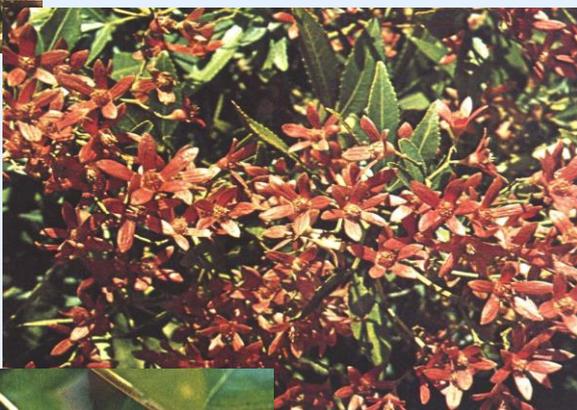


**COFFS HARBOUR  
STREET TREE  
MASTERPLAN**



**Coffs Harbour City Council  
APRIL 1999**

# CONTENTS

## EXECUTIVE SUMMARY

<b>1. BACKGROUND .....</b>	<b>1</b>
Introduction .....	1
Scope .....	1
Outline.....	1
History .....	1
Issues.....	2
<b>2. MASTERPLAN.....</b>	<b>4</b>
Aims .....	4
Species Selection and Location.....	5
<b>3. IMPLEMENTATION .....</b>	<b>9</b>
Priorities .....	9
Site Assessment and Planning .....	9
Planting and Maintenance .....	10
Public Consultation and Education .....	10
<b>APPENDIX 1</b>	
Historic Street Tree Planting in Coffs Harbour .....	13
<b>APPENDIX 2</b>	
Species Selection Criteria .....	14
<b>APPENDIX 3</b>	
Species Description.....	15
<b>APPENDIX 4</b>	
Olympic Flame Drive .....	19
<b>APPENDIX 5</b>	
Coffs Harbour Future Road Network .....	20
<b>APPENDIX 6</b>	
Allocated Footpath Service Locations .....	21
<b>APPENDIX 7</b>	
Sight Distance Requirements at Carpark Exits .....	23

# COFFS HARBOUR STREET TREE MASTERPLAN

## EXECUTIVE SUMMARY

### PURPOSE

The street tree masterplan has been prepared to guide City wide street tree planting in Coffs Harbour for the next ten years (to 2009). The proposed plantings aim to reinforce the colourful 'garden city' and 'rainforest by the sea' image being promoted by Council. They also aim to be attractive to tourists and residents and complement and contrast with the city's natural setting. The master plan forms part of Council's strategic planning for public landscaping and reserve management.

### HISTORY

Street tree planting of significance commenced in Coffs Harbour in the 1960's and is evident in the older residential areas such as Beryl Street, Gundagai Street, Rose Avenue, Gordon Street and in the town centre along High Street and in Anzac Square. The work was largely instigated and carried out by local residents. During the 1980's further community street tree planting took place. Council tree planting has been carried out annually since the late 1980's.

### AIMS

The aims of the street tree master plan are to provide guidance for future street tree planting in Coffs Harbour which will:

- create an impression of colour, vibrance and attraction for residents and visitors of the city
- reinforce the objectives of Vision 2020 programme to create a 'garden city' and 'rainforest by the sea' image for Coffs Harbour
- protect and enhance the natural environment
- be consistent with relevant plans and strategies
- minimise ongoing maintenance costs through suitable species selection, ground preparation and planting methods.
- ensure public safety
- provide for consistent management throughout the life cycle of the trees
- educate and involve the community in the implementation of the plan

### SPECIES SELECTION AND LOCATION

The overall principle for street tree species selection is as follows:

LOCATION	STREET TREE PLANTING
High Profile Areas (commercial and tourist centres) Priority 1 Streets (major thoroughfares)	Emphasis on colour Reinforce local themes Olympic Flame Drive
Priority 2 Streets (minor roads in residential and industrial areas)	Emphasis on attractive trees suited to local conditions and character

An extensive selection of species is included in the plan to cater to varying environmental conditions and site restrictions.

## **PRIORITIES**

Annual works programmes are to be prepared which implement street tree planting on the following basis:

1. Complete Olympic Flame Drive 1999 subject to funding and approvals
2. Complete planting of major thoroughfares (Priority 1 Streets) and streets in high profile areas
3. Replace or relocate existing trees where required to remove bushland weed species, plants which have not performed well or to accommodate service provisions and road upgrading
4. Implement planting of residential and industrial area streets (Priority 2 Street) as resources allow and as required for road upgrading and to meet community demand
5. Street tree planting in new subdivisions to be provided at subdivision stage

## **SITE ASSESSMENT**

Prior to finalising works programmes and species selection, a site assessment is to be carried out to determine engineering requirements and site conditions for plant growth and species selection. Considerations include existing and future utilities, footpaths and road works, local character and planting theme, tree spacing and location and soil preparation and tree protection requirements. Council's Engineering Branch is to be consulted during the site assessment process and is to give final approval to planting proposals. The assessment and planning phase needs to allow a minimum of 24 months for preparation of nursery stock.

## **PLANTING AND MAINTENANCE**

All site works including excavations, site securing and planting are to be carried out in accordance with industry standards and Council's safe working code. All street tree planting should be carried out by Council staff. Residents wishing to have street trees planted will need to contact Council.

Plants are to be well grown advanced stock and planted in ample good quality soil and mulched to ensure their successful establishment and growth. Regular maintenance including pruning, mulching and fertilising is required during the first 1-3 years to ensure trees become established and develop a suitable form. Ongoing maintenance is to be carried out as required to ensure the continued health and suitable form of the trees. Ongoing maintenance is to be minimised where possible by appropriate species selection and planting and establishment methods.

## **INVENTORY**

A street tree inventory has been established to record tree planting and maintenance activities. The inventory is to be expanded to include new plantings and plantings carried out before 1989. When resources allow, the inventory can be linked to Council's GIS system to facilitate works programming and access to information.

## **PUBLIC CONSULTATION AND EDUCATION**

Public education and consultation is to comprise

- Inclusion of relevant information in Council brochures to be produced by the Parks and Recreation Branch in 1999.
- Letter box drops to adjoining properties prior to carrying out new plantings.
- Masterplan made available to the general public on request and at local libraries.
- A street tree directory is to be prepared when resources allow to provide a guide for residents and visitors. This will become particularly useful when tree planting becomes more established.

# COFFS HARBOUR STREET TREE MASTERPLAN

## 1. BACKGROUND

### INTRODUCTION

Street trees play an important role in improving the visual quality and character of the streetscape. They also help to provide shade, enclosure and in some cases fauna habitat. In Coffs Harbour, the street environment is often set against a backdrop of bushland trees or the vegetated escarpment of the coastal range. It is Council's intention to promote a colourful 'garden city' and 'rainforest by the sea' image which is attractive to tourists and residents and both complements and contrasts with the city's natural setting.

### SCOPE

The purpose of the street tree masterplan is to provide a guide to City wide street tree planting over the next ten years. The master plan forms part of Council's strategic planning for public landscaping and reserve management. The plan should be reviewed every five years to ensure it remains relevant and useful.

### OUTLINE

The plan has been divided into the following sections:

*Part 1 Background* outlines the history, scope and issues to be addressed by the plan

*Part 2 Masterplan* details the overall concept for planting, road hierarchy and species selection

*Part 3 Implementation* outlines the practical implementation of the plan including plant production, site assessment, planting methods and maintenance.

### HISTORY

Street tree planting of significance commenced in Coffs Harbour in the 1960's and is evident in the older residential areas such as Beryl Street, Gundagai Street, Rose Avenue, Gordon Street and in the town centre along High Street and in Anzac Square. The work was largely instigated and carried out by local residents. Species planted at this time include the Callistemon viminalis avenues in High Street and Lemon Scented Gum plantings in Anzac Square and Brodie Drive. Exotic species used at this time included Butterfly Bush, Conifers, Golden Rain Trees, Jacaranda and Photinia.

During the 1980's further community street tree planting took place and focused on the use of adapted native species. This work was carried out in part by community members also involved in the development of the North Coast Regional Botanic Garden. Species planted at this time included Cadagi Gums, Ivory Curl Trees, Lilly Pillies and Snow in Summer Paperbarks.

Significant tree planting has been implemented by Council since the late 1980's and has included the use of local rainforest species such as Riberry, Brush Box and Cudgeri and colourful exotic trees such as African Tulip Tree and Golden Cassia. Street tree planting is yet to be carried out in many of the new residential areas developed in the 1980's and 1990's.

Lack of kerb and gutter has in some cases enabled the retention of native trees within the road reserve (eg. Safety Beach) and in other cases has delayed the ability to establish street trees. A detailed list of species historically used in street tree planting in Coffs Harbour planted is given in Appendix 1.

## **ISSUES**

### **Providing Colour in the Streetscape**

Colour in the streetscape can be provided by flowering trees, colourful underplanting and furnishings such as seats, bollards and banners.

Flowering trees provide colour generally for 2-4 weeks over spring or summer, with some providing second displays in autumn or winter. It is important that trees have attractive form and foliage for the remaining months of the year and to co-ordinate plantings to provide the best effect over the year. Trees generally require at least 3-5 years to provide a good flowering effect.

A number of species provide additional features with colourful new foliage growth or fruit. Roundabout and traffic island planting and furnishings help to provide year round colour in high profile areas when street trees are not in flower.

### **Environmental constraints and considerations**

The footpath area of the street is generally a harsh environment for plants. Soils are often poor, compacted and prone to drying out because of the surrounding road and/or footpath pavements. The trees need to be accommodated amongst a range of services including overhead power lines and underground pipes and wiring. Other considerations include air pollution and local conditions such as coastal exposure or high water table, traffic sight distances, existing planting and access to private property.

Site assessment and appropriate species selection, ground preparation and maintenance is therefore required to ensure the success of the planting.

### **Tree Root Damage to Gutters, Footpath Pavements and Services**

Where possible trees should be planted up to 2 metres from kerbs, pavements and services to avoid disturbance or damage. Standard service allocations in the footpath area provide for trees to be planted approximately 1 metre from the kerb (see Appendix 6). Where this is necessary appropriate species selection, the installation of root barriers or some periodic maintenance to pavements or kerbs may be required.

Trees with large invasive root systems such as Ficus and Eucalypts are generally to be avoided in street planting to minimise the lifting and cracking of gutters and footpath pavements. Where trees are important to local character (eg. Ficus trees in Sawtell), the maintenance of pavements or kerbs becomes part of providing for local amenity.

### **Tree Replacement and Removal**

Most of the street tree planting in Coffs Harbour is relatively young. The life span of street trees has been estimated at generally between 50-100 years (Hitchmough, 270). Significant replacement of existing plantings due to age will therefore not become a major issue for at least another 10-20 years. Options for tree replacement include staggered and full replacement. Implementation needs to consider the visual impact to the streetscape, costs, and community education.

Some street tree replacement or removal is required in the short term to make way for critical services, footpath construction or to remove unhealthy trees or species which have become bushland weeds. Examples include the removal of Phoenix Palms from Park Avenue (to be relocated to Brelsford Park) to allow footpath construction, the removal of Slash Pine trees in Brelsford Park to allow for city centre drainage construction and the removal and replacement over time of bushland weed species such as Umbrella Trees and Slash Pine.

