



City of Cockburn  
**STREET TREE MASTER PLAN**

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# 1. INTRODUCTION

The City of Cockburn is currently undergoing both infill and green field development to accommodate the rapidly growing population. This process is resulting in the removal of large amounts of the cities Urban Forest. This equates to a loss of asset to the city and amenity to the community and environment.

In response to this, the City is implementing a planting program for our streetscapes to ensure trees are provided to benefit the community and environment, now and for the future generations to come.

Through this process, an opportunity exists to support the environment and create or increase identity and character to the suburbs within the City of Cockburn by planting species that will not only survive the changing environmental conditions, but flourish.

A survey of all the street trees within the City of Cockburn was undertaken to inform this document. This survey identified that most streets within the City of Cockburn provide no street tree theme, with residential streets trees in these areas being a random mix of native and exotics species. Newer developments have provided avenue planting themes, as the desire to create pedestrian friendly neighbourhoods gains importance.

This document will act as a resource to be used by the City of Cockburn officers, developers and the community to provide a holistic vision for the City's streetscapes in the future. The tree palette has been selected for streetscapes and verges adjacent to residential or private lots.

Strategic objectives of the street tree master plan are to:

<b>Increased Urban Forest</b>	Increase the numbers of trees and in turn the percent of shade within the City.
<b>Urban character</b>	Provide a tree palette to guide the character of future development and improvements within the City.
<b>Species suitability</b>	Provide a selection criteria which guides appropriate species selection which will thrive and be appropriate for its location.
<b>Street hierarchy</b>	Define the street hierarchy and create landmark locations to aid navigating around the city through the use of selected species
<b>Installation</b>	Provide information on planting location to ensure utilities and the public are protected.







## 2. DOCUMENT FORMAT

This Master plan is divided into seven sections.

1. Analysis of the street tree
2. Maintenance
3. Selection criteria
4. Methodology
5. Tree zones
6. Suggested species
7. Species information and gallery



# 3. ANALYSIS OF THE STREET TREE

## 3.1 Benefits

Street trees which contribute to the Urban Forest have many, economic, environmental, social, physical and mental benefits.

### Economic Benefits

- Reduces home energy demand and costs.
- Reduces deterioration to infrastructure from sun damage and weather.
- Increased real estate value of properties with tree lined streets.
- Increases the asset base of the City of Cockburn as the trees grow.

### Environmental Benefits

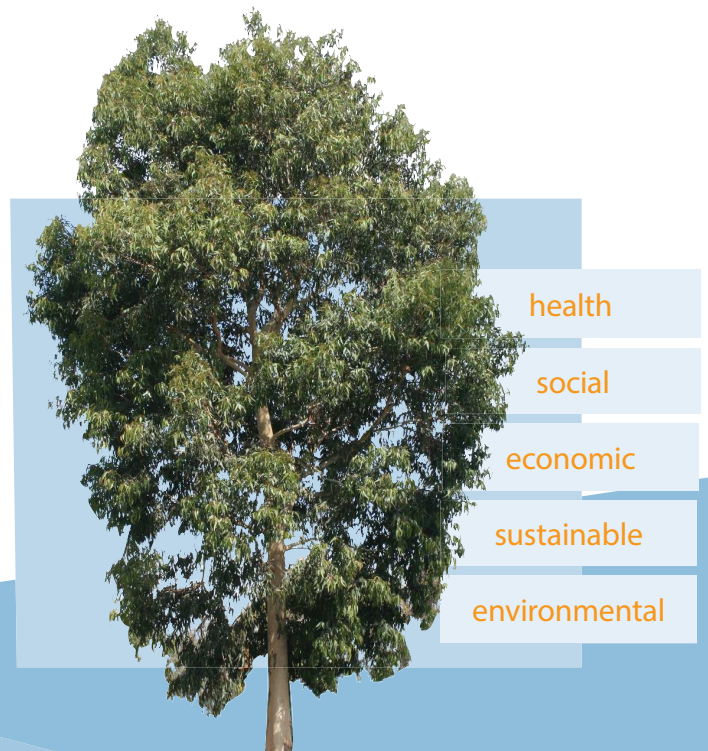
- Reduces greenhouse emissions by shading nearby buildings and paths from the sun.
- Cools the air through transportation when the tree releases moisture in the form of vapour.
- Reduces the urban heat island effect in a time of climate change to improve liveability, safety and comfort.
- Improves air quality
- Improves water quality by filtering chemicals and nutrients stripping water runoff.
- Reduces soil erosion.
- Locks up carbon from the atmosphere to help prevent climate change.
- Increases habitat to birds and other wildlife and provide food.
- Screens objectionable views and reduce glare from street lights and car headlights.
- Supports biodiversity and ecological corridors.
- Reduces road noise to residents.
- Reduces the speed and damaging effects of strong winds.

### Social Benefits

- Improves the character and visual amenity of streetscapes and neighbourhoods.
- Evokes community passion and pride, and create a sense of place.
- Reduces psychological precursors to crime.
- Street trees provide visual and physical separation between cars and pedestrian areas.
- Traffic calming

### Physical / Mental Benefits

- Shaded, tree lined streets and paths are conducive to healthy activities, and therefore improve the health of residents.
- Pedestrians using shaded footpaths have reduced exposure to UV radiation.
- Improves our quality of life by providing a sense of peacefulness, restfulness, serenity and tranquillity as a result of creating a more natural and less artificial environment.
- Increases the mental health of residents by creating community cohesion and lowering stress levels.



### 3. 2 Concerns regarding Street Trees

Street trees have the potential to create a number of problems. These main concerns include:

#### Infrastructure conflicts

- Tree roots lifting and breaking paths, driveways, fences, roads etc.
- Root invading utility infrastructure.
- Leaves clogging up drains and filling up building gutters.
- Potential tree or branch failure which may damage power lines, houses and harm people and animals.
- Trees may conflict sight-lines.
- Trees too large for the verge it is planted in may cause damage by growing into the house.
- Trees may shade solar panels of the adjacent house.

#### Concerns from Resident's

- Trees can be messy, dangerous and destructive with leaf and bark litter, branch, fruit and nut drops.
- Trees will conform to prevailing conditions and as such may not be a form and shape that the resident finds desirable.



- The tree encroaches over their boundary.
- Residents fear the tree will fall on their house, themselves or others.
- Residents fear the tree will catch on fire.
- The tree fails to grow or thrive and provides little amenity.
- Trees can be affected by disease and pests/
- Trees can be vandalised, especially when small and young.

