# Port Stephens Council Tree Technical Specification September 2014

## 1. BACKGROUND

1.1. These technical specifications have been developed with particular reference to the Port Stephens Council Local Environment Plan 2013, The Port Stephens Council Development Control Plan 2014, The Local Government Act 1993, Trees (Disputes between Neighbours) Act 2006, and the Threatened Species Conservation Act 2005.

## 2. PERFORMANCE CRITERIA

2.1. The performance criterion for this Technical Specification is that it provides guidance for the retention and removal of trees within the Port Stephens Local Government Area.

2.2. Objectives

The objectives of the Tree Preservation Order and procedures are as follows;

To protect and preserve trees throughout the Council area in order to maximise the benefits they provide, particularly in regard to:

a) sustaining the biodiversity of our ecosystems;

b) the health and safety of residents;

c) retention and enhancement of natural beauty and scenic values.

d) limiting the effects of pollution and adverse changes in global atmospheric gasses;

e) control of sunlight, shade, winds and beautification of urban/commercial areas;

f) maintenance of ground water levels and water quality;

g) soil enrichment and protection from erosion; and

h) providing economic benefit

## 3. DEFINITIONS

3.1. Definitions relating to this technical specification are the same as defined by the Land and Environment Court.

# 4. MANAGEMENT REQUIREMENTS

## 4.1. Arborist Reports

Council will only recognise arborist reports which conform to the *International Society of Arboriculture Hazard Assessment Form*, with supporting photographs and CV of the arborist who prepared the report. Supporting evidence for the report may include:

a) Laboratory results for the identification of pathogens or identification of species through root analysis.

b) Useful Life Expectance (ULE).

c) Tree valuations.

d) Tree remediation including pruning, root pruning and mulching works.

e) Resistograph measurements or similar diagnostic equipment readings.

f) Root mapping procedures.

g) Vegetation Management Plan (see the Vegetation Technical Specification).

Where the arborist report has been prepared to support a notification that a tree(s) is dead, dying or presents a risk to person or property, the report must address the criteria in clauses 5.9(5) and/or (6) in the LEP and include a recommendation as to whether the tree(s) should be removed under this criteria, or whether other actions may resolve the issue (e.g. pruning).

Council reserves the right to reject inadequate arborist reports or decline to sign off on modifications to an arborist report if:

- the variation to designs or layout has occurred irrespective of conditions set by the original arborist report,
- the modification or planned changes are detrimental to the long-term viability of vegetation on the site,
- trees or vegetation communities are incorrectly located or referenced following a site inspection,
- effects on adjacent trees on other properties and reserves are not considered as part of the development application.

### 4.2. Nuisance Trees

Provided that no significant hazard or other safety issues are relevant, Council is unlikely to support an application for the removal of a tree for any of the following reasons:

- Leaf/bark/cones/twigs drop (into gutters/downpipes/pools/lawns and the like)
- To increase natural light into a dwelling which does not have a passive solar design
- To improve street lighting or private property
- To enhance views (pruning may be a viable option)
- To reduce bird or bat droppings
- Minor lifting of, or damage to, driveways, paths, fences, retaining walls and other minor infrastructure
- To erect a fence
- Bush fire hazard reduction works which has not been approved by the NSW Rural Fire Service
- To prevent future potential damage to sewer mains
- To alleviate termite activity
- To facilitate routine maintenance of turf areas

### 4.3. Right of Appeal

Where it is in the opinion of the Council that a tree removal or pruning is not warranted the Council will issue an 'Intend to refuse' determination. The applicant may request an 82A review under the EP&A Act, of the original assessment and should specify in writing the grounds upon which he/she considers the determination should be amended. The applicant has the right of appeal on either technical or social grounds. A fee will be applied as per clause 257 of the EP&A Regulations 2000, or as subsequently amended.

Council may require a report from an independent, qualified arborist prior to reassessing the application as detailed in the Port Stephens Council Development Control Plan 2013, or as subsequently amended. Reassessment of application on a social basis includes medical complaints. Medical complaints must be accompanied by a medical certificate.

The Councils staff, that are not subordinate to the first determining officer, shall assess the 82A review, and where they are satisfied that the application should be approved shall make that determination. However prior to making any determination council staff will inform the applicant in writing of their assessment and recommendations, and must receive a written response from the applicant that they are satisfied with any conditions or restrictions intended to be imposed.

If the applicant is not satisfied with the staff assessment of the 82A review they will be advised of the option to have the matter brought before the 355b committee of Ward Councillors which will constitute an 82A review under the EP&A Act. Where reassessment of the application is completed the outcome of this review is to be confirmed in writing stating reasons for the outcome.

Where council staff are not satisfied that the reassessment application should be approved the matter will be brought before the 355b committee of Ward Councillors which will constitute an 82A review under the EP&A Act.

The 355b committee of ward councillors will require a formal meeting, with a report from staff assessing the 82A review, prior to the determination being made and minuted. Those minutes will then be incorporated in the minutes of the next meeting of Council.

More than half of the 355b committee of ward councillors must be present in order to form a quorum.

A staff member will be on each committee to ensure that councillors receive the necessary information and that a proper record, including minutes, is maintained. If an onsite meeting is required this will be set by the Executive Assistant – Councillor Support.

The decision of the 355b committee of ward councillors need not be unanimous but a majority decision must be reached for a determination to be made.

If a majority decision cannot be made the application will be reported to the full council for determination.

The applicant will be advised of right of appeal to the Land and Environment Court under section 97 of the EP&A Act.

### 4.4 Tree Assessment Trees

To ensure consistent practice for all tree assessment matters in the LGA the following tests will be applied for trees on public, private or institutional land. These tests will be used in determining complying development applications for tree removal and for the management of public trees.

#### The Unacceptable Risk

The tree poses an unacceptable risk that cannot be adequately or appropriately managed by arboricultural treatment, fencing, signage or other risk management measures the level of risk must be assessed and reported by a suitably qualified arborist. Options for managing risk other than by tree removal are to be considered.

#### The Diseased Condition

The tree is in a diseased condition that cannot be corrected by pruning or other arboricultural treatment. The diseased condition must be confirmed in a report prepared by a suitably qualified arborist. Options for managing the disease condition other than by tree removal are to be considered.

#### Remaining Life Expectancy

The tree has a remaining life expectancy of less than 5 years and it can be shown that replacement or relocation of the tree would be beneficial having regard to streetscape appearance, pedestrian and traffic circulation, site access and provision of utility services. The tree's remaining life expectancy must be determined and confirmed in a report by a suitably qualified arborist.

#### Property Damage

Public or private 'property' (including utility services, footpaths, driveways, retaining walls and buildings) is being significantly affected by the presence / location or growth of a tree, and it is shown that tree removal is the only reasonable means to avoid further conflict, having regard to all other abatement options. Assessment of the damage is to be carried out and reported by a suitably qualified person (eg. Road/civil engineer) in consultation with a suitably qualified arborist.

**Public Infrastructure Works**

The tree is likely to succumb to major injury as a result of public infrastructure works, and it is impractical to relocate or reconfigure those works so as to avoid such injury. This assessment and any statement/reporting is to be made by a suitably qualified person (eg. Infrastructure designer/public works staff) in consultation with a suitably qualified arborist. Major injury is injury likely to result in death, or in the tree posing an unacceptable risk, or to reducing the remaining life expectancy of the tree to less than 5 years. The likelihood of major injury must be confirmed in a report prepared by a suitably qualified arborist, to determine the impact of the infrastructure on the tree.

**Suppressed Growth Test**

The tree is part of a group of trees the spacing of which is such as to prevent each of the trees within the group from attaining their desired full potential. It will need to be confirmed in a report prepared by a suitably qualified arborist that the tree in question is the one that would be most beneficial to remove. Note: this test does not apply to traditional avenue planting in an evenly spaced group.

**Proposed Driveway Crossing, Private Structures or Works Affecting Public Land**

The tree would prevent the installation and essential function of a proposed driveway crossing, street awning, street balcony, and it is demonstrated that there is no reasonable alternative to removing the tree, all possible alternative design configurations for the works having been considered in order to maximize the public benefits, and the council is satisfied that the proposal would not have any adverse heritage, streetscape, pedestrian or traffic impacts.

**Removal of trees for the installation and maintenance of Photovoltaic arrays and solar hot water systems**

Any application for the removal of a tree for the installation and maintenance of a photovoltaic array or solar hot water system will need careful appraisal. The applicant will need to demonstrate that there is no reasonable alternative to removing the tree, including increasing house hold efficiency, all possible alternative design configurations for the works having been considered. The proponent must be able to demonstrate that they have considered alternative renewable energy methods to generate electricity, and or hot water, is not applicable to the site.

A report using appropriate software for the assessment of the efficiency of the renewable energy technology must be provided as part of the assessment documentation. This report will need to demonstrate that the solar electricity output efficiency is less than 50% of maximum output across the year as a direct result of shading from the tree.

**Possible termite/pest activity in trees**

Council will not always undertake the treatment of termites/pests in trees within parks, road or bushland reserves as they are considered a natural part of the environment and the treatment of termites/pests in trees will not stop them invading from other sources or properties. It is the landowner's responsibility to take the appropriate action to adequately protect their property from the invasion of termites/pests.

Council may consider the treatment of termites/pests in trees in some circumstances based on a risk assessment and at the discretion of the Council's relevant officer. Factors to be considered include the Location of the tree, the target area under the tree and the Significance of the tree.

**Orders requiring Clearing of Overgrowth of Vegetation**

Notices and Orders issued by Council to landowners requiring the removal of excess vegetation likely to harbour vermin shall not constitute consent to remove trees otherwise requiring Council consent.

**Pruning to enhance views**

Council will not approve the removal of otherwise healthy and safe trees for the enhancement of views. Lopping is an unacceptable practice according to the Australian Standard for the Pruning of Amenity Trees, and will not normally be approved.

