

Moore Trees
Arboricultural Services

ABN 90887347745

Arboricultural Development Assessment Report

160 Burwood Road
Concord NSW 2137
Lot 5 in DP 129 325
Lots 398 and 399 in DP752023
Lot 2 in DP 230294
July 2018
FINAL (Updated 5th September 2019)



Prepared for: Colliers International
Project Management

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Member 2018



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Summary

This report has been compiled for Colliers International Project Management, Level 30, Grosvenor Place, 225 George Street Sydney, NSW 2000. The report concerns a proposed Development Application for 160 Burwood Road, Concord NSW 2137. This Arborist Report refers to two hundred and twelve (212) trees.

This report contains the following information required in The City of Canada Bay Council Development guidelines:-

- 1) All trees were assessed for Safe Useful Life Expectancy (SULE).
- 2) Genus and species of each tree.
- 3) Impact of the proposed development on each tree.
- 4) Impact of retaining tree on the proposed development.
- 5) The Tree Protection Zone (TPZ) for each tree to be retained.
- 6) Any root barriers necessary, type and location.
- 7) Any branch or root pruning that may be required for trees.
- 8) List trees within fifteen (15) metres of the site boundary.

Of the two hundred and twelve (212) trees assessed for this report many are in a poor condition or have been overplanted to an extent where they have become suppressed.

The large group of Trees numbered as 33-67 along the western boundary that form a large screen to the site will be retained. The grafted root zones and codominant canopies will not allow any form of services or stormwater works through this area if they are to be retained. The TPZ distances in the Tree Schedule (Appendix 1) should be used should any potential works fall near these trees.

Trees numbered to be retained are numbered as 34-66, 88-91, 93, 94-101, 145-179, 184, 186-190 (191-192 offsite) , 206 and 207. Tree 184 may be relocated within the site. All other trees are to be removed. Trees to be retained should be fenced prior to demolitions works occurring.

Refer to Sections 5 and 6 of this report for full recommendations and tree protection specifications.

Table of Contents

VERSION CONTROL

Date of Issue	Details
8 th April 2016	Draft 1 issued
26 th July 2018	Draft 2 issued
26 th July 2018	Final version issued
5 th September 2019	Updated for new plans

	Page
1 INTRODUCTION	4
2 METHODOLOGY	7
3 RELEVANT BACKGROUND INFORMATION	9
4 RECOMMENDATIONS	13
5 TREE PROTECTION	15
6 IMAGES	18
 Appendices	
1 Tree Protection Plan	22
2 Tree Health and Condition Schedule	24
3 SULE methodology	41
4 TPZ and SRZ methodology	42
5 Tree Protection Fencing Specifications	44
6 Tree Protection Signs	46
7 TPZ and SRZ explanations	48
8 Tree structure information diagram	49
9 Explanatory notes	50
10 Bibliography	51
11 Curriculum Vitae	52

1 INTRODUCTION

1.1 This report has been conducted to assess the health and condition of two hundred and twelve (212) trees located at *160 Burwood Road, Concord NSW 2137*. This report has been prepared for Colliers International Project Management, Level 30, Grosvenor Place, 225 George Street Sydney, NSW 2000 as required for a Development Application with The City of Canada Bay Council at this site.

The purpose of this report is to collect the appropriate tree related data on the subject trees and to provide advice and recommendations that will help to retain trees worthy of retention.

The subject trees were assessed for their health and condition. Also included in this report are tree protection measures that will help retain and ensure that the long term health of the trees to be retained are not adversely affected by the proposed development in the future. These tree protection measures will need to be completed once final designs have been completed.

As specified in The City of Canada Bay Council Development Application guidelines the following data was collected for each tree:

- 1) A site plan locating all trees over four (4) metres in height, including all street trees.
- 2) All trees were assessed for Safe Useful Life Expectancy (SULE), health and amenity value.
- 3) Genus and species identification of each tree.
- 4) Impact of the proposed development on each tree.
- 5) The Tree Protection Zone (TPZ) calculated for each tree.
- 6) Any branch or root pruning that may be required for trees.

Also noted for the purpose of this report were:

- Health and Vigour; using foliage colour and size, extension growth, presence of deadwood, dieback and epicormic growth throughout the tree.
- Structural condition using visible evidence of bulges, cracks, leans and previous pruning.
- The suitability of the tree taking into consideration the proposed development.

- Age rating; Over-mature (>80% life expectancy), Mature (20-80% life expectancy), Young, Sapling (<20% life expectancy).

1.2 Documents and information provided: For this Arborist Report I was given a site plan of the location, undertaken by CMS Surveyors Pty Limited marked DWG # 13040 detail issue 1 dated 12/05.15. I was also provided with an Illustrative Master Plan for the site.

1.3 Location: The proposed development site is located at 160 Burwood Road, Concord NSW 2137 (Diagram 1). Known as Lot 5 in DP 129 325, Lots 398 and 399 in DP752023, Lot 2 in DP 230294. The proposed development site from herein will be referred to as "the Site". The study area can be seen in Diagram 2.