### **Road Hierarchy**

The road hierarchy used for this plan has been prepared in consultation with Council's Engineering branch and incorporates the Coffs Harbour Regional Road Network for Coffs Harbour and Sawtell Toormina which was adopted by Council in May 1998 (see Appendix 5). Where possible the size of trees is to reflect this road hierarchy, using larger trees for major roads and smaller species in minor roads. The use of large trees will be dependent on site constraints such as services and footpath size (see Attachment B).

### **Road Upgrading**

In general, street tree planting is only carried out on roads with constructed kerb and gutter unless suitable planting locations can be found which will not be disturbed when road upgrading is carried out. Engineering Branch needs to be consulted during the planning process for street tree programmes to accurately identify future road works, services and footpaths. Street tree planting should be coordinated with road upgrading works programmes where appropriate. Suitable lead time (min 2 years) needs to be allowed to enable trees to be produced.

### **Highway Upgrading and Roadside Revegetation**

Planting associated with the Pacific Highway is generally the responsibility of the Roads and Traffic Authority. Significant upgrading of the Highway at Bonville and North Coffs are currently underway. All landscaping and planting plans are approved by Council and generally include restoration of native vegetation and some street tree, roundabout and median strip planting. Where the works coincide with urban areas the landscaping should be compatible with the Street Tree Masterplan. The maintenance of Highway traffic island in the northern and southern approaches to the city is the responsibility of the RTA and is limited to pruning and weed control carried out one to two times per year.

### **Car Parking Areas**

The species selection outlined in this masterplan is also suited to use in public car parking areas. Existing or proposed street trees should be taken into account when determining tree planting for parking areas.

### **Community Education and Involvement**

Community awareness of street tree planting proposals can assist Council in ensuring the success of the plantings and support during and after works are carried out. To ensure Council's duty of care for public safety, all planting within the road reserve should be carried out by Council staff. Residents wishing to have street trees planted need to contact Council.

## **Olympic Flame Drive**

The Olympic Flame Drive was first proposed by Council in 1995 as part of Coffs Harbour's bid to be included on the route of the Olympic Torch Relay to Sydney for the 2000 Olympics. The original proposal is included in Appendix 4 and has been incorporated into the Street Tree Masterplan. It aims to provide avenues of red flowering trees in 12 locations, taking advantage of 2 established avenues in High Street (Weeping Bottle Brush) and Toormina Road, (African Tulip Tree). Other species to be used include Tree Waratah and Riberry. Some of the existing trees nominated will require replacement in the future due to age or poor growth.

Coffs Harbour's inclusion in the Olympic Torch Relay route was confirmed in October 1998. Implementation of the planting is subject to availability of funds and RTA approval for median strip plantings in the Pacific Highway (Sapphire and Korora). The trees will provide a commemoration of the torch relay for the future as well as a feature in 2000 during the relay.

## **Planning Studies**

Streetscape and road hierarchy proposals contained within relevant planning studies such as the Woolgoolga Town Study, CBD Masterplan, Sawtell Precinct Plan and Development Control Plans for new residential areas (ie West Coffs, North Boambee Valley and Moonee DCP's) and Council's Road Safety Strategy have been incorporated into the masterplan.

## **Koala Food Trees**

Koala food trees are generally not to be used in street tree planting to avoid possible hazard to koalas from traffic and because most species are too large. Koala food trees can be used in public reserve areas of known koala habitat (in accordance with the Coffs Harbour Natural Areas Plan of Management). Koala food tree planting also forms part of RTA restoration of suitable highway road reserve areas (eg. Bonville). Where limited options for linking habitat are available, the use of small growing species is to be considered in conjunction with suitable traffic control measures. Separate approval from Council will be required to proceed with such works.

## 2. MASTERPLAN

### AIMS

To provide guidance for future street tree planting in Coffs Harbour which will:

- create an impression of colour, vibrance and attraction for residents and visitors of the city through the use of:
  - trees with attractive flowers, fruit and/or foliage and
  - roundabout or traffic island planting in focal areas
  - trees suited to the character and scale of surrounding development and landscape
- reinforce the objectives of Vision 2020 programme to:
  - create a garden city image for Coffs Harbour
  - create a rainforest by the sea image
- protect and enhance the natural environment by:
  - using contrasting and complimentary species
  - including locally occurring species
  - avoiding the planting of known environmental weed species and replacing existing plantings where possible
  - using potentially invasive species with caution.
- be consistent with relevant plans and strategies such as:
  - traffic strategy
  - Olympic Flame Drive
  - City centre masterplan
  - Woolgoolga Town Study
  - Sawtell Precinct Plan
- minimise ongoing maintenance costs through suitable species selection, ground preparation and planting methods.
- ensure public safety
- provide for consistent management throughout the life cycle of the trees
- educate and involve the community in the implementation of the plan



*Firewheel  
Tree*



*Lilly Pilly*

## SPECIES SELECTION AND LOCATION

The overall principle for street tree species selection is as follows:

LOCATION	STREET TREE PLANTING
High Profile Areas (commercial and tourist centres)	Emphasis on colour Reinforce local themes Olympic Flame Drive
Priority 1 Streets (major thoroughfares)	
Priority 2 Streets (minor roads in residential and industrial areas)	Emphasis on attractive trees suited to local conditions and character

Site assessment is to be carried out for all streets prior to planting to determine local conditions (see Implementation). These factors will guide final species selection.

Maps 1-8 show the location of high profile areas, priority streets and Olympic Flame Drive proposals

Table 1 Master Plan Overview provides an overview of street tree planting themes and indicative species.

Appendix 3 provides a full list of street trees recommended for use in Coffs Harbour. The Appendix includes undesirable and potential bushland weed species.



*Lemon Scented Myrtle*



*Pride of Bolivia*

**TABLE 1 MASTERPLAN OVERVIEW**

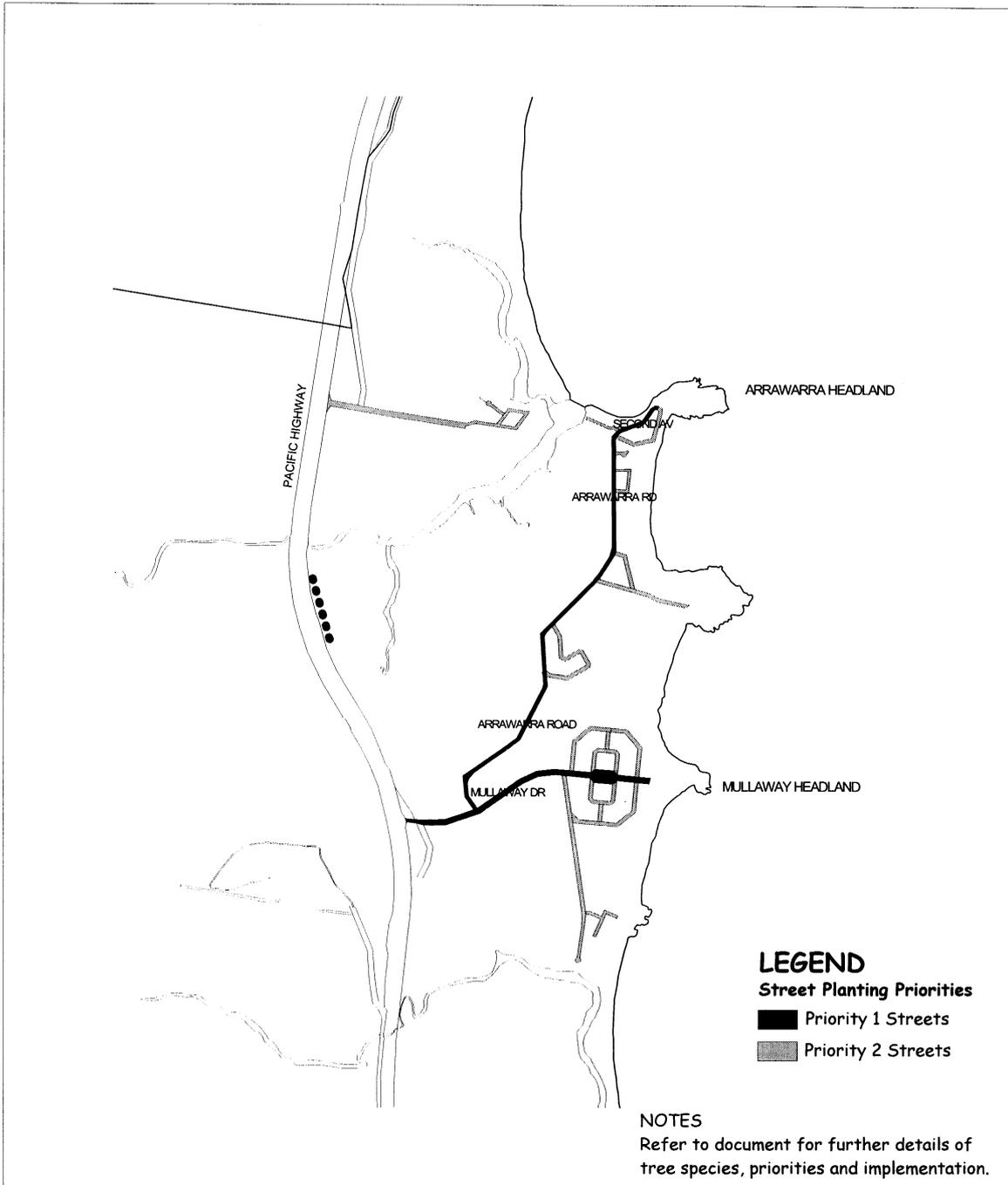
DESCRIPTION	LOCATION	STREET TREE THEMES	CONDITIONS	INDICATIVE SPECIES (complete species list Appendix 3)
<b>OLYPMIC FLAME DRIVE</b>	Pacific Highway (at Woolgoolga, Korora, Sapphire, Coffs Harbour) High Street Hogbin Drive	Red flowering trees providing colour mainly in spring	Conditions vary from dry exposed locations to swamp land areas and sheltered inland sites	Alloxylon flamium (Tree Waratah) Syzygium leuhmanii (Riberry) Callistemon viminalis (Weeping Bottlebrush) Spathodea campanulata (African Tulip Tree)
<b>TOWN CENTRES (HIGH PROFILE AREAS)</b>	Coffs Harbour CBD	<p>Vibrant holiday and business centre</p> <p>Wide range of colourful flowering trees, palms and accent plants</p> <p>Trees in scale with buildings and highway</p> <p>Town centre roundabout, street side and median gardens</p> <p>Extensive city centre streetscape upgrading including paving and furnishings and landscaping proposed</p>	<p>Sheltered from coastal winds</p> <p>Various soils</p> <p>Limited soil depth in Highway medians and roundabouts</p>	<p>Alloxylon flamium (Tree Waratah)</p> <p>Brachychiton acerifolius (Illawarra Flame Tree)</p> <p>Buckinghamia celcissima (Ivory Curl)</p> <p>Calodendron capense (Cape Chestnut)</p> <p>Ceasalpinia ferrea (Leopard Tree)</p> <p>Cilliata australis (Red Cedar)</p> <p>Flindersia schottiana (Cudgeri)</p> <p>Gleditsia tricanthos sunburst (Golden Honey Locust)</p> <p>Jacaranda mimosaefolia (Jacaranda)</p> <p>Melicope elleryana (Pink Melicope)</p> <p>Roystonea regia (Royal Palm)</p> <p>Syzygium leuhmanii (Riberry)</p> <p>Spathodea campanulata (African Tulip Tree)</p> <p>Stenocarpus sinuatus (Firewheel Tree)</p> <p>Tibouchina grandulosa (Tibouchina)</p> <p>Tipuana tipu (Pride of Bolivia)</p>

Table 1 Masterplan Overview cont.