### 3. 3 Key Mitigating Strategies

A number of strategies can be used to reduce damage or problems created by trees. These include:

- Selection of the appropriate species for the site.
- Ensure adequate water for the first two years establishment period.
- Using root barriers when using a species with known invasive roots.
- Proper initial design to locate trees at correct distances from infrastructure or design infrastructure to fit the tree.
- Initial designs to map sight-line conflicts.
- Consider the use of unit paving where a risk of surface roots is high, as this allows for a more cost effect restoration of the path.
- Where street trees with invasive surface roots already exist: suspend walls and fences, using a pier and beam system.
- Underground power lines when possible to avoid power line conflict.
- Audit street trees on a schedule basis to check for potential limb failure and structural damage.
- Advise residents to use gutter guards to prevent leaves form clogging house gutters.
- Educate residents regarding the benefits of street trees and how to contribute to the care of their street tree



# Urban heat - Surface temperatures on a 42 degree day

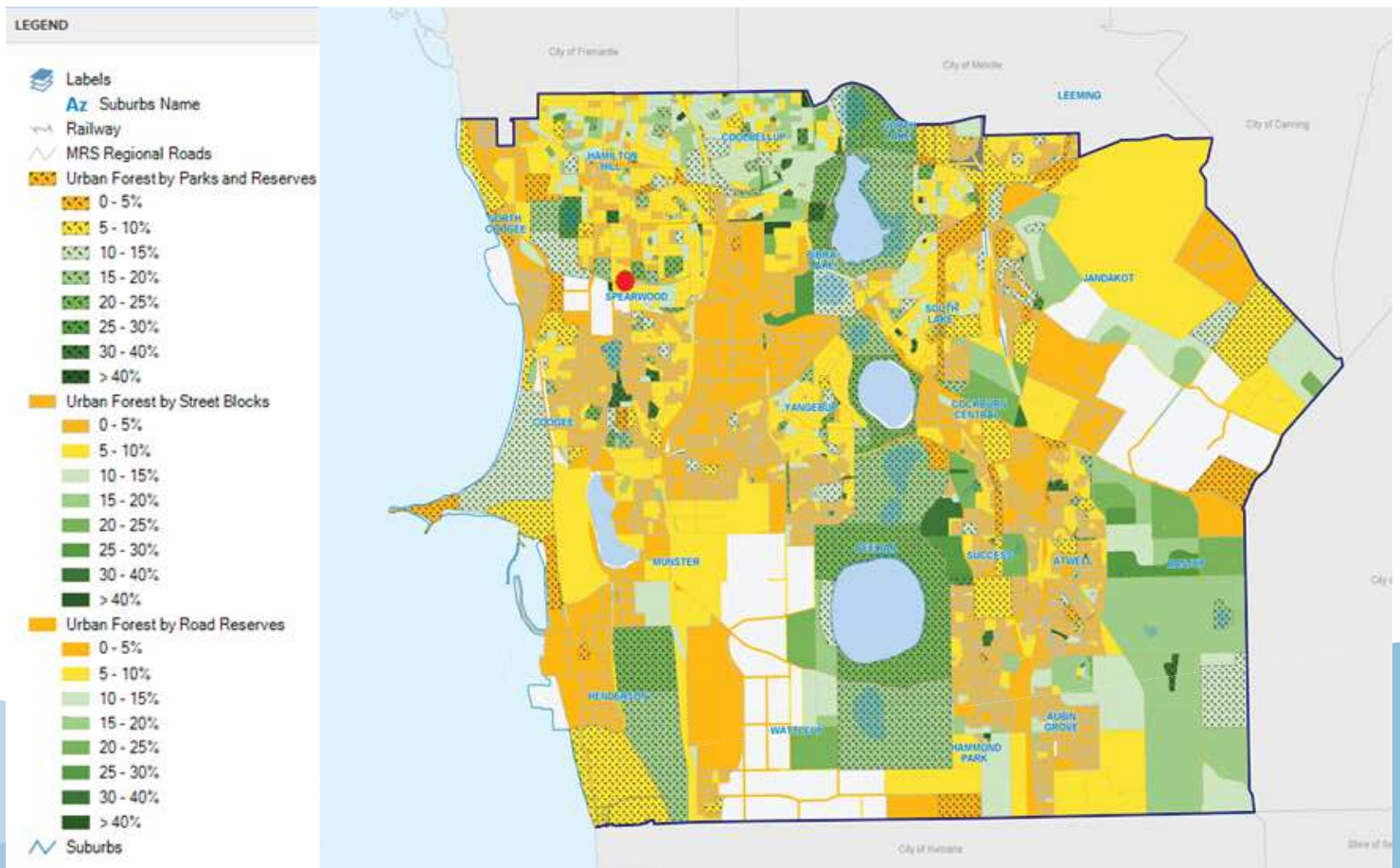


Bitumen in full sun= 65.8°C

Bitumen under tree canopy = 38.5°C

Rubber softfall around tree = 94°C

Increasing the street tree canopy is an opportunity to reduce the heat island effect across the City



Urban forest coverage in the the City of Cockburn



## 4. MAINTENANCE

### 4.1 Management - Arboriculture Inspections

The management of street trees is currently through officers in the Parks Service Unit with the engagement of a consulting arborist as required. The incorporation of a consulting arborist in the management program achieves a degree of independence in the decision making process. The assistance of a consultant is generally required when the request could be controversial, subject to the political process or escalate to involve the media in an attempt to garner community support for the removal of a tree or trees. In addition the consulting arborist can provide Quantified Tree Risk Assessments and reports to determine the potential risk of a tree.

### 4.2 Clearance from Power Lines

The Western Australian Office of Energy Safety sets out the regulations for the clearance of vegetation from power lines. The regulations list each power line classification and the clearance zones required to mitigate disruption to the network. In addition the regulations outline that management of naturally occurring vegetation is performed by the service provider whilst planted street trees are the responsibility of the local municipal authority.

Compliance with regulations is facilitated by the contracts issued by service providers that require inspection, issue notices of non-compliance, action works not completed and re-inspection.

Management of the clearance of vegetation from power lines will be facilitated through the street tree database. The database generates reports that list all trees under power lines orientated to each suburb, previous pruning history and a monetary value for the works. All street trees under power lines will be pruned on an annual basis, subject to growth habits and additional requirements by the regulators

### 4.3 Street tree and Utility Alignment

Street trees must be planted on a particular alignment within the road reserve. The location varying road reserve widths is outlined in the 'Utility Providers: Code of Practice for Western Australia'. This ensures trees are planted along

the power pole and street light alignment which will reduce the possibility of the tree being dug up in the future for repairs or amendments to the underground utilities. Generally the tree will be located between 2.4 and 3m from the front lot boundary and 1.5 to 2m from the edge of crossovers.



## 5. SELECTION CRITERIA

The City is a constructed cultural and urban landscape consisting of streets, buildings (residential, industrial and commercial), natural areas and POS. Trees play an important role in enriching the cultural experience of a location, therefore the aesthetic characteristics of the trees need to be an important selection consideration. The selection of species may also reinforce climatic, historical, cultural or natural associations that satisfy local requirements.