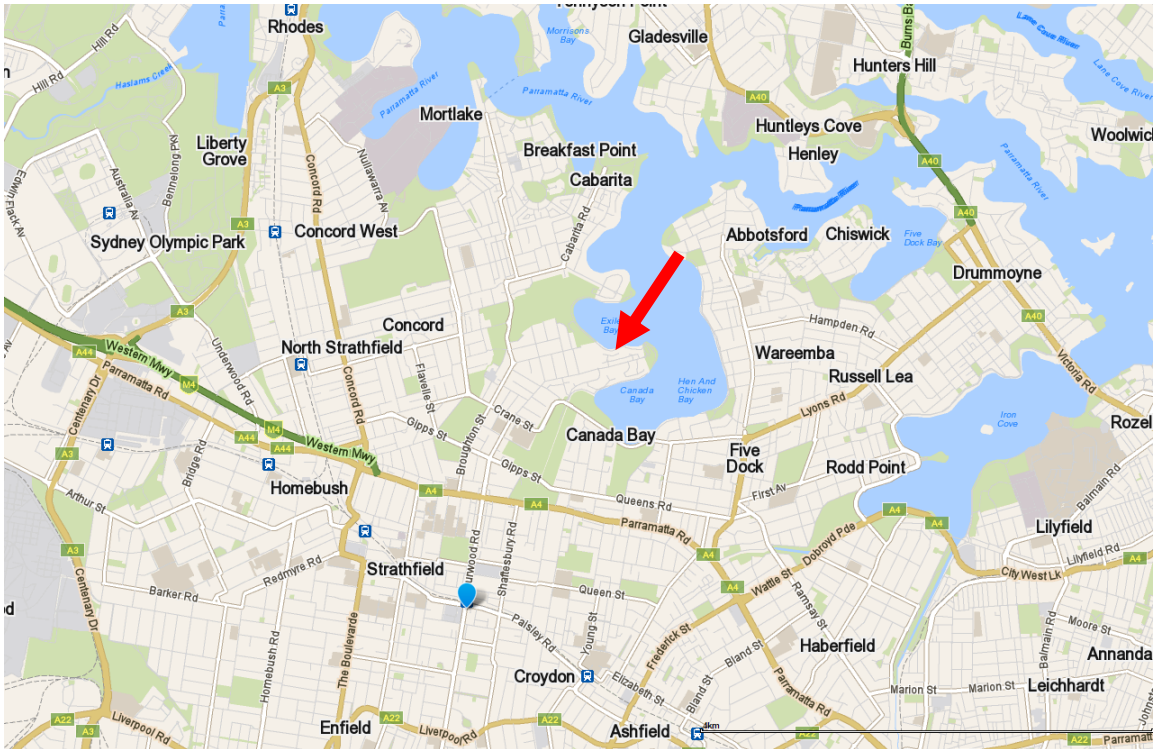


Diagram 1: Location of subject site, 160 Burwood Road, Concord NSW 2137 (Red arrow) (whereis.com.au, 2018)



Diagram 2: Location of the study area (whereis.com.au, 2018)

2 METHODOLOGY

- 2.1** To record the health and condition of the trees, a Visual Tree Assessment (VTA) was undertaken on the subject trees on 23 March 2016. This method of tree evaluation is adapted from Matheny and Clark, 1994 and is recognised by The International Society of Arboriculture. Individual tree assessments are listed in Appendix 2 of this report. All inspections were undertaken from the ground. No diagnostic devices were used on these trees.
- 2.2** This report is only concerned with trees on the site that come under The City of Canada Bay Council Tree Management Order policy (TPO). It takes no account of any tree or shrub under four (4) metres in height.
- 2.3 Height:** The heights and distances within this report have been measured with a Bosch DLE 50 laser measure.
- 2.4 Tree Protection Zones (TPZ):** The Tree Protection Zone (TPZ) is the principal means of protecting trees on development sites. The TPZ is a combination of the root area and crown area requiring protection. It is an area isolated from construction disturbance, so that the tree remains viable. TPZ's have been calculated to help determine impacts for each tree. The TPZ calculation is based on the Australian Standard *Protection of trees on development sites*, AS 4970, 2009.
- 2.5 Structural Root Zone (SRZ):** The SRZ is a specified distance measured from the trunk that is set aside for the protection of tree roots, both structural and fibrous. The woody root growth and soil cohesion in this area are necessary to hold the tree upright. The TPZ and SRZ are measured as a radial measurement from the trunk. No roots should be severed within this area. A detailed methodology on the TPZ and SRZ calculations can be found in Appendix 4. It is possible that the current design may change. It is strongly recommended that the Architect applies the calculated TPZ and SRZ distances to their construction drawings and assess impacts should designs change. The Architect should notify Moore Trees during the design stage should any works fall within the TPZ and SRZ distances of a potential tree to be retained.

2.6 SULE: The subject trees were assessed for a Safe Useful Life Expectancy (SULE). The SULE rating for each tree can be seen the Tree Assessment Schedule (Appendix 2). A detailed explanation of SULE can be found in Appendix 3.

