DUBBO REGIONAL COUNCIL

DUBBO STREET TREE MASTERPLAN

TOOL KIT BOOKLET

Contents

Tree Species Selection Criteria

This guide outlines the selection criteria that has been used to identify appropriate tree species are most suitable for each of the different street types, as identified by the Road Hierarchy, within the City of Dubbo.

There is No Perfect Tree

A selection criterion was developed to provide a quantitative and qualitative basis for the Master List of Street and Park Trees for the City of Dubbo. However it should be remembered that the urban environment is a varied conglomeration of microclimates and heterogeneous soil conditions whereby above ground and below ground site conditions can change dramatically within the space of a few metres. Street trees also have to compete for space with services, vehicles and pedestrians, as well as the general expectation that there no negatives that may impact on peoples' lives (Figure 1).

It is therefore unlikely that there is one species of tree that can comply fully with all the selection criteria.

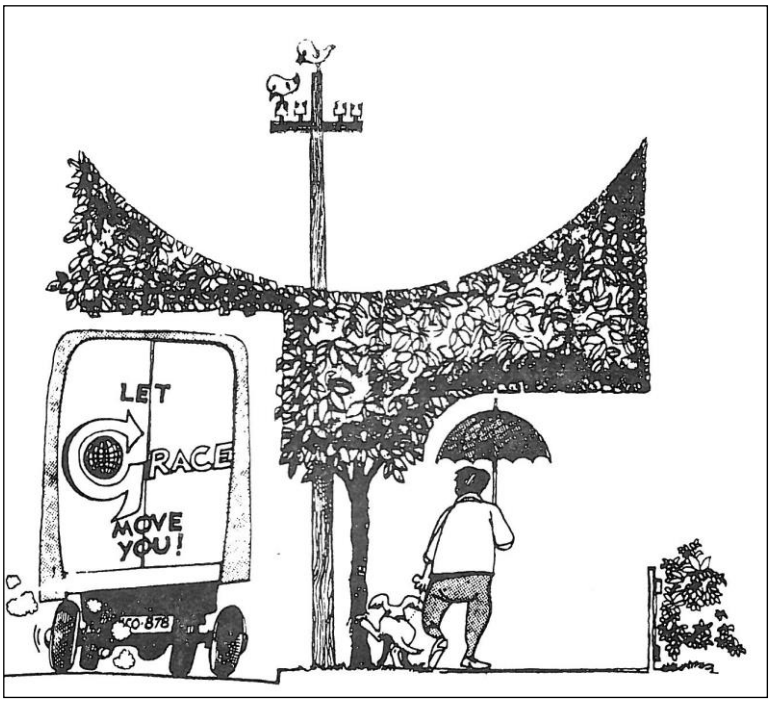


Figure 1. Is this the perfect tree? Not quite! Further requirements include: sheds no leaves, nuts, fruit, bark or flowers, produces no hayfever; harbours no insects or noxious fauna; requires no pruning or spraying; and grows no roots. (S.A Department of Further Education).

Just as there is no one perfect urban tree, it is also important to understand that there is no one type of urban environment. While the Tree Selection Matrix can produce a list of tree species suitable for a particular Location Type, a site analysis of each planting site must be carried out to make the final determination of the "right" tree for a specific site.

Appropriate site assessment and tree selection can have the following benefits:

- Minimised conflict between tree roots and adjacent road, footpaths, civil infrastructure and buildings.
- Reduced incidence of pest and disease outbreaks. This can be achieved through selecting resistant varieties of trees and increasing species diversity through the City.
- Increased plant performance.

- Improved drought survival.
- Increased tree longevity so that tree benefits exceed costs. The benefit of an urban tree is directly proportional to its crown size or volume and longevity in the landscape.
- Reduced maintenance costs, particularly pruning. Pruning requirements can be reduced by selecting smaller trees under powerlines or narrow canopy form for main roads.
- Increased attractiveness of streetscapes, reinforcing the pervading landscape and architectural character.
- Reduced environmental demand – trees that have tolerance of drought and generally do not require additional resource inputs, such as irrigation or fertiliser, in order to perform satisfactorily.
- Reduced incidence of allergic reactions by the public.
- Reduced incidence of pest species within the urban environment by favouring trees that do not provide the same foraging or sheltering opportunities.
- Reduced incidence of slip and trip injuries from fruit fall by selectively excluding trees that produce fleshy fruits that become mucilaginous on decomposition or species that produce hard round berries from pedestrian areas.

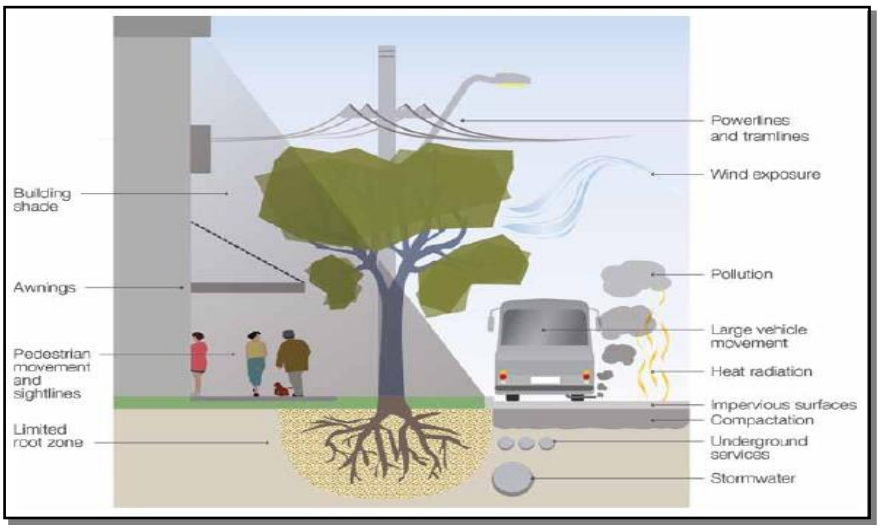


Figure 2. Poor species selection can result in conflict with services, reduced environmental benefits and aesthetics.

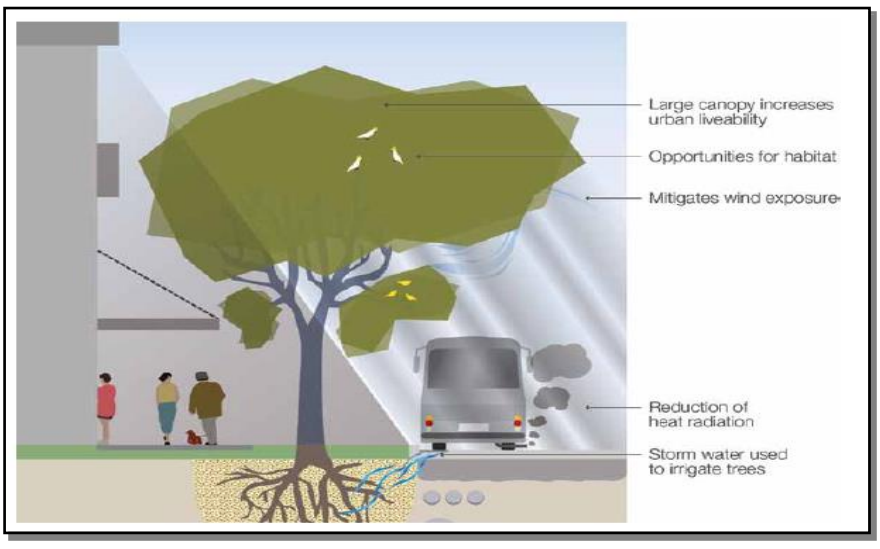


Figure 3. Good species selection reduces conflicts with services, and increases the environmental benefits and aesthetics of an area.

Tree selection will take into account relative plant tolerances and adaptability, and integration into surrounding planting themes. The basic issues regarding tree selection can be summarised as follows:

- Biological requirements relate to a tree's ability to tolerate urban conditions. The species selected should have high tolerance levels that will allow establishment and sustained growth while producing desired benefits with low management inputs. Biological requirements also relate to available root space to sustain the potential tree size.
- Ecological issues include tree diversity, maintaining and enhancing existing significant areas of native and remnant indigenous vegetation, selecting plants that do not have the potential to become woody weeds that impact on natural systems.
- Functional and spatial issues include the trees' ability to be pruned to provide required clearances, the trees root system and the degree of its impact on adjacent infrastructure, and above ground and below ground restrictions.
- Aesthetic issues consider the ability for trees to enhance the visual or other sensory (for example, olfactory) amenity of a streetscape or area.
- Tree longevity: the longer a tree is allowed to grow in a site the greater the benefits to the landscape and return on initial investment.
- Availability: selected trees will need to be commercially available in the desired numbers and size for planting programs.
- Litter drop: leaves, flowers, fruit and bark can cause maintenance issues and trip hazards.
- Structural integrity: stock should be known to have received appropriate formative treatment whilst in the production nursery.

Overview of Selection Criteria

The base selection criteria for determining the suitability of a street tree in Dubbo's urban environment and changing climatic conditions are those that affect its ability to adapt to urban conditions.

A broad range of species from varied habitats have been tested against these base selection criteria to ensure the best possible outcome given specific individual site outcomes and constraints.

Twelve base selection criteria for adaptability to urban conditions

Twelve base selection criteria for adaptability to urban conditions have been identified. They reflect the species' ability to respond to drought, heat, wind and pollution the species' lifespan, pathogen and pest susceptibility and manageability, effect on community health and allergies, the degree and quality of shade cast, maintenance requirements, extent of tree litter produced, potential fruit fall problems and its potential as an environmental weed.

These 12 criteria that affect a species' adaptability to urban conditions are discussed more fully in the following pages. As an aid to decision making, each species is given an overall numerical score from 1 to 60. This score is derived by assigning a value of 1 (low) to 5 (high) for each of the 12 base criteria. While there is no such thing as the 'perfect street tree', a score of 60 points represents a highly adaptable and useful species.

The first 10 selection criteria were based on the spreadsheet that was prepared for the Melbourne City Council by Aspect and Tree Logic consultancy, with "Fruit Fall Problems" and "Weed Potential" added following discussions with the Manger of Landcare and Manager Parks and Landcare Operations. This

criterion is not fixed and following further review additional criteria may be added to refine the selection process further with the higher the number of criteria used in the assessment the more accurate the scoring.

Using the 12 assessment criteria the best performing tree, with a score of 54 out of 60 was the Italian Cypress (*Cupressus sempervirens*). Another 5 species , Kurrajong (*Brachychiton populneus*), Rottenest Island Pine (*Callitris preissii*), Cimmaron Green Ash (*Fraxinus pennsylvanica 'Cimmaron'*), Urbanite Green Ash (*Fraxinus pennsylvanica 'Urbanite'*) and the Edgewood Pear (*Pyrus calleryana x betulaefolia "edgedall"*) scored 53 out of 60. This does not mean that we limit ourselves to these few trees as we ultimately want to develop a strong and robust urban forest.

Additional criteria

These criteria guide selection of the 'right tree for the right place'. They consider a tree's suitability for being grown beneath power lines, in heavy shade, being pruned to allow vehicular and pedestrian movement, adaptability to waterlogged soils, salinity tolerance and tolerance of soil compaction.

These additional criteria are discussed more fully in the following pages.

Location Types

This strategy identifies 11 street location types (including Arterial Roads, Sub Arterial Roads, Collector Roads, Residential Roads, Central Business District and Laneways) and 1 park location type (Parkland) within the City of Dubbo.

Each of the 12 Location Types is associated with a set of minimum conditions necessary for the success of a street tree in that environment. Species can be rated for their suitability against each of the 12 Location Types. Tree lists for each of the 12 Location Types can thus be generated through the Tree Matrix.

These species lists for each Location Type can be used by Council in precinct plan applications in which further considerations are then overlaid on this these general and more specific species selection criteria.

Non-rated Criteria

Additional considerations that may be used to further refine the selection of a street tree include, for example, heritage, biodiversity goals, microclimate goals, aesthetics and character. This strategy does not rate tree species against these criteria.

Park Trees

While most street trees can be grown in parks, the reverse is not always possible. Park trees include species that require greater root volumes than those generally achievable in the streetscape environment, and species of large size.

Park trees are generally larger tree species and cultivars suitable for planting in larger open spaces with reduced above and below ground constraints. Trees are generally able to develop natural form.

The Twelve Base Selection Criteria Affecting Adaptability to Urban Conditions

Adaptability to urban conditions is a culmination of various plant tolerances that make a particular species or cultivar more or less suited to planting in urban landscapes, and here specifically the urban landscape of the City of Dubbo.

Each species' adaptability to urban conditions was given an overall numerical score from 1 to 60. This score was derived by assigning a value of 1 (low) to 5 (high) for each of the 12 base criteria. The twelve base criteria are:

- Drought tolerance
- Heat tolerance
- Wind tolerance
- Longevity
- Pollution tolerance
- Pathogen and pest susceptibility and manageability
- Potential as allergen
- Shade cast
- Maintenance required
- Tree litter
- Fruit fall problem
- Weed potential

Drought Tolerance

Drought tolerance is defined as the ability of a species to withstand extended dry periods. Generally plants that require less water (once they are established) are drought tolerant because they are adapted to regions with frequent drought or to soils with low water-holding capacity.

Value rating:
1 = not tolerant of extended dry periods.
5 = highly tolerant of extended dry periods

Heat Tolerance

Heat stress can be defined as the rise in temperature beyond a threshold level for a period of time sufficient to cause irreversible damage to plant growth and development. Transitory or constantly high temperatures cause an array of changes to plant growth.

Value rating:
1 = Low = not tolerant of transitory or constantly high temperatures.
5 = High = highly tolerant of transitory or constantly high temperatures.

Wind Tolerance

Degree to which species/variety is susceptible to limb breakage.

Value rating:
1 = Low tolerance to wind loads and generally low resistance to limb breakage.
3 = Moderate tolerance to wind loads and generally resistant to limb breakage.
5 = High tolerance to wind loads and generally good resistance to limb breakage.

Longevity

Expected life span that a tree species can be retained in a safe and aesthetically pleasing manner in the situation (providing site conditions remain unchanged). Most urban trees have reduced life spans compared to those found in natural habitats.

Value rating:
1 = short lived (< 50 years).
2 = Moderate life span (50-100 years).

3 = Moderate to long-lived species (100-150 years).
4 = Long-lived species (> 150 years).
5 = not used

Pollution Tolerance

Air pollutants can harm trees by two means; by being absorbed as chemical contaminants through stomata, and by being absorbed as dust and particulate matter on the surface of the leaf. Virtually all of the pollutants to trees are airborne, and include fluorides, oxidants, sulfur dioxide and carbon monoxide. Sunlight reacts with oxidants to form tree pollutants, like ozone and PAN (peroxyl acetyl nitrate). The effects of pollutants on trees can cause the tree to weaken and die.

The tolerance of species to pollution is largely related to their avoidance (or not) of uptake of pollutants by the leaves or in a biochemical tolerance of pollutants. Some plants can metabolize pollutants into less toxic substances. There is enormous variability between species as to their tolerance to pollution.

Pollution ratings are primarily based on referenced literature and experience.

Value rating:
5 = highly tolerant of pollution
3 = moderately tolerant of pollution
1 = poorly tolerant of pollution.

Pathogen and Pest Susceptibility and Manageability

This rating considers a particular species susceptibility to pests and pathogens. Potential pathogens that currently are not present but could impact on species have been listed (see Table 5).

Value rating:
1 = High susceptibility to pathogens or pests, with control difficult.

3= Moderate susceptibility to pathogens or pests.
5 = Low susceptibility to pathogens and pests, and control easy.

Potential as Allergen

Of the 50,000 different kinds of trees, less than 100 have been shown to cause allergies. Most allergies are specific to one type of tree or to the male cultivar of certain trees. The degree of allergic reaction, and the physical origin of the allergen (for instance, sap) known to cause allergic reaction, is indicated on the tree matrix.

Value rating:
1 = High potential as an allergen.
5 = Low potential as an allergen.

Shade Cast

This rating represents a qualitative estimate of the degree of shade cast projected by a tree. This rating also considers the form of the tree, for instance a broad tree will cast greater shade compared to a fastigiate tree.

Value rating:
1 = low shade cast.
2 = Moderate to low shade cast.
3 = Moderate shade cast.
4 = Moderate to high shade cast.
5 = Heavy shade cast.

Maintenance Required

This rating assumes typical pruning maintenance works such as pruning for sight clearances and clearance of powerlines. Maintenance activities are generally higher in a younger tree in order to attain the form to suit site constraints. This rating also indicates any specific maintenance requirements that may be required.

Levels:
5 = Low – Due to size or growth habit of the plant the degree of maintenance required would be less than the perceived maintenance inputs.
3 = Moderate – Typical assumes current cyclic pruning programs to meet site constraints, risk management and legislative requirements.
1 = High – Expected maintenance levels are higher than current maintenance standards, representing greater potential impacts with infrastructure or additional seasonal requirements.

Tree Litter

All trees will shed litter, leaves, bark, flowers or fruit at some time during a given growing season. As far as is possible the tree selections generally do not drop excessive litter. There are exceptions however as these trees have other characteristics which make them suitable for certain planting situations.

Where excessive litter is a known for a particular species or cultivar, it has been noted on the tree matrix.

Value rating:
1 = Produces a considerable amount of troublesome litter.

3 = produces a reasonable amount of litter that can be managed with reasonable resources
5 = produces little troublesome litter.

Fruit Fall Problems

Some trees develop flowers and / or fruiting bodies that can lead to management issues. Trees that produce excessively large or heavy seed pods or cones, large fleshy fruit or flowers and berries will be avoided wherever possible.

Value rating:
1 = Produces a considerable amount of troublesome fruit fall that is difficult to manage.

3 = produces a reasonable amount of fruit fall that can be managed with reasonable resources.
5 = produces little or no fruit fall.

Weed Potential

Tree species have differing potential to become a problematic weed species. The Chinese Elm, for example, is extremely drought hardy but produces a large amount of viable seed and is potentially a species that could become a future weed problem. In contrast, there are a number of cultivars on the list which are similarly as hardy but do not produce any viable seed. In some cases a weed problem may take years to express itself and it may be the culmination of a number of events.

Value rating:
5 = produces no viable seed or produces a low amount of seed and is not drought tolerant.
3 = produces a moderate amount of seed and drought resistant
1 = produces a large amount of viable seed and is drought tolerant

Additional Criteria

Street type criteria are a further set of criteria that determine the tree selection for a specific type of street. Various types of street have specific effects on light availability, or restrictions such as the presence of overhead powerlines. These criteria guide selection of the 'right tree for the right place'.

Soil Compaction Tolerance

Tree species were rated for their ability to withstand the highly compacted soils that often occur in the urban environment.

Waterlogged Soil Tolerance

Trees that can tolerate waterlogged soils are particularly useful for WSUD applications. Soils temporarily inundated with water lead to poor aeration. Species tolerant of waterlogged soils are often also tolerant of compacted soil conditions.

Value rating:
1 = not tolerant of periodic inundation.
3 = Moderate tolerance of periodic inundation.
5 = Highly tolerant of periodic inundation (and of low oxygen in soils).

Shade Tolerance

Most tree species require full sun. There are some species that will tolerate lower light levels of part shade. There are no species selected in the matrix that tolerate full shade (less than 6 hours of filtered sunlight per day).

Categories:
Full sun – More than 6 hours of direct sunlight.
Full sun to part-shade – Either more than 6 hours of direct sunlight a day or filtered light for most of the day. (These species would be more suitable for streets that have low direct sun through a day.

Power Lines

Tree species were rated as being suitable for planting under power lines without pruning, with pruning (if specifically known, for instance Smooth-barked Apple (*Angophora costata*)), or not suitable.

Choosing the Right Tree

This section identifies the process for selecting the most appropriate tree species for a particular location.

Introduction

To successfully choose a street tree it is necessary to determine the type of location in which the tree is to be grown.

The right choice of species for a street tree will depend on a number of factors. Consideration needs to be given to:

- Zoning: in which zone is the tree to be located in? For example: residential, CBD, industrial, etc.
- The street's form and use: Is the street wide or narrow, arterial, sub-arterial, collector or residential road and does it have powerlines? What type of vehicles use the street?
- The location within the street: Is the tree located on the grass footpath/verge, in the road's shoulder or does the street have a median in which the tree is to be positioned?

- Desired qualities: How much maintenance can be provided? How long-lived is the desired tree? How drought tolerant should the tree be? Pollution tolerant? How much shade is to be provided by the tree? Is the tree known to cause allergic reactions to people? Does it drop an excessive amount of litter? Or does it produce fruit, flowers or berries that may be problematic or costly to manage?

The purpose of this guide is to help identify the 11 street location types and one park location types within the City of Dubbo and provide assistance in determining what trees would be suitable in each situation.

Each of the 11 Location Types is associated with a set of minimum conditions necessary for the success of a tree in that environment.

For instance, the criteria for a tree located in an Arterial Road (LP02) is: canopy 7 - 25m,height 5 - 11m,drought tolerance ≥ 4,heat tolerance ≥ 4,wind tolerance ≥ 4,longevity ≥ 3,pollution tolerance ≥ 3,pathogen/pest tolerance ≥ 3,allergen potential ≥ 3,shadow cast ≥ 3,maintenance required ≥ 3,tree litter ≥ 3,fruit fall ≥ 3 and weed potential ≥ 3. These criterions have been used to interrogate the interactive matrix to provide a list of potential tree species candidates that be further refined by considering additional criteria such as the presence of powerlines, the level of shading or waterlogged soils, heritage and neighbourhood character.

Importantly, the Tree Selection Matrix should only be considered a guide and it may be the case that another species may be preferred for a particular reason. For example: it may be that that there is a predominance of a species within a streetscape that is performing well and is not adversely impacting on infrastructure, or there may be a historic reason to maintain a species within a certain area. Further, new species and cultivars that perform better in urban environments are likely to be developed, while some plants that are identified may fall out of favour or become problematic as a result of disease management (eg: *Fraxinus "raywoodii"*) or weed potential eg: *Gleditsia triacanthos* cultivars).

Tree Selection Matrix

Tree Species		Origin	Growth Rate	Height	Canopy Widths	Type	Biodiversity Potential-Foraging habitat	Common Availability	Base Criteria	Drought Tolerance	Heat Tolerance	Wind Tolerance	Longevity	Pollution Tolerance	Pathogen and Pest Susceptability	Potential as Allergen	Shadow Cast	Maintenance Required	Tree Litter	Fruit Fall Problem	Weed Potential	ADAPTABILITY TO URBAN CONDITIONS	Location Type Criteria	Soil Compaction Tolerance	SalinityTolerance	ADAPTABILITY WITHIN STREET TYPES
DUBBO																										
Acacia baileyana	Cootamundra Wattle	Central NSW	Fast	4	3	Evergreen	Insects, birds	Common		3	3	3	1	3	4	1	3	5	5	4	2	**37**		3	1	41
Acacia deanei	Deanes Wattle	Central NSW	Fast	4	3	Evergreen	Insects, birds	Common		3	3	3	1	3	4	2	3	5	5	4	2	**38**		3	1	42
Acacia decurrens	Early Black Wattle	Black Wattle, Sydney Wattle	Fast	8	5	Evergreen	Insects, birds	Common		3	3	3	1	3	4	2	3	5	5	4	1	**37**		3	3	43
Acacia implexa	Lightwood	NSW, Vic, Qld	Fast	15	5	Evergreen	Insects, birds	Common		3	4	3	1	3	4	2	3	5	5	4	2	**39**		3	2	44
Acacia leprosa 'Scarlet Blaze'	Scarlet Blaze	Victoria	Mod to Fast	5	3	Evergreen	Insects, birds	Faceys and other specialist nurseries		3	3	3	1	3	4	2	3	5	5	5	5	**42**		3	3	48
Acacia mearnsii	Late Black Wate	NSW, Vic, Tas and SA	Fast	10	5	Evergreen	Insects, birds	Common		2	2	3	1	3	3	2	3	5	5	4	1	**34**		2	1	37
Acacia melanoxylon	Blackwood	NSW, Vic, Qld, Tas and SA	Mod to Fast	15	5	Evergreen	Insects, birds	Common		3	3	3	1	3	3	2	3	5	5	4	2	**37**		3	2	42
Acacia pendula	Weeping Myall	NSW, Vic, Qld	Slow	10	4	Evergreen	Insects, birds	Common		4	4	4	2	3	4	4	3	4	5	5	3	**45**		3	3	51
Acacia pravissima	Ovens Wattle	NSW, ACT, Vic	Mod to Fast	6	3	Evergreen	Insects, birds	Common		3	3	3	1	3	3	2	3	5	5	4	2	**37**		3	3	43

Acacia salicina	Willow Acacia	NSW, Vic, Qld, NT and SA	Mod to Fast	12	5	Evergreen	Insects, birds	Common		3	4	3	1	3	4	2	3	5	5	5	2	**40**		3	4	**47**
Acacia spectabilis	Mudgee wattle	Central West NSW and Queensland	Mod to Fast	5	3	Evergreen	Insects, birds	Common		4	4	3	1	3	4	2	3	5	5	5	3	**42**		3	2	**47**
Acer buergerianum	Trident Maple	Eastern China, Korea & Japan. Mountain woods	Mod	8	6	Deciduous	Unknown	Common. Bare root, container, advanced		3	3	3	2	3	5	3	3	3	3	4	3	**38**		3	3	**44**
Acer campestre 'Elsrijk'	Elsrijk Maple	Cultivar	Mod	7	5	Deciduous	Unknown	Becoming available. Bare root and containers		5	5	3	4	3	5	5	3	3	5	4	2	**47**		5	5	**57**
Acer campestre 'Evelyn'	Queen Elizabeth Maple	Cultivar	Mod	6	5	Deciduous	Unknown	Common. Bare root, container		5	5	3	4	3	5	5	3	3	5	4	5	**50**		5	5	**60**
Acer negundo	Box Elder	North America	Fast	20	15	Deciduous	Unknown	Common. Bare root, container		3	3	3	3	4	4	5	5	3	3	4	1	**41**		4	3	**48**
Acer negundo 'Sensation'	Sensation Box Elder Maple	Cultivar	Mod	10	8	Deciduous	Unknown	Common. Bare root, container		4	4	3	2	5	3	4	4	3	5	5	5	**47**		4	3	**54**
Acer platanoides 'Crimson Sentry'	Crimson Sentry Norway Maple	Cultivar	Mod	9	5	Deciduous	Unknown	Common. Bare root, container		4	4	3	2	3	5	5	4	3	5	4	5	**47**		5	3	**55**
Acer platanoides 'Globosum'	Globe Norway Maple	Cultivar	Slow	5	4	Deciduous	Unknown	Becoming available. Bare root and containers		3	3	5	2	3	5	5	2	5	5	4	5	**47**		5	3	**55**
Acer rubrum 'October Glory'	October Glory Red Maple	Princeton Nurseries	Fast	15	9	Deciduous	Unknown	Common. Bare root, container		3	3	3	3	3	5	5	3	3	5	4	5	**45**		5	3	**53**