Tree selection criteria can be divided into three main categories which are listed in order of importance. These include:

1. Environmental considerations
2. Functional requirements
3. Aesthetic and design requirements.

### 5.1 Environmental Considerations

The following section shall outline some environmental factors that affect tree selection

#### Climate

Perth has a Mediterranean climate with hot, dry summers and mild, wet winters. It is the sunniest capital city in Australia with clear blue skies an incredible 70% of the year. Summer temperatures can rise above 40 degrees Celsius, accompanied by strong easterly and south westerly winds patterns which expose the coastal plants to salt spray. The further inland the lower the wind speed and the less salt burning is experienced. Selecting trees for these areas will need to take into account the distance from the coast, and wind and salt tolerance.

#### Geology and Soils

Five different soil associations can be found across the City of Cockburn. The types range from white limey sands to limestone outcrops with little soil cover, to deep yellow sand to black peaty sands, to loams and clay surrounding lakes and swamps. Limestone outcrops will require mechanical assistance to enable tree planting, and the Quindalup sandy soils are typically low nutrient, alkaline soils with good drainage, but will require soil building at the time of planting and a good fertilizing regime to ensure the new plant has sufficient nutrients to establish a root system.

It is also important to consider that in many developed areas within the City, the natural soil will have been stripped off and replaced with up to several meters of construction fill sand which is devoid of organic matter. This soil will require building with organic matter before planting into and whilst trees with large tap roots will eventually reach the natural soil, trees with shallower surface roots may never come into contact with natural soils.

#### Hydrology

The City of Cockburn has several strings of lakes and swamps running from the North to the South. These areas naturally host a range of riparian species of plants which tolerate seasonal to year round inundation of water.

Much of the swamp system has been filled in the development process however trees with large tap roots will access this ground water once enough growth has occurred.

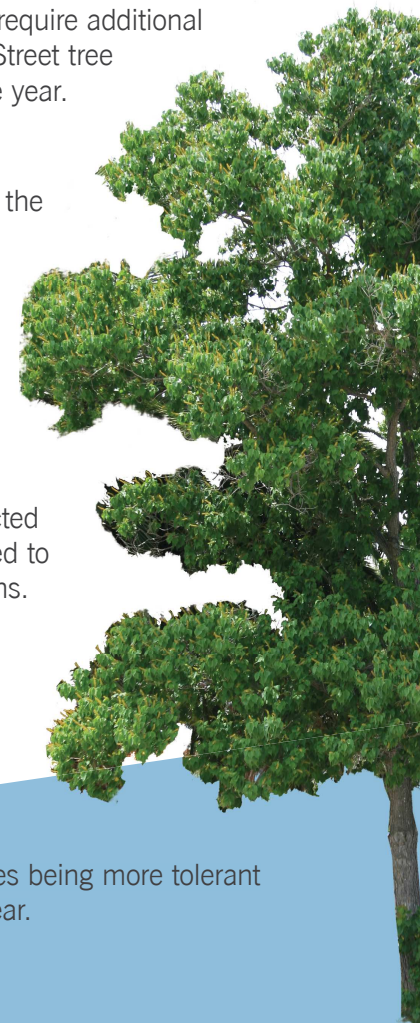
Many areas of the City will require additional water to be provided to the Street tree during the dry months of the year.

#### Hardscapes

Higher density of housing in the City of Cockburn means a greater percentage of the ground is covered with paving, roads and hard surfacing. This leads to lower soil permeability, greater compaction, higher heat sink temperature and smaller planting areas. Selected trees for these areas will need to be tolerant of these conditions.

#### Atmospheric Pollution

Dense development areas and busy roads will have high air pollution from quantity of cars. Trees will need to be tolerant of this pollution with deciduous trees being more tolerant due to the leaf drop every year.



## Drought conditions

With the reduced rainfall it is expected that street trees will survive an average drought period in reasonable condition without irrigation or a reliance on scheme water after the initial two to three year establishment period.

## Pest and Disease

Tree species should be resistant to pests and disease. Planting a diverse species range shall ensure that any outbreaks of pests or disease will not devastate a large area.

## Wildlife Habitat

Trees provide shelter, food sources and corridors which our native fauna species can utilize. Trees along the city's ecological corridors and a 50m buffer either side, should be endemic or native tree species which benefit the ecology of those areas and help to maintain the natural biodiversity.

## 5. 2 Functional requirements

### Proven performance

When considering a species for a location there needs to be a proven history of that species thriving in the same conditions.

### Tree litter

The amount of leaf, bark, nut or fruit litter which sheds from a tree must be a consideration, especially for tree which will overhang a pedestrian path. The level of maintenance available must be equal to that which will be required of the species.

### Limb failure

All trees shed branches from time to time; however some trees are more prone to other for limb shedding and limb failure or branches heavy and large enough to cause injury. Such trees must not be planted along pedestrian paths or over play grounds and areas where people are likely to frequent. It is recommended that know limb shedding varieties only be used in ecological corridors wide primary distributor reserves or in large garden beds where people are not encouraged to be.

### Canopy size

The expected maximum canopy size must fit into the planting location without growing so large that it will require constant pruning. It is acceptable

for the canopy to overhand the road as long as its form will allow a height clearance underneath for the tallest vehicle to pass under.

## Tempering of climate

Research has shown that trees with larger broader canopies provide the greatest benefits to the city, however whilst small trees growing in large areas do not contribute to the visual quality or canopy cover of the street, very large trees in confined spaces can become problematic with high maintenance costs.

Tree species selection should therefore provide the broadest shade canopy within the context of the available space. Scale of the street, site constraints such as verge widths, overhead powerlines, building alignments and vehicular clearances much all is considerations when selecting an appropriate tree. In some instances a tree may not be suitable for an area at all.

## Root Damage

Tree selection must take into account the surrounding infrastructure. If paths, fences or building are within the potential root zone then a tree with non-invasive roots must be selected or effective root control provided. Large POS site with sufficient space surrounding the tree can afford trees with more invasive root systems.

## Longevity

Trees with long life spans are preferable over species which will require more frequent replacement.

## Crown pruning and leader removal

Trees to be planted under overhead power lines should have epicormic budding capabilities. This allows the crown to thicken in response to pruning such that although the crown height is continually reduced the remaining branches provide a dense sideways spreading canopy which still provides shade.

## Solar passive

Tree selection will also be cognisant of solar panels on adjacent residential homes in high density settings to ensure the penetration of sunlight during winter periods.



## 6. METHODOLOGY

### 6.1 Tree Species Selection

Trees have varying lifespans with some trees living up to 150 years. It is therefore imperative that our selection objective is to plant the correct species for the correct location, according to the local environmental conditions and constraints of the intended planting location.

Incorrect selection can incur a high ongoing maintenance cost to the City, fail to thrive or in some circumstances, require the removal of the tree after it has matured and proven to be problematic.