DESCRIPTION	LOCATION	STREET TREE THEMES	CONDITIONS	INDICATIVE SPECIES (complete species list Appendix 3)
<b>TOWN CENTRES</b> Cont.	Woolgoolga	Coastal holiday village Timber industry history Town named after the Weigulga Lilly Pilly. Existing Norfolk Pines and Riberry plantings Town Centre streetscape gardens (Streetscape upgrading including paving, furnishings and landscaping underway)	Low lying exposed coastal conditions Poor soils Sheltered location and better soils at Apex Park	Araucaria heterophylla (Norfolk Island Pine) Araucaria cunninghamiana (Hoop Pine) Delonix regia (Poinciana) Syzygium australe (Weigulga) Syzygium leuhmannii (Riberry) Stenocarpus sinuatus (Firewheel Tree) Grevillea robusta (Silky Oak)
	Park Beach	Commercial and holiday accommodation centre  Species to reflect CBD planting while suited to low lying conditions	Low lying coastal conditions	Flindersia schottiana (Cudgeri) Spathodea campanulata (African Tulip Tree) Syzygium australe (Lilly Pilly) Tristaniopsis laurina (Water Gum)
	Jetty	Harbourside holiday, recreational and business centre Coast tolerant trees Streetscape gardens	Exposed coastal conditions	Cupaniopsis anarcardioides (Tuckeroo) Pandanus pedunculatus (Screw Pine) Araucaria heterophylla (Norfolk Island Pine)
	Toormina	Suburban commercial centre 'Gardens' theme	Range of soils sheltered from coastal conditions. Eucalypt forest setting	Tibouchina glandulosa (Tibouchina) Spathodea campanulata (African Tulip Tree)
	Sawtell	Historic coastal holiday village Ficus hillii (Hills Weeping Fig) – existing established trees to be retained Town Centre streetscape gardens	Exposed coastal conditions. CBD provides some shelter	Ficus hillii (Hill's Weeping Fig) – existing Cupaniopsis anarcardioides (Tuckeroo)  Alloxylon flamium (Tree Waratah)

**Table 1 Masterplan Overview cont.**

<b>DESCRIPTION</b>	<b>LOCATION</b>	<b>STREET TREE THEMES</b>	<b>CONDITIONS</b>	<b>INDICATIVE SPECIES (complete species list Appendix 3)</b>
<b>COASTAL VILLAGES</b>	Mullaway/ Arrawarra, Safety Beach Woolgoolga Residential areas, Sandy Beach, Emerald Beach, Moonee Sapphire Korora Sawtell residential areas South Coffs	Attractive exotic and native trees suited to local conditions  Trees to reflect older street tree plantings in established residential areas where applicable (Woolgoolga and Sawtell)	Exposure to salt winds, high water table, heavy soils common  Natural settings nearby  Lack of kerb and gutter, particularly in northern beaches older village areas	<i>Salt toleratnt – exposed locations:</i> Cupaniopsis anarcardioides (Tuckeroo) Banksia integrifolia (Coastal Banksia) Syzygium australe (Weigulga, Brush Cherry)  <i>Other Areas:</i> Acmena smithii (Lilly Pilly) Backhousia citriodora (Lemon Scented Myrtle) Buckinghamia celcissima (Ivory Curl) Ceratopetalum gumiferum (NSW Christmas Bush) Melaleuca luecadendra (Weeping Paperbark) Syzygium leuhmanii (Riberry)
<b>INLAND SUBURBS</b>	West Woolgoolga Bray Street West Coffs Toormina Boambee North Boambee Valley	Attractive subtropical rainforest trees and understorey trees including flowering varieties  Trees to reflect older street tree plantings in established residential areas where applicable	Generally good soils Sheltered low lying location  Subtropical rainforest and riparian bushland, Koala habitat and eucalypt forest  Some established residential areas and street tree planting.	Brachychiton acerifolius (Illawarra Flame Tree) B. discolor (Lace bark) Syzygium spp (Lilly Pilly) Castenospermum australe ( Black Bean) Ceratopetalum gumiferum (NSW Christmas Bush) Flindersia australis (Australian Teak) Ceasalpinia ferrea (Leopard Tree)  Older suburbs: Tibouchina grandulosa (Tibouchina) Lagerstoemia indica (Crepe Myrtle) Jacaranda mimosaeifolia (Jacaranda) Cassia javanica (Pink Cassia) Gordonia axillaris (Gordonia)
<b>WESTERN TOWNSHIPS</b>	Nana Glen, Coramba, Karangi, Ulong, Lowanna	Historic towns, timber industry,	Frost prone areas	Acer spp (Maple) Callistemon spp (Bottlebrush) Liquidamber styraciflau (Liquidamber) Fraxinus spp (Ash)



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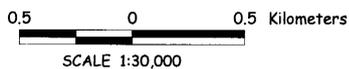
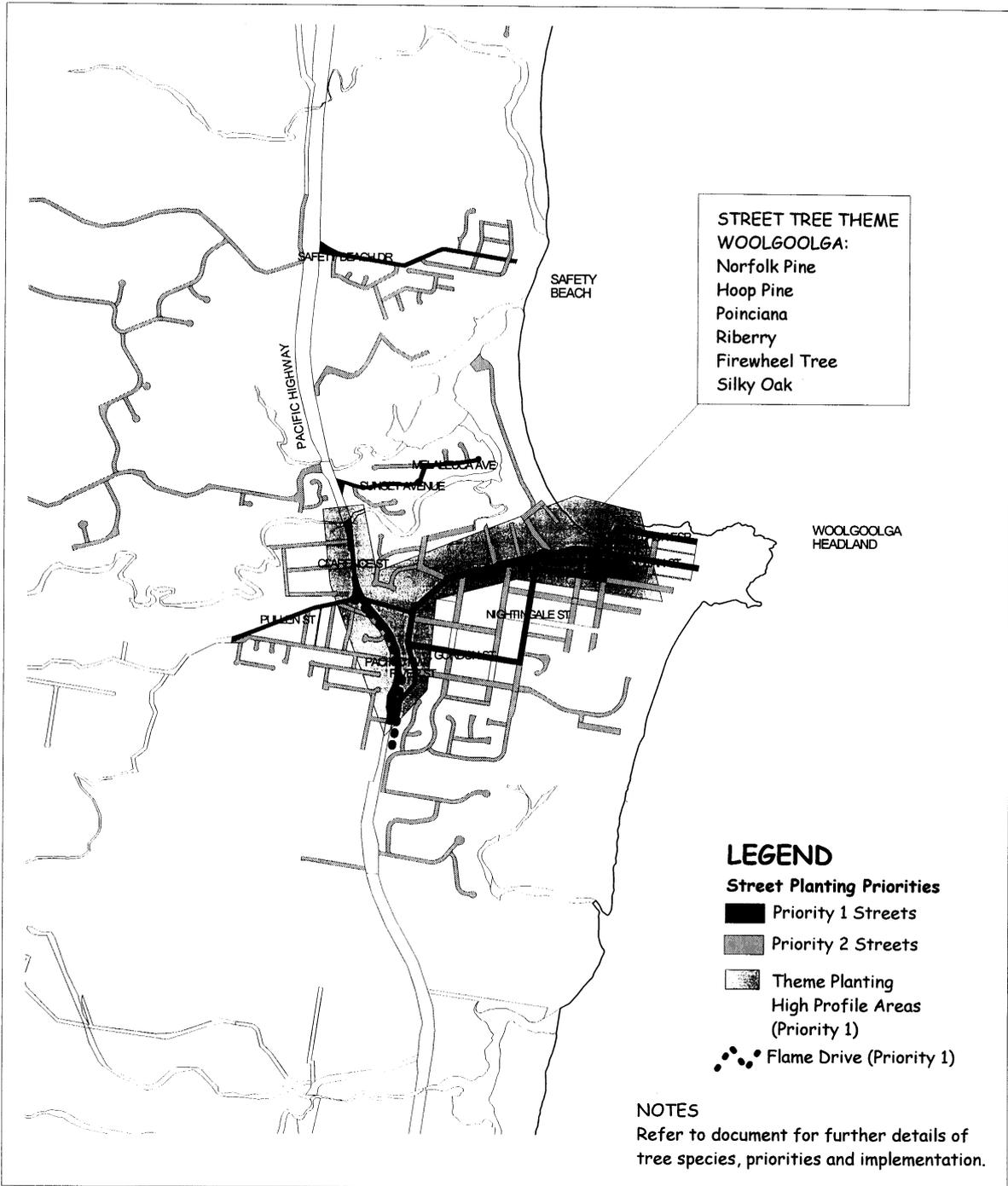
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**STREET TREE MASTERPLAN**

**MAP 1**

**Arrawarra - Mullaway**

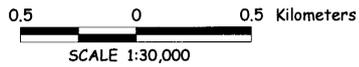
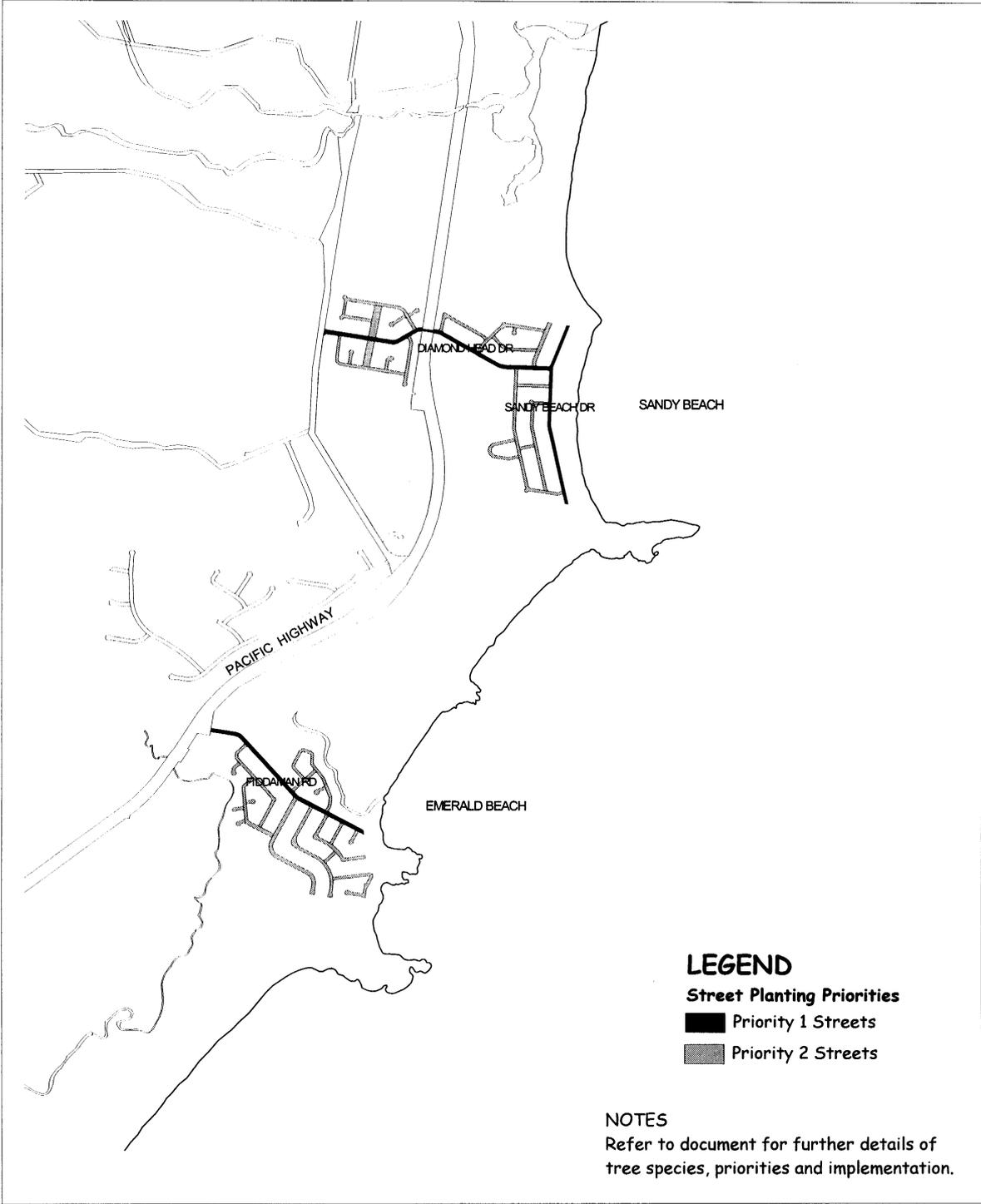


