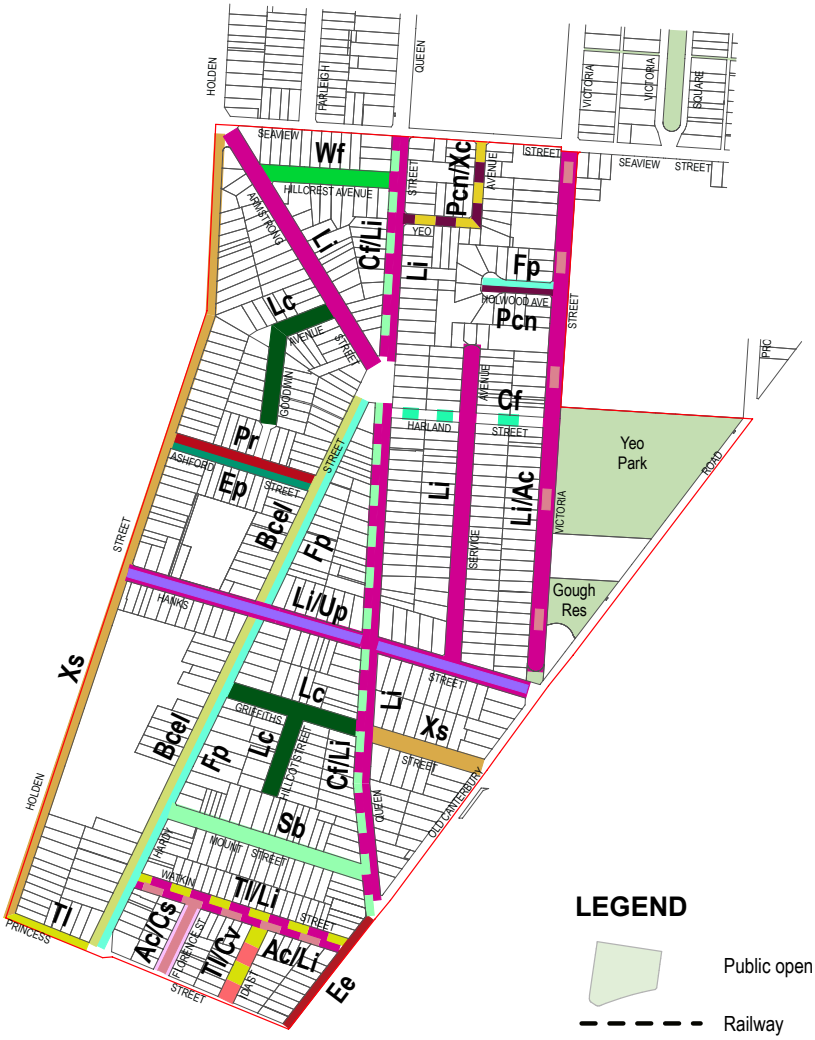
Existing Primary Street Trees
- *Lophostemon confertus*
- *Callistemon sp.*
- *Melaleuca bracteata*
- *Lagerstromia indica*
- *Tristaniopsis laurina*
- *Melaleuca quinquenervia*
- *Leptospermum petersonii*

Figure 6.41 - Hurlstone Park contains some of the great streets of the area such as Goodwin Ave. These need to be protected and continued as important historical streets and excellent contributors to the areas canopy coverage (Photo-Arterra)

Figure 6.40- Aerial view of Hurlstone Park illustrating current canopy cover and landuse density and patterns. (Source: 21st November 2014 NearMap)

Figure 6.42 - Service Avenue, illustrating an excellent example of modern and consistent street planting that now marks a memorable and desirable street. (Photo-Arterra)

NORTH



SPECIES LEGEND

Evergreen

Ac	*Angophora costata* (Smooth-barked Apple)
Bcel	*Buckinghamia celsissima* (Ivory Curl Flower)
Cv	*Callistemon viminalis cv.* (Bottlebrush)
Cs	*Camellia sasanqua cv.* (Camellia)
Cf	*Caesalpinia ferrea* (Leopard Tree)
Ee	*Elaeocarpus eumundi* (Eumundi Quondong)
Ep	*Eucalyptus paniculata* (Grey Ironbark)
Lc	*Lophostemon confertus* (Brush Box)
Pr	*Photinia x fraseri 'Robusta'* (Photinia)
Sb	*Sapium sebiferum* (Chinese Tallow Tree)
Tl	*Tristaniopsis laurina* (Water Gum)
Wf	*Waterhousea floribunda 'Green Avenue'* (Weeping Lilly Pilly)
Xc	*Xanthostemon chrysanthus* (Golden Penda)
Xs	*Xylosma senticosum* (Xylosma)

Deciduous

Fp	*Fraxinus pennsylvanica* (Green Ash)
Li	*Lagerstroemia indica* (Crepe Myrtle)
Pcn	*Prunus cerasifera 'Nigra'* (Purple-leaf Cherry Plum)
Up	*Ulmus parvifolia 'Todd'* (Chinese Elm)

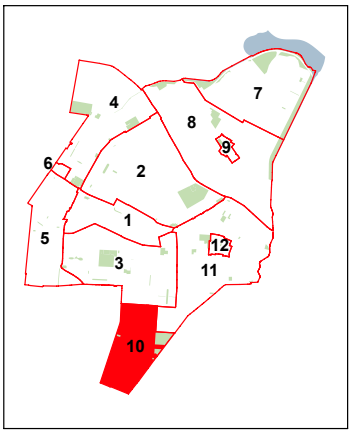
Mixed Species

Mix	*Refer to the street tree species schedule for details on the mixed tree species for this street location*

LEGEND

Public open space

Railway



PRECINCT KEY PLAN

Figure 6.43
Precinct 10
Hurlstone Park and Ashbury

6.11 Summer Hill

Land area: 111.9Ha

Context and History
Located 8km west of Sydney, this precinct contains an established residential area, with some commercial and industrial land use around the railway station and along Parramatta Road and Liverpool Road. Summer Hill is bound by Liverpool Road and Parramatta Road to the north, the Hawthorne Canal in the east, Old Canterbury Road to the south and Prospect Road in the west. The suburb of Haberfield is located to the north, Lewisham to the east, to the south is Dulwich Hill, and to the west is Ashfield (south).

Settlement of the area dates from 1794 when the first land grant was made. The population was small until the railway station opened in 1879. Over the next 50 years the area grew and developed into a distinguished suburb with many neat Victorian houses and spired churches. During the post-war years, the area transitioned into a more working-class suburb and significant development occurred when many large estates were subdivided and mansions were demolished and replaced with smaller houses, terraces and apartment blocks.

Summer Hill still retains a rich heritage and has a large number of protected local architecture and remnant industrial heritage in the former flourmill site. It has a diverse character, with a mix of residential types from medium density apartment blocks and terraces near the Summer Hill railway station, to detached Federation style houses set back from the street with off street parking and tree lined streets.

Figure 6.44- Aerial view of Summer Hill illustrating current canopy cover and landuse density and patterns. (Source: 21st November 2014 NearMap)

Figure 6.45 - Sloane Street (Photo-Arterra)

Major features
A major feature of the area is the Main Western Railway Line, which dissects Summer Hill in half from east to west, creating Summer Hill north and Summer Hill south. Other features of the area also include Trinity Grammar School, Darrell Jackson Gardens, John Paton Reserve, Summer Hill Skate Park, the Summer Hill railway station and Western Gower Street Reserve.

Streets and Street trees
This area has low to moderately rolling topography. Apart from the major roads, the majority of the streets in this area are characterised by low-density residential streets with narrow to small <1.8m-3.5m verges with 1.5m wide footpaths and a resulting 1-1.5m wide grass strip which two-thirds of the street trees are planted. In some cases the species selected for these narrow verges are too large for the space, which has started to cause some damage to the surrounding surfaces. The remaining streets have in-road planting.

Evidence of historical in-road planting has been retained with some very good examples along Kensington Street and Sloane Street. This distinctive and successful planting greatly enhances the character of these streets and are historically important to the Summer Hill heritage.

There is a mixed palette of existing trees, some large and some small, often with little regard to whether they are under the wires or not. As a result, clearance pruning has significantly disfigured many of the larger trees on one side of the road.

Existing Primary Street Trees
- *Lophostemon confertus*
- *Melaleuca bracteata*
- *Melaleuca quinquenervia*
- *Callistemon sp.*
- *Elaeocarpus reticulatus*
- *Callistemon viminalis cv.*
- *Prunus sp.*
- *Tristaniopsis laurina*
- *Schinus areira*
- *Melaleuca styphelioides*

Figure 6.46 - A photomontage of Carlton Crescent, Summer Hill illustrating a potential change to the street trees and street treatments that could significantly soften the street and screen the adjoining railway corridor. (Image - Arterra)

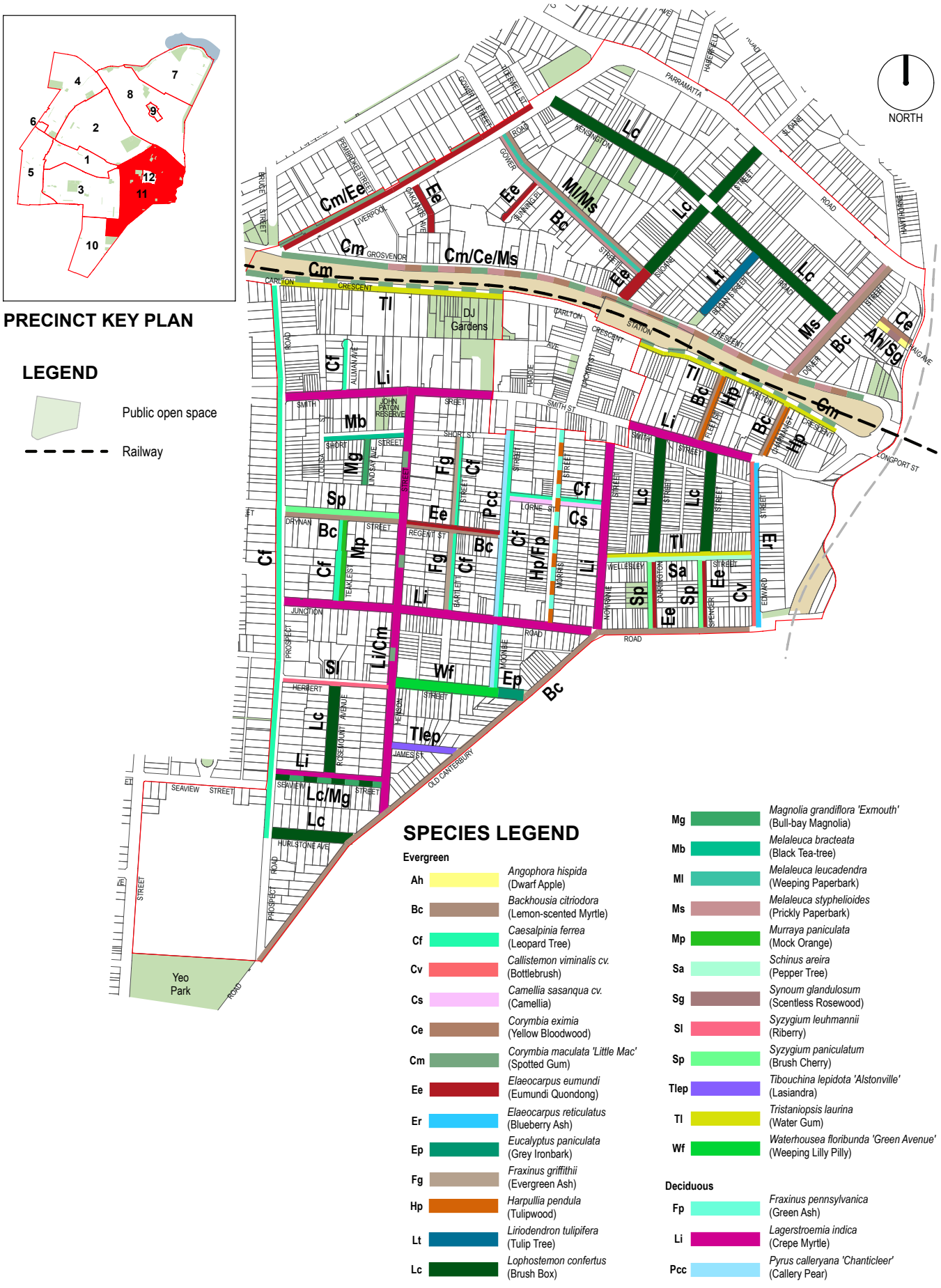


Figure 6.47
Precinct 11
Summer Hill

6.12 Summer Hill Village

Land area: 5.8Ha

Context and History
Summer Hill Village is located in the centre of the Summer Hill precinct and to the south of Summer Hill railway station. The area is known for its atmosphere, cafes, local food and old world charms. It has a rich heritage and protected local architecture. Three pedestrian friendly streets form the distinct village character, which comprises a diverse mix of small locally independent businesses dominated by cafes and restaurants. The streets form a square enclosing a small plaza and a tree-lined carpark.

Settlement of the area dates from 1794 when the first land grant was made. The population was small until the railway station was opened in 1879. Over the next 50 years the area grew and developed into a distinguished suburb with neat Victorian houses and spired churches until the 1920s.

Major features
A major feature of the area is the Summer Hill railway station and Inner West & Southern Train lines.

Streets and Street trees
The main roads are characterised by small commercial businesses with small fully paved verges between 1.8-3.5m wide. Some street tree planting is located within the paved footpaths in individual tree pits with resin-bonded gravel infill.

The trees planted within the central carpark add to the character of the area.

Existing Primary Street Trees
- *Pyrus calleryana cv.*

Figure 6.48 - Morris Street (Photo-Arterra)

Figure 6.49 - Smith Street (Photo-Arterra)

Figure 6.50 - Lackey Street (Photo-Arterra)

Figure 6.51 - Smith Street (Photo-Arterra)

Figure 6.52
Precinct 12
Summer Hill Village

7.0 Street Tree Action Plan and Implementation

7.1 Overview

Ashfield has a demonstrated commitment to street tree planting. In many areas it could be considered by most people to be well treed, although in many areas the trees are typically small and heavily pruned for power line clearance. The vast majority of streets are already planted and some streets present very well. There are some very historic street tree avenues that contribute significantly to the beauty, character and enjoyment of Ashfield.

Despite this, longer term or strategic thought has not been given to some of the previous planting initiatives. Moving forward, it is important that the street planting of Ashfield seeks to:-

- Maintain and reinforce important heritage streets and avenues.
- Maintain and improve its substantial in-road planting assets and procedures.
- Plant the right tree in the right place with emphasis on planting medium sized trees compared to smaller trees to improve the look of the streets and improve overall canopy cover.
- Implement a much more proactive program of ABC installations in strategic streets to allow medium trees to be installed and/or continue past the wires.
- Place more emphasis on appropriate and best-practice planting details to improve success of the trees and reduce future infrastructure damage.
- Provide better integration of street planting with soil improvement, pavement replacement programs, expanded tree pit surrounds and maintaining in-road planting opportunities.
- More closely scrutinised planting in very narrow grass strips or narrow fully paved verges in the light of the many factors such as physical space for the ultimate tree size and passing vehicle clearances.

Often it takes only a very small shift from the established norms to achieve a much better outcome for the tree, the community and the environment.

7.2 Inventory Maintenance

An inventory is a very important management tool and the street tree inventory currently prepared by Council should be maintained and continue to be regularly updated as any existing trees are removed and replaced. It should also be subject to comprehensive re-verification done every 5-10 years. The best way to achieve this is on a continuous/cyclic review basis, updating one or two separate precincts each year thereby delivering a complete review and update every 10 years.

7.3 Tree Removals and Replacements

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 or canopy cover improvements. Generally, Council will 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 use by 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, an unacceptable hazard or 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 specific plan to revitalise a street or area. Even then, unnecessary tree removal will still be avoided where possible.

Figure 7.1 - Trees are important investments and their management and care can represent a substantial ongoing funding commitment by Council. (Photo-Arterra)

Street Tree Removals and Replacements

Council aims to maintain and conserve the overall canopy coverage within the LGA. Council will remove street trees in the following circumstances.

- The tree is dead or dying, or unacceptably disfigured or poorly formed.
- The tree is assessed as being hazardous due to recognisable structural or health defects and where remedial or selective pruning cannot eliminate the risk, or where such pruning will leave the tree unacceptably disfigured or poorly formed.
- The tree is causing public infrastructure damage which is considered significant and cannot be overcome by other reasonable and practical measures.
- The tree is causing significant damage to significant private structures. It will typically be a requirement to positively establish that the tree is causing the damage and that the damage is 'significant' and that continued and future damage cannot be overcome by other reasonable and practical measures.
- Any other reason, at the discretion of Council's staff which can be justified by either technical or legal grounds according to particular circumstances.

In regard to the above, 'significant' damage is a relative term, and will usually be assessed with respect to the likelihood of repetitive repairs and the relative costs compared to the amenity value of the individual tree. For example repairs or replacement of footpath pavements or kerbs once every 10-15 years due to tree root growth would generally be considered acceptable. However, the replacement of a footpath every 2-3 years and a tree that will continue to substantially increase in size would indicate that the tree is generally unsuitable for the location.

Likewise, it is also necessary to consider the severity, age and nature of any private property damage and how quantifiable the damage is being caused solely by the tree. If the structure is a relatively minor outbuilding, or landscape wall or the suitability or quality of construction is questionable, it may be of greater over-riding benefit to retain the tree as the more significant item. Obviously, if the damage is clearly related to the Council's tree and is affecting the structural integrity of a dwelling or other important structure, then clearly tree removal must be considered. As a rule this will generally be determined on a case by case basis.

If an owner is claiming that damage is being caused by a Council street tree, the owner must furnish reasonable proof that the damage is directly attributable to the tree. Root and species identification may be necessary if more than one tree may be contributing to the damage.

The removal of a tree is generally not considered justified when damage is restricted to minor works such as unit paving, fencing or footpaths and driveways or to a deteriorating sewer or drainage line where reasonable and practical repairs can be carried out. This is a principle largely upheld by the NSW Land and Environment Court.

Where a street tree is removed, Council will install a suitable 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 Strategy. Where a choice of species is provided the species selected will take into consideration the localised environmental, functional and aesthetic aims and the reason for the previous trees removal. The species selected shall be at the sole discretion of the Council.

Notification of Tree Removals

Where practicable and feasible the Council will provide at least 7 days notice for the planned removal of significant or heritage street trees. This notification will typically be via a notice on the Councils website and a notice attached to the tree. For emergency removal or minor street tree removal, typically no notice will be provided.

Palm Transplanting or Removals

As part of this strategy, the transplanting of some palms has been identified. Priority will typically be given to palms that:-

- are already causing conflicts with over head power lines.
- are in streets where only a few palms remain and they are not identified to be continued.

The following streets have been identified as priority streets:-

- Loftus street - Ashfield North
- Kenilworth Street - Croydon North/Ashfield West
- Ranger Road - Croydon North/Ashfield West
- Edwin Street South - Croydon North/Ashfield West
- Heighway Avenue - Croydon South/Croydon Park
- Stanton Road - Haberfield

Major Upgrades and Removal Timing and Strategies

The method that removals will be approached in any given street is a complex consideration and will be dependent on a number of important and inter-related factors:-

- Size and significance of the trees being replaced
- Whether they are part of a consistent avenue planting
- The nature of the problem that they may be causing
- The nature of the replacement trees being suggested and whether there will be room under other existing trees for the new planting.

For particularly significant trees or isolated trees that are not part of a recognised avenue planting, they will typically be removed one at time and replaced with a suitable new tree. This allows the trees to be replaced gradually without significant impacts to the overall amenity of the area.

This may not be effective if the trees are part of a larger grouping or if major street changes or improved planting techniques are proposed. In such cases, Council will be seeking to achieve economies of scale in the new works and flexibility in addressing new footpaths, services or road works, that may otherwise damage existing trees.

When the trees are part of a group or avenue, the Council will typically remove the identified problem or substandard trees as small groups. For long avenues this will typically be in a 'block' style replacement leaving some groups or 'blocks' remaining in between the new planting. This keeps the overall integrity of the street planting while replacements begin to mature. As the new planting matures the Council will return to remove the remaining 'blocks'. Depending on the size of trees being replaced and the length and importance of the avenue, this process will usually be completed over a 5-8 year program in either 2-3 stages, leaving 2-3 years between removals and replacements. This length of time is important so that Council can properly program and budget the works and also to allow time for the new trees to reach a suitable size before removing further trees.

7.4 New Tree Planting Program

The implementation of any new street tree planting needs to be carefully planned and considered. This will involve the critical elements below:-

- the quality and species of the trees planted
- the size they are planted and
- the way it is physically planted and cared for in the first few weeks and months.

Planting time is also important. Most, if not all tree planting in Ashfield, should be undertaken in either Autumn or Winter. This will greatly increase the success of the planting and reduce the establishment maintenance burden. Staff (or their chosen contractors) should focus on planting during these times and then focus on after care activities, such as watering, weeding and formative pruning in the summer months.

Tree Procurement

Considerable effort and resources can be spent in planting new street trees. This considerable effort can be wasted if the tree dies shortly after planting, or if the tree is supplied in a substandard form or condition that may ultimately lead to poor performance or the later development of serious structural defects and poor health. As outlined by authors such as Gilman (Gilman 2012), most tree defects that occur in mature trees were present and identifiable at the time a tree was initially planted. It is therefore essential that the tree and its roots are in optimal condition when delivered and planted.

An important aspect of the implementation of this Strategy will be to also improve the way Council plans for, and procures its nursery stock. Implementing a more 'forward-thinking' and pre-planned approach to plant procurement has numerous benefits, which include: -

- Securing favourable contract growing prices.
- Ability to prepare and coordinate planting at optimum times of the year.
- Ability to purchase trees of the required species and cultivars.
- Ability to purchase trees of the required sizes and dimensions and formatively pruned to suit street tree installation.
- Assurance of the required quantities, including allowance for replacements when necessary.
- Ability to inspect and demand high quality stock, free of above and below ground defects.

In summary, all trees to be provided to the Council should be part of an advanced plant supply contract with one or more reputable commercial suppliers and they should conform to the NATSPEC "*Guide for assessing the quality of and purchasing of landscape trees*" by Ross Clark 2003. The specifications outlined in Section 8.2 of the STS detail the specific requirements for the supply and transportation of trees. Council should undertake inspections of the stock prior to, or upon delivery, and reject any trees that fail to adhere to these specifications.

Tree Sizes

Tree size at installation is a critical issue. Too small and the tree may take a very long time to reach a worthwhile size and is more susceptible to accidental damage and vandalism. The bigger the tree at installation the harder and the larger the cost to install it and replace it if it is damaged. There needs to be balance between size and cost.

Figure 7.2 - Advanced growing contracts for trees allows for the proper supply of plants in the varieties, sizes, quantity and quality that Council requires. (Photo - Arterra)

The following guidelines are proposed as part of this Plan. The sizes given are nominal container sizes and it is assumed that stock will be grown and supplied under the Natspec guide to purchasing landscape trees (Clark, 2003).

Table 13 - TREE INSTALLATION SIZING

Minimum Plant Container Size	Location Parameters
45L	Minimum typical street planting size for minor access streets or other areas of minimal use and where vandalism is unlikely
75-100L	Collector Roads and areas where casual vandalism is likely
150-200L	For major roads or areas where damage to smaller trees is highly likely
400L and above.	For special, high profile areas or civic or gate way planting sites

Tree Planting

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. Council officers prior to the finalisation of any planting program will assess this sort of conflict.

Similarly each tree planting site needs to be carefully assessed for potential future conflicts with existing or planned infrastructure. Future issues and unnecessary tree removals and pruning can be avoided if the tree is not put too close to street lighting, signage, walls, bus stops etc. Refer to section 4.5 for further guidance. Of course some of these final decisions will need to be judgement calls based on the benefit of the tree, the traffic volumes of the street and the

Figure 7.3 - Quality control of trees supplied for planting is critical to the success of any planting program. Unless checked, many defects can be present at the time of planting and they can be either rejected or the problem easily rectified before it becomes a major problem when the trees reaches maturity. (Photo-Arterra)

nature of the conflict. Council officers shall have the final say on whether a tree is planted or not. Council officers may also use discretion and change from the scheduled species for the street to deal with some isolated and specialised planting considerations (such as underground services) in an attempt to still provide tree planting in a given location.

Planting method and approach is also an important aspect in the final success of any tree planting, but especially street tree planting. For Ashfield, planting shall typically adhere to the standard tree planting details and specifications provided in Part C -Section 8.2 and 8.3.

The following shall be observed and implemented during typical street tree planting:-

- Quality Imported Backfill Soil shall be applied to the soils surrounding and within the tree planting pit to aid in the establishment of the new tree.
- Soil wetting agent shall be applied to the soils surrounding and within the tree planting pit to aid in the effectiveness and uptake of water by the new tree
- Planting pits (particularly within pavement) shall be made as large as possible to facilitate air and water exchange with the root system and prevent unnecessarily early interaction between roots and pavements. The bigger the planting area to start with the more likely roots will be to divide and be smaller by the time they need to travel under pavements. Porous pavements should only be used as a last resort and under special circumstances. These are more applicable to retaining large and mature trees, where pavement needs to be replaced.
- Pre-planting root pruning shall be undertaken for each tree upon planting. Trees grown in containers will nearly always have circling and kinked roots growing at the edge of the container. This is the very last chance we have for these to be corrected and provide a better quality, radial root pattern to develop in the mature tree. This is a critical step. Every tree should have the outside 5-10mm of the root ball shaved off with a sharp spade at the time of planting and just before backfilling.
- Consideration may be given to localised root barriers between trees and adjoining kerbs to deflect and direct surface roots away and under critical infrastructure, particularly in very flat areas or in median planting.
- Install protective staking around the trees, to identify it as new planting and protect it from casual and accidental interference. This staking is not to support the tree, as the new trees should be self supporting upon supply from the nursery. More permanent guards may be warranted in very high use or vandal prone areas. In very exposed or high wind areas, separate support staking directly around the plant may be needed in the first few months. This shall be via 2 stakes placed just outside the rootball and a figure 8 hessian tie placed loosely around the trunk. All stakes should be removed within 6-12 months. If this does not appear possible, the tree should be thoroughly inspected and replaced as the failure to become self supporting is likely to indicate a serious defect in the root system or root collar.
- The surrounds of each tree should be mulched. This is important to help retain moisture, and inhibit weeds. Over time this may be either continued or allowed to return to grass, depending on the location and the adjoining owners preferences. The mulch will help reduce the incidence of mower and/or whipper snipper damage to the young tree. Grass also has a far greater capacity to intercept rain water and therefore should be discouraged around the base of the tree, particularly when younger. Regardless, each new tree should be supplied with an expandable plastic collar guard when planted within grassed surrounds.
- The tree needs to be thoroughly watered upon planting and then at regular intervals. The amount and frequency will be dependent on the season and size that the tree was installed. Each species will be different but as a rule of thumb the plant will need to be watered weekly for the first 8 weeks, then fortnightly for the next 12 weeks (4 months total). After this time the tree should have started to develop roots into the wider environment and become self sufficient. Further water should only need to be applied in severe conditions. The amount of water is also important. Approximately 50% of the volume of the original container volume should be applied at each watering (ie. 45L tree should have 20-30L applied and a 200L tree should have 100L applied at each watering). The water should also be directly to the original root ball and not to the surrounding soil. All the roots of the tree are largely within the immediate vicinity of the original root ball when it is young and may take some time to expand outwards.
- Finally the tree should be assessed for the need for formative pruning. Refer to the section 7.5 following.

7.5 Tree Establishment and Formative Pruning

Many defects that lead to later tree problems and failures are present in the tree upon delivery from the nursery and the initial planting. For example:-

1. Included branches
2. Co-dominant and tri-dominant stems
3. Congested branching architecture
4. Crossing and rubbing branches
5. Leans
6. Poor root development and girdling roots

Proper tree procurement as outlined in the previous sections goes an enormous way to preventing many of these issues but cannot deal with all of them.

At an early age many of these problems seem insignificant and unimportant. The tree, branches and defects are relatively small. These branches, however are often the trunks and branches that are the major branches of the tree when it matures and as it grows, so do the size of the trunks and these branches. A 25-50mm branch today will be the 200mm branch in 10 years time. Likewise, branches are typically at the same point in the tree in the mature tree as they are when young. Plants elongate from the ends, and the early trunks and stems just expand in girth, they do not move upwards in the tree. For example, if the tree currently has a major branch at 1.5m high, that major branch will always be emanating from about 1.5m high on the tree. When it is small that may not be an issue, but when the tree is mature this may not be desirable for clearances around and under the tree.

So small defects can become more serious and much larger as the tree grows. If failure occurs in maturity, the greater the damage or injury the failure may inflict. Also when a tree is mature, the ability to rectify these defects becomes substantially more difficult and costly. It also involves removing potentially very large branches, large amounts of foliage and pruning into heartwood and leaving substantial wounds that the tree expends substantial reserves trying to compensate for and seal around the wounds. It also opens up avenues for decay organisms to enter and affect the structural integrity of the tree. The result of failures later in a trees life usually results in excessive tearouts and trunk wounds and subsequently, poorly formed trees for the remainder of their life.

The far better and more cost effective way to manage the younger and newly planted street trees is to undertake a targeted and comprehensive 'formative pruning' program. The time and resources to remove a few 20-50mm diameter branches is miniscule compared to the cost of removing the same defects in a mature tree 10-20 years later, where chainsaws, traffic control and chippers are required. It will also ultimately result, in the long term, in a far better formed tree, free of defects as it grows and one that will positively contribute to the landscape and pose minimal hazard and risk to the residents and public for many years. Research has consistently shown the return on investment is hugely disproportionate, when comparing formative pruning with that of tree care in later life. (Ryder and Moore 2013)

The Council shall adopt a yearly program of formative pruning, targeting all newly planted and younger trees for a period of 3 years after installation. Although it may seem drastic, all major inclusions should be removed and lower lateral branches should be either removed or subordinated on the trees to force a much stronger central leader that is both ultimately higher and more dominant than would otherwise be if the tree was left untrimmed. This will mean that when the tree is gradually crown raised to provide better clearances for pedestrians and vehicles the cuts are quite small and easily accommodated, (rather than removing very large branches and potentially exposing the heartwood of the branches and tree trunk if left to later).

Likewise, once a reasonable lower clearance is achieved, trees that need to fit under power lines should start to be trained as soon as possible. They should not be left until they are amongst the wires. If pruned early and well under the wires a better shape can be provided with increased branching that will enable the tree to be easily managed under the wires or provide far greater opportunity to train outer branches around the wires, if need be.

The dividends from such a program will be repaid ten-fold in the future via trees with better basic structures and health and requiring less pruning and intervention as they mature. This ultimately leads to less risks of failure due to defective parts that were easily removed when the tree was young (Gilman 2012).

Formative pruning, although straight forward in theory, does require individual assessment and decisions based on each trees specific needs. It is both ‘art’ and ‘science’ and should be conducted by an experienced arboricultural professional and in line with AS4373 Pruning of Amenity Trees. Experiences from professionals such as Gilman indicate that in younger trees, foliage removal in the order of 40-50% is not an unacceptable figure and may be necessary in achieving the longer term desired outcomes. For older trees this should be reduced to 15-20% maximum.

The basic premise Council will follow is to 'prune early and prune often' until the desirable form of the tree is achieved

Figure 7.4 - Defects such as congested branching and included bark at major branches will be present in the tree forever unless removed. Removing these is an easy and cost effective process when the tree is young. If left, it becomes increasingly costly and detrimental to the tree. If left untreated these can lead to catastrophic consequences in later life. (Photo-Arterra)

and most obvious structural defects are removed. Finally, if formative pruning is not realistically achievable due to extreme pre-existing defects then it is far better to remove and replace the tree when it is young, rather than expecting the defects to unrealistically remedy themselves and then having to remove the tree in 10 years time or worse, remove the tree due to an otherwise preventable failure.