Most of the older established suburbs within the City of Cockburn are planted with established trees. This provides us with a valuable insight as to which species thrive in different areas of our city and inform us of what growth pattern we can expect from these species. We have overlaid this information with performance criteria such as environmental contributions, amenity, aesthetic and heritage values to create a 'Street Tree List'.

It is understood that trees are living organisms which will always create a degree of negative factors that cannot be controlled. The selection process aims to provide more positive than negative factors as an outcome.

### 6.2 Zoned Landscape Approach

The City of Cockburn has identified three different zones which require three different approaches to the planting theme within them.

The City of Cockburn's vision is to create avenue planting to its streets, with both sides of the road being planted with a consistent pattern of preferably one variety of tree (Avenue planting). All planting to new developments will be based on an avenue planting approach where species selection and location of planting will reinforce the distinct physical character of each area and where possible be responsive to its unique environmental conditions. A number of key species will be identified suitable for the use at strategic entrances or key intersection as well as the streets throughout the various suburbs within City of Cockburn. The Street Tree Master Plan provides details regarding the methodology and tree selection.

### 6.3 Existing Tree Plantings

Areas with an existing pattern of planting, we will choose the most appropriate tree or trees to the existing streetscape to be used for future plantings to this area. If none of the existing trees are deemed suitable, a new species from the list will be selected based on the species in the surrounding area. No streetscapes shall be removed on mass rather be a process of natural attrition or as infill development requires the removal of trees to the verge.

## 7. ZONE DESCRIPTION

Coastal Zones	These are zones which will experience the direct force of the salt laden prevailing winds, with quick draining sandy soils.
Significant Verges, Median & Roundabouts	These zones include verges, medians or roundabouts that the City of Cockburn identifies as significant and therefore have a particular character predetermined for the streetscaping to create this street hierarchy. Roads such as major entrances to suburbs, significant roundabouts, median or landmarks locations.
Ecological corridors and wetlands	These zones have been identified by the 'Natural area management strategy' as being of significant ecological benefit to the City of Cockburn. These zones create ecological links within the city to help sustain our wildlife and ecological biodiversity. See Appendix A for Ecological area map
Industrial and commercial zones.	The zones are often identified by larger setbacks and car parks directly adjacent to the front lot boundary. This space allows the planting of larger street trees which will provide a greater shade to help combat the extreme heat sinks often associated with these areas.
Residential zones	This zone consists of everywhere else that does not fall into the above zones one to four. These zones aim to create a consistent avenue planting with the same plant to both sides of the road. Many existing roads will only achieve infill of a single species to gradually over the decades to come achieve this vision. New developments will achieve this from the outset.

## 8. STREET TREE SELECTION FOR ZONES

### Zone 1:

#### Coastal Front Line

- Agonis Flexuosa
- Araucarcia heterophylla
- Casuarina equisetifolia
- Corymbia ficifolia
- Cupaniopsis anacardiodes
- Callistemon kings park special
- Callistemon viminalis
- Erythrina sykesii
- Eucalyptus gomphcephala
- Gleditsia tricanthos shademaster
- Hibiscus tilaceus rubra
- Melaleuca quinquenervia
- Olea europa
- Pyrus cleveland select
- Ulmus parvifolia

#### Beneath Power Lines

- Agonis flexuosa
- Corymbia ficifolia
- Cupaniopsis anacardiodes
- Callistemon kings park special
- Callistemon viminalis
- Gleditsia tricanthos shademaster
- Hibiscus tilaceus rubra
- Olea europa
- Melaleuca quinquenervia
- Ulmus parvifolia

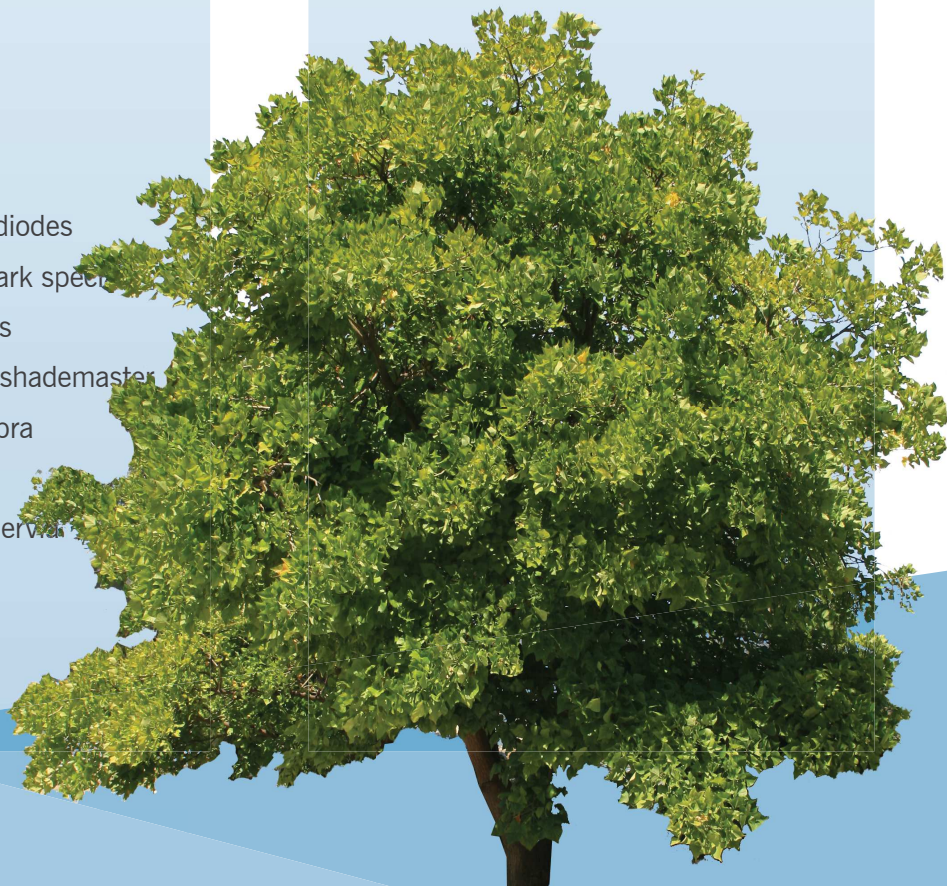
### Zone 2:

#### Significant Verges, Median, and Roundabouts

- Araucarcia heterophylla
- Corymbia maculata
- Erythrina Sykesii
- Platanus acerfolia
- Platanus insularis
- Platanus orientalis
- Platanus digitata
- Fraxinus oxycarpa Raywood
- Liquidamber styraciflua
- Ulmus parvifolia

#### Beneath Power Lines

- Ulmus parvifolia
- Erythrina sykesii





## Zone 3

### Ecological Corridors

- Agonis flexuosa
- Angophora costata
- Araucaria heterophylla
- Brachychiton Acerfolia
- Callistemon viminalis
- Callistemon kings park special
- Corymbia ficifolia
- Corymbia maculata
- Erythrina sykesii
- Eucalyptus gomphocephala
- Eucalyptus leucoxyton 'rosea'
- Eucalyptus sideroxyton 'rosea'
- Eucalyptus torquata
- Melaleuca quinquenervia