**Impact on Human Health**

Where a tree proposes an unacceptable risk to human health, the health concern must be supported by a statutory declaration to provide further guidance on the consideration of human health matters in the determination of a tree removal application.

### 4.5 Works to Public Trees

Where works have been proposed for the benefit of the individual and there is no benefit to the Community, Council will organise quotes and all costs, will be incurred by the individual.

On completion of Councils Tree Hazard Evaluation Form all works will be prioritised in relation to the hazard assessment signed to the particular tree. Works will be scheduled as either:
Very High Priority – Within 7 working Days
High Priority – Within 28 Working Days
Medium Priority – Reassessed annually or within budget limits
Low Priority – Reassessed every two years

### 4.6.Tree Planting or Replacement Trees

The long-term success of urban tree plantings is the end result of a detailed process involving many stakeholders. It requires a detailed analysis of site conditions and design constraints. It requires an extensive knowledge of the inherent characteristics of a wide range of species. Long-term benefits are gained when time is spent at the planning stage and when due consideration is given to solving potential conflicts and problems.

Tree plantings for developments or replacement trees required as part of approved Development Applications should be in accordance with Attachment 1: Tree Planting Guidelines. The number of replacement trees should be in accordance with Attachment 2: Retention Value of Trees.

### 4.7 Waste Minimisation

Where consent is granted for tree removal from development sites Council can condition effective utilisation of all salvageable timber. Wherever practicable timber, including hollow logs, should be salvaged, other useable trees and shrubs should be salvaged for reuse either in log form, or as a woodchip mulch for erosion control and/or site rehabilitation.

### 4.8 Bonds and Guarantees

For site development/construction activities with the potential to affect sensitive areas containing remnant vegetation significant trees, or tree(s) located on public land Council may levy a bond or guarantee on the applicant to ensure protection of the tree(s) or vegetation located on community land. The sum of the bond will be reasonable estimate of the cost of rectifying any damage caused by a failure on the applicant's part to provide protection to the tree(s) or vegetation.

For significant trees on community land which might be affected by development works a condition to require the placement of a bond or bank guarantee of $10,000 for the first

significant tree and $2000 for each significant tree thereafter will be required. This bond is to be submitted prior to release of the construction certificate or practical completion certificate.

**Forfeit Of Deposit / Guarantee Through Breach Of Consent**

Where trees and / or remnant bushland, identified for retention and protection, are damaged or die as a result of the building or development works, Council will actively pursue the breach of consent and seek to apply the deposit or guarantee in order to minimise loss of amenity and / or habitat value as follows:

- To ensure that installation of fencing and soil erosion treatments are completed;
- To provide remedial tree care to affected tree(s);
- To replace damaged or dead trees; or
- To rehabilitate / regenerate disturbed bushland.

**Period Of Deposit / Guarantee And Refund**

The deposit or guarantee will be released no earlier than twelve months and no later than two years after practical completion of the development. Release of the deposit / guarantee will be contingent upon receipt of a report prepared by a properly qualified arborist certifying that the significant tree(s) / vegetation nominated for protection have been adequately protected and are in satisfactory condition.

The period for holding of the deposit / guarantee will be not less than twelve months to allow adequate time for the developmental impact on significant tree(s) and / or remnant bushland to be assessed properly. For release of the deposit / guarantee, significant tree(s) and / or remnant bushland will need to display vigour, integrity and sustainability of natural processes, not worse than that prior to start of construction, and no signs of increased decline, "die-back", disease of pathogens or weed infestation.

### 4.9 Retention Value of Trees

There is always a compromise between retaining trees on a development site and the economic imperatives of land development. It is clear that the community values trees given their contribution to the amenity and visual character of the local area. Retaining trees on development sites is a fine balance between sustaining that amenity and the economic development of the land. Establishing priorities for the retention of trees is an important part of the planning process.

The four steps in assign the retention value are outlined in attachment 2. IMPORTANT – Sustainability must only be assessed by a person who has the minimum qualification of AQF Level 4 in arboriculture.

### 4.10 Significant Trees

Council will establish and maintain a Register of Significant Trees in order to facilitate preservation of trees which have recognised cultural significance. The register is available on councils website. Significant trees are those which exhibit aesthetic, historic, scientific or social, environmental, or cultural value for past, present or future generations.

A Significant Tree Consultative Committee will be established to

- To review the Significant Tree Register (STR).
- Identify and examine issues relating to the significant tree register.
- Make recommendations to Council for the inclusion of trees onto the register.
- Make recommendations to Council for the removal of trees from the register.
- Make recommendations for consideration by Council.

The Committee will have a total of 12 members consisting of 10 community nominees endorsed by Councillors; one Councillor; and Councils Vegetation Management officer who will fulfil the role of an independent non-voting Facilitator/Secretary.

The criteria for listing a tree(s) on the STR shall include the following:

- Historical value
- Contribution to landscape / townscape
- Commemorative tree
- Belonging to historic building / garden / park
- Exceptionally old or fine specimen
- Curious growth habit or physical appearance
- Horticultural / scientific value
- Unusually large size
- Rare to the area
- Outstanding aesthetic quality
- Valuable corridor or habitat
- Indigenous cultural significance

NOTE - Any tree species which has a trunk diameter larger than 1.6m measured 1.4m above ground height is considered to be a significant tree under this plan.

Nomination - Any person may nominate a tree(s) to be included or removed from the STR. The Significant Tree Committee will assess the tree(s) in relation to the criteria listed in B2.C1 of this plan and then make a recommendation to Council.

Inclusion of tree(s) on the STR shall not preclude removal but flag the need for careful appraisal of any proposal to prune or remove them. Any proposal to remove or prune a significant tree will require approval of Council.

Documentation - All documentation for significant trees will be placed on a centrally-located register.

Comprehensive Tree Hazard Evaluation Forms must be completed prior to placement on the Significant Tree List. Corresponding Safe Useful Life Expectancy (SULE) determination, along with remedial maintenance procedures will be attached to the Comprehensive Tree Hazard Evaluation Forms. Decisions regarding completion of arboriculture forms and maintenance procedures are to be delegated to relevant committee. All proposed works on or affecting a Significant Tree must be accompanied by a report from a Diploma qualified arborist.

Notification - Owners of significant and heritage trees are to be notified through the Section 149 certificate issued under the EP&A Act 1979. Prior to proclaiming the tree(s) significant, the proposal shall be placed on public exhibition. A notation regarding the Significant Tree will also be placed on the relevant Council property file and on councils property management system.

Maintenance procedures may include the following:

- Mulch will be applied at a depth of 150mm from the trunk to the dripline. Appropriate mulching material should blend with existing landscape surroundings and consist of organic matter with a low carbon to nitrogen ratio. Mulch should be replenished within a 24-month cycle.
- The reduction of competitive plants including grass.
- Minimal land use within dripline.
- Best practice must be employed when undertaking arboricultural procedures.
- The only hardware to be installed into heritage and significant trees are those for cable & bracing procedures.
- Alternatives to pruning should be pursued such as propping, cable & bracing. Where these procedures are not appropriate, all pruning is to be consistent with the Australian Standard AS-4374-2007 "Pruning of Amenity Trees".
- Aerial bundle cabling is required to minimise gully pruning or canopy reduction for line clearance.
- Where root intrusion has been verified the replacement of leaking pipe system is the preferred option.

In circumstances where the Significant Tree Committee can not be convened the General Manager has delegated authority to place a tree on to the STR.

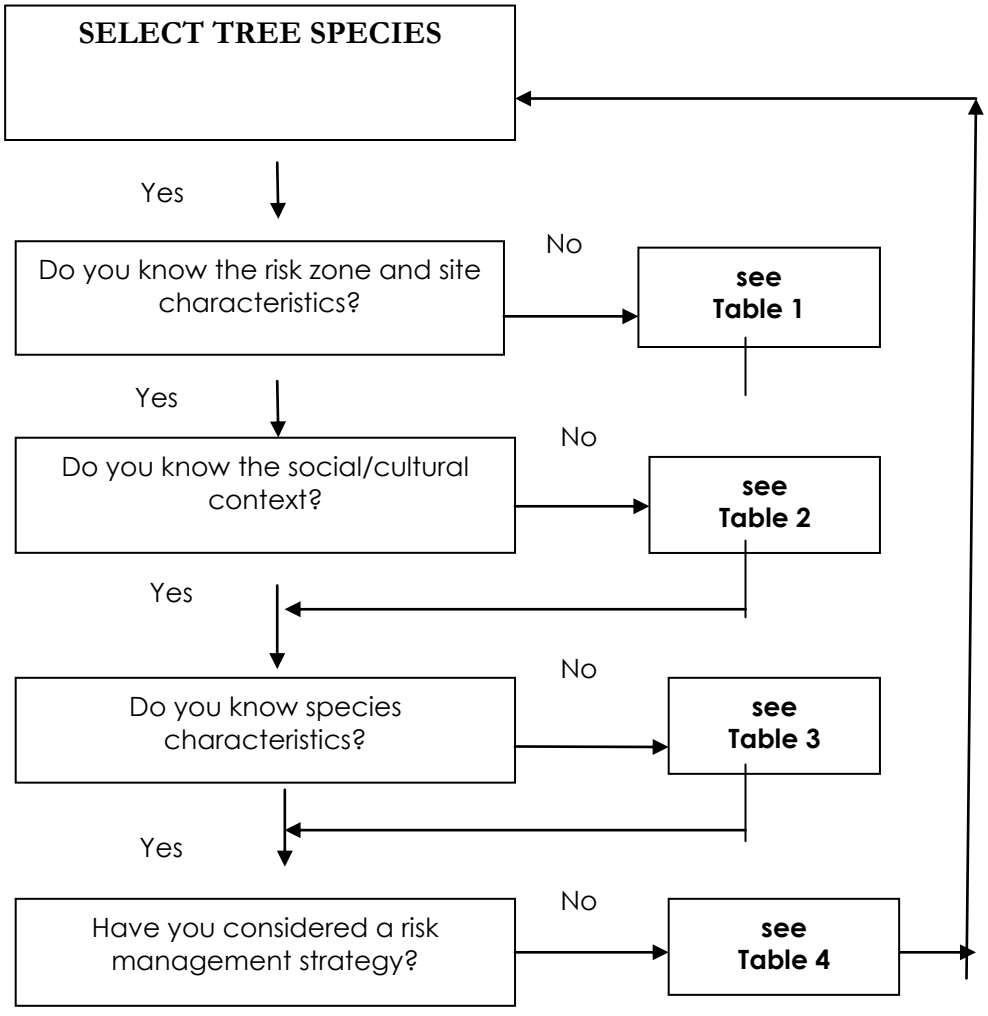
## 5. MAINTENANCE AND MONITORING REQUIREMENTS

5.1. Monitoring observations will be recorded in a report format and submitted in digital format.

### New Tree Selection and Placement

The long-term success of urban tree plantings is the end result of a detailed process involving many players. It requires a detailed analysis of site conditions and design constraints. It requires an extensive knowledge of the inherent characteristics of a wide range of species. Long-term benefits are gained when time is spent at the planning stage and when due consideration is given to solving potential conflicts and problems. Figure 1 illustrates a methodology for selecting trees.