Some species are particularly pre-disposed to the formation of included bark branch unions at various points. This is most serious when it occurs in the major lower limbs and first order branch junctions. This type of union is often a weak branch attachment and is more inclined to failure as the tree matures. Larger and end-weighted branches are therefore prone to failure in heavy rains and strong winds. Trees such as Robinia that are inclined to such inclusions will not be as widely used. They can be managed, however, to try and alleviate the issue and reduce the likelihood of any serious failures.

Figure 7.5 - Like any asset, trees will still require ongoing management and maintenance, particularly as they age and should be factored into Council's ongoing management programs. (Photo-Arterra)

7.6 Mature Tree Pruning and Ongoing Management

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. Council has developed specific guidelines with regard to tree pruning for clearances and to maintain views and solar access. Refer to Figure 7.6 below for a diagram that graphically illustrates the proposed clearances and offsets for mature tree pruning. This is a guideline illustration only and actual clearances required will depend on individual site constraints.

Council will not typically prune a tree for the provision of views or creation of unreasonable solar or digital receiver 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 pre-existing solar or digital receiver access.

If an existing tree is removed, any replacement tree will normally 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.

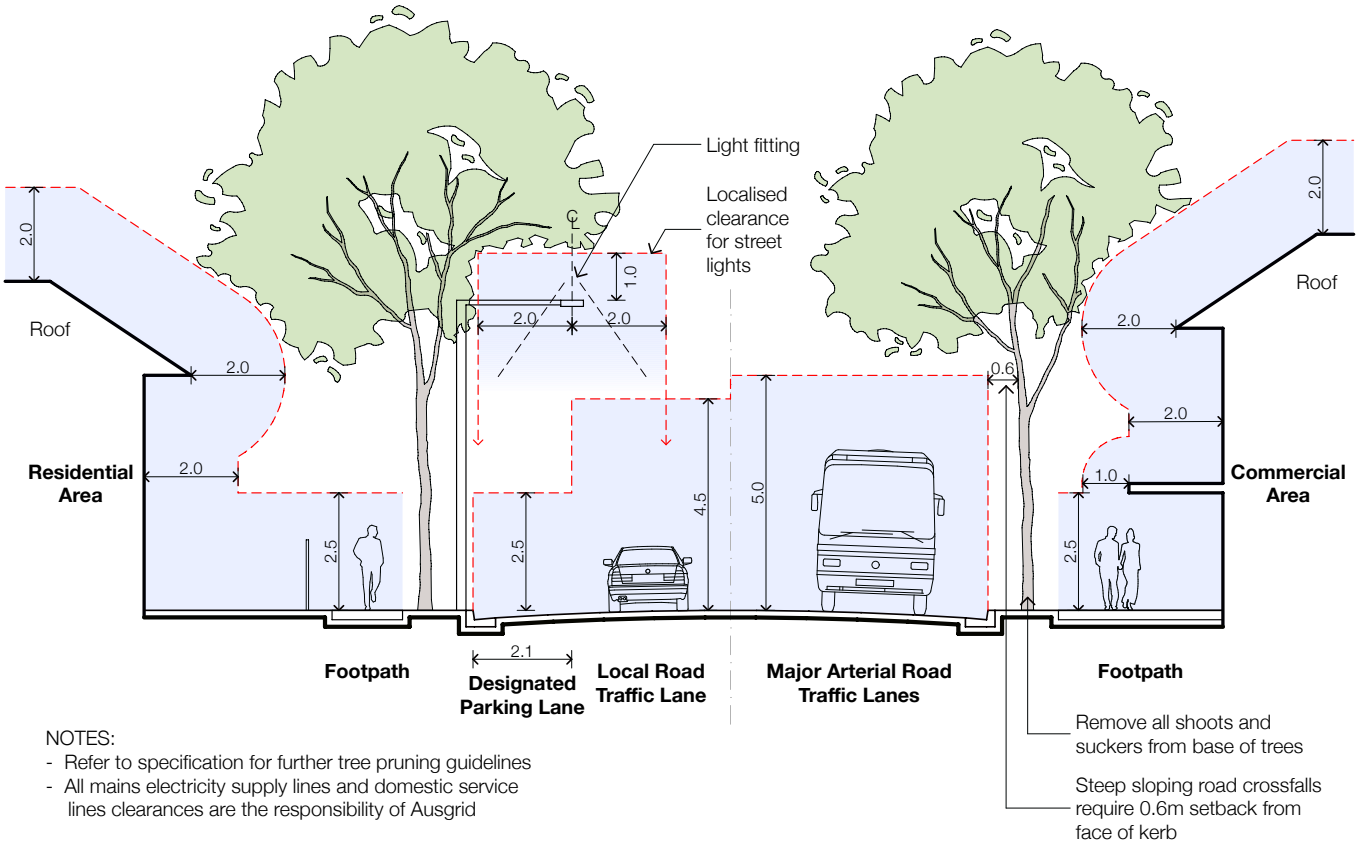


Figure 7.6 - Council's standard pruning clearances to be applied.

Unauthorised (Resident) Planting on Council Land

Council may identify situations where residents' 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.

It may also represent an unacceptable maintenance burden to Council, or a cost to later remove the tree and result in the strategic vision of the Strategy not being achieved. Council therefore, does not permit planting of trees on Council land by persons other than Council staff or contractors and Council may remove any such trees without notice.

Tree Vandalism and Unauthorised Removals or Use of Street Trees

In accordance with Clause 5.9 of the Ashfield Local Environmental Plan 2013 it is an offence to damage, prune or remove a Council street tree. Any persons found guilty of tree vandalism will be prosecuted.

Residents shall also not attach items to a street tree or use a street tree for unauthorised purposes. As an example residents must not:-

- attach signs, flags, bunting or banners to trees.
- place wires, ropes or lights within the canopy.
- erect tree houses or other structures within or around the tree.
- attach swings or rope ladders etc.
- cut or otherwise damage roots or trunks at ground level to undertake edging or gardens.

Figure 7.7 - Resident planting - inappropriate species and spacing of unauthorised planting on Council land without approval from Council raises many serious issues regarding long term liability and maintenance obligations. It also can represent lost opportunities for Council to achieve more strategic visions and objectives. (Photo-Arterra)

7.7 Street Tree Action Plan and Priorities

This Strategy provides Council with a clear direction to the ongoing management of street trees in Ashfield. Specifically, this document recommends the following key priority areas to be targeted by Council in its management of the street tree resource:-

- Commitment to long term strategies to increase the canopy cover within the Ashfield area.
- Commitment to ongoing maintenance of an accurate and up-to-date inventory of street trees
- Commitment to a visionary program of gateway and civic scaled tree planting in key areas (refer to Part B-Section 5)
- Reinforcement and improved tree planting along the identified major road corridors (refer to Part B-Section 5).
- Identification of streets where the implementation of ABC (Aerial Bundled Conductors) overhead wiring should be budgeted and prioritised (refer to Part B-Section 7.10 for detail).
- Investigation and implementation of further in-road planting opportunities particularly in narrow streets or in very wide streets with small trees. (refer to Part B-Section 4.7, 4.8 and 7.11).
- Implementation of improved approaches and methods to tree planting techniques with particular focus on achieving greater soil volumes and space for trees, more generous tree surrounds, integration of paving, services and tree planting and appropriate species selection. (refer to Part C-Section 8.2 & 8.3)
- Improved, consistent and documented procedures to deal with larger and problematic existing street trees. (refer to Sections Part A-2.7 and 2.8)
- Commitment to a recognised and probabilistic method for tree risk assessment (ie. the QTRA method).
- Greater scrutiny of proposed new and replacement planting sites based on the expected and ultimate size of the tree and assessment of the surrounding key infrastructure and services clearances.
- Consideration to the implementation of a register of significant park and street trees.
- Undertaking a valuation of the urban forest as an overall asset using a suitable broad scale measurement tool such as "i-Tree™".
- Commitment to the potential Palm relocation program.
- Improved procurement of tree stock with a defined and managed approach using forward planned installation periods, advanced ordering of quality plants in suitable sizes and adherence to the proposed species and cultivar palettes.
- Proactive response to resident requests for street planting where it is in keeping with the Strategy and ability to supply quality nursery stock.
- Develop an online street tree planting or maintenance request form.
- Proactive maintenance practices such as formative pruning and mulching around the base of young trees to achieve good quality, well structured and low maintenance trees well into the future.

The implementation of the above actions should be equally spread across all precincts, as far as reasonably practicable, to avoid some precincts receiving no attention for some years.

7.8 Costs and Resourcing

The priorities set out in this Strategy will require a commensurate commitment from Council, Council staff and the wider community. Appropriate funding, both recurrent and one-off capital injections will need to be provided as part of this Strategy to achieve the objectives and allow the implementation of key priorities.

To achieve this Strategy Council will need to consider:-

- Allocating or employing suitable Council staff to oversee and co-ordinate all street tree planting programs, including advanced plant procurement, supply methods and contracts, and the appropriate scheduling and resourcing of planting programs and early after care.
- Allocating a small standing committee involving at least a landscape architect, arborist, civil engineer and a traffic engineer to investigate and further develop and design the identified in-road planting opportunities.
- Allocating appropriate one-off and recurrent funding to the achievement of this Plan. A broad estimate of potential funding requirements is outlined below to assist and guide Councils priorities.
- Maintaining suitably resourced and appropriately trained staff (or contractors) concerned with the ongoing management and pruning of mature street trees.

Table 14 - GENERAL ESTIMATES OF BUDGETARY COST

Priority Item	Description	Estimated Budget Rates
ABC Installation	Allowance to negotiate with Ausgrid and facilitate installation of segments or lengths of ABC where currently none exists, with priority given to the streets identified in this Plan. Aim to achieve 20-30% streets ABC'd by 2030. (5-6 average streets per year)	$ 7,000 / span
New Street Tree Planting (includes tree supply, delivery and installation, tree pit preparation, excavation and tree surrounds, staking, traffic control etc.)	45 L Tree planting (small tree supply and install)	$ 250 / tree
	75 - 100 L Tree Planting (medium tree supply and install)	$ 1,200 / tree
	150 - 200 L Tree Planting (large tree supply and install)	$ 2,500 / tree
	400 L (and above) Tree Planting (special feature tree supply and install)	$ 5,000 / tree
	Allowance for in-road Installation and creation of median and blisters, necessary road work, signage, lane marking, services installation and re-directions	$ 250,000 / street
Establishment and Formative Pruning	Allowance for watering, weeding and annual formative pruning for the above tree planting (per year)	$ 10 / tree
Council Works Around Problematic Trees	Allowance for undertaking work around existing problematic trees to facilitate their retention, such as kerb and path realignments	$ 10,000 / tree
Tree Hazard Abatement	Allowance for undertaking work around existing problematic trees to facilitate their retention, such as services upgrades, compensation for private property damage, tree pruning.	$ 10,000 / tree
Palm Relocation	Allowance for undertaking transplant and relocation of palms, including preparation, cranage, transport and post transplant care	$ 5,000-10,000 / tree depending on numbers, complexity and distance moved.
Tree Removals (includes cranage, EWP, traffic control, chipping and removal stump grinding etc.)	Allowance for large and problematic tree removals and on major roads (per year)	$ 7,500 / tree
	Allowance for small to medium problematic and substandard tree removals on minor streets (per year)	$ 600 / tree
	Allowance for emergency tree removals and pruning (per year)	$ 4,500 / tree
Street Tree Inventory Maintenance/Update	Allowance for continuing cyclic update of existing street tree inventory - updating and reviewing 1-2 precincts per year.	$ 10,000 / year
Street Tree Promotion and Education	Allowance for community based activities and promotions and development of an on-line street tree planting or maintenance request form	$ 25,000 / year

7.9 New Planting Areas - Priority Streets and Upgrades

During fieldwork and review for the preparation of the Street Tree Strategy 2015 the following streets were identified for priority planting. Council needs to continue to be proactive and actively target some streets where trees are failing and respond by providing a very holistic and integrated solution to engineering, services, soil and trees. (eg. Byron St, Oak Street should be the models for renovating similar streets). Possible streets that may be targeted in the next 3-5 years include:-

- Shepherd Street, Ashfield South
- Alt Street (between Martin and Waratah St), Haberfield
- Australia St, Croydon
- Northcote St, Haberfield
- Etonville Pde, Croydon North
- Bland Street, Ashfield

Figure 7.8- Oak St, Ashfield North an excellent example of how existing in-road planting can be sensitively upgraded with minimal impact to trees and retain the character and beauty of the street. This should be a model for similar streets requiring redevelopment or major replanting programs.

Figure 7.9- Byron St, Croydon North - a good example of how streets can be renewed proving good integration of trees, parking, carriageways and pathways.

Figure 7.10- Etonville Pde, Croydon North - an example of a street that should be upgraded and planted to improve amenity and biodiversity

Figure 7.11- Northcote St, Haberfield - an example of a street requiring upgrade and replanting.

Figure 7.12- Shepherd St, Ashfield South - an example of a street requiring upgrade and replanting.

Figure 7.13- Bland St, Ashfield South - an example of a street that could be planted with a defining and consistent treatment that indicates it as important collector road similar to Croydon Road.

7.10 ABC Priority Streets

During fieldwork and review for the preparation of the Street Tree Strategy 2015 the following streets were identified as 'priority' streets for the expansion or the introduction of Aerial Bundled Conductor (ABC) 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.

Table 15 - ABC PRIORITY STREETS	
Street Name	**Bewteen Streets**
01. Ashfield Town Centre	
Holden Street	
Knox Street	
Liverpool Road	Queen Street and Lapish Ave
Liverpool Road	Frederick Street and Lapish Ave
Miller Avenue	
Queen Street	Liverpool Road and Norton Street.
Victoria Street	Liverpool Road and Norton Street
02. Ashfield North	
Bruce Street	
Chandos Street	
Eccles Avenue	
Richmond Avenue	
Tideswell Street	
03. Ashfield South	
Allibone Street	
Brunswick Parade	
Carlisle Street	
Farleigh Street	
Hugh Street	
King Street	
Tintern Road	
04. Croydon North/Ashfield West	
Australia Street	
Banks Street	
Earle Avenue	
Etonville Parade	
Scott Street	
Sunbeam Avenue	
Vine Street	
05. Croydon South/Croydon Park	
Forbes Street	
Georges River Road	Greenhills St and Milton St
Hay Street	
Walter Street	
Watson Avenue	
Wetherill Street	Liverpool Road and Thomas St.
06. Croydon Village	
Elizabeth Street	West of Edwin Street North.

Table 15 - ABC PRIORITY STREETS (cont.)	
Street Name	**Bewteen Streets**
07. Dobroyd Point	
Dobroyd Parade/City West Link	
Empire Street	Waratah Street and Martin Street
Minto Street	
Rawson Street	Waratah Street and Martin Street
08. Haberfield	
Cove Street	
Denman Avenue	
Empire Street	Ramsay Street and Martin Street
Forrest Street	
Logan Avenue	
Nicholls Avenue	
Northcote Street	
Ramsay Street	
Sloane Street	Ramsay St and Parramatta Road
Tressider Avenue	
Wolseley Street	
10. Hurlstone Park	
Goodwin Street (south section)	
Hillcrest Avenue	
Mount Street	
Watkin Street	
11. Summer Hill	
Allman Avenue	
Bogan Street	
Carrington Street	
Kensington Road	
Moonbie Street	
Oaklands Avenue	
Rosemount Avenue	
12. Summer Hill Village	
Lackey Street	

7.11 In-Road Planting Opportunities

During research for the preparation of the STS 2015, some streets were identified where new in-road planting or re-aligned kerbs should be explored. This reduces conflict with overhead power lines, reduces the perceived width of street, may allow biodiversity shrub planting under canopy trees, and allows for larger trees to be planted.

In-road planting can also allow tree planting where verges are otherwise too narrow and where there would otherwise be no trees at all in a street. They do not have to be regularly or closely spaced, as even a few trees can make a huge difference to how a street looks and feels.

The streets listed below have been identified as streets having opportunities to plant within the current road carriageway, with the objective to plant larger canopy street trees that are further away from overhead power lines and thereby reduce the apparent width of the road carriageway, calming traffic and/or providing a more aesthetically pleasing street. This also allows trees to be planted further away from nearby houses. Many of these opportunities could be combined with rearrangement of parking and provisions for perpendicular or angled parking to minimise parking loss, and in some instances even increase the parking opportunities.

Water Sensitive Urban Design (WSUD) opportunities may also be identified with some of these proposals, subject to the installation of suitably drained tree pits, and consideration of drainage and other raingarden/ biofiltration parameters. It should be noted, the viability of in-road planting / WSUD installation for each of the streets identified will be **subject to further detailed investigation** including most importantly the proper location of underground services, subsoil drainage, and traffic and parking considerations.

Table 16 - STREETS FOR POTENTIAL NEW IN ROAD PLANTING OR KERB REALIGNMENTS			
Precinct Name	**Street Name**	**Between Streets**	**Potential for implementation of WSUD, rain gardens etc.**
01. Ashfield Town Centre	Station Street		-
01. Ashfield Town Centre	Wood Street		-
02. Ashfield North	Nixon Avenue		Yes
02. Ashfield North	Richmond Avenue		-
02. Ashfield North	Taringa Street		Yes
02. Ashfield North	Tideswell Street		-
02. Ashfield North	Wallace Street		Yes
04. Croydon North/Ashfield West	Australia Street		-
04. Croydon North/Ashfield West	Bay Street		-
04. Croydon North/Ashfield West	Burns Street		Yes
04. Croydon North/Ashfield West	Etonville Parade		Yes
04. Croydon North/Ashfield West	Knocklayde Street		Yes
05. Croydon South/Croydon Park	Lion Street		-
05. Croydon South/Croydon Park	Norton Street	Milton Street and Carshalton Street	-
05. Croydon South/Croydon Park	Thomas Street	Frederick Street and Dickinson Avenue	-
05. Croydon South/Croydon Park	Yabsley Avenue		Yes
07. Dobroyd Point	Alt Street		Yes
07. Dobroyd Point	Crescent Street		Yes (subject to drainage and rock)
07. Dobroyd Point	Dobroyd Parade		-
07. Dobroyd Point	Martin Street	Ramsay Street and Dobroyd Parade.	Yes
07. Dobroyd Point	Martin Street	Dalhousie Street and Dobroyd Parade.	Yes
09. Haberfield Village	Dalhousie Street	Dickson Street and Winchcombe Avenue	-
10. Hurlstone Park	Florence Street		Yes
10. Hurlstone Park	Hanks Street		-
10. Hurlstone Park	Harland Street		-
11. Summer Hill	Carlton Crescent	Prospect Road and Smith Street	Yes
11. Summer Hill	Chapman Street		-
11. Summer Hill	Fleet Street		-
11. Summer Hill	Henson Street		Yes

7.12 References

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PART C - Street Tree Technical Guidelines, Details & Specifications

Ashfield Council

Ashfield
Street Tree Strategy
2015

8.0 APPENDICES

8.1 Street by Street Species Listings by Precinct

The following pages provide tables that outline in further detail the proposed street tree species, on a street by street basis, broken up for each precinct.

These tables supplement, and should be read in conjunction, with the relevant precinct maps as provided in Part B - Section 6.0. The final selection and placement of the any street tree shall still be subject to the application of the appropriate site assessment and other relevant siting influences outlined in this document before final planting. If a suitable site can not be found,or reasonably created, within the realties of budget and spatial constraints then a street tree may not be installed.

Street Name	Between Streets	Power Lines	Verge Width	Verge Type	Existing Dominant	Proposed Species	Key Street Observations
01 ASHFIELD TOWN CENTRE							
Beatrice Street		ABC (Even)	Small (<1.8-3.5m)	Grass & Path	***Lophostemon confertus***	***Waterhousea floribunda 'Green Avenue' (both sides)***	ABC already installed. Could do perpendicular parking to improve parking and provide tree planting. Could swap over time to new species with similar character to reduce reliance on Brush Box.
Bland Street		OH (Odd)	Small (<1.8-3.5m)	Fully Paved	***Nil***	***Lagerstroemia indica (both sides)***	Recommend to pull up part of pavement and install trees and grass or a suitable low maintenance verge garden/hedge instead of full width pavement.
Brown Street		ABC (Even)	Small (<1.8-3.5m)	Fully Paved	***Mixed***	***Zelkova serrata 'Green Vase' (both sides where not impacted by awnings)***	High voltage on railway side as well as low voltage powerlines. Awnings occur in places. Eastern end with new development. Wider verges in this area provide for tree planting with no overhead power lines (4.0m width). Recently planted Pyrus and Water Gums. Opportunity for larger planting in the future.
Cavill Avenue		OH (Even)	Small (<1.8-3.5m)	Fully Paved	***Nil***	***Elaeocarpus eumundi (both sides where space allows and clear of wires)***	Private trees contributing to the streetscape. Verge variable from 2.3 to 1.8
Charlotte Street		ABC (Odd)	Small (<1.8-3.5m)	Fully Paved	***Mixed***	***Zelkova serrata 'Green Vase' (strategic locations only, clear of obstructions)***	Opportunity for a few larger trees at strategic locations.
Frederick Street	Liverpool Road and Railway Line	OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Elaeocarpus eumundi (both sides where space permits) Corymbia maculata 'Little Mac', Waterhousea floribunda 'Green Avenue' (only where not under wires and where development is setback from road or adjacent road closure or park, otherwise no street planting suggested)***	Very busy through road with traffic in kerb side lanes. Typically narrow verge restricting planting opportunities. Various street closures and open spaces along street do allow larger tree planting. Verge width therefore variable at these locations. Recommend implementing a consistent defining small upright tree as a linking element with other similar collector roads.
Heighway Avenue	east of Frederick Street	OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Lophostemon confertus***	***Syzygium paniculatum***	Short street but with historic Brush Box in-road planting. Should continue with in-road planting but could change to another similar character species to reduce reliance on Brush Box
Hercules Street		ABC (Even)	Medium (3.5-5m)	Fully Paved	***Ulmus parvifolia***	***Ulmus parvifolia 'Todd' or Zelkova serrata 'Green Vase' (both sides)***	Trees planted in kerb extensions and blisters. Very attractive street with good canopy and character.
Holden Street		OH (Odd)	Small (<1.8-3.5m)	Fully Paved	***Nil***	***Zelkova serrata 'Green Vase' (both sides)***	Opportunity to plant but extensive services and busy street with traffic lights. Implement ABC and undertake tree planting in strategic location on both sides of street.
Knox Street		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Zelkova serrata 'Green Vase' (both sides)***	Fully paved on (even) east side of street. Brush Box planted in road to the southern end of street. Busy street with traffic lights, large sections of driveway. Recommend installing ABC in strategic location where tree planting possible.
Liverpool Road	Queen Street and Lapish Ave	OH (Odd)	Medium (3.5-5m)	Fully Paved	***Syzygium paniculatum (balled) Brachychiton acerifolius***	***Zelkova serrata 'Green Vase' (both sides where space and clear of awnings) Washingtonia robusta or Butia capitata (both sides as gateway treatment both sides between Lapish Ave and Miller Ave)***	Syzygium sp. pruned to balls under awnings. Existing Brachychiton are variable in condition. Awnings, services, sight lines, traffic lights limit planting. Buses etc. travelling next to road edge.
Liverpool Road	Queen Street to Carlton Crescent	OH (Odd)	Small (<1.8-3.5m)	Fully Paved	***Mixed***	***Elaeocarpus eumundi (non wire side or where clear of wires) Corymbia maculata 'Little Mac' (where space and clear of wires) Washingtonia robusta or Butia capitata (at Victoria Street intersection as a gateway)***	Very busy street but potential opportunities for small trees or shrubs under awnings. Where awnings permit and services and sight distances permit suitable high branching trees could be installed to improve amenity.

Street Name	Between Streets	Power Lines	Verge Width	Verge Type	Existing Dominant	Proposed Species	Key Street Observations
Liverpool Road	Frederick Street and Lapish Ave	OH (Odd)	Medium (3.5-5m)	Fully Paved	***Nil***	***Elaeocarpus eumundi (non wire side)***	Driveways, services, sight lines, traffic lights limit planting. Buses etc. travelling next to road edge.
Miller Avenue		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Lophostemon confertus Tristaniopsis laurina***	***Koelreutaria bipinnata (both sides)***	Currently has in-road planting but there are a lot of driveways and car parking loss may be unacceptable if further expanded. Recommend to discontinue in-road planting and implement a spreading tree in the verge with ABC as a priority.
Murrell Street		OH (Even)	Small (<1.8-3.5m)	Fully Paved	***Nil***	***Lagerstroemia indica (under wire side only)***	Very narrow verges and private school trees contributing to streetscape. Small trees possible under wires on western side.
Orchard Crescent		None or UG	Small (<1.8-3.5m)	Fully Paved	***Tristaniopsis laurina***	***Koelreutaria bipinnata (both sides)***	Most tree planting potentially on private property. Recommend larger trees be negotiated if new planting ever required or the adjacent car park redeveloped.
Queen Street	Liverpool Road and Norton Street.	OH (Even)	Small (<1.8-3.5m)	Fully Paved	***Syzygium paniculatum (balled)***	***Zelkova serrata 'Green Vase' (both sides)*** ***Elaeocarpus eumundi (where there are spaces in awnings)***	Fully paved verge and awnings impacting tree placement. Traffic in kerb side lane. Busy street with traffic lights at Liverpool Road end. Implement ABC as a priority.
Station Street		None or UG	Small (<1.8-3.5m)	Fully Paved	***Nil***	***Zelkova serrata 'Green Vase' (strategic locations only, where clear of obstructions)***	Variable verge width. Station awnings impact on planting locations. Short street. Massive amenity improvement possible with the loss of only two or three carspaces if trees planted in-road.
The Avenue		OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Lophostemon confertus***	***Waterhousea floribunda 'Green Avenue' (in-road and non-wire side)*** ***Backhousia citriodora (under wires)***	Extensive units within street. Perpendicular parking has been implemented amongst historic in-road planting. Recommend retaining in-road planting parking and ultimate replacement with a similar character species to reduce reliance on Brush Box.
The Esplanade		OH (Even)	Small (<1.8-3.5m)	Fully Paved	***Mixed***	***Existing Lophostemon confertus to be retained where feasible otherwise replace with Ulmus parvifolia 'Todd' and Zelkova serrata 'Green Vase' (both sides where space and clear of wires)***	Street is a kinking rear laneway. Low traffic volume and small verges, particularly at western end. Wider and variable verges at eastern end.
Thomas Street	Liverpool Road and The Avenue	OH (Even)	Small (<1.8-3.5m)	Fully Paved	***Melaleuca bracteata Callistemon viminalis cv.***	***Lagerstroemia indica (both sides)***	Existing trees disfigured by power line clearance pruning. Define street as key collector road and lead in to Ashfield town centre.
Victoria Street	Liverpool Road and Norton Street	OH (Even)	Small (<1.8-3.5m)	Fully Paved	***Nil***	***Koelreutaria bipinnata (strategic both sides if ABC undertaken)***	Currently no street planting. Street tree planting desirable in strategic locations.
Wood Street		OH (Even)	Small (<1.8-3.5m)	Fully Paved	***Nil***	***Zelkova serrata 'Green Vase' (strategic locations only, clear of obstructions)***	In-road tree planting possible in vacant areas at ends of car parking. Large amenity improvement possible with inclusion of a few trees clear of wires.

Street Name	Between Streets	Power Lines	Verge Width	Verge Type	Existing Dominant	Proposed Species	Key Street Observations
02 ASHFIELD NORTH							
Albert Parade		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Corymbia eximia (in wider verges leading to centre) Ficus rubiginosa, Ficus microcarpa var. hillii, Syzygium paniculatum (in central park area)***	Central island park created mid street and is well planted with a large variety of larger growing trees. Narrow full paved verge opposite in this central section and no planting recommended on this side.
Alt Street	Railway Line and Parramatta Road	OH (Odd)	Small (<1.8-3.5m)	Fully Paved	***Nil***	*-*	Narrow verge, fully paved, with narrow carriageway. No planting recommended. Large private trees currently contribute to street character.
Benalla Avenue			Narrow (<1.8m)	Grass & Path	***Lophostemon confertus***	***Elaeocarpus eumundi (both sides in grass strip) Lophostemon confertus (in island only)***	Narrow grass strip for most of street but small area with median island planting.
Bland Street		OH (Odd)	Narrow (<1.8m)	Fully Paved	***Nil***	***Lagerstroemia indica (both sides)***	Very narrow verge, either fully paved or with extremely thin grass strip. Long term vision should be to create as a Crepe Myrtle lined collector road similar to other precincts. Power lines swap to even side west of Julia street. Private trees do currently contribute to streetscape. Busy street, parking critical.
Broughton Street		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Callistemon viminalis cv.***	Unique little cul-de-sac style arrangement narrow at southern end. Pleasant trees and street scape in northern T head. Should continue current planting theme. Narrow parts considered too narrow to plant trees.
Bruce Street		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Waterhousea floribunda 'Green Avenue'***	Numerous young and semi-mature Waterhousea (Weeping Lilly Pilly) planted in-road and doing well. Should continue and reinforce this theme. Street closed by Park at Liverpool Road/ Elizabeth Street.
Cecil Street		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Lophostemon confertus***	***Lophostemon confertus (both sides in-road)***	Numerous areas of kerb displacement noted in street. Existing and significant avenue of in-road planting dominated by Brush Box which should be retained and continued.
Chandos Street		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Lophostemon confertus (alternating with) Robinia pseudoacacia 'Frisia' (both sides when in-road or ABC, otherwise non wire side only)***	Historically an in-road Brush Box avenue but now substantially diluted. Recommend continuing in-road planting and reintroducing Brush Box alternating with a contrasting and suitable deciduous tree. ABC should be implemented.
Charlotte Street		OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Callistemon viminalis cv. (both sides)***	Narrow grass strip. Numerous standardised Lilly Pilly currently planted. This presents a maintenance burden and little canopy cover benefit. Recommend more consistent planting of small trees.
Church Street		OH (Even)	Small (<1.8-3.5m)	Fully Paved	***Mixed***	***Lagerstroemia indica (both sides)***	Currently Callistemon and Melaleucas alternating pattern under wires. Some Elaeocarpus planted on non-wire side. Fully paved verges. Many trees disfigured by power line clearance pruning.
Comet Street			Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Tibouchina lepidota (alternating with below both sides) Backhousia citriodora (alternating with above both sides)***	Very narrow grass verge and short dead-end street. Recommend a more consistent and alternating planting of small trees to fit under overhead wires.
Curt Street		OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Lagerstroemia indica (both sides)***	Short dead end street with very narrow grass strip, suitable for thin trunked species only. Numerous Crepe Myrtles already planted Recommend continuing and reinforcing.
Eccles Avenue		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Corymbia maculata 'Little Mac' (in-road both sides)***	Historical planting of Brush Box and Butia Palms. Brush Box have been very disfigured by power line clearance by pruning. Avenue character now very diluted. Recommend continuing in-road planting but changing over time to new species. Street should be converted to ABC to allow future trees to develop without pruning.