### Beneath Power Lines

- Agonis flexuosa
- Callistemon viminalis
- Callistemon kings park special
- Corymbia ficifolia
- Eucalyptus leucoxyton 'Rosea'
- Eucalyptus torquata
- Melaleuca quinquenervia

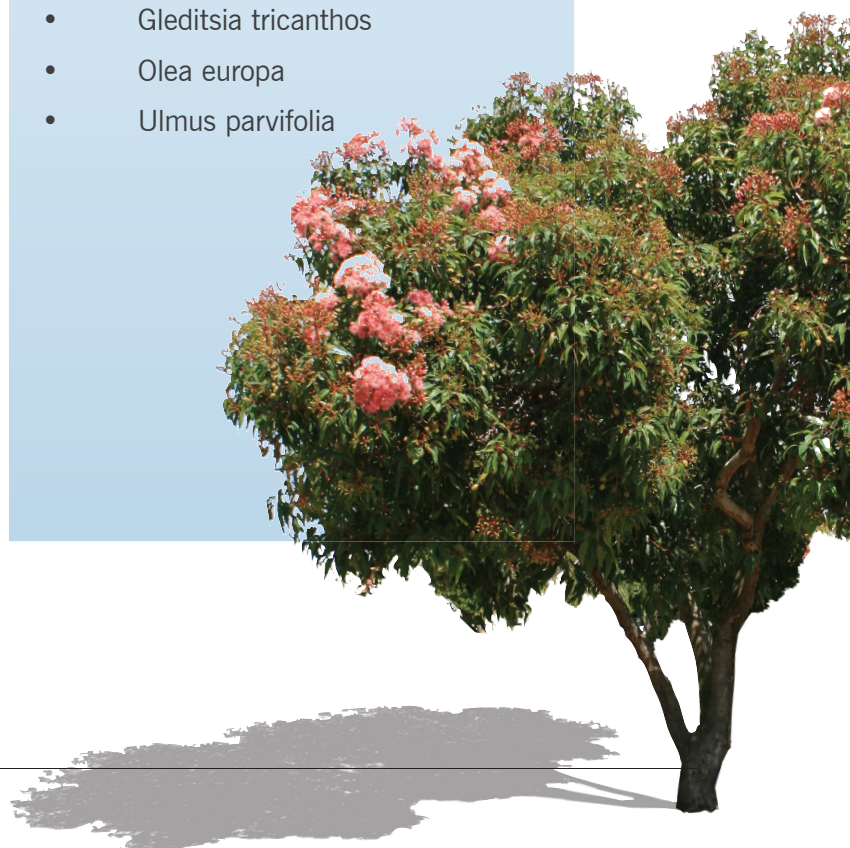
## Zone 4

### Industrial Commercial

- Angophora costata
- Brachychiton acerfolia
- Brachychiton populneus
- Delonix regia
- Eucalyptus gomphocephala
- Eucalyptus sideroxyton 'rosea'
- Fraxinus oxycarpa 'raywoodii'
- Gleditsia tricanthos inermis
- Liquidamber styraciflua
- Magnolia grandiflora
- Olea europa
- Platanus acerfolia
- Platanus orientalis
- Platanus insularis
- Ulmus parvifolia

### Beneath Power Lines

- Angophora costata
- Eucalyptus sideroxyton 'rosea'
- Gleditsia tricanthos
- Olea europa
- Ulmus parvifolia



## Zone 5 Residential Wide Verges

- Agonis flexuosa
- Angophora Costata
- Bauhinia sp.
- Brachychiton Acerfolia
- Eucalyptus leucoxyton 'Rosea'
- Eucalyptus sideroxyton 'rosea'
- Fraxinus oxycarpa Raywood
- Delonix regia
- Gleditsia tricanthos inermis
- Hibiscus tilaceus rubra
- Jacaranda mimosifolia
- Lagerstroemia sp.
- Liquidamber styraciflua
- Magnolia little gem
- Melaleuca quinquenervia
- Platanus orientalis
- Platanus insularis
- Paulownia tomentsa
- Prunus dulcis
- Pyrus ussuriensis
- Ulmus parvifolia

### Beneath Power Lines

- Agonis Flexuosa
- Eucalyptus leucoxyton 'Rosea'
- Delonix regia
- Gleditsia tricanthos inermis
- Hibiscus tilaceus rubra
- Jacaranda mimosifolia
- Melaleuca quinquenervia
- Ulmus parvifolia

## Zone 6 Residential Narrow Verges

- Callistemon 'KPS'
- Callistemon viminalis
- Corymbia ficifolia
- Eucalyptus foresterianna
- Eucalyptus spathulata
- Eucalyptus torquata
- Lagerstroemia sp.
- Pyrus calleryana Cleveland select
- Pyrus calleryana capital
- Prunus cerasifera sp.
- Olea europa
- Sapium Sebiferum

### Beneath Power Lines

- Callistemon 'KPS'
- Callistemon viminalis
- Corymbia ficifolia
- Eucalyptus foresterianna
- Eucalyptus spathulata
- Eucalyptus Torquata
- Lagerstroemia sp.
- Pyrus calleryana Cleveland select
- Pyrus calleryana capital
- Prunus cerasifera sp.
- Olea europa
- Sapium Sebiferum