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**MAP 2**  
**Woolgoolga**

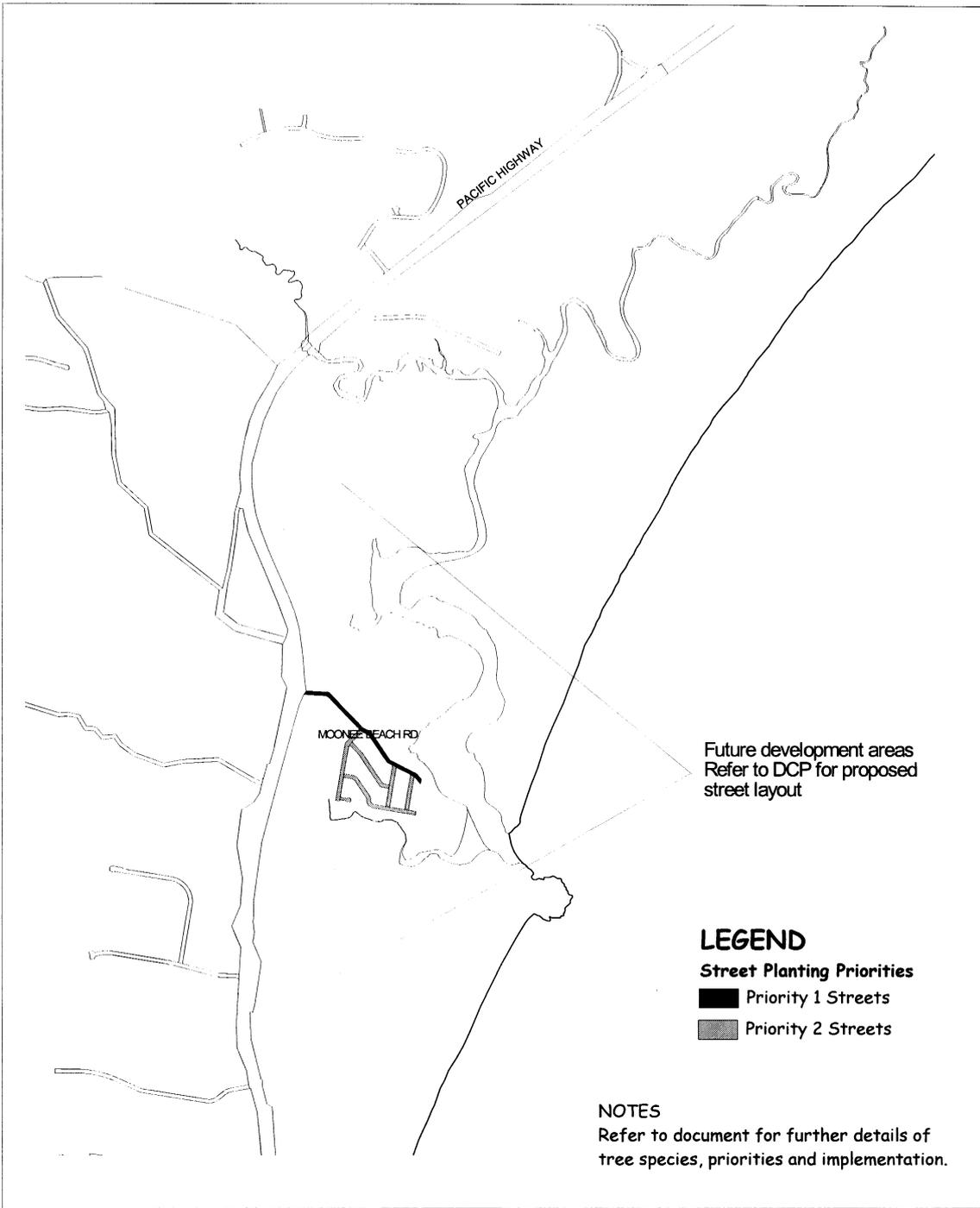


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**STREET TREE MASTERPLAN**

**MAP 3**  
**Sandy Beach - Emerald Beach**



Future development areas  
Refer to DCP for proposed  
street layout

**LEGEND**  
**Street Planting Priorities**  
 ■ Priority 1 Streets  
 ■ Priority 2 Streets

**NOTES**  
Refer to document for further details of  
tree species, priorities and implementation.



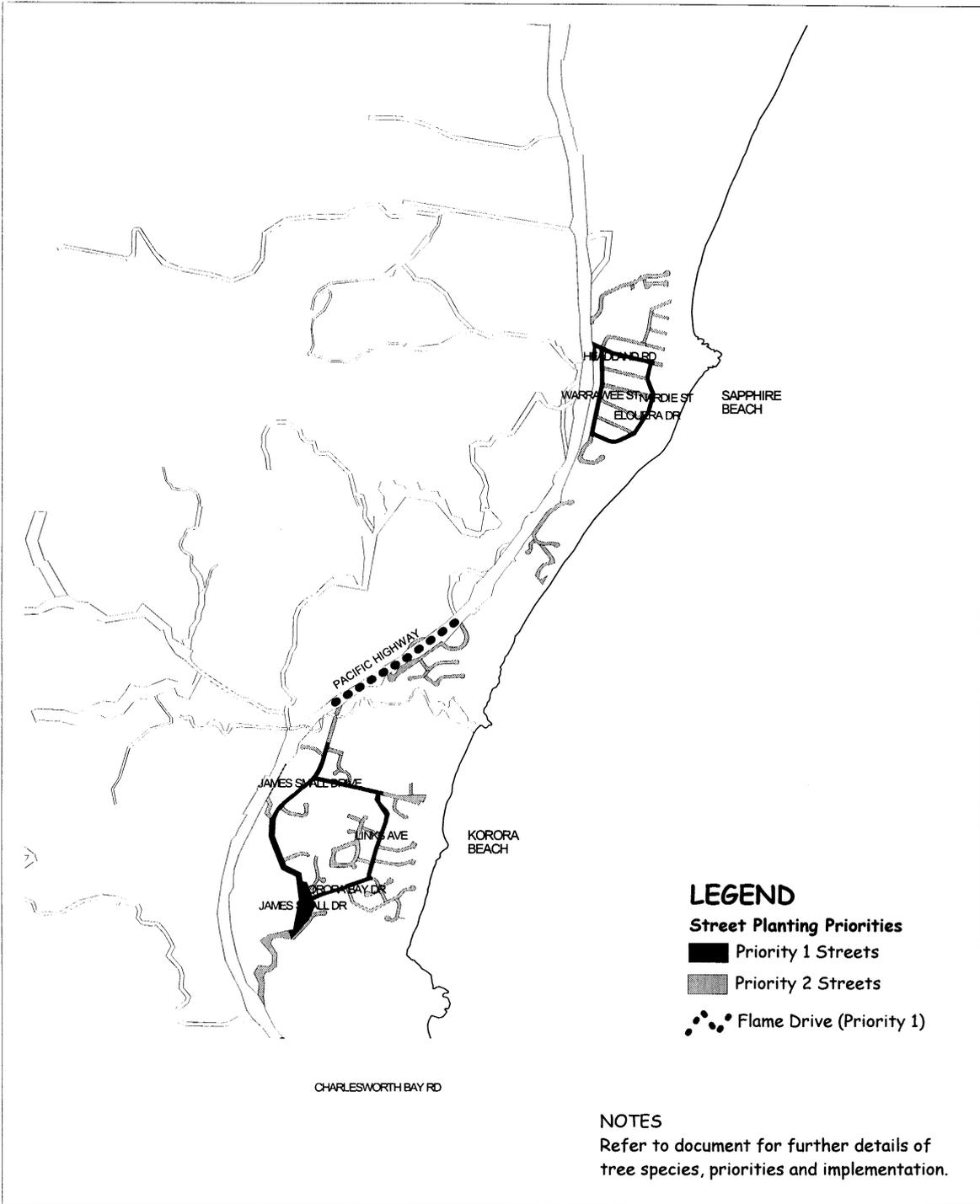
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**STREET TREE MASTERPLAN**

