

# DUBBO STREET TREE MASTERPLAN





## **ACKNOWLEDGEMENTS**

This plan has been produced by the Dubbo Regional Council staff in conjunction with Tree Logic Pty Ltd and Urban Forest Consulting.

Tree Logic is an arboricultural consultancy delivering professional advice about trees and street tree management.

Urban Forest Consulting provides strategic and technical advice to help green cities across Australia.

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# BACKGROUND

Dubbo is the gateway to western NSW, with visitor numbers to the City growing annually. A major part of the presentation and character of the City is drawn from its landscapes, particularly the health and vibrancy of the street tree population. Ensuring tree renewal and tree health in Dubbo must also be a priority if liveability, community health and sustainability is to be demonstrated at streetscape level. Dubbo's streets and neighbourhoods need to be fit for the future. This means the provision of streets that are functional, well maintained and adequate for the needs of a growing community.

As an Evocity, Dubbo needs to be focussing on cost effective solutions for increasing its attractiveness to both potential residents and visitors as well as its long term resilience as a key regional city. Tourism centric cities such as Orange, Tamworth and Wagga Wagga all correspondingly value the contribution that their street trees make to their unique characters and invest in their renewal and management accordingly. Currently, it could be argued that Dubbo has not in the past placed the same value on the contribution that urban trees make towards the long term liveability and sustainability of the City. This situation is changing through the recent acceptance of street trees as Council assets and recent park street beautification projects that have included Brisbane and Darling streets.

Dubbo 2036 has a vision to position Dubbo as "a vibrant city of lifestyle and opportunity" and a mission statement "to manage and promote Dubbo's diversity, lifestyle and opportunity through innovation and excellence". Looking towards the future, Dubbo is focusing on the expansion of its tourism potential and the City as a cultural centre. The public realm has the capacity to characterise Dubbo as a vibrant city demonstrating innovation and excellence. Dubbo needs to be a place that people want to visit and spend time in.

The existing high quality of parks and open space in Dubbo need to be connected by high quality streetscapes, of which the major aesthetic component are the trees.

The Strategic Community Plan in Dubbo 2036 recognises the importance of trees by emphasising the need to strategically manage street trees for both optimisation of the City's presentation and its heritage values. This is identified in the principal theme "Our Infrastructure – 3.1.11 Roadside landscaping, street trees and verges are strategically developed and maintained to optimise the standard of the City's presentation".

Considerable work has been done in building a comprehensive street and park tree inventory to help understand the state of the existing tree population. In May 2015, an Urban Tree Report was commissioned to build the business case for establishing an annual tree planting program, which was approved "in principle" by Council.

Council now has the opportunity to commence its tree planting program. In order to ensure a strategic and holistic approach to this, a priority based street tree planting program has been developed in the form of a Masterplan. This is to replace the existing Masterplan which was developed in 2004.

To assist in the readability and useability of the Dubbo City Street Tree Master Plan it has been produced as a series of booklets.



(Left) Talbragar Street. Photo A.B. Unger



(Right) Macquarie Street 1905. Photo W. Lander

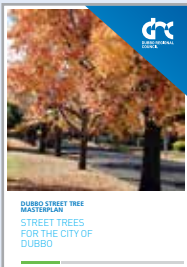


### CITY OF DUBBO STREET TREE MASTER PLAN

Provides background information on trees within the City of Dubbo, the current issues relating to street tree planting, identifies and summarises the issues and opportunities for each of the eight (8) precincts.

**APPENDIX 1** of this document provides a prioritised planting plan (1 – 10) for the planting / replanting of trees across the City and the associated list of streets and approximate tree numbers for each.

**APPENDIX 2** consists of a spreadsheet that identifies the Proposed Tree Species by Street. Each street has been assessed and a maximum of three (3) suitable tree species identified for it. Residents of each street will be given the opportunity to identify their preferred tree species leading up to the planting / replanting of the streetscape.



### STREET TREES FOR THE CITY OF DUBBO

This document provides fact sheets for the majority of trees identified within the Trees by Street spreadsheet. This booklet will provide the backbone of the information that will be sent out to residents during the community consultation phase for individual street tree planting.

### TOOL KIT BOOKLET

This document provides the rationale and the decision making processes behind the City of Dubbo Street Tree Master Plan. This document includes:

- A tree species selection matrix. Approximately 250 trees have been assessed and graded against 15 criteria to assist in the identification of suitable trees for Dubbo.
- Street Typology drawings that identify the hierarchy of streets within the City of Dubbo and suitable planting solutions.
- The tree planting procedures, as adopted by Council, and
- The Tree Protection Zones, as identified under the Australian Standard (AS 4970 – 2009)



# REVIEW OF 2004 STREET TREE MASTERPLAN

Many of the aims and objectives as set out in the 2004 Masterplan reflect similar aims of the current tree planting program for Dubbo. In 2004 these aims were to:

- Give every property owner the opportunity to have a street tree outside their property
- Enforce suburban and precinct characters through the identification of the dominant vegetation type (i.e. native, exotic or mixed) and continuing with that theme
- Establish and maintain avenues and boulevards along arterials, sub-arterials and collector roads
- Green up the industrial areas
- Ensure appropriate plantings to minimise future heavy maintenance
- Provide clear guidelines for staff in development of new plantings and maintenance of existing trees

The 2004 Avenue planting suggestions were:

1. Mitchell Highway (western and eastern approaches to City completed)
2. Newell Highway (northern approach underway)
3. Cobbora Road
4. Fitzroy Street
5. Wingewarra Street
6. Boundary Road
7. Darling Street (Between Talbragar and Wingewarra completed)
8. Sheraton Road
9. Wheelers Lane
10. Myall Street (East section is 90% complete)

The existing precinct categories were:

- Character conservation zone Native
- Character conservation zone Exotic
- Existing subdivisions (non-conservation ) Native
- Existing subdivisions (non-conservation) Exotic
- New subdivisions

The Masterplan was a comprehensive document when it was developed. Due to the constraints of establishing a tree planting program, many of the desired outcomes and objectives have not been met.

It is proposed to supersede this 2004 document with a more technically compatible and achievable 10 year priority based planting program that incorporates current best practice urban tree management as well as linking key benefits of street tree planting such as climate change adaptation and community health and wellbeing into Council's broader priorities.

# KEY CONSIDERATIONS FOR STREET TREE PRECINCT PLANTING

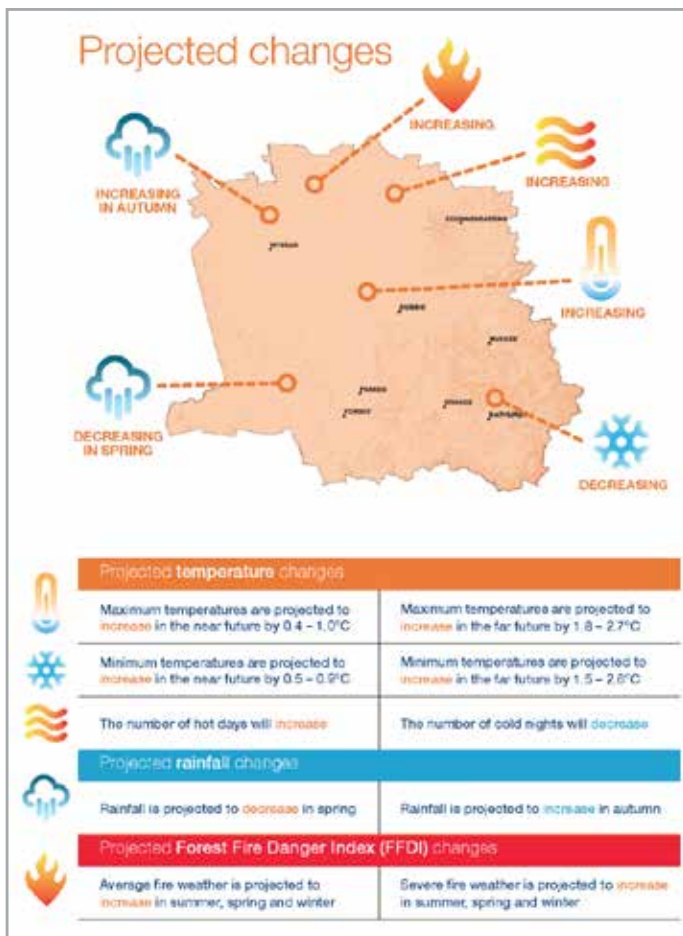


Figure 1: Project climate scenarios for the region of Dubbo (Adapt NSW, 2014).

## CLIMATE

Dubbo's climate is characterised by hot summers and cool winters that attract frosts. Average annual rainfall is 584mm, with average wettest month in January, however rainfall is distributed relatively evenly over the year. Dubbo's mean maximum temperature reach 33 degrees Celsius in January, and consecutive days over 38 degrees Celsius are becoming more common in summer. The mean daily minimum temperatures vary from 2.6 to 17.9 degrees Celsius. Therefore, urban trees need to be able to withstand periods of 40 degree heat, frosts and periods of low rainfall.

Climate change scenarios developed by New South Wales State Government Office of Environment and Heritage show that over the next 60 years these existing climatic challenges will be exacerbated.

The region is projected to continue to warm during the near future (2020–2039) and far future (2060–2079), compared to recent years (1990–2009). The warming is projected to be on average about 0.7°C in the near future, increasing to about 2.1°C in the far future. The number of hot days is projected to increase and the number of cold nights is projected to decrease. Figure 1 below outlines projected climatic changes for the region.

As a result, tree species that are planted today are going to need to withstand these more extreme weather conditions. The planting palette must therefore consider future adaptability of each species selected.

## GEOLOGY

The region of Dubbo has a rich geological history, one of the main reasons for the agricultural success of the area.

Some important items of note:

1. The ancient rocks of the Lachlan Fold Belt, mainly of volcanic and marine origin, occupy the area south of an arc stretching from north of Narromine, through Toongi, Geurie and on to north-east of Dunedoo.
2. There are freshwater fluvial deposits of the Sydney and Great Artesian Basins to the north of the ancient rocks.
3. Basalt flows centred around Dubbo and Mendooran.

# KEY CONSIDERATIONS FOR STREET TREE PRECINCT PLANTING (CONTINUED)

4. There are recent alluvium of the Western Plains and in areas adjacent to present rivers and streams.

## ROAD TYPOLOGIES

Dubbo is typified by wide long streets that are typically asphalted from kerb to kerb. Outside of the CBD, trees are planted in roadways or on the nature strip. Some arterial roadways have medians planted with trees. Apart from the CBD with building awnings stretching out over the footpath, there is ample growing space for trees in streets, particularly in the roadways. The major conflict is with overhead powerlines.

## COMMUNITY

Judging by the street tree planting records of other EvoCities such as Wagga Wagga, Albury and Orange, leafy green trees that provide ample shade and amenity are preferred.