**Figure 1 - Species Selection Flow Chart**



## TABLE 1 – TREE PLANTING RISK ZONES

Areas in column A with most constraints represent the highest potential risk and therefore require greater emphasis on risk management. These areas are typical of CBD, high-density sites, tourist precincts and the like where trees are highly desirable and often critical components of the landscape.

| | **ZONE A**<br><br>**Most constraints**<br>(Greatest risk) | **ZONE B**<br><br>**Moderate constraints (Moderate risk)** | **ZONE C**<br><br>**Fewest constraints (Minimum risk)** |
|---|---|---|---|
| Electrical & telecommunications | ▪ Un-insulated low and high voltage wires | ▪ Bundled cables (ABC)<br>▪ Insulated cables | ▪ No power lines |
| **Below ground services typical layouts** | ▪ Fibre optic cables<br>▪ High voltage power | ▪ Water mains<br>▪ Gas mains<br>▪ Stormwater | ▪ No underground services |
| **Paved areas** | ▪ Area wholly paved<br>▪ Surface wholly sealed<br>▪ Brick pavers laid on sand | ▪ Partially paved areas<br>▪ Non reinforced concrete | ▪ Grass up to 6m |
| **Verge width** | ▪ Less than 3.0m | ▪ From 3m to 4m | ▪ 4m or wider |
| **Building set back** | ▪ None | ▪ Less than 6m | ▪ 6m or greater |
| **Street lighting** | ▪ Over pedestrian crossings<br>▪ Traffic intersections | ▪ Street lighting other than crossings and intersections | ▪ No street lighting |
| **Safety signage; ie traffic signs** | ▪ Dual carriageways<br>▪ Arterial roads | ▪ Medium density residential streets<br>▪ Arterial roads in rural zones | ▪ Low density rural/residential streets |
| **Traffic** | ▪ Heavy vehicles<br>▪ Public transport in heavy volumes | ▪ Public transport in moderate volume<br>▪ Heavy vehicles in moderate volumes | ▪ Public transport in low volume<br>▪ Residential traffic in low volume<br>▪ Cul-de-sacs. |
| **Soils** | ▪ Shallow | ▪ Moderately compacted | ▪ Deep profile |

| | | | |
|---|---|---|---|
| **Soil Volume per tree** | ▪ 5-15 $m^3$ | ▪ 20-40 $m^3$ | ▪ 50-80 $m^3$ |
| **Climate** | ▪ Frontline salt wind exposure<br>▪ Prevailing wind exposure | ▪ Second line coastal salt influence<br>▪ Moderate wind exposure | ▪ Minimum salt influence<br>▪ Minimal wind exposure |
| **Street – Width & Usage** | ▪ Narrow; CBD residential & commercial; | ▪ Non CBD; narrow residential & commercial; | ▪ Average to wide residential/ commercial |

**TABLE 2 - SOCIAL AND CULTURAL CONTEXT**

| CONTEXT | IMPORTANCE | | | RISK MANAGEMENT CONTROL STRATEGIES |
|---|---|---|---|---|
| | LOW | MEDIUM | HIGH | |
| Heritage | | | | |
| Architectural style | | | | |
| Community values | | | | |
| Wildlife habitat | | | | |
| Street character | | | | |
| Landscape character | | | | |

## TABLE 3: Tree Species Characteristics

| Species | Common Name | Origin | Size | Form | Plant Characteristics | Pests & Disease | Constraint Zone | Longevity | Soil | Powerline Suitability | Other Characteristic |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Height & Spread | | | | | | | | |
| *Acacia irrorata* | Green Wattle | *(e)* | 8 x 4 | erect | *FL-l FR-L BR-L* | Borer | A | S | ALL | S | DWBP |
| *Acacia elata* | Cedar Wattle | *(e)* | 12 x 7 | Pyrmidal | *FL-L FR-L BR-L* | Borer | A | M | ALL | U | D |
| *Acacia binervia* | Myall Wattle | *(e)* | 8 x 6 | broad domed | *FL-L FR-L BR-L* | Borer | A | M | ALL | S | SDA |
| *Acacia implexa* | Hickory Wattle | *(e)* | 8 x 6 | narrow domed | *FL-H FR-M BR-L* | Borer | A | L | ALL | S | WBA |
| *Acer negundo 'sensation'* | Box Elder | *(I)* | 12 x 10 | standard | *FL-R FR-M BR-M* | | C | L | ALL | U | I |
| *Acer palmatum* | Japanese Maple | *(I)* | 6 x 4 | standard | *FL-R FR-M BR-M* | | A | L | ALL | S | |
| *Acronychia oblongifolia* | Lemon Aspen | *(e)* | 10 x 6 | narrow domed | *FL-l FR-L BR-M* | | B | L | ALL | sp | WBAF |
| *Agonis flexuosa* | Willow Myrtle | *(a)* | 10X8 | broad domed | *FL-L FR-L BR-L* | | B | L | S | S | weeping canopy |
| *Alnus jorullensis* | Evergreen Alder | *(I)* | 6 x 6 | narrow domed | *Fl-l FR-M BR-M* | scale | B | L | ALL | SP | s2 |
| *Alphitonia excelsa* | Red Ash | *(e)* | 12 X 8 | broad domed | *Fl-H FR-H BR-M* | leaf beetle | B | l | ALL | SP | WBAFS 3 |
| *Angophora costata* | Smooth Bark Apple | *(e)* | 21 X 15 | irregular | *FL-M FR-L BR-H* | Borer ,canker | C | L | ALL | U | BWH |
| *Angophora floribunda* | Rough Bark Apple | *(e)* | 12 X 6 | irregular | *FL-L FR-L BR-H* | | B | L | ALL | U | BWAM |
| *Araucaria heterophylla* | Norfolk Island Pine | *(a)* | 25 x1 2 | conical | *FL-L FR-M BR-H* | | C | L | all | U | S1 |
| *Aracaucaria cunninghamii* | Hoop Pine | *(a)* | 25 x1 2 | conical | *FL-L FR-M BR-H* | | C | L | ALL | U | |
| *Arbutus unedo* | Strawberry Tree | *(I)* | 6 x 6 | broad domed | *FL-L FR-H BR-M* | | B | L | S | SP | S3 |
| *Banksia integrifolia* | Coastal Banksia | *(e)* | 10 x 6 | irregular | *FL-M FR-M BR-M* | Borer | C | m | ALL | U | SBAW |
| *Banksia serrata* | Old Man Banksia | *(e)* | 10 x 6 | irregular | *FL-M FR-H BR-M* | Borer | C | L | ALL | U | SB |
| *Brachychiton populneus* | Kurrajong | *(e)* | 15 x 6 | narrow domed | *FL-M FR-H BR-M* | Bag Moth | B | l | ALL | u | DF |

| Species | Common Name | Origin | Size | Form | Plant Characteristics | Pests & Disease | Constraint Zone | Longevity | Soil | Powerline Suitability | Other Characteristic |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Backhousia citridora* | Lemmon Scented Myrtle | *(a)* | 12 x 8 | standard | *FL-L FR-L BR-M* | | B | L | S | SP | scented foliage |
| *Backhousia myrtifolia* | Brown Myrtle | *(e)* | 10 x 8 | broad domed | *FL-L FR-L BR-M* | | B | l | C | u | DW |
| *Brachychiton acerifolius* | Illawarra Flame Tree | *(a)* | 12 x 8 | conical | *FL-M FR-H BR-M* | Bag Moth | C | L | ALL | U | BWAF |
| *Buckhamia celsissima* | Ivory Curl Flower | *(a)* | 8 x 4 | narrow domed | *FL-H FR-M BR-L* | None | B | M | ALL | S | BWA |
| *Callitris macleayana* | Stringy bark Pine | *(e)* | 10 x 3 | Column | *FL-L FR-L BR-L* | None | B | L | ALL | U | DW screen hedge |
| | | | | | | | | | | | |
| *Callistemon citrinus* | Crimson Bottle Brush | *(e)* | 3 x 3 | narrow domed | *FL-L FR-L BR-L* | Tip Borer | A | M | ALL | S | BWA |
| *Callistemon 'Candy pink'* | | *(a)* | 3 x 2 | narrow domed | *FL-L FR-L BR-L* | Tip Borer | A | M | ALL | S | BWA |
| *Callistemon 'Captain cook'* | | *(a)* | 3 x 3 | narrow domed | *FL-L FR-L BR-L* | Tip Borer | A | M | ALL | S | BWA |
| *Callistemon citrinus 'endeavour'* | Bottle Brush 'endeavour' | *(a)* | 3 x 3 | narrow domed | *FL-L FR-L BR-L* | Tip Borer | A | M | ALL | S | BWA |
| *Callistemon 'Hannah ray'* | | *(a)* | 3 x 3 | narrow domed | *FL-L FR-L BR-L* | Tip Borer | A | M | ALL | S | BWA |
| *Callistemon 'Reeves Pink'* | | *(a)* | | narrow domed | *FL-L FR-L BR-L* | Tip Borer | A | M | ALL | S | BWA |
| *Callistemon salignus* | Salignus | *(a)* | 10 x 8 | narrow domed | *FL-L FR-L BR-M* | Tip Borer | B | L | ALL | U | BM |
| *Callistemon viminalis* | Weeping Bottle Brush | *(a)* | 6 x 4 | narrow domed | *FL-L FR-L BR-L* | Tip Borer | A | L | ALL | S | BM |
| *Calodendrum capense* | Cape Chesnut | *(l)* | 10 x 8 | broad domed | *FL-L FR-L BR-M* | Leaf Beetle | B | L | ALL | U | heritage tree A |
| *Ceratopetulum apetalum* | Coach Wood | *(a)* | 10 x 8 | broad domed | *FL-M FR-H BR-M* | | B | L | c | U | MA |
| *Ceratopetulum gummiferum* | NSW Christmass Bush | *(e)* | 10 x 8 | broad domed | *FL-L FR-L BR-L* | Borer | B | M | S | S | difficult to establish |
| *Choricarpia leptopetala* | Never Break | *(e)* | 10 x 8 | broad domed | *FL-L FR-L BR-M* | | B | L | C | u | DW |
| *Corymbia gummifera* | Red Bloodwood | *(e)* | 20 x 18 | irregular | *FL-L FR-M BR-H* | Borer | C | L | ALL | U | B & WA |
| *Corymbia maculata* | Spotted Gum | *(e)* | 25 x 18 | irregular | *FL-L FR-L BR-H* | psyllid | C | L | ALL | U | DB |