Acer rubrum 'Scarsen'	Scarlet Sentinel Freeman Maple	Garden & natural occuring A.saccharinum x A.rubrum	Mod to Fast	11	5	Deciduous	Unknown	Common. Bare root, container		3	3	3	3	3	5	5	3	3	5	4	5	**45**		5	3	**53**
Acer truncatum x *A. platanoides* 'Keithsform'	Hybrid Shantung Norwegian Sunset	Cultivar	Mod to Fast	9	5	Deciduous	Unknown	Common. Bare root, container		4	4	3	3	5	5	5	3	3	5	4	5	**49**		4	4	**57**
Acer x freemanii 'Autumn Blaze'	Autumn Blaze Freeman Maple	Garden & natural occuring A.saccharinum x A.rubrum	Fast	15	9	Deciduous	Unknown	Common. Bare root, containerised.		4	4	3	3	3	5	5	3	3	5	4	5	**47**		4	4	**55**
Acmena smithii	Lilly Pilly	NSW, Vic, Qld	Mod	8	8	Evergreen	Insects, birds	Common		4	3	3	2	3	4	5	4	4	5	4	4	**45**		2	2	**49**
Afrocarpus falcata	Yellow Wood	East coast South Africa	Mod	14	10	Evergreen	Seed eaters	Occasional		3	3	5	4	3	5	5	5	3	5	4	5	**50**		4	3	**57**
Agathis robusta	Queensland Kauri	Queensland, lowlands & tablelands	Mod	22	11	Evergreen	Seed eaters	Common. Container & advanced		3	4	3	4	3	5	5	4	3	5	3	5	**47**		3	3	**53**
Agonis flexuosa	Willow Myrtle	WA	Mod	6	5	Evergreen	Seed eaters	Common		5	5	3	2	3	5	5	3	3	5	4	5	**48**		2	5	**55**
Albizia julibrissin	Pink silk Tree	Iran, Japan	Fast	10	5	Deciduous	Flowers, insect-eaters, seed	Common		5	4	3	2	2	3	4	4	3	3	2	2	**37**		2	5	**44**
Allocasuarina littoralis	Black She-Oak	Eastern Victoria & NSW. Lighter forests	Fast	8	4	Evergreen	Seed eaters	Common		5	5	3	2	3	5	5	2	3	5	4	5	**47**		2	5	**54**
Allocasuarina torulosa	Forest She-Oak	Coastal forests NSW & Qld	Mod	11	7	Evergreen	Seed eaters	Common		5	5	3	2	3	5	5	3	3	2	4	5	**45**		4	5	**54**
Allocasuarina verticillata	Drooping She-Oak	NSW, Vic., Tas., SA.	Fast	8	7	Evergreen	Seed eaters	Common		5	5	5	2	3	5	5	2	3	2	4	5	**46**		3	5	**54**

		Coastal & Inland																								
Alnus cordata	Alder, Italian Alder	Italy, France	Mod	10	7	Deciduous	Unknown	Common		5	4	3	3	5	4	4	3	3	3	4	2	**43**		4	5	**52**
Alnus jorullensis	Evergreen Alder	Central and South America	Fast	10	6	Evergreen	Unknown	Common		5	4	5	3	5	4	4	4	3	4	4	2	**47**		4	5	**56**
Alphitonia excelsa	Red Ash	Qld, NSW, WA, NT	Mod to Fast	21	8	Evergreen	Flowers, insect-eaters, seed	Occasional. Specialist native nurseries		4	3	3	3	4	2	5	3	3	4	4	2	**40**		2	4	**46**
Angophora costata	Smooth-Barked Apple	Qld, NSW	Fast	19	14	Evergreen	Flowers, insect-eaters, seed	Common		5	5	5	4	3	5	3	2	3	4	5	5	**49**		3	5	**57**
Angophora floribunda	Rough-Barked Apple	Qld, NSW	Mod to Fast	15	11	Evergreen	Flowers, insect-eaters, seed	Common		4	4	3	2	3	4	5	3	3	4	4	5	**44**		3	4	**51**
Angophora hispida (Syn. *A. cordifolia*)	Dwarf Apple	NSW	Mod	6	6	Evergreen	Flowers, insect-eaters, seed	Common to rare. Specialist nurseries		5	5	5	2	3	5	5	3	3	5	5	5	**51**		4	5	**60**
Araucaria columnaris	*Coral Reef Araucaria*	*New Caledonia, Ouinne to Prony, 7 Isle of Pines and Loyalty Islands*		30	6	Evergreen	Not Known	Occasional specialist nurseries		3	3	4	3	3	4	5	2	3	5	5	5	**45**		2	4	**51**
Araucaria cunninghamii	Hoop Pine	New Guinea, QLd, NSW	Mod	30	11	Evergreen	Seed eaters	Common		3	3	5	4	3	5	5	3	5	5	4	5	**50**		3	3	**56**
Araucaria heterophylla	Norfolk Island Pine	Norfolk Island	Mod to Fast	23	8	Evergreen	Seed eaters	Common		3	4	5	4	2	5	5	2	3	2	4	5	**44**		4	3	**51**

Arbutus unedo	Irish Strwberry Tree	Mediterrean, western Europe, France, Ireland	Slow	7	5	Evergreen	Birds	Common		4	4	3	2	3	5	3	3	4	4	4	4	**43**		3	3	49
Backhousia citriodora	Lemon Myrtle	Qld	Slow	7	6	Evergreen	Insects, birds	Common		3	4	3	3	2	4	5	3	3	5	3	5	**43**		5	2	50
Banksia integrifolia subsp. *integrifolia*	Coastal Banksia	Vic, NSW, Tas, Qld	Mod	15	8	Evergreen	Flowers, insect-eaters, seed	Common		3	4	5	4	3	5	5	2	3	5	4	5	**48**		4	3	55
Banksia serrata	Saw Banksia	East coast Australia	Mod	11	8	Evergreen	Flowers, insect-eaters, seed	Common		4	4	3	3	3	5	5	4	2	5	4	5	**47**		2	4	53
Bauhinia variegata	Orchid Tree	South China, Pakistan, India	Fast	10	8	Deciduous	Birds, insects	Common		3	3	2	2	2	3	5	4	3	3	4	5	**39**		3	2	44
Bauhinia x blakeana	Hong Kong Orchid Tree	South China	Mod	8	4	Evergreen	Flowers, insects	Common		4	4	2	3	3	3	4	4	5	5	5	5	**47**		3	4	54
Betula pendula	Silver Birch	Most of Europe,	Fast	20	10	Deciduous	Insects	Common		3	2	3	2	3	4	2	3	2	4	4	3	**35**		1	3	39
Brachychiton acerifolius	Flame Tree	Qld., NSW	Mod	11	5	Semi-Deciduous	Flowers, insect-eaters	Common		4	5	3	3	3	5	5	2	5	2	3	5	**45**		3	4	52
Brachychiton discolour	Lacebark	Qld, NSW	Mod	15	10	Semi-Deciduous	Flowers, insect-eaters	Common		2	3	5	3	3	3	5	4	3	3	2	5	**41**		3	2	46
Brachychiton populneus	Kurrajong	Inland Vic., Nsw, & Qld.	Mod to Fast	8	6	Evergreen	Flowers, insect-eaters	Occasional		5	5	5	4	3	5	5	3	5	5	3	5	**53**		3	5	61
Brachychiton populneus x acerifolius 'Jerilderie Red'	Jerilderie Red Kurrajong	Cultivar	Mod	8	4	Deciduous	Flowers, insect-eaters	Common		5	4	3	3	4	4	5	3	5	4	4	4	**48**		3	3	54

Brachychiton rupestris	Queensland Bottle Tree	Central Qld. Northern NSW	Mod to Slow	9	10	Deciduous	Flowers, insect-eaters	Occasional		5	5	5	4	3	5	5	2	5	5	3	5	**52**		3	5	60
Brachychiton x roseus	Hybrid Flame Tree	Hybrid	Slow to Mod	9	6	Deciduous	Flowers, insect-eaters	Occasional		3	4	3	4	3	5	5	3	5	5	3	5	**48**		3	3	54
Callistemon citrinis	Crimson Bottlebrush	Qld, NSW, Vic	Fast	3	2	Evergreen	Birds, insects	Common		4	4	4	2	3	5	4	3	4	4	5	4	**46**		4	4	54
Callistemon 'Harkness'		Garden Hybrid	Fast	5	3	Evergreen	Flowers, insect-eaters	Common		3	5	3	2	3	5	5	2	3	5	5	5	**46**		5	3	54
Callistemon salignus	Willow leaf Callistemon	Qld. & NSW	Fast	6	4	Evergreen	Flowers, insect-eaters	Common		3	4	5	2	3	5	5	3	3	5	5	5	**48**		5	3	56
Callistemon viminalis	Weeping Bottlebrush	NSW & Qld.	Fast	6	5	Evergreen	Flowers, insect-eaters	Common		5	4	3	2	3	5	5	2	4	5	5	5	**48**		5	5	58
Callistris rhomboidea	Port Jackson Pine	Qld, NSW, Vic, SA	Mod to Slow	6	2	Evergreen	Seed eaters	Specialist nurseries, seed		3	3	5	4	3	5	5	3	5	5	4	3	**48**		4	3	55
Callitris glaucophylla	White Cypress Pine	Australia: all mainland States	Mod to Slow	19	8	Evergreen	Seed eaters	Specialist nurseries, seed		5	4	5	4	3	5	5	3	5	5	4	3	**51**		3	5	59
Callitris preissii	Rottnest Island Pine	Swan Coastal plain around Perth & Rottnest and Garden islands	Slow	8	5	Evergreen	Seed eaters	Specialist nurseries, seed		4	5	5	4	3	5	5	4	5	5	4	4	**53**		2	4	59
Casuarina cunninghamiana	River She-Oak	NSW, Qld.	Mod	19	11	Evergreen	Seed eaters	Common		5	5	5	2	3	5	5	2	3	2	4	5	**46**		5	5	56
Casuarina glauca	Swamp She-oak	East coast Australia	Fast	15	7	Evergreen	Seed eaters	Common		5	5	5	2	3	5	5	2	3	2	4	5	**46**		5	5	56
Catalpa bignonioides 'Nana'	Dwarf Indian Bean	Cultivar	Mod to Slow	4	4	Deciduous	Unknown	Common		3	2	3	2	3	5	5	2	3	5	5	5	**43**		3	3	49

Cedrus atlantica	Atlas Cedar	North Africa; Morocco, Algeria	Mod	20	11	Evergreen	Seed eaters	Common		4	4	3	4	3	5	3	3	3	5	4	5	**46**		1	4	**51**
Cedrus deodara	Deodar Cedar	India and Pakistan	Mod	15	11	Evergreen	Seed eaters	Common		3	4	3	4	3	4	3	3	3	4	4	5	**43**		4	3	**50**
Celtis australis	European Nettle Tree	Southern Europe	Mod to Slow	11	6	Deciduous	Unknown	Occasional		5	4	5	4	2	5	5	3	2	5	3	2	**45**		3	5	**53**
Celtis occidentalis	Common Hackberry	North America	Mod to Fast	11	11	Deciduous	Unknown	Occasional		5	4	3	4	3	5	5	3	2	5	3	2	**44**		4	5	**53**
Cercis siliquastrum	Judas Tree	Mediterranean	Mod	8	5	Deciduous	Flower, insect - eaters, seeds	Occasional		3	5	3	2	3	5	5	2	3	5	4	5	**45**		3	3	**51**
Chamaecyparis lawsoniana	Lawsons Cypress	USA	Mod	25	4	Evergreen	Unknown	Common		3	4	4	4	4	3	5	5	4	5	5	5	**51**		4	2	**57**
Cinnamomum camphora	Camphor Laurel	Japan, Taiwan, & China	Fast	9	8	Evergreen	Foilage grazers, seed eaters	Common		3	4	5	2	3	5	5	3	3	5	4	1	**43**		2	3	**48**
Corymbia citriodora	Lemon-Scented Gum	Qld	Fast	15	15	Evergreen	Flowers, insect - eaters, seed.	Common		4	3	3	4	3	5	5	1	3	5	5	5	**46**		3	4	**53**
Corymbia citriodora 'Scentuous'	Scentuous Lemon-scented Gum	Cultivar	Fast	7	4	Evergreen	Flowers, insect-eaters, seed	Common		4	4	4	4	4	4	4	3	4	4	4	5	**48**		4	3	**55**
Corymbia eximia	Yellow Bloodwood	NSW	Fast	10	8	Evergreen	Flowers, insect-eaters, seed	Rare. Specialist nurseries or seed		5	4	3	4	3	5	5	3	4	5	5	5	**51**		1	5	**57**
Corymbia ficifolia	Red-Flowering Gum	Southern WA	Mod	8	7	Evergreen	Flowers, insect-eaters, seed	Common. Specialist nurseries for		5	4	3	3	3	5	5	5	4	2	4	5	**48**		2	4	**54**

								grafted stock																		
Corymbia ficifolia 'Wild Sunset'	Wild Sunset Red-flowering Gum	Cultivar	Mod	6	6	Evergreen	Flowers, insect-eaters, seed	Common, container		5	4	4	4	4	4	4	4	4	3	2	5	**47**		4	4	**55**
Corymbia ficifolia 'Wildfire'	Wildfire Red-flowering Gum	Cultivar	Mod	6	6	Evergreen	Flowers, insect-eaters, seed	Common, container		5	4	4	4	4	4	4	4	4	3	2	5	**47**		4	4	**55**
Corymbia gummiferum	Red Bloodwood	Qld, NSW,Vic	Mod	20	7	Evergreen	Flowers, insect-eaters, seed	Common.		5	4	3	1	3	5	5	5	3	3	4	5	**46**		3	4	**53**
Corymbia maculata	Spotted Gum	S/E Qld & coastal NSW	Fast	20	14	Evergreen	Flowers, insect-eaters, seed	Common. Tube, Container or advanced		5	4	3	3	3	5	5	2	3	5	5	5	**48**		4	5	**57**
Corymbia ptychocarpa	Swamp Bloodwood	WA, NT	Mod to Fast	15	11	Evergreen	Flowers, insect-eaters, seed	Specialist native nurseries		5	4	3	2	4	5	5	3	3	5	5	5	**49**		3	3	**55**
Corymbia torelliana	Cadagi	Qld	Mod to Fast	30	12	Evergreen	Flowers, insect-eaters, seed	Common		3	3	3	4	4	3	5	4	3	3	3	2	**40**		3	3	**46**
Crataegus laevigata	English Hawthorn	Western and Central europe	Slow	6	6	Deciduous	Insects, birds	Not common		5	5	5	3	4	4	5	2	3	3	4	2	**45**		3	5	**53**
Cupaniopsis anachardioides	Tuckaroo, Carrotwood	Australia, Indonesia and New Guinea	Modto Fast	8	9	Evergreen	Fruit eaters	Common. Container & advanced		5	5	5	4	5	5	5	4	2	2	4	4	**50**		4	5	**59**
Cupressus glabra (syn. *C. arizonica*)	Smooth Arizona Cypress	USA, central Arizona	Mod	11	7	Evergreen	Low - nesting	Common		5	4	5	2	3	5	3	5	3	5	5	5	**50**		2	5	**57**

Cupressus sempervirens	Italian Cypress	Southern Europe, Iran	Mod	15	3	8	Nesting	Common		5	5	4	4	3	5	4	4	5	5	5	5	**54**		3	5	**62**
Cupressus torulosa	Bhutan Cypress	Himalaya, SW China	Mod	23	8	Evergreen	Nesting	Common		3	5	3	4	3	5	3	5	5	5	5	5	**51**		3	3	**57**
Elaeocarpus reliculatus	Blueberry Ash	Qld, NSW, Vic, Tas	Fast	8	6	Evergreen	Birds	Common		2	3	3	3	4	4	5	4	3	5	5	5	**46**		3	3	**52**
Erythrina crista-galli	Coral Tree	South America	Fast	17	10	Deciduous	Flowers, birds, insects	Rare. Specialist nurseries or seed		4	4	3	4	4	4	5	4	4	4	3	2	**45**		2	4	**51**
Eucalyptus albens	White Box	Qld, NSW, Vic	Fast	25	10	Evergreen	Flower, insect - eaters, nesting, hollows	Specialist native nurseries		5	5	3	4	4	4	5	4	3	3	5	5	**50**		3	5	**58**
Eucalyptus bancroftii	Orange Gum	Qld., NSW	Fast	15	9	Evergreen	Flower, insect - eaters, seed.	Occasional		3	4	3	4	3	5	5	2	3	5	5	5	**47**		3	3	**53**
Eucalyptus bicostata	Victorian Blue Gum	Vic, NSW, SA	Fast	40	15	Evergreen	Flower, insect - eaters, nesting,	Common		3	4	5	2	3	3	5	5	4	3	3	5	**45**		3	2	**50**
Eucalyptus blakelyi	Blakely's Red Gum	NSW, Vic	Fast	25	10	Evergreen	Flower, insect - eaters, nesting,	Common		4	4	3	2	3	3	5	4	4	3	3	5	**43**		4	1	**48**
Eucalyptus botryoides	Southern Mahogany	NSW, Vic	Fast	40	12	Evergreen	Flower, insect - eaters, nesting,	Specialist nurseries		3	4	5	4	3	2	5	5	2	3	3	5	**44**		2	2	**48**
Eucalyptus caldocalyx 'Nana'	Dwarf Sugar Gum	South Australia	Fast	12	10	Evergreen	Flowers, insect-eaters, seed	Common, container		5	5	4	4	4	4	4	4	3	4	4	5	**50**		4	4	**58**

Eucalyptus camaldulensis	River Red Gum	Australia, mainland states	Fast	23	19	Evergreen	Flowers, insect-eaters, seed	Common		3	4	3	3	3	5	5	2	3	5	5	5	**46**		4	3	**53**
Eucalyptus cinerea	Argyle Apple	NSW tablelands & Vic.	Fast	15	11	Evergreen	Flowers, insect-eaters, seed	Common		3	4	3	4	3	5	5	3	3	5	5	5	**48**		5	3	**56**
Eucalyptus cladocalyx	Sugar Gum	SA	Fast	30	10	Evergreen	Flowers,	Common		4	4	3	3	3	5	5	4	3	5	4	5	**48**		1	3	**52**
Eucalyptus cosmophylla	Cup Gum	SA	Fast	9	8	Evergreen	Flowers, insect-eaters, seed	Rare. Specialist nurseries or seed		3	5	3	3	3	5	5	2	3	5	5	5	**47**		3	3	**53**
Eucalyptus crebra	Narrow-leaved ironbark	Qld, NSW	Fast	16	10	Evergreen	Flowers, insect-eaters, seed	Common		5	5	4	3	2	4	5	3	3	3	3	5	**45**		4	3	**52**
Eucalyptus dunnii	Dunn's White Gum	Qld, NSW	Fast	50	20	Evergreen	Flowers, insect-eaters, seed	Common		4	5	3	3	3	3	5	5	3	3	3	5	**45**		2	2	**49**
Eucalyptus forrestiana	Fuchsia Gum	WA	Fast	4	3	Evergreen	Flowers, insect-eaters, seed	Common		4	5	4	2	3	3	5	2	4	4	4	5	**45**		2	4	**51**
Eucalyptus gregsoniana	Wolgan Snow Gum	Blue Mountains & Budawang Range, NSW	Mod	5	3	Evergreen	Flowers, insect-eaters, seed	Occasional		3	4	5	3	3	5	5	2	3	5	5	5	**48**		3	3	**54**
Eucalyptus leucoxylon	Yellow Gum	SA & Vic	Fast	14	11	Evergreen	Flowers, insect-eaters, seed	Commom. Check source and subspecies		5	4	3	2	3	5	5	2	3	3	5	5	**45**		5	5	**55**
Eucalyptus leucoxylon dwarf form	Euky Dwarf Yellow Gum	Australflora introduction	Fast	5	4	Evergreen	Flowers, insect-eaters, seed	Common		5	5	3	3	3	5	5	1	3	5	5	5	**48**		4	5	**57**

Eucalyptus leucoxylon ssp. *megalocarpa*	Yellow Gum (Large Fruited)	Western Victorian border and into South Australia	Fast	11	9	Evergreen	Flowers, insect-eaters, seed	Common. Check source and subspecies		5	5	3	2	3	5	5	2	3	3	5	5	**46**		4	5	**55**
Eucalyptus mannifera subsp. *maculosa*	Red Spotted Gum	Inland Ranges	Fast	11	5	Evergreen	Flowers, insect-eaters, seed	Common. Check source and subspecies		5	5	3	3	3	5	5	2	3	5	5	5	**49**		3	5	**57**
Eucalyptus melliodora	Yellox Box	Open woodland. Vic to Qld.	Fast	15	9	Evergreen	Flowers, insect-eaters, seed	Common		5	5	5	2	3	5	5	2	3	5	5	5	**50**		4	5	**59**
Eucalyptus microcarpa	Grey Box	Qld, NSW, Vic, SA	Fast	25	9	Evergreen	Flowers, insect-eaters, seed, possums	Common		4	5	3	3	3	4	5	5	4	4	4	5	**49**		3	2	**54**
Eucalyptus microtheca	Coolibah	WA, QLD, NT	Mod	10	5	Evergreen	Flowers, insect-eaters,	Specialist nurseries		5	5	3	3	3	4	5	5	4	4	4	5	**50**		3	2	**55**
Eucalyptus nicholii	Willow-Leaf Peppermint	Northern tablelands of NSW	Fast	11	5	Evergreen	Flowers, insect-eaters, seed	Common		5	5	3	4	3	4	5	2	3	5	5	5	**49**		4	5	**58**
Eucalyptus platypus	Round-Leaf Moort	Southern WA.	Fast	8	8	Evergreen	Flowers, insect-eaters, seed	Common. May need to verify seed source.		5	4	5	4	3	4	5	3	3	5	5	5	**51**		3	5	**59**
Eucalyptus polyanthemos	Red Box	Vic & NSW. Dry foothill country	Fast	15	11	Evergreen	Flowers, insect-eaters, seed	Occasional. Specialist native nurseries		5	5	3	2	5	4	5	3	3	5	5	5	**50**		4	5	**59**
Eucalyptus pulchella	White Peppermint	Eastern Tasmania	Fast	11	6	Evergreen	Flowers, insect-eaters, seed	Common		3	5	5	4	3	5	5	2	3	5	5	5	**50**		3	3	**56**

Eucalyptus robusta	Swamp Mahogany	NSW, VIC	Fast	25	10	Evergreen	Flowers, insect-eaters, seed	Common		3	3	3	4	3	4	5	3	4	4	4	5	**45**		3	3	**51**
Eucalyptus rossii	Scribbly Gum	NSW	Fast	15	10	Evergreen	Flowers, insect-eaters, seed	Specialist nurseries		3	4	3	2	3	4	5	3	3	4	4	5	**43**		2	1	**46**
Eucalyptus scoparia	Wallangarra White Gum	NSW Qld border.	Fast	11	9	Evergreen	Flowers, insect-eaters, seed	Common		5	3	3	2	3	5	5	2	3	5	5	5	**46**		3	5	**54**
Eucalyptus sideroxylon	Red Ironbark	Vic., NSW	Fast	16	10	Evergreen	Flowers, insect-eaters, seed	Common		5	5	3	2	3	5	5	2	2	5	5	5	**47**		4	5	**56**
Eucalyptus sieberi	Silvertop Ash	NSW, Vic, Tas	Fast	35	12	Evergreen	caterpillars, insects	Common		3	3	3	3	3	4	5	3	3	4	4	5	**43**		3	3	**49**
Eucalyptus spathulata	Swamp Mallet	Southern wheatbelt WA	Fast	8	7	Evergreen	Flowers, insect-eaters, seed	Common		5	5	5	4	3	5	5	2	2	5	5	5	**51**		5	5	**61**
Eucalyptus stoatei	Scarlet Pear Gum	Small distribution southern WA	Mod	7	4	Evergreen	Flowers, insect-eaters, seed	Occasional		5	5	3	2	3	5	5	2	3	5	5	5	**48**		3	5	**56**
Eucalyptus stricklandii	Strickland's Gum	WA	Fast	10	6	Evergreen	Flowers, insect-eaters, seed	Specialist nurseries		4	5	4	2	3	4	5	2	2	2	5	5	**43**		2	1	**46**
Eucalyptus tereticornis	Forest Red Gum	NSW	Fast	20	12	Evergreen	Insects, birds	Specialist nurseries		4	4	4	3	3	4	5	4	2	2	5	5	**45**		4	2	**51**
Eucalyptus torquata	Coral Gum		Fast	6	3	Evergreen	Insects, birds	Specialist nurseries		3	4	4	2	3	3	5	2	4	3	5	5	**43**		3	2	**48**

Ficus macrophylla	Moreton Bay Fig	Northern Queensland to southern coast of NSW	Mod	26	26	Evergreen	Flowers, insect-eaters, seed	Common		3	5	5	2	3	5	4	5	3	3	2	5	**45**		3	3	**51**
Ficus microcarpa var. *hillii*	Hill's Fig	Qld	Mod	11	11	Evergreen	Flowers, insect-eaters, fruit	Common		4	4	4	4	3	3	5	5	3	5	4	5	**49**		4	4	**57**
Ficus platypoda	Rock Fig	Central & Northern Australia WA, NT and eastwards into NEQ (restricted to the Gulf of Carpentaria).	Mod	8	9	Evergreen	Flowers, insect-eaters, fruit	Common. Containerised		4	5	3	3	3	4	5	4	3	5	5	5	**49**		3	4	**56**
Ficus rubiginosa	Port Jackson Fig	Northern Queensland to southern coast of NSW	Mod	9	9	Evergreen	Flowers, insect-eaters, fruit	Common. Containerised		4	4	5	4	3	4	4	5	3	3	5	5	**49**		3	4	**56**
Flidersia maculosa	Leopard Wood	Arid and semi arid areas in NSW & Qld	Slow	11	8	Evergreen	Unknown	Occasional		5	5	3	4	3	5	5	1	3	3	3	4	**44**		3	5	**52**
Flindersia australis	Crows Ash, Australian Teak	Subtropical wet to moist rainforests of South/east Qld & NSW	Mod	18	10	Evergreen	Unknown	Common		3	3	3	4	3	5	5	5	3	3	3	4	**44**		3	3	**50**
Fraxinus excelsior	European Ash	Europe	Mod	11	11	Deciduous	Unknown	Common. Bare root, container or advanced		3	4	3	4	3	5	5	3	3	5	5	5	**48**		4	3	**55**
Fraxinus excelsior 'Aurea'	Golden Ash	Garden Origin	Mod	11	11	Deciduous	Unknown	Common. Bare root, container or advanced		3	4	3	4	3	5	5	3	3	5	5	5	**48**		4	3	**55**

Fraxinus griffithii	Flowering Ash	India-Subcontinent, China-Korea, Japan, Tropical Asia	Modto Fast	7	7	Evergreen	Unknown	Common		2	3	3	2	4	5	5	3	4	4	5	5	**45**		3	3	**51**
Fraxinus ornus	Flowering Ash	Europe & Asia Minor	Mod	8	5	Deciduous	Unknown	Occasional		4	3	3	4	3	5	5	2	3	5	4	3	**44**		4	4	**52**
Fraxinus ornus 'Arie Peters'	Arie Peters Manna Ash	Cultivar	Mod	10	8	Deciduous	Unknown	Common, bare-root, container		3	3	4	4	5	5	3	4	5	4	4	5	**49**		3	3	**55**
Fraxinus ornus 'Meczek'	Moptop Ash	Cultivar	Slow	3	2	Deciduous	Unknown	Fleming's		4	3	3	2	3	5	5	2	5	5	5	5	**47**		4	4	**55**
Fraxinus angustifolia ssp. o*xycarpa* 'Raywood'	Claret Ash	Cultivar	Fast	12	7	Deciduous	Unknown	Common		4	4	4	4	5	2	5	4	3	4	5	5	**49**		4	4	**57**
Fraxinus pennsylvanica 'Aerial'	Aerial Green Ash	Cultivar	Mod	11	6	Deciduous	Unknown	Fleming's		5	4	5	2	3	5	5	3	3	5	5	5	**50**		4	5	**59**
Fraxinus pennsylvanica 'Cimmaron'	Cimmaron Green Ash	Cultivar	Mod	15	8	Deciduous	Unknown	Fleming's		5	5	5	4	3	5	5	3	3	5	5	5	**53**		4	5	**62**
Fraxinus pennsylvanica 'Urbanite'	Urbanite Green Ash	Cultivar	Mod	15	8	Deciduous	Unknown	Fleming's		5	5	5	4	3	5	5	3	3	5	5	5	**53**		4	5	**62**
Fraxinus velutina	Velvet Ash	SW of USA into Mexico	Fast	7	8	Deciduous	Unknown	Occasional		3	5	3	4	3	5	5	3	3	5	4	3	**46**		4	3	**53**
Geijera parviflora	(Wilga, Australian Willow)	Inland Vic., Nsw, & Qld.	Slow to Mod	7	6	Evergreen	Unknown	Occasional. Difficult to propagate from seed.		5	4	5	3	3	5	5	4	2	5	5	5	**51**		3	5	**59**
Ginkgo biloba	Maidenhair Tree	China	Slow	15	9	Deciduous	Unknown	Occasional		3	5	3	4	4	5	5	3	3	4	3	5	**47**		4	3	**54**
Ginkgo biloba 'Princeton Sentry'	Upright Maidenhair Tree	Cultivar	Slow	15	9	Deciduous	Unknown	Occasional		3	4	3	4	5	5	5	3	3	5	5	5	**50**		4	3	**57**