Street Name	Between Streets	Power Lines	Verge Width	Verge Type	Existing Dominant	Proposed Species	Key Street Observations
Elizabeth Street	Liverpool Road and Frederick Street	OH (Even)	Narrow (<1.8m)	Fully Paved	***Mixed***	***Lagerstroemia indica (both sides wherever space and sight distances permit)***	Typically very narrow verge and fully paved. Some opportunity to plant in between Orpington Street and Grainger Avenue where footpath widens to 3.5m. Footpath also widens on western side between Bland and Alt St with mature Brush Box planted but now disfigured by clearance pruning. Recommend a long term program of Crepe Myrtle planting to define as a key collector road similar to Croydon Road, and others, and to improve street amenity.
Federal Avenue		OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Lophostemon confertus***	***Lophostemon confertus (In-road both sides)***	Dominated by Brush Box with only one recently planted Water Gum. Recommend continuing theme of Brush Box in-road rather than dilute.
Frederick Street	Railway Line and Parramatta Road	OH (Odd)	Narrow (<1.8m)	Fully Paved	***Nil***	***Elaeocarpus eumundi (both sides where space permits) Corymbia maculata 'Little Mac', Waterhousea floribunda 'Green Avenue' (only where not under wires and where development is setback from road or adjacent road closure or park)***	Major through road, narrow verge. Private trees contribute to streetscape particularly towards Parramatta Road end. Some apartments are set well back and can allow large tree planting until potential future road widening is undertaken. Recommend implementing a consistent defining small upright tree as a linking element with other similar collector roads.
Gower Street	Liverpool Road and Ormond Street	OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Melaleuca styphelioides (both sides)***	Short section of much longer street. Very diverse mix of planting. Recommend making more consistent with suitable small Melaleuca to tie in with southern section of Gower Street in adjoining precinct.
Grainger Avenue	North of Elizabeth Street	ABC (Even)	Small (<1.8-3.5m)	Fully Paved	***Robinia pseudoacacia 'Frisia'***	***Robinia pseudoacacia 'Frisia' (both sides)***	Currently dominated by Robinia which are generally performing well. Street currently ABC'd.
Henry Street		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Tristaniopsis laurina Elaeocarpus reticulatus***	***Tristaniopsis laurina (both sides)***	Numerous young Elaeocarpus currently on non-wire side. Grass verge strip on wire side but fully paved on other. Recommend converting all street to grass strip to improve planting conditions.
Ilford Avenue		OH (Even)	Large (>5m)	Grass & Path	***Lophostemon confertus***	***Lophostemon confertus (both sides)***	Short street with very large verge. Good street, recommend continuing existing planting theme.
John Street		OH (Even)	Narrow (<1.8m)	Fully Paved	***Mixed***	***Waterhousea floribunda 'Green Avenue' (in-road north of Alt St, non-wire side only) Elaeocarpus eumundi (east of Alt St, non-wire side only)***	Waterhousea currently planted in-road west of Alt St. Tibouchina planted east of Alt within the verge within in the narrower dead-end portion.
Julia Street		OH (Even)	Narrow (<1.8m)	Fully Paved	***Lagerstroemia indica***	***Lagerstroemia indica (both sides, east of Bland St only)***	Trees planted east of Bland Street only. Other areas considered too narrow.
Loftus Street		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Waterhousea floribunda 'Green Avenue' (in-road and on non-wire side only) Buckinghamia celsissima (under wires, discontinue in-road on wire side)***	Some existing mature and young Butia Palms currently planted within road carriageway. Many trees disfigured by power line clearance pruning.
Margaret Street		OH (Even)	Narrow (<1.8m)	Fully Paved	***Nil***	***-***	Narrow fully paved verge. Very limited planting opportunity.
Nixon Avenue		OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Callistemon viminalis cv.***	***Corymbia eximia (in-road only if parking reconfigured) Callistemon viminalis cv. (both sides)***	Short street. Could convert to perpendicular parking in part and create in-road planting on eastern non-wire side. Street currently dominated by Callistemon.
Oak Street		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Lophostemon confertus***	***Lophostemon confertus (both sides)***	Raised and paved parking detail been more recently implemented. Street historically and currently dominated by Brush Box. Recommend continuing and using as a template/model for other future street upgrades in similar streets.

Street Name	Between Streets	Power Lines	Verge Width	Verge Type	Existing Dominant	Proposed Species	Key Street Observations
Ormond Street		OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Lagerstroemia indica (both sides)***	Much of street adjacent significant Park. Fully paved on southern side for short section between Pembroke Street and Bruce Street only. Recommend reinstating grass strip to match other areas of road. Many disfigured trees due to power line clearance pruning. Numerous young Crepes Myrtles planted on park side, some under bigger trees.
Orpington Street		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Lophostemon confertus (in-road both sides)*** ***Lagerstroemia indica (adjacent Ashfield Park on park side only)***	One of the more important streets within the precinct with significant heritage planting of in-road Brush Box. Recommend continuing and reinforcing. Retain theme of Crepe Myrtle around Ashfield Park perimeter, otherwise Brush Box
Pembroke Street		OH (Even)	Narrow (<1.8m)	Fully Paved	***Mixed***	***Lagerstroemia indica (in-road both sides south of south of Ormond)*** ***(no planting proposed adjacent park)***	Narrow path, fully paved opposite park. Nice park outlook. Significant planting within park. Robinia only planted south of Ormond Street and in-road. Should continue in-road planting south of Ormond Street.
Rectory Avenue		ABC (Odd)	Small (<1.8-3.5m)	Grass & Path	***Waterhousea floribunda***	***Waterhousea floribunda 'Green Avenue' (in-road both sides)***	Currently an excellent in-road planting of Waterhousea floribunda (Weeping Lilly Pilly). Recommend continuing and reinforcing. Street currently ABC'd.
Richmond Avenue		OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Melaleuca bracteata***	***Tristaniopsis laurina (both sides)*** ***Ulmus parvifolia 'Todd' (only new in-road blisters at angled parking)***	Mixture of fully paved verge and verge with grass strip. Angled parking to wider northern end of street. Recommend installing spreading trees in blisters at parking. ABC of street should be prioritised.
Taringa Street		OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Lagerstroemia indica (under wires)*** ***Caesalpinia ferrea (opposite wires and within any in-road blisters)***	Very narrow grass strip. Narrow trunked species suitable only. Opportunity for some strategically placed in-road planting blisters.
Tawa Street		OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Lagerstroemia indica (both sides)*** ***Tibouchina lepidota (both sides)***	Short street with asymmetrical verge. Larger verge located under wires, in part.
Tideswell Street		OH (Odd)	Small (<1.8-3.5m)	Fully Paved	***Nil***	***Caesalpinia ferrea (strategically in-road or clear of wires)***	Very aesthetically unpleasing street that would benefit greatly from a couple of strategically placed in-road street trees. Need to negotiate and locate around numerous driveways.
Wallace Street		OH (Odd)	Narrow (<1.8m)	Fully Paved	***Nil***	***Caesalpinia ferrea (2 or 3 strategically in-road only)***	Narrow fully paved verge. Barren street with only small trees in private lots. Recommend undertaking strategic in-road planting at 2 or 3 locations along road.
Webbs Avenue		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Alternating planting of Tristaniopsis laurina (in-road or on verge opposite wires)*** ***Zelkova serrata 'Green Vase' (in-road or on verge opposite wires) (Avoid planting directly under wires)***	Historically an in-road Brush Box avenue but now substantially diluted. Recommend continuing in-road planting but changing to a new species over time.
Webbs Street		OH (Odd)	Narrow (<1.8m)	Fully Paved	***Nil***	-	Typically narrow lane type street with no planting opportunities.

Street Name	Between Streets	Power Lines	Verge Width	Verge Type	Existing Dominant	Proposed Species	Key Street Observations
03 ASHFIELD SOUTH							
A'Beckett Avenue		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Pyrus ussuriensis (in-road or non-wire side)*** ***Gordonia axillaris (under wires)***	Consistent row of Alnus jorullensis existing. Should break up full paved side with grass and install small trees under wires. Look at possibility of perpendicular or angled parking.
Allibone Street		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Callistemon viminalis cv.***	***Backhousia citriodora (under wires)*** ***Harpullia pendula (non-wire side)***	Only very short portion of the street within LGA. Recommend planting trees where no wires.
Alma Street		OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Waterhousea floribunda 'Green Avenue' (in-road and non-wire side)***	Quiet street, with historic in-road planting of Brush Box previously dominant. Recommend continuing and reinstating similar character but changing from Brush Box to reduce overall reliance. Suggest major upgrade to treatment similar to Oak St. Discontinue planting under wires in verge.
Arthur Street		OH (Odd)	Narrow (<1.8m)	Fully Paved	***Nil***	-	Narrow one way street, very busy, with narrow verge, minimal planting opportunities. Power lines swap sides at Carlisle Street.
Blackwood Avenue		ABC (Even)	Narrow (<1.8m)	Fully Paved	***Nil***	-	Currently no planting. Verge narrow and fully paved. Limited planting opportunities.
Brunswick Parade		ABC (Odd)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Lophostemon confertus (in-road both sides on northern entry section),*** ***Ficus rubiginosa, Brachichiton discolour, Corymbia maculata (in median area/park only)*** ***(No planting in narrow fully paved verges)***	Historically significant and uniquely designed street. ABC undertaken in most of street.
Carlisle Street		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Lophostemon confertus***	***Lophostemon confertus (in-road both sides)***	Historical in-road planting dominated by Brush Box. Recommend continuing and reinforcing. ABC should be a priority to allow existing, and any new planting, to develop fully.
Clissold Street		OH (Even)	Narrow (<1.8m)	Fully Paved	***Nil***	-	Narrow street and verge, fully paved. Private trees contribute to streetcape. No planting currently exits or is recommended. Power lines swap to even side west of Queen St.
Farleigh Street		OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Lophostemon confertus***	***Lophostemon confertus (in-road both sides)***	Historical in-road planting dominated by Brush Box. Recommend continuing and reinforcing. ABC should be a priority to allow existing and new planting to develop fully.
Hampden Street		OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Lophostemon confertus***	***Lophostemon confertus (in-road both sides)***	Historical in-road planting dominated by Brush Box. Recommend continuing and reinforcing.
Holden Street		OH (Odd)	Small (<1.8-3.5m)	Fully Paved	***Mixed***	***Lagerstroemia indica (both sides)***	Powerlines swap to eastern side of road south of Clissold. Only eastern side within LGA from this point. Asymmetrical verge. Verge width and type changes north of Park Avenue. Existing planting dominated by an alternating planting of Black Tea Tree and Broad Leaf Paperbark. Some minor in-road planting of Brush Box occurs north of Arthur St. Recommend installing grass strip for all sections. Recommend a long term program of Crepe Myrtle planting to define as a key collector road similar to Croydon Road, and others, and to improve street amenity.
Hugh Street		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Lophostemon confertus***	***Lophostemon confertus (in-road both sides)***	Historical in-road planting dominated by Brush Box. Recommend continuing and reinforcing. ABC should be a priority to allow existing and new planting to develop fully.

Street Name	Between Streets	Power Lines	Verge Width	Verge Type	Existing Dominant	Proposed Species	Key Street Observations
Joseph Street		OH (Even)	Small (<1.8-3.5m)	Fully Paved	***Mixed***	***Buckinghamia celsissima (non-wire side south of Arthur St)*** ***Buckinghamia celsissima (under wires north of Arthur St)*** ***Zelkova serrata 'Green Vase' (non-wire side north of Arthur St)***	Grass and path only on section of road north of Arthur St, otherwise fully paved. Numerous young Ivory Curl Trees Flower planted in southern section on non-wire side.
King Street		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Lophostemon confertus (in-road or on non-wire side verge)***	Historical in-road planting dominated by Brush Box. Recommend continuing and reinforcing. ABC should be a priority to allow existing and any new planting to develop fully.
New Street		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Lagerstroemia indica (both sides)***	Very narrow grass strip, will support small and thin trunked tree only.
Norton Street		OH (Even)	Narrow (<1.8m)	Fully Paved	***Nil***	-	Typically narrow and fully paved verge. Very narrow grass strip, typically less than 1m wide in very eastern end of street. Busy through street. Mixture of houses, some built to boundary line. Private trees often contributing to streetscape. No tree planting recommended.
Palace Street		OH (Even)	Small (<1.8-3.5m)	Fully Paved	***Lophostemon confertus***	***Backhousia citriodora (both sides on lead-in sections to central widened area)*** ***Ficus microcarpa var hillii, Ficus rubiginosa (Centrally with median area only)***	Generous median in centre of street is a historical feature. Could and should plant some very large trees within this area. eg. Figs. Could also plant small tree on lead in sections of street at either end.
Park Avenue		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Lophostemon confertus alternating with Zelkova serrata 'Green Vase' (in-road only or non-wire side).*** ***(Discontinue planting in grassed verges under wires.)***	Good street currently dominated by in-road Brush Box but with numerous interspersed other species. Recommend reinforcing Brush Box with and alternating deciduous species in-road to allow solar access to southern side of street.
Pyrmont Street		OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Callistemon viminalis cv.***	***Callistemon viminalis cv. (both sides)***	Short street, currently dominated by Bottle Brush. Recommend continuing and reinforcing.
Queen Street		OH (Even)	Medium (3.5-5m)	Grass & Path	***Mixed***	***Lagerstroemia indica (both sides)***	Many trees disfigured by power line clearance pruning. Numerous younger Crepe Myrtles planted performing well. Major road through precinct. Good sized grass strip for planting, with houses usually set well back. Verge gets noticably narrower north of New Street. Recommend reinforcing and strengthening Crepe Myrtles as a defining element marking this as a key collector road.
Robert Street	Victoria Street and Holden Street	OH (Even)	Narrow (<1.8m)	Fully Paved	***Nil***	-	Very narrow road and verge, no planting opportunities.
Robert Street	Victoria Street and Prospect Road		Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Lagerstroemia indica (both sides)***	Narrow grass strip supports only small trees. Numerous young Crepes Myrtles currently planted. Recommend continuing and reinforcing this theme.
Rose Street		OH (Odd)	Small (<1.8-3.5m)	Fully Paved	***Mixed***	***Caesalpinia ferrea (opposite wires)*** ***Prunus cerasifera 'Nigra' (under wires)*** ***(no planting on eastern leg section).***	Recommend planting Prunus sp. where under wires. Recent Caesalpinia at southern end are performing well. Recommend continuing and reinforcing this theme over time.
Seaview Street	Victoria Street and Prospect Road	OH (Odd)	Medium (3.5-5m)	Grass & Path	***Ficus microcarpa var. hillii***	***Waterhousea floribunda 'Green Avenue' (non wire side only)***	Asymmetrical verge with large figs planted on the larger non-wire side within good sized grass verge. Trees performing well and should be retained for as long as possible. When replacements are required, recommended to use similar character tree but with more appropriate ultimate size with less impacts.

Street Name	Between Streets	Power Lines	Verge Width	Verge Type	Existing Dominant	Proposed Species	Key Street Observations
Seaview Street	Victoria Street and Armstrong Street	OH (Even)	Narrow (<1.8m)	Fully Paved	***Nil***	*-*	Narrow verge and street. Currently no planting. Power lines swap sides at Queen Street. No planting recommended
Shepherd Street		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Lophostemon confertus***	***Lophostemon confertus (in-road both sides)***	Quiet street, with historic in-road planting of Brush Box that was previously dominant. Recommend continuing and reinforcing historic character. Suggest major upgrade to street treatment similars to Oak St.
Somerville Avenue		OH (Odd)	Small (<1.8-3.5m)	Fully Paved	***Nil***	*-*	Short street, fully paved, with narrow verge and very limited planting opportunities. Parking at a premium.
Tintern Road		OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Lophostemon confertus***	***Lophostemon confertus (in-road both sides)***	One of the best heritage streets within precinct, with historical in-road planting of Brush Box. Recommend continuing and reinforcing. ABC priority to prevent replacement trees from being disfigured by pruning.
Victoria Square		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Eucalytus paniculata, Araucaria cunninghamii, Ficus rubiginosa (central park area only)*** ***Prunus cerasifera 'Nigra' (both side around the house side verge)***	A very unique street with a very large central median park. Recommend continuing character and planting, particularly large endemic Eucalypts and historic Pines. Recommend consistent small flowering trees on house side in narrow verge so as not to compete with Park.
Victoria Street	Norton Street and Seaview Street	OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Phoenix canariensis***	***Phoenix canariensis (in-road both sides unless overrun with disease)*** ***Buckinghamia celsissima (both sides in verge only, between Palms)*** ***Araucaria cunninghamii (in-road both sides should palms fail in future)***	One of the most significant Phoenix avenue planting within a street in wider Sydney. Some ABC currently installed near hospital. Recommend careful monitoring and maintenance and continuing unless the avenue succumbs to Fusarium Wilt. (If this happens convert to similarly civic-scaled species reflective of the same era of planting)
William Street		OH (Even)	Small (<1.8-3.5m)	Fully Paved	***Mixed***	***Pyrus ussuriensis (in-road non-wire side)*** ***Fraxinus griffithi (under wires in southern verge only)*** ***Waterhousea floribunda 'Green Avenue' (non-wire side in southern verge only)***	Good street. Large grass area occurs only on verge in the southern wider portion of street.

Street Name	Between Streets	Power Lines	Verge Width	Verge Type	Existing Dominant	Proposed Species	Key Street Observations
04 CROYDON NORTH / ASHFIELD WEST							
Alexandra Street		OH (Odd)	Small (<1.8-3.5m)	Grass	***Mixed***	***Schinus areira and Corymbia eximia (non-wire side only)***	Asymmetrical verge arrangement. Grass only verge on the non-wire side. Can accommodate good sized trees. Trees mixed but Schinus dominates visually.
Anthony Street		OH (Odd)	Narrow (<1.8m)	Fully Paved	***Lophostemon confertus (in centre park median only)***	***Corymbia maculata 'Little Mac', Eucalyptus paniculata (randomly grouped in centre park median only & located clear of overhead wires, minimum 1.5m from kerb edge)***	Very narrow verge, fully paved. Centre park median in very eastern end only. Typically too narrow to plant in side verges. Recommend ABC for park area prior to any new planting.
Astwin Street		OH (Odd)	Small (<1.8-3.5m)	Fully Paved	***Mixed***	***Melaleuca bracteata (non-wire side)*** ***Tristaniopsis laurina (under wires)***	Some trees disfigured by clearance pruning. Very narrow and fully paved verge. Short dead-end street. Improve tree pit preparation for any new planting.
Australia Street		OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Angophora costata (both sides if ABC and kerb realignment implemented otherwise only non wire side)*** ***Tristaniopsis laurina (under wires only if no ABC implemented)***	Potentially relocate and/or realign kerb to allow tree planting like nearby Sunbeam Ave. Recommend installation of ABC to allow spreading trees on both sides without disfiguring pruning.
Banks Street		OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Lophostemon confertus***	***Lophostemon confertus (in-road both sides)***	Good street, should continue character. Opportunity for perpendicular parking and formalisation of tree surrounds similar to Oak Street.
Bastable Street		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Tibouchina lepidota***	***Caesalpinia ferrea (non wires side only)*** ***Camellia sasanqua (under wires)***	Narrow verge and grass strip. Thin trunked and upright tree to be used. Currently dominated by Tibouchina but many not currently performing well.
Bay Street		OH (Even)	Small (<1.8-3.5m)	Fully Paved	***Mixed***	***Lagerstroemia indica (both sides in verge)*** ***Syzygium paniculatum (a few strategically in-road only)***	Narrow and fully paved verge, with trees planted in small tree pits, many now causing damage to pavement. Improve planting detail for future tree planting. Recommend narrow small and upright tree for future planting. Consider a few strategically located blisters along street to facilitate larger evergreen tree planting such as near intersection with Scott St & Byron St.
Birriga Road		OH (Odd)	Small (<1.8-3.5m)	Fully Paved	***Melaleuca bracteata***	***Lagerstroemia indica (non-wire side only)***	Existing trees are planted under wires and disfigured. Recommend implementing planting on the non-wire side and eventually discontinuing trees under wires. Review the need for fully paved verge.
Bridges Avenue			Small (<1.8-3.5m)	Fully Paved	***Nil***	***-***	Short dead-end street. Verge fully paved and only 2.0m wide. No planting currently and none recommended. Recommend residents instead are encourage to plant trees within front yards.
Burns Street		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Ulmus parvifolia 'Todd' (both sides in-road only)*** ***Tristaniopsis laurina (in verge both sides)***	Very wide road. Consider in-road planting blisters
Byron Street		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Gordonia axillaris (under wires)*** ***Lophostemon confertus (non-wire side only)***	Unique street profile has been employed south of Dalmar Street. Concept is sound and could be expanded to other similar streets to reduce width of traffic lanes, provide parking and space for tree planting.
Cantor Crescent		OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Nil***	***Gordonia axillaris, Photinia x fraserii 'Robusta' (both sides)***	Very short and only a small section of street located within LGA. Could plant a small tree for improved canopy cover and shade.
Church Street	Lang Street and Croydon Road.	OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Lophostemon confertus (Park frontage only)*** ***Lagerstroemia indica (elsewhere on both sides)***	Bus route, good trees located in adjacent park. Narrow grass strip for planting. Numerous Crepe Myrtle already planted. Recommend continuing and reinforcing Crepe Myrtle, except in front of park.

Street Name	Between Streets	Power Lines	Verge Width	Verge Type	Existing Dominant	Proposed Species	Key Street Observations
Church Street	Croydon Road and Frederick Street	OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Lagerstroemia indica (both sides)***	Bus route. Very narrow strip for planting and supports only small thin trunked tree. Many trees disfigured by powerline clearance pruning. Suggest changing species to Crepe Myrtle to tie in with Church Street west of Croydon Rd.
Croydon Road		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Lagerstroemia indica***	***Lagerstroemia indica (both sides)***	Busy collector road. Narrow grass strip for planting supports only relatively small tree. Dominant tree is currently Crepe Myrtle. Recommend continuing and reinforcing as the key theme for this type of collector road.
Dalmar Street		OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Callistemon viminalis cv. (under wires)*** ***Corymbia eximia (non-wire side)*** ***Jacaranda mimosifolia (in-road blisters only)***	Historic in-road planting of Brush Box, now mainly to the western end only. Quite diverse mix of planting elsewhere and dominated by Callistemon. Wider verge in the eastern end past Scott Street. Opportunity for blister style planting at strategic locations to improve amenity of street.
Earle Avenue		OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Koelreutaria paniculata (both sides)***	Small and relatively narrow carriageway. Reasonable sized grass strip for tree planting. Recommend strengthening consistency of avenue planting with small spreading tree.
Edwin Street North		OH (Odd)	Small (<1.8-3.5m)	Fully Paved	***Mixed***	***Lophostemon confertus, Waterhousea floribunda 'Green Avenue' (in central median only)*** ***Harpullia pendula (non wire side between Anthony St and Elizabeth St)***	Large central median park that is well planted with a diverse range of large trees.
Elizabeth Street	Edwin Street North and Frederick Street	OH (Even)	Small (<1.8-3.5m)	Fully Paved	***Nil***	***Lagerstroemia indica (both sides wherever space and sight distances permit)***	Nothing currently planted, very busy road, with narrow verges. Recommend a long term program of Crepe Myrtle planting to define as a key collector road similar to Croydon Road, and others, and to improve street amenity.
Etonville Parade		OH (Odd)	Narrow (<1.8m)	Fully Paved	***Lophostemon confertus***	***Corymbia eximia (within in-road blisters on both sides)*** ***Mixed biodiversity shrub and tree species along creek side.***	Opportunity for biodiversity corridor planting along the creek side of street. Recommend strategic in-road planting blisters on both sides to improve amenity of street. Power lines swap sides at Banks Street. Recommend ABC to allow taller planting without pruning.
Gregory Avenue		OH (Even)	Large (>5m)	Grass & Path	***Lophostemon confertus***	***Lophostemon confertus (both sides)***	Short dead-end street. Very good street, should continue character. Power line positioned near kerb allowing larger trees behind with minimal pruning.
Hammond Avenue		OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Lophostemon confertus*** ***Callistemon viminalis cv.***	***Lophostemon confertus (in-road both sides)*** ***Camellia sasanqua (in verge both sides between Brush Box)***	Historic Brush Box planting in-road. Should continue in-road planting and character.
Hedger Ave		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Lagerstroemia indica***	***Lagerstroemia indica (both sides)***	Very narrow grass strip. Numerous Crepe Myrtles already planted, which should be continued and strengthened.
Henry Street		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Koelreutaria paniculata (both sides except in front of Park, where it should be on non Park side of street only)***	Narrow grass strip. Minimal tree planting at present, with many spaces available. Suggest matching in with treatment for Earle Street
Hunt Street		OH (Even)	Narrow (<1.8m)	Fully Paved	***Nil***	-	Very narrow, difficult to plant successfully. No planting recommended.
John Street		OH (Even)	Small (<1.8-3.5m)	Fully Paved	***Nil***	***Harpullia pendula (non-wire side only)***	Busy through road between Frederick Street and Croydon Road. Narrow and fully paved verges. No planting at present.
Jones Street		OH (Odd)	Narrow (<1.8m)	Fully Paved	***Nil***	-	Very 'laneway-like' street. Asymmetrical verge. Very narrow path, considered too narrow for planting.

Street Name	Between Streets	Power Lines	Verge Width	Verge Type	Existing Dominant	Proposed Species	Key Street Observations
Kenilworth Street		OH (Even)	Large (>5m)	Grass & Path	***Mixed***	***Eucalyptus mannifera, Corymbia maculata 'Little Mac', Corymbia eximia (both sides clear of wires) Callistemon viminalis cv. (under wires)***	Heritage palms with interspersed and later installed native plantings which now dominate character. Suggest transplanting palms to targeted gateways within LGA.
Knocklayde Street		OH (Even)	Small (<1.8-3.5m)	Fully Paved		***Caesalpinia ferrea (strategically in-road, or non-wire side only)***	No planting at present. Suggest a few strategic trees planted in-road on non-wire side to improve amenity of street with minimal parking loss.
Lang Street		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Tristaniopsis laurina***	***Tristaniopsis laurina (under wires) Brachychiton discolor (at Park frontage only)***	Only eastern half of the street controlled by Ashfield Council. Figs dominant at Centenary Park frontage. Figs in only fair condition and will require replacement in the foreseeable future.
Lucy Court			Narrow (<1.8m)	Grass	***Nil***	***Hapullia pendula (non-wire side only, within grass strip)***	Small road with narrow verge but non-wire side is grass only and could be planted with suitable small tree to improve amenity and provide canopy cover.
Lucy Street		OH (Even)	Small (<1.8-3.5m)	Fully Paved	***Mixed***	***Photinia x fraserii, Koelreutaria paniculata (under wires) Koelreutaria bipinnata (non-wire side)***	Narrow and fully paved verge. Many trees disfigured by powerline clearance pruning.
Mackay Street		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Lophostemon confertus***	***Lophostemon confertus (in-road both sides)***	Good street. Recomennd continuing and reinforcing character.
Page Avenue		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Murraya paniculata (under wires) Zelkova serrata 'Green Vase' (non wire side)***	Parking allowed on one side of street only. Recommend deciduous tree on southern side of street and small tree under wires.
Parramatta Road	Frederick Street and Lang Street		Small (<1.8-3.5m)	Fully Paved	***Nil***	-	Views, driveways, traffic lights, signage and awnings. Most areas fully paved with some small areas of grass strip. Currently no planting. Constraints considered too significant to implement worthwhile planting until West Connex completed.
Queen Street		OH (Odd)	Small (<1.8-3.5m)	Fully Paved	***Mixed***	***Callistemon viminalis cv. (near oval) Lagerstroemia indica (at eastern end both sides).***	Powerline swaps sides at Jones St. Trees clear of powerlines. Strong row of Lagerstroemia at eastern end. Cupressus currently dominant along edge of oval. Next to oval verge is all grass, but only 2m wide. Numerous young Callistemon planted along Oval verge. Reasonably busy street.
Ranger Road		OH (Even)	Large (>5m)	Grass & Path	***Mixed***	***Eucalyptus mannifera, Corymbia maculata 'Little Mac', Corymbia eximia (both sides clear of wires) Callistemon viminalis cv. (under wires)***	Historical planting of palms. Very generous grass verge width would support large trees. Larger trees now overwhelming the historical palms. A lot of Euc. nicholii in street. Later installed native plantings now dominate character. Suggest transplanting palms to targeted gateways within LGA.
Scott Street			Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Jacaranda mimosifolia (in road only) Waterhousea floribunda 'Green Avenue' (in road only) Lagerstroemia indica (in verges both sides)***	Recent in-road planting of Lagerstroemia and Waterhousea in western end. Recommend installation of ABC to allow existing planting to mature. Recommend larger trees when clear of wires.
Sunbeam Avenue		OH (Odd)	Large (>5m)	Grass & Path	***Mixed***	***Angophora costata (both sides if ABC implemented otherwise only non wire side) Tristaniopsis laurina (under wires only if no ABC implemented)***	Recommend installation of ABC to allow spreading trees on both sides without disfiguring pruning. Verge width accommodates larger more spreading planting.
Vine Street		OH (Odd)	Narrow (<1.8m)	Fully Paved	***Robinia pseudoacacia 'Frisia'***	***Robinia pseudoacacia 'Frisia' (in road both sides)***	Quaint dead-end and short street. In-road planting already exists. Suggest potential expansion and continuation of in-road tree pits to improve amenity and canopy cover.
West Street		OH (Even)	Narrow (<1.8m)	Fully Paved	***Nil***	-	No planting in street, very narrow. Private trees currently contribute to the streetscape.

Street Name	Between Streets	Power Lines	Verge Width	Verge Type	Existing Dominant	Proposed Species	Key Street Observations
05 CROYDON SOUTH / CROYDON PARK							
Arthur Street	Greenhills Street and Milton Street	OH (Odd)	Small (<1.8-3.5m)	Grass & Path	*Lophostemon confertus*	*Lophostemon confertus (in road both sides)*	Historic in-road planting, performing well. Recommend continuing and reinforcing.
Beatrice Street	Milton Street North and Frederick Street	ABC (Even)	Small (<1.8-3.5m)	Grass & Path	*Lophostemon confertus*	*Lophostemon confertus (in-road both sides)*	Short dead end street with existing in-road planting. Should continue with similar character species. Could turn parking to perpendicular parking with treatment similar to Oak St.
Carshalton Street		OH (Even)	Small (<1.8-3.5m)	Grass & Path	*Mixed*	*Callistemon viminalis cv., Tristaniopsis laurina (alternating both sides)*	Narrow grassed strip. Numerous young Elaeocarpus currently planted.
Cromwell Street		OH (Odd)	Small (<1.8-3.5m)	Grass & Path	*Mixed*	*Tristaniopsis laurina, Camellia sasanqua (alternating, both sides)*	Very narrow grass strip available for planting. Numerous recent plantings of Elaeocarpus on the non-wire side. Street supports only small and thin trunked species.
Dougan Street		OH (Even)	Small (<1.8-3.5m)	Fully Paved	*Tibouchina lepidota*	*Tristaniopsis laurina (both sides)*	Strong avenue planting of Tibouchina. Many not doing very well, suckering and dieback evident.
Edwin Street South		OH (Odd)	Small (<1.8-3.5m)	Grass & Path	*Mixed*	*Callistemon viminalis cv. (both sides in verge between in-road bays)* *Ulmus parvifolia 'Todd' (in-road only)*	Palms largely overwhelmed by other street planting. Reasonable grass strip for planting. Recommend ultimately transplanting palms to targeted gateway sites and installing larger spreading tree to create new character and increase canopy cover.
Forbes Street		OH (Odd)	Large (>5m)	Grass & Path	*Mixed*	*Sapium sebiferum (under wires but ABC a priority)* *Syzygium paniculatum, Waterhousea floribunda 'Green Avenue' (non-wire side).*	A lot of semi-mature Chinese Tallow Tree. ABC a priority to allow them to develop properly. Large verge, would support medium sized trees easily.
Georges River Road	Greenhills St and Milton St	OH (Odd)	Small (<1.8-3.5m)	Grass & Path	*Nil*	*Elaeocarpus eumundi (both sides)*	No tree planting at present. Main road with kerb side traffic. Recommend introducing a consistent tree planting character with a manageable upright tree forming part of the wider collector road definition. ABC should be implemented over time to allow trees to develop.
Greenhills Street		OH (Even)	Small (<1.8-3.5m)	Grass & Path	*Mixed*	*Largerstroemia indica and Camellia sasanqua (alternating under wires)*	Only eastern side controlled by Council. Narrow verge and overhead power lines. Numerous young Crepe Myrtles planted on both sides. Should continue and strengthen this theme. Verge widens north of Mills Street. Street is a bus route.
Hay Street		OH (Even)	Large (>5m)	Grass & Path	*Butia capitata*	*Butia capitata (both sides, ABC a priority to retain palms)* *Waterhousea floribunda 'Green Avenue' (at northern end / entry of street only)*	Very wide verge. Historic avenue of Palms. Now grown to height conflicting with wires. ABC should be a high priority. Should continue palms as historic reference but also introduce some canopy trees in strategic locations at northern end of street. Only northern end of street within the LGA.
Heighway Avenue		OH (Even)	Small (<1.8-3.5m)	Grass & Path		*Koelreutaria bipinnata (in road only)* *Tristaniopsis laurina (non-wire side in narrow area and elsewhere on both sides in verge)*	Street narrows at the eastern end. Recommend small tree on non wire side only. Transplant Palms to targeted gateway sites within LGA. No planting recommended under wires in narrow sections.
Highbury Street		OH (Odd)	Small (<1.8-3.5m)	Grass & Path	*Mixed*	*Caesalpinia ferrea (non-wire side only)* *Prunus cerasifera 'Nigra' (under wires)*	Very narrow grass strip avaialble for planting. Recommend high branching narrow trunked trees only.