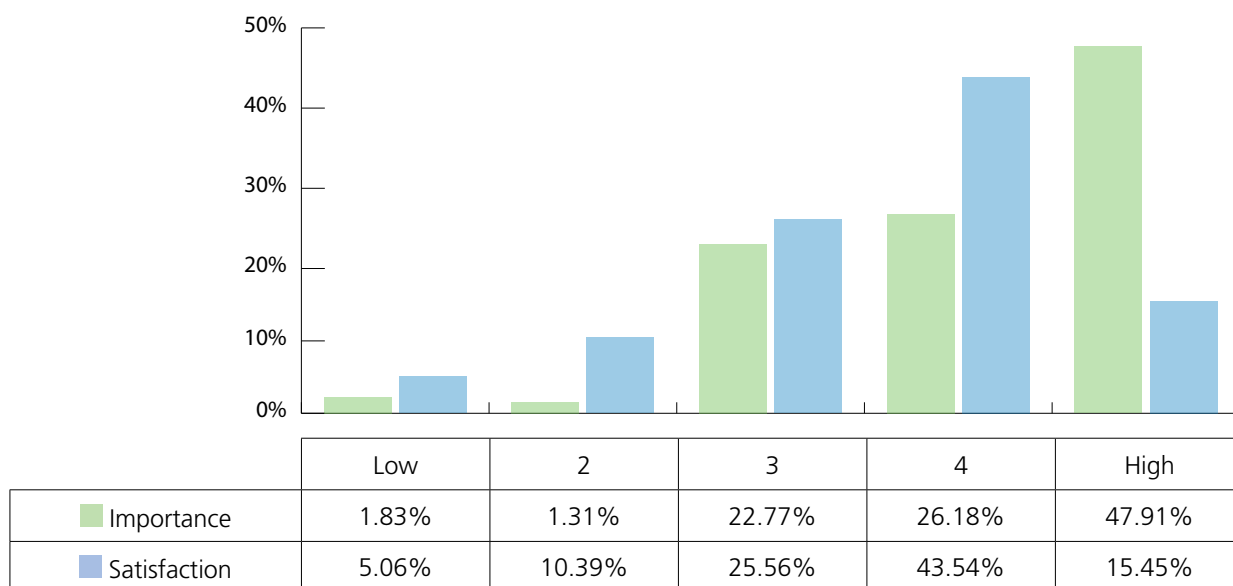
As identified in the Community Needs Survey (2015) 74% respondents believe that streetscapes are Moderate to

High importance, with 59% of respondents identifying a Moderate to High level of satisfaction. A further 25% of respondents claim an Average Satisfaction level with the City's streetscapes. While this identified level of satisfaction is encouraging Council recognises that there is a significant amount of work that is required to improve the health, structure, canopy cover and resilience of the urban forest. As part of the engagement strategy in the implementation of the Dubbo Street Tree Master residents will be invited to participate in the selection of street trees (through a voting mechanism) on a street by street basis, in accordance with the Prioritised Planting Program.

## FUTURE OF DUBBO

Dubbo is positioning itself as the gateway to the west and an agricultural hub. Tourism will be a core component of economic activity due to its key position as a stopover for travellers along the Newell, Mitchell and Golden highways.

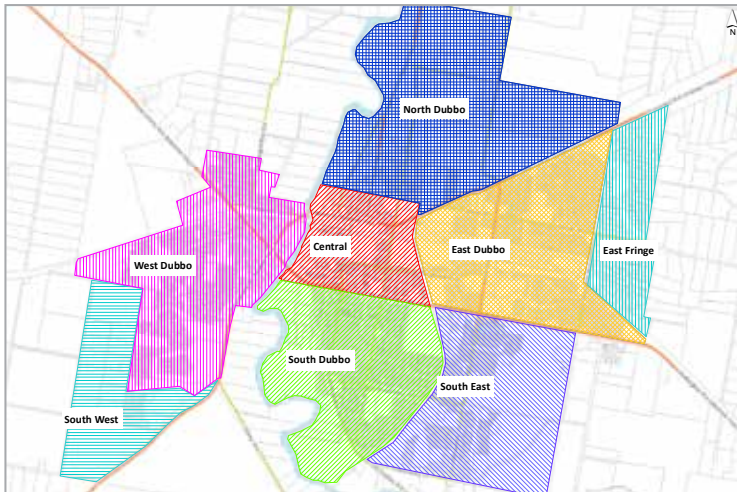
## 11.4 STREETScape MAINTENANCE



Just 3% of Survey respondents considered Streetscape Maintenance to be of low importance, with 74% giving it a score of 4 or 5. 15% of respondents have low Satisfaction, with 25% scoring it as Average Satisfaction with a score of 3. 59% of respondents indicated a Satisfaction score of 4 or 5.



# DUBBO EIGHT PRECINCTS



## CENTRAL

Based on the original footprint of the gazetted Village of Dubbo (1847) this is the oldest precinct which now contains the central business district, formalised gardens and open space, including highly maintained playing fields. A smaller commercial sector exists along Bourke Street (Newell Highway) with existing plantings located within the road reserve.

The precinct is characterised by wide road reserves that often allows for tree planting within the road shoulder. This offset planting significantly reduces conflict with aerial powerlines, which are set just behind the kerb, allowing a wider option of species to be considered. Many streets have wide road reserves and tree planting in the street. Many older residences still exist within this precinct, notably Bultje Street, Gipps Street and sections north of Erskine Street. Plantings in these areas should reflect and strengthen this heritage element.

## SOUTH DUBBO

Older style residential housing in the northern streets and a similar road configuration to that of the Central precinct. The majority of the southern parts of this precinct comprise more recent developments from the 1970's and 1980's. In these areas trees are commonly planted many with trees in the nature strips. On the southern tip, newer developments have and are appearing, some with underground powerlines.

## WEST DUBBO

Older housing developments, with the oldest areas dating back to around 1903, with street typologies similar to Central and South Precincts. However most of the development is more recent with typical road configurations and planting in nature strips. All new developments have underground powerlines with new developments towards the western and northern edge. The precinct has a small commercial sector around the juncture of the Newell and Mitchell highways, and a light industrial sector further west on the Mitchell Highway.

## EAST DUBBO

Predominately a residential precinct with development dating back to the late 1960s on the western edge with newer developments progressively moving east and north east.

In the older western subsection (around Brigalow Ave) and throughout the Apollo Estate overhead powerlines exist that will limit species selection. East of Brigalow Avenue the majority of electrical services have been undergrounded.

Along Wheelers Lane, between Birch Avenue and Cobra Street, a commercial zone exists, that includes the Orana Mall, Macquarie Inn and car yards. A light industrial zone exists backing along either side of the rail corridor that faces onto public open space.

## NORTH DUBBO

The southern end of this precinct has a substantial number of older residences, with some dating back to the early 1900s. This precinct has been infilled with light industry, however in recent times there has been a move back towards residential development – medium density.

Typically wide streets dominate in the older southern sections and generally have overhead powerlines.

## SOUTH EAST AND SOUTH WEST

These are primarily newer estates that have a variety of road configurations and tree planting opportunities. The majority of streets have underground powerlines. There is still remaining brown and green field sites zoned for future residential development.

## EAST FRINGE

A residential estate dating back to the mid-1980s that has typically has large blocks (4,000 – 10,000m<sup>2</sup>) with the majority of trees located on private property. The subdivision has a country estate air with large houses set well back from the streets and well-watered front yards.

Streets within this area are devoid of kerb and guttering with stormwater drainage being provided for by broad grassed swales that drain into a series of stormwater basins. Electrical services in this precinct are underground.

# DUBBO EIGHT PRECINCTS – CENTRAL DUBBO



## SITE CHARACTERISATIONS

- Contains the Central Business District of Dubbo that is concentrated along Macquarie and Talbragar streets. Another commercial zone is located north of Erskine Street.
- Two large and highly significant parks
- Bordered by Mitchell Hwy (Cobra Street) to the south
- Bordered by Macquarie River and parkland precinct to the west
- Constrained by existing infrastructure: shop fronts, powerlines, underground services, car parking

## TREE AUDIT RESULTS

Top 10 street tree species (1,837 trees)

<i>Jacaranda mimosifolia</i>	258	14%
<i>Brachychiton populneus</i>	164	9%
<i>Lophostemon confertus</i>	136	7%
<i>Melia azedarach</i>	119	6%
<i>Platanus x acerifolia</i>	111	6%
<i>Lagerstroemia indica</i>	106	6%
<i>Fraxinus 'Raywoodii'</i>	97	5%
<i>Tristaniopsis laurina</i>	76	4%
<i>Celtis occidentalis</i>	72	4%
<i>Araucaria cunninghamii</i>	59	3%

## Species with highest number of trees with ULE <5 years:

- *Brachychiton populneus* (19 trees)
- *Melia azedarach* (12 trees)

## Species with lowest amenity values:

- *Brachychiton populneus* (42 trees). These trees are nearing the end of their Useful Life Expectancy and are in an advanced state of decline.
- *Lagerstroemia indica* varieties (39 trees). These specific trees are considered low value possibly because some were vandalised and had reshoot as multi-stemmed specimens. This has been partially rectified through a formative pruning program and replanting of those that couldn't be improved.
- *Jacaranda mimosifolia* (30 trees). These specific trees are considered low value as they are under powerlines and have been poorly pruned by powerline clearance contractors. This situation is being rectified through a Memorandum of Understanding with the energy supplier and new contract conditions and protocols with regards to community consultation put in place with their cutters to ensure amenity of valuable trees is not lost during pruning.

## Species with highest number in poor health:

- *Brachychiton populneus* (21 trees). These trees are of a certain age and many of them were planted prior to the sealing of the roads. Asphalt has been laid right up to each tree's trunk which has had the

## USEFUL LIFE EXPECTANCY OF TREES

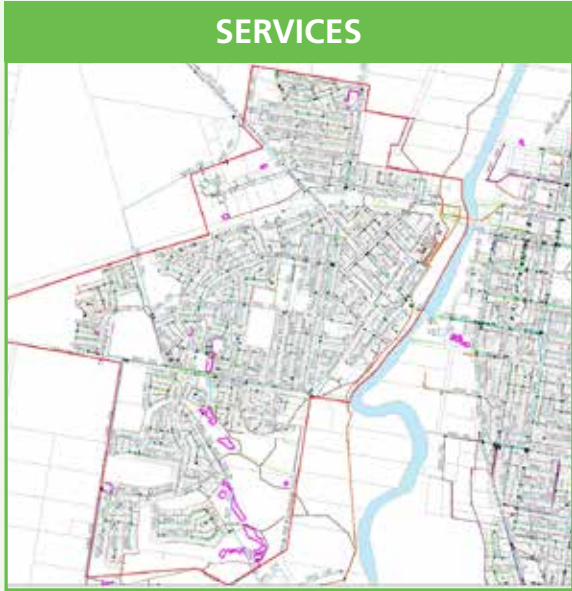


detrimental effect of drastically changing the root zone characteristics and causing mechanical damage to the trunk and root system.