| Species | Common Name | Origin | Size | Form | Plant Characteristics | Pests & Disease | Constraint Zone | Longevity | Soil | Powerline Suitability | Other Characteristic |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Delonix regia* | poinciana | *(I)* | 8 x 6 | broad domed | *FL-L FR-L BR-M* | | B | L | ALL | SP | spreading canopy |
| *Dysoxlum fraserianum* | Rosewood | *(e)* | 8 x 6 | broad domed | *FL-L FR-H BR-H* | Leaf Miner | B | L | ALL | | |
| *Cupaniopsis anacardioides* | Tuckeroo | *(e)* | 10 x 8 | narrow domed | *FL-L FR-M BR-M* | | A | L | ALL | SP | WS1B |
| *Cupaniopsis pavifolia* | Small Leaf tuckeroo | *(e)* | 8 x 6 | narrow domed | *FL-L FR-M BR-M* | | B | L | ALL | SP | BF |
| *Elaeocarpus eumudii* | Quandong | *(e)* | 8 x 6 | narrow domed | *FL-L FR-M BR-M* | | B | L | ALL | SP | BF |
| *Elaeocarpus reticulatus* | Blue Berry Ash | *(e)* | 8 x 4 | narrow domed | *FL-L FR-M BR-L* | Scale | B | L | ALL | SP | F / BF |
| *Elaeocarpus obovatus* | Hard Quandong | *(e)* | 14 x 8 | narrow domed | *FL-L FR-M BR-H* | | C | L | S | U | WBAF |
| *Elaeodendron australe* | Red Olive Plumb | *(e)* | 8 x 5 | narrow domed | *FL-L FR-H BR-L* | | B | L | ALL | S | DWBS4 |
| *Endiandra sieberi* | Cork Wood | *(e)* | 12 x 6 | narrow domed | *FL-L FR-H BR-L* | None | B | L | S | N | BFS4 |
| *Eucalyptus racemosa* | Scribbly Gum | *(e)* | 14 x 8 | irregular | *FL-L FR-M BR-H* | | C | L | C | U | B & W |
| *Eucalyptus crebra* | narrow leaf Iron Bark | *(e)* | 18 x 8 | irregular | *FL-L FR-M BR-H* | Physillids | C | L | ALL | U | B & W |
| *Eucalyptus molucanna* | Grey Box | *(e)* | 20 x 8 | irregular | *FL-L FR-L BR-M* | | C | L | C | U | B & W |
| *Eucalyptus nicholii* | | *(a)* | 15 x 10 | irregular | *FL-L FR-L BR-H* | Borer, | C | L | ALL | U | Koala feed tree |
| *Eucalyptus parramattensis* | | *(e)* | 10 x 8 | irregular | *FL-L FR-L BR-M* | | B | L | ALL | SP | Koala feed tree |
| *Eucalyptus pilularis* | Blackbutt | *(e)* | 25 x1 5 | irregular | *FL-L FR-L BR-H* | | C | L | ALL | U | BWH * |
| *Eucalyptus piperita* | Sydney Peppermint Gum | *(e)* | 20 x 8 | irregular | *FL-L FR-L BR-M* | | C | L | ALL | U | BW |
| *Eucalyptus punctata* | Grey Gum | *(e)* | 30 x 15 | irregular | *FL-M FR-L BR-M* | Physillids | C | L | ALL | U | Koala feed tree |
| *Eucalyptus robusta* | Swamp Mahogany | *(e)* | 20 x 15 | irregular | *FL-L FR-L BR-H* | Physillids | C | L | ALL | U | Koala feed tree |

| Species | Common Name | Origin | Size | Form | Plant Characteristics | Pests & Disease | Constraint Zone | Longevity | Soil | Powerline Suitability | Other Characteristic |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Eucalyptus saligna* | Sydney Blue Gum | *(a)* | 30 x 15 | irregular | *FL-L FR-L BR- H* | | C | L | ALL | U | BW |
| *Eucalyptus sideroxylon 'rosea'* | Red Flower Ironbark | *(a)* | 12 x 6 | irregular | *FL-L FR-L BR-L* | | b | L | ALL | U | BW |
| *Eucalyptus signata* | Scribbly Gum | *(e)* | 8 x 6 | irregular | *FL-L FR-L BR-M* | | B | L | ALL | sp | WBM |
| *Eucalyptus scoparia* | Willow Gum | *(a)* | 10 x 8 | irregular | *FL-L FR-L BR-M* | | B | L | ALL | U | Koala feed tree |
| *Eucalyptus tereticornis* | Forest Red Gum | *(e)* | 21 x 15 | irregular | *FL-L FR-L BR-H* | | C | L | ALL | U | Koala feed tree |
| *Fraxinus excelsia* | | | | broad domed | | | B | | ALL | | |
| *Ficus rubiginosa* | Port Jackson Fig | *(e)* | 30 x 30 | broad domed | *FR-H BR-H* | Physillids | C | L | ALL | U | |
| *Ficus microcarpa 'Hillii'* | Hills Weeping Fig | *(a)* | 25 x2 0 | broad domed | *FR-H BR-H* | Physillids | C | L | ALL | U | |
| *Ficus obliqua* | Small Leaf Fig | *(e)* | 20 x 20 | broad domed | *FR-H BR-H* | Physillids | C | L | ALL | U | |
| *Ficus supbera* | decidious Fig | *(e)* | 20 x 15 | broad domed | *FR-H BR-H* | Physillids | C | L | ALL | U | |
| *Flindersia australis* | Austrlian teak | *(a)* | 15 x 6 | irregular | *FL-L FR-l BR-L* | None | B | L | ALL | U | BP |
| *Fraxinus oxycarpa 'Raywoodii'* | Claret Ash | *(l)* | 10 x 8 | broad domed | *FL-L FR-L BR-L* | | B | L | ALL | SP | |
| *Geijera salicifolia* | Brush Wilga | *(e)* | 12 x 8 | broad domed | *FL-M FR-M BR-L* | None | B | L | ALL | U | WAB |
| *Glochidion ferdinandi* | Cheese tree | *(e)* | 12 x 8 | broad domed | *FL-M FR-M BR-L* | Leaf Beetle | B | L | ALL | SP | slow growing S1 |
| *Gmelina leichardtii* | White Beach | *(e)* | 12 x 5 | narrow domed | *FL-L FR-L BR-L* | None | B | L | ALL | U | WABF |
| *Gleditisia Shademaster* | | *(l)* | 10 x 8 | Vase Shaped | *FL-L FR-L BR-L* | | B | L | ALL | SP | |
| *Gleditsia 'Sunburst'* | | *(l)* | 12 x 8 | Vase Shaped | *FL-L FR-L BR-L* | | B | L | ALL | SP | |
| *Gordonia axillaris* | Gordonia | *(l)* | 6 x 4 | Irregular | *FL-H FR-L BR-L* | | B | L | ALL | S | A |
| *Grevillea banksii* | Grevillea banksii | *(a)* | 3 x 3 | irregular | *FL-L FR-L BR-L* | | A | L | S | S | BWA |
| *Grevillea honeygem* | Grevillea honeygem | *(a)* | 3 x 3 | irregular | *FL-L FR-L BR-L* | | A | M | S | S | BWA |