Street Name	Between Streets	Power Lines	Verge Width	Verge Type	Existing Dominant	Proposed Species	Key Street Observations
Holborow Street		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Lophostemon confertus***	***Lophostemon confertus (in-road both sides)***	Substantial portions with historical Brush Box planting in-road. Should continue character and in-road planting theme. Trees planted directly under wires are frequently disfigured by pruning, should discontinue and focus on in-road. Most houses with driveways and off street parking opportunities.
Leopold Street		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Lophostemon confertus and Sapium sebiferum (alternating in-road both sides)***	Currently in-road planting to wire side and at very northern end. Significant row of Sapium. Many trees disfigured by clearance pruning. Houses serviced by rear lanes, with minimal driveway conflicts. Recommend in-road planting be continued and expanded.
Lion Street		OH (Odd)	Small (<1.8-3.5m)	Fully Paved	***Nil***	***Koelreutaria bipinnata (strategic in-road opposite wires)***	Verge only 2.0m wide, fully paved. No planting currently within street. Recommend very strategic in-road planting at street ends and one in the middle adjacent mid-block park.
Liverpool Road		OH (Even)	Small (<1.8-3.5m)	Fully Paved	***Nil***	***Elaeocarpus eumundi (non wire side only where clear of other obstructions)***	Overhead power, space and sight distances to lights and signage a significant issue along street. No planting currently. Typically fully paved but some minor areas of grass strip. Private trees do contribute to streetscape.
Mills Street		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Camellia sasanqua (both sides)*** ***Eucalyptus paniculata (within road closure area)***	Very short street, with road closure containing larger trees. Numerous driveways. Only a narrow strip for planting in street.
Milton Street		OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Elaeocarpus eumundi (non wire side only or where otherwise clear of wires)***	Some road widening areas allow larger trees. Planting mainly southern end. Power lines swap to even side in southern section past Georges River Road.
Milton Street North		OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Callistemon viminalis cv. & Melaleuca bracteata***	***Callistemon viminalis cv. (non-wire side)*** ***Xanthostemon chrysanthus (under wires)***	Trees affected by powerline clearance pruning. Reasonable grass strip for planting. Strong Bottle Brush theme which should be reinforced. Recommend continuing on non-wire side.
Norton Street	Milton Street and Carshalton Street	OH (Even)	Narrow (<1.8m)	Fully Paved	***Nil***	***Corymbia eximia (strategic in-road locations only)***	Narrow verge, fully paved. No planting at present. No planting recommended except for strategically positioned in-road.
Paisley Road			Small (<1.8-3.5m)	Grass & Path		***Lagerstroemia indica (under wires)*** ***Zelkova serrata 'Green Vase' (railway side)***	Plane Trees installed along railway line. Suggest progressive removal of Planes as they are likely to cause extensive pavement damage in future. Replacements should integrate better tree pit preparation. Numerous young Lagerstroemia planted under wire side. Should continue this theme.
Thomas Street	Frederick street and Dickinson Avenue	OH (Even)	Small (<1.8-3.5m)	Fully Paved	***Mixed***	***Largerstroemia indica (both sides)***	Main thoroughfare. Narrow fully paved verge with powerlines. Could have in-road planting at a few very strategic blisters. Street widens at the far western end. Recommend removing paving in the road side verge strips at this point. Recommend looking at instating grass strip for entire length to improve planting prospects and aesthetics.
Walter Street		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Melaleuca bracteata (both sides, ABC a priority)***	Short street, narrow grass strip. Recommend ABC installation to allow full development of trees.
Watson Avenue		OH (Odd)	Large (>5m)	Grass & Path	***Mixed***	***Syncarpia glomulifera, Corymbia maculata, Eucalyptus paniculata, Glochidion ferdinandi (non wire side only)*** ***Backhousia citriodora (under wires)***	Room for large trees. Asymmetrical verge, with large area on non-wire side. Private trees also contributing to streetscape. Rear access from street for houses fronting the parallel Dougan Street.

Street Name	Between Streets	Power Lines	Verge Width	Verge Type	Existing Dominant	Proposed Species	Key Street Observations
Wetherill Street	Liverpool Rd and Norton Street	OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Waterhousea floribunda 'Green avenue' (in-road and non-wire side)*** ***Xylosma senticosum (under wires)***	Short street with Liverpool Rd end closed to traffic. Currently some remnant in-road planting, but very diluted. Opportunity to implement angled or perpendicular parking with new in road planting and smaller trees placed under wires.
Wetherill Street	Liverpool Road and Thomas Street.	OH (Odd)	Small (<1.8-3.5m)	Fully Paved	***Syzygium paniculatum***	***Lagerstroemia indica (both sides)***	Planting under wires but none on non wire side. Recommend ABC installation as a priority to allow existing trees to mature without further disfiguring pruning. New planting should implement better tree pit preparation.
Yabsley Avenue		ABC (Odd)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Syzygium paniculatum (in road on wire side, and non wire side)*** ***Magnolia grandiflora 'Exmouth' (in verge both sides)***	Short dead-end street. Very wide street. Power lines ABC'd. Some young Magnolia planted under wires. Good opportunity for in-road planting of larger trees.

Street Name	Between Streets	Power Lines	Verge Width	Verge Type	Existing Dominant	Proposed Species	Key Street Observations
06 CROYDON VILLAGE							
College Street		OH (Even)	Narrow (<1.8m)	Fully Paved	***Nil***	***-***	No existing street trees. None recommended due to width of path.
Edwin Street North		OH (Odd)	Small (<1.8-3.5m)	Fully Paved	***Lagerstroemia indica***	***Lagerstroemia indica (in-road only on both sides)***	Recently installed Crepe Myrtles within blisters.
Elizabeth Street		OH (Even)	Small (<1.8-3.5m)	Fully Paved	***Lagerstroemia indica***	***Lagerstroemia indica (in-road both sides)***	One Crepe Myrtle installed at intersection with Edwin Street North. Continue in-road blisters for full extent of 'village centre'.
Elizabeth Street	West of Edwin Street North.	OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Melaleuca quinquenervia***	***Elaeocarpus eumundi (both sides wherever space permits)***	Narrow street and verge but could have more trees planted if ABC implemented.
Hennessy Street		OH (Even)	Small (<1.8-3.5m)	Fully Paved	***Lagerstroemia indica***	***Lagerstroemia indica (both sides except under awning)***	Potted plants only under awnings. Footpath only 2m wide.
Hordern Parade		OH (Even)	Small (<1.8-3.5m)	Fully Paved	***Nil***	***-***	No planting existing. Very low wires. No planting recommended.
Railway Street		ABC (Odd)	Narrow (<1.8m)	Fully Paved	***Nil***	***-***	No planting existing. Very narrow. No planting recommended.

Street Name	Between Streets	Power Lines	Verge Width	Verge Type	Existing Dominant	Proposed Species	Key Street Observations
07 DOBROYD POINT							
Alt Street	Martin Street and Waratah Street	OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Angophora costata (both sides if kerb realigned, otherwise on non-wire side only)***	Massively wide carriage way. Recommend realigning kerb. Alt street on other side of Martin Street is much narrower in adjoining precinct. Recommend implementing angled parking on the wire (high) side of street.
Barton Avenue		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Harpullia pendula, Tristaniopsis laurina (in-road and verge both sides)***	Previous historical planting of in-road Brush Box planted but now greatly diluted. Recommend retaining in-road planting where possible and maintaining the character with new species reflective of Brush Box.
Boomerang Street		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Lagerstroemia indica, Buckinghamia celsissima (alternating pattern on both sides, except in front of Park)***	Numerous younger Crepe Myrtle doing well. Melaleucas often disfigured by power line clearance pruning. Recommend alternating future planting with a small spreading evergreen tree of similar scale. Verge width, cycleway and parking lane permit spreading tree.
Chelmsford Avenue		OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Harpullia pendula (non wire side)*** ***Buckinghamia celsissima (under wires)***	Historical in-road planting of Brush Box but now substantially diluted. Recommend changing to new species with similar character but planted within the verge areas as existing Brush Box decline and require replacement.
Crane Avenue		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Lophostemon confertus***	***Lophostemon confertus (in-road both sides)***	Historical in-road planting of Brush Box now becoming diluted. Recommend reinforcing and continuing with improved tree pit preparation for any new planting.
Crescent Street		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Lagerstroemia indica (both sides in verge)*** ***Zelkova serrata 'Green Vase" (in median)***	Very wide street. Recommend potential median strip creation with central tree small to medium sized planting depending on width able to be achieved. Recommend reinforcing and continuing Crepe Myrtle already extensively planted in verges.
Dalhousie Street	Martin and waratah	OH (Even)	Small (<1.8-3.5m)	Fully Paved	***Mixed***	***Tristaniopsis laurina alternating with Lagerstroemia indica (both sides)***	Planting of trees under wires. Recommend also planting on non-wire side unless services prevent. Recommend investigating reinstatement of grass verge strip rather than maintaining as fully paved to improve tree performance and street aesthetics. Cycle and parking lane permit spreading but low tree under wires.
Dobroyd Parade		OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Angophora hispida, Melaleuca styphelioides, Banksia integrifolia, Elaeocarpus reticulatus (both sides)*** ***Angophora costata (in-road or where clear of overhead wires)***	Views to harbour. Very wide street. In-road planting opportunities.
Dobroyd Parade/City West Link		OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Melaleuca bracteata (in grass verge clear of wires)*** ***Murraya paniculata (hedge between service road and City West Link)*** ***No planting in front of Robson Park*** ***Maintain suitable mixed native planting along harbour edge/ cycleway***	Major arterial road along harbour front. Mostly fronting open spaces. At southern end there is a split 'service' road arrangement. Should plant hedging screen along service road and plant additional trees in grass verge. No overhead wires in some areas permit medium sized trees.
Dudley Street		OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Harpullia pendula (in road)*** ***Camellia sasanqua (both sides in verge between in-road trees)***	Dominated by existing historic Camphor Laurels and other period plantings. Recommend continuing and reinforcing historic association and character but with new planting as existing trees age and fail.
Empire Street	Waratah Street and Martin Street	OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Tristaniopsis laurina, Pyrus ussurensis (alternating planting on both sides in verge)***	Historical in-road planting now very depleted. Very diverse tree planting mix. Recommend discontinuing in-road planting. Planting should match in with planting undertaken in adjoining Haberfield precinct. ABC should be a priority to allow trees to develop fully.
Hawthorne Parade	Dobroyd Parade and Barton Avenue	OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Angophora hispida, Synoum glandulosum (under wires)*** ***Angophora costata, Eucalyptus robusta (in-road or where clear of overhead wires)*** ***Casuarina glauca (in park areas only)***	Extensive native planting in linear park to eastern side of street. Numerous young Crepe Myrtles planted. Recommend street be included and planted as part of biodiversity corridor.

Street Name	Between Streets	Power Lines	Verge Width	Verge Type	Existing Dominant	Proposed Species	Key Street Observations
Kingston Street		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Lophostemon confertus (in-road both sides)*** ***Camellia sasanqua, Prunus cerasifera 'Nigra' (in verge both sides between in-road trees)***	Historic in-road planting of Brush Box dominant. Recommend continuing and reinforcing rather than allowing any further dilution.
Learmonth Street		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Angophora costata (in-both sides or in verge opposite wires when in-road not possible)*** ***Angophora hispida (under wires if in verge and in-road not possible)***	In-road planting existing. Mixture of trees including Brush Box, Figs and Camphor Laurels. Figs declining in health. Soil conditions very shallow.
Loudon Avenue		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Lophostemon confertus***	***Lophostemon confertus (in road both sides)***	Historic in-road dominated by Brush Box. Very good street. Recommend reinforcing and continuing species and character, with improved tree pit design and preparation for any new planting. Recommend discontinuing tree planting under wires in verge.
Martin Street	Ramsay Street and Dobroyd Parade.	OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Angophora hispida, Synoum glandulosum (under wires)*** ***Angophora costata, Angophora floribunda, Eucalyptus robusta (in-road or where clear of overhead wires)*** ***Casuarina glauca, Acacia binervia (in park areas only)***	Could vastly narrow road and plant numerous trees within verge and Park. Recommend street be included and planted as part of biodiversity corridor.
Martin Street	Dalhousie Street and Dobroyd Parade.	OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Cupaniopsis anacardiodes, Pyrus ussuriensis (alternating pattern on both sides)*** ***Melaleuca leucadendra (within in-road blisters only)***	Very diversely planted at present, with very small trees in many areas. Recommend trees that are able to provide more canopy. Large Melaleucas frequently causing infrastructure damage. Some historic palm planting to northern end now conflicting with wires. Recommend they be transplanted to targeted gateway sites within LGA. Recommend long term development of alternating planting of deciduous and evergreen medium sized trees. Melaleuca leucadendron retained as in-road planting at intersections with kerb widenings.
Miller Street		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Butia capitata (in road both sides)*** ***Gordonia axillaris (in verge both sides)***	Very consistent planting of historic in road Butia Palms in danger of becoming very visually diluted by other larger street planting. Recommend retaining and strengthening the palms possibly obtained from elsewhere within LGA if they decline and retaining as in-road planting. Recommend inter-planting on the verges with a low but more spreading canopy tree. Other trees to be removed as they age or fail.
Minto Street		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Lophostemon confertus (in-road both sides or in verge when not under wires)***	Historical in-road planting of Brush Box but now becoming substantially diluted. Given this streets' position within the precinct, it is recommended to retain and reinforce as an in-road Brush Box street.
Mortley Avenue		OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Lophostemon confertus (in-road or in verge on Park non-wire side)*** ***Gordonia axillaris (under wires)***	Historic in road Brush Box planting along Robson Park side. Recommend reinforcing and continuing them but any new trees could be included within park verge. Recommend small trees under wires.
Rawson Street	Waratah Street and Martin Street	OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Lophostemon confertus***	***Lophostemon confertus (in-road both sides)***	Historic in-road planting of Brush Box still dominant. Recommend reinforcing and continuing. Recommend ABC be implemented to prevent disfiguring pruning and improving tree pit design and location for any new planting.
Tillock Street		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Waterhousea floribunda (in-road both sides south of Learmonth St)*** ***Cupaniopsis anacardioides (both sides in verge north of Learmonth St)***	Change in street character occurs north of Learmonth Street. Recommend reinforcing and continuing historic in-road planting theme south of Learmonth Street.
Turner Avenue		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Lophostemon confertus***	***Lophostemon confertus (in-road both sides)***	Brush Box in-road the dominant tree but with many Water Gums now installed to the western end. Recommend preserving and reinforcing original Brush Box theme.

Street Name	Between Streets	Power Lines	Verge Width	Verge Type	Existing Dominant	Proposed Species	Key Street Observations
Waratah Street		OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Xylosma senticosum (both sides)*** ***Butia capitata (at key intersection nodes)***	No current or historic in-road planting on this street. Busy collector road linking to east and western sides of peninsula. Recommend introducing a strong theme planting of a small spreading tree to reinforce importance of street to precinct. Recommend introducing a feature palm planting at key intersections. (Could be transplanted from streets where old palm avenues are diluted and planned to be replaced).

Street Name	Between Streets	Power Lines	Verge Width	Verge Type	Existing Dominant	Proposed Species	Key Street Observations
08 HABERFIELD							
Allum Street			Narrow (<1.8m)	Fully Paved	***Nil***	-	Narrow verge and street, minimal opportunities for planting.
Alt Street	Ramsay Street and Martin Street	ABC (Odd)	Large (>5m)	Grass & Path	***Mixed***	***Ulmus parvifolia 'Todd' (both sides)***	Short section of much longer street. This section dominated by reasonably unique very wide grass verges that would support broad spreading trees. Power lines already installed with ABC. Recommend replacing the few existing palms over time with canopy trees to create an arched canopy over road. Could be one of the great sections of street in the future within the LGA.
Alt Street	Ramsay and Parramatta Road	OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Lophostemon confertus (in-road wire side only)*** ***Harpullia pendula (in grass verge non wide side)***	Reasonable remnants of previous historic in-road planting of Brush Box. This character now diluted. Many trees planted beneath wires disfigured by clearance pruning. Recommend reinforcing and continuing in-road Brush Box theme on wire side only and implementing a more consistent planting in the verges on non-wire side with similar character but smaller tree.
Bland Street	Ramsay Street and Parramatta Road	OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Lagerstroemia indica (both sides)***	Many trees disfigured by power line clearance pruning. Numerous Crepe Myrtles planted and performing well. Should be created as a Crepe Myrtle lined collector road similar to other precincts.
Chandos Street		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Cupaniopsis anacardioides and Melaleuca bracteata (alternating non wire side)*** ***Callistemon viminalis cv. and Gordonia axillaris (alternating on wire side)***	Some isolated remnants of previous historic in-road planting of Brush Box. This character is now very diluted with only a couple left in-road at far southern end. Many trees planted beneath wires disfigured by clearance pruning. Recommend discontinuing in-road Brush Box theme and implementing more consistent planting within verges.
Cove Street		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Lophostemon confertus***	***Glochidion ferdinandi (both sides with ABC a priority)***	Short street, with some remnants of historic in-road planting of Brush Box, although now substantially diluted. Recommend discontinuing in-road but installing similar character native tree to both sides and implementing ABC to continue historic character.
Dalhousie Street	Winchcombe Avenue and Parramatta Road	OH (Odd)	Small (<1.8-3.5m)	Fully Paved	***Mixed***	***Tristaniopsis laurina alternating with Lagerstroemia indica (both sides)***	Power lines swap sides at various points. Very diverse street planting at present. Major collector road along ridge through precinct. Recommend trying to define as principle collector with more consistent planting theme. Recommend alternating planting of two small, to medium trees, that can be kept under wires.

Street Name	Between Streets	Power Lines	Verge Width	Verge Type	Existing Dominant	Proposed Species	Key Street Observations
Dalhousie Street	Ramsay Street and Barton Avenue	OH (Odd)	Small (<1.8-3.5m)	Fully Paved	*Tristaniopsis laurina*	*Tristaniopsis laurina alternating with Lagerstroemia indica (both sides)*	Limited planting at present. Major collector road along ridge through precinct. Recommend trying to define as principle collector with more consistent planting theme. Recommend alternating planting of two, small to medium trees, that can be kept under wires. Recommend converting from fully paved to grass strip for improved tree performance and aesthetics.
Deakin Avenue		ABC (Even)	Medium (3.5-5m)	Grass & Path	*Lophostemon confertus*	*Lophostemon confertus (in-road both sides)*	Far western end fully paved, similar to Dickson St. Historic in-road planting of Brush Box. Recommend reinforcing and continuing.
Denman Avenue		OH (Even)	Small (<1.8-3.5m)	Grass & Path	*Mixed*	*Lophostemon confertus (in-road both sides)* *Lagerstroemia indica (in verge between Brush Box where space permits)*	Dominated by historic in-road planting of Brush Box. Many Crepe Myrtle now planted in verges between the Brush Box.
Dickson Street		OH (Even)	Small (<1.8-3.5m)	Grass & Path	*Lagerstroemia indica*	*Lagerstroemia indica (both sides)*	Commercial area and fully paved at very western end. Dominated by Crepe Myrtles that are performing well. Recommend continuing.
Dobroyd Parade	Cove Street and Parramatta Road	ABC (Odd)	Small (<1.8-3.5m)	Grass & Path	*Mixed*	*Glochidion ferdinandi, Banksia integrifolia, Acmena smithii, Angophora costata, Eucalyptus robusta (non-wire side only)* *Acmena simithii var. minor (under wires)*	Short street connecting to the nearby Open Space. Recommend having some suitable small trees planted on southern side under power lines. Maintain mixed native trees in open space next to car parking.
Empire Street	Ramsay Street and Martin Street	OH (Odd)	Small (<1.8-3.5m)	Grass & Path	*Mixed*	*Lophostemon confertus (in road both sides at southern end)* *Tristaniopsis laurina, Pyrus ussurensis (elsewhere alternating planting both sides in grass strip)*	Historic in-road planting dominated by Brush Box but with other species now planted in grass strip. Recommend reinforcing and continuing with improved tree pit preparation for any new tree planting. Together with the section in Dobroyd Point Precinct this represents an important historic street. Recommend ABC as a priority to allow trees to fully develop without pruning.
Forrest Street		OH (Odd)	Small (<1.8-3.5m)	Grass & Path	*Lophostemon confertus*	*Lophostemon confertus (in road both sides)*	Historic in-road planting of Brush Box. Recommend reinforcing and continuing with improved tree pit preparation for any new tree planting.
Gillies Avenue		OH (Odd)	Small (<1.8-3.5m)	Grass & Path	*Lophostemon confertus*	*Lophostemon confertus (in-road both sides)*	Reasonable remnants of previous historic in-road planting of Brush Box. Recommend reinforcing and continuing in road Brush Box theme.
Haberfield Road		OH (Even)	Small (<1.8-3.5m)	Grass & Path	*Lophostemon confertus*	*Lophostemon confertus (in-road both sides)*	Historic in-road planting of Brush Box. Recommend reinforcing and continuing current character with better tree pit preparation for future planting.
Hawthorne Parade	Parramatta Rd and Marion Street	OH (Odd)	Small (<1.8-3.5m)	Grass & Path		*Corymbia maculata (in road only)* *Acacia binervia (non wire side only)* *Tristaniopsis laurina, Synoum glandulosum, Banksia integrifollia (in verge both sides)*	Historic in-road planting of Brush Box but now substantially diluted in character and extent. Road runs parallel and near to Greenway Corridor. Recommend continuing in-road planting where it is retained but with locally occurring species able to clear wires, elsewhere smaller native species.
Hawthorne Parade	Marion Street and Barton Avenue	OH (Even)	Small (<1.8-3.5m)	Grass & Path	*Mixed*	*Callistemon viminalis cv., Synoum glandulosum (under wires)* *Angophora costata, Eucalyptus robusta (in-road or where clear of overhead wires)* *Ficus rubiginosa, Waterhousea floribunda 'Green Avenue', Casuarina glauca (Park side)*	Long street running adjacent and parallel to Hawthorne Canal, and part of Greenway Corridor. Park planting should provide scope for larger trees to contribute to streetscape such as Figs, Melaleucas and Casuarinas. Recommend smaller native tree under wires, large trees on non wire side set back from kerb edge.

Street Name	Between Streets	Power Lines	Verge Width	Verge Type	Existing Dominant	Proposed Species	Key Street Observations
Kingston Street	Ramsay Street and Barton Avenue	OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Schinus areira and Lophostemon confertus***	***Waterhousea floribunda 'Green Avenue' (in-road both sides)*** ***Tristaniopsis laurina (in verge non-wire side only where not possible to maintain in-road)***	Dominated by Pepercorn Trees in southern end. Many not performing very well. Character changes at kink in road from Brush Box to Peppercorn. Recommend retaining historic character and in-road planting but converting to similar new species to reduce over reliance on Brush Box. Discontinue planting in verge under wires.
Logan Avenue		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Waterhousea floribunda (in road both sides)*** ***Tristaniopsis laurina (in verge both sides between in-road planting)***	Short and quiet street, dominated by historic in-road Brush Box planting but now diluted with other species. Recommend maintaining in-road planting with better tree pit preparation for future planting and ultimate conversion to similar character species to reduce over reliance on Brush Box. Recommend ABC implementation.
Lord Street		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Banksia serrata (under wires)*** ***Eucalyptus haemastoma (non-wire side)***	Power on northern side. Very short connecting street with very diverse current planting. Trees under wires disfigured by power line clearance pruning.
Marion Street		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Callistemon viminalis cv., Synoum glandulosum, Tristaniopsis laurina (both sides)*** ***Corymbia eximia, Eucalyptus haemastoma (non-wire side only)***	Short section of street with LGA leading into Leichhardt. Adjacent to Greenway Corridor. Recommend maintaining diverse native community of street trees.
Nicholls Avenue		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Lophostemon confertus (in-road both sides)***	Very nice street character, with strong community involvement. Historic in-road planting of Brush Box, most in good condition. Some replacement planting using other species. ABC should be a priority for this street to reduce disfiguring pruning.
Northcote Street		OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Lophostemon confertus***	***Angophora costata (in road both sides)*** ***Murraya paniculata (in grass verge both sides)***	Street should be targeted for replacement and upgrade program and ABC installation. Historic planting of in-road Brush Box but many now in poor condition. Recommend retaining character and in-road planting but changing species to reduce over reliance on Brush Box, similar to nearby Walker Street.
O'Connor Street	Ramsay and Parramatta Road	OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Lophostemon confertus***	***Lophostemon confertus (in-road both sides)***	Historic in-road planting of Brush Box, most in good condition. One of the longer streets in this precinct retaining this character. Recommend reinforcing and continuing.
O'Connor Street	Ramsay Street and Barton Avenue	OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Lophostemon confertus (in road both sides)***	Currently diverse street planting, originally Brush Box in-road planting that has been substantially diluted. Butia Palms also common on one side, with Brush Box on non-wire side. Palms now conflicting with wires. Together with Kingston and Kensington Streets, this could be one of the longest historical in-road planting streets reflective of early Haberfield. Recommend reinforcing and continuing in-road character and reinstating as a prominent Brush Box Street. Recommend discontinuing planting in verge under wires and gradual transplanting of Palms and replacement with Brush Box
Percy Street		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Callistemon viminalis cv., Synoum glandulosum, Tristaniopsis laurina (both sides)*** ***Corymbia eximia, Eucalyptus haemastoma, Acacia binervia (non-wire side)***	Very diverse planting currently in street. Street located near Greenway Corridor. Recommend maintaining diverse native community of trees.
Ramsay Street		ABC (Even)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Caesalpinia ferrea (non wire side or both sides where power ABC'd or undergrounded)*** ***Lagerstroemia indica (under wires)***	Major through road. Power undergrounded between Wattle Street and Walker Street. ABC implemented from Walker Street to Alt Street. Numerous young Crepe Myrtle planted in some places. Recommend long term program of ABC implementation to allow larger trees to be planted without disfiguring pruning.

Street Name	Between Streets	Power Lines	Verge Width	Verge Type	Existing Dominant	Proposed Species	Key Street Observations
Rawson Street		OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Lophostemon confertus***	***Lophostemon confertus (in road both sides)*** ***Harpullia pendula (non wire side in grass strip where there are no in-road opportunities)***	Historic in-road planting dominated by Brush Box but a few other species now planted in grass strip. Recommend reinforcing and continuing with improved tree pit preparation for any new tree planting. Together with sections in Dobroyd Point precinct this represents an important historic street.
Rogers Avenue		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Lophostemon confertus***	***Lophostemon confertus (in-road both sides)***	Dominated by historic in-road Brush Box planting. Numerous young Brush Box replacements undertaken. Numerous other species planted in places within verges. Recommend reinforcing and continuing Brush Box theme.
Sloane Street	Ramsay Street and Parramatta Road	OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Harpullia pendula (both sides)***	Major through road from Ramsay Street, inner west suburbs and across Parramatta Road. Some remnants of historic in-road Brush Box but now substantially diluted. Recommend discontinuing in-road in this section and installing medium sized evergreen trees in verge with ABC implemented on wire side as a priority.
St Davids Road		OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Syzygium paniculatum (in-road when on wire side, in verge on non wire side)***	Historical in-road Brush Box planting now quite diluted in character. Good sized grass strip for planting. Recommend continuing character but with new species and discontinue in-road planting over time, except on the wire side. Discontinue verge planting under wire side.
Stanton Road		OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Lophostemon confertus***	***Lophostemon confertus (in-road both sides)***	Historic in-road planting of Brush Box and Butia Palms. Many trees not performing well and disfigured by power line clearance pruning. Recommend reinforcing and continuing current character but with better tree pit preparation for future planting.
Tinana Street		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Lophostemon confertus***	***Lophostemon confertus (in-road both sides)***	Dominated by historic in-road Brush Box planting. Numerous young replacements undertaken. Some other species planted in sections within verge. Recommend reinforcing and continuing Brush Box theme.
Tressider Avenue		OH (Odd)	Large (>5m)	Grass & Path	***Lophostemon confertus***	***Lophostemon confertus (both sides in verge)***	One of the best streets in the precinct. Wide verge with excellent continuity of historic Brush Box. One of a handful of streets where trees are not in-road. Recommend reinforcing and continuing as an important historical record of period planting. ABC should be a priority over any new planting.
Walker Avenue		OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Angophora costata (in road only)*** ***Murraya paniculata (in grass verges both sides)***	Some reasonable remnants of previous historic in-road planting of Brush Box. This character now very diluted, many not performing well. Many trees planted beneath wires disfigured by clearance pruning. Recommend reinforcing and continuing in-road planting but implementing a taller native tree, able to clear wires, similar to nearby Northcote Street.
Wattle Street		OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Elaeocarpus eumundi (where unaffected by overhead wires and grass strip exceeds 1m in width)***	Major through road with vehicles travelling in kerb side lane. Unique pocket planting of larger native trees exists within island at Parramatta Road intersection. Some sections with power under grounded near Ramsay Street intersection.
Winchcombe Avenue		OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Lophostemon confertus***	***Lophostemon confertus (in-road both sides)***	Dominated by in-road Brush Box but with also somewhat random recent plantings of Water Gum and Peppercorns. Recommend reinforcing and continuing as a Brush Box themed street.
Wolseley Street		OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Callistemon viminalis cv., Acmena smithii var. minor (under wires)*** ***Acmena smithii, Syzygium paniculatum, Harpullia pendula (in road and non wire side)***	In-road and verge planting of semi-mature Lilly Pilly. Most performing adequately. ABC needed to be implemented to allow them to mature properly. Street parallel to Iron Cove Creek and should be planted with a mix of locally native species
Yasmar Avenue		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Callistemon viminalis cv.***	***Callistemon viminalis cv. (both sides)***	Relatively short street with good sized grass verge for planting. Dominated by Callistemon which should be continued as theme.

Street Name	Between Streets	Power Lines	Verge Width	Verge Type	Existing Dominant	Proposed Species	Key Street Observations
09 HABERFIELD VIILLAGE							
Dalhousie Street	Dickson Street and Winchcombe Avenue	ABC (Even)	Small (<1.8-3.5m)	Fully Paved	***Nil***	***Butia capitata (in-road median)*** ***Butia capitata (both sides where awnings and services permit)***	Awnings affecting much of street and some ABC already undertaken. Look at median planting on approaches to intersection with Ramsay Street with transplanted Butia Palms to announce arrival at Village Centre and elsewhere where power line, underground services and awnings permit.
Ramsay Street	Gillies Avenue & Kingston Road	ABC (Even)	Small (<1.8-3.5m)	Fully Paved	***Mixed***	***Butia capitata (in-road medians, blisters and roundabouts)*** ***Lagerstroemia indica (both sides where awnings, services and power lines permit)***	Historic Camphor Laurels located in adjoining car park contribute to character. Recent Butia Palms planted in blisters and at roundabout announcing arrival at Village Centre. Currently some clipped shrubs etc with Village Centre blisters. Numerous young Crepe Myrtles planted in newly developed areas at western end. Recommend reinforcing Palm Character as Village Centre theme using palms transplanted from streets where palms have now become diluted or are impacting with OH power.