### DESIGN PRINCIPLES

- High visual impact: attractiveness, scale and seasonality, no allergens or excessive fruit drop due to high pedestrian activity.
- Planting to portray character of being “a gateway city”. Lush, healthy foliage that matches the scale of the streetscape and or existing heritage values.
- Need to phase out poorly performing species e.g. Brachychitons to be replaced or restricted to areas where they have an adequate root zone and minimises the problem of the pods.
- Provision of dappled shade in summer yet allow sunlight in during winter e.g. deciduous trees for west/east oriented streets.
- Ability and willingness to improve street tree planting sites to support high visual impact species.
- Native species to be concentrated around parks and Macquarie river parkland.
- Opportunity to connect Central Precinct to South Dubbo, North Dubbo and East Dubbo via boulevard plantings along arterial, sub-arterial and connector roads. Eg: Fitzroy Street (north), Wingewarra Street (east), Brisbane and Darling streets (south).
- Streets to have a consistent planting theme to save on recurrent maintenance cost e.g. boulevards and avenues.
- Consideration for replacement tree species to be suitably sized and appropriate to reduce conflict with overhead powerlines and other services.
- Cobra Street (Mitchell Highway) to be planted as a Boulevard.

# DUBBO EIGHT PRECINCTS – WEST DUBBO



### SITE CHARACTERISATIONS

- Mostly residential with some industrial in the north west
- Commercial area at the juncture of the Newell and Mitchell highways and at Delroy Parklands (Minore Road).
- Several sub-arterial roads/collector roads
- Large golf course in the south
- Bordered by Macquarie River and parkland
- Several new developments in the south and west that have a defined and approved planting plan
- Older section closer to the Central precinct has more private tree canopy cover
- Overhead powerlines predominate in the north, east and central sections of the precinct. Underground power in the south and west sectors
- Considerable number of vacant sites
- Beautiful avenue of lemon-scented gums in Coinda Crescent.

### TREE AUDIT RESULTS

Top 10 Street Tree Species (4,459 trees)

<i>Pyrus ussuriensis</i>	480	11%
<i>Callistemon viminalis cv</i>	253	6%
<i>Ulmus parvifolia</i>	224	5%
<i>Fraxinus Raywoodii</i>	199	4%
<i>Ficus hillii</i>	177	4%
<i>Triadica sebiferum</i>	175	4%
<i>Jacaranda mimosifolia</i>	159	4%
<i>Lophostemon confertus</i>	153	3%
<i>Corymbia citriodora</i>	149	3%
<i>Fraxinus griffithii</i>	125	3%

A very high percentage of *Pyrus ussuriensis* suggests a potential overplanting. *Fraxinus Raywoodii*, given its unsuitability long term to match Dubbo’s climate, will not be utilised as an on-going species. It will be replaced gradually with more suitable species. Currently there is a greater native species focus for West Dubbo which should continue to strengthen the areas character.

## USEFUL LIFE EXPECTANCY OF TREES



### NOTES FOR TREES IN WEST DUBBO

- There are very few street trees with low ULE
- There are very few street trees with low amenity values (highest is *Acacia sp* with 24 trees)
- There are very few street trees in poor health
- However there is a high percentage of vacant sites, particularly in the north of the precinct.

- Collector Roads: St Andrews Rd, Baird Drive and North Street which should also reflect a homogenous planting style where possible.
- Consideration for replacement tree species to be suitably sized and appropriate to reduce conflict with overhead powerlines and other services.

### HIGHEST AMENITY SPECIES ARE

- *Ficus microcarpa hillii* (175 trees)
- *Corymbia citriodora* (106 trees)
- *Jacaranda mimosifolia* (94 trees)

### DESIGN PRINCIPLES

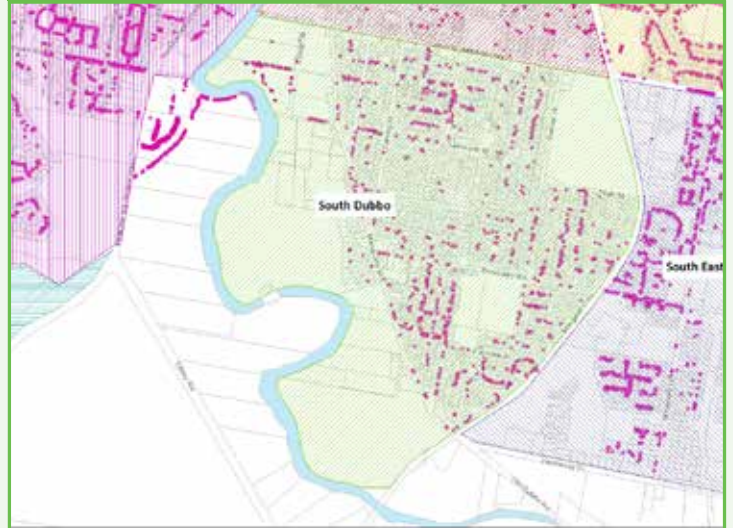
- Shade provision
- Priority to fill in missing tree gaps
- Bio-linkages from parkland (use of natives)
- Avenue plantings along arterials and sub-arterials:
  - Arterials to be planted as boulevard: Newell Highway (Wylandra Street) and Mitchell Highway (Victoria Street)
  - Sub arterials to be planted as boulevard: Thompson Street

# DUBBO EIGHT PRECINCTS – SOUTH DUBBO

## SERVICES



## MISSING TREES



### SITE CHARACTERISATIONS

- Mostly residential, with small commercial areas located at Tamworth Street and Boundary Road
- Bordered by Cobra Street (Mitchell Highway), Macquarie River and Margaret Crescent which is a Collector Road
- Large amount of parkland and private greenspace (e.g. farmland) along the river corridor
- Considerable amount of private tree canopy cover
- Wide residential streets with opportunities for roadway planting.
- Significant numbers of streets with low ULE trees
- Significant number of vacant sites.
- Some street tree planted in roadways - Gipps Street has median strip trees
- Already has good seasonal colour in some streets – which should be continued across the precinct
- Existence of overhead powerlines through much of precinct.

### TREE AUDIT RESULTS

TOP 10 Street Tree Species (4,025 trees)

<i>Fraxinus 'Raywoodii'</i>	309	8%
<i>Pyrus calleryana</i>	300	7%
<i>Liquidambar styraciflua</i>	233	6%
<i>Lophostemon confertus</i>	199	5%
<i>Acer negundo</i>	185	5%
<i>Lagerstroemia indica</i>	171	4%
<i>Sapium sebiferum</i>	154	4%
<i>Callistemon viminalis</i>	147	4%
<i>Fraxinus griffithii</i>	130	3%
<i>Ulmus parvifolia</i>	121	3%

Given the unsuitability of *Fraxinus "Raywoodii"* for future plantings in Dubbo, is noted that this species will be slowly replaced by other species.

## USEFUL LIFE EXPECTANCY OF TREES



### Species with highest number of trees with ULE <5 years:

- *Fraxinus Raywoodii* (24 trees)
- *Prunus cerasifera* (15 trees)

### Species with lowest amenity values:

- *Fraxinus Raywoodii* (126 trees)
- *Acer negundo* (72 trees)
- *Pyrus calleryana* (52 trees)

### Species with highest number in poor health:

- *Fraxinus Raywoodii* (13 trees)

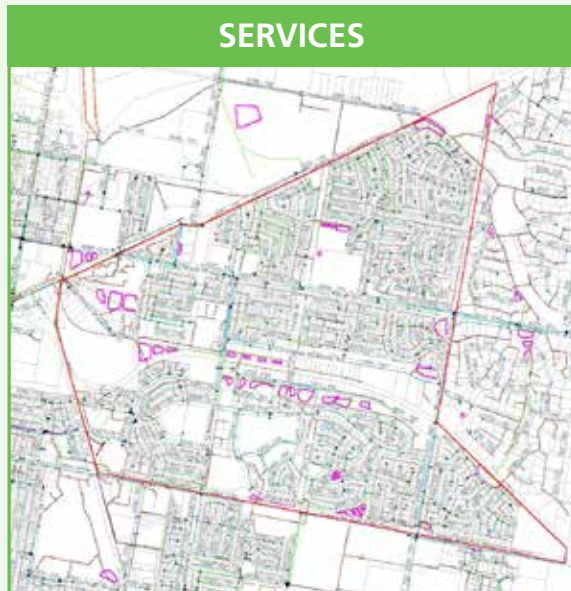
Species with greatest number of highest amenity in the area is *Pyrus calleryana* (54 trees)

## DESIGN PRINCIPLES

- Shade provision
- Opportunity to improve the visual amenity of the commercial areas located on Tamworth Street and Boundary Road.
- Seasonal colour to match existing themes
- Majority residential – neighbourhood feel
- Opportunity to connect South Dubbo Precinct to East Dubbo and South East Precinct via boulevard plantings along arterial, sub-arterial and connector roads.  
Eg: Boundary Road

- Roads to consider for enhanced character through avenue planting:
  - Fitzroy Street, Darling Street, Macquarie Street
  - Collector Roads: Palmer Street (Community consultation picked *Photina glabra*), High Street, Margaret Crescent, Tamworth Street and Fairview Street and Boundary Road.
- Need to eliminate poorly performing species e.g. *Fraxinus Raywoodii*
- Streets to have a consistent planting theme to help reduce recurrent maintenance costs
- Consideration for replacement tree species to be suitably sized and appropriate to reduce conflict with overhead powerlines and other services.

# DUBBO EIGHT PRECINCTS – EAST DUBBO



## SITE CHARACTERISATIONS

- Bordered by Cobra Street (Mitchell Highway), Cobbora Rd (Golden Highway) and easement that runs along Sheraton Road
- A broad range of street typologies that reflect the development of the different sub-divisions of the precinct over time. The earlier sub-divisions are found on the western edge of the precinct and date back to the 1960s, with the newer subdivisions of Eastridge and Yarrowonga developed in the 1990s and 2000s respectively.
- Housing blocks tend to be on the larger size that has allowed for tree planting on private property that enhances overall tree canopy coverage.
- There are few footpaths along residential streets, therefore not designed to enhance pedestrian activity.
- Trees have been planted in nature strips in the absence of footpaths
- There are a significant number of missing trees
- Small amount of industrial area along both sides of the railway line – fronting on to public open space
- Some large parks, including the Dubbo Regional Botanic Gardens at Elizabeth Park
- Existing sub arterials that have already been planted:
- Sheraton Rd has large median, partly planted with natives (*Corymbia maculata*)
- Myall Street has median planted with natives (*Corymbia maculata*, *Eucalyptus sideroxylon*)

- Wheeler Lane has semi mature trees (*Liquidamber styraciflua*) in median. There is however a conflict with single strand powerline which has resulted in ‘pruning’ out of the leader.
- A strong native theme throughout precinct, with splashes of autumnal colour from Ash, Prunus and Liquidambar which lends itself to a more mixed palette of species.

## TREE AUDIT RESULTS

Top 10 Street Tree Species (6,025 trees)

<i>Fraxinus Raywoodii</i>	473	8%
<i>Fraxinus griffithii</i>	410	7%
<i>Ulmus parvifolia</i>	350	6%
<i>Callistemon viminalis cv</i>	333	5%
<i>Liquidambar styracifolia</i>	264	4%
<i>Corymbia maculata</i>	240	4%
<i>Eucalyptus sp.</i>	225	4%
<i>Pyrus calleryana cv</i>	212	3%
<i>Prunus cerasifera nigra</i>	173	3%

*Fraxinus Raywoodii* again appearing as a dominant species which will not be used in continuing planting programs due to disease issues.