2.7 Plans provided:

- CMS Surveyors Pty Limited marked DWG # 13040 detail issue 1 dated 12/05.15;
- Illustrative Master Plan marked OC-L-001 dated 13.6.18 Rev D and architectural set by Oculus AR-XX-XX-001 to 009;
- Tree Retention and Protection Plan marked project S-15021 L101 undated.
- BVN Plans, Issue D, dated 29,01,19, marked AR-XX-XX-001- AR-XX-XX-010

2.8 Impact Assessment: A basic impact assessment was conducted on the site trees. This was conducted by assessing the site survey and concept plans provided by Colliers International Project Management. The plans provided were assessed for the following:

- Reduced Level (R.L.) at base of tree.
- Incursions into the Tree Protection Zone (TPZ).
- Assessment of the likely impact of the works.
- Location of sediment controls in relation to TPZ areas
- Location of stockpile areas in relation to TPZ areas
- Canopy clearance for scaffolding Australian Standard (Scaffolding) 1576.1, 2010 and Scaffolding Code of Practice 2009-Safe work Australia.

3 RELEVANT BACKGROUND INFORMATION

3.1 The site is bounded by Sydney Harbour, Burwood Road, Duke Street and Zoeller Street. The site is currently an industrial area that consists of large factory and warehouse buildings and associated offices. Car parking is located on the northern side of the main buildings and the area has several open space areas that have been planted with mixture of native and exotic tree species with lawn areas adjoining the harbor. There does not appear to have been any particular planting theme for the site and trees have been removed and replaced as required.

3.2 Environmental Significance: The City of Canada Bay Council prohibits the ring barking, cutting down, lopping, removing, injuring or wilful destruction of any tree, or any part of the tree, if:

- (a) The tree has a height of, or greater than, four (4) metres;
- (b) The tree has a trunk girth of, or greater than, 500mm at any point; or
- (c) The tree is a cycad or mangrove, irrespective of its dimensions, except with the express written consent of the Council.

3.3 Illegal tree removal: Damaging or removing trees can result in heavy fines. Local Government does have the authority to issue on the spot fines known as penalty infringement notices (PINS) starting from \$3,000 or can elect to have a potential tree damaging incident addressed in the Local Court. Recent cases, for example, include two (2) mature trees removed for development (Sutherland Shire Council (SSC) v Palamara, 2008) costing \$4,500 in fines and \$5,000 in court costs. SSC v El-Hage, 2010 concerning illegal tree removal of a single tree costing \$31,500 in fines and \$5,000 in costs. Poisoning trees can also incur substantial fines (SSC v Hill) resulted in a single tree fine that totalled \$14,000 plus a \$10,000 bond for a replacement tree. All of the above cases resulted in a criminal conviction for the guilty parties.

- 3.4 The Site Trees:** The site was inspected on 23 March 2016. Each tree has been given a unique number for this site and can be viewed on the Tree Location Plan (Appendix 1). This plan is based on the plan undertaken by CMS Surveyors Pty Limited marked DWG # 13040 detail issue 1 dated 12/05.15. Tree locations can be seen in the Tree Location Plan (Appendix 1).
- 3.5** Trees 1-30 are located on the southern side of the site, consisting mostly of conifers and a single specimen Jacaranda (*Jacaranda mimosifolia*) near the main security entry on Burwood Road (Tree 1). This tree is in good health and condition although it does have some quite low lying lateral branches (Plate 1). The main trunk, first and second order branches are free of any cracks, splits or fruiting bodies. New extension growth was noted. The basal area and woody root zone were free of any ground heaving, or lifting.
- 3.6** The street trees along Burwood Road are numbered as Trees 205-212. These are all Water Gums and would not be considered significant trees and could readily be replaced, however they are Council property.
- 3.7** Along the western boundary is a large screen planting (Plate 2) of native and exotic tree species consisting of mature trees including watergum, Jacaranda (*Jacaranda mimosifolia*), Podocarpus, Gum trees (*Eucalyptus sp.*), Brush Box (*Lophostemon confertus*), Oleander shrubs. Generally, these trees are in good health and condition. As individual specimens, these trees are not particularly significant, however as a group they certainly form a good screening of vegetation between the residential dwellings of Duke Street and the warehouse area. Some of the adjoining properties have large trees close to the boundary. These are numbered as Trees 46 and 52. These trees located on the adjoining properties are in good health and condition and would be considered significant. No building works should occur within eight (8) metres of these trees as measured from the centre of each tree. The TPZ's for these trees will need to be implemented on any designs so that irreparable damage does not occur to them. These trees are within two (2) metres of the boundary fences.