Street Name	Between Streets	Power Lines	Verge Width	Verge Type	Existing Dominant	Proposed Species	Key Street Observations
10 HURLSTONE PARK							
Armstrong Street		OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Lagerstroemia indica (both sides)***	Very wide street, some traffic calming devices with blisters. Good width to grass verge. Many trees disfigured by power line clearance pruning. Recommend low growing but spreading tree to both sides. Recommend implementing Crepe Myrtles to define this street as a collector road.
Ashford Street		OH (Odd)	Large (>5m)	Grass & Path	***Mixed***	***Photinia x fraseri 'Robusta' (under wires)*** ***Eucalytpus paniculata (non wire side)***	generous grass verge width, would accommodate large trees and small spreading trees when under wires. Currrently native theme to planting. District view available from some houses.
Florence Street		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Angophora costata (in-road both sides)*** ***Camellia sasanqua (in grass verge both sides)***	Wide short street, that would benefit from in-road planting with potential reconfiguration of parking. Recommend larger tree in-road with small tree in grass verge both sides.
Goodwin Avenue (north section)		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Lophostemon confertus***	***Lophostemon confertus (in-road both sides)***	Very good historic street with in-road Brush Box planting. Should continue and reinforce character.
Goodwin Street (south section)		OH (Odd)	Large (>5m)	Grass & Path	***Lophostemon confertus***	***Lophostemon confertus (both sides)***	One of the best streets in the precinct. Wide verge with excellent continuity of historic Brush Box. One a handful of streets where trees are not in-road. Recommend reinforcing and continuing as an important historical record of period. Recommend ABC implemented if any new planting ever undertaken.
Griffiths Street		OH (Odd)	Medium (3.5-5m)	Grass & Path	***Mixed***	***Lophostemon confertus (in-road both sides west of Queen)*** ***Xylsoma senticosum (in verge both sides east of Queen)***	Traffic light sight distances and different street character currently exists east of Queen Street. McDonalds located on corner. Historic in-road planting of Brush Box west of Queen Street. Recommend reinforcing and continuing this theme west of Queen St as one of the few such avenues remaining in Precinct. Matching character tree but in smaller size and in verge recommended for west of Queen Street.

Street Name	Between Streets	Power Lines	Verge Width	Verge Type	Existing Dominant	Proposed Species	Key Street Observations
Hanks Street		OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Ulmus parvifolia 'Todd' (median/in-road)*** ***Lagerstroemia indica (in verge both sides)***	Many trees disfigured by power line clearance pruning. Very wide street. Recommend to consider investigation of pocket median planting.
Hardy Street		OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Fraxinus pennsylvanica (on non wire side)*** ***Buckinghamia celsissima (under wires)***	Main collector road in Precinct. Extremely diverse mix of street planting at present, street lacks character. Recommend implementing a more consistent planting palette to define it as a principle road.
Harland Street		OH (Even)	Narrow (<1.8m)	Fully Paved	***Nil***	***Caesalpinia ferrea (2-3 positions in-road only non wire side)***	Narrow verge and street with currently no planting. In-road planting opportunities exist opposite wires.
Hillcot Street		OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Lophostemon confertus***	***Lophostemon confertus (in-road both sides)***	Historic in-road planting of Brush Box. Recommend reinforcing and continuing.
Hillcrest Avenue		OH (Odd)	Large (>5m)	Grass & Path	***Lophostemon confertus***	***Waterhousea floribunda 'Green Avenue' (in-parking lane)***	Street reconfigured and many existing trees declining. Should be replanted with similar character tree to maintain significance but reduce over reliance on Brush Box and with ABC as a priority when replanted. Ensure adequate and improved tree pit construction.
Holden Street	Seaview Street and Princess Street	OH (Even)	Medium (3.5-5m)	Grass & Path	***Mixed***	***Xylosma senticosum***	Only eastern half street in LGA. Many trees disfigured by clearance pruning. Wide verge but very low power lines. Verge narrows slightly at the southern School end which has been provided with some ABC. Non LGA side dominated by Brush Box. Recommend lush spreading evergreen tree capable of being easily managed and pruned under wires.
Holwood Avenue		OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Prunus cerasifera 'Nigra' (under wires)*** ***Fraxinus pennsylvanica (non wire side)***	Short dead end street with diverse mix of planting currently. Reasonable width grass planting strip.
Ida Street		ABC (Odd)	Small (<1.8-3.5m)	Grass & Path	***Tristaniopsis laurina, Callistemon viminalis cv.***	***Tristaniopsis laurina, Callistemon viminalis cv. (alternating both sides)***	Wide short street. Minimal powerline conflict due to ABC already implemented in much of street.
Mount Street		OH (Odd)	Medium (3.5-5m)	Grass & Path	***Sapium sebiferum***	***Sapium sebiferum (both sides with ABC implementation)*** ***Camellia sasanqua (under wires if no ABC undertaken)***	Generous verge that supports good sized tree. Recommend ABC implementation to allow existing trees to assume normal shape. Good street with consistent planting. Should continue and reinforce current palette.
Old Canterbury Road	Princess Street and Prospect Road		Small (<1.8-3.5m)	Fully Paved	***Nil***	***Elaeocarpus eumundi (south of Queen St only)***	Only western side of street controlled by Council. Major regional through road, with vehicles travelling on kerb side lane. Overhead power lines impacting ability to plant from north of Queen Street. Could plant some trees to the south of Queen St. Much of street dominated by Yeo and Gough Park where park trees could better contribute to streetscape.
Princess Street			Narrow (<1.8m)	Fully Paved	***Mixed***	***Tristaniopsis laurina (opposite wires west of Hardy St only)***	Only northern side controlled by Ashfield Council. Section between Holden Street and Hardy Street with normal verge width that will support planting. Free of overhead wires in this section. Other parts of street no current planting and none recommended.
Queen Street	Seaview Street and Old Canterbury Road	OH (Even)	Medium (3.5-5m)	Grass & Path	***Mixed***	***Caesalpinia ferrea alternating with Lagerstroemia indica (non wire side)*** ***Lagerstroemia indica (under wires)***	Very diverse mix of planting currently exists in the street. Main collector road, should be provided with a more consistent and defining character.
Service Avenue		OH (Even)	Large (>5m)	Grass & Path	***Lagerstroemia indica***	***Lagerstroemia indica (both sides)***	A very well planted street, with very consistent planting of Crepe Myrtle. Recommend reinforcing and continuing this theme into the future.

Street Name	Between Streets	Power Lines	Verge Width	Verge Type	Existing Dominant	Proposed Species	Key Street Observations
Victoria Street	Seaview Street and Old Canterbury Road	OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Angophora costata (in road blisters only)*** ***Lagerstroemia indica (both sides in grass verge)***	Historic in-road planting of Butia Palms. Street dominated by adjoining Park and Trinity School. Numerous young Crepe Myrtles currently planted. Recommend phasing in-road palm planting out in favour of a larger and more spreading tree located within road blisters at strategic locations. Recommend continuing Crepe Myrtle theme in road verges. Consider angled parking near Park and Schools and additional blister planting.
Watkin Street		OH (Odd)	Medium (3.5-5m)	Grass & Path	***Mixed***	***Angophora costata alternating with Lagerstroemia indica (non wire side only)*** ***Tristaniopsis laurina alternating with Lagerstroemia indica (under wires)***	Slightly asymmetric verge, with wider verge on non wire side often with parking strip implemented. Some ABC at western end which should be expanded. Recommend theme of Crepe Myrtle continued both sides with alternating larger trees on non wire side and smaller tree under wires.
Yeo Avenue		ABC (Odd)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Xanthostemon chysanthus alternating with Prunus cerasifera 'Nigra' (both sides)***	Very diverse mix of existing street planting. Very narrow grass strip and power lines. Recommend small trees only.

Street Name	Between Streets	Power Lines	Verge Width	Verge Type	Existing Dominant	Proposed Species	Key Street Observations
11 SUMMER HILL							
Allman Avenue		OH (Even)	Small (<1.8-3.5m)	Fully Paved	***Syzygium leuhmannii***	***Caesalpinia ferrea (non wire side only)***	Trees planted under powerlines, but nothing on non-power side. Parking at a premium. Recommend planting on the non-power side with small high branching tree and discontinuing planting under wires.
Bartlett Street		OH (Odd)	Small (<1.8-3.5m)	Fully Paved	***Mixed***	***Casesalpinia ferrea (non wire side only)*** ***Fraxinuis griffithii (under wires)***	Recommend thin trunked high branching for non-wire side and small tree under wires.
Bogan Street		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Liriodendron tulipifera (both sides)***	Good sized grass strip that would support medium sized tree. Street would benefit from the installation of ABC to prevent disfiguring pruning.
Carlton Crescent	Liverpool Road and Prospect Road	OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Nil***	***Corymbia maculata 'Little Mac' (on railway side only)***	Busy road. Footpath only on one side with very limited space, narrow grass strip, vehicles travelling in kerb lane and traffic lights sight distances limit planting opportunities. Suggest planting on railway side only.
Carlton Crescent	Prospect Road and Smith Street	OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Tristaniopsis laurina (under wires)*** ***Corymbia maculata 'Little Mac' (in road non-wire side only)***	Larger trees on railway side which typically has a grass only verge. Often this area is too narrow for tree planting. Recommend consider very strategic blister on non-wire side to plant larger trees say every 100-120m, minimising the parking loss but radically improving aesthetics of street. Reasonably consistent planting of Water Gum under wires should be continued and reinforced.
Carrington Street		OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Lophostemon confertus (in road both sides north of Wellesley St)*** ***Syzygium paniculatum (in road on wire side south of Wellesley)*** ***Elaeocarpus eumundi (non wire side south of Wellesley)***	Western section of street narrow and fully paved. Recommend in-road in this section too. North of Wellesley St contains an important remnant of in-road Brush Box planting. This section should be retained and reinforced, together with nearby Spencer Street.
Chapman Street		OH (Odd)	Narrow (<1.8m)	Fully Paved	***Callistemon viminalis cv. and Melaleuca bracteata***	***Backhousia citriodora (under wires)*** ***Harpullia pendula (in-road non wire side)***	Currently planting under wires, with nothing on non wires side. Recommend small tree under wires with better planting practice an 2-3 medium sized trees in-road on other side.
Dover Street		OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Melaleuca styphelioides and Callistemon viminalis cv.***	***Melaleuca styphelioides (non-wire side only)*** ***Backhousia citriodora (under wires)***	Many existing trees disfigured by power line clearance pruning.
Drynan Street		OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Melaleuca bracteata and Lophostemon confertus***	***Syzigium paniculatum (opposite wires)*** ***Backhousia citriodora (under wires)***	Some historic in-road planting of Brush Box but now substantially diluted. Recommend discontinuing in-road planting.
Edward Street		OH (Odd)	Small (<1.8-3.5m)	Fully Paved	***Callistemon viminalis cv. and Elaeocarpus reticulatus***	***Callistemon viminallis cv. (under wires)*** ***Elaeocarpus reticulatus (non wire side)***	Numerous young Callistemon recently planted.
Fleet Street		OH (Odd)	Narrow (<1.8m)	Fully Paved	***Callistemon viminalis cv. and Melaleuca bracteata***	***Backhousia citriodora (under wires)*** ***Harpullia pendula (in-road non wire side)***	Planting under wires, with nothing on non-wires side. Recommend small tree under wires with better planting practice and 2-3 medium sized trees in-road on other side.

Street Name	Between Streets	Power Lines	Verge Width	Verge Type	Existing Dominant	Proposed Species	Key Street Observations
French's Lane		OH (Even)	Narrow (<1.8m)	Fully Paved	***Nil***	*-*	Street providing rear lane access to Dover Street and the only access that is provided to Haig Ave. Verge too narrow for street tree planting.
Gower Street		OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Melaleuca leucadendra (in road both sides where adequate planting pits can be provided)*** ***Melaleuca styphelioides (in verge non wire side)*** ***Backhousia citriodora (under wires)***	Alternating planting of Melaleuca leucadendra and Melaleuca styphelioides. Many trees disfigured by power line clearance pruning. One of the few streets in wider Sydney with reasonably consistent planting of the Melaleuca leucadendra species. Should continue with adequately prepared in-road planting pits but ultimately discontinue in verges. Palms now very sporadic, should discontinue and relocate to other areas within the LGA.
Grosvenor Crescent	Liverpool Road and Pembroke Lane	OH (Even)	Small (<1.8-3.5m)	Fully Paved	***Mixed***	***Corymbia maculata 'Little Mac' (on railway side only)***	Planting possible on railway side only.
Grosvenor Crescent	Pembroke Lane and Smith Street	OH (Even)	Small (<1.8-3.5m)	Fully Paved	***Mixed***	***Melaleuca styphelioides, Corymbia eximia, Corymbia maculata 'Little Mac' (non wire side only)***	Grass only verge on the railway side currently and extensively planted with larger trees. Native planting suggested to link with Cadigal Reserve and Green Corridor. Many large Euc. sp within adjoining apartment landscapes contribute to streetscape.
Haig Avenue		ABC (Odd)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Corymbia eximia (in-road and non-wire side)*** ***Angophora hispida, Synoum glandulosum (under wires)***	Very short and quiet street next to native reserve. Historically in-road Brush Box. Recommend native tree planting to link in with Greenway Corridor, but with similar form and size of the Brush Box to maintain historic references.
Henson Street		OH (Odd)	Small (<1.8-3.5m)	Fully Paved	***Mixed***	***Lagerstroemia indica (both sides)*** ***Corymbia maculata 'Little Mac (strategic in-road planting blisters)***	Narrow verge and fully paved. Strategic in-road planting recommended. Many existing Tibouchina not performing well. Historic in-road planting of Peppercorn Trees on one side of street north of Junction Rd. Many young ones planted as replacements. Together with Prospect Road one of the more significant collector roads in Summer Hill.
Herbert Street		OH (Odd)	Small (<1.8-3.5m)	Fully Paved	***Mixed***	***Eucalyptus paniculata (with road closure area)*** ***Waterhousea floribunda 'Green Avenue' (both sides in-road, eastern end only)*** ***Syzygium leuhmannii (non-wire side western end)***	Street closed to traffic at Old Canterbury Road end. Street kinks in the middle at Henson Street. Currently Euc. nicholli planted within street closure. Western end of street presents slightly narrower verge. Recommend reconifguring the eastern end with in-road planting and parking lane definition both sides.
Hurlstone Avenue		OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Lophostemon confertus***	***Lophostemon confertus (in-road both sides)***	Histroric in-road planting of Brush Box. Some disfigured by power line clearance pruning. Good street, should continue and reinforce as one of the few remaining Brush Box streets in Summer Hill.
James Street		OH (Odd)	Small (<1.8-3.5m)	Fully Paved	***Tibouchina lepidota***	***Tibouchina lepidota (both sides)***	Currently dominated by Tibouchina under wires. Recommend continuing but with improved tree pit preparation for any new or replacement trees.
Junction Road		OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Lagerstroemia indica (both sides)***	Very diversely planted street with no defining character. Significant collector road within Summer Hill so should be defined with Crepe Myrtles similar to other collector roads within LGA. Also has relatively narrow grass strip that supports only small thin trunked tree suitable for under wires.
Kensington Road		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Lophostemon confertus***	***Lophostemon confertus (in-road both sides)***	Excellent street, should continue. Manage as an important heritage street. ABC should be implemented over time and over any new planting.
Lindsay Avenue		OH (Even)	Narrow (<1.8m)	Fully Paved	***Syzygium leuhmannii (heavily pruned copse)***	***Magnolia grandiflora 'Exmouth'***	Short dead end street. Could look at one or two additional trees where clear of wires, with attention to adequate tree pit preparation.

Street Name	Between Streets	Power Lines	Verge Width	Verge Type	Existing Dominant	Proposed Species	Key Street Observations
Liverpool Road	Parramatta Road and Grosvenor Crescent	OH (Even)	Small (<1.8-3.5m)	Fully Paved	***Mixed***	***Elaeocarpus eumundi (non wire side only where clear of other obstructions)*** ***Corymbia maculata 'Little Mac' (only in setback areas clear of wires)***	Numerous underground services. High traffic volumes with kerb side traffic. Space available in front of apartments with setback on northern side for larger trees. Plane trees in Explorers Park contribute to streetscape. Recommend planting of small upright tree to define as key collector road similar to other portions of Liverpool Rd.
Lorne Street		OH (Odd)	Small (<1.8-3.5m)	Fully Paved	***Mixed***	***Caesalpinia ferrea (non wire side only)*** ***Camellia sasanqua (under wires)***	Planting under wires and none on non-wire side.
Louisa Street		OH (Even)	Narrow (<1.8m)	Fully Paved	***Nil***	-	Very narrow street and verges, fully paved. Minimal planting opportunity.
Moonbie Street		OH (Even)	Small (<1.8-3.5m)	Fully Paved	***Mixed***	***Caesalpinia ferrea (in-road and non wire side)*** ***Pyrus calleryana 'Chanticleer' under wires***	In-road Schinus areira planted in-road north of Junction Road. ABC a priority for street. Most of verge fully paved.
Morris Street		OH (Odd)	Small (<1.8-3.5m)	Fully Paved	***Eucalyptus microcorys***	***Harpullia pendula alternating with Fraxinus pennsylvanica (non wire side)***	Power lines quite low along street. Large Eucalyptus microcorys planted in-road on non-wire side. Recommend staged replacement of these over time with improved tree pit preparation and alternating planting of and evergreen and deciduous species.
Nowraine Street		OH (Odd)	Small (<1.8-3.5m)	Fully Paved	***Mixed***	***Lagerstroemia indica (both sides and in-road where possible)***	Numerous Crepe Myrtles planted within street, some within the road.
Oaklands Avenue		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Elaeocarpus eumundi***	***Elaeocarpus eumundi (both sides)***	Short street with recent planting of Elaeocarpus eumundi. Recommend ABC installation to ensure they can mature without disfiguring pruning.
Old Canterbury Road		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Backhousia citriodora (under wires)***	Only western side of street within LGA. Many trees disfigured by power line clearance pruning. Views available to city from higher portions. Adjoining Council targeting planting of Brush Box, Koelreutaria and Backhousia citriodora
Parramatta Road		OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Nil***	-	Major regional road, limited planting opportunities within street.
Prospect Road	Carlton Street and Seaview Street	OH (Even)	Small (<1.8-3.5m)	Fully Paved	***Mixed***	***Caesalpinia ferrea (non wire side only)***	Caesalpinia currently starting to dominate the character of street. Opportunities to plant more. Very narrow grass strip south of Robert Street on the eastern side, but is under wires. Recommend no planting under wires.
Prospect Road	Seaview Street and Old Canterbury Road	OH (Even)	Small (<1.8-3.5m)	Fully Paved	***Caesalpinia ferrea***	***Caesalpinia ferrea (only non wire side and if School landscape alters)***	Trinity School landscaping contributing to streetscape. Narrow fully paved verge under wires. No planting currently under wires. Trees in school contribute to streetscape and overhang verge, no requirement for street planting in this area while these are maintained.
Regent Street			Small (<1.8-3.5m)	Fully Paved	***Mixed***	***Elaeocarpus eumundi (non wire side)*** ***Backhousia citriodora (under wires)***	Planting under powerlines but currently none on non-wire side. Recommend thin trunked high branching tree on non wire side. Improved tree pit preparation for any new or replacement planting.
Rosemount Avenue		OH (Odd)	Large (>5m)	Grass & Path	***Lophostemon confertus***	***Lophostemon confertus (both sides)***	Excellent street character. ABC a priority to prevent further pruning.
Seaview Street	Prospect Road and Henson Street	OH (Odd)	Large (>5m)	Grass & Path	***Mixed***	***Lophostemon confertus and Magnolia grandiflora 'Exmouth' (non wire side)*** ***Lagerstroemia indica (under wires)***	Rather unique street within precinct with asymmetrical verge. Very wide verge on south side supports very large tree planting. Numerous young Brush Box recently planted on the large side and Crepe Myrtles under wires. Aging Camphor Laurels will eventually require replacement with more suitable species.

Street Name	Between Streets	Power Lines	Verge Width	Verge Type	Existing Dominant	Proposed Species	Key Street Observations
Short Street		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Melaleuca bracteata (non wire side only)***	North side fully paved under wires. Narrow grass strip less than 1m wide. Section east of Henson Street is a very narrow street and verge with no tree planting recommended. Private trees contribute to streetscape.
Sloane Street	Grosvenor Crescent and Parramatta Road	OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Lophostemon confertus***	***Lophostemon confertus (in-road both sides)*** ***Elaeocarpus eumundi (south of Gower St only where services and awnings permit)***	Significant through road. Significant remnants of in-road planting of Brush Box. Recommend reinforcing and continuing.
Smith Street		OH (Odd)	Small (<1.8-3.5m)	Fully Paved	***Mixed***	***Lagerstroemia indica (both sides)***	Major through road. Narrow verge, mostly fully paved. Recommend strengthening and reinforcing with a Crepe Myrtle theme on both sides with improved tree pit preparation for any new or replacement planting. This will define this as an important collector road similar to other such streets.
Spencer Street		OH (Odd)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Syzygium paniculatum (in-road wire side south of Wellesley St)*** ***Elaeocarpus eumundi (non wire side south of Wellesley St)*** ***Lophostemon confertus (in-road both sides north of Wellesley St)***	North of Wellesley St contains an important remnant of in-road Brush Box planting. This section should be retained and reinforced, together with nearby Carrington Street.
Sunning Place		OH (Even)	Narrow (<1.8m)	Fully Paved	***Nil***	***Elaeocarpus eumundi (non wire side only)***	Short dead end street, narrow verge. Any planting would need close attention to tree pit design and installation.
Teakle Street		OH (Even)	Small (<1.8-3.5m)	Grass & Path	***Mixed***	***Murraya paniculata (under wires)*** ***Caesalpinina ferrea (non wire side)***	Wires very low within this street. Verge becomes wider to southern end. Recommend medium sized spreading tree on non-wire side.
Wellesley Street		ABC (Odd)	Small (<1.8-3.5m)	Fully Paved	***Mixed***	***Schinus areira (in road non wire side only)*** ***Tristaniopsis laurina (under wires)***	Extensive planting of Schinus areira within road opposite wires. Should continue but with improved tree pit preparation for any new or replacement planting.

Street Name	Between Streets	Power Lines	Verge Width	Verge Type	Existing Dominant	Proposed Species	Key Street Observations
12 SUMMER HILL VILLAGE							
Hardie Avenue		None or UG	Narrow (<1.8m)	Fully Paved	***Nil***	*-*	Plane trees planted within adjoining car park.
Lackey Street		OH (Odd)	Small (<1.8-3.5m)	Fully Paved	***Pyrus ussuriensis***	***Pyrus ussuriensis (both sides)***	Awnings impact tree locations. Should continue theme of Pyrus to delineate village precinct.

8.2 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 Ashfield 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, its chosen Contractors or any private developers required to carry out work in the public domain.

Key factors that shall be considered include:-

- Purchase of trees of the specified size and quality
- Tree installation specification - including size of tree pits, and soil and backfill provisions
- Street planting technical details
- Specification and installation of any required 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. Definitions for the terms used within this specification shall be in accordance with the NATSPEC guide.

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 above container (m)	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	3.0

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 <15º.

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 branch unions
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 <45º.

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:-

- AS4419-2003 Soils for landscaping and garden use;
- AS4454-2003 Compost, soil conditioners and mulches;
- AS4373-2007 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 AS4419

TYPE B Soil mix: Blended soil mix comprising 50% recovered existing site topsoil (or imported premium grade 'low organic' 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, contamination, 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 30º Celsius. Generally tree planting is preferred during the cooler months from March to October (autumn and spring).

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 placed 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. (Refer standard details)

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 relevent 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 and grates on specified trees.

When trees are installed within grassed surrounds, plastic collar guards are to be installed regardless of being mulched.

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 or watering 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 then 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.

8.3 Typical Street Planting Details

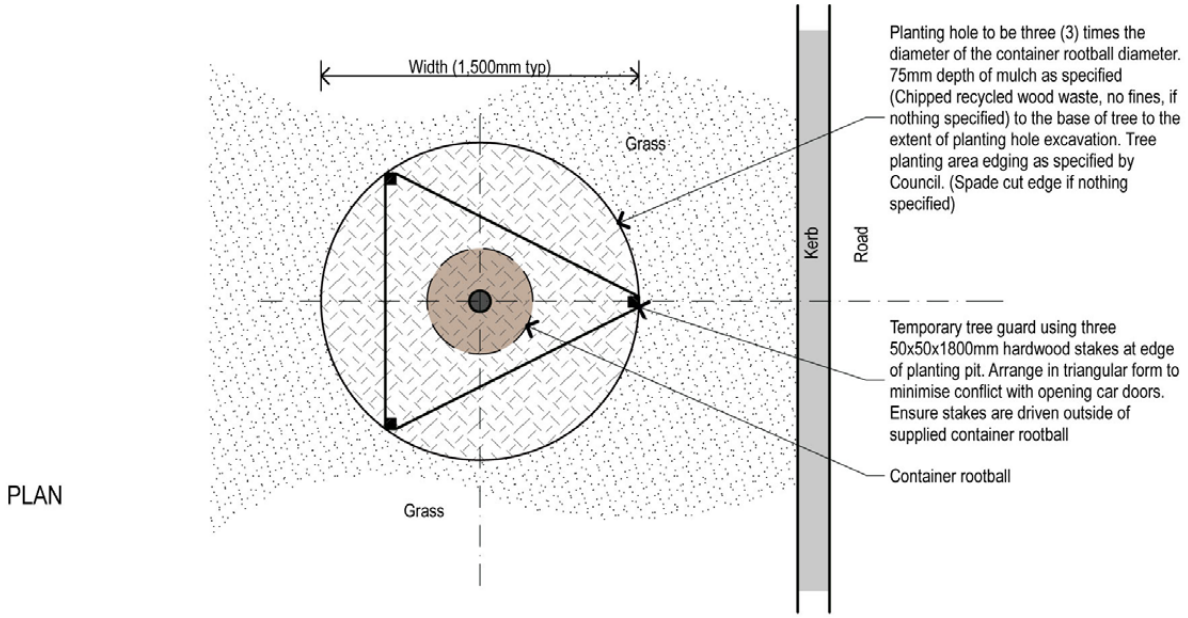
Technical details have been developed to ensure Council staff, developers and Council's Contractors provide an appropriate and consistent treatment for all street tree planting throughout the variety of street environments typically encountered.

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.

Refer to the following pages for the standard street tree installation and planting details to be typically applied to all normal street planting within the Ashfield LGA area. These details may be amended by Council, from time to time, to accommodate any site specific circumstances.

NOTE:
All details are to be read in conjunction with any site specific DA conditions, Council issued Contract Documentation and the general Specification clauses contained in Section 8.3 of the Ashfield Council Street Tree Strategy 2015



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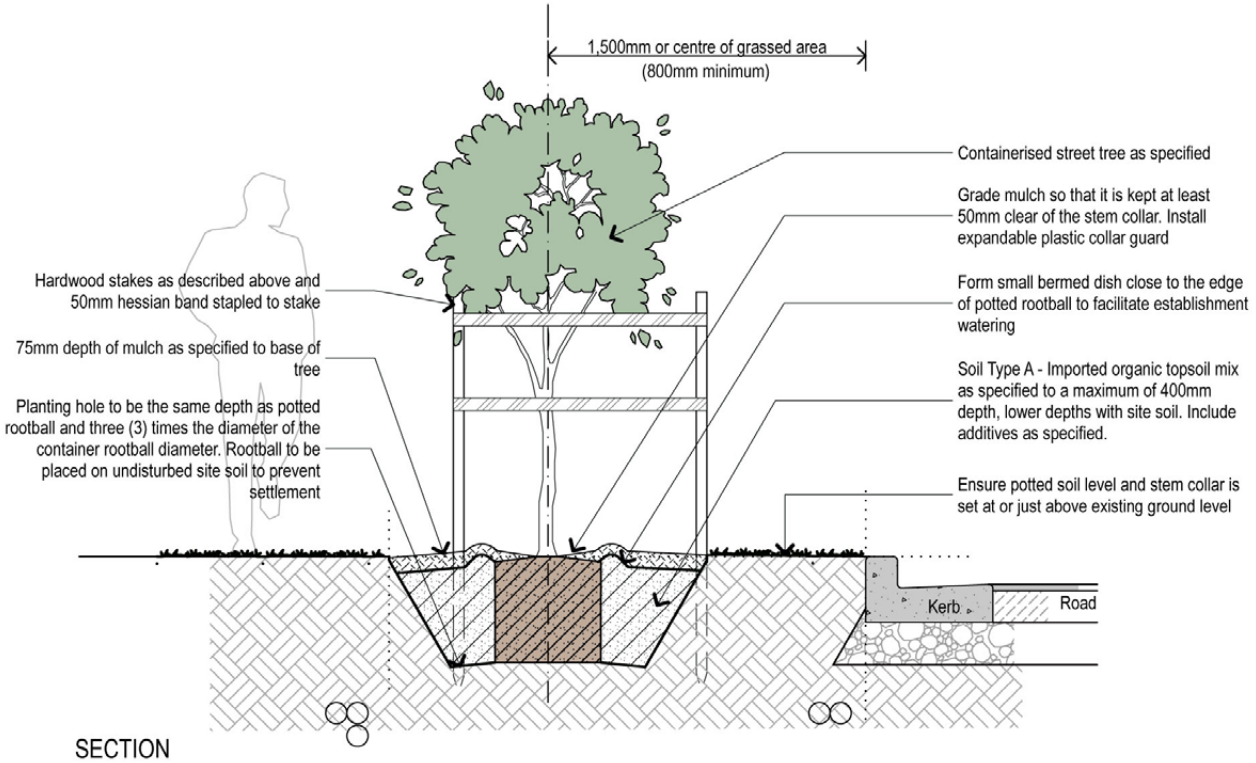

SECTION

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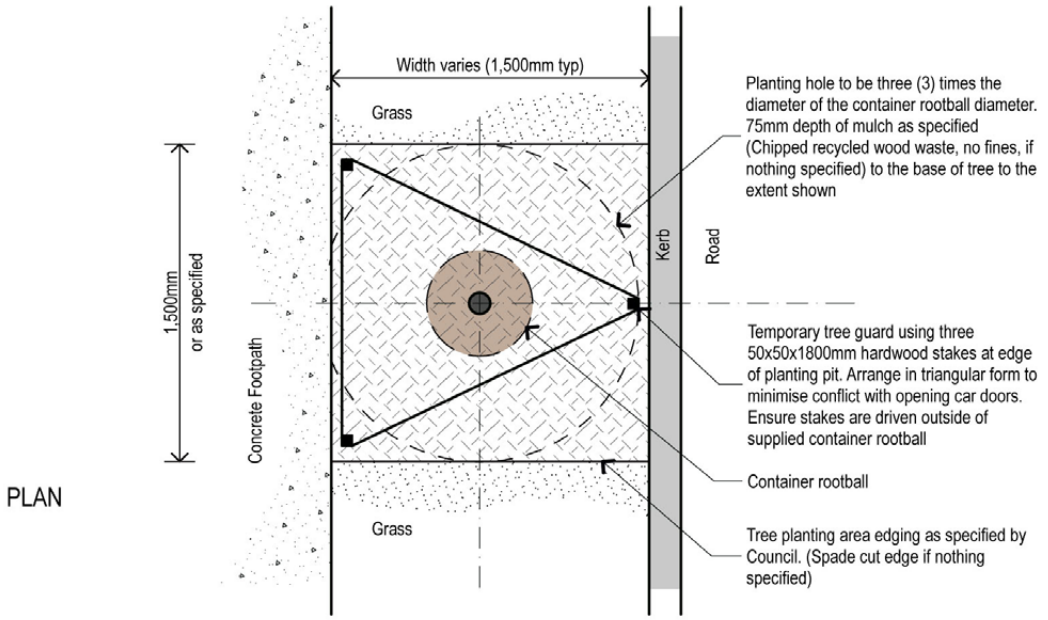
Ashfield Council

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

NOTE:
All details are to be read in conjunction with any site specific DA conditions, Council issued Contract Documentation and the general Specification clauses contained in Section 8.3 of the Ashfield Council Street Tree Strategy 2015