**MAP 4**  
**Moonee**



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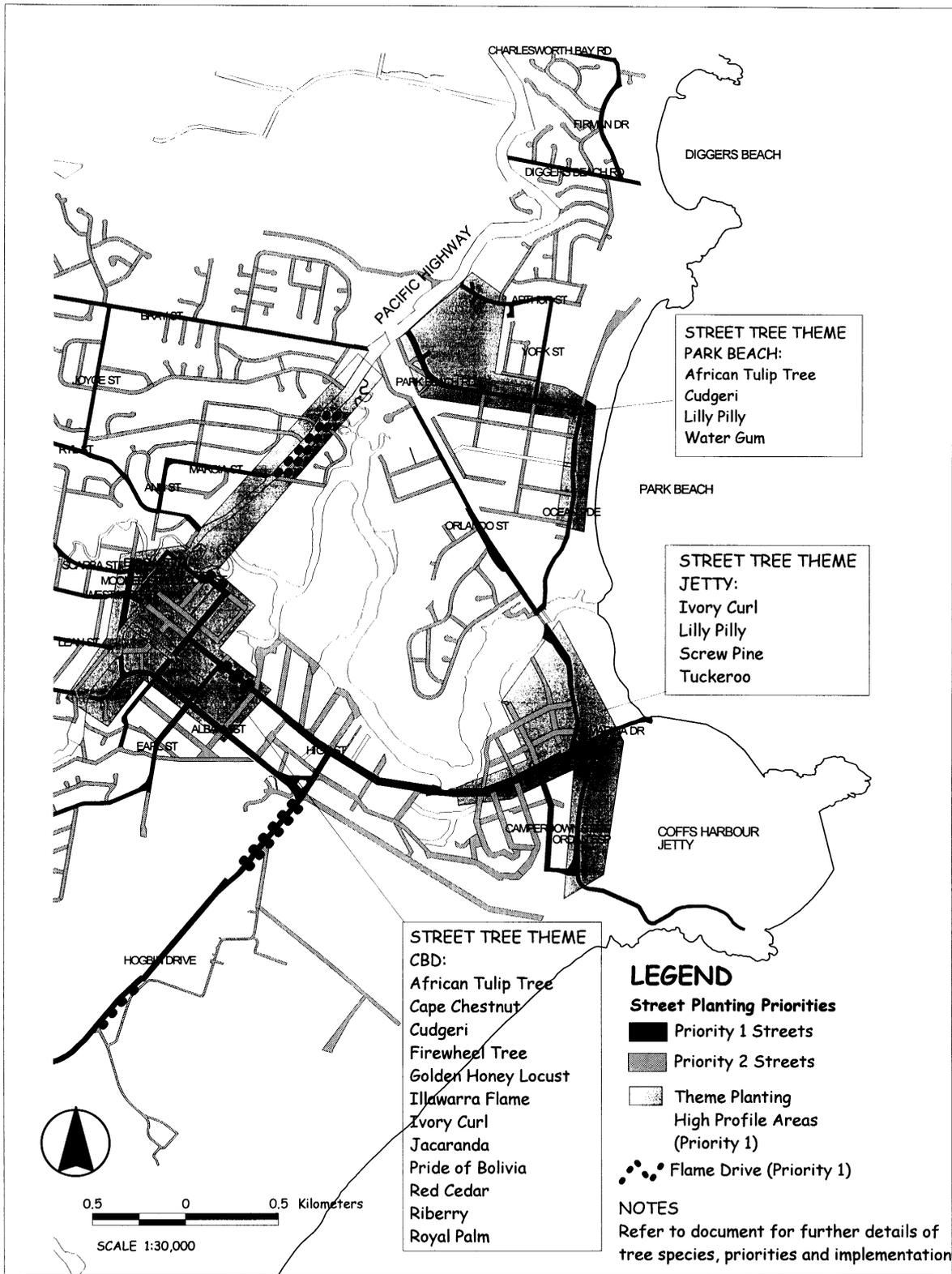
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**STREET TREE MASTERPLAN**

**MAP 5**

**Sapphire - Korora**

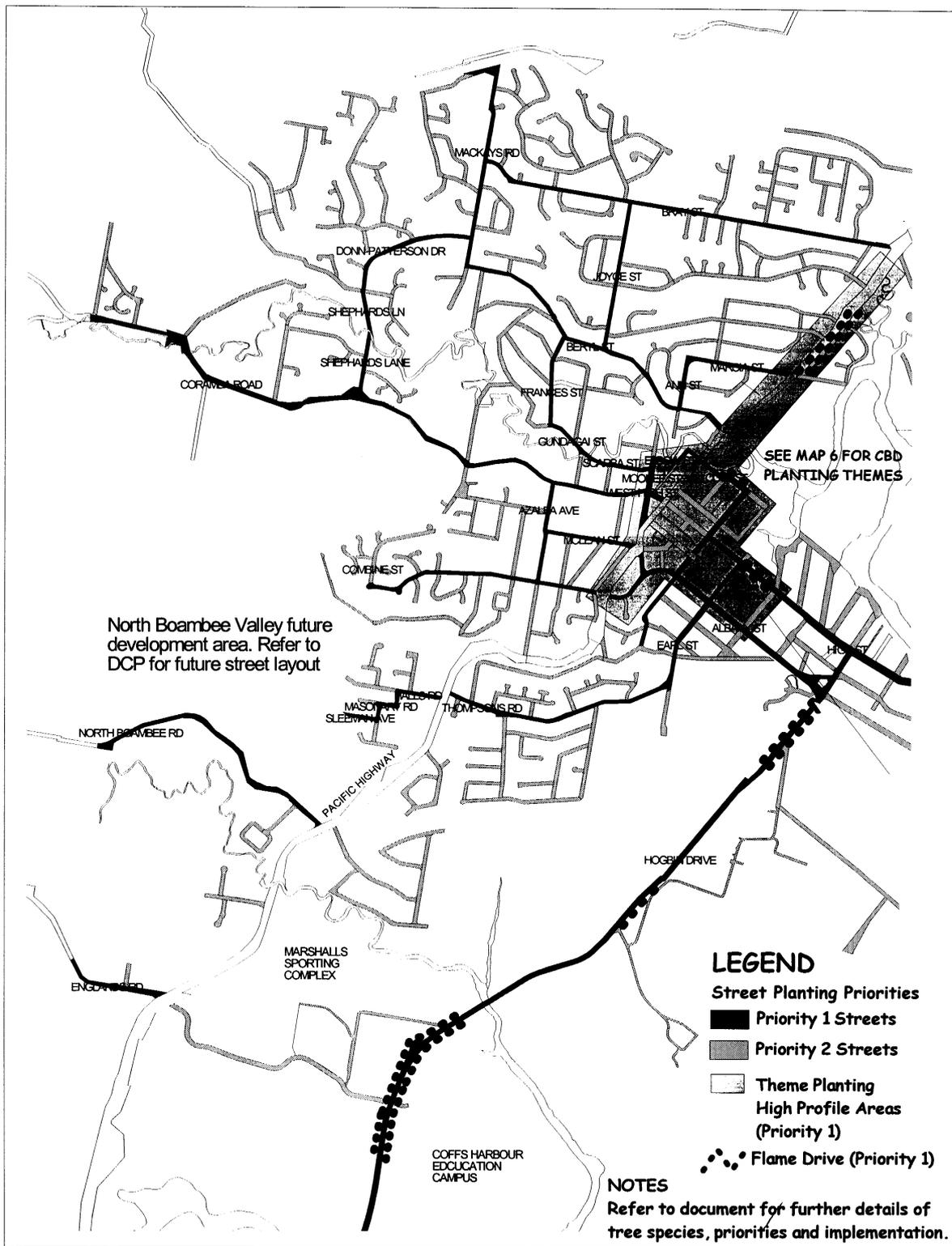


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**STREET TREE MASTERPLAN**

**MAP 6**  
**Coffs Harbour**

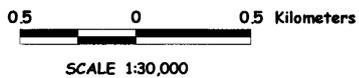


North Boambee Valley future development area. Refer to DCP for future street layout

SEE MAP 6 FOR CBD PLANTING THEMES

- LEGEND**
- Street Planting Priorities
  - Priority 1 Streets
  - Priority 2 Streets
  - Theme Planting High Profile Areas (Priority 1)
  - Flame Drive (Priority 1)

**NOTES**  
Refer to document for further details of tree species, priorities and implementation.

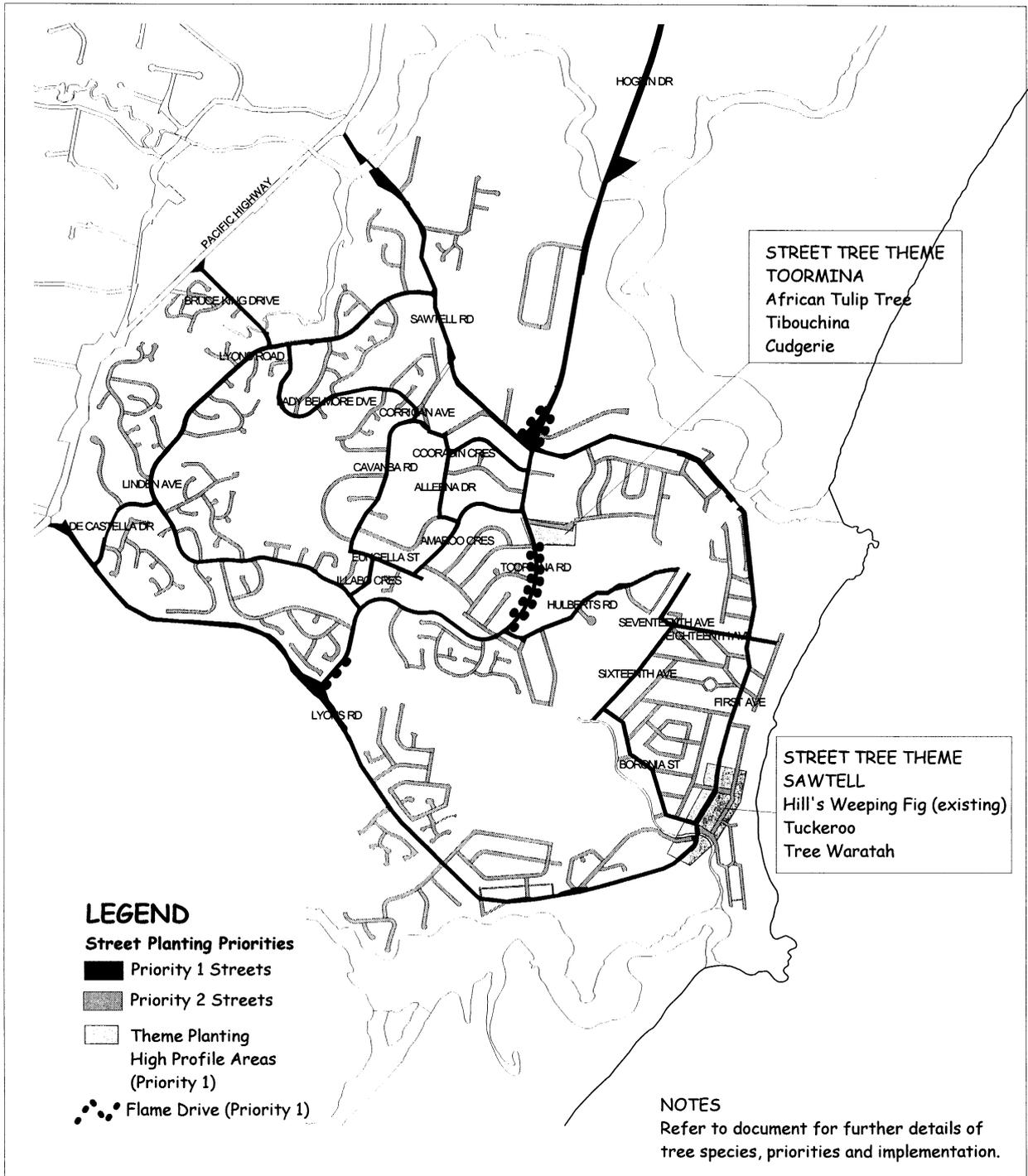


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**MAP 7**  
**West Coffs - South Coffs**



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SCALE 1:30,000

Coffs Harbour City Council  
**STREET TREE MASTERPLAN**

**MAP 8**  
**Sawtell - Toormina**



Produced by Parks and Recreation Branch  
 Coffs Harbour City Council  
 January 1999

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### 3. IMPLEMENTATION

#### PRIORITIES

Annual works programmes are to be prepared which implement street tree planting on the following basis:

6. Complete Olympic Flame Drive 1999 subject to funding and approvals
7. Complete planting of major thoroughfares (Priority 1 Streets) and streets in high profile areas
8. Replace or relocate existing trees where required to remove bushland weed species, plants which have not performed well or to accommodate service provisions and road upgrading
9. Implement planting of residential and industrial area streets (Priority 2 Street) as resources allow and as required for road upgrading and to meet community demand
10. Street tree planting in new subdivisions to be provided at subdivision stage

Refer to Maps 1-8 show street priorities, high profile areas and Olympic Flame Drive locations.