## USEFUL LIFE EXPECTANCY OF TREES



### Species with highest number of trees with ULE <5 years:

- *Grevillea sp* (64 trees)
- *Fraxinus "Raywoodii"* (10 trees)

### Species with lowest amenity values:

- *Grevillea sp* (71 trees)
- *Brachychiton populneus* (10 trees)

### Species with highest number in poor health:

- *Grevillea sp* (29 trees)

### Species with highest amenity:

- *Corymbia maculata* (80 trees)
- *Liquidamber styraciflua* (69 trees)
- *Cedrus deodora* (52 trees)

## DESIGN PRINCIPLES

- Shade provision
- Potential for large trees
- Fill the missing trees gap
- Consideration of transitioning the Liquidambar in Wheelers Lane medians to a smaller variety to reduce ongoing conflict.
- Majority residential – requires a more neighbourhood feel
- Opportunity to connect East Dubbo Precinct to Central

Precinct via boulevard plantings along arterial, sub-arterial and connector roads. Eg: Wingewarra Street. Opportunity to connect to the North and South Precincts via Wheelers Lane and Sheraton Road

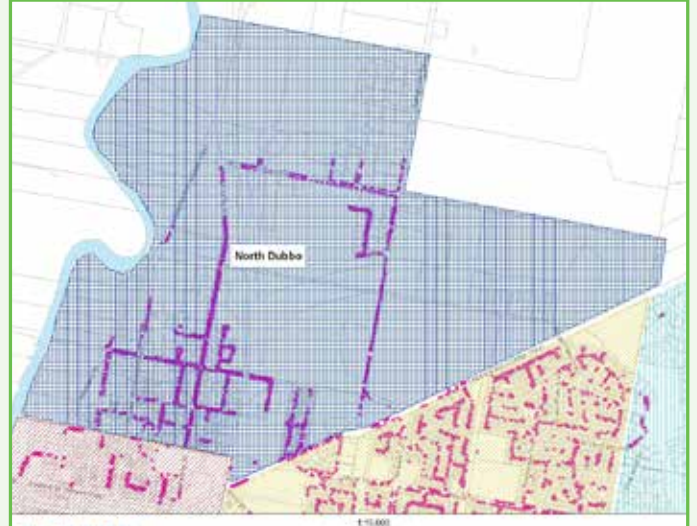
- Roads for consideration and character:
- Sub-arterial roads: Myall Street need to continue its existing planting themes)
- Collector Roads: Windsor Parade (Saphora – Japanese Pagoda Tree), Mitchell Hwy, Birch Ave, Douglas Mawson Drive, Davidson Drive, Websdale Drive, St Georges Terrace and Hume Street
- Streets to have a consistent planting theme to help reduce recurrent maintenance costs.
- Need to eliminate poorly performing species
- Can continue along mixed theme: native interspersed with exotics for seasonal colour
- Link Central Precinct and East Dubbo Precinct through Wingewarra Street.
- Consideration for replacement tree species to be suitably sized and appropriate to reduce conflict with overhead powerlines and other services in the western and northern sections.

# DUBBO EIGHT PRECINCTS – NORTH DUBBO

## SERVICES



## MISSING TREES



## SITE CHARACTERISATIONS

- Residential in the south grading to more industrial zoning to the north
- Few very publicly managed trees outside the residential south area
- More vacant sites than actual trees planted
- Existing trees have long useful lives

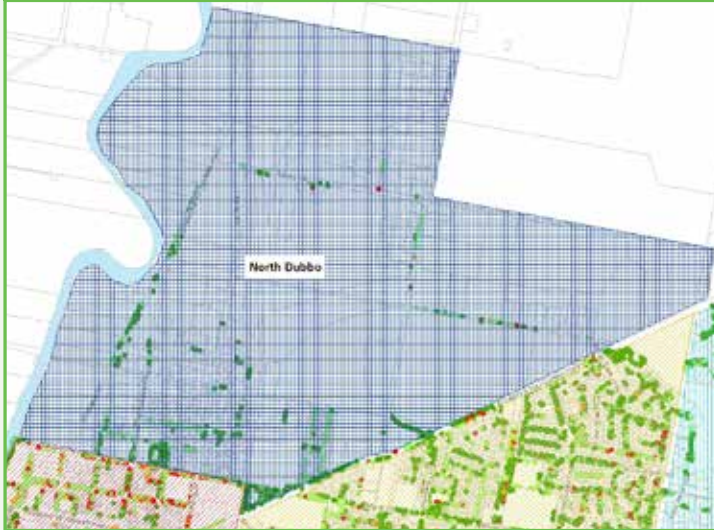
## TREE AUDIT RESULTS

Top 10 Street Tree Species (1,447 trees)

<i>Melia azedarach</i>	176	12.1%
<i>Jacaranda mimosifolia</i>	87	6%
<i>Populus deltoides</i>	82	5.6%
<i>Lagerstroemia indica</i>	72	4.9%
<i>Eucalyptus camaldulensis</i>	67	4.6%
<i>Fraxinus Raywoodii</i>	66	4.5%
<i>Callistemon viminalis</i>	60	4.1%
<i>Ulmus glabra "lutescens"</i>	54	3.7%
<i>Platanus x acerifolia</i>	50	3.4%
<i>Prunus cerasifera nigra</i>	50	3.4%

*Melia azedarach* prevails as the most dominant tree, though not problematic. There are very few trees in poor health or with low ULE's

## USEFUL LIFE EXPECTANCY OF TREES



### Species with lowest amenity values:

- *Ulmus glabra "lutescens"* (13 trees)

### Species with highest amenity:

- *Eucalyptus camaldulensis* (49 trees)
- *Populus deltoides* (39 trees)

## DESIGN PRINCIPLES

- Shade provision for the south residential areas – exotic deciduous trees.
- Potential for large trees
- Fill the missing trees gap
- Majority residential – requires a much stronger neighbourhood feel
- The older residential areas have heritage values associated with them. Wide streets and shoulder plantings allow for larger trees. Overhead powerlines exist but the offset plantings can reduce conflict potential.
- Darling Street (north) – large broad canopied trees (Platanus).
- Myall Street – (Melia) species could be retained if we go with the Elite variety.
- Use of native (endemic) species in the industrial areas to cope with the exposed conditions.

- The Streets to have a consistent planting theme to help reduce recurrent maintenance costs.
- Consideration for replacement tree species to be suitably sized and appropriate to reduce conflict with overhead powerlines and other services.
- Opportunity to connect North Precinct and the Central Precinct via boulevard plantings along Fitzroy Street (Jacarandas).

# DUBBO EIGHT PRECINCTS – SOUTH EAST DUBBO



## SITE CHARACTERISATIONS

- New residential developments
- Existing trees have long useful lives
- High number of dead trees

## TREE AUDIT RESULTS

Top 10 Street Tree Species (105 trees)

<i>Pyrus calleniana cv</i>	189	9.8%
<i>Fraxinus Raywoodii</i>	184	9.5%
<i>Ulmus parvifolia</i>	176	9.1%
<i>Fraxinus griffithii</i>	128	6.6%
<i>Liquidambar styraciflua</i>	105	5.4%
<i>Pistachia chinensis</i>	71	3.6%
<i>Callistemon viminalis cv</i>	66	3.4%
<i>Prunus cerasifera nigra</i>	51	2.6%
<i>Celtis australis</i>	42	2.1%
<i>Lagerstroemia indica</i>	38	1.9%

This a rapidly expanding precinct, and the above audit results do not accurately reflect the species breakup as they occur at present. Of the most concern is the large number of *Fraxinus Raywoodii* that have already been planted within the precinct. Due to issues with disease and unsuitability with the Dubbo climate, especially as we are trending towards a hotter climate, this species

will need to be transitioned out of the palette. It is also suggested that the *Pyrus calleniana* is nearing the point of over planting, although this can be somewhat corrected through the broadening of the planting palette for this precinct.

## DESIGN PRINCIPLES FOR SOUTH EAST DUBBO

- Reduce vacant sites – most noticeably through the Avian and Holmwood estates.
- Enhance neighbourhood character
- Shade enhancement through the planting of larger, higher canopied and domed shaped tree species in the wider streets.
- Consider using more fastigiated, smaller, or species that produce a higher broad canopy in the narrower streets (reduced potential of damage by garbage trucks, street sweepers etc).
- Increase endemic planting within parkland connectors and streetscapes.
- Opportunity to link South East Precinct to South Precinct via Boundary Road.
- Mix of endemic and exotic species to provide seasonal variation and colour throughout the year.
- Streets to have a consistent planting theme to help reduce recurrent maintenance costs.

# DUBBO EIGHT PRECINCTS – SOUTH WEST DUBBO



## SITE CHARACTERISATIONS

- New residential development dating back to the 2000s.
- Future residential areas identified to the west, south and east of Kintyre Estate.
- Existing trees have long useful lives
- Larger blocker sizes with a significant number of trees located on private property.

## TREE AUDIT RESULTS

Top 10 Street Tree Species (92 trees)

<i>Pyrus ussuriensis</i>	21	22.8%
<i>Fraxinus Raywoodii</i>	13	14.1%
<i>Corymbia maculata</i>	9	10%
<i>Ulmus parvifolia</i>	8	9.7%
<i>Gleditsia triacanthos var.inermis cv</i>	6	6.5%
<i>Eucalyptus cinerea</i>	5	5.4%
<i>Acacia podalyriifolia</i>	4	4%
<i>Callistemon viminalis</i>	3	3.2%
<i>Corymbia ficifolia</i>	3	3.2%
<i>Eucalyptus erythrocorys</i>	3	3.2%

Tree data is only available for the Kintyre Estate only. The estate has retained a reasonable amount of endemic

vegetation, notably *Eucalyptus sideroxylon* and *Casuarina cristata*, on private property that is a positive attribute. The street tree planting within the road network of the estate however is dominated by exotic species.

*Fraxinus Raywoodii* again appears as a dominant species which will not be used in continuing planting programs due to disease issues.

It is suggested that future street tree planting for the estate focusses on endemic species, with an allowance for suitable exotic species intermingled to provide seasonal variation.

Few trees in this precinct have low amenity or low ULE.

## DESIGN PRINCIPLES

- Strengthen endemic species plantings within the streets to create biodiversity corridors to connect to adjacent existing patches of remnant vegetation.
- East/west roads can be exotic species to provide seasonal variation / colour
- Strong connection to a new sub-division (Huntingdale) that has started to the east of the existing Kintyre Estate. (Approved planting include *Angophora floribunda*, *Eucalyptus sideroxylon 'rosea'* and *Casuarina cristata*).

# DUBBO EIGHT PRECINCTS – EAST FRINGE



## SITE CHARACTERISATIONS

- Newer residential developments
- Only very small opportunity in vacant sites, although there is substantial connecting public open space throughout the precinct that can be used to increase tree canopy cover
- Existing trees have long useful lives
- Larger block sizes with significant tree cover in the private realm
- A strong native aspect to the street tree population.