Gleditsia triacanthos var.*inermis* Varieties	Thornless Common Honey Locust	Cultivar	Fast	15	9	Deciduous	Unknown	Common. Bare root. Container		5	4	3	2	3	5	5	2	3	5	5	3	**45**		4	5	**54**
Grevillea robusta	Silky Oak	Qld, NSW	Fast	30	15	Evergreen	Flowers, insect-eaters	Common		4	4	4	4	4	5	5	4	4	5	5	2	**50**		3	4	**57**
Hakea francisiana	Narukalja	WA, SA	Fast	5	3	Evergreen	Flowers, insect-eaters	Occasional. Specialist native nurseries		5	5	3	2	5	5	5	1	3	5	4	5	**48**		2	5	**55**
Hakea laurina	Pincushion Hakea	WA	Mod	6	3	Evergreen	Flowers, insect-eaters	Common		3	4	5	1	2	5	5	2	4	5	5	5	**46**		1	2	**49**
Hakea salicifolia	Willow-leaved Hakea	NSW, Qld.	Mod	5	4	Evergreen	Flowers, insect-eaters	Common		3	4	5	1	2	5	5	2	4	5	5	5	**46**		1	2	
Hymensoporum favum	Natve frangipani	Qld, NSW, New Guinea	Fast	10	6	Evergreen	Flowers, insect-eaters	Common. Container, advanced		3	3	2	3	3	5	4	2	4	5	5	5	**44**		3	3	**50**
Jacaranda mimosifolia	Jacaranda	Brazil	Mod	15	12	Deciduous	Flowers, insect-eaters	Common. Container, advanced		3	4	3	3	3	5	5	3	4	4	2	5	**44**		4	3	**51**
Koelreuteria bipinnata	Chinese Flame Tree	Asia, particularly China	Mod	10	10	Deciduous	Flowers, insect-eaters, seed	Occasional. Container		4	4	4	4	5	5	4	4	4	3	3	5	**49**		4	3	**56**
Koelreuteria paniculata	Golden Rain Tree	China, Japan & Korea	Mod	7	6	Deciduous	Flowers, insect-eaters, seed	Common. Not large quantaties		5	4	3	2	3	5	5	2	3	5	5	4	**46**		4	5	**55**
Lagerstroemia indica x *L. fauriei* varieties	Indian Summer Crepe Myrtles	Hybrid variety	Mod	5	5	Deciduous	Flowers, insect - eaters, seed.	Common Fleming's		5	3	3	4	3	5	5	3	3	5	5	5	**49**		4	5	**58**

Lagunaria patersonia	Norfolk Hibiscus	Norfolk Island, Lord Howe Island	Mod	12	4			Common		4	3	4	3	4	4	1	3	3	1	2	2	**34**		3	4	**41**
Leptospermum petersonii	Lemon-Scented Tea-tree	Qld. NSW	Mod	4	4	Evergreen	Flowers, insect-eaters, seed	Common		3	3	5	4	3	5	5	2	3	5	5	5	**48**		3	3	**54**
Liquidambar formosana	Formosan Sweetgum	Central & South China, & Taiwan	Mod	14	8	Deciduous	Unknown	Occasional. Not large numbers		3	3	3	3	3	5	5	3	3	5	4	5	**45**		3	3	**51**
Liquidambar styraciflua 'Goduzam' Gold Dust	Liquidambar, American Sweetgum	North America	Fast	12	8	Deciduous	Unknown	Flemings		3	3	4	4	5	5	5	4	3	4	4	3	**47**		4	3	**54**
Liquidambar styraciflua 'Rotundiloba'	Rotundiloba Sweetgum	Cultivar	Mod	19	11	Deciduous	Unknown	Common		3	4	3	3	5	5	5	3	3	5	4	3	**46**		4	3	**53**
Lophostemon confertus	Queensland Brush Box	Coastal forests NSW & Qld	Fast	12	10	Evergreen	Flowers, insect-eaters, seed	Common		3	4	3	4	4	5	5	4	3	5	4	5	**49**		4	3	**56**
Magnolia grandiflora 'Exmouth'	Little Gem Southern Magnolia	Cultivar	Mod	6	5	Evergreen	Unknown	Common		3	5	3	3	3	5	5	4	3	5	5	5	**49**		4	3	**56**
Malus floribunda	Crab Apple	Asia	Mod	8	10	Deciduous	Flowers, fruit	Common		3	4	2	2	3	5	5	3	3	4	4	4	**42**		3	3	**48**
Malus ioensis 'Plena'	Bechtel Crab Apple	Cultivar	Slow to Mod	6	4.5	Deciduous	Flowers, fruit	Common		3	4	3	3	3	4	5	3	4	4	3	4	**43**		3	3	**49**
Malus tschonoskii	Crab Apple	Asia	Mod	7	4	Deciduous	Flowers, fruit	Common - Flemings		4	3	4	3	3	4	5	3	4	4	5	5	**47**		3	3	**53**
Melaleuca bracteata	Black Tea-tree	NSW to Darwin. Coastal & inland, adjacent to water	Mod to slow	10	7	Evergreen	Flowers, insect-eaters, seed	Common. Container		4	4	4	3	4	4	4	4	4	4	4	5	**48**		4	4	**56**

Melaleuca linariifolia	Snow in Summer	NSW	Fast	7	7	Evergreen	Birds	Common		3	3	4	2	3	4	5	4	4	5	5	5	**47**		5	3	**55**
Melaleuca quinquenervia	Broad leaved paperbark	Qld, NSW	Fast	25	6	Evergreen	Flowers, insect - eaters, seed.	Common		3	3	3	2	5	4	5	4	3	5	5	2	**44**		4	3	**51**
Melia azedarach 'Elite'	Elite White Cedar	Cultivar	Fast	10	8	Deciduous	Unknown	Common. Container		3	4	4	4	5	4	4	4	4	4	4	5	**49**		4	3	**56**
Platanus X *acerifolia*	London Plane Tree	Hybrid	Mod	19	15	Deciduous	Seed eaters	Common		4	3	5	3	5	5	1	4	3	2	3	5	**43**		4	4	**51**
Prunus cerasifera 'Nigra'	Flowering Plum	Cultivar	Mod	5	4	Deciduous	Insects, birds	Common		3	4	3	3	3	3	5	4	4	4	3	5	**44**		3	3	**50**
Triadica sebiferum (Sapium sebifera)	Chinese Tallow Tree	Eastern Asia	Fast	11	9	Deciduous	Fruit eaters	Common		4	4	3	2	3	5	3	3	4	4	3	2	**40**		5	5	**50**
Ulmus parvifolia	Chinese Elm	China & Japan	Mod to Fast	12	14	Semi-E/green	Low	Common		5	5	3	3	3	5	5	4	4	5	5	5	**52**		5	5	**62**
Ulmus parvifolia 'Emer II' Allee	Allee Chinese Elm	Cultivar	Mod	15	12	Deciduous	Unknown	Common. Container		4	4	4	4	5	4	4	5	4	4	5	5	**52**		4	3	**59**
																						0				**0**
TRIAL TREES																										
Acacia stenophylla	Eumong, River Cooba	Eastern Australia, widespread in inland areas	Mod to fast	20	10	Evergreen	Flowers, insect-eaters, seed	Occasional. Specialist nursery		4	4	4	4	3	4	4	4	3	4	4	3	**45**		5	5	**55**
Acer monspessulanum	Montpelier Maple	Southern Europe	Mod	9	8	Deciduous	Unknown	Becoming available. Bare root and containers		5	5	4	4	4	4	4	4	4	4	3	4	**49**		4	3	**56**

Atalaya hemiglauca	Whitewood	Widespread in the dry, inland areas of Australia, found in every mainland State except Victoria.	Mod to Fast	9	7	Evergreen	Unknown	Occasional. Specialist nursery		5	5	5	3	3	4	5	3	3	5	5	5	**51**		2	4	**57**
Casuarina cristata	Belah	Australia; all mainland States	Mod to fast	15	12	Evergreen	Birds, insects	Common. Container		5	5	5	3	3	4	4	3	4	3	3	5	**47**		4	4	**55**
Ceratonia siliqua	Carob	Eastern Mediterranean	Mod	10	10	Evergreen	Flowers, insect-eaters, seed	Common. Container		5	5	4	4	4	4	4	4	3	3	2	4	**46**		4	4	**54**
Eucalyptus astringens	Brown Mallet	Southwest WA	Mod	18	15	Evergreen	Birds, insects	Occasional. Specialists. Not in large numbers		5	5	4	4	3	4	4	4	3	3	3	5	**47**		3	4	**54**
Eucalyptus gardneri	Blue Mallet	Southern WA	Fast	9	5	Evergreen	Birds, insects	Occasional. Specialists. Not in large numbers		5	5	4	4	3	4	4	4	4	4	4	5	**50**		3	4	**57**
Eucalyptus polybractea	Blue Mallee	Victoria, NSW	Mod to Slow	8	8	Evergreen	Birds, insects	Occasional. Specialists. Not in large numbers		5	5	4	4	3	4	4	4	4	4	4	5	**50**		3	4	**57**
Eucalyptus viridis	Green Mallee	Disjunct distribution in semi-arid regions of south-eastern Australia	Mod to Slow	9	5	Evergreen	Birds, insects	Occasional. Specialists. Not in large numbers		5	5	4	4	3	4	4	3	4	4	4	5	**49**		3	4	**56**
Eucalyptus wimmerensis 'Honey Pots'	Tucker Time® Honey Pots™	Cultivar	Mod to Slow	5	4	Evergreen	Birds, insects	Occasional. Specialists. Not in large numbers		5	5	4	3	3	4	4	3	4	4	4	5	**48**		3	4	**55**

Fraxinus americana var.	White Ash	Eastern North America	Mod to Fast	15	12	Deciduous	Unknown	Common. Bare root. Container		3	3	3	4	3	5	5	3	3	5	3	2	**42**		4	3	49
Maclura pomifera 'Wichita'	Osage Orange	Arkansas & Texas	Mod	11	11	Deciduous	Unknown	Occasional		5	4	5	2	3	5	5	4	3	5	5	5	**51**		4	5	60
Melaleuca styphelioides	Prickley-leaved Paperbark	NSW	Fast	8	6	Evergreen	Flowers, insect - eaters, seed.	Common		3	3	3	2	5	4	5	4	5	5	5	5	**49**		4	2	55
Melia azedarach	White Cedar	Northern Australia, Asia	Fast	7	6	Deciduous	Flowers, insect - eaters, seed.	Common		4	5	3	4	3	5	5	3	3	3	1	3	**42**		4	4	50
Metasequoia glyptostroboides	Dawn Redwood	China	Mod to Fast	15	8	Deciduous	Unknown	Common		3	4	5	4	3	5	5	3	5	5	5	5	**52**		3	3	58
Nerium oleander	Oleander	Mauritania, Morocco, Portugal the Sahara the Arabian peninsula, Asia, China	Mod	5	4	Evergreen	Unknown	Common		5	5	5	4	5	5	1	2	4	4	2	3	**45**		4	5	54
Nyssa sylvatica	Black Tupulo	North America	Slow to Mod	12	8	Deciduous	Flowers, insect-eaters,	Rare. Specialist nurseries or seed		4	4	3	4	2	3	4	3	4	3	4	4	**42**		3	4	49
Olea europea	European Olive	Mediterranean	Slow	7	6	Evergreen	Unknown	Common		5	4	5	2	3	5	5	4	3	4	3	2	**45**		4	5	54
Paulownia tomentosa	Empress Tree, Princess Tree	Central & Western China	Fast	19	19	Deciduous	Unknown	Common		5	5	1	4	3	3	5	3	3	5	4	2	**43**		4	5	52
Phoenix canariensis	Canary Island Date Palm	Canary Islands	Slow	12	6	Evergreen	Fruit eaters	Common		5	5	5	2	3	5	5	3	5	4	3	4	**49**		5	5	59

Phoenix reclinata	Senegal Datae Palm	tropical Africa, Madagascar and the Comoro Islands.	Slow	11	7	Evergreen	Fruit eaters	Common		5	5	5	2	3	5	5	3	5	4	3	4	**49**		5	5	**59**
Photinia robusta	Photinia	Asia	Fast	6	4	Evergreen	Unknown	Common		4	4	5	4	5	5	4	3	3	4	5	3	**49**		4	4	**57**
Pinus canariensis	Canary Island Pine	In the western Canary Islands and Gomera (W of N Africa), an area of subhumid Mediterreanean climate	Modto Fast	30	15	Evergreen	Seed eaters	Common		5	5	5	2	3	5	3	3	3	5	3	4	**46**		4	5	**55**
Pinus halepensis	Aleppo Pine	Mediterranean region	Mod to Fast	20	12	Evergreen	Seed eaters	Common		5	5	3	3	3	5	3	3	3	5	3	4	**45**		3	5	**53**
Pinus patula	Mexican Pine	Mexico	Mod	15	15	Evergreen	Seed eaters	Occasional. Specialised nursery		5	5	5	3	3	5	3	3	3	5	3	4	**47**		3	5	**55**
Pinus pinaster	Maritime Pine	Western Mediterranean	Mod to Fast	23	12	Evergreen	Seed eaters	Common. Not large quantaties		5	5	5	2	3	5	3	3	3	5	3	4	**46**		3	5	**54**
Pinus pinea	Stone Pine	Iberian Peninsula	Mod to Fast	19	19	Evergreen	Seed eaters	Occasional. Specialists. Not in large numbers		5	5	5	2	3	5	3	4	3	5	3	4	**47**		4	5	**56**
Pistacia chinensis	Chinese Pistachio	China & Taiwan	Fast	8	8	Deciduous	Unknown	Difficult to propagate from seed. Occasional		5	3	3	4	3	3	5	3	3	5	5	3	**45**		4	5	**54**
Platanus orientalis 'Digitata'	Cyprian Plane	S/E Europe to Western Asia	Mod	19	15	Deciduous	Seed eaters	Common		3	2	3	4	4	3	1	3	3	2	3	5	**36**		4	3	**43**
Podocarpus elatus	Plum Pine	Qld, NSW	Mod	18	15	Evergreen	Seed eaters	Occasional		2	4	3	4	3	3	5	5	3	5	5	5	**47**		2	2	**51**

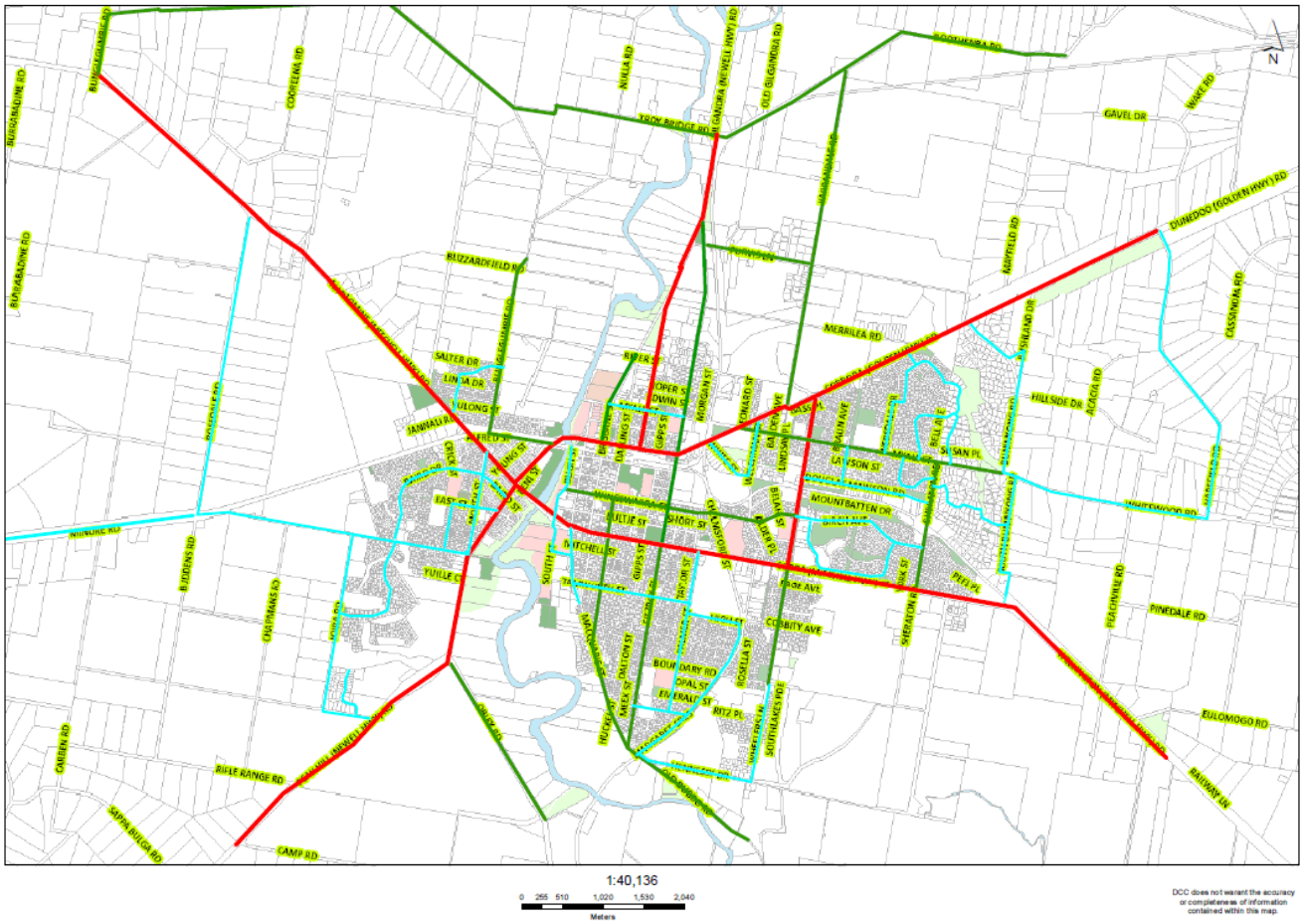
Populus nigra var. *italica*	Lombardy Poplar	Italy	Fast	25	3	Deciduous	Unknown	Common		3	3	3	2	3	2	2	2	3	4	5	2	**34**		3	3	40
Populus x canadensis 'Evergreen 65 - 1'	Popular	Cultivar	Fast	20	10	Semi	None	Fleming's		3	3	5	3	4	3	5	4	4	5	5	5	**49**		3	3	55
Populus x P. euramericana 'Veronese'	Veronese Popular	Cultivar	Fast	20	6	Deciduous	None	Fleming's		3	3	5	3	4	3	5	3	4	4	5	4	**46**		3	3	52
Populus yunnanensis	Yunnans Poplar	Asia	Fast	17	8	Deciduous	Unknown	Common		3	3	4	3	3	3	4	3	2	4	5	5	**42**		2	3	47
Prunus cerasifera 'Oakville crimson spire'	Oakville Crimson Spire	Cultivar	Mod	6	2	Deciduous	Unknown	Fleming's		3	4	3	3	3	3	5	2	4	4	4	5	**43**		3	3	49
Pyrus calleryana 'Aristocrat'	Aristocrat Pear	Hybrid	Mod	11	7	Deciduous	Unknown	Common		4	4	3	3	5	5	5	3	3	5	5	5	**50**		4	4	58
Pyrus calleryana 'Chanticleer'	Chanticleer Pear	Hybrid	Fast	11	6	Deciduous	Unknown	Common		4	4	5	2	5	5	5	3	3	5	5	2	**48**		4	4	56
Pyrus calleryana 'Valzam'	Valiant Callery's Pear	Hybrid	Mod	9	5	Deciduous	Unknown	Common		4	4	4	3	5	5	5	3	4	5	4	5	**51**		4	4	59
Pyrus calleryana x *betulaefolia* 'Edgedell'	Edgewood Pear	Hybrid	Mod	8	6	Deciduous	Unknown	Common		4	4	5	3	5	5	5	3	4	5	5	5	**53**		4	4	61
Pyrus nivalis	Snow Pear	South Europe	Mod	11	8	Deciduous	Unknown	Common		3	4	3	4	3	5	5	3	2	5	4	5	**46**		4	3	53
Pyrus ussuriensis	Manchurian Pear		Mod	9	7	Deciduous	Unknown	Common		3	3	3	3	3	4	5	3	5	5	5	5	**47**		3	3	53
Quercus acutissima	Sawtooth Oak	China, Japan, Korea	Mod	12	11	Deciduous	Seed eaters	Occasional		3	4	3	4	3	5	5	3	3	5	3	5	**46**		3	3	52
Quercus agrifolia	Coast Live Oak	California to Mexico	Mod	19	19	Evergreen	Seed eaters	Occasional		3	4	3	4	3	5	5	5	3	5	3	5	**48**		3	3	54
Quercus bicolor	Swamp White Oak	USA	Mod	15	15	Deciduous	Seed eaters	Occasional		5	5	3	4	3	5	5	4	3	5	3	4	**49**		4	5	58
Quercus canariensis	Algerian Oak	Nth Africa & S/W Europe	Mod	20	19	Semi-Deciduous	Seed eaters	Occasional		5	5	3	4	3	5	5	4	3	5	3	4	**49**		3	5	57

Quercus cerris	Turkey Oak	Sth. Europe & Western Asia	Mod	15	15	Deciduous	Foliage grazers, seed eaters	Occasional		5	3	3	4	3	5	5	3	3	2	3	4	**43**		3	5	**51**
Quercus coccinea	Scarlet Oak	USA- Alabama to Maine	Mod	19	15	Deciduous	Seed eaters	Common		4	3	3	3	3	5	5	4	3	5	3	5	**46**		4	4	**54**
Quercus ilex	Holly Oak	Mediterranean region	Slow	15	15	Evergreen	Seed eaters	Occasional		5	5	5	4	3	5	5	5	3	5	3	4	**52**		3	5	**60**
Quercus macrocarpa	Bur Oak	USA	Mod	20	15	Deciduous	Unknown	Occasional		5	4	3	4	3	5	5	3	3	5	3	5	**48**		5	5	**58**
Quercus palustris	Pin Oak	Eastern USA	Mod	18	12	Deciduous	Foliage grazers, seed eaters	Common. Container, bare rooted, advanced.		3	3	3	4	5	5	5	3	3	5	3	5	**47**		4	3	**54**
Quercus phellos	Willow Oak	USA; New Jersey to Texas	Mod to Fast	15	15	Deciduous	Unknown	Common		4	4	5	4	5	5	5	4	3	5	3	4	**51**		4	4	**59**
Quercus robur	English Oak	Europe & Mediterranean region	Mod	15	12	Deciduous	Foliage grazers, seed eaters	Common. Container, bare rooted, advanced		3	4	3	4	3	3	5	4	3	4	3	5	**44**		4	3	**51**
Quercus robur 'Fastigiata'	English Oak	Europe & Mediterranean region	Mod	15	4	Deciduous	Foliage grazers, seed eaters	Common. Container, bare rooted, advanced		3	3	3	4	3	3	5	3	5	5	3	5	**45**		4	3	**52**
Quercus rubra	Red Oak	USA	Mod	15	15	Deciduous	Seed eaters	Common. Bare rooted, advanced		4	3	4	3	5	5	5	3	3	5	3	4	**47**		4	4	**55**
Quercus suber	Cork Oak	Spain, Portugal, NorthAfrica, Turkey	Mod	10	8	Deciduous	Unknown	Specialist nurseries, seed		4	4	4	3	5	5	5	5	4	3	3	5	**50**		2	2	**54**
Robinia pseudoacacia (Varieties)	Black Locust	Appalachian & Ozark Mountains	Fast	11	8	Deciduous	Unknown	Common		5	4	5	2	3	5	5	2	3	5	3	3	**45**		5	5	**55**

Salix babylonica	Weeping Willow	China	Fast	15	12	Deciduous	Unknown	Common		1	1	3	2	3	3	3	5	4	4	5	1	**35**			1	36
Schinus areira	Peppercorn Tree	Peru	Mod	11	11	Evergreen	Foliage grazers, seed eaters	Common		5	5	3	4	3	5	5	2	2	2	3	4	**43**		5	5	53
Sophora japonica 'Princeton Upright'	Upright Pagoda Tree	Hybrid. Parents from China & Korea	Fast	11	5	Deciduous	Unknown	Bare rooted		5	5	3	3	5	5	5	2	3	5	5	5	**51**		4	5	60
Stenocarpus sinuatus	Firewheel Tree	Qld. NSW	Slow	12	4	Evergreen	Flowers, insect-eaters, seed	Common		3	2	3	3	1	5	5	4	3	5	5	5	**44**		2	3	49
Syncarpia glomulifera	Turpentine	NSW	Mod	20	10	Evergreen	Birds, insects	Common, seed		3	3	5	3	3	4	5	4	3	4	3	5	**45**		3	3	51
Syzygium australe 'Pinnacle'	Pinnacle Scrub Cherry	Hybrid variety	Mod to Slow	6	2	Evergreen	Fruit eaters	Common		3	3	3	2	3	5	5	1	3	2	4	5	**39**		3	3	45
Syzygium paniculatum	Brush Cherry	NSW & Qld coastal forest	Fast	10	8	Evergreen	Fruit eaters	Common		3	4	3	2	3	5	5	5	3	2	4	5	**44**		4	3	51
Tabebuia chrysotricha	Yellow Trumpet Tree		Mod to Fast	9	4	Deciduous	Flowers, insect-eaters, seed	Common		2	2	4	2	3	3	2	3	4	4	4	5	**38**		3	3	44
Taxodium distichum	Baldcypress	South/east coast USA, Mississippi valley	Mod to Fast	23	11	Deciduous	Unknown	Occasional. Specialist nursery		4	3	3	4	3	5	5	3	3	5	5	5	**48**		4	4	56
Tilia cordata 'Greenspire'	Upright Small Leafed Linden	Hybrid	Mod	11	6	Deciduous	Unknown	Common. Container, Bare rooted		3	3	3	3	5	5	5	4	3	5	5	5	**49**		4	3	56
Trachycarpus fortunei	Chusan Fan Palm	China	Slow	5	2	Evergreen	Unknown	Occasional. Specialists. Not in large numbers		3	4	3	3	3	5	5	2	5	5	5	5	**48**		3	3	54

Tristaniopsis laurina	Kanooka, Water Gum	Qld, NSW, Vic	Slow	10	8	Evergreen	Flowers, insect-eaters	Common		3	4	3	2	4	5	5	3	3	5	5	5	**47**		5	3	**55**
Tristaniopsis laurina 'Luscious' (Luscious® *Tristaniopsis laurina* 'DOW10')	Luscious Water Gum, Kanooka	Cultivar	Mod to slow	8	5	Evergreen	Flowers, insect-eaters	Common. Container		3	3	4	4	4	4	4	4	4	4	5	5	**48**		4	3	**55**
Ulmus glabra 'Lutescens'	Golden Elm	cultivar	Mod to Fast	15	15	Deciduous	Low	Common		3	2	3	3	5	1	5	4	1	3	5	2	**37**		4	3	**44**
Ulmus procera	English Elm	Western & Southern Europe	Mod to Fast	19	19	Deciduous	Low	Common. Bare root, container or advanced		2	2	5	3	5	2	5	4	1	5	5	5	**44**		5	2	**51**
Ulmus x hollandica	Dutch Elm	Southern England, Northern France	Mod to Fast	15	15	Deciduous	Low	Common. Bare root, container or advanced		2	2	3	3	5	1	5	4	1	5	5	5	**41**		5	2	**48**
Washingtonia filifera	California Fan Palm	South-eastern California, western Arizona and thru to Baja California	Mod to Slow	12	3	Evergreen	Unknown	Common		5	4	3	4	3	5	5	1	5	5	5	4	**49**		4	5	**58**
Washingtonia robusta	Washington Palm, Mexican Fan Palm	North-western Mexico and Baja Californi	Mod to Slow	15	3	Evergreen	Unknown	Common		5	4	3	4	3	5	5	1	5	5	5	4	**49**		4	5	**58**
Waterhousea floribunda	Weeping Lilly Pilly	Qld, NSW	Mod	18	15	Evergreen	Fruit eaters	Common		3	4	3	2	3	5	5	5	3	5	5	5	**48**		4	3	**55**
Zelkova serrata 'Green Vase'	Japanese Zelkova	Hybrid, parent Japan	Fast	11	15	Deciduous	Unknown	Common. Bare rooted		3	4	5	4	5	3	5	3	3	5	5	5	**50**		4	3	**57**
Zelkova serrata 'Wireless'	Japanese Zelkova	Hybrid, parent Japan	Mod to Fast	7	9	Deciduous	Unknown	Becoming available. Bare root and containers		3	4	5	4	5	3	5	3	3	5	5	5	**50**		4	3	**57**

Street Typologies



Overview of the street hierarchy of Dubbo.