- 3.8** Along the northern border of the site are Trees 72, 73, 78, 84 and 85. These trees are all large *Eucalyptus* species that appear to be in good health and condition. These trees are growing within the Golf Course and will be affected by the construction of a new road.
- 3.9** The eastern side of the site consists of a long narrow driveway extending from the security gate on Burwood Road (Plate 3). It has been densely planted with a mix of Broad-leaved Paperbark (*Melaleuca quinquenervia*), Alder (*Alnus jorullensis*) trees and conifers that are generally in fair to good condition with several poor specimens.
- 3.10** The driveway leads to a large open field area that has Tree 184 (Plate 4), a large mature Hills Weeping Fig (*Ficus microcarpa* var. 'Hillii'). This tree is the largest tree on site and forms a very prominent feature tree. This tree is in excellent health and condition, free of any cracks, splits and fruiting bodies. The woody root zone around the base of the tree has been mulched. It has been well cared for and as a result is certainly worth keeping if possible. It should be noted that this tree species is not indigenous to the Sydney area. The north-eastern corner of the site, around Tree 184, is densely planted forming a thick screen to adjoining residential units. The north-western area contains a mixture of She Oak (*Casuarina* sp.) and Gum trees (*Eucalyptus* sp.). These trees are all in good health and condition. The main car park area has been mostly planted with Broad-leaved Paperbark (*Melaleuca quinquenervia*), all approximately spaced 2-3 metres apart, in varying sizes ranging from 200mm - 450mm stem diameter (Plate 5). These trees are all in good health and condition. Damage to the surrounding asphalt, kerb and gutter is occurring due to the small planter beds these trees are planted in. Also in the car park are two (2) Lemon-scented Gum Tree (*Corymbia citridora*). These are numbered as follows Trees 137 and 138 (Plate 6). These trees are all in good health and condition, free of cracks, splits and fruiting bodies. This species will not tolerate works over the root zone or level changes. These specimens will be approximately 20-30 years old.

- 3.11** Trees 191 and 192 are located within public open space however they are allocated within the boundaries of the site, growing on the foreshore edge (Plate 7). These trees are single specimens of Port jackson fig (*Ficus rubiginosa*) and Swamp she oak (*Casuarina glauca*). These trees are in good health and condition. The main trunk, first and second order branches are free of any cracks, splits or fruiting bodies. New extension growth was noted. The basal area and woody root zone were free of any ground heaving, or lifting. These trees could be replaced if required as they are less than 15 years old.
- 3.12 Exempt trees:** Canada Bay Council lists several species of trees as being exempt from the provisions of the Development Control Plan (DCP). Trees species identified as *Oleander sp*, Cocos palm (*Syagrus romanzoffiana*) and Alder (*Alnus jorullensis*) are all present on site. These trees are numbered as 144, 189, 190, 196, 198 and 199 (Cocos) and Trees 145, 146, 147, 151, 154, 161, 162 and 163 are Alder trees.
- 3.13** Trees numbered as 98 and 182 are memorial trees as evidenced by small plaques at the base. They appear to be former staff members at the factory. Tree 98 is a small struggling Swamp mahogany (*Eucalyptus robusta*) only in fair condition. Tree 182 is a small Silky oak (*Grevillea robusta*) that has the main central leader dying, most likely from old storm damage.

4 RECOMMENDATIONS

- 4.1** Of the two hundred and twelve (212) trees assessed for this report many are in a poor condition or have been overplanted to an extent where they have become suppressed. Tree 1, the large mature Jacaranda by the front gate is significant. This tree will have an extensive root system that will extend far beyond the drip line as shown in Appendix 8. The proposed building near this tree is very close and extensive pruning of the canopy to comply with scaffolding standards will not allow much of a specimen to be retained. Unfortunately, as it is surrounded by various levels and concrete structures retaining this tree will be difficult.
- 4.2** The large group of Trees numbered as 34-66 along the western boundary that form a large screen to the site appear possible to retain. The grafted root zones and codominant canopies will not allow any form of services or stormwater works through this area if they are to be retained. The TPZ distances in the Tree Schedule (Appendix 1) should be used should any potential works fall near these trees.
- 4.3** There are some clumps of trees along the northern section of the site that border the Golf Course with some being located on the Golf course. These are groups 69-71, 76-79 and 80-85. These trees will all be impacted by the extension of Zoeller Street. Kerb, guttering and drainage works will not allow for any of these trees to be retained.
- 4.4** Trees within the main car park area would suffer extensive root damage removing surrounding asphalt and concrete. Woody roots and fine feeder roots would be damaged, making long term viability of any of these trees almost impossible to retain.
- 4.5** Trees 167-190 and 88-102 are located around the lawn area and fronting the foreshore area. Although over planted these trees are mostly in good health and condition and are worthy of retention. Tree 184, the large mature Hills Fig is certainly worth retaining, if possible. At present Tree 184 is proposed to be relocated within the site. A site specific tree relocation specification will be required for a tree of this size.

- 4.6** Trees numbered to be retained are numbered as 34-66, 88-91, 93, 94-101, 145-179, 184, 186-190 (191-192 offsite) , 206 and 207. Tree 184 may be relocated within the site. All other trees are to be removed. Trees to be retained should be fenced prior to demolition works occurring.
- 4.7** A Project Arborist should be appointed to oversee the arboricultural related works for the project. The Project Arborist should be used for arboricultural certification services and also used as a point of contact should any questions arise during the project. As specified in AS 4970, 2009, a Project Arborist is a person with a minimum Australian Qualification Framework (AQF) level 5 Diploma of Arboriculture or Horticulture qualification.