#### SITE ASSESSMENT AND PLANNING

Prior to finalising works programmes and species selection, a site assessment is to be carried out including:

1. Planting constraints:
  - underground and overhead services
  - existing trees
  - driveways and footpaths
  - soils, drainage, exposure to winds and salt spray
2. Designated planting theme (commercial centres)
3. Existing street tree planting and landscape character (residential and industrial areas)
4. Suitable spacing:
  - on arterial roads and commercial areas spacing of 10-15 metres is generally suitable
  - on residential streets 1 tree per allotment is generally provided
  - double density planting may be used to assist traffic calming by increasing street enclosure
5. Planting preparation:

The site assessment should be completed a minimum of two years prior to scheduled planting to allow adequate time to prepare nursery stock. Some non-commercial species may require 3-5 years to prepare

Council's Engineering Branch are to be consulted during the site assessment stage to

- confirm future plans for services, footpaths, road widening and kerb and gutter
- obtain approval for the planting proposals
- ensure works comply with road safety requirements

## **SITE ASSESSMENT AND PLANNING (cont)**

Identification of existing and future services and construction is of particular importance for footpaths less than 3.5 metres wide, footpaths without kerb and gutter and footpaths on major roads that generally carry major utility lines. Planting should be coordinated with road upgrading where appropriate. Extensions or 'blisters' in the footpath alignment and variations to road alignment within the road reserve can be used to accommodate trees and overcome site constraints in some situations. Refer to Appendix 6 for allocated service locations in footpaths.

## **LANDSCAPE PLANS (Road Safety Strategy)**

In accordance with Council's Road Safety Strategy adopted in February 1999 landscape plans are to be prepared for:

- each existing roundabout, pedestrian refuge and other traffic management structures. Plans to be prepared in consultation with Council's Road Safety Officer and Traffic Engineer and completed by June 2000.
- any new 'traffic management' devices constructed

## **PLANTING AND MAINTENANCE**

### **General**

All site works including excavation, planting, and securing of planting sites are to be carried out by Council staff in accordance with Council's safe working code to ensure the safety of workers and the general public. Pruning is to be carried out in accordance with industry standards. Staff training is to be provided where required. Residents wishing to have street trees planted should contact Council.

### **Plants and Planting**

Plant material is to be grown to industry standards with good root and top form. Where required stock is to be 'cutting' grown to ensure the desired flowering or foliage form. Plant stock is generally to be grown to minimum 2 metre height in 15-25 litre containers.

Prior to planting, planting holes are to be prepared to provide the best possible growing conditions within resources available. The prepared area should be a minimum depth of 600mm and diameter of 2m. Preparation should comprise excavation and backfilling with enriched soil material or structural and pH improvement of in situ soils as appropriate. Plants are to be well watered before and immediately after planting, fertilised and mulched to a minimum depth of 75mm and diameter of 1m. Protective enclosures or staking should be provided where damaged by wind or vandals are anticipated.

### **Establishment Maintenance**

Establishment maintenance is required over the first 1-3 years following planting to ensure healthy establishment of the tree and the development of a suitable growth form. Activities include watering, mulch replacement, pruning, pest control and removal of protective enclosures or staking.

## **Ongoing Maintenance**

Ongoing maintenance is to be carried out as required to ensure the continued health of the trees. Ideally this maintenance is minimised by appropriate species selection and planting methods.

Ongoing maintenance activities include mulch replacement, control of pests, diseases and weeds. Pruning is also required to improve shape, remove damaged, diseased or dangerous limbs, to accommodate services or control root growth (eg. root damage to pavements or kerbs). Other activities include protection of trees during service installation or other construction, removal/replacement of unhealthy or undesirable trees and repair of damage by vandals.

## **Inventory**

A street tree inventory has been established to record tree planting and maintenance activities. Records have been entered for trees planted since 1989. The inventory is to be expanded to include new plantings and plantings carried out before 1989. When resources allow, the inventory can be linked to Council's GIS system to facilitate works programming and access to information.

## **PUBLIC CONSULTATION AND EDUCATION**

Public education and consultation is to comprise:

- Inclusion of relevant information in Council brochures to be produced by the Parks and Recreation Branch in 1999
- Letter box drops to adjoining properties prior to carrying out new plantings
- Masterplan made available to the general public on request and at local libraries
- A street tree directory is to be prepared when resources allow to provide a guide for residents and visitors. This will become particularly useful when tree planting becomes more established.

## APPENDIX 1

### Historic Street Tree Planting in Coffs Harbour

SPECIES	COMMON NAME	LOCATION (EG.)	PERIOD
<i>Araucaria heterophylla</i>	Norfolk Island Pine	Beach Street, Woolgoolga	1960's
<i>Araucaria cunninghamiana</i>	Hoop Pine	Beach Street, Woolgoolga	1960's
<i>Photinia robusta</i>	Photinia	West High Street	1960's
<i>Grevillea robusta</i>	Forest Oak	High Street	1960's
<i>Callistemon viminalis</i>	Weeping Bottle Brush	High Street near Brelsford Park, Earl Street	1960's
<i>Pinus radiata</i>	Slash Pine	Brelsford Park	1960's
<i>Bauhinia variegata</i>	Butterfly Tree	Beryl Street	1960's
<i>Ficus Hillii</i>	Hills Weeping Fig	Park Avenue, 1 <sup>st</sup> Avenue, Sawtell	1960's
<i>Eucalyptus citriodora</i>	Lemon Scented Gum	Anzac Square, Brodie Drive	1960's
Various	Conifers	Raleigh Street	1960's
<i>Gordonia axillaris</i>	Gordonia	Gordon Street	1960's
<i>Erythrina indica</i> and <i>cristagali</i>	Coral Tree	Ocean Parade	1960's
<i>Harpephyllum caffrum</i>	Kaffir Plum	Glenreagh Street	1960's
<i>Lagerstroemia indica</i>	Crepe Myrtle	Lyster Street	1960's
<i>Jacaranda mimosaeifolia</i>	Jacaranda	Jetty area, Beryl Street	1960's
<i>Koelruteria paniculata</i>	Golden Rain Tree	Bailey Avenue	1970's
<i>Phoenix canariensis</i>	Phoenix Palm	Park Avenue,	1960's
<i>Pittosporum rhombifolium</i>	Holly Leaf Pittosporum	Beryl Street	1960's
<i>Cassia javanica</i>	Pink Cassia	Gundagai Street	1960's
<i>Melaleuca linariifolia</i>	Snow in Summer		1980's
<i>M Stypheloides</i>	Prickly Paperbark		1980's
<i>Tristanopsis laurina</i>	Water Gum	Pacific Highway near High Street	1980's
<i>Buckinghamia celcissima</i>	Ivory Curl	High Street near Hospital	1984/85
<i>Roystonea regia</i>	Royal Palm	Hardacre Street	1984/85
<i>Buckinghamia celcissima</i>	Ivory Curl Tree	Hardacre Street	1984/85

## APPENDIX 2

### SPECIES SELECTION CRITERIA

#### *Aesthetic Criteria*

- Relationship with distinctive landscape
- Colour of tree foliage
- Ultimate size of tree canopy
- Form of tree canopy
- Floral displays v tree foliage and form
- Uniformity of growth
- Deciduous v evergreen
- Dominants and subdominants

#### *Biological criteria*

- Climate suitability
- Salt spray tolerance
- Low levels of soil oxygen
- Tolerance of compacted soils
- Tolerance of drought
- Tolerance of pests and diseases
- Tolerance of air pollution

#### *Functional criteria*

- Readily available and transplantable at advanced size
- Above average tolerance of root damage and disturbance
- Average or below average capacity to invade services, shrink load bearing clays
- Acceptable leaf and fruit fall characteristics
- Low risk of becoming an urban or environmental weed
- Not prone to major limb shear
- Tolerant of severe pruning
- Long lived
- Satisfactory form to allow pedestrian and vehicular clearance with minimal pruning
- Capacity to lift pavements and kerbing

## APPENDIX 3

### SPECIES DESCRIPTION

The species listed below have been selected for their attractive characteristics and ability to perform in a street planting situation. Criteria used to select street trees is summarised in Appendix 2. \* Suited to planting under power lines

**Table 3 Species Description**

NAME	HT (M)	FEATURES – FLOWERS, FRUIT AND FOLIAGE	COMMENTS
Acmena smithii (Lilly Pilly)	10	White flowers in summer followed by attractive pink fruit	Local native species. Shapely small tree
Alectryon coriaceus (Beach Birds Eye)	6	Large dark green leaves with grey underside. White flowers in summer are followed by bright red fruit surrounding black seed	Local Littoral rainforest species, mod. salt tolerant. Bushy spreading growth – shape pruning and suitable site required
Allocassuarina torulosa (Forest Oak)	15	Pendulous needle like foliage colouring to deep burgundy / purple in autumn-winter	Koala food tree planting (specific locations – see 'issues' page 4)
Araucaria heterophylla (Norfolk Island Pine)	20+	Strong conical form	Very Coast tolerant
Araucaria cunninghamiana (Hoop Pine)	20+		
Agonis flexuosa Weeping Myrtle	10	Strings of white flowers in spring Weeping foliage	Very hardy, drought tolerant
Alloxylon flamium (Tree Waratah)	10	Red waratah like flowers in late spring	Prefers good soil and protected site
Backhousia citriodora (Lemon Scented Myrtle)	8*	Profuse white flowers in summer. Lemon scented foliage with coppery new growth	
Backhousia myrtifolia (Carol, Cinnamon Myrtle)	7*	Masses of cream flowers in spring. Cinnamon scented foliage with coppery new growth	
Buckinghamia celcissima (Ivory Curl Tree)	10	Large cream grevillea like flowers in autumn and spring	
Banksia integrifolia (Coastal Banksia)	15	Yellow flowers at various times during the year	Coast tolerant
Brachychiton acerifolius (Illawarra Flame Tree)	20+	Scarlet flowers in late spring	Prefers ample water
Brachychiton discolor (Lace Bark)	20+	Pink flowers in late spring / summer	
Caesalpinia ferrea (Leopard Tree)	15	Yellow flowers in later summer / autumn	Attractive spotted trunk
Callistemon viminalis (Weeping Bottle Brush)	10	Red bottle bush flowers spring / summer and often at other times of the year	Tolerates wet or dry soils. Weeping habit
Callistemon viminalis cultivars Eg. Dawson River Weeper Kings Park Special, Hannah Rae, Harkness	4*	Most forms have larger and more prolific flowers than 'viminalis'	Suited to planting under power lines
Calodendron capense (Cape Chestnut)	15+	Pink perfumed flowers in autumn and spring	Broad spreading tree. Prefers ample water