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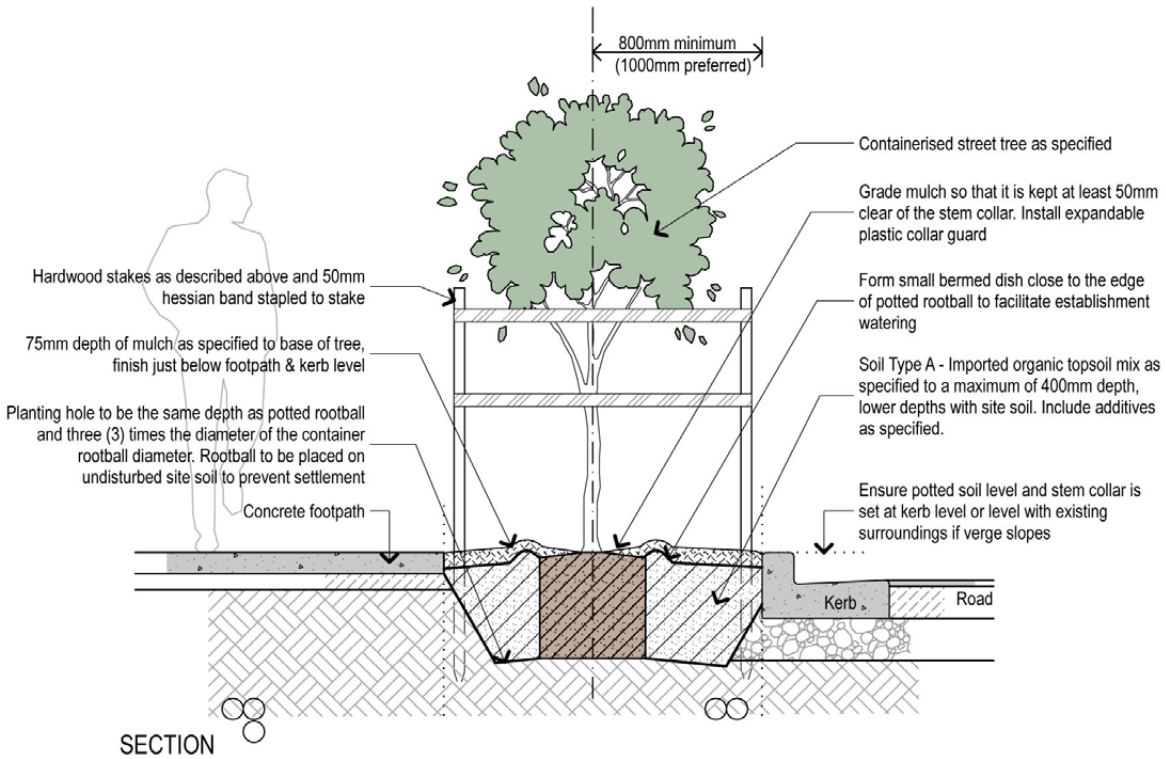

SECTION

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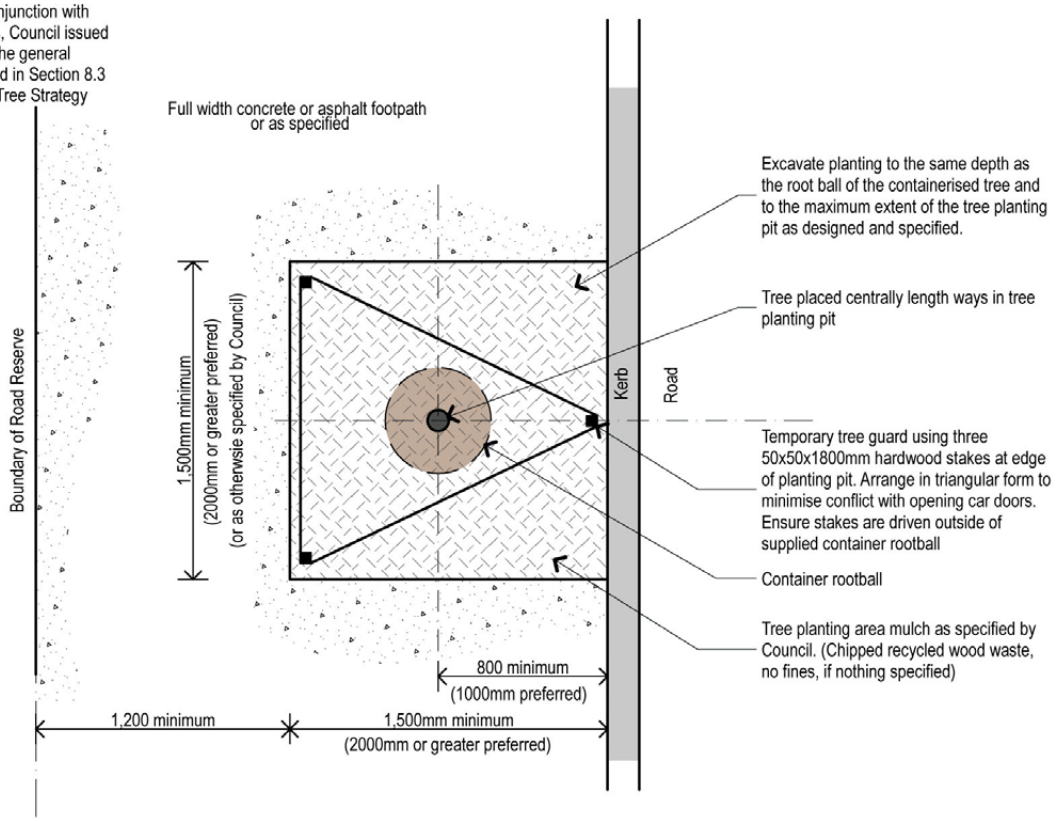
Ashfield Council

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

NOTE:
All details are to be read in conjunction with any site specific DA conditions, Council issued Contract Documentation and the general Specification clauses contained in Section 8.3 of the Ashfield Council Street Tree Strategy 2015



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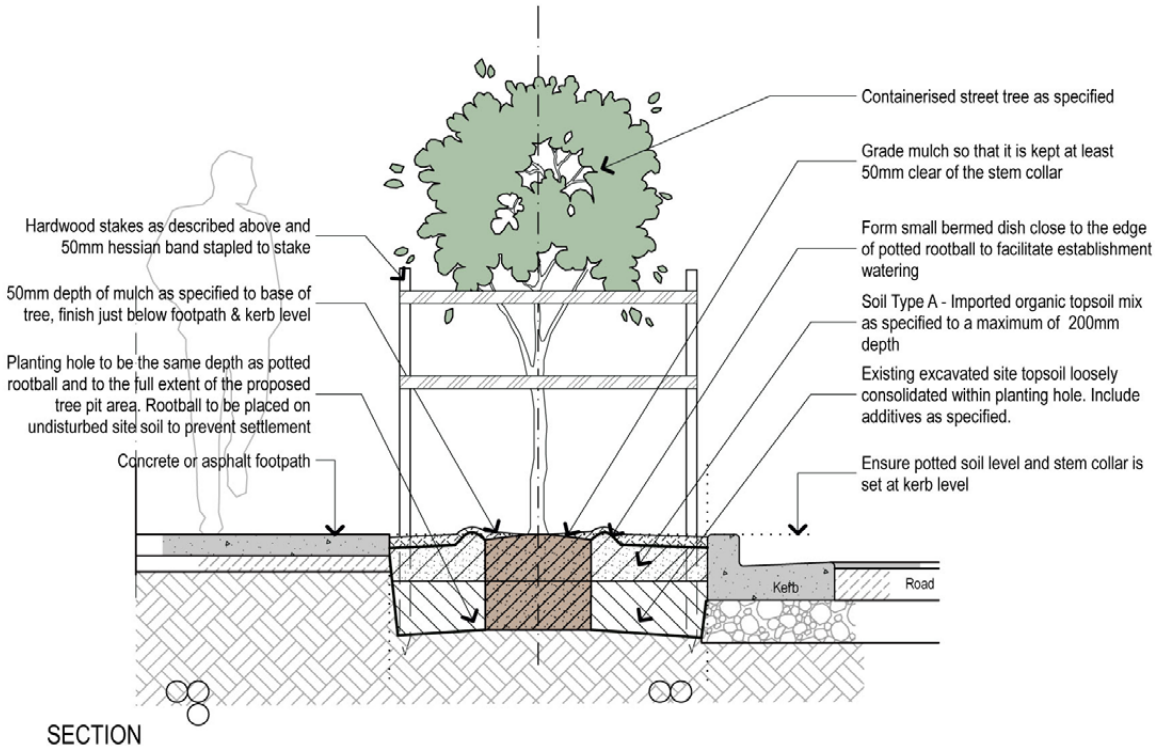

SECTION

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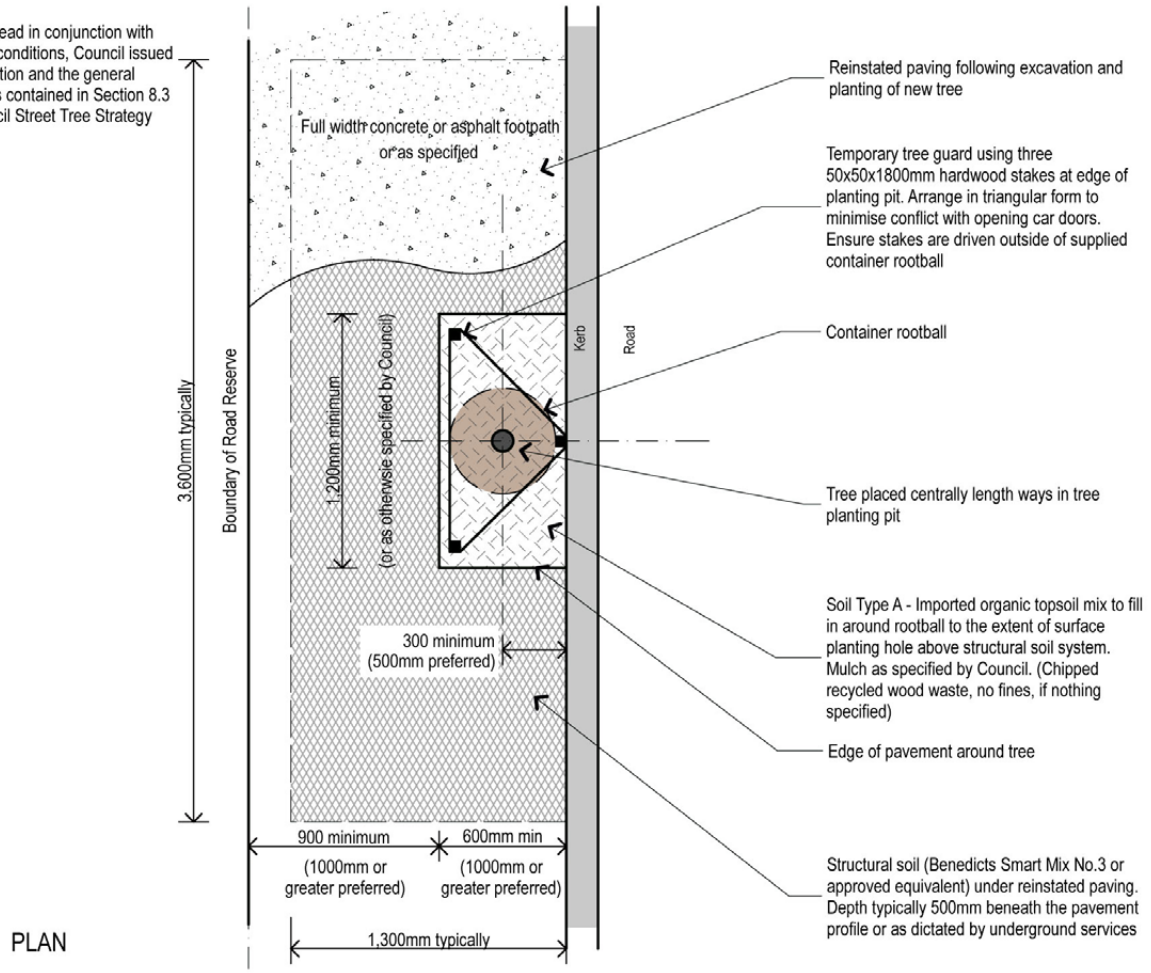
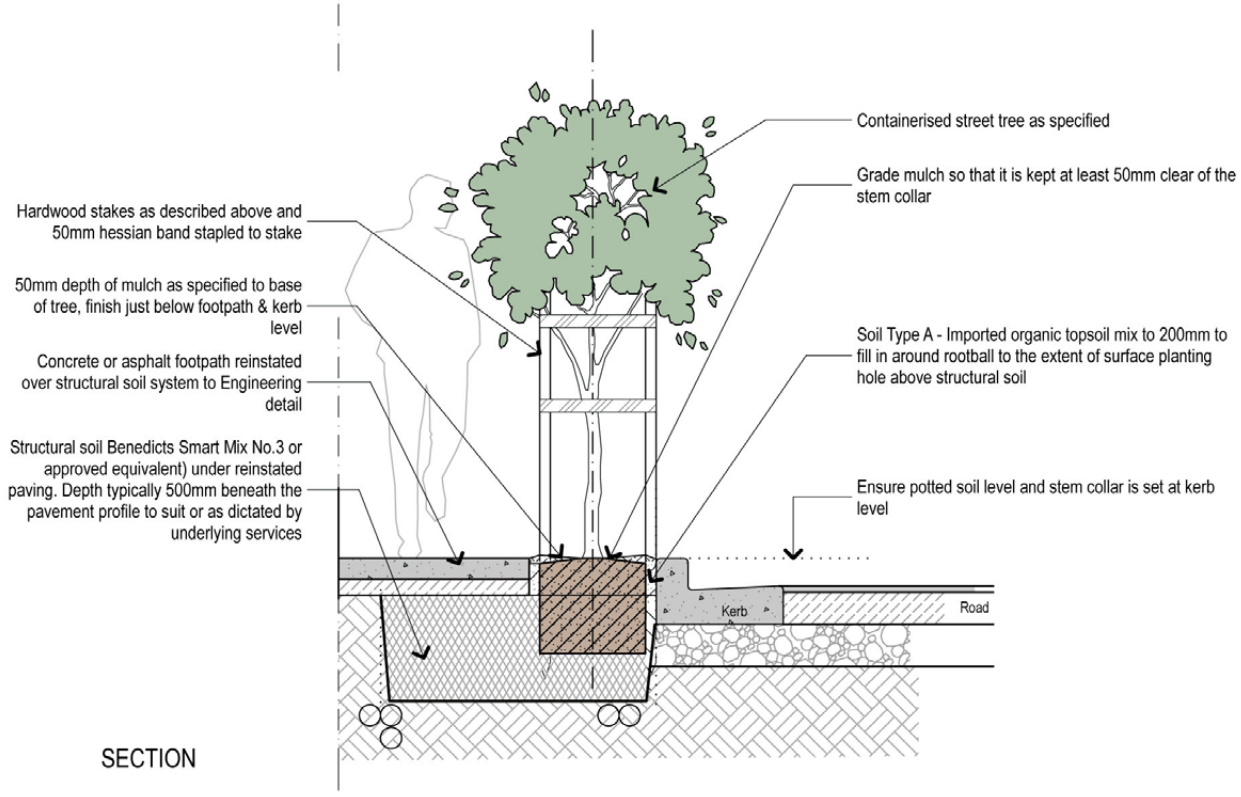
Ashfield Council

DETAIL 3 - TREE PLANTING IN FULLY PAVED VERGE AND GOOD SURROUNDING SUBSOIL

NOTE:
All details are to be read in conjunction with any site specific DA conditions, Council issued Contract Documentation and the general Specification clauses contained in Section 8.3 of the Ashfield Council Street Tree Strategy 2015





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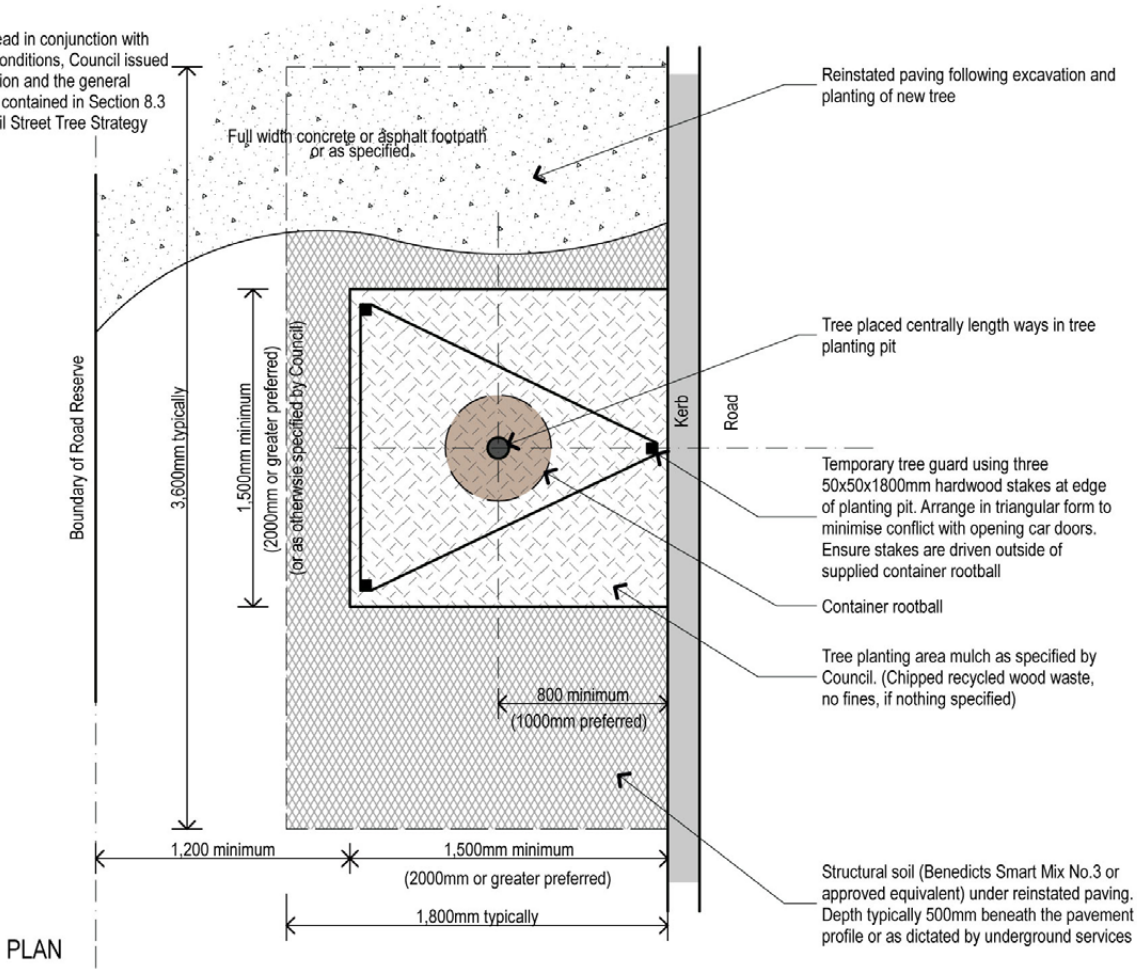
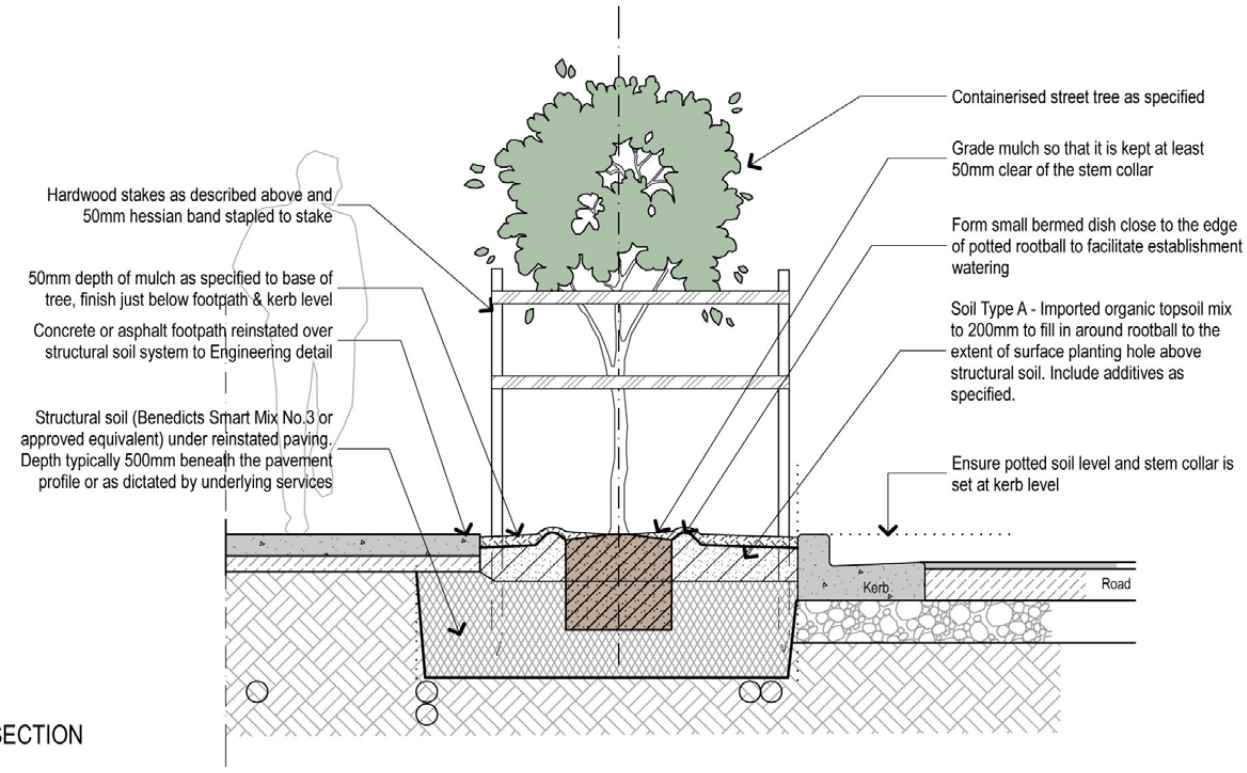
Ashfield Council

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

NOTE:
All details are to be read in conjunction with any site specific DA conditions, Council issued Contract Documentation and the general Specification clauses contained in Section 8.3 of the Ashfield Council Street Tree Strategy 2015





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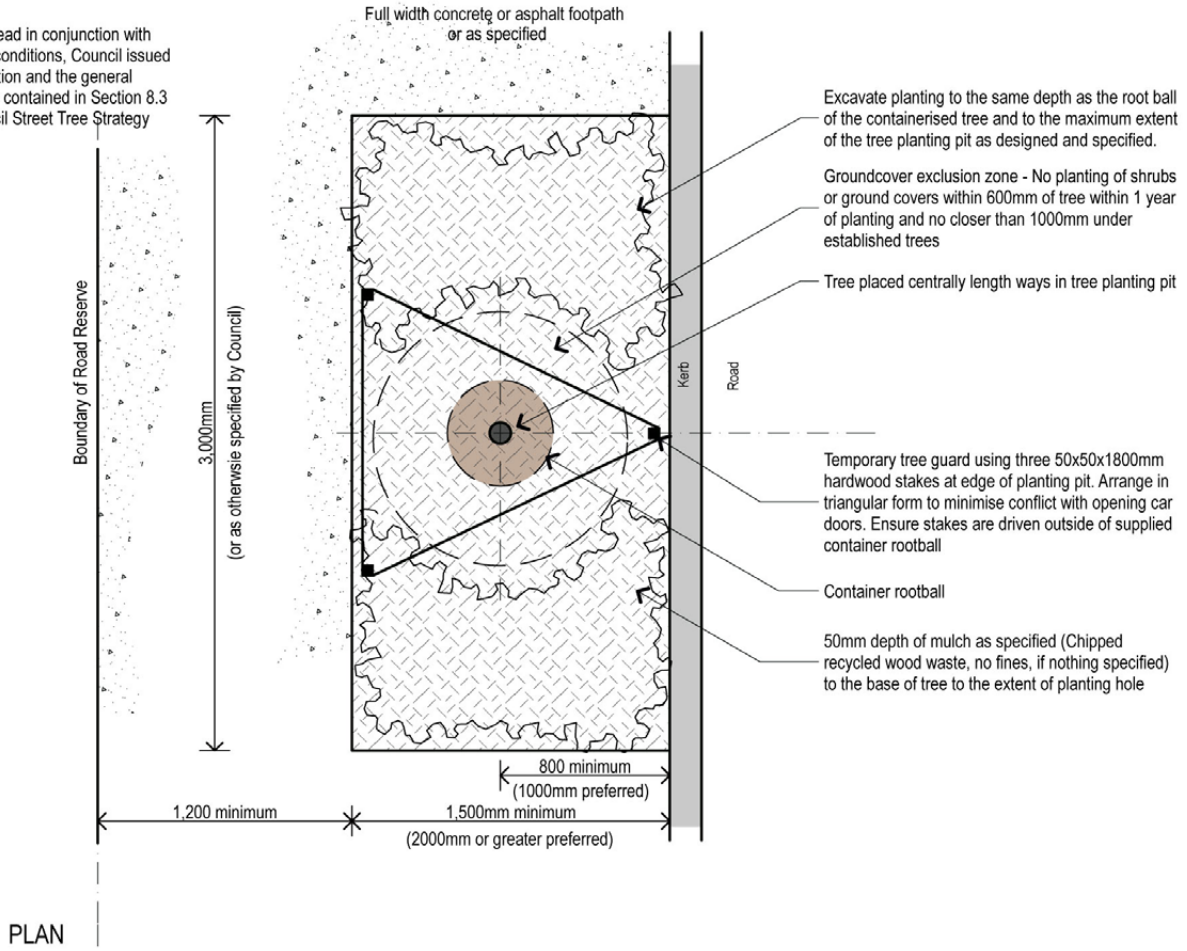
Ashfield Council

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

NOTE:
All details are to be read in conjunction with any site specific DA conditions, Council issued Contract Documentation and the general Specification clauses contained in Section 8.3 of the Ashfield Council Street Tree Strategy 2015



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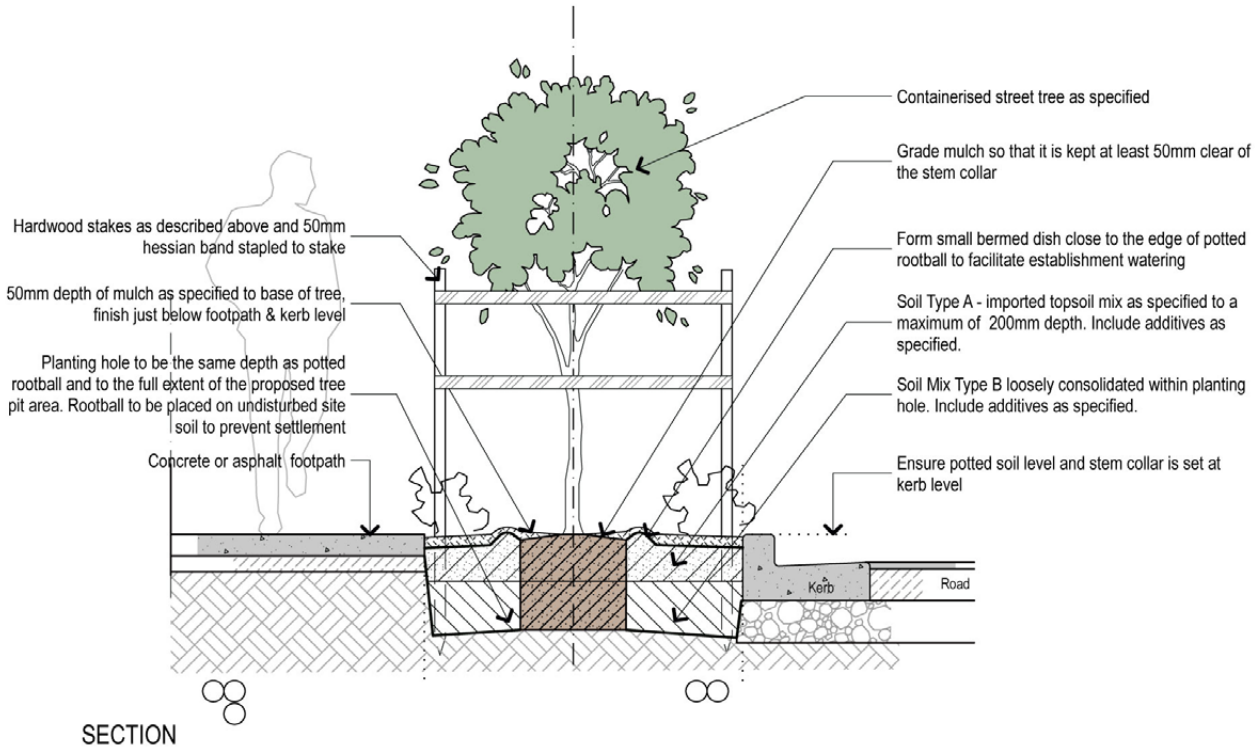

SECTION

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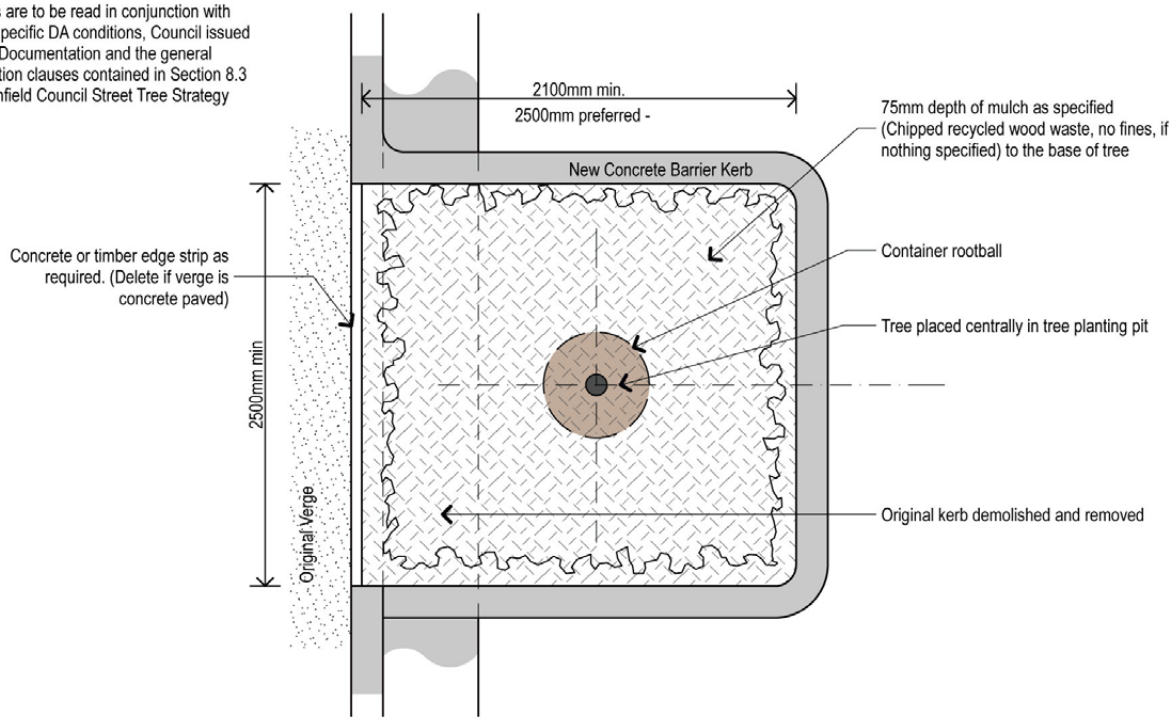
Ashfield Council

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

NOTE:
All details are to be read in conjunction with any site specific DA conditions, Council issued Contract Documentation and the general Specification clauses contained in Section 8.3 of the Ashfield Council Street Tree Strategy 2015



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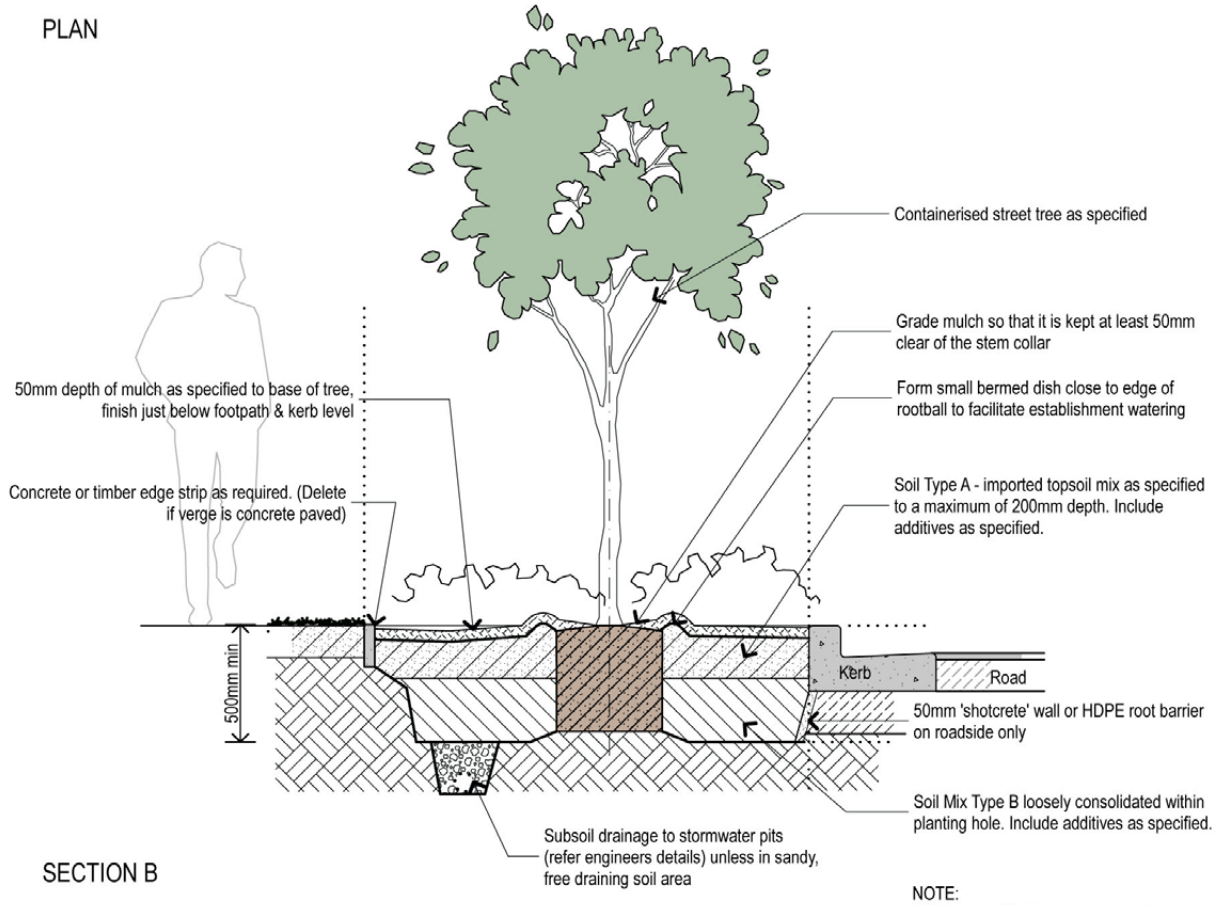

SECTION B

NOTE:
All blister and kerb extension details are to be verified for adequate drainage and existing gutter stormwater discharge on a case by case basis.