5 TREE PROTECTION

- 5.1 Trees to be protected:** The site trees to be retained will be required to be fenced for protection. All fencing shall be installed as specified in Section 5.2 (Tree Protection – Implementation of Tree Protection Zone). Indicative locations of the fencing are shown in the Tree Protection Plan (Appendix 1).
- 5.2 Implementation of Tree Protection Zone:** All tree protection works should be carried out before the start of demolition or building work. It is recommended that chain mesh fencing with a minimum height of 1.8 metres be erected as shown in the Tree Protection Plan (Appendix 1). Specifications for this fencing are shown in Tree Protection Fencing Specifications (Appendix 5).
- 5.3 Instructional videos:** Alternatively, you can view the Moore Trees short instructional films on the links below. These films are a quick onsite reference for builders, project managers and architects.

Film #1, Trunk Protection

<https://www.youtube.com/watch?v=ehcFre6bp74>

Film #2, Tree Protection Fencing

<https://www.youtube.com/watch?v=ffMabxLN9nU>

- 5.4 The Tree Protection Zone (TPZ) and Structural Root Zone (SRZ):** The TPZ is implemented to ensure the protection of the trunk and branches of the subject tree. The TPZ is based on the Diameter at Breast Height (DBH) of the tree. The SRZ is also a radial measurement from the trunk used to protect and restrict damage to the roots of the tree.

The Tree Protection Zone (TPZ) and Structural Root Zone (SRZ) have been measured from the centre of the trunk. TPZ distances are all listed in the Tree Schedule (Appendix 2). The following activities shall be avoided within the TPZ and SRZ of the trees to be retained;

- Erecting site sheds or portable toilets.

- Trenching, ripping or cultivation of soil (with the exception of approved foundations and underground services).
- Soil level changes or fill material (pier and beam or suspended slab construction are acceptable).
- Storage of building materials.
- Disposal of waste materials, solid or liquid.

5.5 Tree Damage: If the retained trees are damaged a qualified Arborist should be contacted as soon as possible. The Arborist will recommend remedial action so as to reduce any long term adverse effect on the tree's health.

5.6 Signage: It is recommended that signage is attached to the tree protection fencing. A sample sign has been attached in Appendix 6. This sign may be copied and laminated then attached to any TPZ fencing. This sign should be attached at 15 metre intervals.

5.7 Root Pruning: If excavations are required within a TPZ this excavation shall be done by hand to expose any roots. Any roots under fifty (50) millimetres in diameter may be pruned cleanly with a sharp saw. Tree root systems are essential for the health and stability of the tree. If hand excavation is not possible then alternatives should be used such as hydro excavation or other non-invasive excavation technologies.

5.8 Arborist Certification: It is recommended that the developer supply Council or the Principal Certifying Authority with certification from the Project Arborist three (3) times during the construction phase of the development in order to verify that retained trees have been correctly retained and protected as per the conditions of consent and Arborist's recommendations. The certification is to be conducted by a Qualified Consulting Arborist with AQF level 5 qualifications that has current membership with either Arboriculture Australia (AA) or Institute of Australian Consulting

Arboriculturists (IACA). Arborist certification is recommended:

- (1) Before the commencement of demolition or construction to confirm the fencing has been installed;
- (2) At mid-point of the construction phase;
- (3) At completion of the construction phase.

If you have any questions in relation to this report please contact me.



Paul Vezgoff

Consulting Arborist

Dip Arb (Dist), Arb III, Hort cert, AA, ISA

26th July 2018



www.mooretrees.com.au

6 IMAGES



Plate 1: Trees located along the southern boundary near the entry gate. Tree 1 is to the right of image. P. Vezgoff.



Plate 2: Trees 33-67 along the western boundary. P. Vezgoff.



Plate 3: Trees 145-166 along the driveway entry. P. Vezgoff.



Plate 4: Tree 184, the large specimen tree. P. Vezgoff.



Plate 5: Car park trees densely planted. P. Vezgoff.



Plate 6: Single specimen trees within the car park such as Tree 138. P. Vezgoff.



Plate 7: Trees 91 and 92 located on the foreshore edge. P. Vezgoff.

Appendix 1

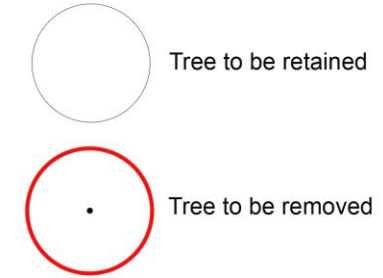
Plan 1

Tree Protection Plan



Tree protection plan

Moore Trees



Tree 184 to be relocated within the site.
Refer to site specific tree relocation specification.