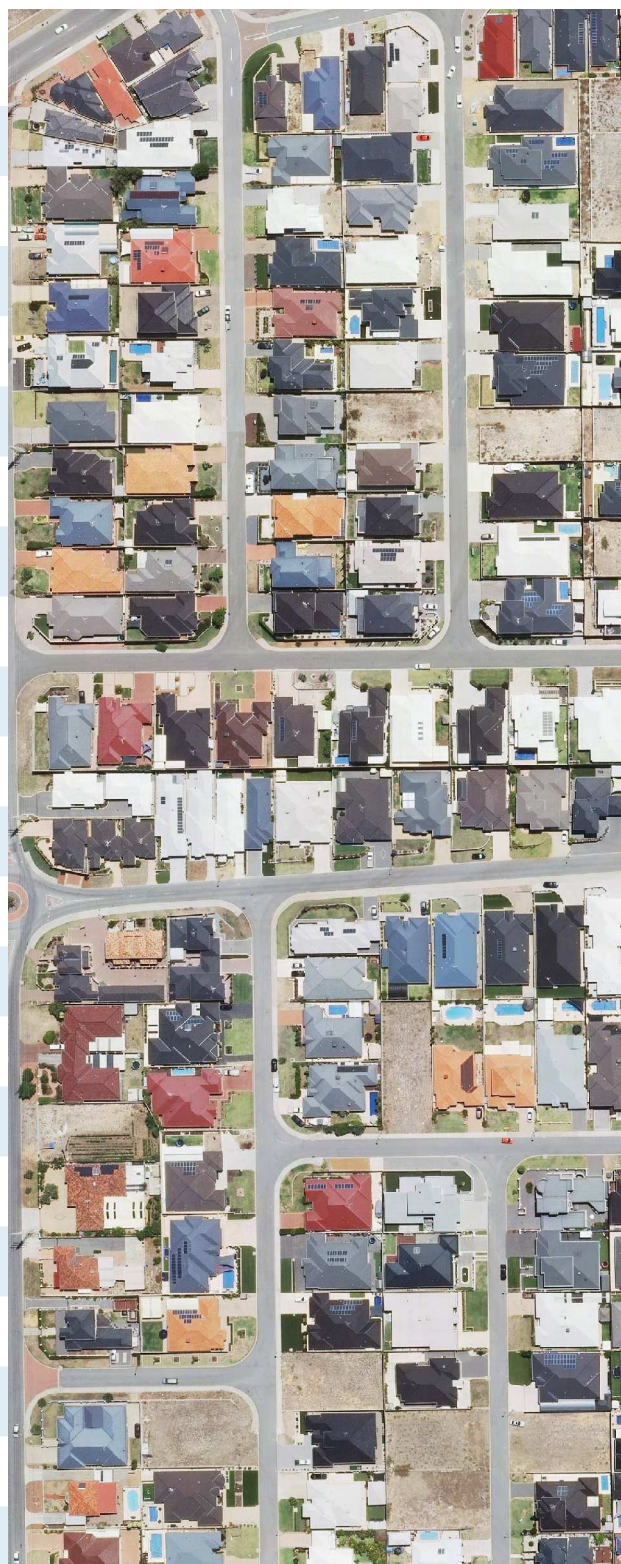


## 9. FUTURE TREE PLANTING OPPORTUNITIES

In 2014 an audit of the City of Cockburn's verge trees was undertaken. The survey also recorded residential lots which had no tree present. The number of tree required to achieve an outcome of one tree per residential verge is recorded below. This information coupled with data from the urban canopy survey will be applied in our on going street tree planting program.

\* Leeming and Banjup will be audited in 2016 / 2017.

Suburb	Total no. of potential tree planting opportunities
Spearwood	2504
Hamilton Hill	2443
Yangebup	2096
Success	1808
South Lake	1704
Bibra Lake	1653
Atwell	1558
Beeliar	1418
Munster	1391
Coolbellup	1351
Coogee	1127
Aubin Grove	1004
Hammond Park	937
Jandakot	822
Banjup	688
North Coogee	577
Wattleup	574
Cockburn Central	315
North Lake	237
Henderson	183
<b>Total</b>	<b>24,390</b>





## 10. STREET TREE DETAILS - NATIVE

Botanic name	Common name	Mature size	Flowering	Growth habit	Growth rate							Use beneath power lines	Invasive roots	Comments
						Sand	Loam	Limestone	Clay	Deciduous	Evergreen			
<i>Agonis flexuosa</i>	WA Peppermint	H: 10m W: 7m	✓	Weeping / round spreading form	M/S	✓	✓	✓			✓			
<i>Angophora Costata</i>	Smooth barked apple gum	H: 15m W: 7m	✓	High rounded dense canopy	M/F	✓	✓		✓	✓			✓	Moderate root damage
<i>Araucaria heterophylla</i>	Norfolk Island Pine	H: 30m W: 15m		Conical, erect standing	M/S/	✓	✓	✓	✓		✓			Land mark plant
<i>Brachychiton Acerfolia</i>	Illawarra flame tree	H: 10m W: 6m	✓	Pyramidal dense canopy	S	✓	✓			✓			✓	
<i>Callistemon viminalis</i>	Weeping bottlebrush	H: 7m W: 4m	✓	Low, weeping, dense habit	M	✓	✓				✓	✓	✓	
<i>Callistemon 'KPS'</i>	Kings Park Special	H: 5m W: 3m	✓	Large bushy habit	F		✓		✓					
<i>Corymbia ficifolia</i>	Red flowering gum	H: 12m W: 6m	✓	Compact rounded canopy	M	✓	✓	✓	✓		✓	✓		
<i>Corymbia maculata</i>	Spotted gum	H: 30m W: 6m	✓	Tall straight dense canopy	F	✓	✓	✓	✓			✓	✓	
<i>Cupaniopsis Anarcardiodes'</i>	Tuckeroo	H: 8m W: 8m	✓	Rounded canopy	M	✓	✓	✓	✓		✓	✓		
<i>Erythrina x Sykesii</i>	Australlian Coral tree	H: 15m W: 12m	✓	Dense rounded canopy	F	✓	✓	✓	✓	✓		✓	✓	
<i>Eucalyptus Forrestiana</i>	Fuscia gum	H: 5m W: 4m	✓	Upright open form	M	✓	✓	✓	✓		✓	✓		
<i>Eucalyptus gomphocephala</i>	Tuart	H: 40m W: 15m	✓	Broad spreading, upright branches	M	✓	✓	✓	✓			✓		
<i>Eucalyptus leucoxyton 'rosea'</i>	Yellow gum	H: 6m W: 5m	✓	Open form	F	✓	✓	✓	✓		✓	✓	✓	
<i>Eucalyptus marginata</i>	Jarrah	H: 15m W: 7m	✓	Open form	S	✓	✓		✓			✓		
<i>Eucalyptus sideroxyton 'rosea'</i>	Red ironbark	H: 15m W: 7m	✓	Dense pyramidal upright	M/F	✓	✓	✓	✓			✓		
<i>Eucalyptus Spathulata</i>	Swamp mallee	H: 8m W: 5m	✓	Small round or spreading	M	✓	✓	✓	✓		✓	✓		
<i>Eucalyptus Torquata</i>	Coral gum	H: 12m W: 4m	✓	Small round or spreading	F	✓	✓	✓	✓		✓	✓		
<i>Melaleuca quinquenervia</i>	Broad leaf paper bark	H: 15m W: 7m	✓	Tall Rounded canopy	M/F	✓	✓	✓			✓	✓		