| Species | Common Name | Origin | Size | Form | Plant Characteristics | Pests & Disease | Constraint Zone | Longevity | Soil | Powerline Suitability | Other Characteristic |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Grevillea moonlight* | Grevillea moonlight | *(a)* | 5 x 3 | irregular | *FL-L FR-L BR-L* | | A | M | S | S | BWA |
| *Grevillea robusta* | silky oak | *(a)* | 20 x 8 | Conical | *FL-M FR-L BR-M* | | A | L | ALL | U | BWA |
| *Hibiscus splendens* | Pink Hibiscus | *(e)* | 6 x 6 | pendulous | *FL-H FR-M BR-L* | leaf beetle | A | S | ALL | S | WABS3 |
| *Hibiscus tilliacae* | | *(a)* | 8 x 6 | broad domed | *FL-M FR-L BR-L* | leafbeet | A | L | ALL | S | S2A |
| *Hymenosporum flavum* | Native Frangipani | *(a)* | 10 x 8 | broad domed | | Lerps | A | L | ALL | S | |
| *Jacaranda mimosifolia* | Jacaranda | *(I)* | 15 x 15 | broad domed | *FL-H FR-L BR-M* | | A | L | ALL | SP | F heritage tree |
| *Lagastrobus franklii* | Huon pine | *(a)* | | Conical | | | B | L | ALL | | slow growing |
| *Litsea reticultat* | Bolywood | *(e)* | 8 x 6 | irregular | *FL-m FR-M BR-L* | NONE | B | L | C | U | WAB |
| *Lophostemon confertus* | QLD Box Brush | *(a)* | 15 x 12 | narrow domed | *FL-L FR-L BR-M* | | A | L | ALL | SP | |
| *Magnolia grandiflora* | Magnolia | *(I)* | 20 x 20 | broad domed | *FL-M FR-L BR-L* | Rust | A | L | ALL | SP | A |
| *Livistonia australia* | Cabbage Tree Palm | *(e)* | 25 x 6 | column - like | *FL-L FR-H BR-M* | | A | L | ALL | U | |
| *Melia azedarach* | White Cedar | *(I)* | 12 x 8 | broad domed | *FL-M FR-H BR-M* | white cedar moth | A | L | ALL | S | |
| *Melaleuca decora* | White Feather Myrtle | *(e)* | 10 x 8 | irregular | *Fl-L FR-L BR-L* | webcat | B | L | C | S | WABM |
| *Melaleuca leucadendra* | Weeping Paperbark | *(a)* | 18 x 8 | pendulous | *FL-L FR-L BR-H* | | B | L | ALL | U | WAB |
| *Melaleuca liniarifolia* | snow in summer | *(e)* | 6 x 4 | narrow domed | *FL-H FR-L BR-L* | web catipillar | B | M | ALL | S | WABM |
| *Melaleuca sieberi* | Sieberi Paperbark | *(e)* | 6 x 4 | narrow domed | *FL-H FR-L BR-L* | | B | M | ALL | S | WABM |
| *Melaleuca stypheloides* | Prickly paper bark | *(e)* | 10 x 8 | irregular | *Fl-L FR-L BR-L* | webcat | B | L | ALL | S | M |
| *Melaleuca quinquinervia* | Broad Leaf Paperbark | *(e)* | 12 x 8 | irregular | *FL-L FR-L BR-H* | borer | A | L | ALL | U | Koala feed tree |

| Species | Common Name | Origin | Size | Form | Plant Characteristics | Pests & Disease | Constraint Zone | Longevity | Soil | Powerline Suitability | Other Characteristic |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |
| *Metrosideros excelsa* | New Zealand Christmas | *(I)* | 12 x 8 | narrow domed | *FL-L FR-M BR-M* | Borer | A | L | ALL | SP | S |
| *Omalanthus populifolius* | Bleeding heart | *(e)* | 6 x 6 | narrow domed | *FL-L FR-L BR-L* | | A | M | ALL | S | |
| *Nyssa sylvatica* | | | | | | | | | ALL | | |
| *Pistachio chinensis* | | *(I)* | 10 x 8 | narrow domed | *FL-L FR-L BR-M* | | A | L | ALL | S | |
| *Platanus orientalis* | Oriental plane tree | *(I)* | 25 x 25 | narrow domed | *FL-R FR-H BR-H* | | C | L | ALL | U | |
| *Prunus cerasifera 'Nigra'* | Ornamental plum | *(I)* | 6 x 6 | Vase Shaped | *FL-L FR-L BR-L* | Leaf minor | A | L | ALL | S | |
| *Quercus palustris* | Common\English oak | *(I)* | 15 x1 2 | narrow domed | *FL-M FR-H BR-M* | Leaf minor | A | L | ALL | U | |
| *Robina psuedo acacia 'Frisia'* | Golden Robina | *(I)* | 10 x 8 | standard | *FL-L FR-L BR-M* | | A | L | ALL | S | |
| *Sapium sabiferum* | Chinese Tallow | *(I)* | 6 x 6 | standard | *FL-L FR-L BR-M* | | A | L | ALL | S | |
| *Schinus ariera* | Peppercorn tree | *(I)* | 10 x 6 | irregular | *FL-L FR-M BR-H* | Borer | A | L | ALL | SP | D |
| *Syzigium australe* | Lilly Pilly | *(a)* | 8 x 6 | narrow domed | *FL-L FR-H BR-M* | | A | L | ALL | S | |
| *Syzigium leuhmanii* | Lilly Pilly | *(a)* | 6 x 5 | narrow domed | *FL-L FR-H BR-L* | | A | L | ALL | S | |
| *Syzigium paniculatum* | Lilly Pilly | *(a)* | 20 x 15 | broad domed | *FL-L FR-H BR-H* | | A | L | ALL | SP | |
| *Syzigium 'Minor'* | Lilly Pilly | *(a)* | 6 x 4 | narrow domed | *FL-L FR-L BR-L* | | A | L | ALL | S | |
| *Acmena smithii* | Lilly Pilly | *(a)* | 15 X 8 | narrow domed | *FL-M FR-H BR-M* | | C | L | ALL | U | BWF |
| *Tristaniopsis laurina* | Watergum | *(a)* | 10 x 8 | narrow domed | *FL-L FR-L BR-M* | | A | L | ALL | SP | |
| *Ulmus parvifolia* | Chinese elm | *(I)* | 10 x 10 | broad domed | *FL-L FR-L BR-M* | | A | L | ALL | SP | |
| *Ulmus glabra* | Wych elm | *(I)* | 15x8 | narrow domed | *FL-L FR-L BR-L* | | A | L | ALL | S | |

| | |
|---|---|
| Origin | (a) Australian Native |
| | (e) Occurs in Port Stephens |
| | (I) Introduced |

| | | |
|---|---|---|
| Plant Characteristics | *FL*-L | Flower Set **Light** |
| | *FL*-M | Flower Set **Medium** |
| | *FL*-H | Flower Set **Heavy** |
| | *FR*-L | Fruit Set **Light** |
| | *FR*-M | Fruit Set **Medium** |
| | *FR*-H | Fruit Set **Heavy** |
| | *BR*-L | Branch Set **Light** |
| | *BR*-M | Branch Set **Medium** |
| | *BR*-H | Branch Set **Heavy** |

| OTHER CHARACTERISTICS |
|---|
| D - Drought resistant |
| W - Wildlife Attracting |
| B - Bird Attracting |
| M - Requires Wet conditions |
| F - fruit drop a problem on hard surfaces |
| A - Attractive flowers |
| H - Hollow forming |
| S1 - front line salt tolerant |
| S2 - Hind dune salt tolerant |
| S3 - mildly salt tolerant |
| * - Unsuitable as street tree |

**TABLE 4: RISK MANAGEMENT CONTROL STRATEGIES FOR NEW TREE PLANTING**

The control strategies listed below can be utilised to abate and manage potential risks between trees and infrastructure.

| Control Strategy | Description |
|---|---|
| **Root barriers** | Installation of root barriers to manufacturers specification at the time of planting will assist tree roots to develop away from services, pavements and other structures.<br>NOTE OF CAUTION - Tree root barriers do require periodic monitoring as roots deflected downwards will return to the surface if soil oxygen levels are not sufficient to support growth at depth. Roots can also grow over the barrier in some situations |
| **Soil compaction** | Proper compaction of the soil when back filling trenches or around utility easements and house footings will direct tree roots away from these areas. Achieving and maintaining compaction to 95% can inhibit root growth through the depravation of oxygen. |
| **Soil Modification** | Where soils constraints are identified the use of structural soil can be utilised |
| **Pseudo street trees** | Residents could be encouraged to plant trees within their boundaries in preference to street tree planting. This might allow larger species to be used, and reduce pressure on pavements and services. |
| **Design of new roads and pathways** | The design of new roads and footpaths should be undertaken with consideration for tree planting on the nature strip or in the road pavement to ensure appropriate allocation of space. |
| **Provision of aeration and irrigation** | Where there is to be continuous paving around a tree, the installation of an aeration and irrigation system should be considered. Where irrigation is installed and properly operating, a tree root system will be proportionally smaller than without irrigation. |
| **Pavement Openings** | Pavement openings at the base of the tree should be as large as possible to reduce the future impact of buttressing roots on pavements. For the position of the tree refer to. |
| **Insulated (ABC) cabling** | Replacement of uninsulated overhead powerlines with insulated & bundled cables will reduce both the clearance needed and the pruning costs and severity. |
| **Flexible pathways** | Use of flexible material such as bitumen, paving, or rubber compounds for footpaths and tree surrounds, will reduce the occurrence of trip points and is less expensive and easier than concrete to maintain or replace when necessary. |
| **Underground power & communications cables** | The initially high cost of installing power underground may in fact be a practical option when compared with the projected cost of repeated pruning, the risk that this work involves to operators, the negative impact on trees, loss of public amenity and of urban forest economic contributions. |
| **Enlarging root zone** | Where space allows, a designated area above the root zone |

| | |
|---|---|
| | of the tree should be enlarged/created to accommodate surface roots. Rather than turf, this area could be formed into a garden bed, mulched or covered with a suitable tree grate. |
| **PVC welded piping** | Replacement of old porous clay pipe mains with PVC or polyurethane mainlines will significantly reduce the potential for tree root entry. |
| **Articulating pavement joint** | Articulating paving joint to be used in pathway adjacent to tree planting area |

**Location of Street Trees**

Street tree planting should contribute to a coherent and regular spaced planting along the footway or roadway. The following guidelines should be used to assist layout of street trees subject to location of public utilities and other site-specific constraints;

Table 5: Street Tree Layout Guidelines

| CONSTRAINT | NOMINAL CLEARANCE |
|---|---|
| Constraint zone A | 7 metre spacing |
| Constraint zone B | 10 metre spacing |
| Constraint zone C | 15 metre spacing |
| Street intersection | 10m from intersection curb line |
| Power or light pole | 5m from centre of pole |
| Storm water inlet | 3m from edge of inlet |
| Major underground service junction | 3m from edge of junction box |
| Bus Stops | No trees planted along length of stop |
| Traffic lights | 10m from pole of traffic lights |
| Driveway. | 3m from edge of driveway |
| Fire hydrants. | 3m from center of hydrants |
| Visibility | Trees trunks to be free of branches 2.4m above ground height |