Fence. Implementation of tree protection zone (TPZ). All tree protection works should be carried out before the start of demolition or building works. It is recommended that chain mesh fencing with a minimum height of 1.8 metres be erected



Date: 5.9.19
 Drawn: P.Vezgoff
 Site Address: 160 Burwod Road
 Concord NSW 2137

Appendix 2

Tree health & condition
assessment schedule

TREE HEALTH AND CONDITION ASSESSMENT SCHEDULE – 160 Burwood Road, Concord

Tree	Species	Height (m)	Spread (m)	DBH (mm)	Live canopy %	Defects	SULE	Condition	Age	Comments	TPZ (mm)
1	Jacaranda (Jacaranda mimosifolia)	12	4	600	80	Dead wood >50mm	1a >40 years	Good	Mature		7200
2	Hinoki cypress (<i>Chamaecyparis obtuse</i> 'Crippsii')	5	2	150	60	No visual defects	2a May only live for 15-40 years	Good	Mature		1800
3	Hinoki cypress (<i>Chamaecyparis obtuse</i> 'Crippsii')	6	3	200	90	No visual defects	2a May only live for 15-40 years	Good	Mature		2400
4	Hinoki cypress (<i>Chamaecyparis obtuse</i> 'Crippsii')	6	3	200	90	No visual defects	2a May only live for 15-40 years	Good	Mature		2400
5	Hinoki cypress (<i>Chamaecyparis obtuse</i> 'Crippsii')	6	3	200	90	No visual defects	2a May only live for 15-40 years	Good	Mature		2400
6	Magnolia solangiana	5	3	100	0	No visual defects	2a May only live for 15-40 years	Good	Mature		1200
7	Hinoki cypress (<i>Chamaecyparis obtuse</i> 'Crippsii')	6	3	200	90	No visual defects	2a May only live for 15-40 years	Good	Mature		2400
8	Hinoki cypress (<i>Chamaecyparis obtuse</i> 'Crippsii')	6	3	200	90	No visual defects	2a May only live for 15-40 years	Good	Mature		2400
9	Hinoki cypress (<i>Chamaecyparis obtuse</i> 'Crippsii')	6	3	200	90	No visual defects	2a May only live for 15-40 years	Good	Mature		2400
10	Hinoki cypress (<i>Chamaecyparis obtuse</i> 'Crippsii')	6	3	200	90	No visual defects	2a May only live for 15-40 years	Good	Mature		2400
11	Magnolia solangiana	5	3	100	0	No visual defects	2a May only live for 15-40 years	Good	Mature		1200
12	Hinoki cypress (<i>Chamaecyparis obtuse</i> 'Crippsii')	6	3	200	90	No visual defects	2a May only live for 15-40 years	Good	Mature		2400

Tree	Species	Height (m)	Spread (m)	DBH (mm)	Live canopy %	Defects	SULE	Condition	Age	Comments	TPZ (mm)
13	Hinoki cypress (<i>Chamaecyparis obtuse</i> 'Crippsii')	6	3	200	90	No visual defects	2a May only live for 15-40 years	Good	Mature		2400
14	Hinoki cypress (<i>Chamaecyparis obtuse</i> 'Crippsii')	6	3	200	90	No visual defects	2a May only live for 15-40 years	Good	Mature		2400
15	Hinoki cypress (<i>Chamaecyparis obtuse</i> 'Crippsii')	6	3	200	90	No visual defects	2a May only live for 15-40 years	Good	Mature		2400
16	Magnolia solangiana	5	3	100	0	No visual defects	2a May only live for 15-40 years	Good	Mature		1200
17	Hinoki cypress (<i>Chamaecyparis obtuse</i> 'Crippsii')	6	3	200	90	No visual defects	2a May only live for 15-40 years	Good	Mature		2400
18	Hinoki cypress (<i>Chamaecyparis obtuse</i> 'Crippsii')	6	3	200	90	No visual defects	2a May only live for 15-40 years	Good	Mature		2400
19	Hinoki cypress (<i>Chamaecyparis obtuse</i> 'Crippsii')	6	3	200	90	No visual defects	2a May only live for 15-40 years	Good	Mature		2400
20	Hinoki cypress (<i>Chamaecyparis obtuse</i> 'Crippsii')	6	3	200	90	No visual defects	2a May only live for 15-40 years	Good	Mature		2400
21	Magnolia solangiana	5	3	100	0	No visual defects	2a May only live for 15-40 years	Good	Mature		1200
22	Hinoki cypress (<i>Chamaecyparis obtuse</i> 'Crippsii')	6	3	200	90	No visual defects	2a May only live for 15-40 years	Good	Mature		2400
23	Hinoki cypress (<i>Chamaecyparis obtuse</i> 'Crippsii')	6	3	200	90	No visual defects	2a May only live for 15-40 years	Good	Mature		2400
24	Hinoki cypress (<i>Chamaecyparis obtuse</i> 'Crippsii')	6	3	200	90	No visual defects	2a May only live for 15-40 years	Good	Mature		2400
25	Hinoki cypress (<i>Chamaecyparis obtuse</i> 'Crippsii')	6	3	200	90	No visual defects	2a May only live for 15-40 years	Good	Mature		2400
26	Magnolia solangiana	5	3	100	0	No visual defects	2a May only live for 15-40 years	Good	Mature		1200
27	Hinoki cypress (<i>Chamaecyparis obtuse</i> 'Crippsii')	6	3	200	90	No visual defects	2a May only live for 15-40 years	Good	Mature		2400
28	Photinia sp	5	3	100	0	No visual defects	2a May only live for 15-40 years	Good	Mature		1200