Red – Arterial Roads

Green – Sub – arterials Roads

Blue – Collector Roads

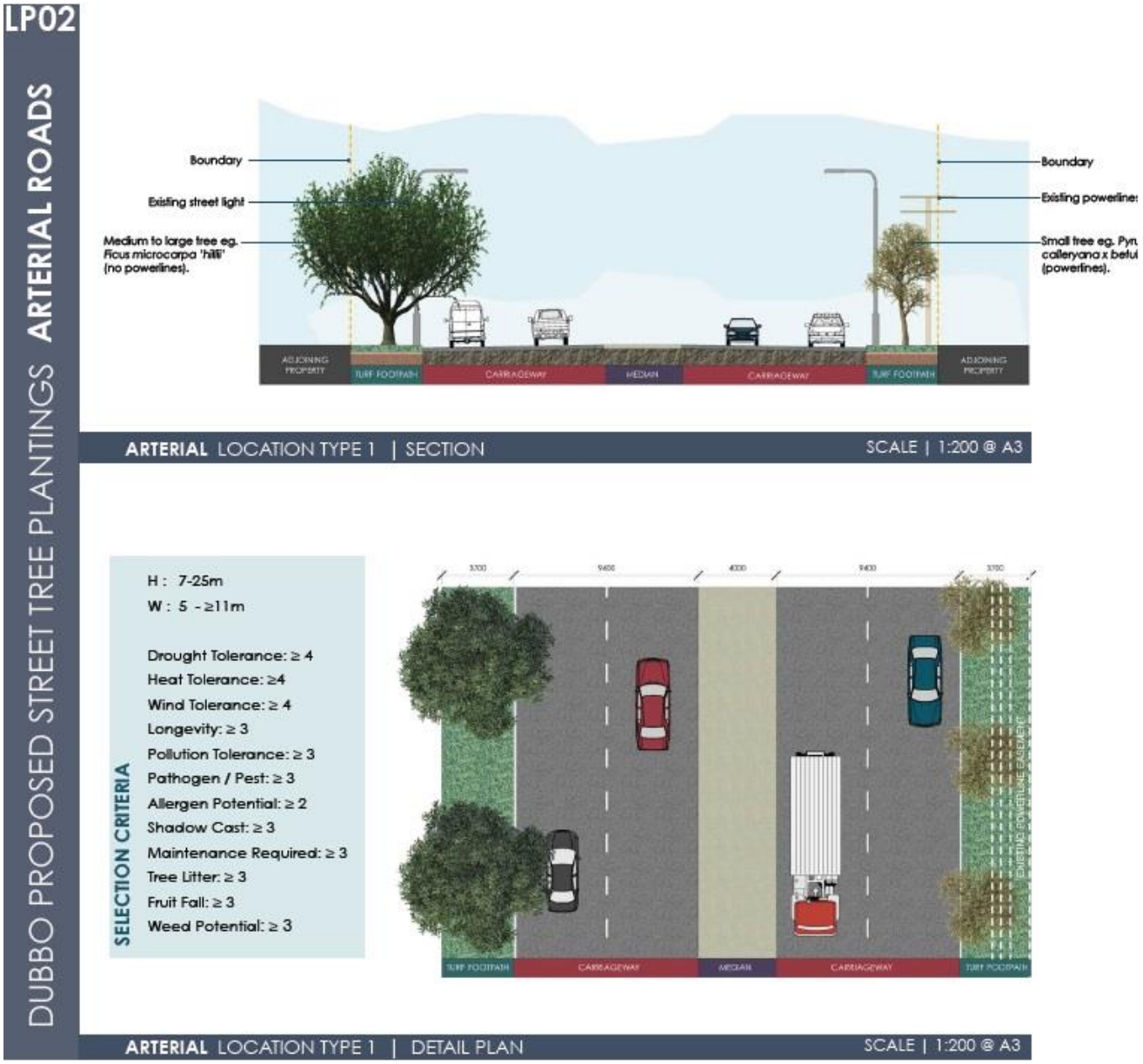
Grey - Residential Roads

Arterial Roads. LP02

Predominantly arterial roads carry through traffic from one region (i.e. outside of the local area) to other forming principal avenues of communication for urban traffic movements. Typically these include highways.

Arterial roads provide a variety of tree planting opportunities due to their scale and the high profile they possess.

Commonly arterial roads are associated with a large range of both underground and overhead services that can restrict the placement of plantings and consequently the type and size of the trees. However, as they often produce the first impression of the City of Dubbo to visitors and tree species should be chosen to provide structure, scale and colour to these major roads.



Arterial Roads LP03

Predominantly arterial roads carry through traffic from one region (i.e. outside of the local area) to other forming principal avenues of communication for urban traffic movements. Typically these include highways.

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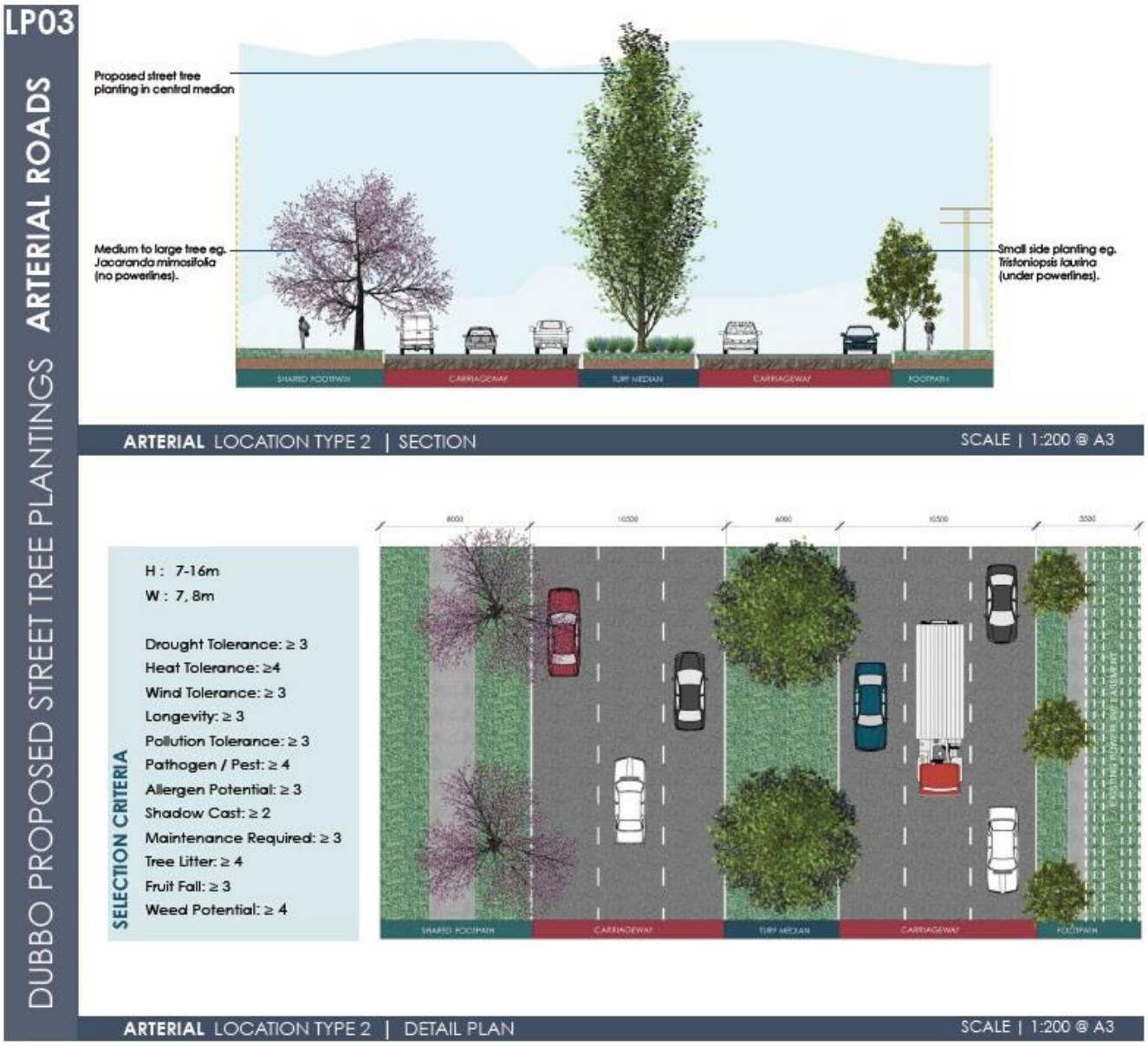

Arterial Roads LP04

Predominantly arterial roads carry through traffic from one region (i.e. outside of the local area) to other forming principal avenues of communication for urban traffic movements. Typically these include highways.

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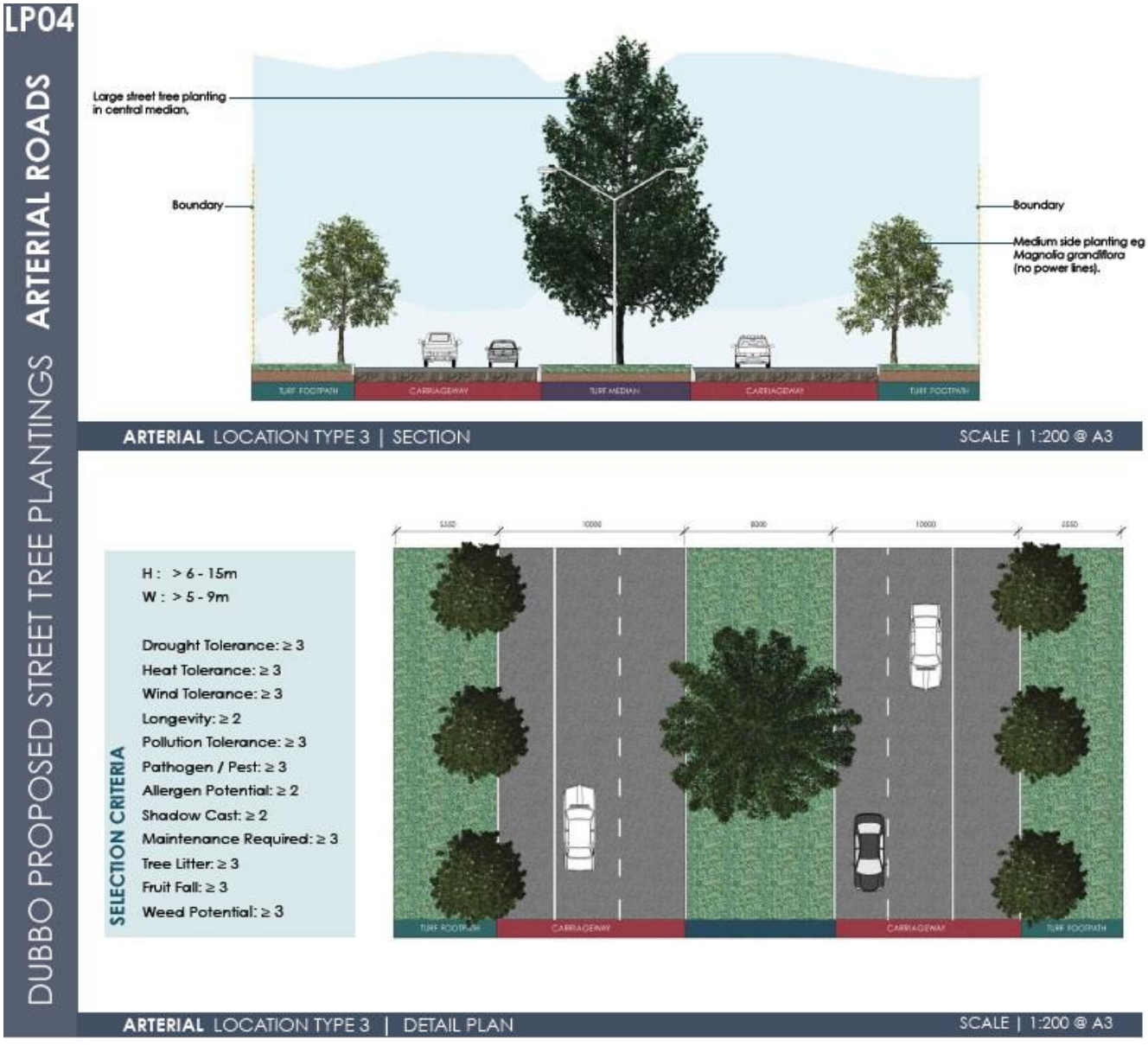
Commonly arterial roads are associated with a large range of both underground and overhead services that can restrict the placement of plantings and consequently the type and size of the trees. However, as they often produce the first impression of the City of Dubbo to visitors and tree species should be chosen to provide structure, scale and colour to these major roads.

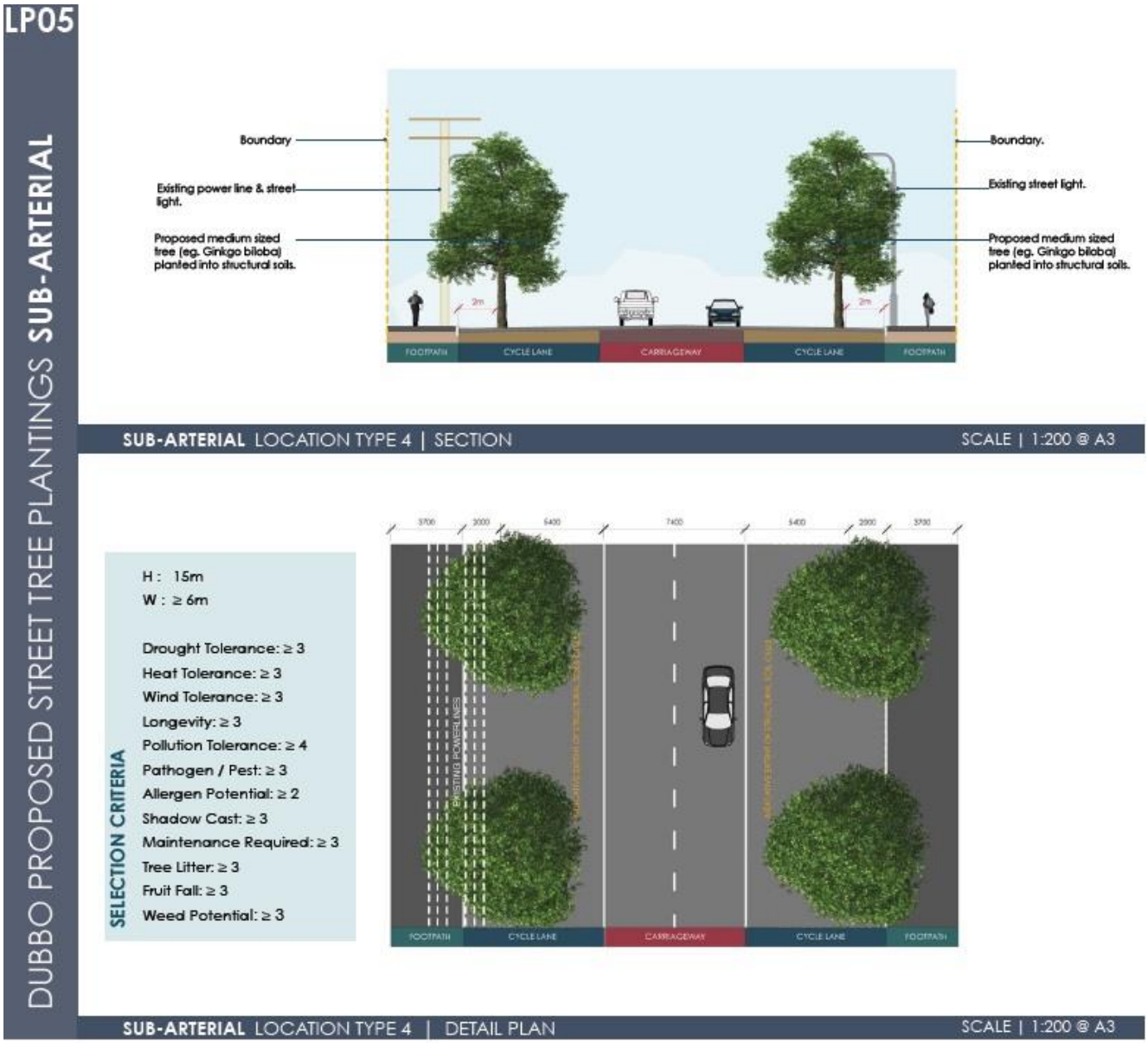


Sub Arterial Roads LP05

Sub – arterial road connect the arterial road to areas of development or carry traffic directly from one part of a region to another, and sometimes interconnect the arterial road network in the local area.

Typically these roads have wide formations with higher than average traffic flow carrying capacity.

The scale of these roads allow for the establishment of larger trees that will overtime develop into shady boulevards and park streets. These park streets will improve the connectivity of the City's existing park network, as well as continuing to provide their functional role.



Sub Arterial Roads LP06

Sub – arterial road connect the arterial road to areas of development or carry traffic directly from one part of a region to another, and sometimes interconnect the arterial road network in the local area.

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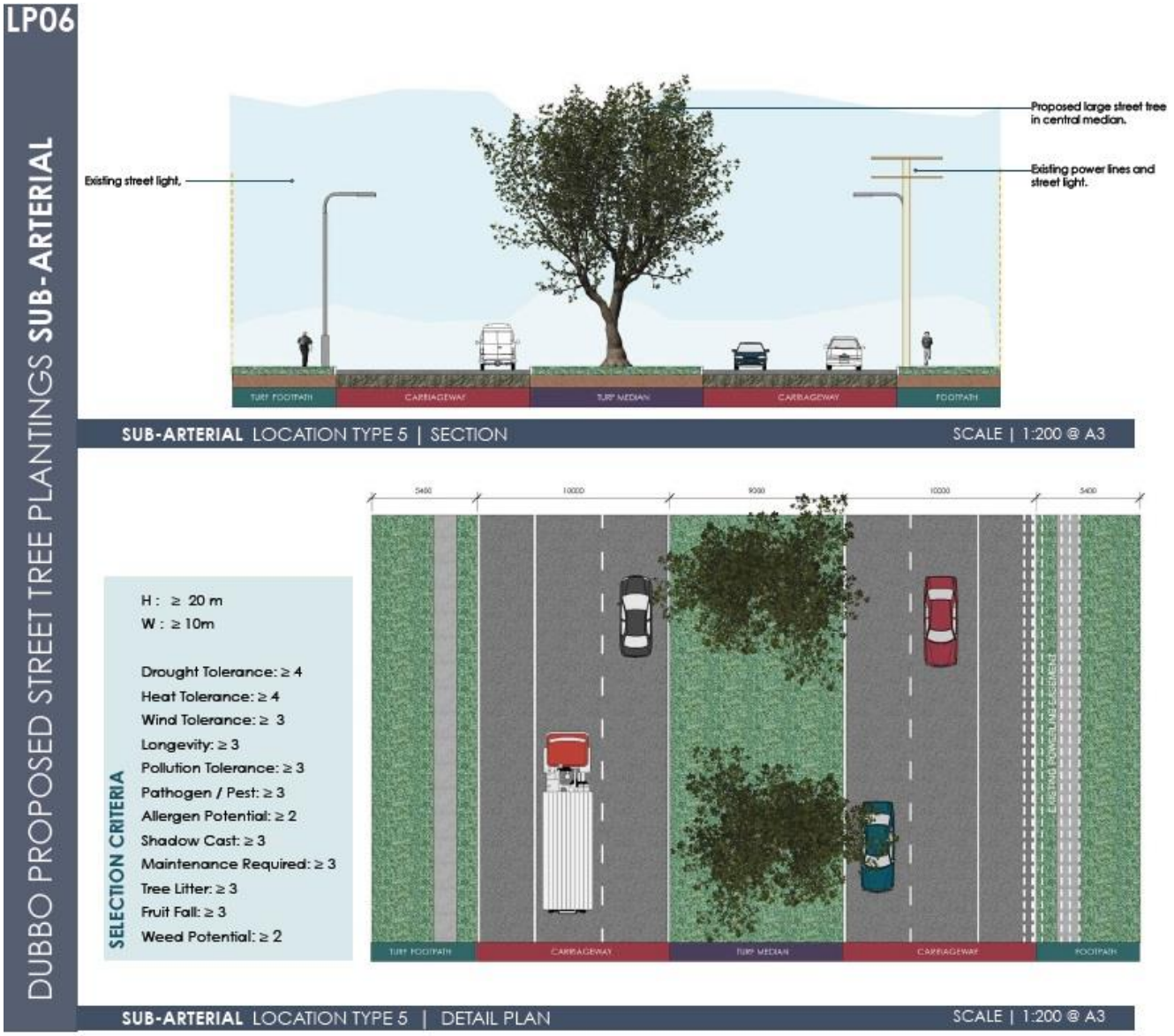


Collector Roads interconnect the arterial roads and the local road system in developed areas. Typically these are spine roads which service distinct neighbourhood precincts with a higher carrying capacity than the lower order roads that come off them.

The level of road are typical broad and scale and where services have been under grounded, provide the opportunity to plant large, broad canopied trees relative to the scale of the street.
Where overhead services remain the option of reducing the height of the trees on either one or both sides of the street exist.

LP07 COLLECTOR ROAD

DUBBO PROPOSED STREET TREE PLANTINGS

COLLECTOR ROAD LOCATION TYPE 6 | SECTION SCALE | 1:200 @ A3

SELECTION CRITERIA

With Powerlines
H : ≤ 8m
W : ≤ 6m

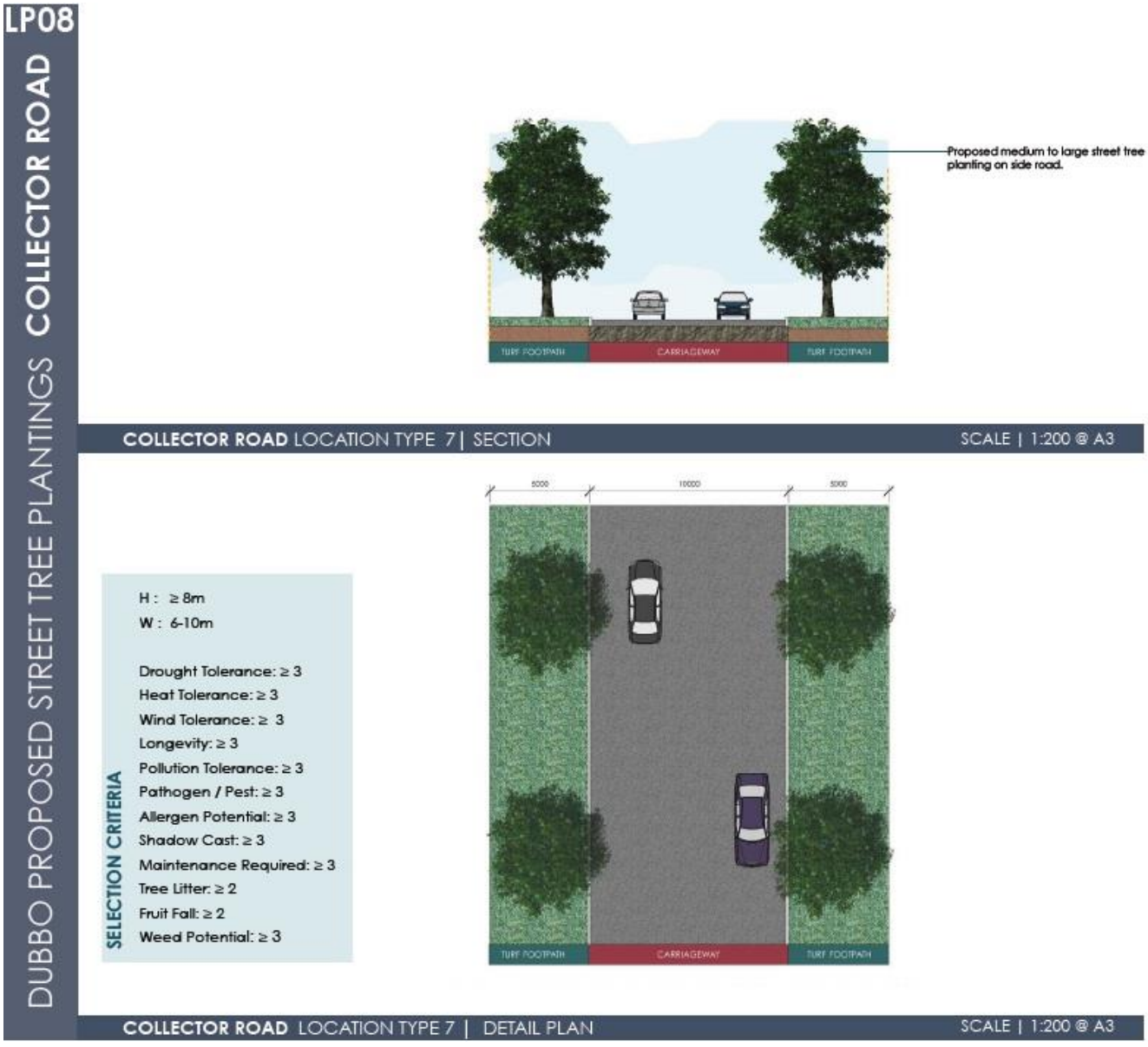
Without Powerlines
H: 8m - ≤ 20m
W: ≤ 8m

Drought Tolerance: ≥ 3
Heat Tolerance: ≥ 3
Wind Tolerance: ≥ 3
Longevity: ≥ 3
Pollution Tolerance: ≥ 4
Pathogen / Pest: ≥ 3
Allergen Potential: ≥ 2
Shadow Cast: ≥ 3
Maintenance Required: ≥ 3
Tree Litter: ≥ 3
Fruit Fall: ≥ 3
Weed Potential: ≥ 3

COLLECTOR ROAD LOCATION TYPE 6 | DETAIL PLAN SCALE | 1:200 @ A3

Collector Roads LP08

Collector Roads interconnect the arterial roads and the local road system in developed areas. Typically these are spine roads which service distinct neighbourhood precincts with a higher carrying capacity than the lower order roads that come off them.
The level of road are typical broad and scale and where services have been under grounded, provide the opportunity to plant large, broad canopied trees relative to the scale of the street.