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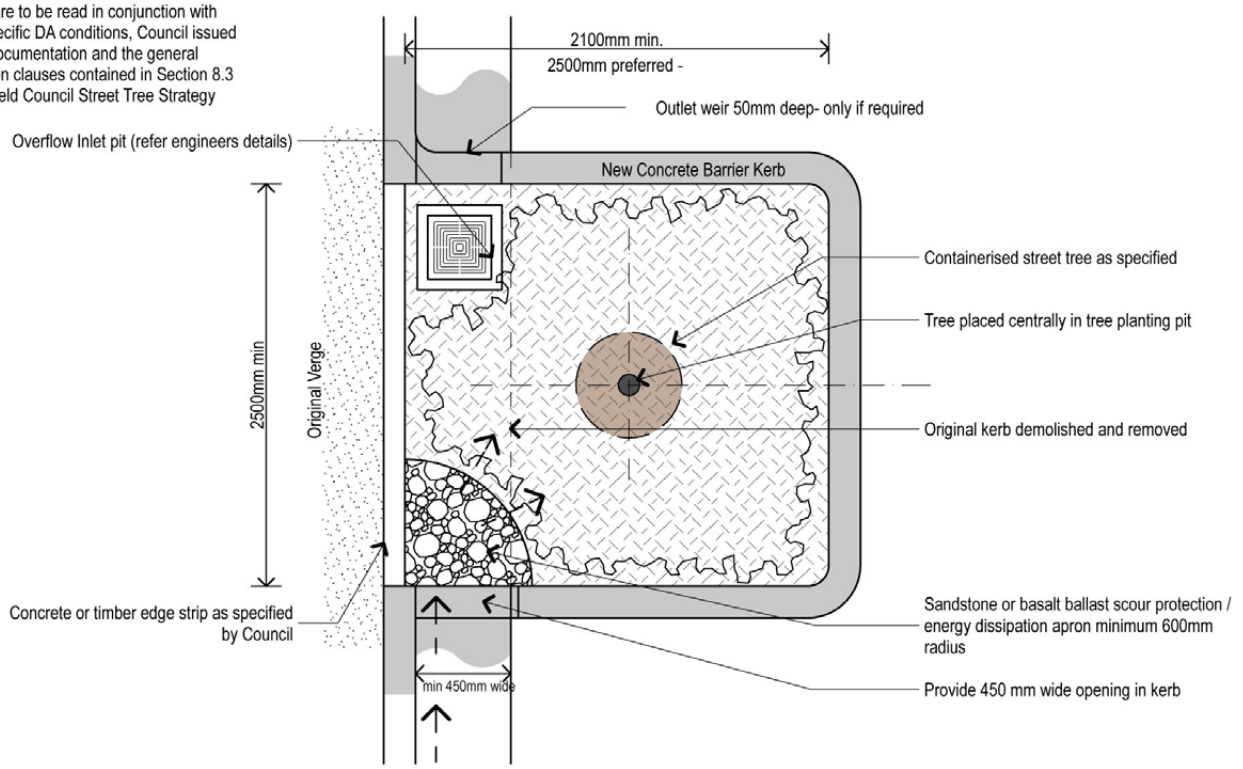
Ashfield Council

DETAIL 7 - INDICATIVE IN ROAD PLANTING WITH KERB EXTENSION

NOTE:
All details are to be read in conjunction with any site specific DA conditions, Council issued Contract Documentation and the general Specification clauses contained in Section 8.3 of the Ashfield Council Street Tree Strategy 2015



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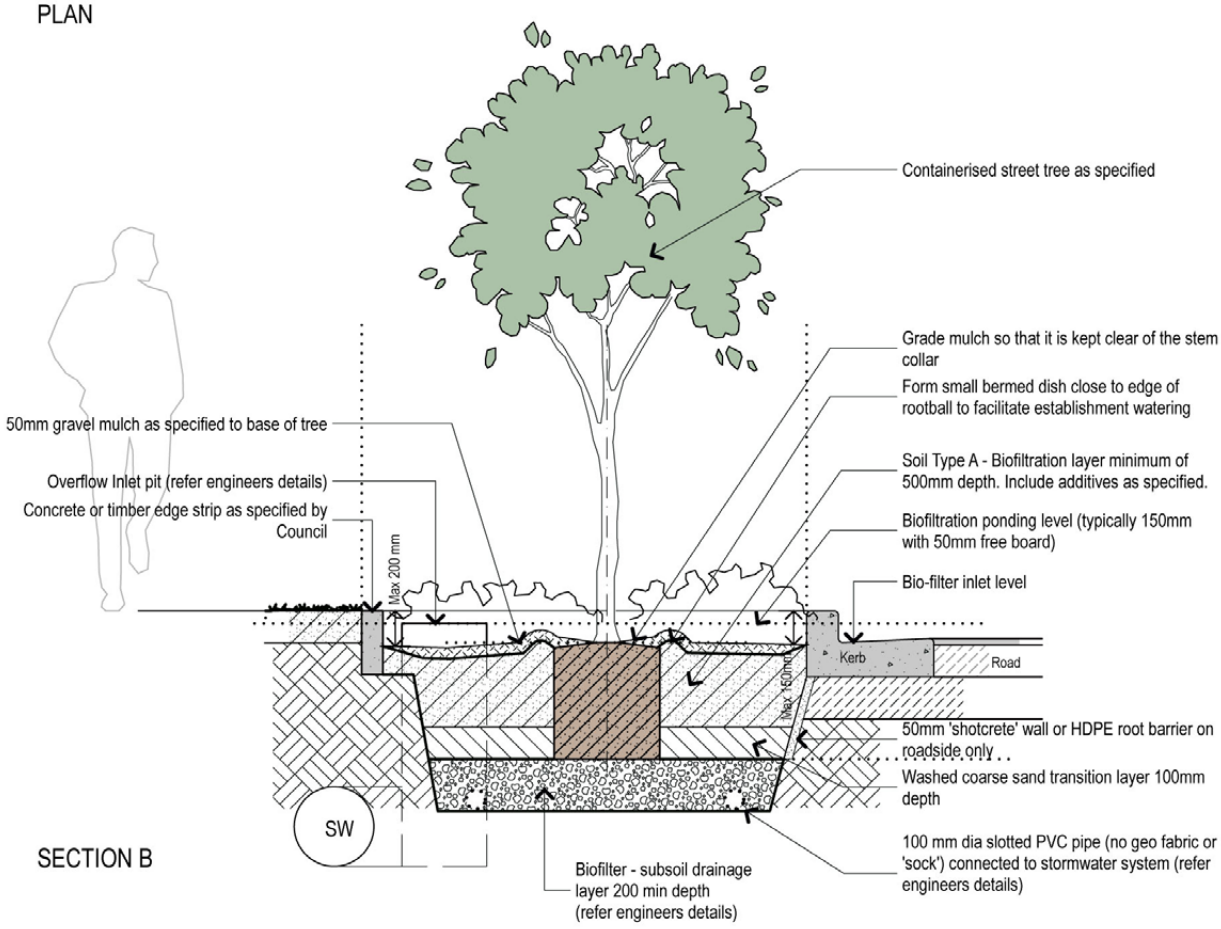

SECTION B

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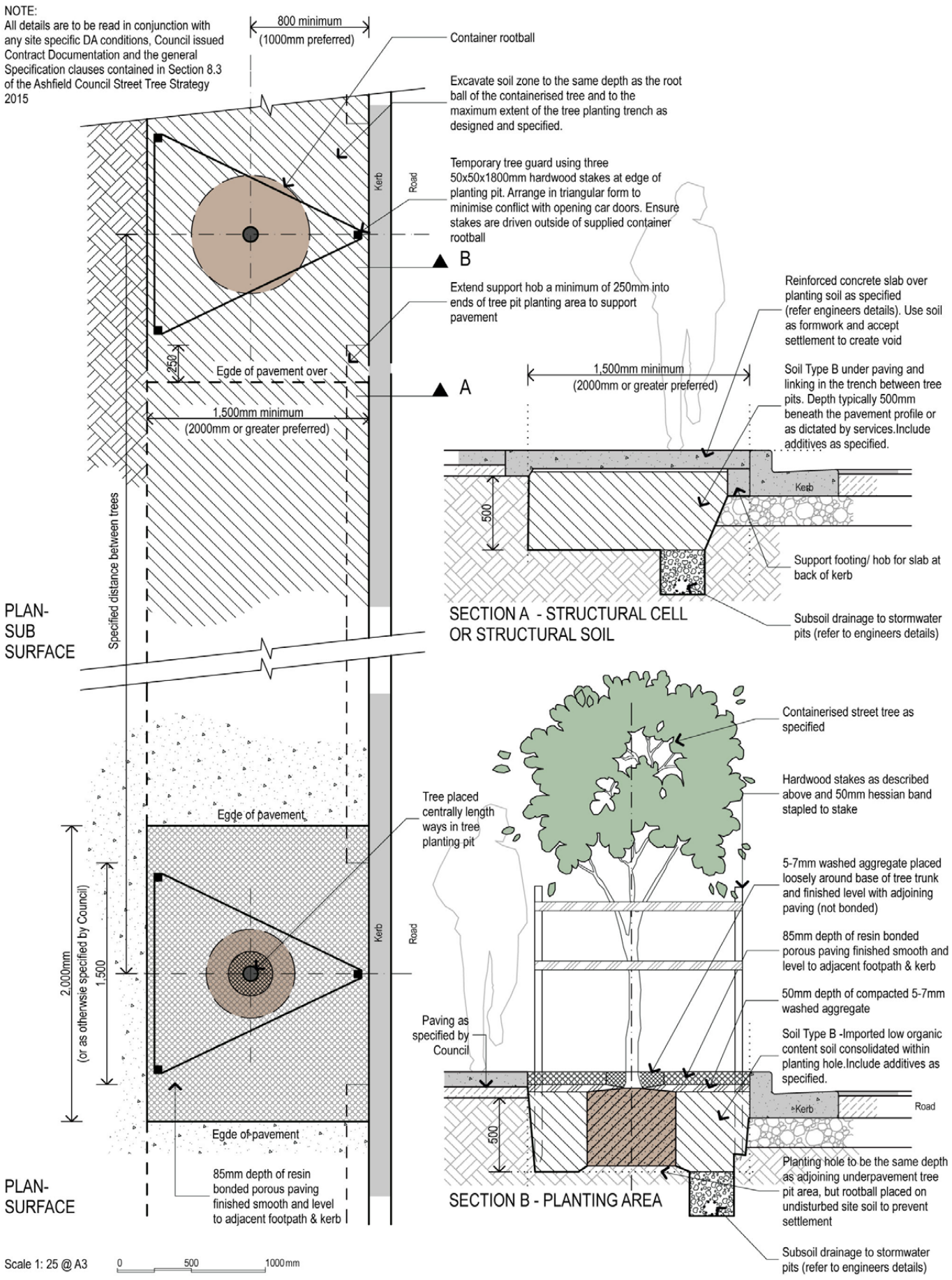
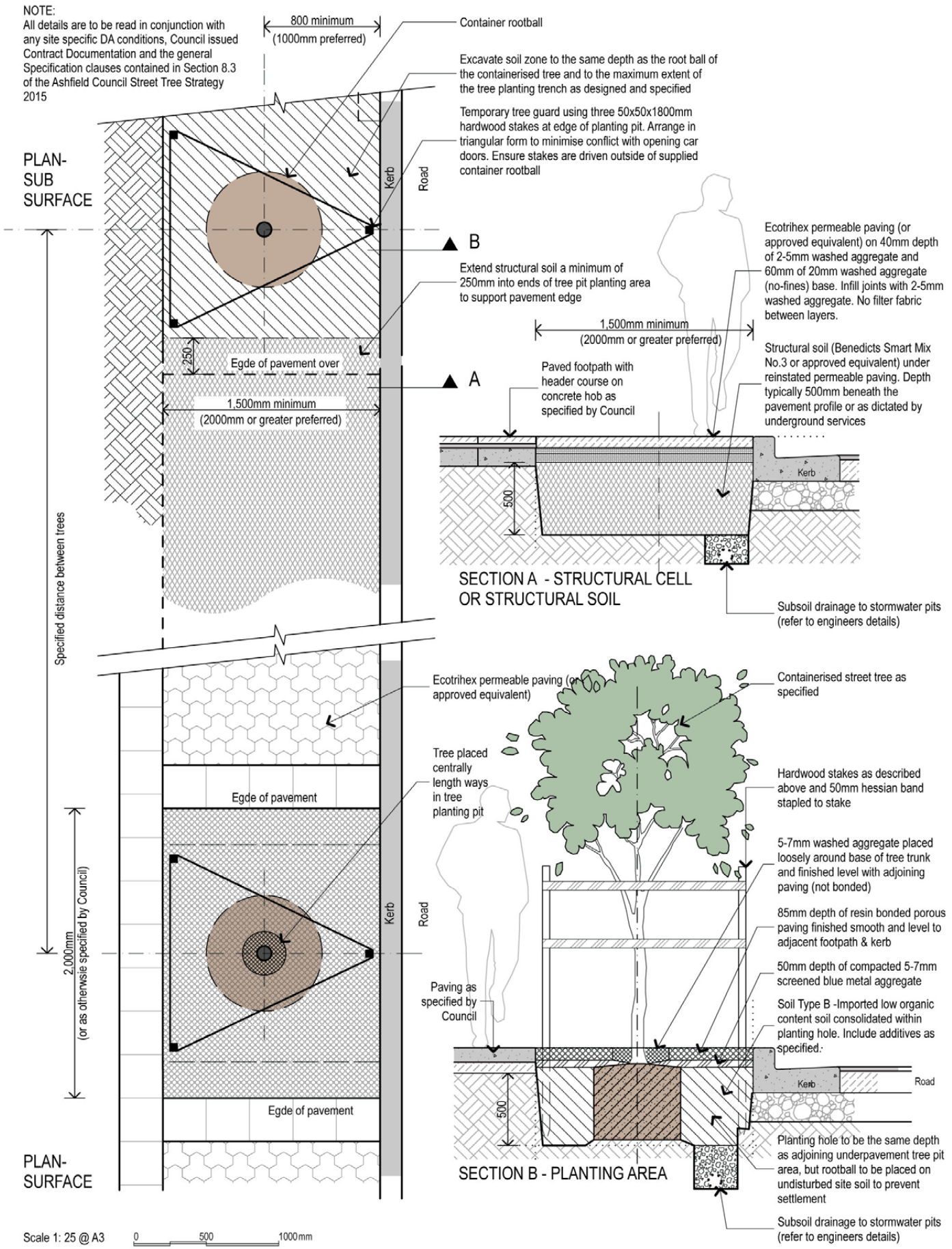
Ashfield Council

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



Ashfield Council

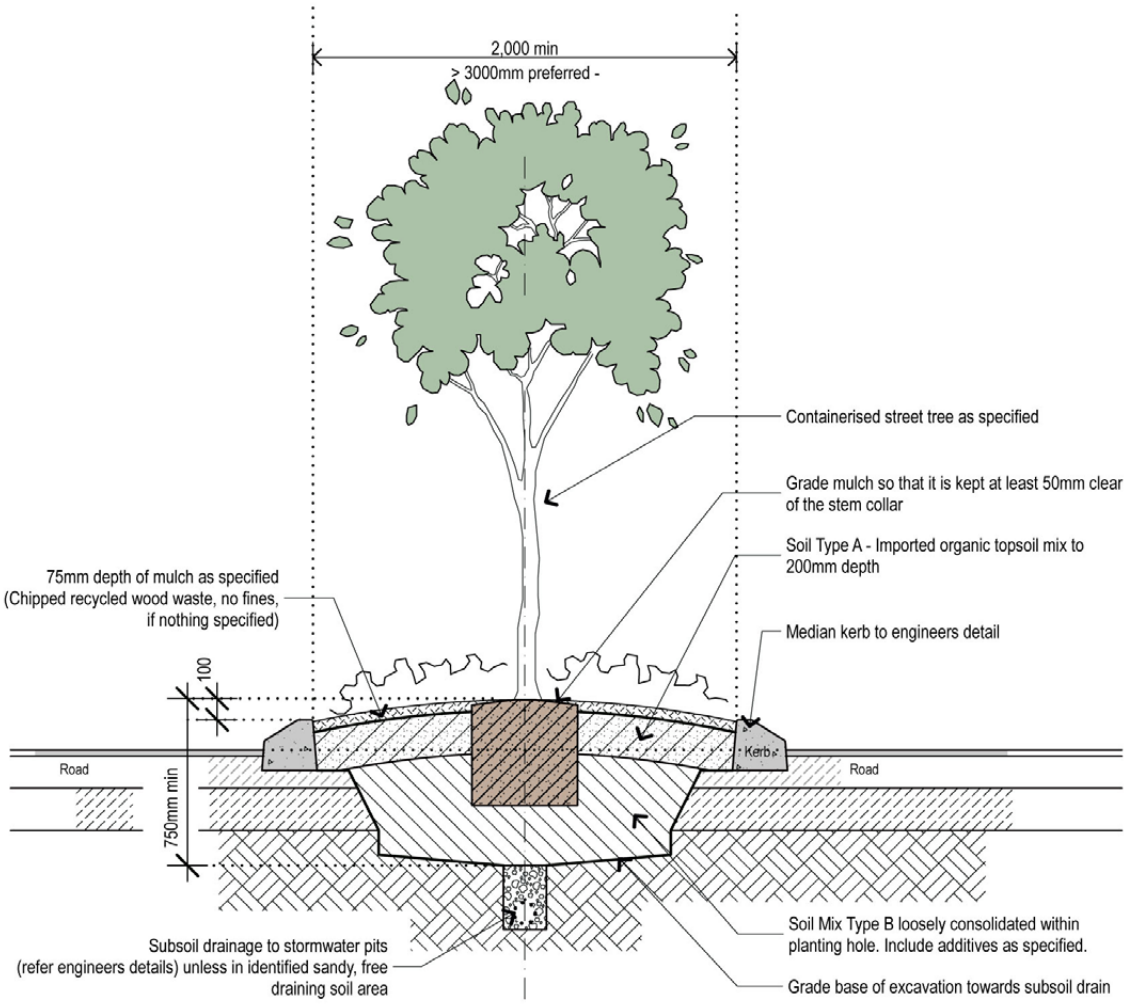
DETAIL 9 - 75-200L TREE PLANTING WITH VAULTED INTERCONNECTED SOIL TRENCH



Ashfield Council

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

NOTE:
All details are to be read in conjunction with any site specific DA conditions, Council issued Contract Documentation and the general Specification clauses contained in Section 8.3 of the Ashfield Council Street Tree Strategy 2015



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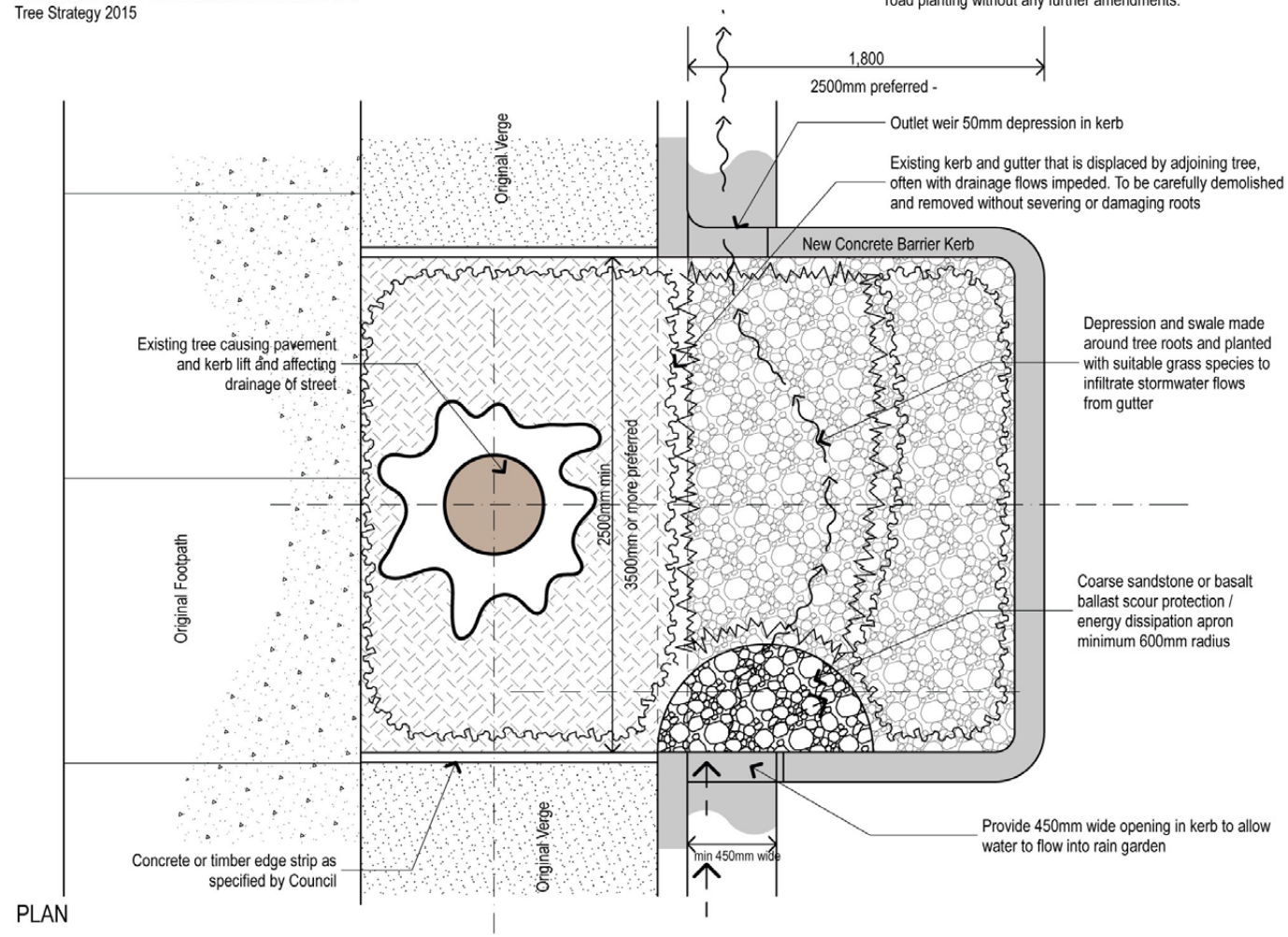
Ashfield Council

DETAIL 11 - INDICATIVE IN ROAD CENTRE ISLAND / MEDIAN PLANTING

NOTE:
All details are to be read in conjunction with any site specific DA conditions, Council issued Contract Documentation and the general Specification clauses contained in Section 8.3 of the Ashfield Council Street Tree Strategy 2015

NOTE:
If the tree is eventually removed, a new suitable tree could be planted centrally and retain the area as a raingarden with in-road planting without any further amendments.



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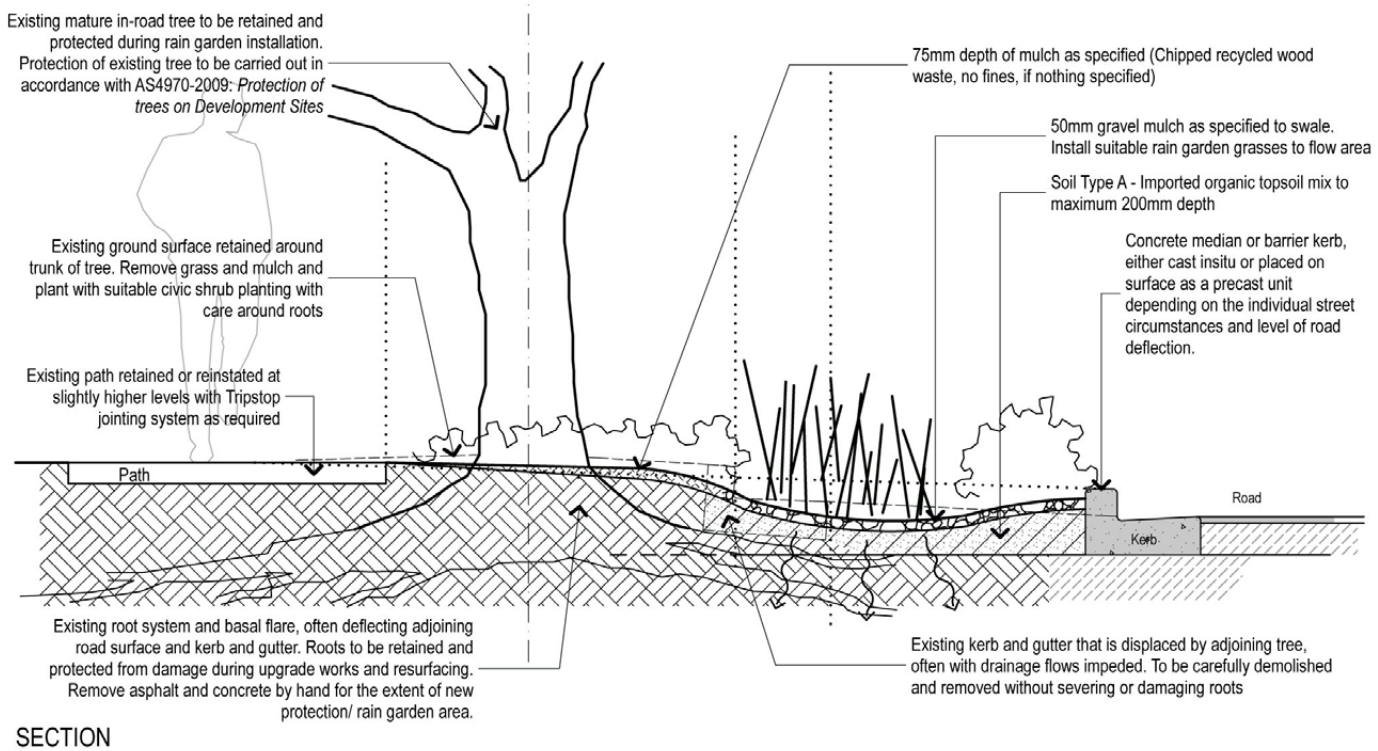

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Ashfield Council

DETAIL 12 - INDICATIVE RAIN GARDEN AND EXISTING LARGE TREE PROTECTION TREATMENT

8.4 Palm Transplanting Specifications

1. Overview

The following outlines the performance specification requirements for the transplanting of mature palms to and from streets within the LGA. These specifications relate only to the transplanting of palm trees. Only healthy palms, that display no obvious signs or symptoms of disease shall be transplanted.

2. Contractor Experience

Any palm trees identified by Council for transplanting are to be prepared, moved and replanted by a suitably qualified and experienced Tree Transplant Contractor. Each transplant operation and tree will usually require specific methods to be applied depending on such factors as:-

- existing surrounds (ie. asphalt, grass, concrete paving)
- species of palm
- height and girth of palm trunk
- access generally
- overhead obstructions
- nearby below ground services location and depths
- distance to be moved and type of transport to be used
- number to be moved
- preparation requirements for the new location

3. Method Statement

The Transplant Contractor must prepare and submit a detailed method statement of their proposed transplant procedure for each specific tree including as a minimum the:-

- detailed description of the location and number of palms to be moved
- identification of site constraints such as overhead or below ground services nearby
- proposed root plate dimensions and any preparatory works required such as trenching, boxing, root ball wrapping, frond pruning or binding.
- lifting methods and proposed timing (season and time of day)
- loading and transport methods
- reinstatement provision and backfilling of original transplant site
- proposed location preparation
- post transplant care regime and length.

This must be submitted to the Council for review, comment and approval prior to any works occurring.

4. Root Ball Sizes

Palms root balls shall typically be:-

- a minimum of 750mm offset/radius from the outside of the basal flare of the trunk,
- a depth not less than 700mm but not more than 1200mm.

The use of a mechanical tree spade is preferred where conditions, clearance to services and access allow. Other methods shall also be considered.

The root ball shall be suitably wrapped, boxed, or otherwise contained to prevent excessive displacement of the surrounding soil and the rootball during lifting, transport and re-planting operations. All wrapping shall typically be removed after placement and prior to backfilling.

5. Timing and Weather

Council shall be notified 48 hours prior to any proposed transplant operations and a Council representative is to be present during the root pruning, lifting and placement operations.

Transplants shall typically not be done during summer months (Dec-Feb) or when there is forecast adverse weather conditions (over 32°C, or when winds are likely to be greater than 30 kph).