Tree	Species	Height (m)	Spread (m)	DBH (mm)	Live canopy %	Defects	SULE	Condition	Age	Comments	TPZ (mm)
29	Thuja sp	9	3	350	90	No visual defects	2a May only live for 15-40 years	Good	Mature		4200
30	Thuja sp	9	3	350	90	No visual defects	2a May only live for 15-40 years	Good	Mature		4200
31	Melaleuca bracteata	7	3	200	70	No visual defects	2a May only live for 15-40 years	Good	Mature		2400
32	Melaleuca bracteata	7	3	200	70	No visual defects	2a May only live for 15-40 years	Good	Mature		2400
33	Chinese elm (Ulmus parvifolia)	8	4	500	0	No visual defects	1a >40 years	Good	Mature	Previous topping	6000
34	Camphor laurel (Cinnamomum camphora)	10	6	400	80	No visual defects	2a May only live for 15-40 years	Good	Mature		4800
35	Broad-leaved Paperbark (<i>Melaleuca quinquenervia</i>)	12	4	900	90	Included codom stems	2a May only live for 15-40 years	Good	Mature		10800
36	Podocarpus falcatus	6	3	400	0	No visual defects	2a May only live for 15-40 years	Good	Mature		4800
37	Brushbox (Lophostemon confertus)	10	5	500	90	No visual defects	2a May only live for 15-40 years	Good	Mature		6000
38	Agonis flexuosa	4	3	200	80	No visual defects	2a May only live for 15-40 years	Good	Mature		2400
39	Chinese elm (Ulmus parvifolia)	10	5	600	70	No visual defects	2a May only live for 15-40 years	Good	Mature		7200
40	Podocarpus falcatus	10	5	500	90	No visual defects	2a May only live for 15-40 years	Good	Mature		6000
41	Crepe Myrtle (<i>Lagerstroemia indica</i>)	5	2	100	80	No visual defects	2a May only live for 15-40 years	Good	Mature		1200
42	Agonis flexuosa	4	2	350	60	No visual defects	2a May only live for 15-40 years	Poor	Mature		4200
43	Brushbox (Lophostemon confertus)	10	5	700	90	No visual defects	2a May only live for 15-40 years	Good	Mature		8400

Tree	Species	Height (m)	Spread (m)	DBH (mm)	Live canopy %	Defects	SULE	Condition	Age	Comments	TPZ (mm)
44	Podocarpus falcatus	5	3	400	0	No visual defects	2a May only live for 15-40 years	Good	Mature		4800
45	Weeping bottle brush (Callistemon viminalis)	6	3	400	60	Included codom stems	1a >40 years	Poor	Mature		4800
46	Hill's weeping fig (Ficus microcarpa var. Hillii)	18	10	1500	90	Included codom stems	2a May only live for 15-40 years	Good	Mature	In neighbour's property	18000
47	Willow Bottle brush (Callistemon salignus)	7	3	200	80	Included codom stems	1a >40 years	Good	Mature		2400
48	Hackberry (Celtis australis)	10	3	300	0	Included codom stems	2a May only live for 15-40 years	Good	Mature		3600
49	Agonis flexuosa	6	2	100	0	Included codom stems	2b 40+, safety or nuisance	Poor	Mature	Coppice regrowth from old stump	1200
50	Water gum (Tristaniopsis laurina)	5	3	300	80	Open cavity with evidence of decay	2a May only live for 15-40 years	Good	Mature		3600
51	Podocarpus falcatus	10	4	700	90	No visual defects	2a May only live for 15-40 years	Good	Mature		8400
52	Acmena smithii	10	4	600	90	No visual defects	2a May only live for 15-40 years	Good	Mature	In neighbour's property	7200
53	Brushbox (Lophostemon confertus)	8	4	400	80	No visual defects	2a May only live for 15-40 years	Good	Mature		4800
54	Podocarpus falcatus	12	6	1200	90	No visual defects	2a May only live for 15-40 years	Good	Mature		14400
55	Red ironbark (Eucalyptus sideroxylon)	15	6	800	90	No visual defects	2a May only live for 15-40 years	Good	Mature		9600

Tree	Species	Height (m)	Spread (m)	DBH (mm)	Live canopy %	Defects	SULE	Condition	Age	Comments	TPZ (mm)
56	Jacaranda (Jacaranda mimosifolia)	12	6	500	90	No visual defects	2a May only live for 15-40 years	Good	Mature		6000
57	Water gum (<i>Tristaniaopsis laurina</i>)	5	2	250	0	Stem wounds	2a May only live for 15-40 years	Good	Mature		3000
58	Podocarpus falcatus	12	5	700	90	No visual defects	2a May only live for 15-40 years	Good	Mature		8400
59	Weeping bottle brush (<i>Callistemon viminalis</i>)	8	4	500	80	No visual defects	2a May only live for 15-40 years	Good	Mature		6000
60	Brushbox (<i>Lophostemon confertus</i>)	8	3	450	80	No visual defects	2a May only live for 15-40 years	Good	Mature		5400
61	Agonis flexuosa	5	2	600	60	No visual defects	1a >40 years	Poor	Mature	Server split in trunk	7200
62	Willow Bottle brush (<i>Callistemon salignus</i>)	4	2	300	80	No visual defects	2a May only live for 15-40 years	Good	Mature		3600
63	Water gum (<i>Tristaniaopsis laurina</i>)	8	4	300	80	No visual defects	2a May only live for 15-40 years	Good	Mature		3600
64	Willow Bottle brush (<i>Callistemon salignus</i>)	8	3	350	80	Included bark	2a May only live for 15-40 years	Good	Mature		4200
65	Brushbox (<i>Lophostemon confertus</i>)	8	3	500	80	No visual defects	2a May only live for 15-40 years	Good	Mature		6000
66	Broad leaved paperbark (<i>Melaleuca quinquenervia</i>)	10	3	600	90	No visual defects	2a May only live for 15-40 years	Good	Mature		7200
67	Lemon-scented gum tree (<i>Corymbia citriodora</i>)	18	10	900	100	No visual defects	2a May only live for 15-40 years	Good	Mature		10800
68	Cupresses sp.	8	1.5	300	70	No visual defects	2a May only live for 15-40 years	Good	Mature	X 6 as a hedge	3600
69	Paperbark (<i>Melaleuca armillaris</i>)	8	3	300	100	No visual defects	2a May only live for 15-40 years	Good	Mature		3600
70	Silky oak (<i>Grevillea robusta</i>)	12	3	500	80	Included codom stems	2a May only live for 15-40 years	Good	Mature		6000