## Species Description (cont)

NAME	HT (M)	FEATURES – FLOWERS, FRUIT AND FOLIAGE	COMMENTS
Callistemon salignus (Pink Tips Bottle Brush)	10	Cream bottle brush flowers late spring / autumn. Bright pink new growth especially in spring	Tolerates wet or dry soils. Moderately frost tolerant
Cassia javanica (Apple Blossom Cassia)	7*	Dense bunches of pink pea flowers in spring and summer followed by long pods. Grey green foliage.	
Cassia multijuga (Golden Shower)	7*	Large bunches of orange yellow flowers in summer	Round headed to columnar often with weeping branches.
Castanospermum australe (Black Bean)	10-15	Dark shiny green foliage, bright red and yellow pea flowers in Spring followed by large leathery pods in Autumn.	Provides dense shade. Flowers rich in nectar
Cupaniopsis anarcardioides (Tuckeroo)	10	White flowers followed by orange fruit in summer. Dark green leathery leaves	Coast tolerant. Local native species
Delonix regia (Poinciana)	10	Scarlet flowers in summer, bright green ferny foliage	Wide spreading tree with drooping horizontal branches. Adequate site and establishment underpruning required
Dysoxylon mueleri (Red Bean)	12	Large clusters of white flowers in Summer followed by hairy pods with red seeds	Provides dense shade
Elaeocarpus reticulatus	10	White or pink fringed bell flowers in spring followed by bright blue fruit	Local native species
Eucalyptus nicholi (Willow Leaf Peppermint)	20	Pendulous light green foliage and cream flowers	Koala Food tree planting (specific locations – see 'issues' page 4)
Eucalyptus salignus	10	Attractive white bark with scribble markings. White flowers in	Locally significant species in Sawtell / Toormina area
Flindersia australis	20+	Large sprays of white flowers in summer. Large star shaped woody fruit	
Flindersia schottiana (Bumpy Ash, Cudgeri)	20+	Masses scented white flowers in summer	Large dark green leaves. Shade tolerant
Gleditsia tricanthos Sunburst (Golden Honey Locust)	10+	Bright yellow-green leaves and yellow flowers in spring.	This cultivar free of spines on trunk and branches. Used in City Centre Mall
Grevillea bayleana and hilliania	15+	White flowers in spring. Leaves bronze or silver underside	Prefers composted soils
Grevillea robusta (Forest Oak)	20+	Orange tooth brush flowers in spring	
Gordonia axillaris (Gordonia)	4*	Large white camellia like flowers in autumn	Prefers humus rich soil and ample moisture
Howea fosteriana (Kentia Palm)		Attractive palm with pendulous dark green foliage and green trunk	
Hymenosporum flavum (Native Frangipani)			
Jacaranda mimosaefolia (Jacaranda)	15	Blue flowers in late spring, light green ferny foliage	Deciduous during flowering Spreading species requiring adequate site area and establishment underpruning

**Species Description cont.**

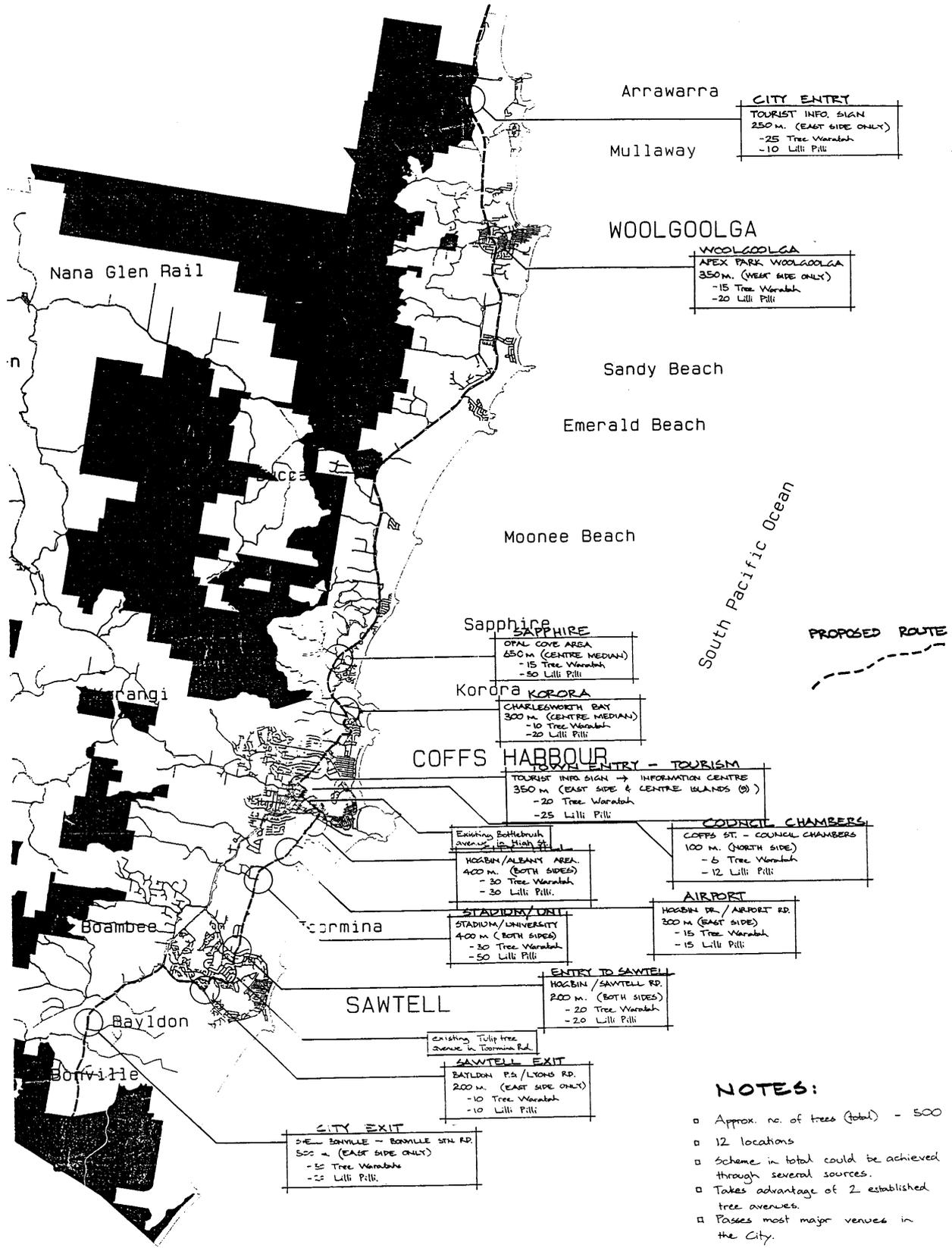
<b>NAME</b>	<b>HT (M)</b>	<b>FEATURES – FLOWERS, FRUIT AND FOLIAGE</b>	<b>COMMENTS</b>
Lophostemon confertus (Brush Box)	15	Attractive red-brown bark, white fringed flowers in spring	Rounded spreading shady crown
Lagerstroemia indica (Crepe Myrtle)	7*	Red, pink, purple or white flowers in spring. Attractive trunk	Decidious
Melaleuca linariifolia (Snow in Summer)	5*	Masses of cream flowers in summer. Soft light green foliage	Shape pruning required
Melicope elleryana (Pink Melicope)	10	Pink flowers spring / summer	Open habit Native to coastal areas north of Coffs Harbour. Seed dispersed by birds. *
Melaleuca quinquenervia (Broad Leaf Paper Bark)	15+	Cream flowers late summer to winter. Red flowering form available.	Tolerates wet and dry soils
Melaleuca leucadendra (Weeping Paper Bark)		Attractive bright green weeping foliage. Cream bottle brush flowers	Tolerates wet and dry soils
Roystonea regia (Royal Palm)	15	Large stately palm with distinctive contoured trunk	Mature examples in Hardacre Street, City Centre Mall and Rose Avenue
Spathodea campanulata (African Tulip Tree)	10+	Orange / red trumpet flower for a long period over summer and autumn	Use with caution near creeks and drainage lines *
Stenocarpus sinuatus (Firewheel Tree)	10-15	Orange / red whorl flowers in summers. Glossy green leaves	Dense columnar shape
Syzygium australe (Weigulga, Brush Cherry)	8	White fluffy flowers in spring followed by rose pink fruits in summer and autumn	Coffs Harbour Floral Emblem
Syzygium leuhmanii (Riberry)	15	White flowers followed by abundant pink/red fruit in summer and autumn. Attractive new growth in shades of pink	Pointed columnar form
Syzygium paniculatum (Magenta Lilly Pilly)	8	White flowers followed by rose / purple fruit in autumn	
Syzygium paniculatum Dwarf Forms eg. Blaze, Aussie Compact, Lillyputt	2-4*	Flowers and fruit same as Magenta Lilly Pilly. Some forms have brightly coloured new foliage growth	Bushy form – shape pruning required
Tibouchina grandulosa, “Alstonville or ‘Kay Williams’ (Tibouchina or Lasiandra)	4-8m*	Large bright purple or pink flowers in autumn and spring	
Tristaniopsis laurina (Water Gum)	5*	Yellow flowers in summer, attractive bark	Tolerates wet and dry soils
Cillia australis (Red Cedar)	20	Fragrant cream flowers in late spring	
Wodyetia bifurcata (Foxtail Palm)	7-15	Neat palm with arching light green fronds with bushy plumes of foliage	Manageable alternative to Cocos Palms. Trial plantings recommended

\* Potential bushland weed (See Table 4)

**Table 4 - Undesirable Species**

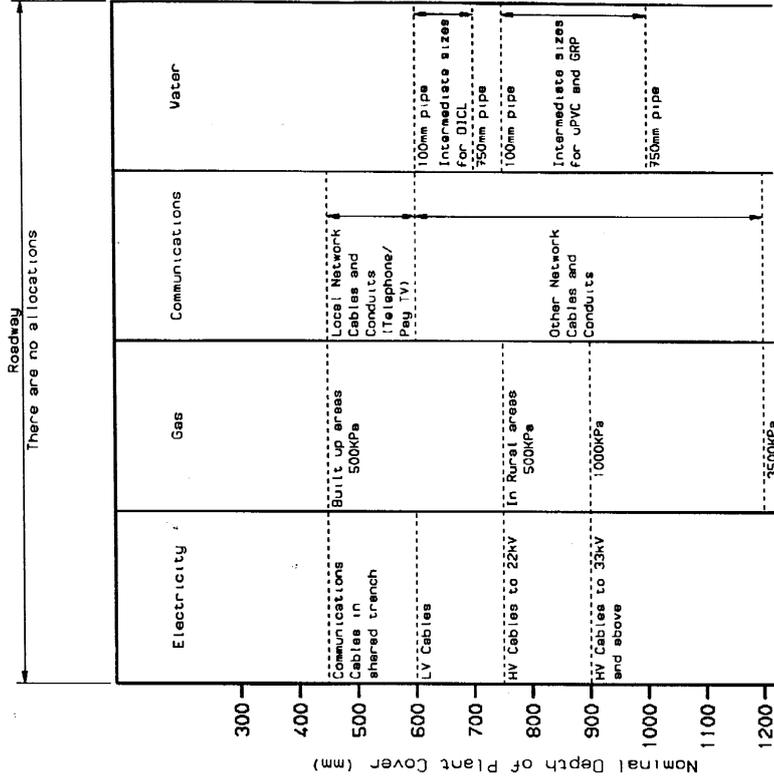
DESCRIPTION	COMMENTS
<p><b>Bushland Weeds</b>                      Schefflera actinophylla (Umbrella Tree)                      Pinus radiata (Slash Pine)</p>	<p>Known bushland weed species to be avoided in new plantings.                      Existing trees to be replaced over time:</p>
<p><b>Potential Bushland Weeds</b>  <i>Wind Dispersed Seeds:</i>                      Koelruteria paniculata (Golden Rain Tree)                      Spathodea campanulata (African Tulip Tree)  <i>Bird Dispersed Seeds:</i>                      Melicope elleryana (Pink Melicope)</p>	<p>Potential bushland weed species to be used with caution and planted only in locations away from bushland, creeks and drainage lines. Occurrence of the species in bushland areas should be monitored and problem seed trees removed.</p>
<p><b>Species with Invasive Root Systems</b>                      Eucalyptus species                      Ficus species (Moreton Bay Fig, Hills Weeping Fig, Rubber Tree)                      Liquidamber styraciflaur (Liquidamber)                      Populus species (Poplar)                      Salix species (Weeping Willow)</p>	<p>Planting limited to use in public reserves where adequate space available</p>