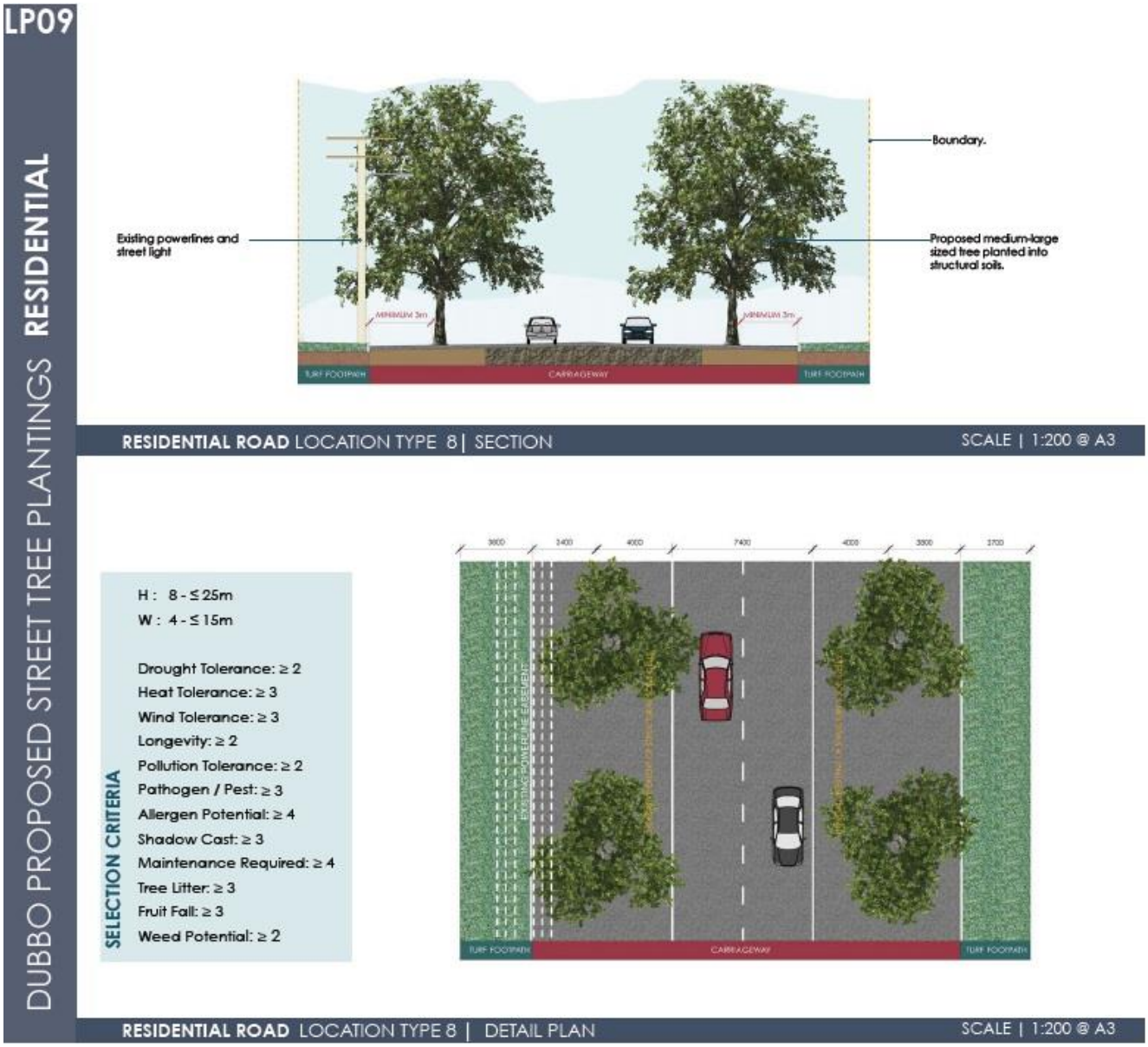
Residential (Local) Roads LP09

More commonly referred to as "Local" roads they are the subdivisional roads within a particular developed area and their purpose is to provide local access to residential property.

Throughout Dubbo, residential streets provide a range of street conditions and types. The street geometry and width, overhead services or not, aspect, building awnings, access to adjacent soil volumes, parking arrangements, precinct character, water sensitive urban design opportunities, the age of the suburb, and streetscape design provide a multitude of scenarios.

Generally speaking, the medians of these residential roads are well populated with trees, but there is considerable potential for verge street tree diversification and better tree growth generally.

Consequently, a large selection of tree species is required to reflect this broad range of planting situations and opportunities.



Residential (Local) Roads LP 10

More commonly referred to as "Local" roads they are the subdivisional roads within a particular developed area and their purpose is to provide local access to residential property.

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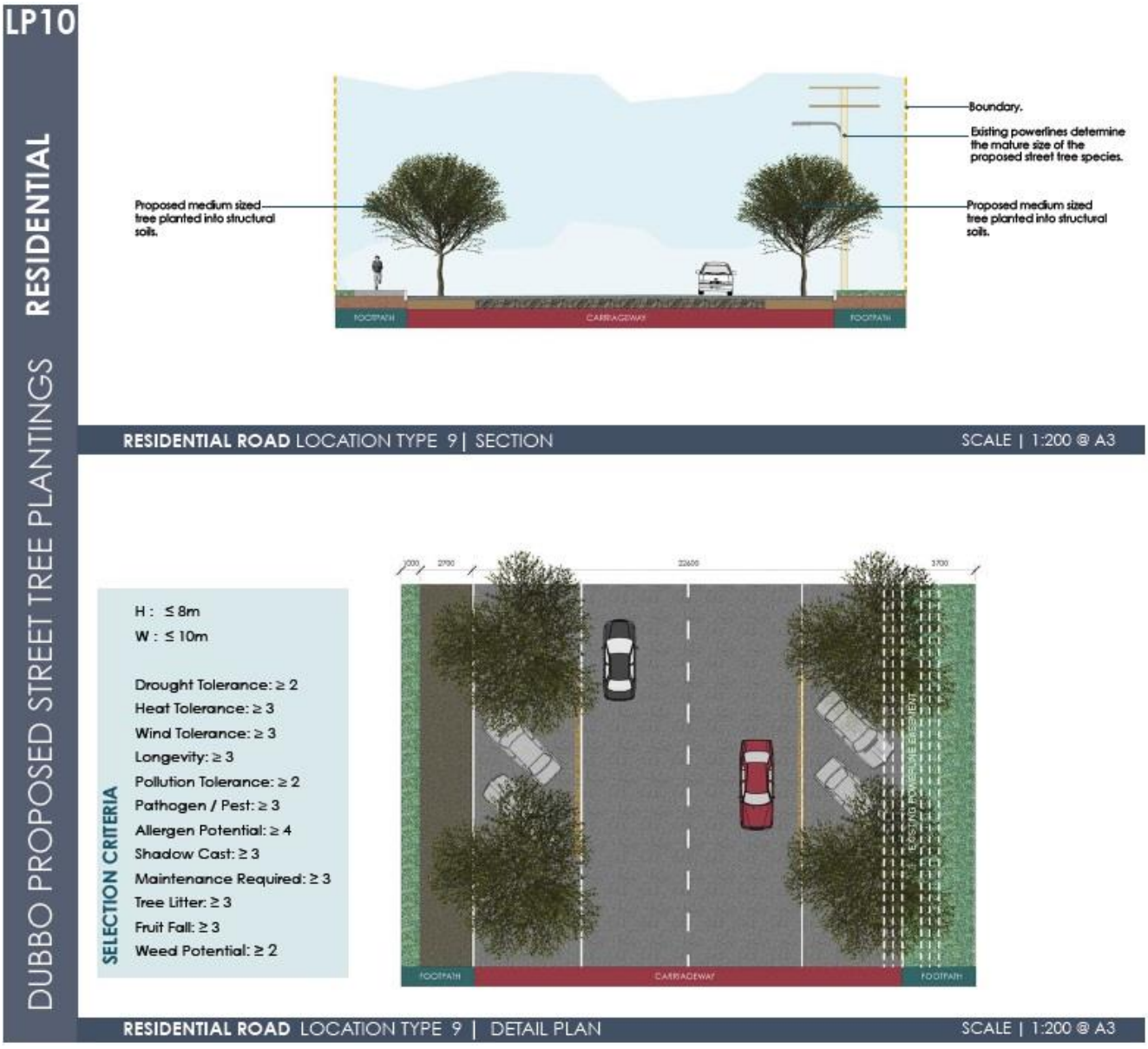


Central Business District LP11

This is the primary commercial precinct/district for an urban area which attracts high vehicular and pedestrian traffic movements and has the highest number of internal trip destinations. The CBD is bounded by Darling Street, Erskine Street, Bligh Street and Cobra Street.

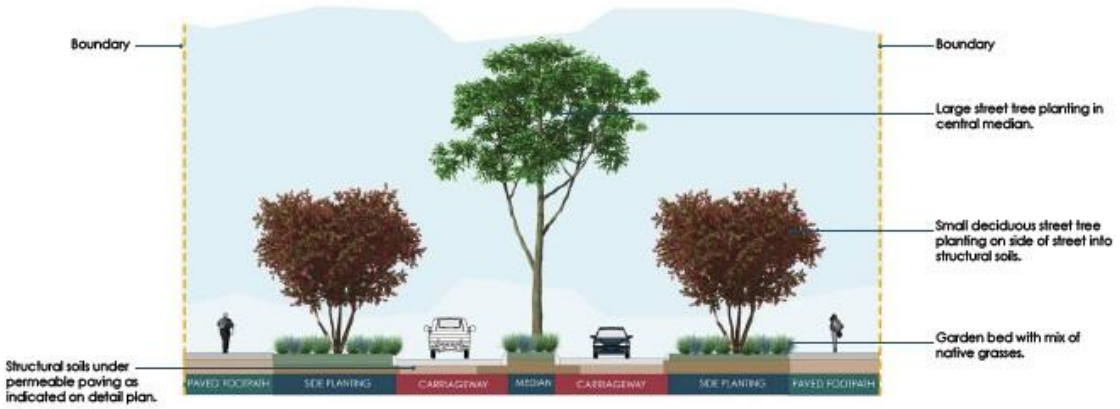
Generally, medians where they exist provide more space for growing trees in than the street's verges. Verge trees compete more for space than median trees, and so verge trees are more in conflict with human needs. Fortunately most of the overhead powerlines have been undergrounded. While underground services can cause restrictions to root growth area, it has eliminated canopy conflicts and so the potential for large trees is maintained.

Greater street tree diversity enables trees to be selected that can adapt to a variety of growing conditions, constraints and opportunities.

LP11

CBD

DUBBO PROPOSED STREET TREE PLANTINGS



CBD LOCATION TYPE 10 | SECTION SCALE | 1:100 @ A3

SELECTION CRITERIA

H : 6 - 19m
W : 3 - 11m

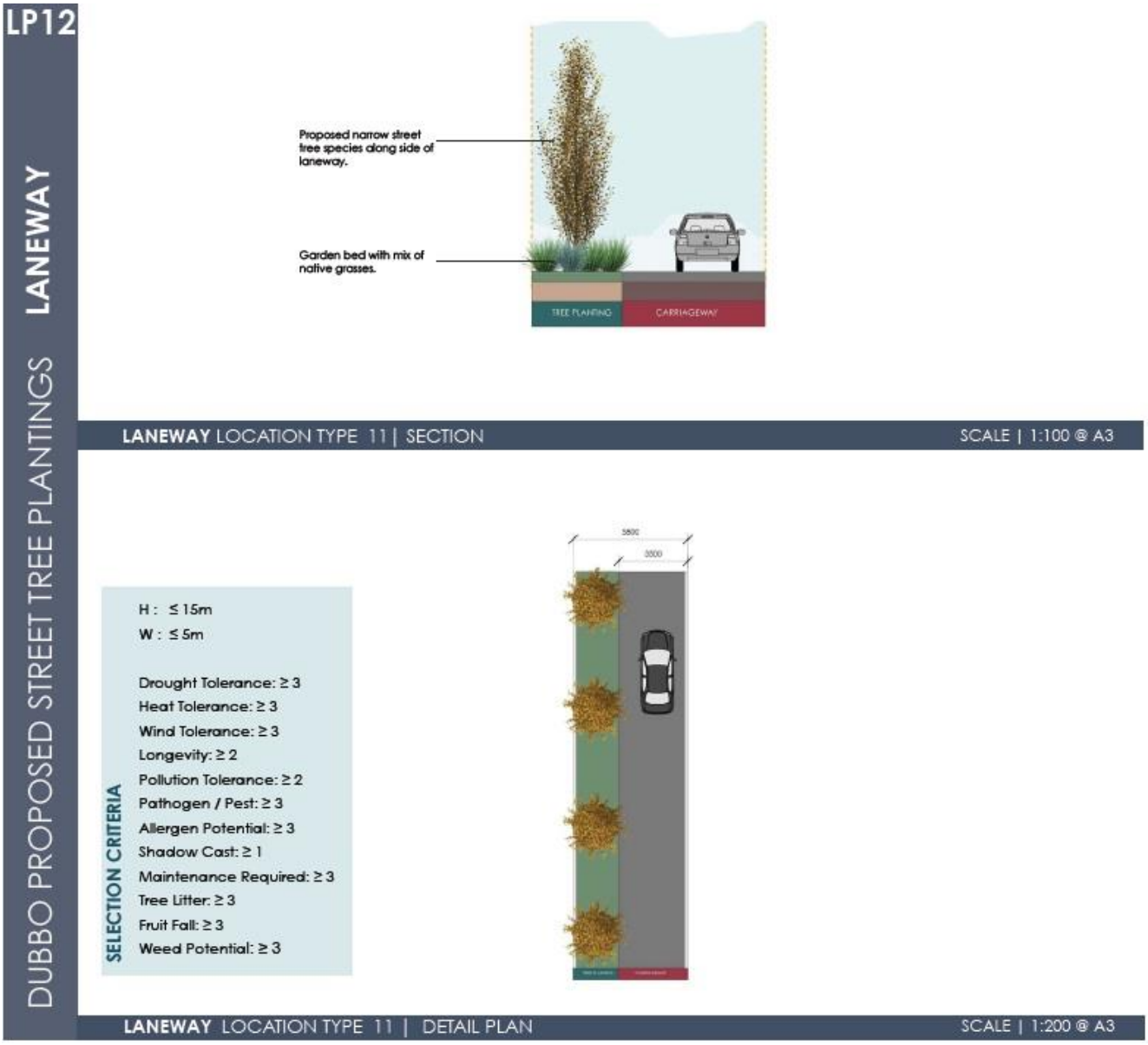
Drought Tolerance: ≥ 4
Heat Tolerance: ≥ 4
Wind Tolerance: ≥ 3
Longevity: ≥ 2
Pollution Tolerance: ≥ 3
Pathogen / Pest: ≥ 3
Allergen Potential: ≥ 3
Shadow Cast: ≥ 3
Maintenance Required: ≥ 3
Tree Litter: ≥ 4
Fruit Fall: ≥ 4
Weed Potential: ≥ 3

CBD LOCATION TYPE 10 | DETAIL PLAN SCALE | 1:200 @ A3

Laneway LP12

The laneways are very narrow, and it is generally agreed that tree planting opportunities in these environments are limited due to space restrictions, low light, conflict with access requirements and commercial uses.

Certain opportunities may still occur and the right tree species for the site will need close scrutiny.



Matrix and Street Typologies

Tree Species		Beneath overhead powerlines (or with pruning-P)	Shade Tolerance	Location Type 1 – Arterial LP02	Location Type 2 – Arterial LP 03	Location Type 3 – Arterial LP 04	Location Type 4 – Sub - arterial LP 05	Location Type 5 – Sub - arterial LP 06	Location Type 6– Collector LP 07	Location Type 7 – Collector LP 08	Location Type 8 – Residential Roads LP09	Location Type 9 - Residential Roads LP10	Location Type 10- CBD LP11	Location Type 11 – Laneway LP12
Acacia baileyana	Cootamundra Wattle	Yes	No											
Acacia deanei	Deanes Wattle	Yes	No											
Acacia decurrens	Early Black Wattle	Yes	No								Yes	Yes	Yes	Yes
Acacia implexa	Lightwood	No	No											
Acacia leprosa 'Scarlet Blaze'	Scarlet Blaze	Yes	No											
Acacia mearnsii	Late Black Wate	Yes (P)	No											
Acacia melanoxylon	Blackwood	No	No											
Acacia pendula	Weeping Myall	Yes (P)	No							Yes	Yes		Yes	Yes
Acacia pravissima	Ovens Wattle	Yes (P)	Yes											
Acacia salicina	Willow Acacia	No	No											
Acacia spectabilis	Mudgee wattle	No	No											

Acer buergerianum	Trident Maple	Yes	No			Yes								
Acer campestre 'Elsrijk'	Elsrijk Maple	Yes	Yes								Yes	Yes		
Acer campestre 'Evelyn'	Queen Elizabeth Maple	Yes	Yes			Yes					Yes	Yes	Yes	Yes
Acer negundo	Box Elder	No	Yes											
Acer negundo 'Sensation'	Sensation Box Elder Maple	No	Yes		Yes	Yes			Yes	Yes		Yes		
Acer platanoides 'Crimson Sentry'	Crimson Sentry Norway Maple	No	No			Yes								Yes
Acer platanoides 'Globosum'	Globe Norway Maple	Yes	No											Yes
Acer rubrum 'October Glory'	October Glory Red Maple	No	No			Yes			Yes	Yes				
Acer rubrum 'Scarsen'	Scarlet Sentinel Freeman Maple	No	Yes			Yes								Yes
Acer truncatum x *A. platanoides* 'Keithsform'	Hybrid Shantung Norwegian Sunset	Yes (P)	No			Yes		Yes	Yes				Yes	Yes

Acer x freemanii 'Autumn Blaze'	Autumn Blaze Freeman Maple	No	No		Yes	Yes			Yes	Yes			Yes	
Acmena smithii	Lilly Pilly	No	Yes			Yes					Yes			
Afrocarpus falcata	Yellow Wood	No	No						Yes	Yes				
Agathis robusta	Queensland Kauri	No	Yes					Yes						
Agonis flexuosa	Willow Myrtle	Yes	No			Yes							Yes	Yes
Albizia julibrissin	Pink silk Tree	No	No											
Allocasuarina littoralis	Black She-Oak	No	No											Yes
Allocasuarina torulosa	Forest She-Oak	No	No											
Allocasuarina verticillata	Drooping She-Oak	No	No											
Alnus cordata	Alder, Italian Alder	No	Yes											
Alnus jorullensis	Evergreen Alder	No	Yes											
Alphitonia excelsa	Red Ash	No	No											
Angophora costata	Smooth-Barked Apple	Yes (P)	No											

Angophora floribunda	Rough-Barked Apple	No	No										Yes	
Angophora hispida (Syn. *A. cordifolia*)	Dwarf Apple	Yes	No			Yes							Yes	
Araucaria columnaris	*Coral Reef Araucaria*	No	No											
Araucaria cunninghamii	Hoop Pine	No	No											
Araucaria heterophylla	Norfolk Island Pine	No	No											
Arbutus unedo	Irish Strwberry Tree	Yes (P)	Yes			Yes							Yes	Yes
Backhousia citriodora	Lemon Myrtle	No	No									Yes		
Banksia integrifolia subsp. *integrifolia*	Coastal Banksia	Yes (P)	No		Yes	Yes								
Banksia serrata	Saw Banksia	Yes (P)	No											
Bauhinia variegata	Orchid Tree	Yes	No											
Bauhinia x blakeana	Hong Kong Orchid Tree	No	Yes											

Betula pendula	Silver Birch	No	No											
Brachychiton acerifolius	Flame Tree	No	No											
Brachychiton discolour	Lacebark	No	No											
Brachychiton populneus	Kurrajong	No	No	Yes	Yes	Yes			Yes	Yes	Yes	Yes		
Brachychiton populneus x acerifolius 'Jerilderie Red'	Jerilderie Red Kurrajong	Yes	No	Yes	Yes	Yes				Yes	Yes	Yes		
Brachychiton rupestris	Queensland Bottle Tree	No	No		Yes									
Brachychiton x roseus	Hybrid Flame Tree	No	No		Yes	Yes			Yes	Yes	Yes			
Callistemon citrinis	Crimson Bottlebrush	Yes	No											Yes
Callistemon 'Harkness'		Yes	No											Yes
Callistemon salignus	Willow leaf Callistemon	Yes	No											Yes
Callistemon viminalis	Weeping Bottlebrush	Yes	No			Yes								Yes
Callistris rhomboidea	Port Jackson Pine	Yes	No									Yes		Yes
Callitris glaucophylla	White Cypress Pine	No	No	Yes				Yes	Yes	Yes	Yes		Yes	

Callitris preissii	Rottnest Island Pine	No	No	Yes		Yes				Yes	Yes	Yes	Yes	Yes
Casuarina cunninghamiana	River She-Oak	No	No											
Casuarina glauca	Swamp She-oak	No	No											
Catalpa bignonioides 'Nana'	Dwarf Indian Bean	Yes	Yes											
Cedrus atlantica	Atlas Cedar	No	No					Yes						
Cedrus deodara	Deodar Cedar	No	No											
Celtis australis	European Nettle Tree	Yes (P)	Yes											
Celtis occidentalis	Common Hackberry	Yes (P)	Yes											
Cercis siliquastrum	Judas Tree	No	Yes			Yes								Yes
Chamaecyparis lawsoniana	Lawsons Cypress	No	No								Yes			
Cinnamomum camphora	Camphor Laurel	No	No											
Corymbia citriodora	Lemon-Scented Gum	No	No											
Corymbia citriodora 'Scentuous'	Scentuous Lemon-scented Gum	Yes	No	Yes	Yes	Yes		Yes		Yes	Yes	Yes		

Corymbia eximia	Yellow Bloodwood	Yes (P)	No		Yes	Yes			Yes	Yes	Yes		Yes	
Corymbia ficifolia	Red-Flowering Gum	No	No						Yes	Yes	Yes			
Corymbia ficifolia 'Wild Sunset'	Wild Sunset Red-flowering Gum	Yes	No			Yes			Yes	Yes	Yes	Yes		
Corymbia ficifolia 'Wildfire'	Wildfire Red-flowering Gum	Yes	No			Yes			Yes	Yes	Yes	Yes		
Corymbia gummiferum	Red Bloodwood	No	No											
Corymbia maculata	Spotted Gum	No	No											
Corymbia ptychocarpa	Swamp Bloodwood	No	No										Yes	
Corymbia torelliana	Cadagi	No	Yes											
Crataegus laevigata	English Hawthorn	Yes	Yes											
Cupaniopsis anachardioides	Tuckaroo, Carrotwood	No	Yes											

Cupressus glabra (syn. *C. arizonica*)	Smooth Arizona Cypress	No	No			Yes							Yes	
Cupressus sempervirens	Italian Cypress	No	No										Yes	Yes
Cupressus torulosa	Bhutan Cypress	No	No						Yes	Yes				
Elaeocarpus reliculatus	Blueberry Ash	No	No									Yes		
Erythrina crista-galli	Coral Tree	No	No							Yes	Yes			
Eucalyptus albens	White Box	No	No					Yes	Yes	Yes				
Eucalyptus bancroftii	Orange Gum	No	No		Yes	Yes								
Eucalyptus bicostata	Victorian Blue Gum	No	No											
Eucalyptus blakelyi	Blakely's Red Gum	No	No								Yes			
Eucalyptus botryoides	Southern Mahogany	No	No											
Eucalyptus caldocalyx 'Nana'	Dwarf Sugar Gum	No	No						Yes	Yes	Yes	Yes		

Eucalyptus camaldulensis	River Red Gum	No	No											
Eucalyptus cinerea	Argyle Apple	No	No											
Eucalyptus cladocalyx	Sugar Gum	No	No					Yes	Yes	Yes				
Eucalyptus cosmophylla	Cup Gum	No	No		Yes	Yes								
Eucalyptus crebra	Narrow-leaved ironbark	No	No											
Eucalyptus dunnii	Dunn's White Gum	No	No					Yes						
Eucalyptus forrestiana	Fuchsia Gum	Yes	No											Yes
Eucalyptus gregsoniana	Wolgan Snow Gum	Yes	No											Yes
Eucalyptus leucoxylon	Yellow Gum	No	No											
Eucalyptus leucoxylon dwarf form	Euky Dwarf Yellow Gum	Yes	Yes											Yes

Eucalyptus leucoxylon ssp. *megalocarpa*	Yellow Gum (Large Fruited)	Yes (P)	No			Yes								
Eucalyptus mannifera subsp. *maculosa*	Red Spotted Gum	No	No			Yes								Yes
Eucalyptus melliodora	Yellox Box	No	No			Yes								
Eucalyptus microcarpa	Grey Box	No	No							Yes	Yes			
Eucalyptus microtheca	Coolibah	No	No								Yes		Yes	Yes
Eucalyptus nicholii	Willow-Leaf Peppermint	No	No			Yes								Yes
Eucalyptus platypus	Round-Leaf Moort	Yes	No	Yes	Yes	Yes			Yes	Yes	Yes	Yes	Yes	
Eucalyptus polyanthemos	Red Box	No	No										Yes	
Eucalyptus pulchella	White Peppermint	No	No		Yes	Yes								

Eucalyptus robusta	Swamp Mahogany	No	No							Yes	Yes			
Eucalyptus rossii	Scribbly Gum	No	No											
Eucalyptus scoparia	Wallangarra White Gum	No	No			Yes								
Eucalyptus sideroxylon	Red Ironbark	No	No											
Eucalyptus sieberi	Silvertop Ash	No	No											
Eucalyptus spathulata	Swamp Mallet	No	No											
Eucalyptus stoatei	Scarlet Pear Gum	Yes	No											Yes
Eucalyptus stricklandii	Strickland's Gum													
Eucalyptus tereticornis	Forest Red Gum	No	No											
Eucalyptus torquata	Coral Gum	Yes	No											Yes
Ficus macrophylla	Moreton Bay Fig	No	Yes											

Ficus microcarpa var. *hillii*	Hill's Fig	Yes (P)	Yes	Yes									Yes	
Ficus platypoda	Rock Fig	Yes	No		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	
Ficus rubiginosa	Port Jackson Fig	No	Yes	Yes		Yes			Yes	Yes				
Flidersia maculosa	Leopard Wood	No	No											
Flindersia australis	Crows Ash, Australian Teak	No	Yes							Yes				
Fraxinus excelsior	European Ash	Yes (P)	No											
Fraxinus excelsior 'Aurea'	Golden Ash	Yes (P)	No											
Fraxinus griffithii	Flowering Ash	Yes	No							Yes	Yes			
Fraxinus ornus	Flowering Ash	Yes	No			Yes								Yes
Fraxinus ornus 'Arie Peters'	Arie Peters Manna Ash	Yes	Yes								Yes	Yes		
Fraxinus ornus 'Meczek'	Moptop Ash	Yes	No											Yes
Fraxinus angustifolia ssp. o*xycarpa* 'Raywood'	Claret Ash	No	No											