## TREE AUDIT RESULTS

Top 10 Street Tree Species (1,106 trees)

<i>Casuarina cunninghamiana</i>	111	10%
<i>Eucalyptus sideroxylon</i>	94	8.5%
<i>Callitris glaucophylla</i>	82	7.4%
<i>Eucalyptus melliodora</i>	82	7.4%
<i>Callistemon viminalis cv</i>	50	4.5%
<i>Corymbia maculata</i>	44	3.9%
<i>Schinus molle</i>	40	3.6%
<i>Ulmus parvifolia</i>	39	3.5%
<i>Prunus cerasifera nigra</i>	36	3.2%
<i>Fraxinus excelsior Aurea</i>	27	2.4%

This precinct has a diverse array of species including 16 different species of Eucalyptus trees, which has been predominantly developer and home owner driven. There is a clear opportunity for Council to be more prescriptive in its species selection advice to developers.

There are very few trees with low amenity or low ULE and there is very high level of species diversity.

## DESIGN PRINCIPLES OF CBD

- Maintain the strong native theme
- Streets to have a consistent planting theme to reduce recurrent maintenance costs.
- Larger broad dome trees due to wider roads and general absence of kerb and guttering
- Link street plantings to plantings within the open space (mostly natives) – biodiversity corridors.

# STREET TREE PRIORITISATION MAPPING

A priority based planting plan has been established with each priority level comprising of approximately 1,050 trees. This figure of 1,050 trees is derived from the "Review of Urban Trees in Dubbo" that identified that a minimum of 550 trees per annum would be required to replace those trees nearing the end of their Useful Life Expectancy just to maintain the current canopy over the next 15 years. A further 500 tree plantings per annum was recommended to commence infilling vacant tree spots to improve the urban tree canopy over the next 40 years from its current level of 10.4% to approximately 21%.

Flexibility is provided within the proposed planting schedule by modifying it slightly to a Prioritised Based Planting Plan rather than an annual tree planting schedule.

1. Streets with a high percentage of trees with a ULE of 5 – 15 years
2. Streets with high levels of missing trees / vacant sites
3. Streets located in lower socio-economic areas to improve the amenity and provide cost benefits (in regards to savings in heating and cooling costs) to the residents.
4. Streets with a high number of Customer Requests for street tree plantings.
5. Streets that have had no previous plantings and require new plantings.

Maps for each precinct are included in Appendix 1.