**APPENDIX 4 OLYMPIC FLAME DRIVE**





3.2 In Roadways



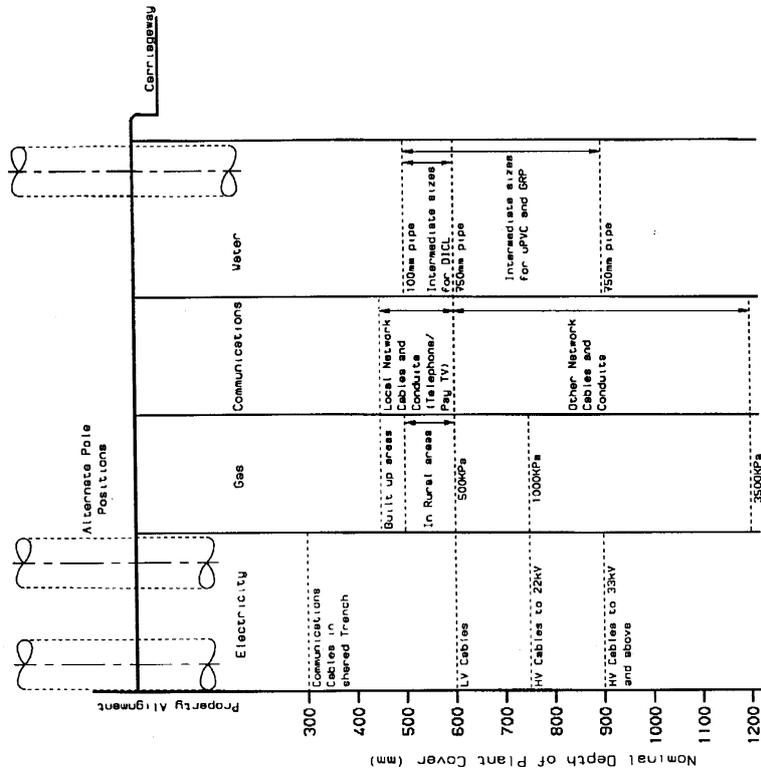
N.B.1. All depths to top of pipe, conduit or cable from gutter invert.  
 N.B.2. Plant laid in rock may have reduced cover to that shown.  
 N.B.3. DICT: Ductile Iron Cement Lined.  
 UPVC: unplasticised Polyvinyl Chloride.  
 GRP: Glass Reinforced Plastic.

WARNING: FOR GENERAL INFORMATION ONLY

This table showing the depth of underground mains indicates only the depths at which the various distribution utilities are nominally laying mains. It has been prepared for information purposes only. Existing and future mains may be laid at different depths from those indicated. It is therefore important that persons intending to excavate should check with the utilities concerned before excavating. They must exercise care in areas where mains are indicated by the utilities and all mains should be located by hand excavation before any mechanical equipment is used.

3.1 In Footways

3.1 In Footways



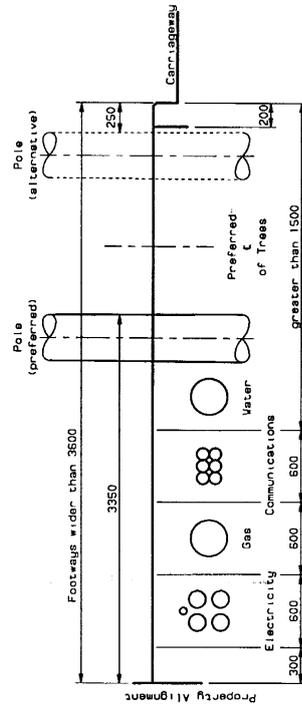
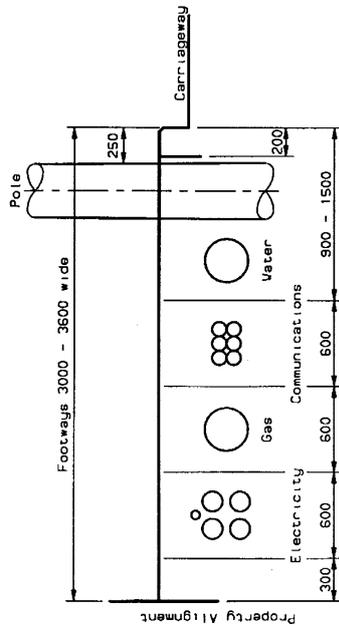
N.B.1. All depths to top of pipe, conduit or cable.  
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**4 PUBLIC UTILITY MAINS - ALLOCATION OF SPACE IN FOOTWAYS**

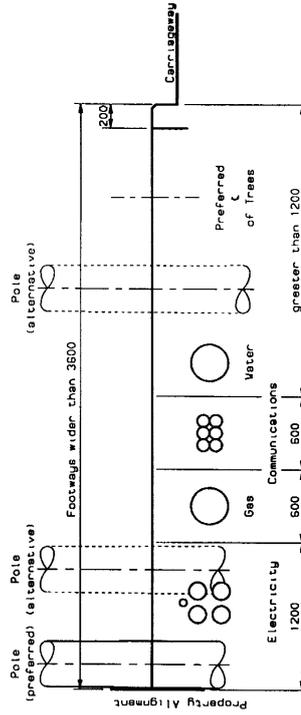
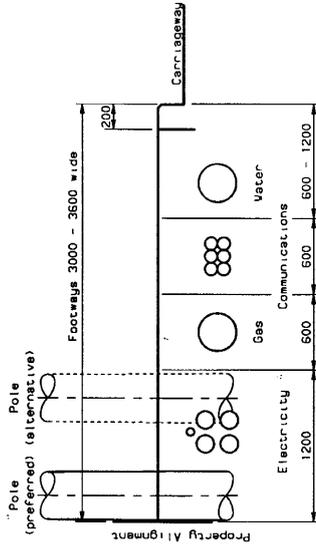
**4.1 Streets Dedicated Prior to 1 January 1991:**



Notes:

1. Where a utility providing underground mains wishes to encroach on space allocated to another utility, it should consult and seek agreement with the other utility. Both utilities should record such encroachments on their respective mapping systems.
2. The first 300mm allocation from the property alignment may be used for the erection of pillars/pedestals/service pits, etc.
3. Where poles and water mains are required in footways less than 3600mm wide, consultation will be required to provide for adequate space.
4. No specific allocation for trees can be identified for footways up to 3600mm wide. Consultation with utilities is required, and due regard will be given to tree species.

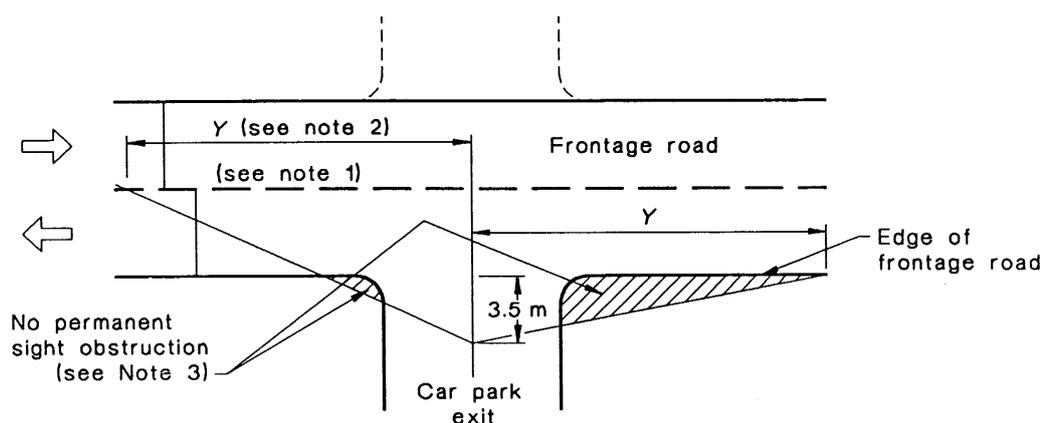
**4.2 Streets Dedicated After 1 January 1991:**



Notes:

1. Where a utility providing underground mains wishes to encroach on space allocated to another utility, it should consult and seek agreement with the other utility. Both utilities should record such encroachments on their respective mapping systems.
2. Footways of width less than 3000mm require special consideration to accommodate utility services. Contact the SOC's Secretariat for information concerning these types of designs, community title situations and other special situations.
3. The preferred position for poles or street lighting columns is adjacent to the property alignment. An alternative position(s) is shown in dashed lines.
4. Where the erection of power poles in the 0 to 1200mm allocation is impractical, power poles may be located in the water allocation, by agreement.
5. No specific allocation for trees can be identified for footways less than 3600mm wide. Consultation with utilities is required, and due regard will be given to tree species.

## APPENDIX 7 SIGHT DISTANCE REQUIREMENTS AT CARPARK EXITS



Frontage road speed (Note 4)	Distance along frontage road, $Y$ m	
	Desirable (Note 5)	Minimum (Note 6)
<45	60	30
45-54	80	40
55-64	105	55
65-74	130	70
75-85	165	95
>85	200	115

### NOTES:

- 1 Separation line (undivided road), or right-hand edge of right-hand through lane (divided road).
- 2 A check to the left is not required at a divided road where the median is wide enough to shelter a crossing vehicle.
- 3 Where visibility is limited due to some removable obstruction (e.g. vegetation, earth bank) attempts should be made to remove the obstruction. If parked vehicles in the frontage road are likely to restrict visibility, the banning of parking for an appropriate distance from the exit may be required.
- 4 The posted or general speed limit is used, unless the 85th percentile speed is significantly higher.
- 5 These distances are equivalent to safe intersection sight distance (SISD) for urban conditions.\*
- 6 These distances are equivalent to approach sight distance (ASD) for urban conditions.\*

FIGURE 3.2 SIGHT DISTANCE REQUIREMENTS AT CAR PARK EXITS

\* See AUSTRROADS. *Guide to traffic engineering practice, Part 5: Intersections at grade*. Sydney: AustRoads, 1988.