Fraxinus pennsylvanica 'Aerial'	Aerial Green Ash	No	No			Yes							Yes	
Fraxinus pennsylvanica 'Cimmaron'	Cimmaron Green Ash	No	No	Yes	Yes	Yes			Yes	Yes			Yes	
Fraxinus pennsylvanica 'Urbanite'	Urbanite Green Ash	Yes (P)	No	Yes	Yes	Yes			Yes	Yes			Yes	
Fraxinus velutina	Velvet Ash	No	No			Yes					Yes	Yes		
Geijera parviflora	(Wilga, Australian Willow)	Yes	No											
Ginkgo biloba	Maidenhair Tree	No	Yes		Yes	Yes	Yes		Yes	Yes				
Ginkgo biloba 'Princeton Sentry'	Upright Maidenhair Tree	No	Yes		Yes	Yes	Yes		Yes	Yes				
Gleditsia triacanthos var.*inermis* Varieties	Thornless Common Honey Locust	No	Yes			Yes								
Grevillea robusta	Silky Oak	No	No					Yes						
Hakea francisiana	Narukalja	Yes	No											Yes
Hakea laurina	Pincushion Hakea	Yes	No											
Hakea salicifolia	Willow-leaved Hakea	Yes	No											
Hymensoporum favum	Natve frangipani	No	Yes											Yes

Jacaranda mimosifolia	Jacaranda	No	No			Yes								
Koelreuteria bipinnata	Chinese Flame Tree	No	No			Yes			Yes	Yes	Yes			
Koelreuteria paniculata	Golden Rain Tree	Yes	Yes			Yes								
Lagerstroemia indica x *L. fauriei* varieties	Indian Summer Crepe Myrtles	Yes	No								Yes	Yes		Yes
Lagunaria patersonia	Norfolk Hibiscus	Yes	No											
Leptospermum petersonii	Lemon-Scented Tea-tree	Yes	No											Yes
Liquidambar formosana	Formosan Sweetgum	Yes (P)	Yes			Yes			Yes	Yes				
Liquidambar styraciflua 'Goduzam' Gold Dust	Liquidambar, American Sweetgum	No	Yes			Yes	Yes	Yes	Yes	Yes				
Liquidambar styraciflua 'Rotundiloba'	Rotundiloba Sweetgum	No	Yes											
Lophostemon confertus	Queensland Brush Box	Yes (P)	Yes		Yes	Yes	Yes	Yes	Yes	Yes				
Magnolia grandiflora 'Exmouth'	Little Gem Southern Magnolia	Yes	Yes			Yes						Yes		Yes
Malus floribunda	Crab Apple	Yes (P)	No								Yes			Yes

Malus ioensis 'Plena'	Bechtel Crab Apple	Yes	No			Yes					Yes	Yes		Yes
Malus tschonoskii	Crab Apple	Yes	No								Yes	Yes		Yes
Melaleuca bracteata	Black Tea-tree	Yes	Yes						Yes	Yes	Yes	Yes		
Melaleuca linariifolia	Snow in Summer	Yes (P)	No			Yes					Yes			
Melaleuca quinquenervia	Broad leaved paperbark	No	Yes							Yes	Yes			
Melia azedarach 'Elite'	Elite White Cedar	Yes	Yes	Yes	Yes	Yes	Yes			Yes	Yes	Yes		
Platanus X *acerifolia*	London Plane Tree	Yes (P)	No			Yes		Yes		Yes	Yes			
Prunus cerasifera 'Nigra'	Flowering Plum	Yes	No								Yes	Yes		Yes
Triadica sebiferum (Sapium sebifera)	Chinese Tallow Tree	Yes (P)	No			Yes					Yes			
Ulmus parvifolia	Chinese Elm	No	Yes					Yes		Yes	Yes		Yes	
Ulmus parvifolia 'Emer II' Allee	Allee Chinese Elm	No	No			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
TRIAL TREES														
Acacia stenophylla	Eumong, River Cooba	No	No								Yes			

Acer monspessulanum	Montpelier Maple	Yes	No			Yes			Yes		Yes	Yes		
Atalaya hemiglauca	Whitewood	Yes	No						Yes		Yes	Yes		
Casuarina cristata	Belah	No	No			Yes				Yes	Yes			
Ceratonia siliqua	Carob	Yes	No						Yes			Yes		
Eucalyptus astringens	Brown Mallet	No	No							Yes	Yes	Yes		
Eucalyptus gardneri	Blue Mallet	No	No							Yes	Yes			
Eucalyptus polybractea	Blue Mallee	Yes	No						Yes		Yes	Yes		
Eucalyptus viridis	Green Mallee	Yes	No							Yes	Yes	Yes		
Eucalyptus wimmerensis 'Honey Pots'	Tucker Time® Honey Pots™	Yes	No						Yes		Yes	Yes		
Fraxinus americana var.	White Ash	No	Yes											
Maclura pomifera 'Wichita'	Osage Orange	No	No										Yes	

Melaleuca styphelioides	Prickley-leaved Paperbark	Yes (P)	No			Yes					Yes			
Melia azedarach	White Cedar	Yes (P)	Yes											
Metasequoia glyptostroboides	Dawn Redwood	No	No		Yes	Yes			Yes	Yes	Yes			
Nerium oleander	Oleander	Yes	No											
Nyssa sylvatica	Black Tupulo	No	Yes								Yes			
Olea europea	European Olive	Yes (P)	No											
Paulownia tomentosa	Empress Tree, Princess Tree	No	No											
Phoenix canariensis	Canary Island Date Palm	No	No			Yes				Yes	Yes			
Phoenix reclinata	Senegal Datae Palm	No	Yes			Yes				Yes	Yes			
Photinia robusta	Photinia	Yes	No						Yes		Yes	Yes	Yes	Yes
Pinus canariensis	Canary Island Pine	No	No											

Pinus halepensis	Aleppo Pine	No	No					Yes						
Pinus patula	Mexican Pine	No	No											
Pinus pinaster	Maritime Pine	No	No											
Pinus pinea	Stone Pine	Yes	No					Yes						
Pistacia chinensis	Chinese Pistachio	Yes	No			Yes				Yes	Yes	Yes		
Platanus orientalis 'Digitata'	Cyprian Plane	Yes (P)	No	Yes	Yes	Yes	Yes	Yes	Yes					
Podocarpus elatus	Plum Pine	No	No											
Populus nigra var. *italica*	Lombardy Poplar	No	No											
Populus x canadensis 'Evergreen 65 - 1'	Popular	No	No						Yes	Yes	Yes			
Populus x P. euramericana 'Veronese'	Veronese Popular	No	No					Yes	Yes	Yes	Yes			
Populus yunnanensis	Yunnans Poplar	No	No											
Prunus cerasifera 'Oakville crimson spire'	Oakville Crimson Spire	No	No											Yes
Pyrus calleryana 'Aristocrat'	Aristocrat Pear	No	No		Yes	Yes	Yes	Yes	Yes	Yes			Yes	
Pyrus calleryana 'Chanticleer'	Chanticleer Pear	No	No	Yes	Yes	Yes	Yes	Yes	Yes				Yes	

Pyrus calleryana 'Valzam'	Valiant Callery's Pear	No	No	Yes		Yes		Yes	Yes	Yes	Yes		Yes	Yes
Pyrus calleryana x *betulaefolia* 'Edgedell'	Edgewood Pear	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Pyrus nivalis	Snow Pear	Yes (P)	No											
Pyrus ussuriensis	Manchurian Pear	Yes (P)	No			Yes			Yes	Yes	Yes			
Quercus acutissima	Sawtooth Oak	Yes (P)	No											
Quercus agrifolia	Coast Live Oak	No	No											
Quercus bicolor	Swamp White Oak	Yes (P)	No											
Quercus canariensis	Algerian Oak	No	No					Yes						
Quercus cerris	Turkey Oak	Yes (P)	No											
Quercus coccinea	Scarlet Oak	No	No											
Quercus ilex	Holly Oak	No	No											
Quercus macrocarpa	Bur Oak	No	No					Yes						
Quercus palustris	Pin Oak	No	No											
Quercus phellos	Willow Oak	No	No				Yes							
Quercus robur	English Oak	Yes (P)	No											

Quercus robur 'Fastigiata'	English Oak	No	No							Yes	Yes			Yes
Quercus rubra	Red Oak	Yes (P)	No				Yes							
Quercus suber	Cork Oak	No	No	Yes		Yes	Yes		Yes	Yes	Yes			
Robinia pseudoacacia (Varieties)	Black Locust	Yes	Yes			Yes								
Salix babylonica	Weeping Willow	No	No											
Schinus areira	Peppercorn Tree	No	Yes											
Sophora japonica 'Princeton Upright'	Upright Pagoda Tree	No	Yes			Yes								Yes
Stenocarpus sinuatus	Firewheel Tree	No	Yes											
Syncarpia glomulifera	Turpentine	No	No							Yes				
Syzygium australe 'Pinnacle'	Pinnacle Scrub Cherry	Yes	Yes											
Syzygium paniculatum	Brush Cherry	No	Yes						Yes					
Tabebuia chrysotricha	Yellow Trumpet Tree	No	No											
Taxodium distichum	Baldcypress	No	No											

Tilia cordata 'Greenspire'	Upright Small Leafed Linden	Yes (P)	Yes			Yes	Yes	Yes	Yes	Yes				
Trachycarpus fortunei	Chusan Fan Palm	No	Yes											Yes
Tristaniopsis laurina	Kanooka, Water Gum	Yes (P)	No			Yes		Yes			Yes			Yes
Tristaniopsis laurina 'Luscious' (Luscious® *Tristaniopsis laurina* 'DOW10')	Luscious Water Gum, Kanooka	Yes	Yes			Yes			Yes		Yes			
Ulmus glabra 'Lutescens'	Golden Elm	No	No											
Ulmus procera	English Elm	Yes (P)	Yes											
Ulmus x hollandica	Dutch Elm	Yes (P)	Yes											
Washingtonia filifera	California Fan Palm	No	Yes											Yes
Washingtonia robusta	Washington Palm, Mexican Fan Palm	No	Yes											Yes
Waterhousea floribunda	Weeping Lilly Pilly	No	Yes											
Zelkova serrata 'Green Vase'	Japanese Zelkova	Yes (P)	No				Yes							

Zelkova serrata 'Wireless'	Japanese Zelkova	Yes	No			Yes	Yes		Yes		Yes	Yes	Yes	

Tree Planting Standards

Western Plains Regional Council

TREE PLANTING STANDARDS

PLAN SHEET INDEX

NOT REQUIRED

SCALES: NOT TO SCALE

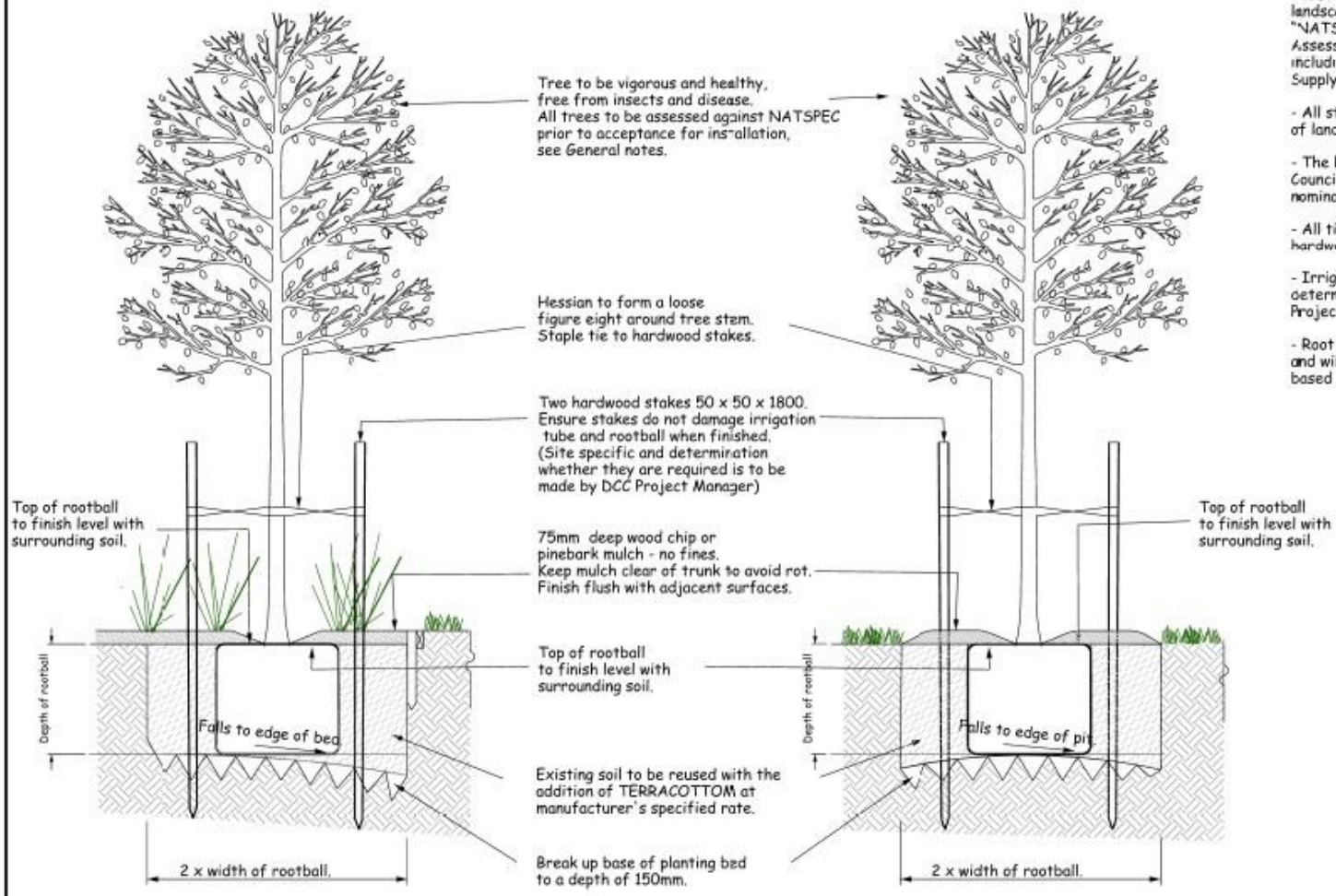
Western Plains Regional Council

DRAWING TITLE: COVER SHEET

JOB: TREE PLANTING STANDARDS

SHEET No. 1 OF 9 SHEETS

PLAN NO: P 6639



D1 >45L TREE IN MASS PLANTING BED
NTS

D2 >45L TREE IN TURF
NTS

GENERAL NOTES

- Provide assessment from the supply nursery or horticultural landscape contractor showing compliance against criteria in "NATSPEC Guide to Specifying Trees - Assessment of Tree Quality" requirements, including a checklist of the key points. Supply to Council's Parks and Landcare prior to planting.

- All stakes and hessian ties to be removed at the end of landscape contractors maintenance period.

- The landscape contractor must furnish test evidence to Council that all soils used do comply with the soil types nominated on these details.

- All timber in contact with ground to be Class 1 durability hardwood or equivalent ACQ treated pine.

- Irrigation lines may or may not be required and will be determined on a site by site basis by the Project Manager (02 6801 4000)

- Root barrier, either modular or linear, may be required and will be determined by the D.C.C Project Manager based on site specific conditions.

THE REQUIREMENTS OF PART IV OR V OF THE ENVIRONMENTAL PLANNING & ASSESSMENT ACT 1979 HAVE BEEN NOT REQUIRED WITH RESPECT TO THIS PROJECT.
PLANNING OFFICER DATE
APPROVED
MANAGER TECHNICAL SUPPORT DATE

SURVEY DATE
DESIGN DATE
DRAWING DT DATE 8/10/11
CHECKED
Mark Blaney DATE 12/2011
SENIOR DESIGN ENGINEER

R:\SURVEY FILES
DESIGN FILES
DRAWING FILES

SCALES
NOT TO SCALE

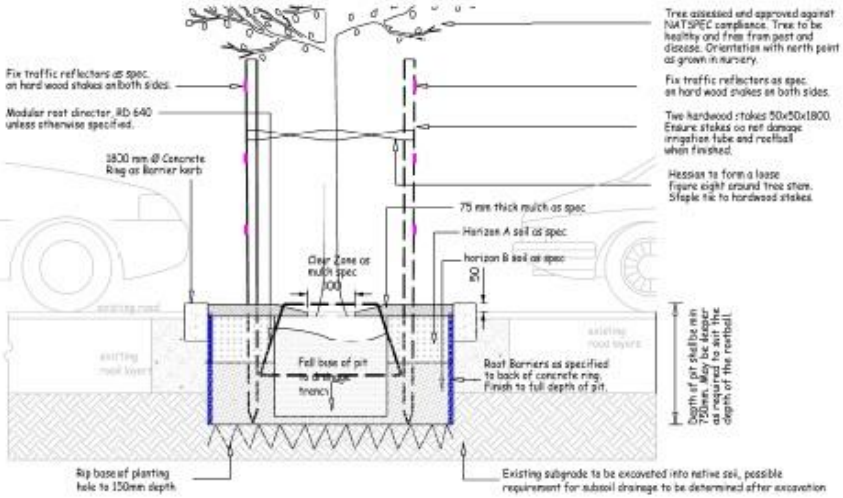
No. DATE APPD DETAILS OF AMENDMENTS

Western Plains Regional Council

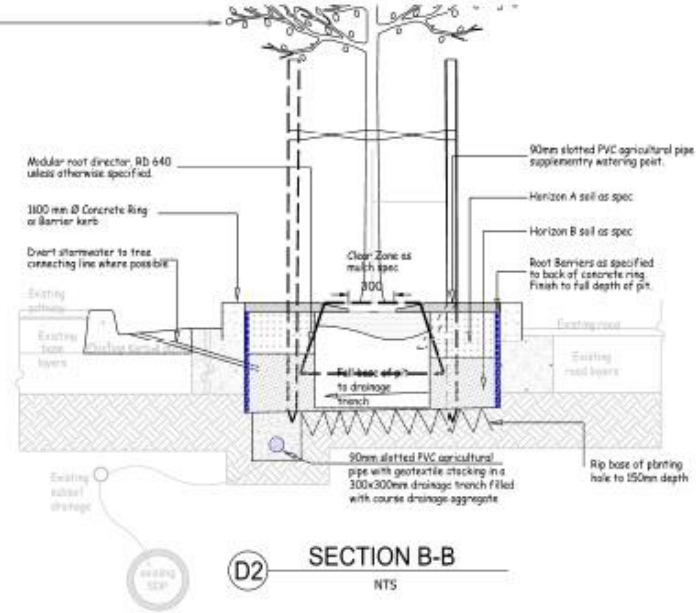
DRAWING TITLE
TREE > 45 L POT SIZE

JOB
TREE PLANTING STANDARDS

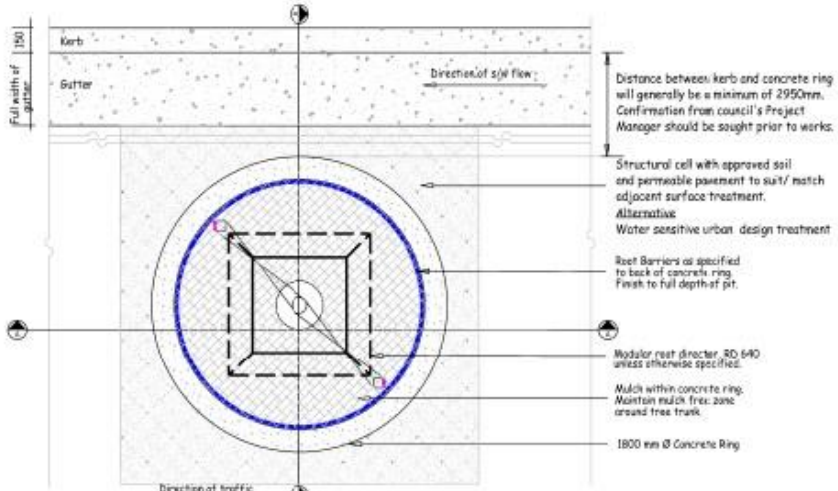
SHEET No. 2
OF 9 SHEETS
PLAN NO.
P 6639



D1 SECTION A-A
NTS



D2 SECTION B-B
NTS



D3 PLAN
N°S

NOTES REFER ALSO TO SHEET 2.- SPECIFICATION

SUBMISSIONS
Submit the following certificates to Council's Project Manager (02 68014000) at the following times:
- Assessment from the supply nursery or horticultural landscape contractor showing compliance against criteria in "NATSPEC Guide to Specifying Trees - Assessment of Tree Quality" requirements, including a minimum of five key points. Supply to Council and obtain approval prior to accepting the order.
- Certificate of compliance from the soil supplier providing laboratory testing to demonstrate compliance with the specification for each type of soil.

HOLD POINTS
Contact Council's Project Manager (02 68014000) at the following hold points and obtain written approval to proceed:
- Set-out of pit prior to cutting of A/C and installation of concrete ring.*
- Pits excavated, drainage installed and root barrier installed ready for backfilling with soils.
- Tree supply to the site, prior to planting.
- Tree planting & tree guard installed.

PRELIMINARIES
Erect sediment control barriers to gutters and drains prior to commencing excavation work. Keep the site continuously clear of debris and soil material that may wash into drainage system. Ensure continuous pedestrian access along the footpath pavement and to property entries. Comply with RTA Manual "Traffic Control at Work Sites".

UTILITIES
Contractor shall carry out Dial Before You Dig searches by phoning 1100 prior to excavation. Where services are within the zone of influence highlighted by the utilities. Locate services accurately using an Accredited Service Locator and hand excavate.

TREE PIT EXCAVATION, PREPARATION AND DRAINAGE
Set-out the tree pits and seek approval from Council's Project Manager prior to proceeding. Saw cut the road pavement to create a neat and round edge. Remove excavation material & dispose off site. Provide a fall to the base of the pit toward the drainage trench as detailed. Construct the drainage trench and connect to s/w system. Break up the base of the tree pit prior to backfilling. Position the root barrier prior to placement of soils. Note: Where possible link drainage between pits and connect to the s/w system behind the kerb. Minimise connections to the s/w main.

ROOT BARRIER
- Supply a HDPE waterproof flexible cuttable root barrier min 0.7mm wall thickness, min height 600mm. Ensure root barrier finishes flush with the top of the pit backfill. Overlap 300mm and heat seal or seal with Butyl tape.
- A modular root director, RD 640 or similar is to be installed centrally within the concrete ring to manufacturers recommendations.

SOILS
Horizon A soil - Equal to AS4419-2003 'Organic Soil' with texture to AS4419-2003 Table 11- Sandy Loam. Place no deeper than 300mm to prevent anaerobic decomposition of organic matter within soil.
Horizon B soil - Place below a depth of 300mm. Equal to AS4419-2003 'Soil blend' with min 5% organic matter content. Texture to AS4419-2003 Table11 - Sandy Loam. Do not incorporate organic matter to horizon B soil.

TREE SUPPLY
All trees must conform to Clark, R 2003, NATSPEC "Specifying Trees - A Guide to Assessment of Tree Quality" Appendix 2. Time of delivery to minimise storage on site. Ensure root balls are kept watered and shade in the shade prior to planting. Inspect immediately upon delivery for NATSPEC compliance and return any trees that do not meet the standard. Cross reference. - Inspections and Submissions.

TREE PLANTING
Plant trees after placement of root barrier and soils, and before placing mulch. Do no fill trees by the trunk. Support from under the rootball. Remove the pot or bag and root prune 10mm all round the root ball to encourage root division and remove any girdling. Plant with the rootball flush with the top of soil and plinth.

MULCH
Mulch type shall be a woodchip mulch with NO FINES. Finish mulch layer 10mm below the top of kerb. Do not mound mulch layer.

REFLECTOR
Each traffic reflector shall be 85mm diameter red 'corner cube' delineator (plastic disc) or HV Signs or equal (See Detail K) Screw mount to tree guard on both sides.

SUB SOIL DRAINAGES
If there are no sub-soil lines, new sub-soil drainage must be provided to connect tree pit drainage into the storm water system.
Locating existing subsoil lines and/or design of new subsoil and storm water connections must be determined prior to construction commencing to ensure feasibility of tree plantings.

THE REQUIREMENTS OF PART IV ORV OF THE ENVIRONMENTAL PLANNING & ASSESSMENT ACT 1979 HAVE BEEN COMPLIED WITH IN RESPECT TO THIS PROJECT.
DATE
PLANNING OFFICER
NOT REQUIRED
APPROVED
DATE
MANAGER TECHNICAL SUPPORT

SURVEY DATE
DESIGN DATE
DRAWING Natasha DATE 05/2011
CHECKED
Mark Reece DATE 12/2011
SENIOR DESIGN ENGINEER

P:\S\SURVEY FILES
DESIGN FILES
DRAWING FILES

SCALES
NOT TO SCALE

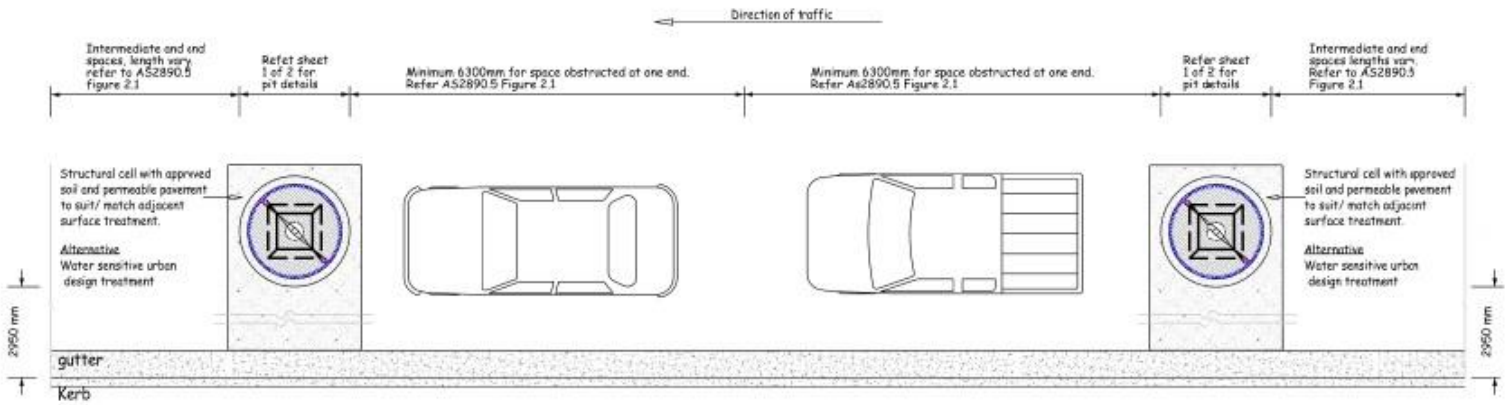
No.	DATE	APPD	DETAILS OF AMENDMENTS

Western Plains Regional Council

DRAWING TITLE
TREES IN ROAD PAVEMENT
SHEET 1 OF 2

JOB
TREE PLANTING STANDARDS

SHEET No. 3
OF 9 SHEETS
PLAN NO.
P 6639



TYPICAL PLAN - TREE IN ROAD PAVEMENT

NTS

DESIGN NOTES

GENERAL-This detail is typical only and may require adjustment for site specific situations. This detail is intended as a design tool to assist designers to setout trees in their site masterplan. It is not intended as a construction detail.
For all proposals to plant trees in the street, installation must demonstrate compliance with the following issues:
HYDRAULIC FLOWS - seek advice from a civil engineer to check that the setout will not impede hydraulic flows along the gutter. Site specific calculations are required for this purpose and engineering certification shall be submitted with the DA/CC.
UTILITIES - The presence and location of underground services varies greatly from site to site and can affect the feasibility and design of tree planting in streetscapes. Many services are not located in accordance with standard allocations. Additional services may be present that are not documented. To check the feasibility of proposed tree locations contact Dial Before You Dig 1100 to determine service locations. Site specific service location shall also be carried out by an accredited service locater to more accurately check the site conditions. Contact council or utilities providers for a list of accredted locaters.
Document utilities locations with the DA/CC documentation to demonstrate the feasibility of proposals. Comply with clearances by utilities providers. Do not locate tree pits where they will interfere with power lines or other utilities.
SUBSOIL DRAINAGE
The locations of subsoil drainage and stormwater pits is required to determine suitable connections for pit drainage. If there are no existing sub-soil lines, new sub-soil drainage must be provided to connect tree pit drainage into the storm water system. Locating existing subsoil lines and/or design of new subsoil and storm water connections must be determined prior to construction commencing to ensure feasibility of tree plantings. Ensure that s/w mains are sealed in accordance with the relevant Australia Standard/s. Where possible minimise connections to the stormwater drains.
TRAFFIC ISSUES - Do not set out street trees in taxi stands, bus stops, loading zones, and slip lanes, driveways, pedestrian kerb ramps, etc. Do not locate street trees where they may interfere with traffic sight lines eg. on the approach side of pedestrian blisters or driveways. Comply with Figure 3.3 AS2890.2 for sight line clearances. Ensure reflectors are located on both sides of the tree guard adjacent to the travel lane and on both sides of the tree guard. Line markings are desirable to highlight the presence of the tree plantings as traffic obstacles. They may be deleted if approved in consultation with Council's traffic officer.