**Specification for Supply of Trees**

Trees purchased for planting are to conform to Natspec guide Purchasing Landscape Trees with respect to root development, height, trunk diameter and branch structure as follows:-

GENERAL PLANT AND TREE FORM

TRUE TO TYPE: Supply plants which are true to type;

16 LITRE STOCK will have a trunk caliper size of between 10-15mm and be a minimum of 1.5m in height (not including root ball);

40 LITRE STOCK will have a trunk caliper size of between 30-40mm and be a minimum of 2.5m in height (not including root ball);

HEALTH & VIGOUR: Supply plants with foliage size, texture and colour consistent with healthy vigorous specimens of the species, and cultivar (if applicable);

PESTS AND DISEASES: Supply plants with at least 90% of foliage free of pest or disease attack;

ROOT SYSTEM: Supply plants with fibrous roots showing repeated and frequent root division;

ROOT DIRECTION: Supply plants free of root circling or girdling;

ROOTBALL OCCUPANCY: Supply plants such that at least 90% of the soil volume stays intact when the unsupported rootball is shaken or handled;

INSPECTION OF ROOT SYSTEM: The Purchaser may inspect the root system of one tree in each 20 (or part thereof) by washing away a small section from stem to the outer extremity;

APICAL DOMINANCE: Supply trees which have a defined central leader and intact apical bud;

BALANCE OF CROWN: Supply trees with a balanced crown and a maximum variation in crown bulk on opposite sides of the stem axis of ±20%;

STABILITY: Supply trees that are self supporting, i.e do not need stakes;

**Water Requirement for Newly Planted Trees**

The following information is provided to ensure adequate moisture level during tree establishment. Water requirements listed below are a guide only an increase or decrease of water will depend climatic conditions at the time of planting. The water values have been calculated for the optimum time to establish trees which is March – May.

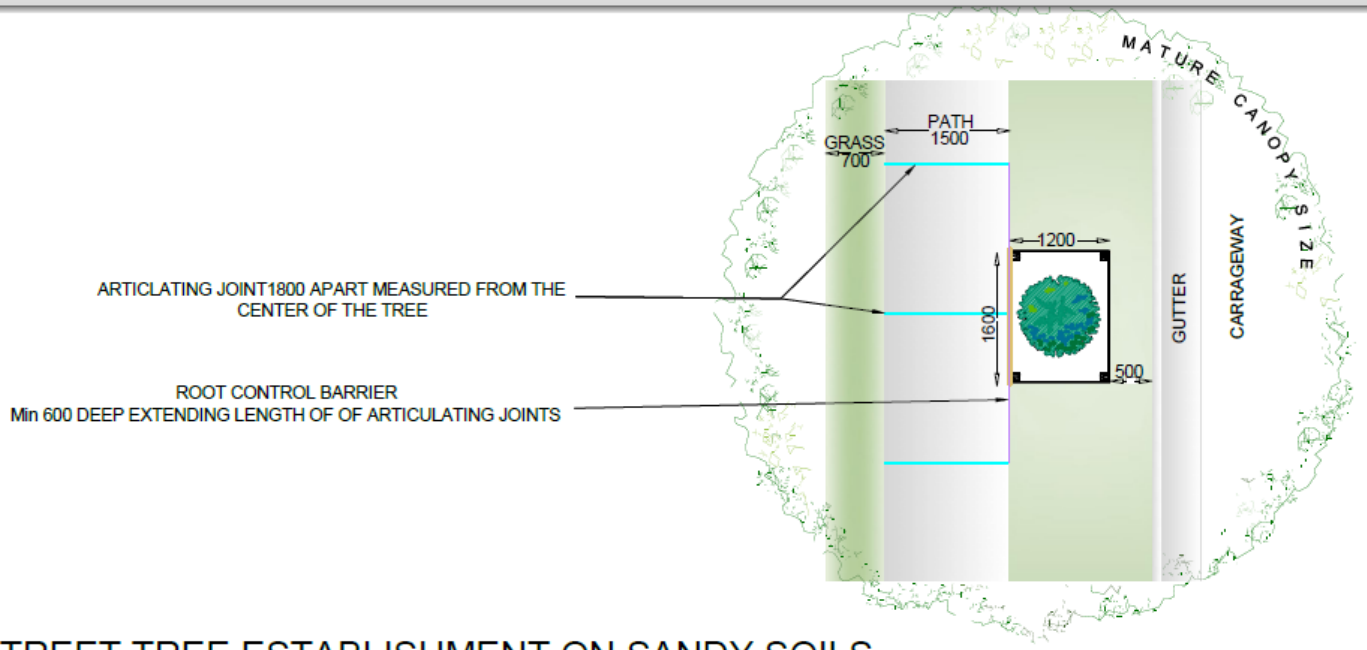
Table 6: Water requirements for new trees

| Container size | Tree height | Ave. trunk diameter | Litres of water/week |
|---|---|---|---|
| 15-20 litres | 1.5-2.0m | 30mm | 5 |
| 40-50 litres | 2.1-3.0m | 50mm | 8 |
| 75-100 litres | 3.1-4.0m | 75mm | 12 |

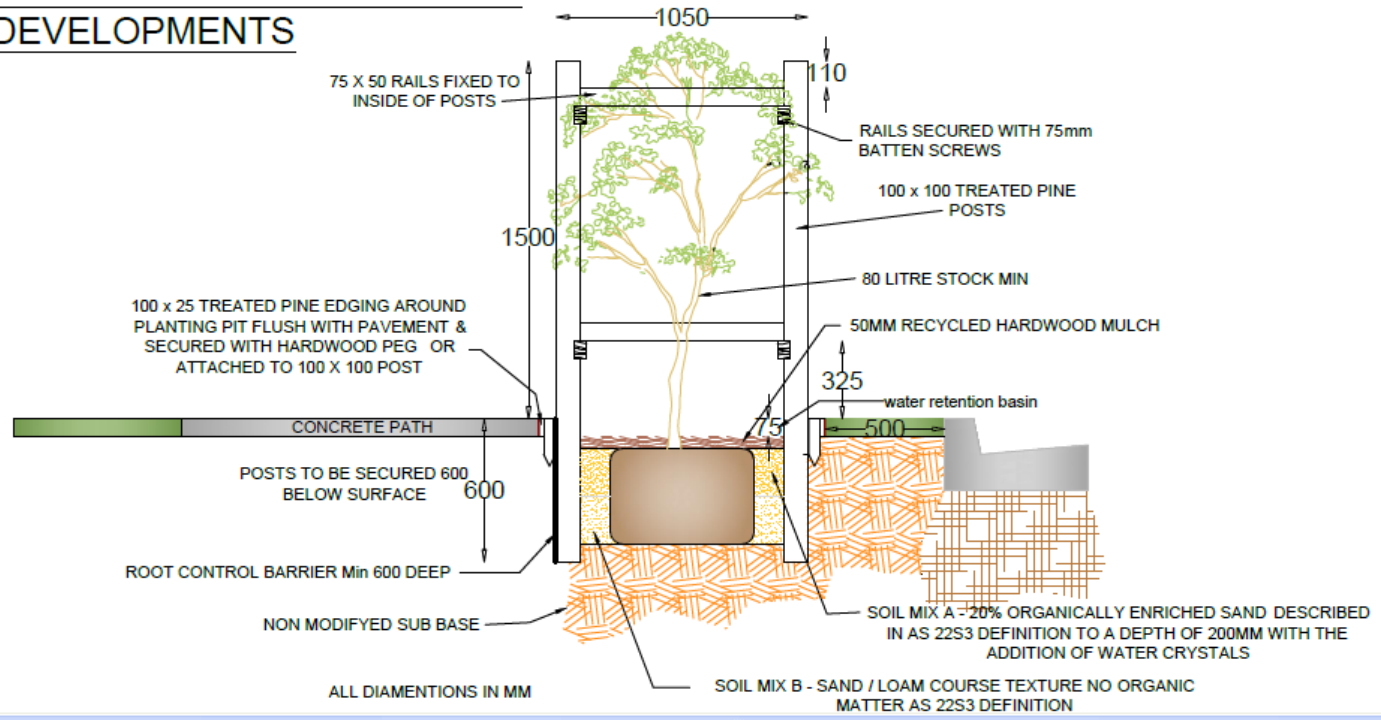
**Soil volumes**

- Between 5 and 15 cubic metres for a small tree.
- Between 20 and 40 cubic metres for a medium sized tree
- Between 50 and 80 cubic metres for a large tree.