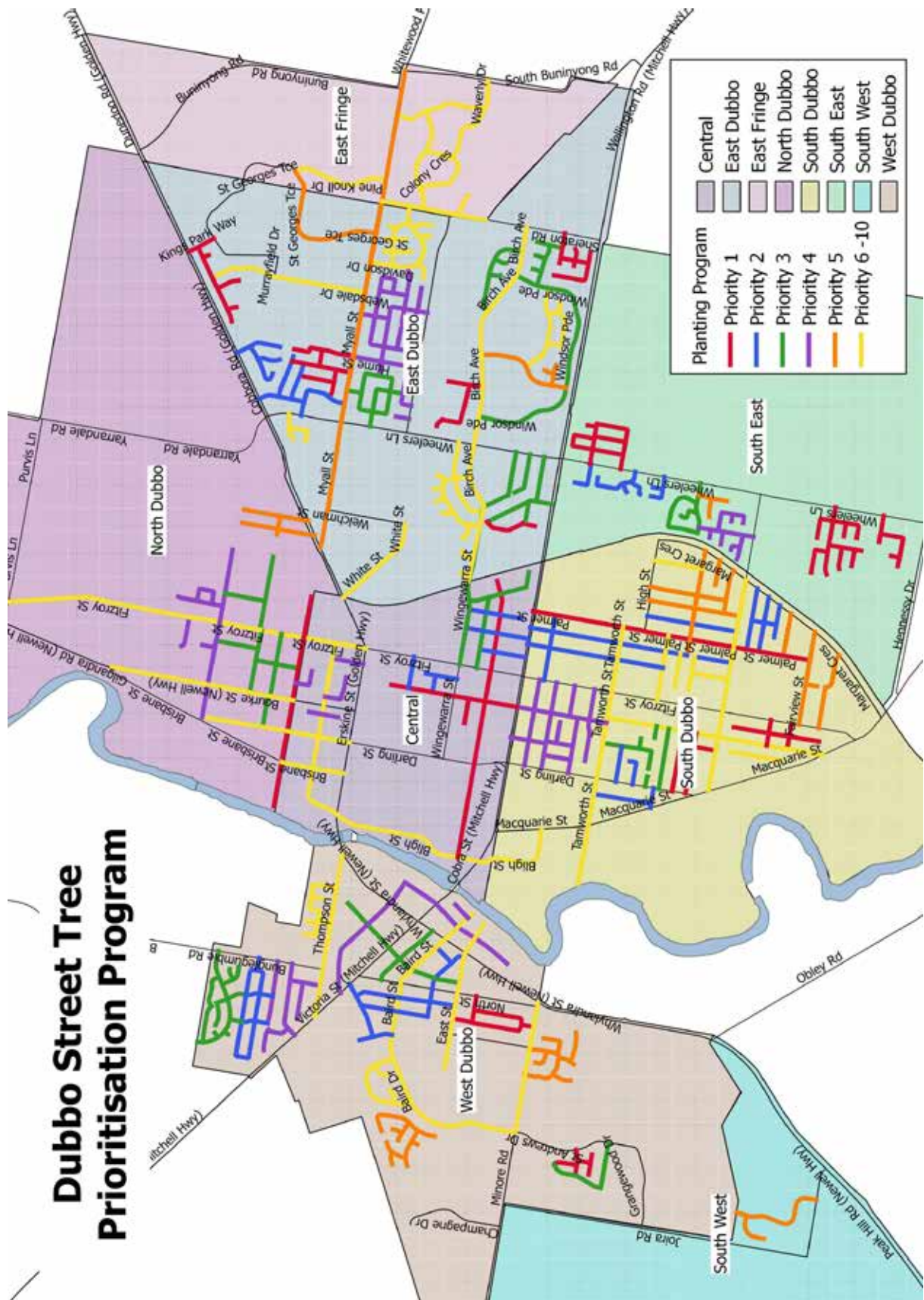
# APPENDIX 1

## PRIORITY BASED PLANTING PROGRAM

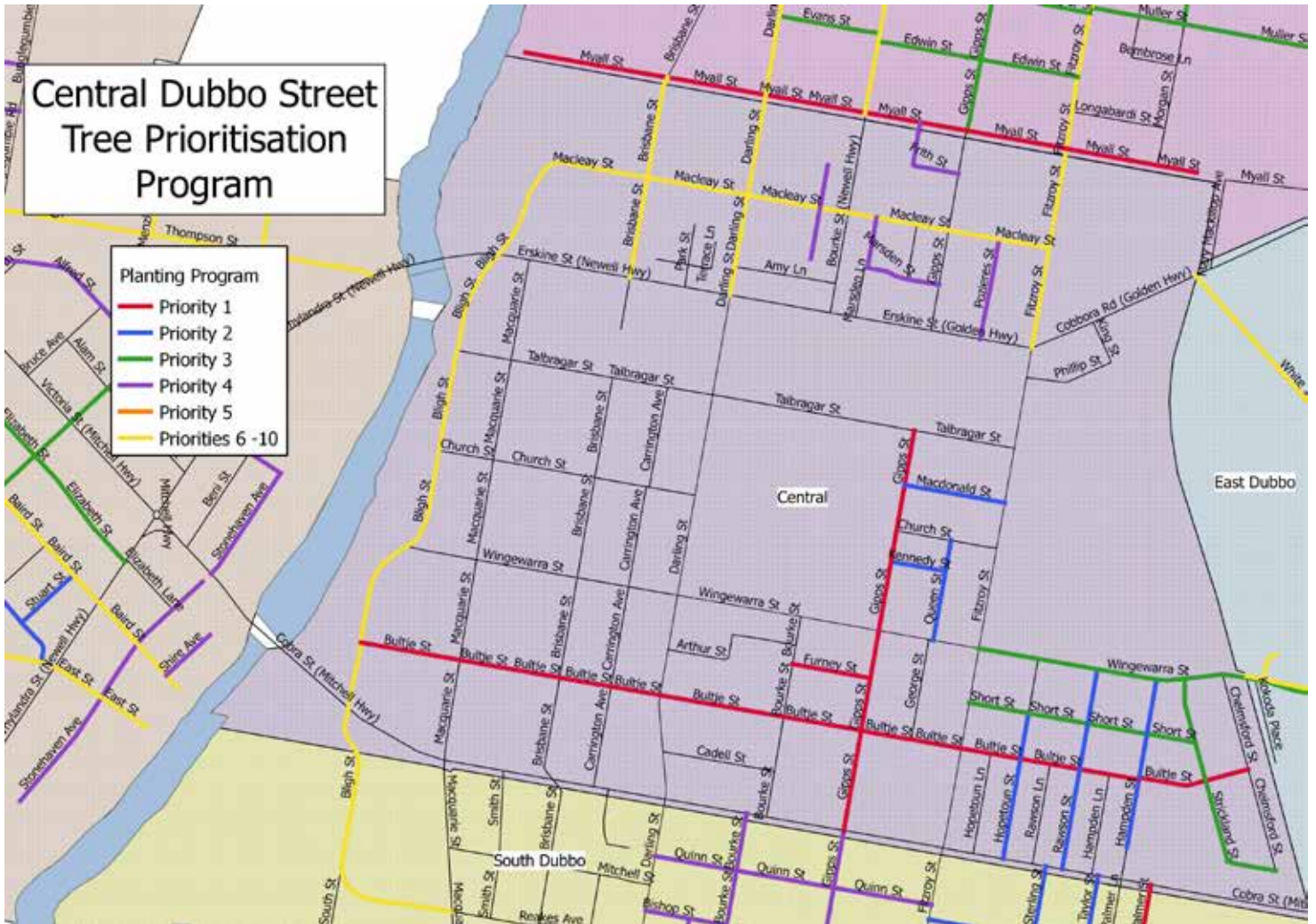




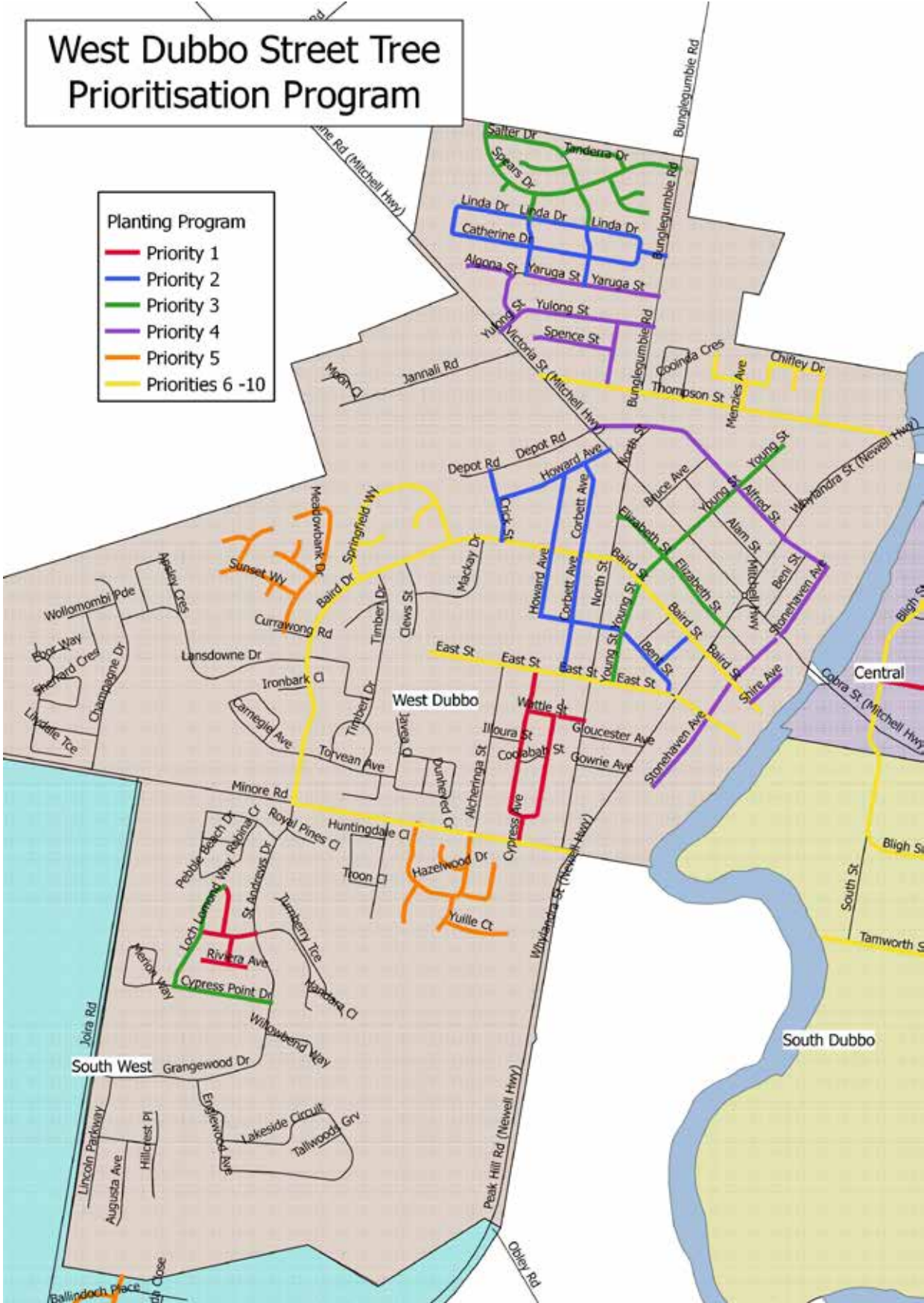
# PRIORITISATION PLANTING PROGRAM



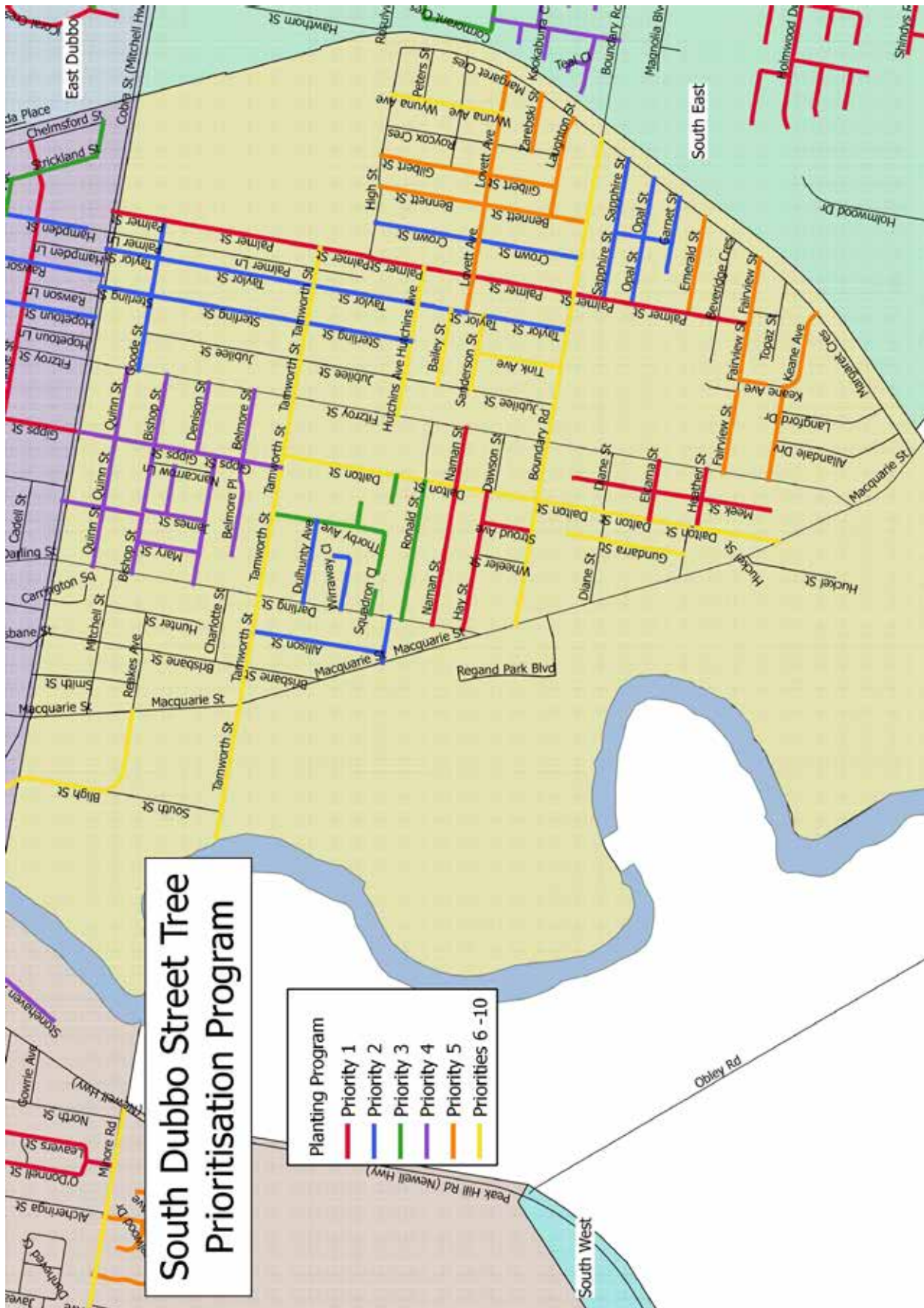
# STREET TREE PRIORITISATION PROGRAM – CENTRAL DUBBO



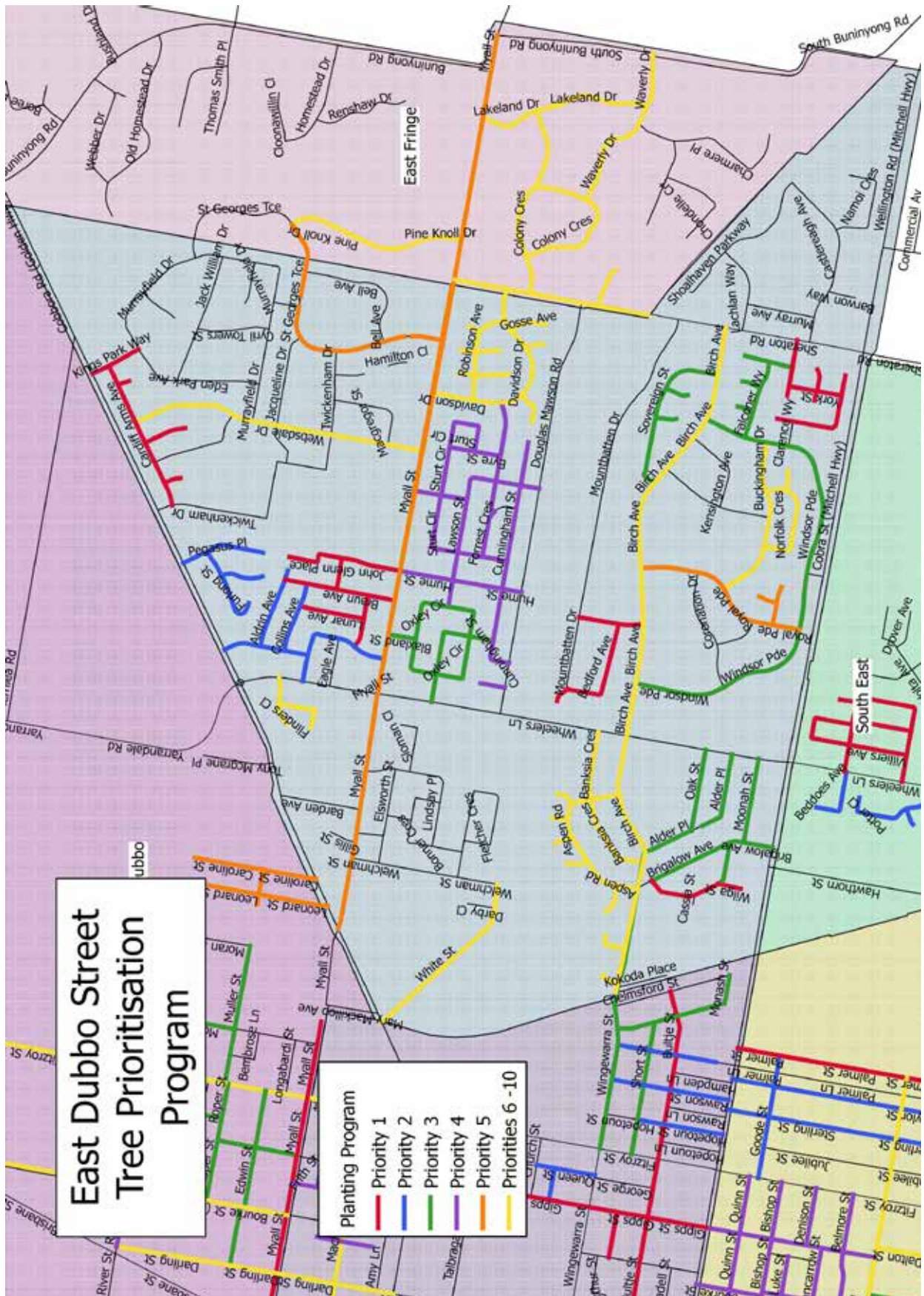
# STREET TREE PRIORITISATION PROGRAM – WEST DUBBO



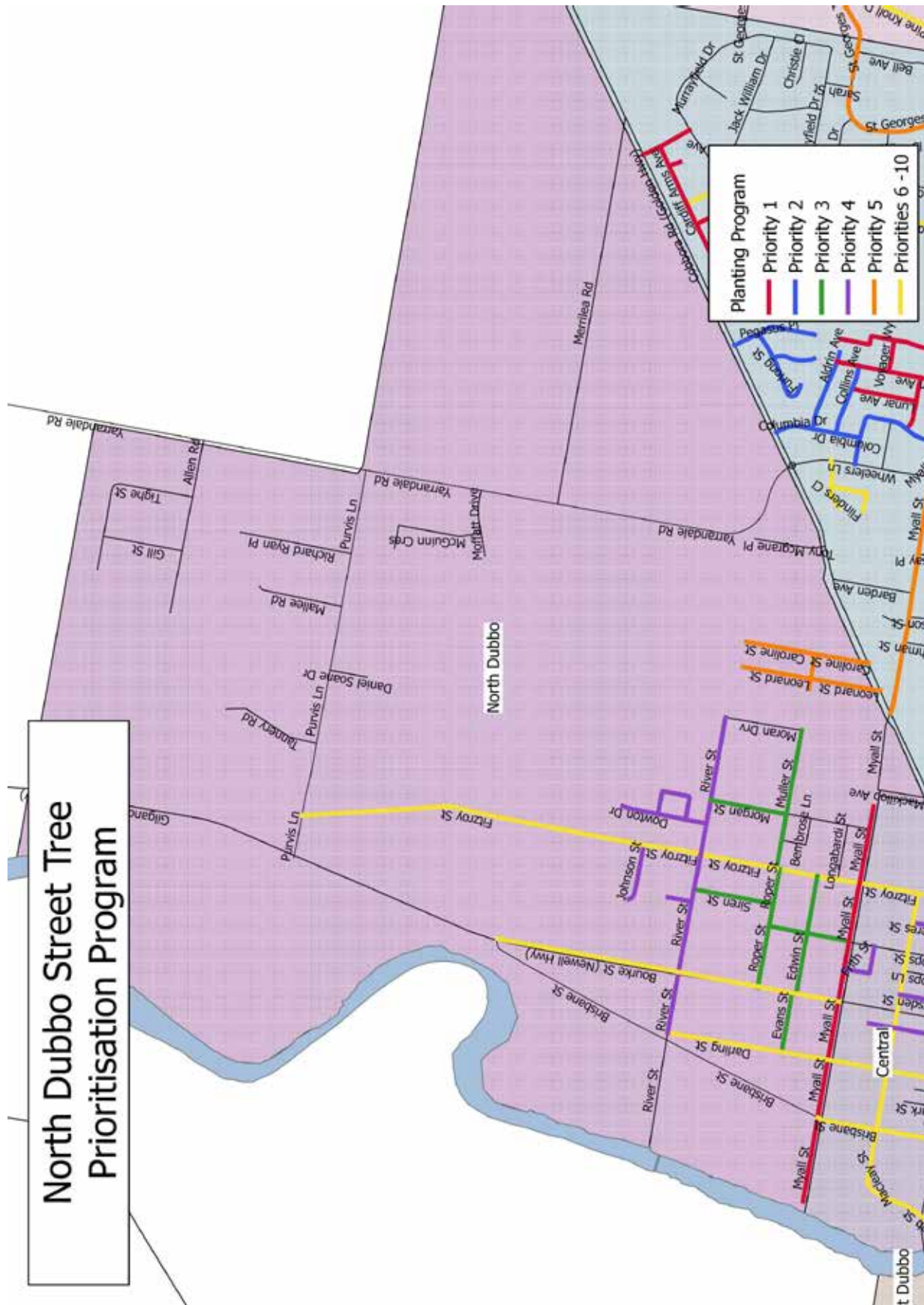
# STREET TREE PRIORITISATION PROGRAM – SOUTH DUBBO



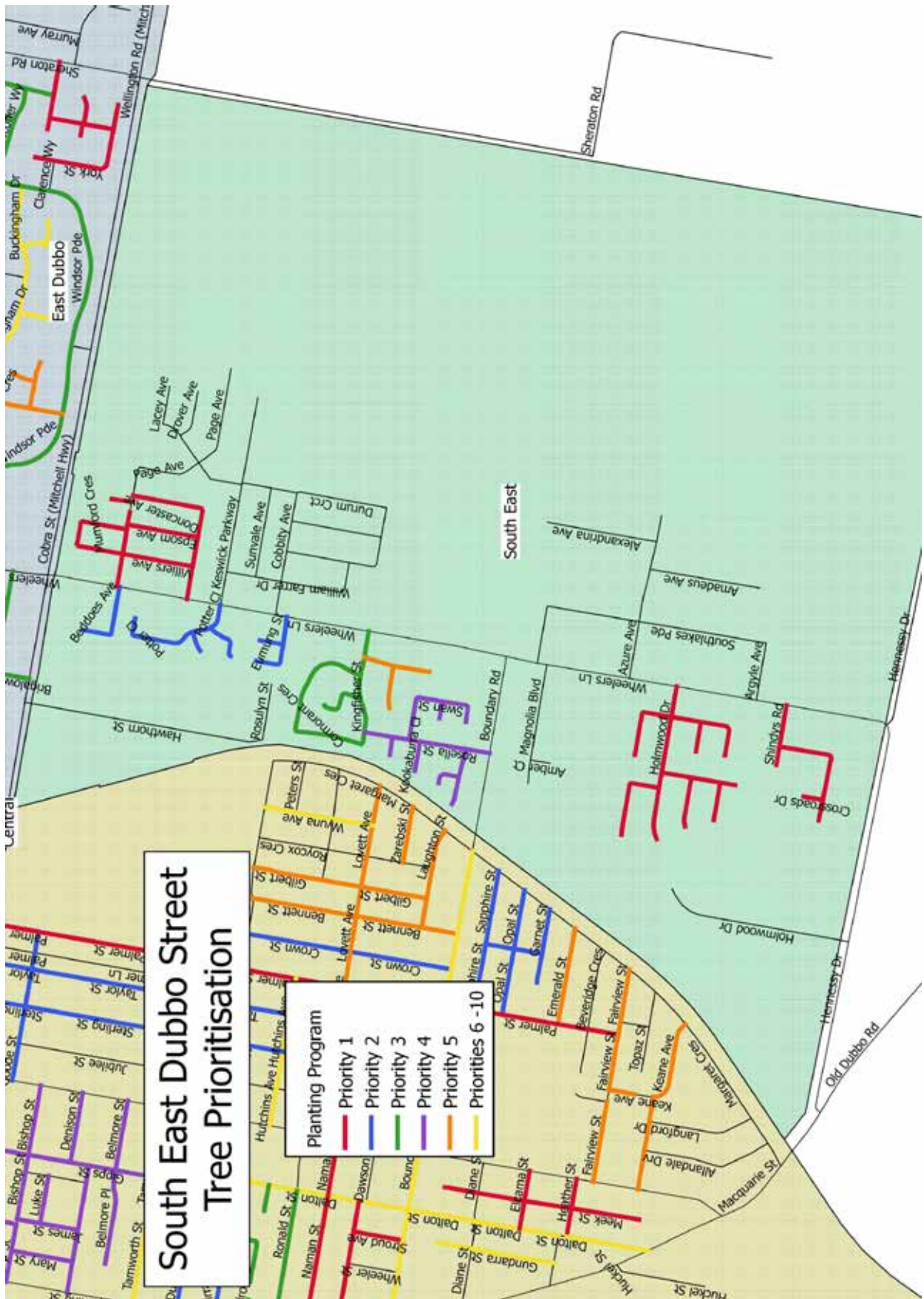
# STREET TREE PRIORITISATION PROGRAM – EAST DUBBO



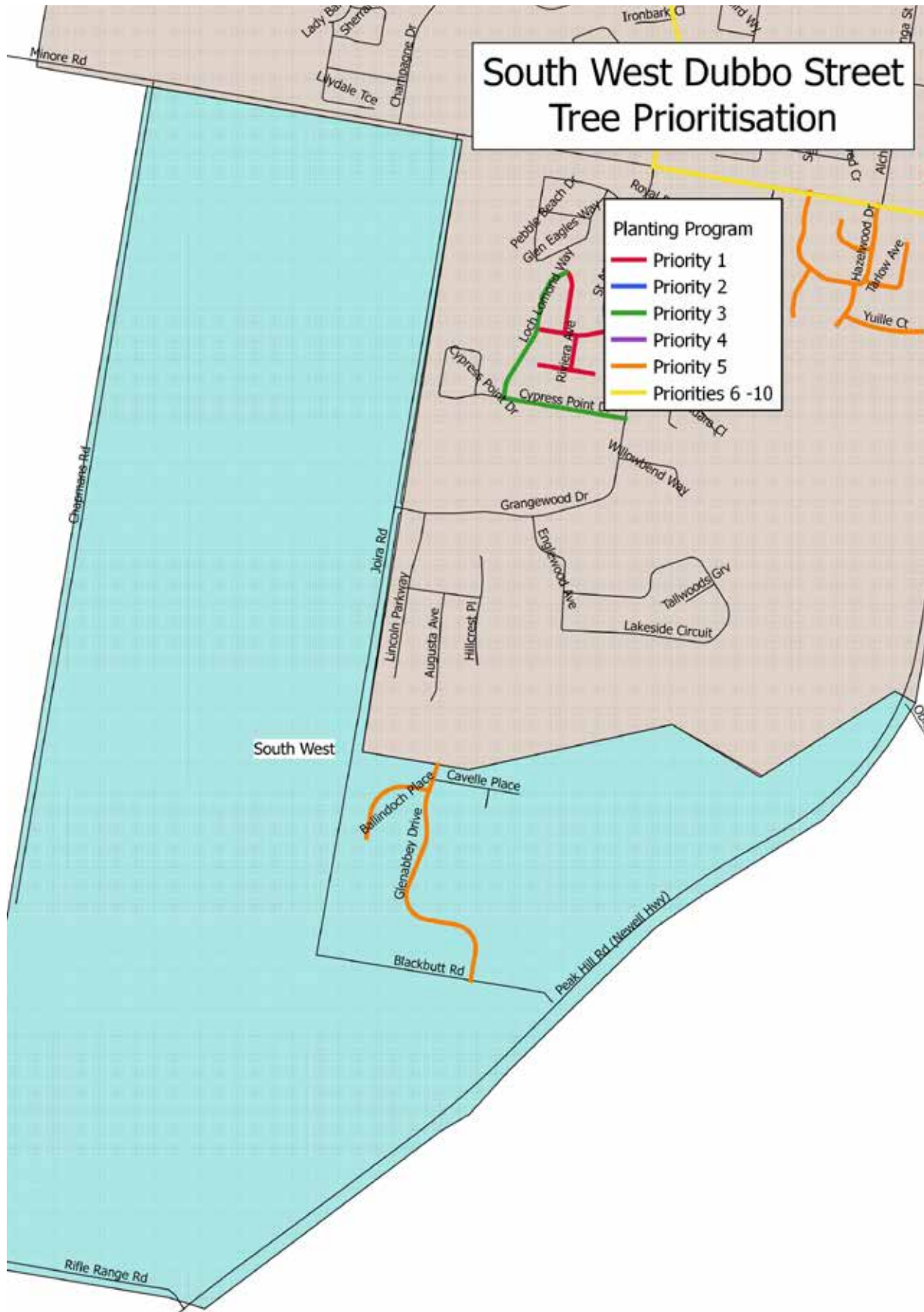
# STREET TREE PRIORITISATION PROGRAM – NORTH DUBBO



# STREET TREE PRIORITISATION PROGRAM – SOUTH EAST DUBBO

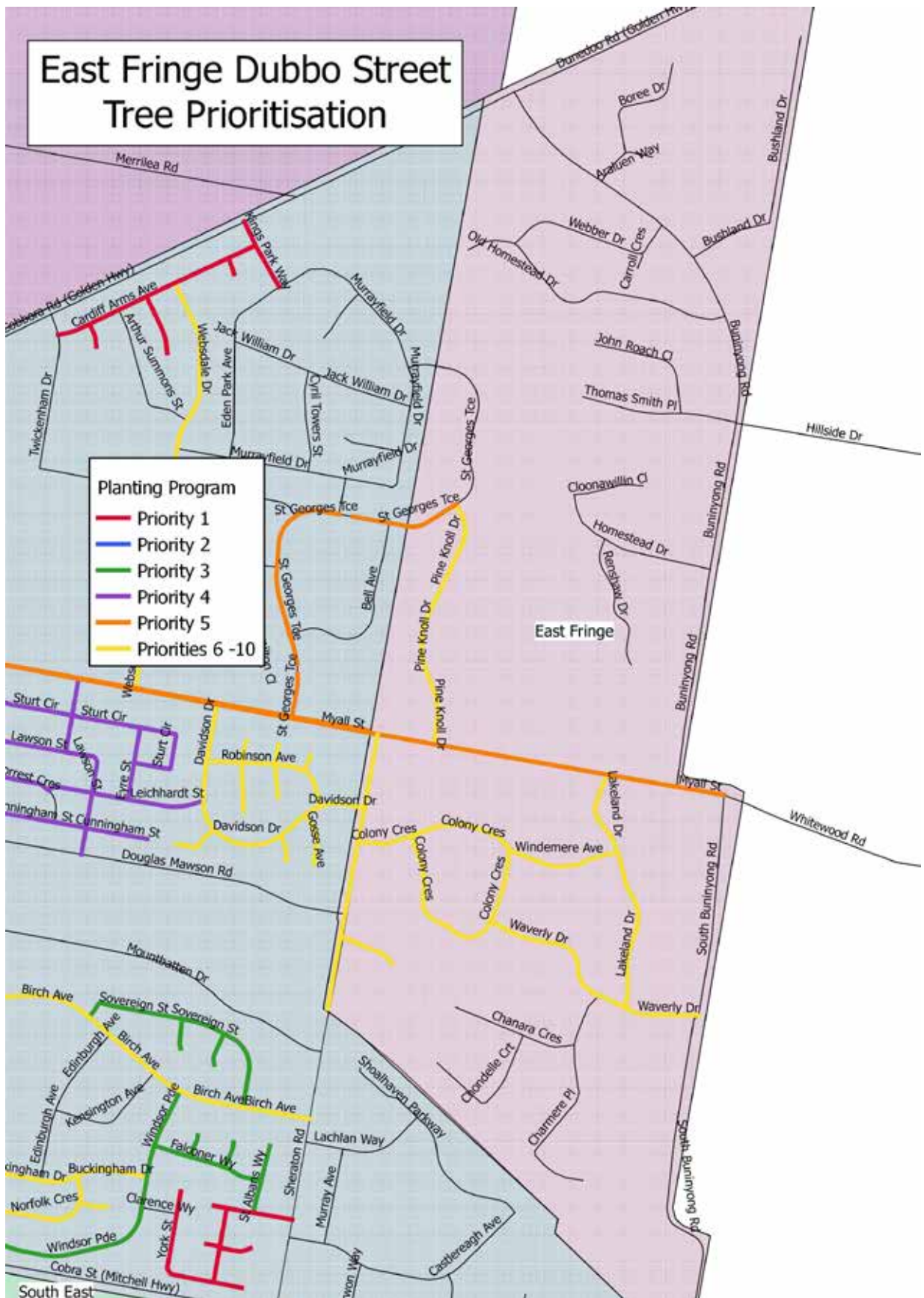


# STREET TREE PRIORITISATION PROGRAM – SOUTH WEST DUBBO





# STREET TREE PRIORITISATION PROGRAM – EAST FRINGE DUBBO



# APPENDIX 2

TREE NUMBERS BY STREET  
TREES BY STREET SPREADSHEET



# TREE NUMBERS BY STREET BY PRIORITY LISTING

PRECINCT	STREET NAME	TREE NUMBERS
<b>Priority 1</b>		
Central		
	Gipps Street	50
	Bultje Street	90
	Furney Street	22
South		
	Naman Street	50
	Meek Street	70
	Stroud Street	15
	Hay Street	42
	Palmer Street	80
East		
	Bedford Place	40
	Wilga Street	36
	York Street	80
	Lunar Avenue	15
	Houston Drive	10
	Braun Avenue	20
	Voyager Way	10
	John Glenn Close	30
	Jenmark Avenue	10
	Viceroy Avenue	20
	John Brass Place	8
	Thornett Place	20
	Cardiff Arms	40
North		
	Myall Street	100
West		
	Riviera Avenue	40
	Shetland Avenue	15
	Askernish Drive	10
	Leavers Avenue	60
	Crum Avenue	8
	O'Donnell Street	50
	Coolabah Street	10
	Cypress Avenue	10

**1051**

PRECINCT	STREET NAME	TREE NUMBERS
<b>Priority 2</b>		
Central		
	Kennedy Street	12
	Queen Street	23
	MacDonald Street	20
	Hopeton Street	40
	Rawson Street	10
	Hamden Street	5
South		
	Heather Street	10
	Elcama Street	10
	Sapphire Street	40
	Opal Street	35
	Garnet Street	15
	Diamond Street	10
	Taylor Street	120
	Crown Street	50
	Alison Street	25
	Dulhunty Avenue	15