PARKING - Check the setout of carparking spaces before locating street trees and locate tree pits to minimise loss of on-street parking spaces. Where additional space is available without loss of parking or where parking is not a major issue, the length of the tree pit may be increased. Where parking setout is not parallel with the kerb, adjust the detail to provide alternative pit designs and setout to suit the site parking arrangements. Comply with the requirements of AS2890.5 On-street Parking.
TREE GUARD ORIENTATION - Where tree guards with decorative panels are proposed, orientate the tree guard with panels perpendicular to the kerb.
TREE SPECIES SELECTION NOTES
Developer must submit a detailed landscape plan of the proposed sub-division to Dubbo City Council for approval. Species must be identified by botanical nomenclature.
Contact DCC Parks and Landcare on 68014000 to determine whether proposed species are relevant to the site.
Weed species should always be avoided in any location.
Avoid the selection of very large trees for confined streetscape situations unless additional tree pit preparation work is carried out or a large verge area is available, well clear of all infrastructure (eg. kerb and gutter, footpath and services).
Avoid the selection of trees that grow in naturally moist situations as these can be shallow rooting, unless pit preparation works are justified in the landscape report.

The 2950mm distance between the kerb and the concrete ring edge allows the D.C.C streetsweeper through.

THE REQUIREMENTS OF PART IV DIV OF THE ENVIRONMENTAL PLANNING & ASSESSMENT ACT 1979 HAVE BEEN NOT REQUIRED WITH RESPECT TO THIS PROJECT.
PLANNING OFFICER DATE
APPROVED
MANAGER TECHNICAL SUPPORT DATE

SURVEY DATE
DESIGN DATE
DRAWING Roland DATE 12/2011
CHECKED
Mark Stacey DATE 12/2011
SENIOR DESIGN ENGINEER

PROJECT FILES
DESIGN FILES
DRAWING FILES

SCALES
NOT TO SCALE

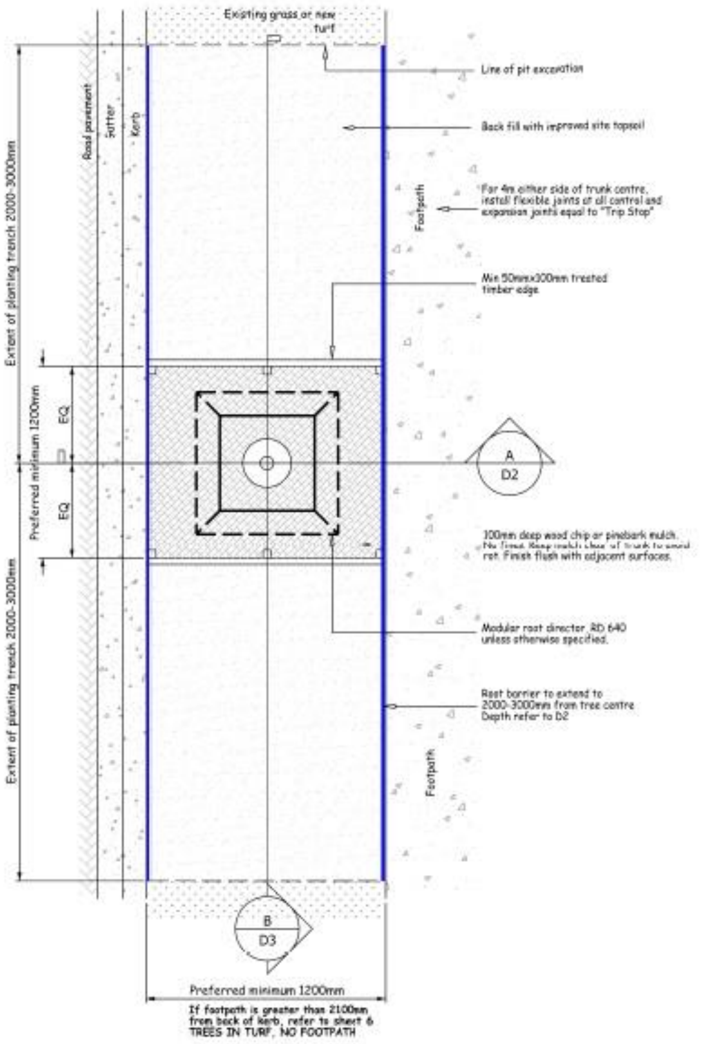
No.	DATE	APPD	DETAILS OF AMENDMENTS

Western Plains Regional Council

DRAWING TITLE
TREES IN ROAD PAVEMENT
SHEET 2 OF 2

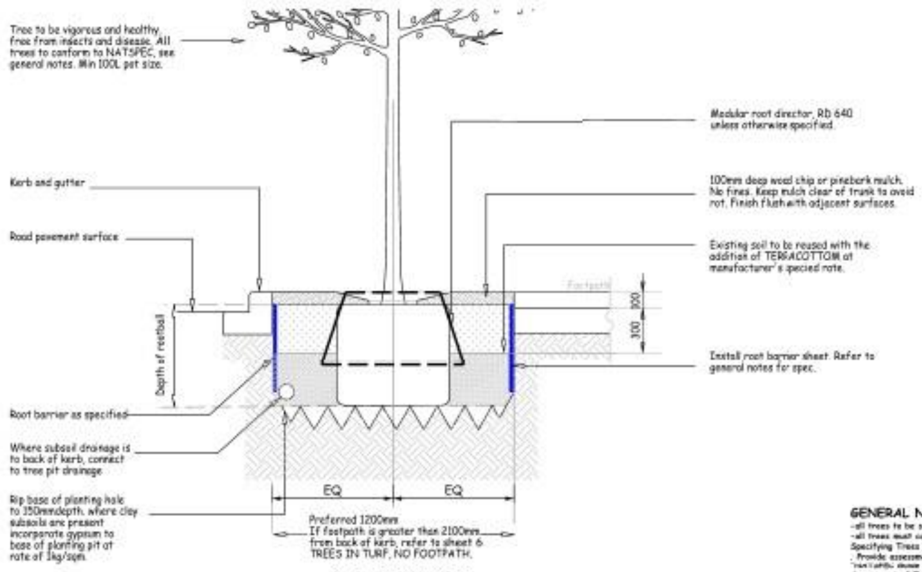
JOB
TREE PLANTING STANDARDS

SHEET No. 4
OF 9 SHEETS
PLAN NO.
P 6639



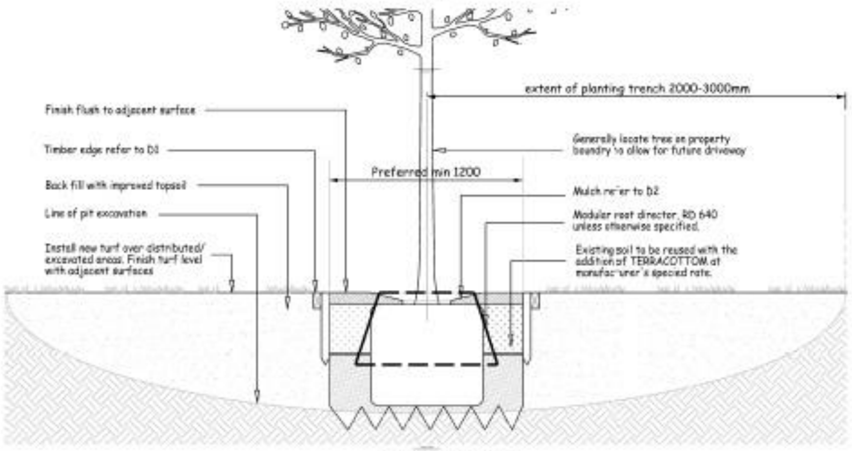
D1 TYPICAL STREET TREE WITH FOOTPATH

NTS



D2 A-A SECTION

NTS



D3 B-B SECTION

NTS

GENERAL NOTES

-all trees to be sized 100L.
-all trees must conform to "NATSPEC Guide to Specifying Trees - Assessment of Tree Quality". Provide assessment of conformance to "NATSPEC Guide to Specifying Trees - Assessment of Tree Quality" from supplier.
-Install root barrier sheet equal to Arborgreen Re-Route 600 linear root barrier. Top of rootbarrier to sit flush with surrounding soil to be covered by mulch.
-Where possible, maximize the space available for the tree root zone by co-ordinating footpath locations to be closer to the property boundary and further from the kerb, or eliminated for minor local roads where pedestrians can walk safely on the road.
- Do not locate tree within 4m of streetlights or where the mature canopy may interfere with lighting performance.
- Do not locate trees within 2.5m of s/w kerb inlet pits.
- All timber in contact with ground to be class 1 durability hardwood or equivalent ACQ treated pine.

INSPECTION HOLD POINTS

Contact Council's Project Manager (02 68014000) at the following hold/witness points. Note: Hold points require written approval to proceed. Witness points require verbal approval to proceed and approvals dates and contacts shall be diarised as evidence of approval. Hold points are noted with an asterisk*.
-Pits excavated, drainage installed and root barrier installed ready for backfilling with soils.*
-Tree supply to the site, prior to planting.
-Tree planting complete.

SUBMISSIONS

Submit the following certificates to Council's Project Manager (02 68014000) at the following times:
-Assessment from the supply nursery or horticultural contractor indicating compliance with "NATSPEC Guide to Specifying Trees-Assessment of Tree Quality" requirements, including a checklist of the key points. Supply to Council and seek approval prior to planting.
-Certificate of compliance from the soil supplier providing laboratory testing to demonstrate compliance with the specification for each type of soil.

THE REQUIREMENTS OF PART IV OR V OF THE ENVIRONMENTAL PLANNING & ASSESSMENT ACT 1979 HAVE BEEN MET WITH RESPECT TO THIS PROJECT. NOT REQUIRED
PLANNING OFFICER DATE
APPROVED
MANAGER TECHNICAL SUPPORT DATE

SURVEY DATE
DESIGN DATE
DRAWING DATE 12/2011
CHECKED Mark Stacey DATE 12/2011
SENIOR DESIGN ENGINEER

NOT TO SCALE

No. DATE APPD DETAILS OF AMENDMENTS

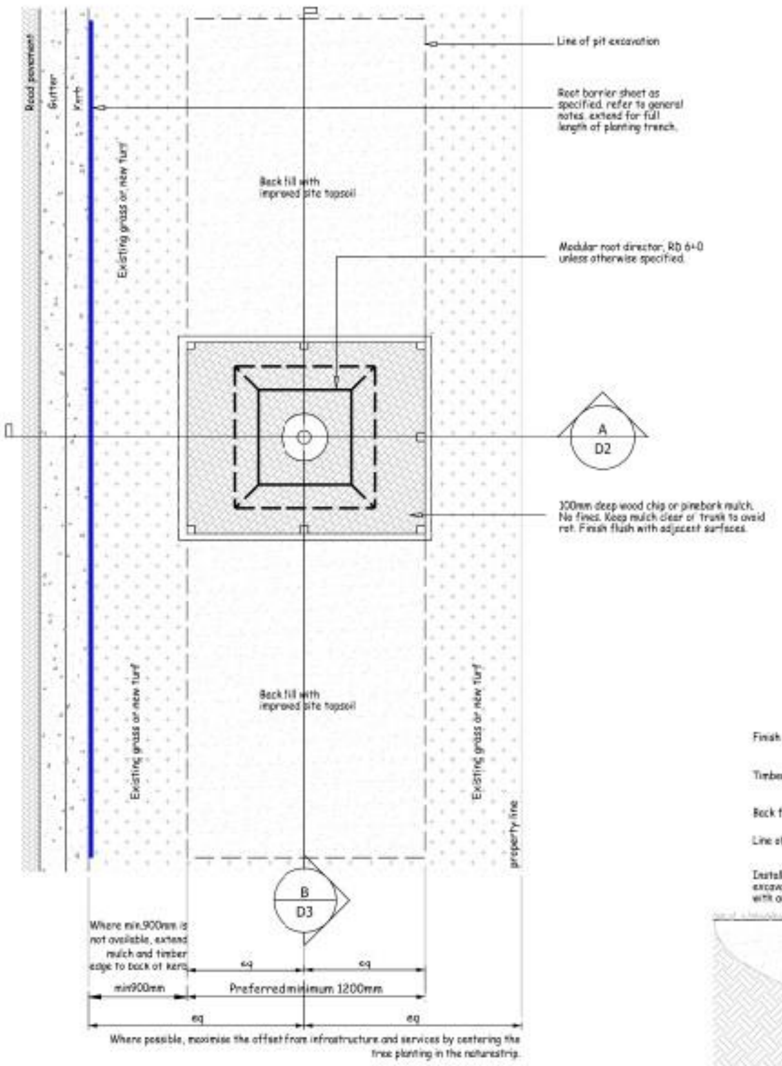
Western Plains Regional Council

DRAWING TITLE: TREES IN TURF WITH FOOTPATH

TREE PLANTING STANDARDS

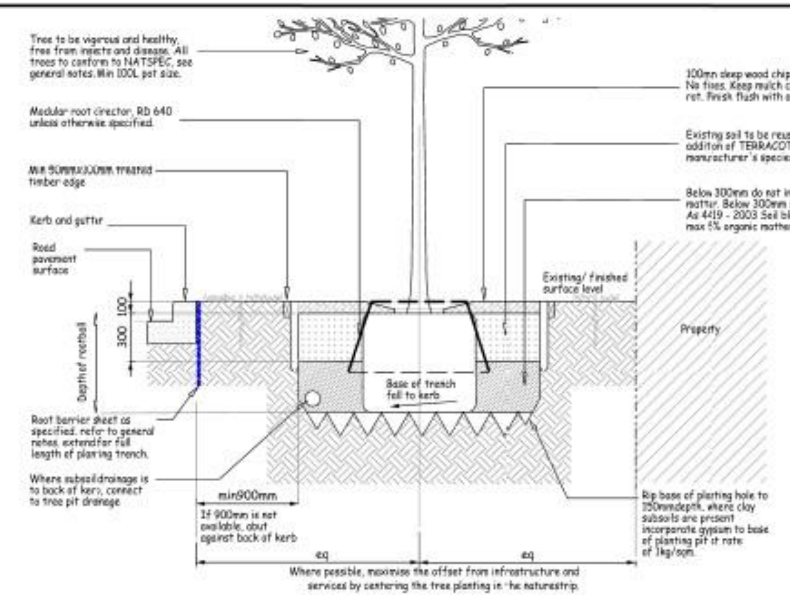
SHEET No. 5 OF 9 SHEETS

PLAN NO. P 6639



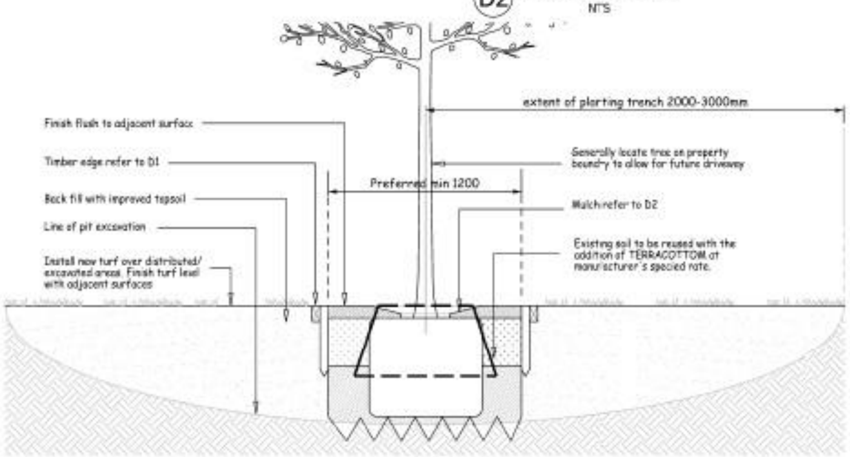
D1 TYPICAL STREET TREE, NO FOOTPATH

NTS



D2 A-A SECTION

NTS



D3 B-B SECTION

NTS

GENERAL NOTES

- All trees to be minimum 100L pot size.
- All trees must conform to "NATSPEC Guide to Specifying Trees - Assessment of Tree Quality". Provide assessment of conformance to "NATSPEC Guide to Specifying Trees - Assessment of Tree Quality" from supplier.
- Install root barrier sheet equal to Arborgreen Re-Route 600 linear root barrier. Top of rootbarrier to sit flush with surrounding soil
- A modular root director, RD 640 or similar is to be installed centrally within the concrete ring to manufacturers recommendations.
- All timber in contact with ground to be Class 1 durability hardwood or equivalent ACQ treated pine.
- Do not locate tree within 4m of streetlights or where the mature canopy may interfere with lighting performance.
- Do not locate trees within 2.5m of s/w kerb inlet pits.

INSPECTION HOLD POINTS

Contact Council's Project Manager (02 68014000) at the following hold/witness points. Note: Hold points require written approval to proceed. Witness points require verbal approval to proceed and approvals dates and contacts shall be diarised as evidence of approval. Hold points are noted with an asterisk*.

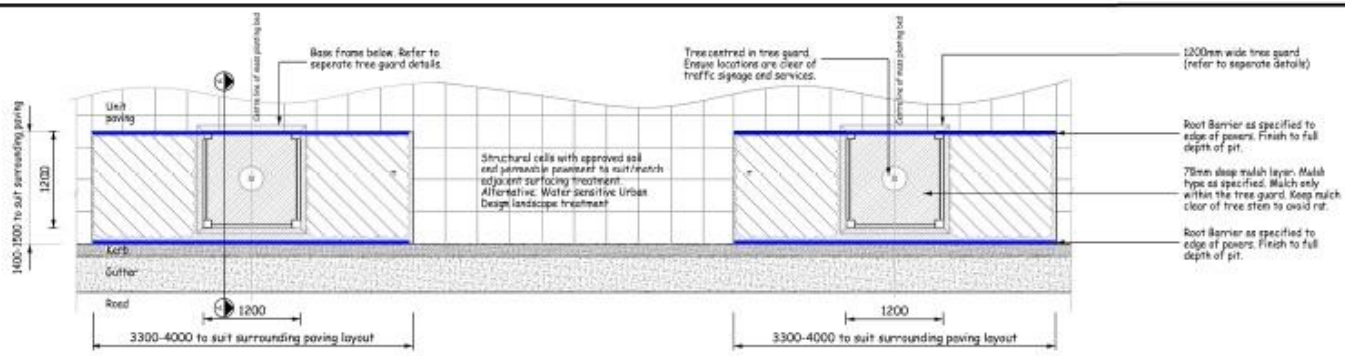
- Pits excavated, drainage installed and root barrier installed ready for backfilling with soils.
- Tree supply to the site, prior to planting.
- Tree planting complete.

SUBMISSIONS

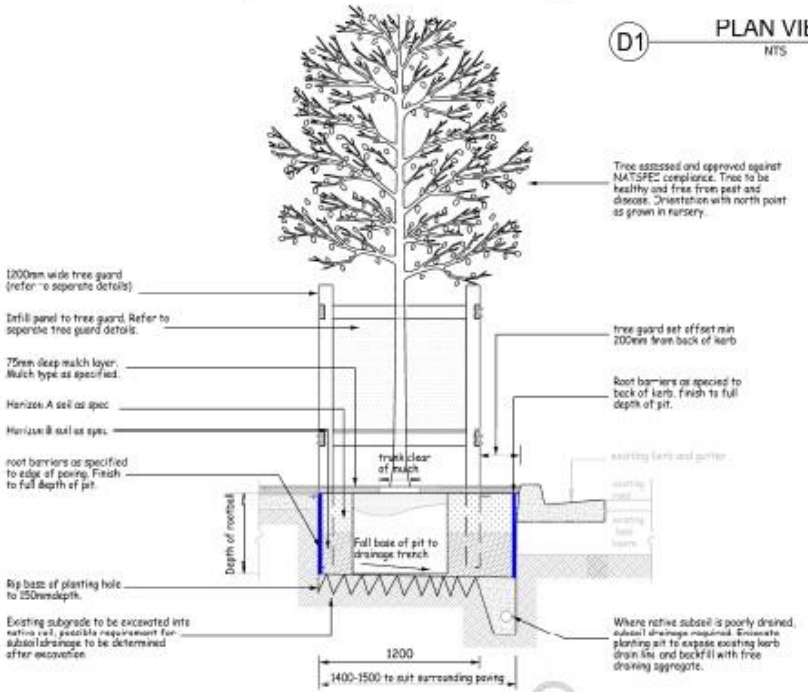
Submit the following certificates to Council's Project Manager (02 68014000) at the following times:

- Assessment from the supply nursery or horticultural contractor indicating compliance with "NATSPEC Guide to Specifying Trees - Assessment of Tree Quality" requirements, including a checklist of the key points. Supply to Council and seek approval prior to planting.
- Certificate of compliance from the soil supplier providing laboratory testing to demonstrate compliance with the specification for each type of soil.

REQUIREMENTS OF PART IV OR V OF THE ENVIRONMENTAL PLANNING & ASSESSMENT ACT 1979 HAVE BEEN MET IN RESPECT TO THIS PROJECT. NOT REQUIRED PLANNING OFFICER DATE APPROVED MANAGER TECHNICAL SUPPORT DATE	SURVEY DATE DESIGN DATE DRAWING Noland DATE 12/2011 CHECKED Mark Stacey DATE 12/2011 SENIOR DESIGN ENGINEER	F.B/SURVEY FILES DESIGN FILES DRAWING FILES	SCALES NOT TO SCALE	No. DATE APPD DETAILS OF AMENDMENTS	Western Plains Regional Council	DRAWING TITLE TREES IN TURF NO FOOTPATH	JOB TREE PLANTING STANDARDS	SHEET No. 6 OF 9 SHEETS PLAN NO. P 6639



D1 PLAN VIEW
NTS



D2 AA- TYPICAL SECTION
NTS

DESIGN NOTES

CONSTRUCTION NOTES
DIAL BEFORE YOU DIG
Contractor shall carry out Dial Before You Dig searches by phoning 1100 prior to excavation. Where planting may be within the zone of influence highlighted by the utilities, locate services accurately using an Accredited Service Locator. Contact Councils Project Manager (02 66004000) if tree locations conflict with services
SUBMISSIONS
Submit the following certificates to Council's Project Manager (02 6600 4000) at the following times:
-Assessment from the supply nursery or horticultural landscape contractor showing compliance against criteria in "NATSPEC Guide to Specifying Trees - Assessment of Tree Quality" requirements, including a checklist of the key points. Supply to Council and obtain approval prior to ordering.
-Certificate of compliance from the soil supplier providing laboratory testing to demonstrate compliance with the specification for each type of soil.
GENERAL - This detail is typical only and may require adjustment for site specific situations. Do not scale off the drawing, dimensions take precedence over scaled measurements.
UTILITIES - The presence and location of underground services varies greatly from site to site and can affect the feasibility and design of tree planting in streetscapes. Many services are not located in accordance with standard allocations. Additional services may be present that are not documented. The locations of subsoil drainage and stormwater pits are required to determine suitable connections for pit drainage. Designers must check the feasibility of proposed tree locations and contact Dial Before You Dig 1300 to determine service locations. Where planting may be within the zone of influence highlighted by the utilities, locate services accurately using an Accredited Service Locator. Comply with clearances required by utilities providers. Do not locate tree pits where they will interfere with power lines or other utilities.
TRAFFIC ISSUES - Do not set out street trees in taxi stands, bus stops, loading zones, and slip lanes, driveways, pedestrian kerb ramps, etc. Do not locate street trees where they may interfere with traffic sight lines eg. on the approach side of pedestrian blisters or driveways. Comply with Figure 3.3 AS2890.2 for sight line clearances. All existing traffic signage to be reinstated at the completion of works to the same location unless otherwise agreed. Contact Council regarding any conflicts with proposed street tree locations and traffic signage.
TREE GUARDS - Type of tree guard to be determined by the Project Manager (Parks and Landcare) on a site by site basis. Where tree guards with decorative panels are proposed, orientate the tree guard with panels perpendicular to the kerb.
TREE SPECIES SELECTION NOTES
Plantings must be in accordance with the Greening Plan of Dubbo Street Tree master plan, but Council will consider alternative species but this option must be well supported with a clear link to site, evidence and a landscape report explaining the nuisance. To environmentally sensitive areas, eg. adjoining water courses, the lake, coastal environments or bushland, local indigenous species should always be pre-ferenced. Contact D.C.C Landscape Architects on 66014000 to determine whether guidelines are relevant to the site. Weed species should always be avoided in any location. Avoid the selection of very large trees for confined streetscape situations unless additional tree pit preparation work is carried out or a large verge area is available, well clear of all infrastructure (eg. kdg, footpath and services).

WITNESS & HOLD POINTS
Contact Council's Project Manager (02 66004000) at the following hold points. Note: Hold points require written approval to proceed.
-Tree pit setout
-Pits excavated, drainage installed and root barrier installed ready for backfilling with soils*
-Trees supply to the site, prior to planting.
-Tree planting & tree guard installed*
PRELIMINARIES
Erect sediment control barriers to gutters and drains prior to commencing excavation work. Keep the site continuously clear of debris and soil material that may wash into drainage system. Ensure continuous pedestrian access along the footpath pavement and to property entries. Comply with RTA Manual "Traffic Control at Work Sites".

TREE PIT EXCAVATION, PREPARATION AND DRAINAGE
Setout the tree pits and seek approval from Council's Project Manager prior to proceeding. Saw cut the road pavement to create a neat and square edge. Remove excavation material & dispose off site. Provide a fall to the base of the pit toward the drainage trench as detailed. Construct the drainage trench and connect to s/w system. Break up the base of the tree pit prior to backfilling. Position the root barrier prior to placement of soils. Note: Where possible link drainage between pits and connect to the s/w system behind the kerb. Minimize connections to the s/w main.

ROOT BARRIER
Supply a HDPE UV stabilised root barrier min 0.7mm wall thickness, min height 600mm. Ensure root barrier finishes flush with the top of the pit backfill and peg to ensure the barrier is fitted minimum 100mm above the base of the pit. Overlap 300mm and weld seal or seal with Butyl tape.

SOILS
Horizon A soil - Equal to AS4419-2003 'Organic Soil' with texture to AS4419-2003 Table D - Sandy Loam. Place as deeper than 300mm to prevent anaerobic decomposition of organic matter within soil.
Horizon B soil - Place below a depth of 300mm. Equal to AS4419-2003 'Soil blend' with max 5% organic matter content. Texture to AS4419-2003 TableD - Sandy Loam. Do not incorporate organic matter in horizon B soil.