# 11. STREET TREE DETAILS - EXOTIC

Botanic name	Common name	Mature size	Flowering	Growth habit	Growth rate								Comments
						Sand	Loam	Limestone	Clay	Deciduous	Evergreen	Use beneath powerlines	
Bauhinia sp.	Orchid tree	H: 8m W: 6m	✓	Spreading irregular canopy	F	✓	✓	✓	✓	✓	✓	✓	Semi deciduous
Fraxinus oxycarpa raywoodii	Claret ash	H: 15m W: 12m		Oval, rounded dense canopy	F	✓	✓	✓	✓			✓	
Delonix regia	Poinciana Flame tree	H: 8m W: 6m	✓	Wide spreading canopy	M		✓	✓	✓			✓	Wide spreading canopy
Gleditsia tricanthos inermis	Shademaster / Sunburst	H: 15m W: 12m	✓	Spreading rounded canopy	F	✓	✓		✓			✓	Autumn colour: yellow
Hibiscus tilaceus rubra	Cottonwood	H: 9m W: 5m	✓	Rounded canopy	F	✓	✓	✓	✓		✓	✓	Surface roots.
Jacaranda mimosifolia	Jacaranda	H: 5m W: 3m	✓	Open globed canopy	M	✓	✓		✓	✓		✓	
Lagerstroemia sp.	Crepe myrtle	3-10m 3-6m	✓	Rounded dense canopy	M/F	✓	✓		✓	✓		✓	
Liquidamber styraciflua	American sweet gum	H: 15m W: 7m		Pyramidal canopy	F		✓	✓	✓			✓	Autumn colour
Magnolia grandiflora	Southern magnolia	H: 10m W: 8m	✓	Globed / pyramidal dense canopy	M	✓	✓		✓		✓		
Magnolia	Little gem	H: 6m W: 3m		Irregular pyramid canopy		✓	✓	✓	✓		✓	✓	
Olea europa	Olive	H: 7m W: 5m	✓	Dense rounded canopy	M	✓	✓		✓	✓		✓	Berries drop and self-seed.
Platanus acerfolia	London Plane	H: 20m W: 15m	✓	Rounded pyramidal canopy	M/F	✓	✓		✓	✓		✓	Autumn colour
Platanus orientalis	Oriental plane	H: 12m W: 6m		Round pyramidal canopy	F				✓	✓			
Platanus insularis	Autumn Glory		✓				✓		✓	✓			
Paulownia tomentsa	Pallownia	H: 12m W: 12m	✓	Pyramidal spreading canopy	F		✓		✓	✓			
Prunus cerasifera sp.	Prunus cerasifera sp.	H: 5m W: 3m	✓	Upright growth	M	✓	✓		✓	✓		✓	Several varieties.
			✓			✓	✓		✓	✓		✓	

# STREET TREE DETAILS - EXOTIC

Botanic name	Common name	Mature size	Flowering	Growth habit	Growth rate	Soil				Evergreen	Use beneath powerlines	Invasive roots	Comments
						Sand	Loam	Limestone	Clay				
Prunus dulcis	Almond	H: 4m W: 3m	✓	Rounded canopy	S/M	✓	✓		✓	✓			
Pyrus calleryana Cleveland select	Chanticleer	H: 9m W: 4m	✓	Small round or spreading	M/F	✓	✓		✓	✓			Autumn colour: red.
Pyrus calleryana capital	Capital	H: 9m W: 3m	✓	Narrow upright	M		✓		✓	✓			Autumn colour: red.
Pyrus ussuriensis	Pyrus ussuriensis	8-15m 8 -12m		Conical pyramid to round canopy	M	✓	✓		✓	✓			Rounded canopy
Sapium Sebiferum	Chinese tallow	H: 10m W: 5m		Rounded canopy	M	✓	✓		✓	✓			Rounded canopy
Ulmus parvifolia	Chinese elm	H: 10m W: 5m		Oval, rounded dense canopy	M	✓	✓		✓	✓			Suckering roots
Elkova serrata	Green vase	H: 14m W: 10m		Vase-shaped, upright branching	M		✓		✓	✓			Not suitable for wetlands.

\*This table represents a selection of tree species which the City considers appropriate in size and form for Streetscapes. Is it accepted that there will be other species over the course of time which may become available that should be considered to be included on this list. The City will consider alternate species upon application.





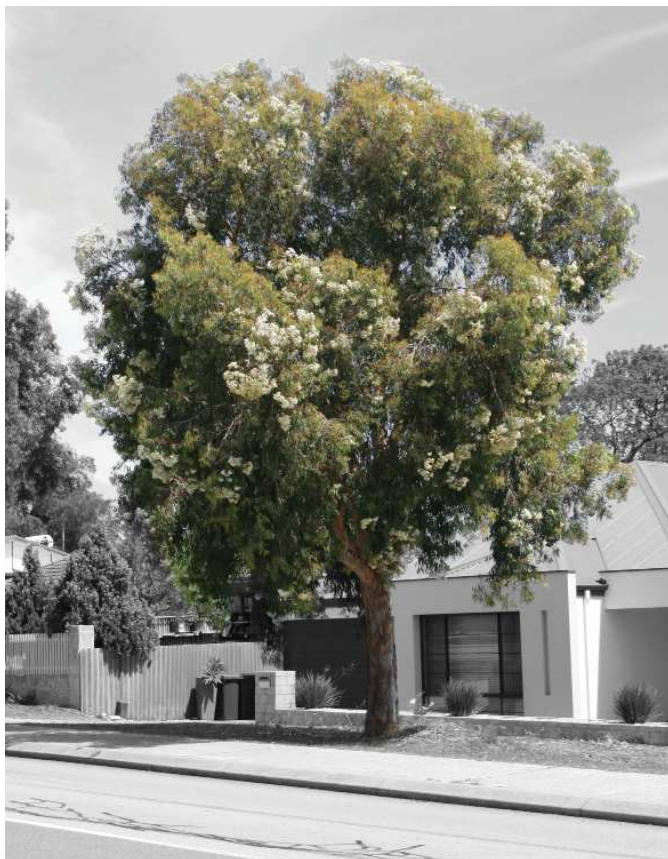
## 12. STREET TREE GALLERY



*Agonis flexuosa*



*Araucaria heterophylla*



*Angophora costata*



*Brachychiton acerfolia*





Calistemon 'kings park special'



Erythrina



Calistemon 'kings park special'