	Wirraway Close	15
	Healy Street	10
	Sterling Street	80
	Goode Street	30
West		
	Howard Avenue	40
	Corbett Avenue	50
	Bent Street	60
	Stuart Street	15
	Linda Drive	60
	Catherine Street	60
	Alkira Street	10
	Aruma Street	10
	Crick Street	10
	McKenzie Street	20

**1050**

# TREE NUMBERS BY STREET BY PRIORITY LISTING (CONTINUED)

PRECINCT	STREET NAME	TREE NUMBERS
<b>Priority 3</b>		
Central		
	Wingewarra Street	40
	Strickland Street	20
	Monash Street	5
South		
	Ronald Street	12
	Highland Place	3
	Squadron Close	5
	Thorby Avenue	15
East		
	Windsor Parade	50
	Sovereign Street	35
	Tudor Place	10
	Andrew Place	15
	St Albans Way	20
	Falconer Way	20
	Beatrice Place	5
	Linley Place	5
	Blaxland Street	
	Wentworth Street	150
	Oxley Circle	
	Brigalow Ave	
	Coral Crescent	
	Moonah Street	100
	Alder Place	
	Oak Street	
North		
	Morgan Street	35
	Muller Street	30
	Siren Street	30
	Roper Street	20
	Edwin Street	22
	Gipps Street	25
West		
	Spears Drive	
	Tanderra Drive	
	Allara Court	

PRECINCT	STREET NAME	TREE NUMBERS
<b>Priority 3</b>		
	Burge Place	250
	Abelia Court	
	Brennan Road	
	Elizabeth Street	40
	Young Street	65
	Loch Lomond Way	20
	Cypress Point Drive	15
		<b>1050</b>

PRECINCT	STREET NAME	TREE NUMBERS
<b>Priority 4</b>		
Central		
	Bourke Street	35
	Quinn Street	45
	Bishop Street	45
	James Street	15
	Luke Street	15
	Mary Street	15
	Nancarrow Street	50
	Belmore Place / Street	45
	Denison Street	25
East		
	Lawson Street	50
	Hume Street	30
	Sturt Circle	60
	Wills Street	15
	Eyre Street	15
	Forrest Crescent	30
	Leichardt Street	40
	Cunningham Street	30
North Dubbo		
	Samuel Street	25
	Marsden Street	25
	Firth Street	15

## TREE NUMBERS BY STREET BY PRIORITY LISTING (CONTINUED)

PRECINCT	STREET NAME	TREE NUMBERS
<b>Priority 4</b>		
	Pozieres Street	30
	Johnson Street	25
	River Street	25
	Dowton Street	25
West		
	Algona Street	25
	Yaruga Street	25
	Yulong Street	25
	Spence Street	25
	Wilkens Street	25
	Alfred Street	50
	Stonehaven Avenue	50
	Shire Avenue	10
		<b>1050</b>

PRECINCT	STREET NAME	TREE NUMBERS