TREE SUPPLY
All trees must conform to Clark, R 2003. NATSPEC "Specifying Trees - A Guide to Assessment of Tree Quality" Appendix 2". Time site delivery to minimise storage on site. Ensure root balls are kept watered and store in the shade prior to planting. Inspect immediately upon delivery for NATSPEC compliance and return any trees that do not meet the standard. Cross reference - Inspections and Submissions.

TREE PLANTING
Plant trees after placement of root director and soils, and before placing mulch. Do not lift trees by the trunk. Support from under the rootball. Remove the pot or bag and root prune 10mm all round the root ball to encourage root division. Plant with the rootball flush with the top of soil and plant.

MULCH
Mulch type shall be a woodchip mulch with NO FINES. Finish mulch to be flush with surrounding pavement. Do not mound mulch layer.

THE REQUIREMENTS OF PART IV OR V OF THE ENVIRONMENTAL PLANNING & ASSESSMENT ACT 1979 HAVE BEEN COMPLIED WITH IN RESPECT TO THIS PROJECT.
DATE
PLANNING OFFICER
NOT REQUIRED
APPROVED
DATE
MANAGER TECHNICAL SUPPORT

SURVEY DATE
DESIGN DATE
DRAWING Natural2 DATE 08/2011
CHECKED
Mark Stasey DATE 12/2011
SENIOR DESIGN ENGINEER

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DESIGN FILES
DRAWING FILES

SCALES
NOT TO SCALE

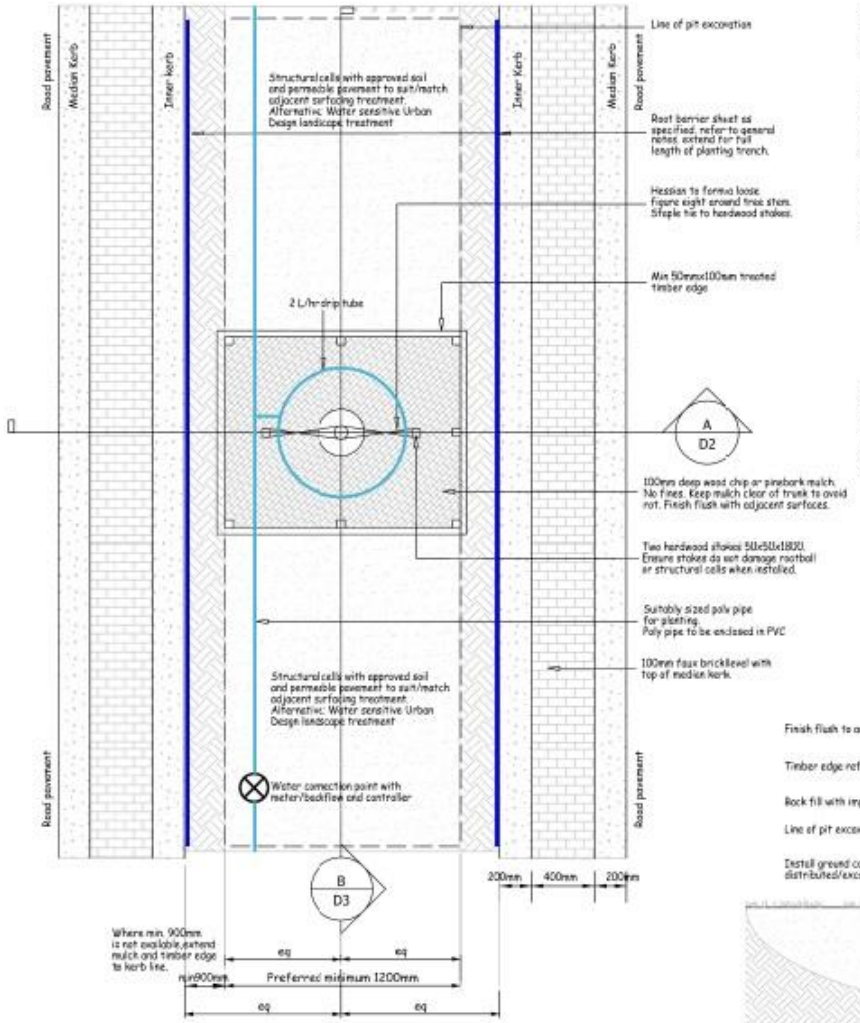
No.	DATE	APPD	DETAILS OF AMENDMENTS

Western Plains Regional Council

DRAWING TITLE
STREET TREES IN MASS PLANTING AND MALLS

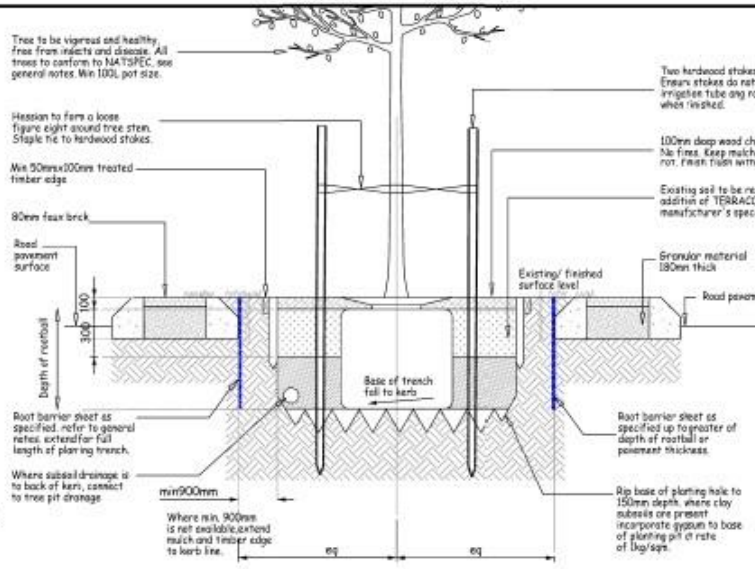
JOB
TREE PLANTING STANDARDS

SHEET No. 7
OF 9 SHEETS
PLAN NO.
P 6639



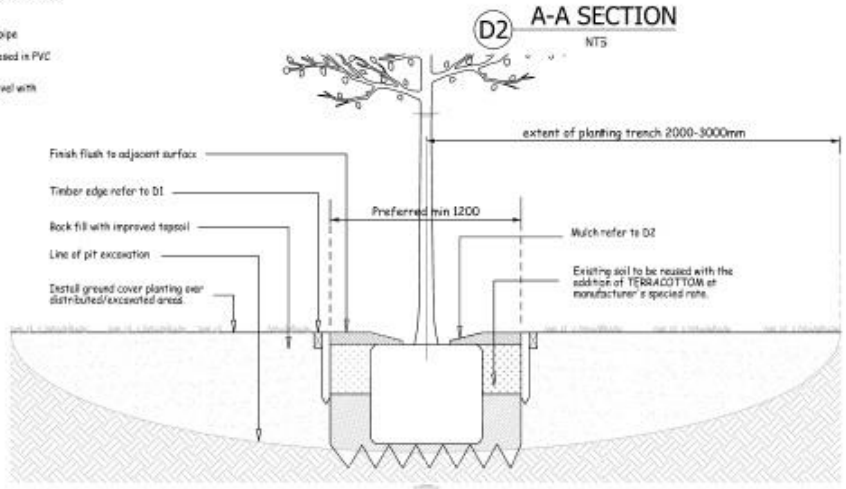
D1 TYPICAL STREET TREE- CENTRAL MEDIAN STRIP

NTS



D2 A-A SECTION

NTS



D3 B-B SECTION

NTS

GENERAL NOTES

-all trees to be minimum 100L pot size.
-all trees must conform to "NATSPEC Guide to Specifying Trees - Assessment of Tree Quality" Provide assessment of conformance to "NATSPEC Guide to Specifying Trees - Assessment of Tree Quality" from supplier
-all stakes and hessian ties to be removed at the end of 13 week landscape establishment period.
-Install root barrier sheet equal to Kirbygreen Re-Route 600 linear root barrier. Top of rootbarrier to sit flush with surrounding soil to be covered by mulch.
- All timber in contact with ground to be Class 3 durability hardwood or equivalent H4 treated pine.
- Do not locate tree within 4m of streetlights or where the mature canopy may interfere with lighting performance.
- Do not locate trees within 2.5m of s/w kerb inlet pits.

INSPECTION HOLD POINTS

Contact Council's Project Manager (02 68034000) at the following hold/witness points. Note: Hold points require written approval to proceed. Witness points require verbal approval to proceed and approvals dates and contacts shall be diarised as evidence of approval. Hold points are noted with an asterisk*.
-Pits excavated, drainage installed and root barrier installed ready for backfilling with soils.*
-Tree supply to the site, prior to planting.
-Tree planting complete.

SUBMISSIONS

Submit the following certificates to Council's Project Manager (02 68034000) at the following times:
-Assessment from the supply nursery or horticultural contractor indicating compliance with "NATSPEC Guide to Specifying Trees - Assessment of Tree Quality" requirements, including a checklist at the key points. Supply to Council and seek approval prior to planting.
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THE REQUIREMENTS OF PART IV OR V OF THE ENVIRONMENTAL PLANNING & ASSESSMENT ACT 1979 HAVE BEEN COMPLIED WITH IN RESPECT TO THIS PROJECT.
PLANNING OFFICER ..... DATE .....
NOT REQUIRED
APPROVED
MANAGER TECHNICAL SUPPORT ..... DATE .....

SURVEY ..... DATE .....
DESIGN ..... DATE .....
DRAWING ..... DATE 120911
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Mark Stacey DATE 120911
SENIOR DESIGN ENGINEER

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SCALES: NOT TO SCALE

No.	DATE	AMDT	DETAILS OF AMENDMENTS

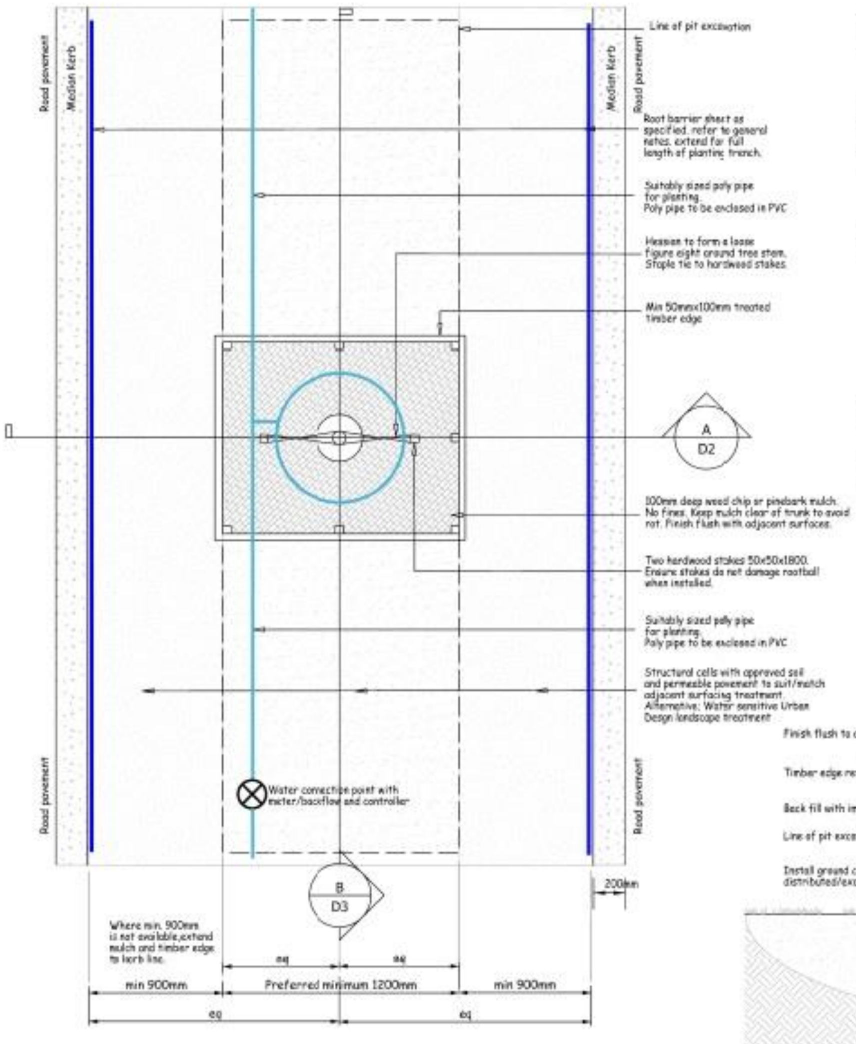
Western Plains Regional Council

DRAWING TITLE: TREES IN CENTRAL MEDIAN STRIPS WITH INNER KERB

JOB: TREE PLANTING STANDARDS

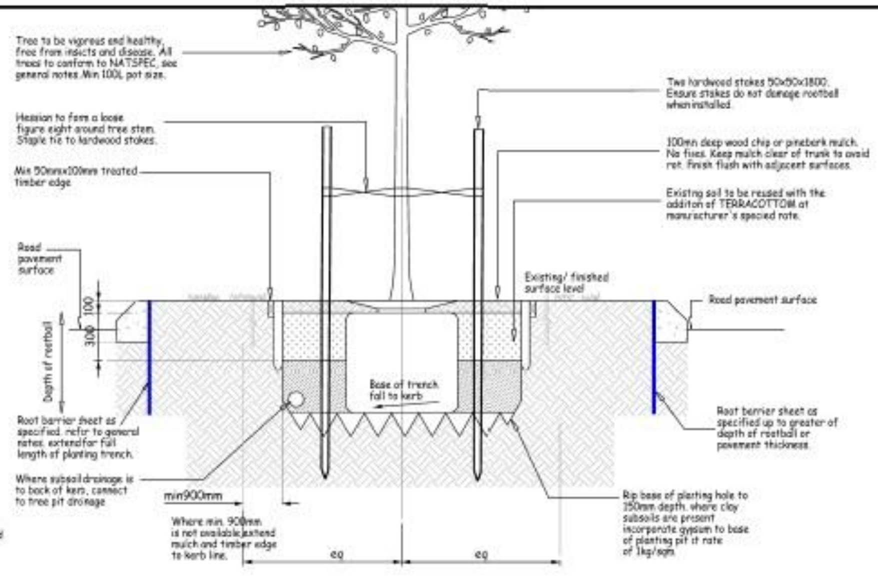
SHEET No. 8 OF 9 SHEETS

PLAN NO. P 6639



(D1) TYPICAL STREET TREE- CENTRAL MEDIAN STRIP

NTS



(D2) A-A SECTION

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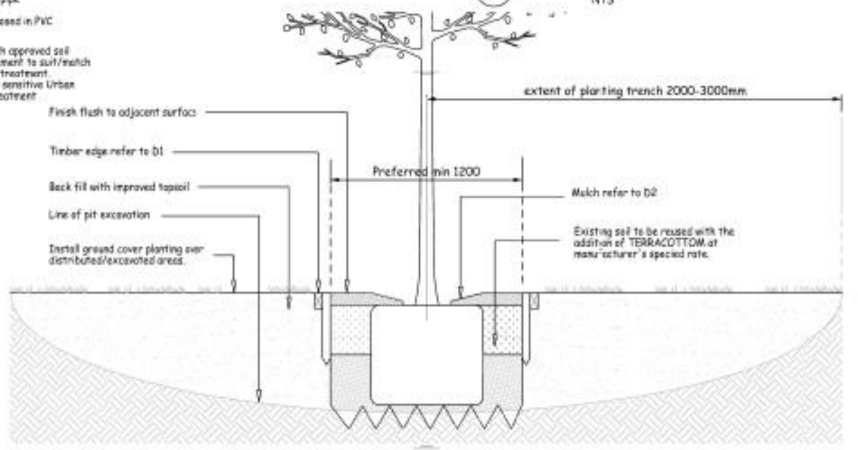

(D3) B-B SECTION

NTS

GENERAL NOTES

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-all stakes and hessian ties to be removed at the end of 13 week landscape establishment period.
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- All timber in contact with ground to be Class 1 durability hardwood or equivalent H4 treated pine.
- Do not locate tree within 4m of streetlights or where the mature canopy may interfere with lighting performance.
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-Pits excavated, drainage installed and root barrier installed ready for backfilling with soils.*
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SUBMISSIONS

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THE REQUIREMENTS OF PART II OF V OF THE ENVIRONMENTAL PLANNING & ASSESSMENT ACT 1979 HAVE BEEN MET WITH RESPECT TO THIS PROJECT.
NOT REQUIRED
DATE ____ PLANNING OFFICER
APPROVED ____ DATE ____ MANAGER TECHNICAL SUPPORT

SURVEY ____ DATE ____
DESIGN ____ DATE ____
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SCALES: NOT TO SCALE

No. | DATE | APPD | DETAILS OF AMENDMENTS

Western Plains Regional Council

DRAWING TITLE: **TREES IN CENTRAL MEDIAN STRIPS WITH GARDEN**

JOB: **TREE PLANTING STANDARDS**

SHEET No. 9 OF 9 SHEETS

PLAN NO. P 6639

Tree Protection Zones

INFORMATION FOR PLANNERS, DEVELOPERS, SERVICE PROVIDERS AND CONTRACTORS

OVERVIEW

The protection of trees is vital to retaining our city's character and environment. Trees grow in a delicate balance with their environment and any changes to that balance must be minimized if the tree is to remain healthy state and fulfil its potential. It is rarely possible to repair stressed and injured trees, so damage needs to be avoided during all stages of development and construction. This document guides work around trees to ensure their long-term protection, integrity and vitality and applies to all public trees that are either owned or managed by the Western Plains Regional Council including those found within the City of Dubbo, Wellington and the surrounding villages of Ballimore, Brocklehurst, Euchareena, Eumungerie, Geurie, Mumbil, Stewart Town, Toongi and Wongarbon

In all cases, Western Plains Regional Council's arborists shall, within the parameters of best practice and meeting the community's expectations, have the discretion to modify or add to any condition, practice or standard outlined within the policy. All construction and development works near public trees must abide by the Structural Root Zone (SRZ) and the Tree Protection Zone (TPZ) requirements outlined in this document unless otherwise directed.

TREE PROTECTION REQUIREMENTS

The most important consideration for the successful retention of trees is to allow appropriate above and below ground space for the trees to continue to grow. There are two protection zones identified within the Australian Standard – Protection of Trees on Development Sites (AS 4970 – 2009).

1. **Structural Root Zone (SRZ):**

   The area around the base of a tree required for the tree's stability in the ground. The woody root growth and soil cohesion in this area are necessary to hold the tree upright. The SRZ is nominally circular with the trunk at its centre and is expressed by its radius in metres.

   This zone considers only the tree's structural stability, and not the root zone required for a tree's vigour and long term viability. This zone is usually much larger and comprises of the Tree Protection Zone (TPZ).

2. **Tree Protection Zone (TPZ):**

   A specified area above and below the ground and at a given distance from the trunk that is set aside for the protection of the tree's root system and crown to provide for the long term viability and stability of the tree, where it may be otherwise potentially damaged by development.

   This requires the allocation of Tree Protection Zones for retained trees. A protection zone should be established for the duration of the project. Care must be taken to ensure that no damage is caused to council tree trunks, roots, canopy or branches during construction.

To ensure that public trees in the municipality are fully protected at all times, the following requirements must be complied with:

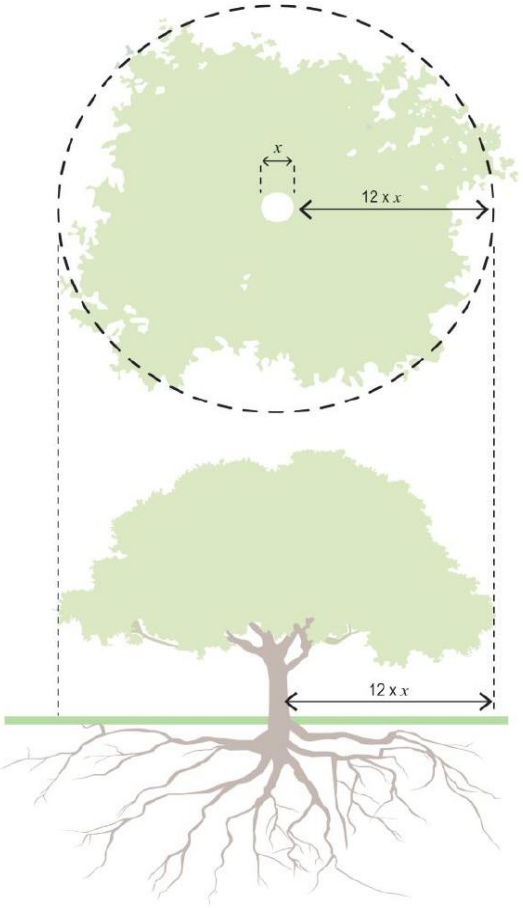
A – TREE PROTECTION ZONES

1. A Tree Protection Zone (TPZ) shall be established for the duration of any works near a tree.
2. A Structural Root Zone (SRZ) is only required to be established when excavation / trenching works are identified that will encroach into the TPZ.
3. The tree and root protection distance methods outlined in the current Australian Standard will be used for the allocation of tree and root protection zones.
   a. The TPZ for individual trees is calculated based on trunk (stem) diameter (DBH), measured at 1.4 metres up from ground level. The radius of the TPZ is calculated by multiplying the tree's DBH by 12. For example; a tree with 40cm DBH requires a TPZ of 4.8 metres.

      The method provides a TPZ that addresses both tree stability and growth requirements. TPZ distances are measured as a radius from the centre of the trunk at ground level.

Trunk Diameter (DBH)	Tree Protection Zone (TPZ)
10cm	1.2m
20cm	2.4m
40cm	4.8m
75cm	9m
100cm	12m

Table 1: Example Tree Protection Zone



b. The SRZ is the area required by the tree to maintain its stability. Encroachment into this zone can lead to catastrophic structural failure of the tree.

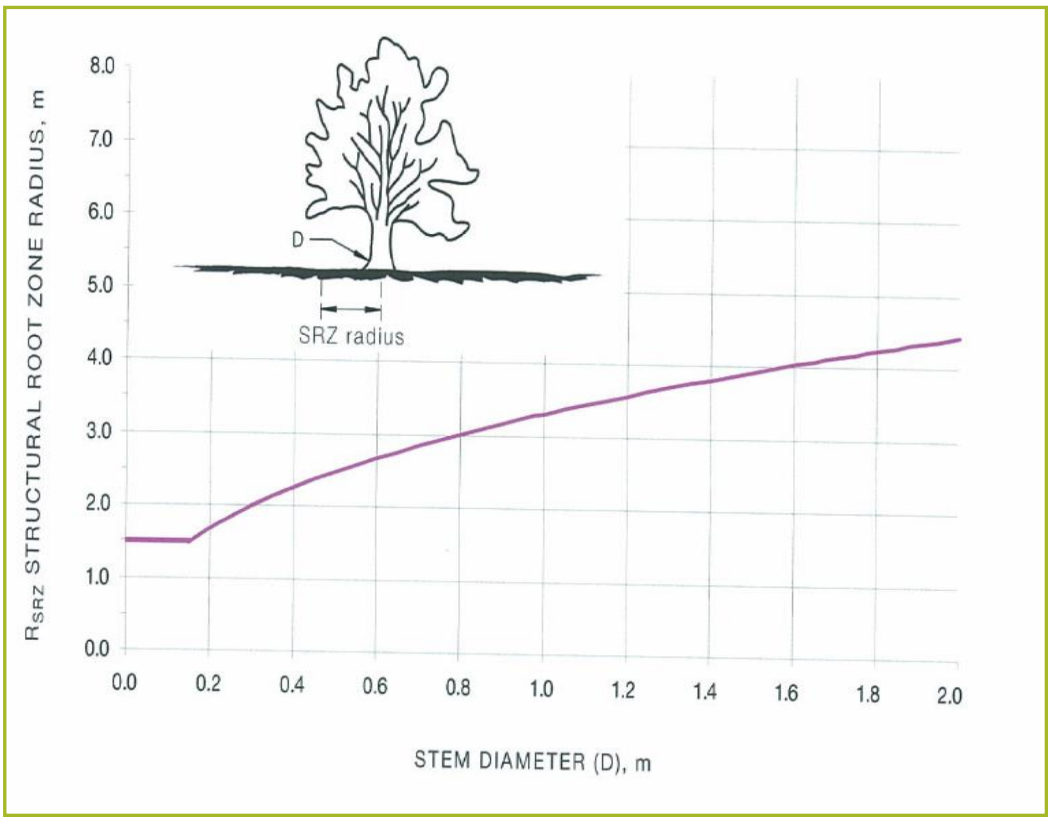
An indicative SRZ radius can be determined from the trunk diameter measured immediately above the root buttress (flare) using the formula:

$$\text{SRZ radius} = (D \times 50)^{0.42} \times 0.64$$

For an example: if the diameter of the tree at the root flare (buttress) is 1.28 metres.

$$\text{SRZ} = (1.28 \times 50)^{0.42} \times 0.64$$

SRZ = 3.67 metres, or a total area of 42.3 metres^2.



Graph 1. SRZ based on stem diameter.

3. The Council's arborist must approve any modification to a tree protection zone.

The following are not permitted within a Structural Root Zone (SRZ) or a Tree Protection Zone (TPZ):

1. Mechanical excavation on the road, footpath or any public space
2. Stockpiling of building materials, debris or soil
3. Vehicular traffic except on existing paved surfaces
4. Installation of service pits or hatches
5. Vehicular crossings
6. Severing of tree roots with a diameter greater than 30mm
7. Alteration of soil levels and structure

B – BORING

1. Installation of underground services are to be bored if substantial disturbance to the root zone. This will be determined by an onsite meeting prior to any works commencing.

2. Entry and exit pits will be positioned outside the designated TPZ of each tree. This requirement should apply unless root sympathetic exploratory investigations have been undertaken and it has been determined that access within the TPZ will not significantly affect the tree.

3. The extent or length of boring in the vicinity of trees will be determined by the TPZ.

4. The depth of the boring will depend on the size of the tree. Table 2 indicates the recommended boring depths for trees based on their trunk diameter.

5. Where boring is unavailable, excavation shall be by hand or non-destructive digging.

Trunk diameter	Minimum Depth to TOP
<100cm	800mm
100-150cm	950mm
>150cm	1100mm

Table 2: Depth of boring

PRUNING

1. No council tree may be pruned or branches removed by anyone other than those authorised by council.

2. Pruning of roots and branches will be in accordance with AS 4373, Pruning of Amenity Trees or any more recent relevant Standard.

REMOVAL

1. Removals of trees will not occur unless approved by the Council.

2. No council tree may be removed by anyone other than those authorised by the Council.

3. Where a public tree removal is approved by the Council's arborist in relation to a development, the associated cost of the tree and its removal shall be paid by the property owner or a representative prior to the removal.

TREE PROTECTION MANAGEMENT PLANS

1. Permission from the Council's arborist is required for activities that do not comply with the above measures.
2. A Tree Protection Management Plan endorsed by the Council's arborist will be prepared prior to the commencement of the works.
3. A Tree Protection Management Plan is developed in accordance with the Australian Standard AS 4970-2009 Protection of trees on development sites or any more recent standard. It is too prepared by a certified arborist to assess impacts to public trees, provide recommendations to reduce impacts on public trees and identify construction guidelines to be followed through all phases of construction.

TREE PROTECTION BONDS

Where construction activities have the potential to impact public trees, a bond for the protection of the tree will be held by the Council. The amount of the bond will amount to the tree amenity value and will be held for the duration of the works, subject to an approved Tree Protection Management Plan.

For further information please contact Western Plains Regional Council on 6801 4000 or email: dcc@dubbo.nsw.gov.au