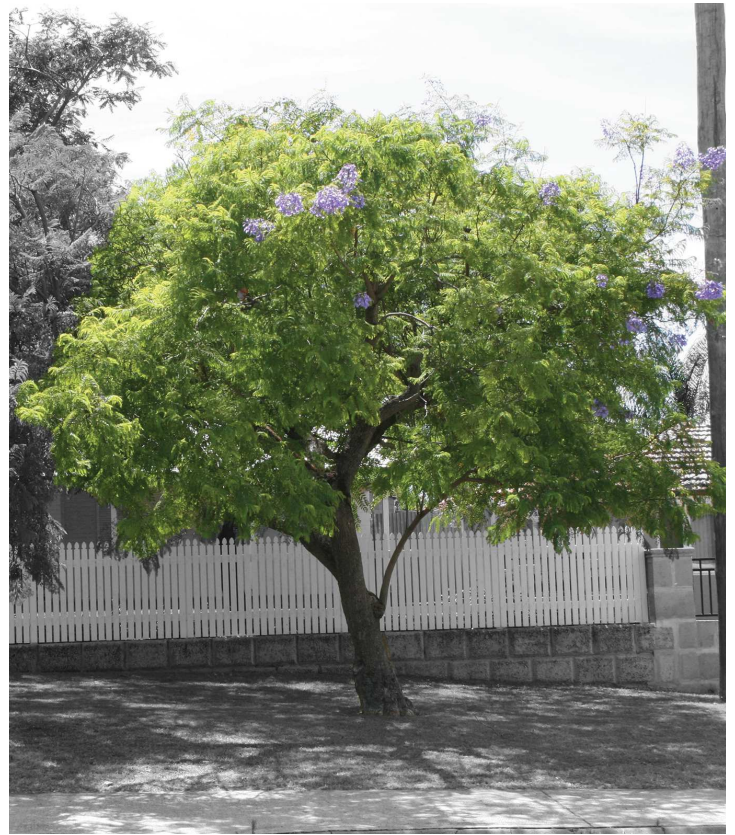


Eucalyptus maculata





*Eucalyptus sideroxylon rosea*



*Jacarandah mimosifolia*



*Magnolia little gem*



*Melaleuca quinquenerva*





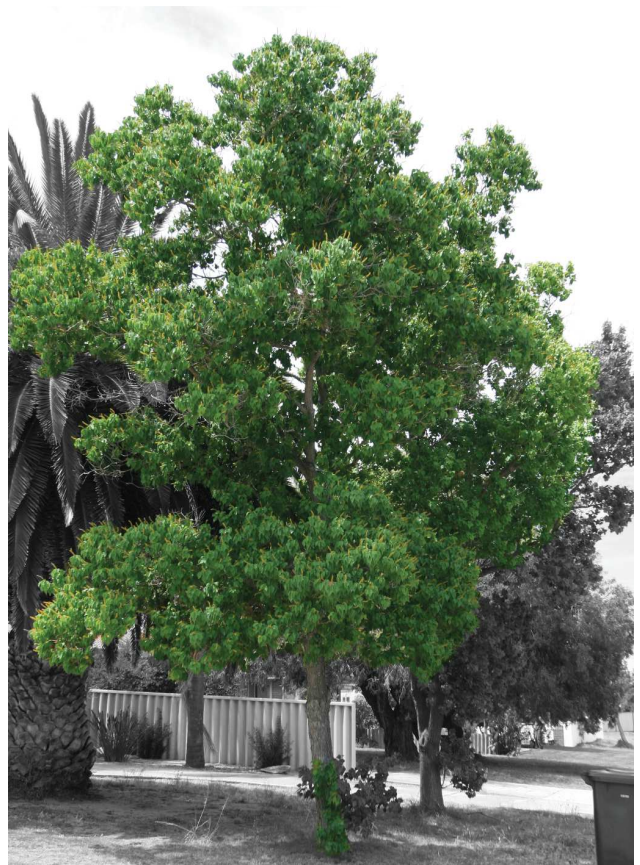
*Olea europaea*



*Platanus* 'london plane'



*Pyrus calleryana* 'cleveland select'



*Sapium sebiferum*

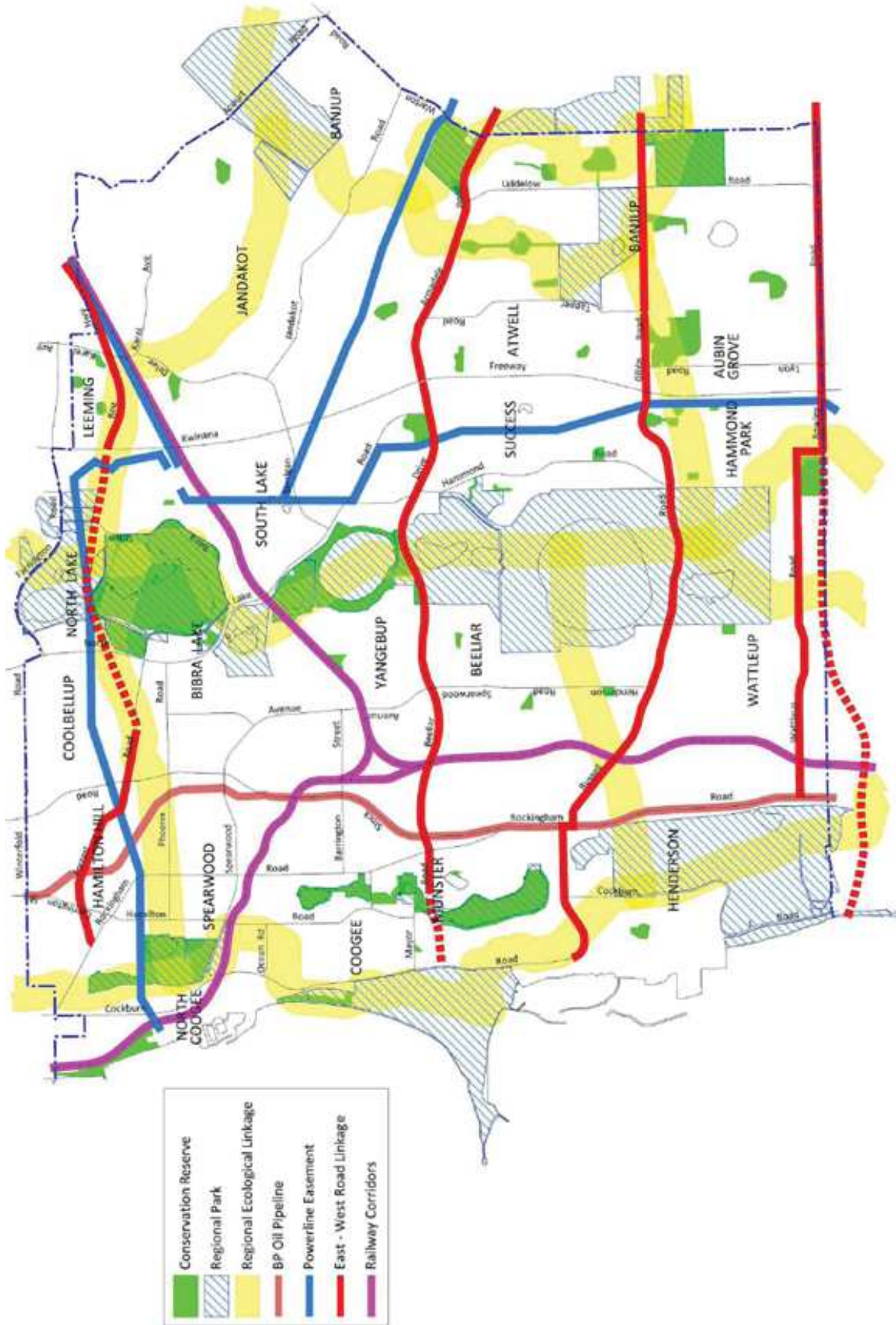






# 1. APPENDICES

## 1.1 Ecological corridors within the City of Cockburn







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