<b>Priority 5</b>		
	Ballindoch Place	25
North		
	Leonard Street	40
	Caroline Street	40
	Fitzhill Parade	25
West		
	Meadowbank Drive	30
	Gumtree Avenue	20
	Sunset Way	30
	Hazelwood Drive	30
	Tarlow Avenue	15
	Yuille Court	5
	Rhyana Court	10
	Greenslopes Court	20
		<b>1050</b>

PRECINCT	STREET NAME	TREE NUMBERS
<b>Priority 5</b>		
East Fringe		
	St Georges Terrace	30
	Myall Street	15
East		
	St Georges Terrace	80
	Myall Street	250
	Royal Parade	40
	Kent Place	10
South		
	Bennett Street	40
	Gilbert Street	40
	Lovett Avenue	30
	Zarbeski Street	30
	Laughton Avenue	60
	Fairview Avenue	25
	Keane Street	25
	Hammond Street	25
	Emerald Street	20
South West		
	Glenabbey Drive	30

PRECINCT	STREET NAME	TREE NUMBERS
<b>Priority 6-10</b>		
Central		
	Macleay Street	
	Fitzroy Street	
	Darling Street	
	Brisbane Street	
South		
	Tamworth Street	
	Boundary Road	
	Hutchins Avenue	
	Bailey Street	
	Sanderson Street	
	Tink Avenue	
	Dalton Street	
	Gundurra Street	
	Wyuna Avenue	
East		
	Wingewarra Street	
	Banksia Crescent	
	Belah Street	

## TREE NUMBERS BY STREET BY PRIORITY LISTING (CONTINUED)

PRECINCT	STREET NAME	TREE NUMBERS
Priority 6-10		
	Aspen Road	
	Boronia Place	
	Mulga Court	
	Cedar Court	
	Maple Court	
	Kurrajong Court	
	Hakea Place	
	Birch Avenue	
	Bass Place	
	Flinders Place	
	Norfolk Crescent	
	Duke Place	
	Buckingham Drive	
	Websdale Drive	
	Davidson Drive	
	Robinson Avenue	
	Giles Court	
	Roe Court	
	Hellyar Court	
	Gregory Court	
	Wells Court	
	Gosse Avenue	
	White Street	
North		
	Darling Street	
	Bourke Street	
	Pine Knoll Drive	
	Sheraton Road	
	Lakland Drive	
	Colny Crescent	
	Waverly Drive	
	Fitzroy Street	
West		
	Baird Street / Drive	
	East Street	
	Minore Road	
	Springfield Way	
	Greenway Place	
	Parkland Place	

PRECINCT	STREET NAME	TREE NUMBERS
Priority 6-10		
	Thompson Street	
	Chiefly Place	
	Curtin Place	
	Menzies Place	
	Lyons Place	

# TREES BY STREET SPREADSHEET

## SPECIES LISTS

A trees by street document has been completed, recommending the dominant three species for each street, by Precinct.