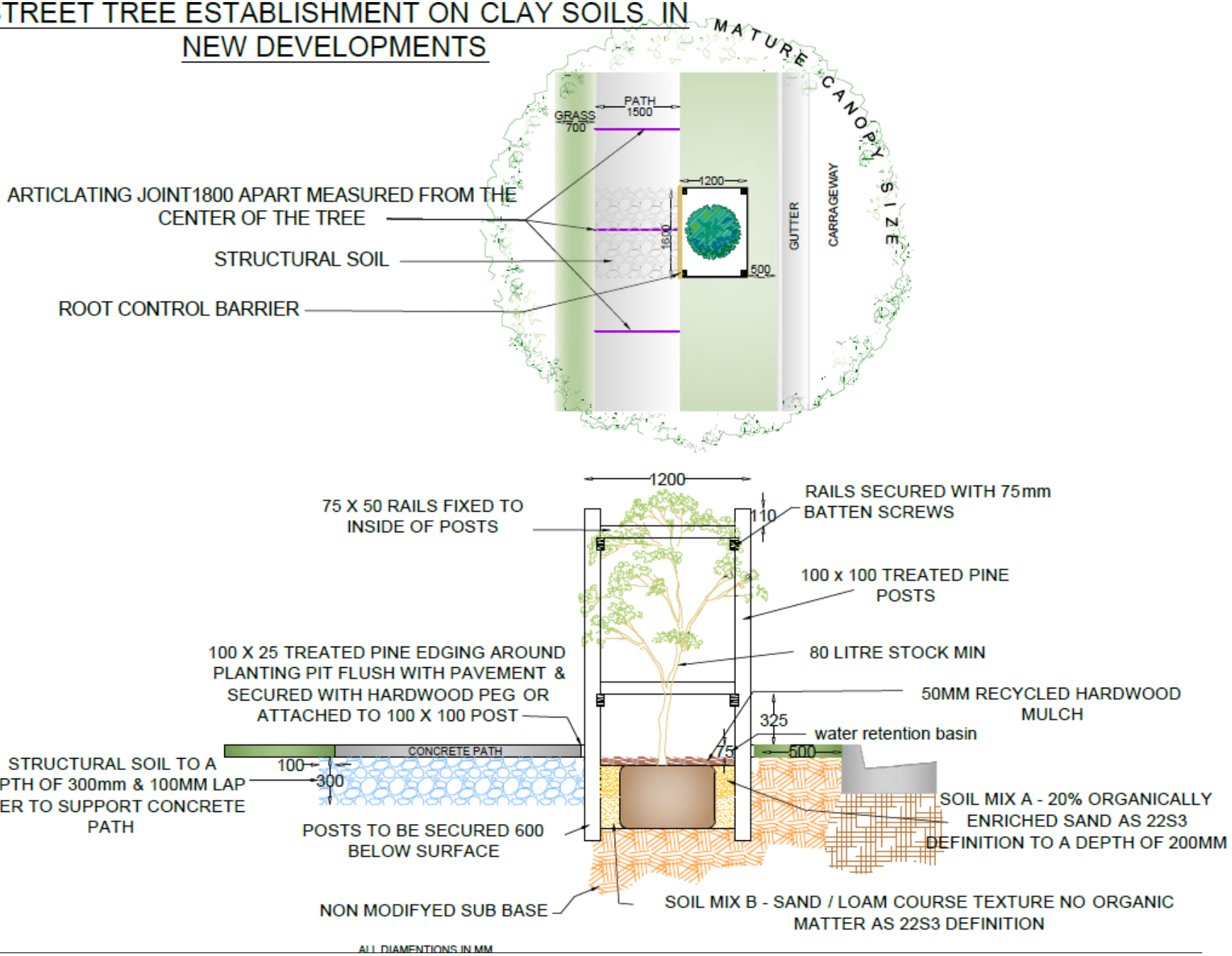
These volumes represent the unobstructed soil volume required by the tree i.e. where the roots can spread to, not the improved soil planting hole. As root growth is limited by available soil oxygen, and this oxygen depletes with depth, there is no benefit t in increasing soil volume by increasing the depth of the planting zone beyond a depth of 1.0m. The greater benefit t is in increasing the soil volume laterally.




# STREET TREE ESTABLISHMENT ON SANDY SOILS IN NEW DEVELOPMENTS



# STREET TREE ESTABLISHMENT ON CLAY SOILS IN NEW DEVELOPMENTS



**Attachment 2: Retention Value of Trees**

**STEP 1. – ASSESS TREE SUSTAINABILITY –Figure 1**

- Greater than 40 years
- From 15 – 40 years
- From 5 to 15 years
- Less than 5 years
- Dead or hazardous

**STEP 2 – ASSESS ENVIRONMENTAL, HERITAGE & AMENITY VALUES**

Determine a Landscape Significance Rating

Make a considered evaluation of the tree's amenity and other values to place it into one of four broad categories (very high, high, medium, low) to aid in the planning process and guide the layout of the site. Refer to Table 1.

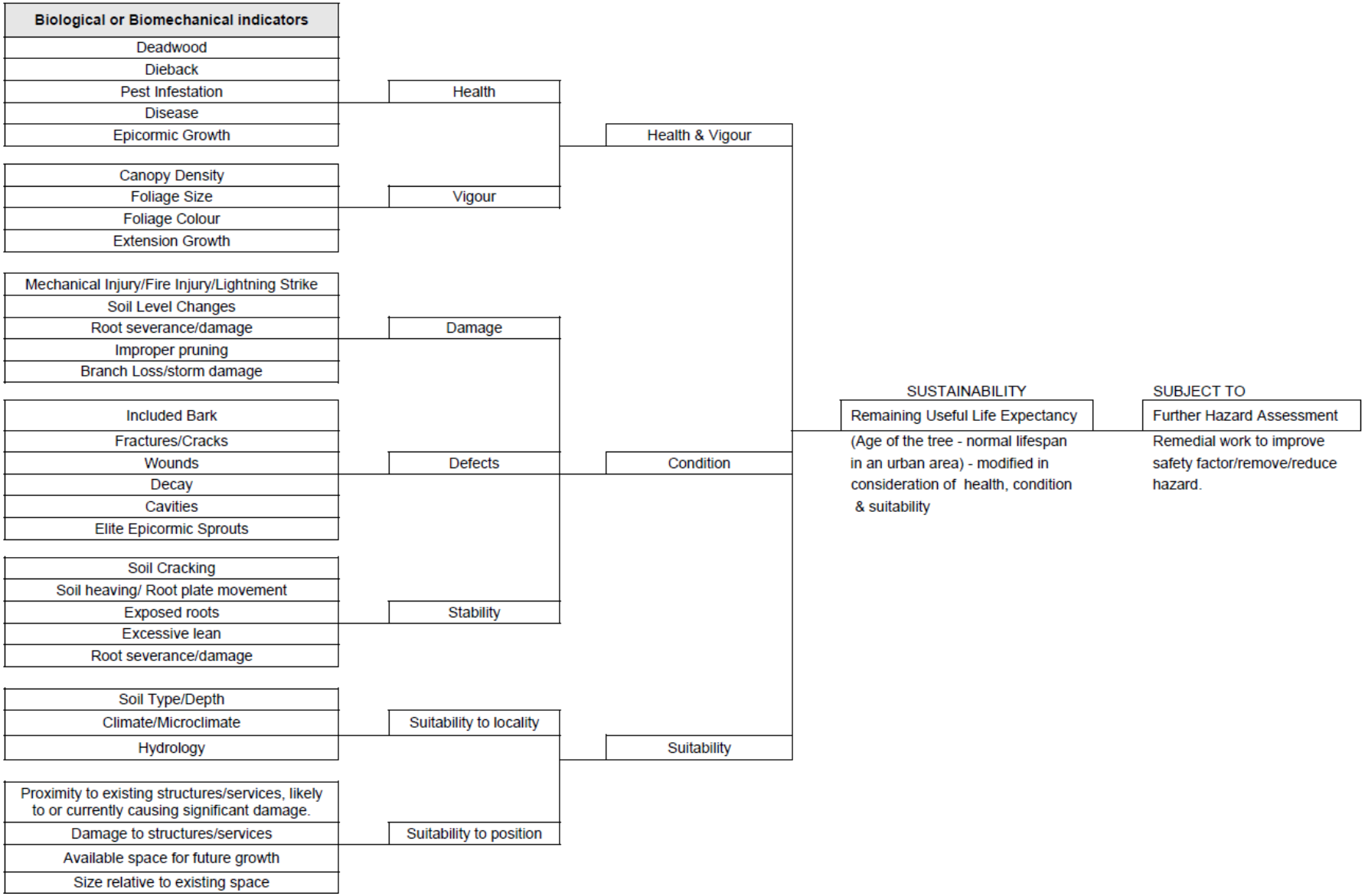
**STEP 3 – WEIGH SUSTAINABILITY AND LANDSCAPE SIGNIFICANCE**

Weigh the sustainability and landscape significance to arrive at a retention value. These two elements must be assessed independently, since they have a relationship with on another. The health, condition and longevity of a tree increases or diminishes depending on its level of intactness, quality and potential longevity. Refer to Table 2.

**STEP 4 – CATEGORISE EACH TREE ACCORDING TO ITS RETENTION VALUE**

Once there is a measure of a trees overall importance or significance in the landscape (ie. its contribution to environmental, amenity and heritage values), these two factors can be weighed up using the table (Table 3) which categorises the tree or trees according to its suitability or desirability for retention. High value trees should be retained in the landscape.

**FIGURE 1 – ASSESSMENT OF THE SUSTAINABILITY OF A TREE IN THE LANDSCAPE**



| TABLE 1 - FACTORS THAT INCREASE OR DIMINISH AMENITY, HERITAGE & ENVIRONMENTAL VALUES | | | | |
|---|---|---|---|---|
| **FACTORS CONTRIBUTING TO AMENITY / AESTHETIC VALUE** | | | | |
| | Very High | High | Medium | Low |
| Live Crown Size | Very Large (Greater than 200m2) | Large (100-200m2) | Medium (40-100m2) | Small - Less than 40m2 |
| Canopy density - apply to deciduous trees in full leaf | Dense - 90-100% foliage cover | Normal - 70-90% Foliage cover | Thinning - 50-70% foliage cover | Sparse - less than 50% foliage cover |
| Visual Prominence / Visual Impact in the Landscape | Located in a visually prominent position in the landscape. A landmark or visible from a considerable distance. Located at a focal point, visible against the skyline. | Visible from surrounding properties the street or other thoroughfares (including waterways) | Visible from surrounding properties | Not visible from surrounding properties (obscured by other trees or built forms) |
| Form and Habit | Very good form and branching habit, excellent specimen, aesthetically distinctive or outstanding, constitutes an excellent representative of the species. | Good form and habit, minor distortion or suppression, good representative of the species. | Fair form and habit, moderate distortion or suppression, fair representative of the species | Poor form and habit with significant distortion or canopy suppression, atypical or poor representative of the species |
| Relationship to other trees and spatial elements or built forms - (setting). | A tree or one of a group of trees that creates a 'sense of place' or special character which creates a sense of identity with the place. Makes a significant contribution to the visual character of the area. | Makes a positive contribution to the visual character of the locality or the amenity of the area (shade, wind amelioration, visual buffer or screening, provides scale to architectural & spatial elements). | Makes a fir/neutral contribution to the amenity of the property / visual character of the area. | Makes a negligible contribution to the amenity of the property/surrounding properties or detracts from the visual character of the area. |