For smaller transplant operations, palms shall be lifted and re-planted within 8 hours of severing the roots.

6. Post Transplant Care

Contractors shall typically be required to maintain the transplanted palm for a minimum of 6 months post transplant. They are to ensure the transplants are adequately watered at all times throughout this period.

'Auxinone' by Barmac Industries shall be applied at a rate of 1 part Auxinone to 50 parts water mixed together with a soil wetting agent to the area around the cut root surfaces. The soil wetting agents shall be 'Saturate', 'Chemwet' or other approved alternative applied in accordance with manufacturer's recommendations to improve the water penetrating capacity of any potentially hydrophobic soils.

The transplanted palm shall be fertilised after transplanting. The fertiliser shall be Patons Multicote 12 + T/E controlled release fertiliser @ 50 grams/ m2. A specific liquid nitrogen fertiliser shall also be applied to help stimulate root growth at rates as per manufacturers recommendations.

A soil - borne fungicide, diluted in accordance with manufacturer's recommendations, shall be applied around all transplanted trees to help prevent the spread or occurrence of fungal pathogens.

8.5 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, and do, 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 Ashfield's Street Tree Strategy and Tree Preservation Policy, 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 any supplied drawing(s) or as directed by Council. 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 an 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 a 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 course 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.

8.6 Street Tree Data Sheets

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

The descriptions and measurements are a reasonable and indicative guide to the expected typical sizes in Sydney 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.

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)

Origin:
NSW Coast and Ranges

Typical Height:
8-12 metres

Typical Width:
8-10 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.

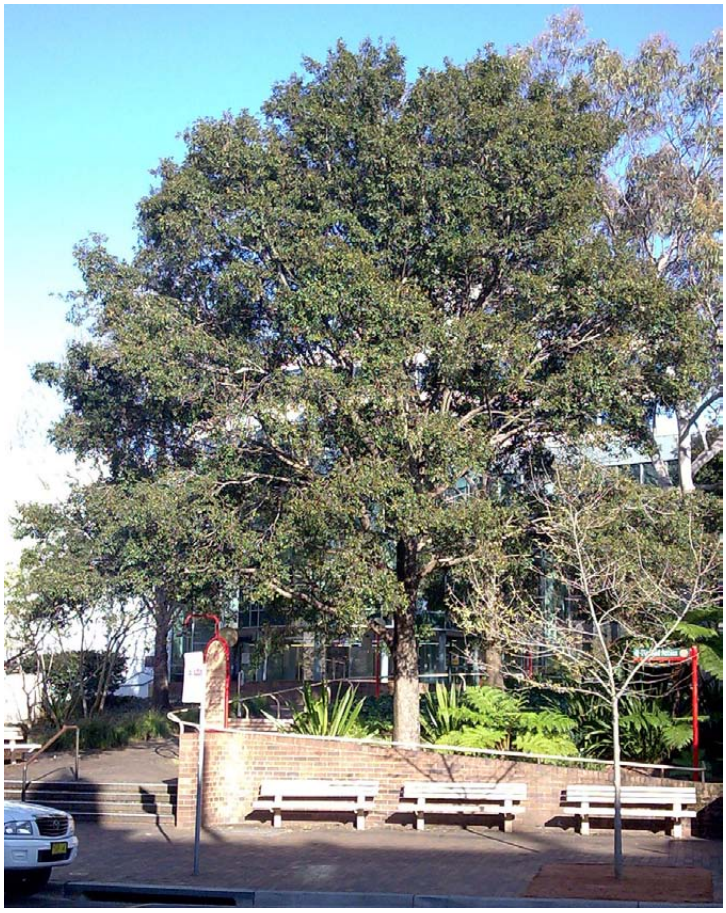


Photo of a mature tree. (Photo. Arterra)

Photo of foliage and fruit. (Photo. Arterra)

Botanic Name:
Acmena smithii
(Syn. Syzygium smithii)

Common Names:
Creek Lilly-Pilly

Family:
MYRTACEAE

Origin:
Eastern Australia

Typical Height:
10-15 metres

Typical Width:
8-12 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 stamenous 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.

Photo of a mature tree. (Photo. Arterra)

Photo of foliage and fruit. (Photo. Arterra)

Botanic Name:
Acmena smithii var. minor
(Syn. Syzygium smithii var minor)

Common Names:
Dwarf Creek Lilly-Pilly

Family:
MYRTACEAE

Origin:
Eastern Australia

Typical Height:
5-8 metres

Typical Width:
3-4 metres

Typical Growth rate:
Moderate.

Typical Habit:
Hardy and dense evergreen tree with a typically compact columnar shape.

Foliage:
Small glossy green leaves varying in shape from narrow-lanceolate to broad-ovate, typically smaller than normal variety.

Flowers:
Cream-white stamenous 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.

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

Origin:
Eastern Australia

Typical Height:
12-20 metres

Typical Width:
10-13 metres

Typical Growth rate:
Fast.

Typical Habit:
Tall native spreading tree with smooth 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.

Photo of mature tree. (Photo. Arterra)

Photo of bark. (Photo. Arterra)

Botanic Name:
Angophora floribunda

Common Names:
Rough-barked Apple

Family:
MYRTACEAE

Origin:
Eastern Australia

Typical Height:
15-20 metres

Typical Width:
10-13 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.

Photo of mature tree. (Photo. Arterra)

Close up photo of flowers. (Photo. Arterra)

Botanic Name:
Angophora hispida

Common Names:
Dwarf Apple

Family:
MYRTACEAE

Origin:
Coastal Sydney

Typical Height:
5-7 metres

Typical Width:
5-7 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 and opposite.

Flowers:
White flowers occurring in large fluffy terminal clusters late spring.

Fruit:
Ribbed woody capsules.

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

Photo of a mature tree. (Photo. Arterra)

Botanic Name:
Araucaria columnaris
(Syn. Araucaria cookii)

Common Names:
Cook Pine

Family:
ARAUCARIACEAE

Origin:
New Caledonia

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:
Small greenish cones.

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

Photo of a mature tree. (Photo. Arterra)

Botanic Name:
Araucaria cunninghamii

Common Names:
Hoop Pine

Family:
ARAUCARIACEAE

Origin:
Northern New South Wales & Queensland

Typical Height:
20-25+ metres

Typical Width:
8-10 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 climatic extremes and coastal exposure.

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

Photo of foliage. (Photo. Arterra)

Botanic Name:
Backhousia citriodora

Common Names:
Lemon-Scented Myrtle

Family:
MYRTACEAE

Origin:
Eastern Australia

Typical Height:
6-9 metres

Typical Width:
3-5 metres

Typical Growth rate:
Moderate.

Typical Habit:
Small native sub-tropical rainforest tree with a compact form when grown in streets.

Foliage:
Dense dull green leaves heavily scented with lemon.

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. Can attain larger sizes but only in very favourable conditions and further north.

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

Origin:
East Coast Australia

Typical Height:
7-10 metres

Typical Width:
5-7 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.

Photo of a mature tree. (Photo. Arterra)

Photo of foliage, young flower head and older seed head. (Photo. Arterra)

Botanic Name:
Banksia serrata

Common Names:
Old Man Banksia

Family:
PROTEACEAE

Origin:
East Coast Australia

Typical Height:
5-7 metres

Typical Width:
5-7 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.

Photo of a mature tree. (Photo. Arterra)

Photo of flowers. (Photo. Arterra)

Botanic Name:
Brachychiton discolor

Common Names:
Queensland Lacebark

Family:
MALVACEAE

Origin:
Eastern Australia

Typical Height:
12-18 metres

Typical Width:
8-10 metres

Typical Growth rate:
Moderate.

Typical Habit:
Hardy medium sub-tropical native deciduous tree with a stout green grey trunk and dense spreading crown. The deciduous nature of the plant is variable, in some seasons foliage will be retained on all or part of the tree.

Foliage:
Large light green leaves with a variable number of lobes.

Flowers:
The flowers are woolly and prominent bell-shaped pink flowers that appear in spring on leafless branches.

Fruit:
Dark brown woolly seed pod contains numerous seeds embedded in hairs in a honeycomb-like husk.

Site requirements:
Tolerates a wide range of soils but prefers moist very well drained soils, in a full sun or part shade position.

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

Origin:
North-eastern Australia

Typical Height:
7-9 metres

Typical Width:
5-7 metres

Typical Growth rate:
Moderate.

Typical Habit:
Small native tree from northern Queensland with a densely foliaged 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 upto 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.

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

Botanic Name:
Butia capitata

Common Names:
Wine Palm or Jelly Palm

Family:
ARECACEAE

Origin:
Brazil

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.

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

Photo of bark. (Photo. Arterra)

Botanic Name:
Caesalpinia ferrea

Common Names:
Leopard Tree

Family:
FABACEAE
(sub. family CAESALPINIOIDEAE)

Origin:
Brazil

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.

Photo of a mature tree. (Photo. Arterra)

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

Botanic Name:
Callistemon viminallis cv.

most suitable cultivars:-
'Hannah Ray'
'Harkness'
'Kings Park Special'
Ku-ring-gai Chase'

Common Names:
Bottlebrush

Family:
MYRTACEAE

Origin:
South-eastern Australia

Typical Height:
7-10 metres

Typical Width:
5-8 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.

Photo of a mature tree. (Photo. Arterra)

Botanic Name:
Camellia sasanqua

Common Names:
Camellia

Family:
THEACEAE

Origin:
China, Japan

Typical Height:
4-6 metres

Typical Width:
4-5 metres

Typical Growth rate:
Moderate.

Typical Habit:
Small exotic tree with a broadly domed crown and compact form. May require some formative pruning to achieve clearances and promote a single leader and tree form.

Foliage:
Dark green leaves. New growth often has slight bronze colouring.

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

Flowers:
Showy and colour varies widley but typically bright to light pink flowers in late summer, into winter (depending on cultivar).

Fruit:
The fruit are firm and grape sized capsules.

Site requirements:
Tolerates a range of reasonable and moist acidic soils in a full sun or partly shaded position. Drought and frost resistant once established.

Photo of mature trees. (Photo. Arterra)

Botanic Name:
Casuarina glauca

Common Names:
Swamp She-Oak

Family:
CASUARINAEAE

Origin:
South-eastern Australia

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 foliaged 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.

Photo of mature trees. (Photo. Arterra)

Photo of bark. (Photo. Arterra)

Botanic Name:
Corymbia eximia

Common Names:
Yellow Bloodwood

Family:
MYRTACEAE

Origin:
Sydney and Blue Mountains

Typical Height:
10-18 metres

Typical Width:
8-12 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:
Urn shaped woody 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.

Photo of mature tree. (Photo. Arterra)

Photo of bark. (Photo. Arterra)

Botanic Name:
Corymbia maculata

Common Names:
Spotted Gum

Family:
MYRTACEAE

Origin:
South-eastern Australia

Typical Height:
18-25 metres

Typical Width:
10-13 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 leaves.

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.

Photo of a mature tree. (Photo. Arterra)

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

Botanic Name:
Cupaniopsis anacardiodies

Common Names:
Tuckeroo

Family:
SAPINDACEAE

Origin:
Coastal eastern Australia

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.

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

Origin:
South-eastern Queensland

Typical Height:
10-12 metres

Typical Width:
3-5 metres

Typical Growth rate:
Moderate.

Typical Habit:
Small native evergreen tree with an 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.

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

Origin:
Eastern Australia

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.

Photo of a mature tree. (Photo. Arterra)

Photo of bark. (Photo. Arterra)

Botanic Name:
Eucalyptus haemastoma

Common Names:
Scribbly Gum

Family:
MYRTACEAE

Origin:
Sydney and Central Coast NSW

Typical Height:
10-15 metres

Typical Width:
10-12 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.

Photo of a mature tree. (Photo. Arterra)

Close up photo of bark. (Photo. Arterra)

Botanic Name:
Eucalyptus mannifera

Common Names:
Brittle Gum

Family:
MYRTACEAE

Origin:
South-eastern Australia

Typical Height:
15-20 metres

Typical Width:
10-12 metres

Typical Growth rate:
Fast.

Typical Habit:
Medium to large native evergreen tree with smooth patchy white - grey bark that sheds in flakes, often becoming white and powdery. Similar to and often confused with Eucalyptus scoparia.

Foliage:
Relatively narrow and pendulous olive green leaves.

Flowers:
Bears white flowers in summer.

Fruit:
Urn shaped capsule.

Site requirements:
Tolerates a wide range of soils in a full sun position. Extremely drought tolerant.

Photo of a mature tree. (Photo. Arterra)

Photo of bark. (Photo. Arterra)

Botanic Name:
Eucalyptus paniculata

Common Names:
Grey Ironbark

Family:
MYRTACEAE

Origin:
Coastal NSW

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.

Photo of a mature tree. (Photo. Arterra)

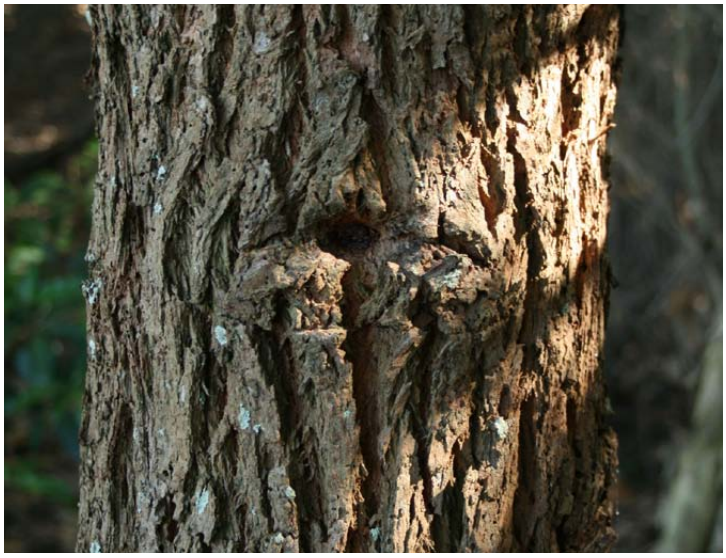


Photo of bark. (Photo. Arterra)

Botanic Name:
Eucalyptus robusta

Common Names:
Swamp Mahogany

Family:
MYRTACEAE

Origin:
South-eastern Australia

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.

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

Origin:
South-eastern Queensland

Typical Height:
20-25 metres

Typical Width:
20-25 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.

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

Origin:
South-eastern Australia

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.

Photo of a mature tree. (Photo. Arterra)

Close up photo of foliage. (Photo. Arterra)

Botanic Name:
Fraxinus griffithii

Common Names:
Evergreen Ash

Family:
ULMACAEAE

Origin:
India, China, South-east Asia

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.

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

Photo of bark. (Photo. Arterra)

Botanic Name:
Fraxinus pennsylvanica

Common Names:
Green Ash / Red Ash

Family:
ULMACAEAE

Origin:
North America

Typical Height:
12-18 metres

Typical Width:
8-10 metres

Typical Growth rate:
Moderate.

Typical Habit:
A medium to large robust deciduous tree with an attractive upright shape.

Foliage:
Leaves are dark green above and lighter beneath.

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

Fruit:
Single seeded winged samaras.

Site requirements:
Tolerates a wide range of soils in a full sun or part shade position. Very drought and frost tolerant.

Photo of a mature tree. (Photo.Arterra)

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

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

Botanic Name:
Glochidion ferdinandi

Common Names:
Cheese Tree

Family:
EUPHORBIACEAE

Origin:
South-eastern Australia

Typical Height:
8-12 metres

Typical Width:
8-10 metres

Typical Growth rate:
Medium

Typical Habit:
Medium sized native evergreen tree with a spreading form and dense canopy. May require some formative pruning to achieve clearances and promote a single leader and tree form.

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.

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

Origin:
Southern China

Typical Height:
5-8 metres

Typical Width:
5-8 metres

Typical Growth rate:
Slow.

Typical Habit:
Small tree with a broad rounded canopy and smooth mottled grey- brown bark. May require some formative pruning to achieve clearances and promote a single leader and tree form. Slightly brittle branchlets, easily prone to breakage.

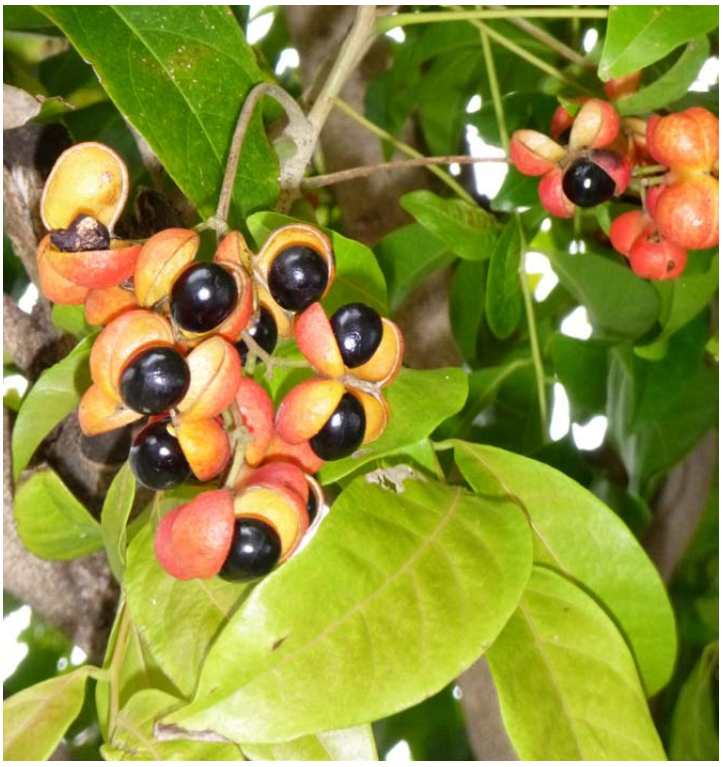
Foliage:
Large elongated dark green smooth glossy leaves.

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.

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

Origin:
Eastern Australia

Typical Height:
8-12 metres

Typical Width:
6-8 metres

Typical Growth rate:
Moderate.

Typical Habit:
Small - medium native evergreen rainforest margin 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.

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

Origin:
Brazil

Typical Height:
10-15 metres

Typical Width:
8-10 metres

Typical Growth rate:
Fast.

Typical Habit:
A medium sized attractive semi-deciduous tree with an upright but spreading shape.

Foliage:
Fern-like bipinnate mid green foliage, turning yellow in late winter and falling just before flowering in spring.

Flowers:
Prolific terminal clusters of bell shaped mauve-blue flowers on leafless stems in spring.

Fruit:
Flattened disc-like seed pods.

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

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

Origin:
China

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.

Photo of a mature tree. (Photo. Arterra)

Close up photo of foliage. (Photo. Arterra)

Botanic Name:
Koelreuteria paniculata

Common Names:
Golden Rain tree

Family:
SAPINDACEAE

Origin:
China, Korea, Japan

Typical Height:
7-9 metres

Typical Width:
7-9 metres

Typical Growth rate:
Slow.

Typical Habit:
An attractive small-sized deciduous and spreading tree. It has a domed crown and furrowed bark.

Foliage:
Mid green leaflets turn deep golden yellow to orange in autumn. Pinnate foliage about 30cm long.

Flowers:
Large cluster of yellow flowers with large terminal panicles up to 20cm 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.

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.
most suitable cultivars:- 'Biloxi' (Pale Pink), 'Natchez' (White), 'Tuscarora' (Dark pink)

Common Names:
Crepe Myrtle

Family:
LYTHRACEAE

Origin:
Japan, Korea, China

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.

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

Close up photo of leaves. (Photo. Arterra)

Botanic Name:
Liriodendron tulipifera

Common Names:
Tulip tree

Family:
MAGNOLIACEAE

Origin:
North America

Typical Height:
12-18 metres

Typical Width:
6-8 metres

Typical Growth rate:
Moderate.

Typical Habit:
Medium to large and columnar deciduous tree with upright branching.

Foliage:
Distinctly shaped-four shallow lobed, mid to lime green leaves up to 20cm long, turning to a rich golden yellow in autumn.

Flowers:
Lightly fragrant, tulip shaped flowers, greenish yellow in colouring with orange markings, late spring to early summer. Only produces flowers if greater than 7 years.

Fruit:
Samaras, borne in upright cone like clusters.

Site requirements:
Moist, well drained soil in full sun locations. Not tolerant of extreme or coastal exposure.

Photo of a mature tree. (Photo. Arterra)

Botanic Name:
Livistona australis

Common Names:
Cabbage Tree Palm

Family:
ARECACEAE

Origin:
Eastern Australia

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.

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

Origin:
Eastern Australia north of Sydney

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, but tolerant of an extremely wide range of soils and conditions. Drought and frost tolerant.

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:
8-12 metres

Origin:
Southern USA

Typical Width:
6-8 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.

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

Origin:
Australia, north of Macleay River

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 foliaged 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.

Photo of a mature tree. (Photo. Arterra)

Close up photo of leaves. (Photo. Arterra)

Close up photo of bark. (Photo. Arterra)

Botanic Name:
Melaleuca leucadrendra

Common Names:
Weeping Paperbark

Family:
MYRTACEAE

Origin:
Eastern Australia

Typical Height:
15-18 metres

Typical Width:
5-7 metres

Typical Growth rate:
Moderate to Fast.

Typical Habit:
A tall, weeping 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.

Photo of a mature tree. (Photo. Arterra)

Close up photo of leaves. (Photo. Arterra)

Close up photo of flowers. (Photo. Arterra)

Botanic Name:
Melaleuca styphelioides

Common Names:
Prickly Paperbark

Family:
MYRTACEAE

Origin:
Eastern Australia

Typical Height:
7-10 metres

Typical Width:
6-8 metres

Typical Growth rate:
Moderate.

Typical Habit:
Medium evergreen tree with creamy white papery bark.

Foliage:
Small slightly twisted leaves with a sharp pointed tip.

Flowers:
Small but profuse white 'bottlebrush' like flowers in summer.

Fruit:
The fruit are small nut-like capsules which are retained on old stems.

Site requirements:
Light soil types in an open sunny position.
Salt tolerant and drought resistant.

Photo of a mature tree. (Photo. Arterra)

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

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

Botanic Name:
Murraya paniculata

Common Names:
Orange Jessamine / Mock Orange

Family:
RUTACEAE

Origin:
India

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:
Inconspicuous small elliptical hairy seeds.

Site requirements:
Prefers rich moist soils in a full sun or part shade position, but adaptable to an extremely wide range of conditions.

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

Origin:
Canary Islands

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.

Photo of a mature tree. (Photo. Arterra)

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

Botanic Name:
Photinia x faseri 'Robusta'

Common Names:
Photinia

Family:
ROSACEAE

Origin:
Japan, China ('Robusta' hybrid originated in Sydney)

Typical Height:
4-6 metres

Typical Width:
4-6 metres

Typical Growth rate:
Moderate.

Typical Habit:
Small exotic tree with a broadly domed crown and compact form and multiple trunks. May require some formative pruning to achieve clearances and promote a single leader and tree form.

Foliage:
Leathery very dark green leaves. New growth often vibrant red to bronze colouring.

Flowers:
Small creamy white flowers held in dense clusters in spring to early summer, but may spot flower at other times.

Fruit:
The fruit are small firm and reddish brown pea sized pomes.

Site requirements:
Tolerates an extremely wide range of soils in a full sun or partly shaded position. Very drought and frost resistant.

Photo of a mature tree. (Photo. Arterra)

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

Botanic Name:
Pyrus calleryana 'Chanticleer'

Common Names:
Callery Pear / Glens Form Pear

Family:
ROSACEA

Origin:
China, Korea, Japan

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.

Photo of a mature tree. (Photo. Arterra)

Close up photo of leaves. (Photo. Arterra)

Botanic Name:
Pyrus ussuriensis

Common Names:
Manchurian Pear

Family:
ROSACEA

Origin:
China, Korea, Japan

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.

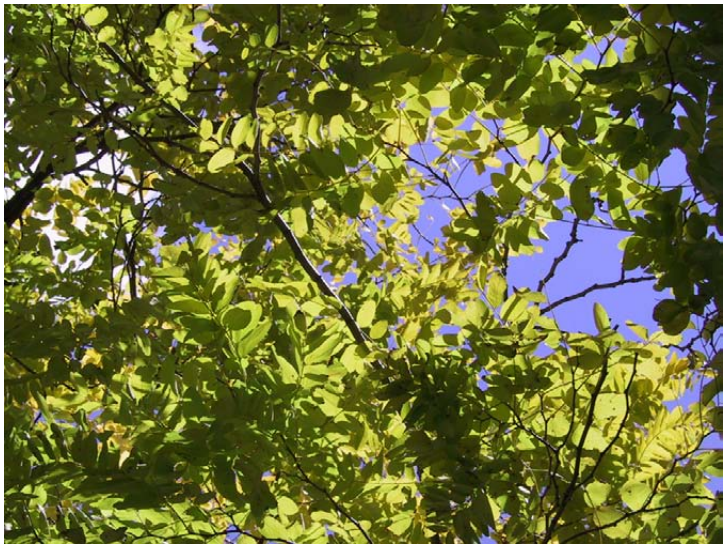
Foliage:
Lustrous dark green leaves to 8cm long that turn gold to plum in autumn.

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.

Photo of a mature tree. (Photo. Arterra)



Close up photo of leaves. (Photo. Arterra)

Botanic Name:
Robinia pseudoacacia 'Frisia'

Common Names:
Golden Robinia / Black Locust

Family:
FABACEAE

Origin:
North America

Typical Height:
10-12 metres

Typical Width:
7-9 metres

Typical Growth rate:
Fast.

Typical Habit:
An attractive hardy deciduous tree with a tall upright vase shape.

Foliage:
Soft bright golden fern like foliage.

Flowers:
Pendulous racemes of white pea shaped flowers.

Fruit:
Small flat seed pods.

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

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

Origin:
Southern China

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 sizes seed pods.

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

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

Close up photo of foliage. (Photo. Arterra)

Botanic Name:
Schinus areira
(Syn. Schinus molle)

Common Names:
Peppercorn Tree

Family:
ANACARDIACEAE

Origin:
Peruvian Andes

Typical Height:
10-12 metres

Typical Width:
8-10 metres

Typical Growth rate:
Moderate.

Typical Habit:
Spreading evergreen tree with fine textured weeping branches.

Foliage:
Finely divided pinnate leaves that have an aromatic resin.

Flowers:
Small yellow- white flowers in spring.

Fruit:
Clusters of small pea size red berries.

Site requirements:
Tolerates a wide range of soils in a full sun or part shade position. Very drought tolerant.

Photo of a mature tree. (Photo. Arterra)

Close up of bark. (Photo. Arterra)

Botanic Name:
Syncarpia glomulifera

Common Names:
Turpentine

Family:
MYRTACEAE

Origin:
East Coast Australia

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.

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

Close up photo of foliage. (Photo. Arterra)

Botanic Name:
Synoum glandulosum

Common Names:
Scentless Rosewood

Family:
MELIACEAE

Origin:
East Coast Australia

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.

Photo of a mature tree. (Photo. Arterra)

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

Botanic Name:
Syzygium leuhmannii

Common Names:
Riberry

Family:
MYRTACEAE

Origin:
East Coast Australia

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 round shaped fleshy fruit, sometimes prolific.

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

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

Photo of a mature tree. (Photo. Arterra)

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

Botanic Name:
Syzygium paniculatum

Common Names:
Brush Cherry, Magenta Lilly Pilly

Family:
MYRTACEAE

Origin:
Coastal NSW

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.

Photo of a mature tree. (Photo. Arterra)

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

Botanic Name:
Tibouchina lepidota 'Alstonville'

Common Names:
Lasiandra

Family:
MELASTOMATACEAE

Origin:
Tropical South America

Typical Height:
6-9 metres

Typical Width:
6-9 metres

Typical Growth rate:
Fast - moderate.

Typical Habit:
Small to medium bushy exotic tree. May require some formative pruning to achieve clearances and promote central leaders and tree form.

Foliage:
Dark green lanceolate shaped eaves with prominent veins, paler on the undersurface and coarse to the touch.

Flowers:
Vibrant and prolific purple panicles that can almost cover the tree in late summer to early winter.

Fruit:
Small and fur covered woody urn-shaped capsule similar in size and shape to a Eucalypt gum nut.

Site requirements:
Tolerates a relatively wide range of soils, but prefers a rich well drained soil, in a warm and full sun position. Drought and frost tender.

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

Origin:
Eastern Australia

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.

Photo of a mature tree. (Photo. Arterra)

Close up photo of foliage. (Photo. Arterra)

Botanic Name:
Ulmus parvifolia 'Todd'

Common Names:
Chinese Elm

Family:
ULMACEAE

Origin:
China, Japan, Korea

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.

Photo of a mature tree. (Photo. Arterra)

Botanic Name:
Washingtonia robusta

Common Names:
Mexican Fan Palm

Family:
ARECACEAE

Origin:
California USA

Typical Height:
20-25 metres

Typical Width:
4-6 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.

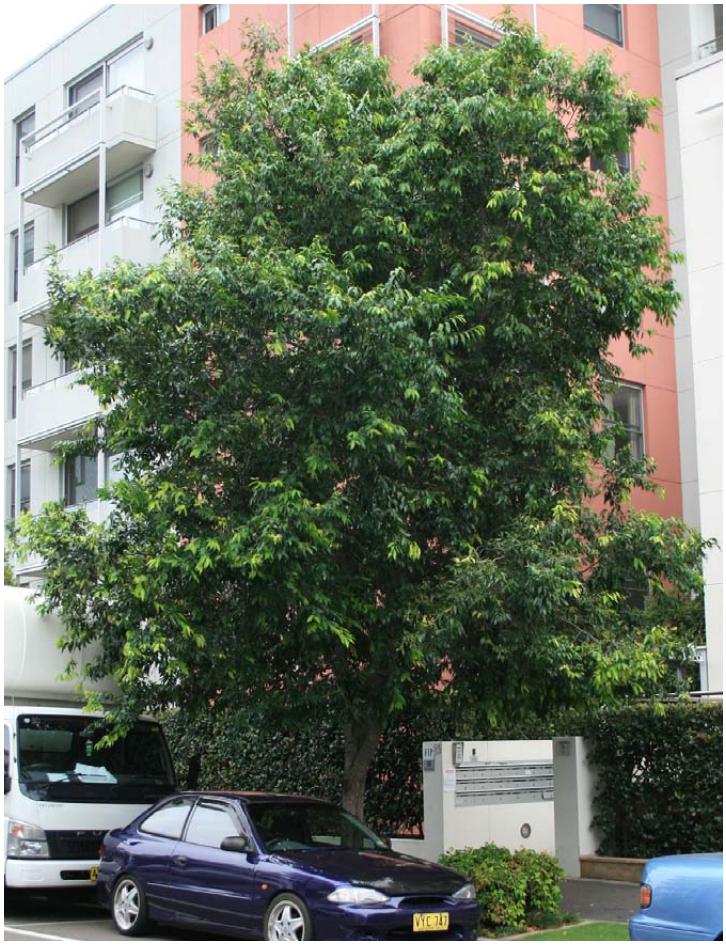


Photo of a semi-mature tree. (Photo. Arterra)

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

Botanic Name:
Waterhousea floribunda 'Green Avenue'

Common Names:
Weeping Lilly Pilly

Family:
MYRTACEAE

Origin:
Eastern Australia

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.

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

Close up photo of foliage. (Photo. Arterra)

Botanic Name:
Xanthostemon chrysanthus

Common Names:
Golden Penda

Family:
MYRTACEAE

Origin:
North-eastern Australia

Typical Height:
7-10 metres

Typical Width:
5-8 metres

Typical Growth rate:
Moderate.

Typical Habit:
An attractive evergreen small tree with a rounded spreading crown.

Foliage:
Attractive, glossy mid green foliage.

Flowers:
Conspicuous and often prolific yellow flowers.

Fruit:
Brown woody capsule.

Site requirements:
Tolerates a wide range of soils in a full sun position, but frost sensitive.

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

Origin:
Southern China

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. Formative pruning may be required to achieve clearances and promote a single leader and tree form.

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.

Photo of a semi-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

Origin:
Japan and Korea

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.