| FACTORS CONTRIBUTING TO ENVIRONMENTAL VALUE | | | | |
|---|---|---|---|---|
| | **Very High** | **High** | **Medium** | **Low** |
| Environmental Significance | Threatened Plant Species or key species in an Endangered Ecological Community (as defined under TSC Act). | Locally indigenous species & representative of the original vegetation of the area. | Planted or self-sown exotic or non local native tree, protected under the local Tree Preservation Order | Scheduled as a Noxious Weed or Environmental Pest Species or Exotic or non-local native tree Exempt under TPO. |
| Botanical Importance | Rare or few in cultivation in the region. The only example of its type, a species endemic to the locality. | Uncommon in cultivation. | Common in cultivation | Very common in cultivation, widely represented in the region. |
| Habitat Value | Provides important habitat (nesting / for aging / food source shelter) for threatened fauna species | Provides habitat for native wildlife. Located within a key / identified vegetation / wildlife corridor. Evidence of nesting hollows, known food source, other visible evidence of wildlife (markings, nests etc) | Beneficial for native wildlife. | Little or no value to native wildlife |

| FACTORS CONTRIBUTING TO HERITAGE VALUE | | | | |
|---|---|---|---|---|
| | **Very High** | **High** | **Medium** | **Low** |
| Cultural Heritage Value | Scheduled as a heritage item under Local LEP, Local or State level of significance. Forms part of the curtilage of a heritage item or structure & has a known or documented association with that item. | Strong historical association with built forms or other historical artefacts (ie other heritage items). A tree or once of a group of trees that exemplifies a particular style or era of landscape / garden design. An important benchmark referencing or representative or defining a particular era, supported by document trav | Historical association supported by anecdotal evidence or unsubstantiated information. Suspected historical association based on knowledge of similar sites, tree age, other tree species etc. | No heritage importance or value, no known or suspected historical association. |
| Aboriginal Heritage | Aboriginal cultural artefact, evidenced by identifiable markings (lookout tree, shield tree etc) or other documentary evidence. | | | |
| Historical Significance | Commemorative Planting relating to an important historical event or planted by an important historical person. | | | |
| Natural Heritage | Remnant tree, existing prior to the development of the local area | Representative of the original vegetation (structure, floristics) of the area. | | |

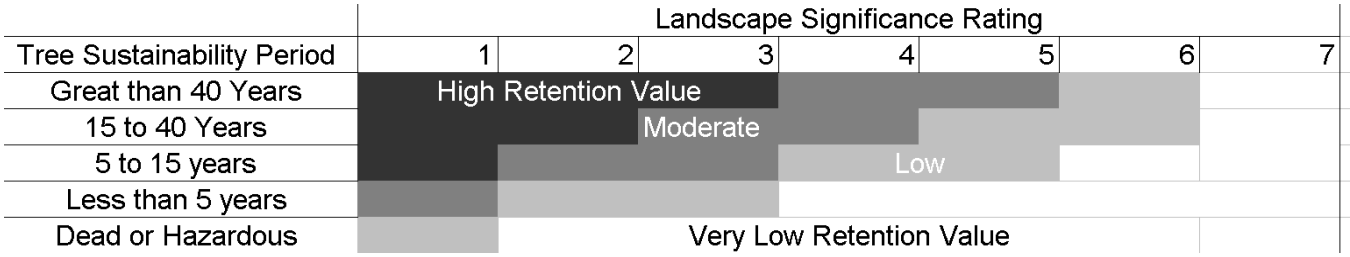
**TABLE 2 - CRITERIA FOR ASSESSMENT OF LANDSCAPE SIGNIFICANCE**

The level of landscape significance is determined using the following key criteria as a guide:

| | |
|---|---|
| **1. SIGNIFICANT** | |
| | The tree is listed as a Heritage Item under the LEP with a local, state or national level or significance; or |
| | The tree forms part of the curtilage of a Heritage Item (building/structure/artefact as defined in LEP and has a known or documented association with that item; or |
| | The tree is a Commemorative Planting having been planted by an important historical person (s) or to commemorate an important historical event; or |
| | The tree is scheduled as a Threatened Species or is a key indicator species of an Endangered Ecological Community as defined under the Threatened Species Conservation Act 1995 (NSW) or the Environmental Protection and Biodiversity Conversation Act 1999; or |
| | The tree is a locally indigenous species, representative of the original vegetation of the area and is known as an important food, shelter or nesting tree for endangered or threatened fauna species; or |
| | The tree is a Remnant Tree, being a tree in existence prior to development of the area; or |
| | The tree has a very large live crown size exceeding 300m2 with normal to dense foliage cover, is located in a visually prominent in the landscape, exhibits very good form and habit typical of the species and makes a significant contribution to the amenity and visual character of the area by creating a sense of place or creating a sense of identity; or |
| | The tree is visually prominent in view from surrounding areas, being a landmark or visible from a considerable distance. |
| **2. VERY HIGH** | |
| | The tree has a strong historical association with a heritage item (building/structure/artefact/garden etc) within or adjacent the property and/or exemplifies a particular era or style of landscape design associated with the original development of the site; or |
| | The tree is listed on Council's Significant Tree Register; or |
| | The tree is a locally-indigenous species and representative of the original vegetation of the area and the tree is located within a defined Vegetation Link / Wildlife Corridor or has known wildlife habitat value; or |
| | The tree has a very large live crown size exceeding 200m2, a crown density exceeding 70% Crown Cover (normal-dense), is a very good representative of the species in terms of its form and branching habit or is aesthetically distinctive and makes a positive contribution to the visual character and the amenity of the area. |
| **3. HIGH** | |
| | The tree has a suspected historical association with a heritage item or landscape supported by anecdotal or visual evidence; or |
| | The tree is a locally-indigenous species and representative of the original vegetation of the area; or |
| | The tree has a large live crown size exceeding 100m2, and the tree is a good representative of the species in terms of its form and branching habit with minor deviations from normal (eg crown distortion / suppression) with a crown density of at least 70% Crown Cover (normal); and The subject tree is visible from the street and surrounding properties and makes a positive contribution to the visual character and the amenity of the area. |

| | |
|---|---|
| **4. MODERATE** | |
| | The tree has a medium live crown size exceeding 40m2, and the tree is a fair representative of the species, exhibiting moderate deviations from typical form (distortion/suppression etc) with a crown density of more than 50% Crown Cover (thinning to normal); and the tree makes a fair contribution to the visual character and amenity of the area; and the tree is visible from surrounding properties, but is not visually prominent - view may be partially obscured by other vegetation or built forms, or |
| | The tree has no known or suspected historical association |
| **5. LOW** | |
| | The tree has a small live crown size of less than 40m2 and can be replaced within the short term with new tree planting; or |
| | The tree is a poor representative of the species, showing significant deviations from the typical form and branching habit with a crown density of less than 50% Crown Cover (sparse); and The tree is not visible from surrounding properties (visibility obscured) and makes a negligible contribution or has a negative impact on the amenity and visual character of the area. |
| **6. VERY LOW** | |
| | The subject tree is listed as an Environment Weed Species in the relevant Local Government Area, being invasive, or a nuisance species. |
| | The subject tree is scheduled as exempt (not protected) under the provisions of the local Councils' Tree Preservation Order due to its species, nuisance or position relative to buildings or other structures. |
| **7. INSIGNIFICANT** | |
| | The tree is a declared Noxious Weed under the Noxious Weeds Act (NSW) 1993 or is an undesirable species. |

Table 3: Tree Retention Values – Assessment Methodology




**Replacement plantings**

Where practical, development proposals should be designed to include sufficient space for planting of appropriate sized trees.

Table 4 outlines the number of trees that will be required to be planted when trees are unable to be retained unless other wise conditioned by, or negotiated with, Council. The pot size of the replacement trees will be determined by Council and is dependant on site characteristics, the species of the tree to be replanted and stock availability.

| **TABLE 4: COMPENSATORY PLANTINGS RATES** | |
|---|---|
| RETENTION VALUE (AS PER TABLE 3) | COMPENSATORY PLANTING |
| High Retention Value | 5 TREES |
| Moderate Retention Value | 3 TREES |
| Low Retention Value | 1 TREE |
| Very Low Retention Value | No Replacement Tree Required |

**Replacement plantings – koala habitat**

Prior to the issue of an Occupation Certificate any koala food trees removed as a result of the development must be replaced according to the ratio detailed in Table 5, or, at Council's discretion the applicant may conduct enhancement works which improve the integrity and viability of koala food trees, habitat and movement corridors on the subject site.

**Table 5**

| Koala food tree size class (dbh) | Replacement Ratio (loss:gain) |
|---|---|
| <100 mm | **1:6** |
| 100-300 mm | **1:8** |
| >300 mm | **1:10** |

N.B. replacement ratios are higher than 1:1 because of the time lag before the ecological benefits of compensatory plantings are realised.

The location of compensatory plantings will be either:

a. Where there is sufficient land on the subject site
b. At Council's discretion at the cost of the applicant, in cases where it is not feasible to plant replacement plantings on site, all or a portion of the replacement trees may be planted on receiving land off the subject site either:
   i. On Council-owned land; or
   ii. On some other land approved by Council for use as receiving land

Replacement food trees must be:

a. of the same species
b. sourced from local provenance seed stock
c. planted in a cluster and, where feasible, in the vicinity of any retained food trees
d. protected, nurtured and maintained until the trees have reached a mature site of 5 metres – at the cost of the applicant.
e. Any replacement trees that die before maturity must be replaced by the applicant and at their cost.