Tree	Species	Height (m)	Spread (m)	DBH (mm)	Live canopy %	Defects	SULE	Condition	Age	Comments	TPZ (mm)
71	Willow gum (<i>Eucalyptus scoparia</i>)	15	6	800	70	No visual defects	2a May only live for 15-40 years	Good	Mature		9600
72	Small-leafed Peppermint (<i>Eucalyptus nicholii</i>)	6	3	400	80	Dead wood >50mm	1a >40 years	Good	Mature		4800
73	Brushbox (<i>Lophostemon confertus</i>)	12	4	500	0	Included codom stems	1a >40 years	Good	Mature	Multi stemmed	6000
74	Native daphne (<i>Pittosporum undulatum</i>)	8	5	350	0	No visual defects	2a May only live for 15-40 years	Good	Mature	Broad open specimen	4200
75	Oleander (<i>Nerium oleander</i>)	5	4	0	90	No visual defects	2a May only live for 15-40 years	Good	Mature		0
76	Silky oak (<i>Grevillea robusta</i>)			0	0	No visual defects	1a >40 years	Good	Mature	Tree is dead	0
77	Lemon-scented gum tree (<i>Corymbia citriodora</i>)	12	6	500	80	No visual defects	2a May only live for 15-40 years	Good	Mature		6000
78	Small-leafed Peppermint (<i>Eucalyptus nicholii</i>)	15	4	800	70	Dead wood <50mm	2a May only live for 15-40 years	Good	Mature	on golf course	9600
79	Paperbark (<i>Melaleuca armillaris</i>)	7	3	200	80	No visual defects	1a >40 years	Good	Mature		2400
80	Jacaranda (<i>Jacaranda mimosifolia</i>)	12	5	400	90	Included codom stems	2a May only live for 15-40 years	Good	Mature		4800
81	Jacaranda (<i>Jacaranda mimosifolia</i>)	12	5	500	90	No visual defects	2a May only live for 15-40 years	Good	Mature		6000
82	Broad leaved paperbark (<i>Melaleuca quinquenervia</i>)	7	3	400	80	No visual defects	1a >40 years	Good	Mature		4800
83	Ficus sp.	12	6	400	0	Included codom	2a May only live for 15-40 years	Good	Mature		4800

Tree	Species	Height (m)	Spread (m)	DBH (mm)	Live canopy %	Defects	SULE	Condition	Age	Comments	TPZ (mm)
						stems					
84	Lemon-scented gum tree (Corymbia citriodora)	20	10	600	90	No visual defects	2a May only live for 15-40 years	Good	Mature	On golf course	7200
85	Lemon-scented gum tree (Corymbia citriodora)	20	8	600	0	Included codom stems	2a May only live for 15-40 years	Good	Mature	Included stem 6m up	7200
86	Lemon-scented gum tree (Corymbia citriodora)	18	5	600	90	Included codom stems	2a May only live for 15-40 years	Good	Mature		7200
87	Sydney red gum (Angophora costata)	10	5	600	80	No visual defects	2a May only live for 15-40 years	Good	Mature		7200
88	Sydney blue gum (Eucalyptus saligna)	8	2	250	70	No visual defects	1a >40 years	Poor	Mature	Major borer damage	3000
89	Spotted gum (Corymbia maculata)	12	3	350	80	Included codom stems	2a May only live for 15-40 years	Good	Mature		4200
90	Acacia baileyana	5	2	300	40	No visual defects	1a >40 years	Poor	Mature	Nearly dead	3600
91	Swamp oak (Casurina glauca)	12	3	500	80	No visual defects	2a May only live for 15-40 years	Good	Mature		6000
92	Swamp oak (Casurina glauca)	12	3	500	80	No visual defects	2a May only live for 15-40 years	Good	Mature		6000
93	Swamp oak (Casurina glauca)	12	3	500	80	No visual defects	2a May only live for 15-40 years	Good	Mature		6000
94	Swamp oak (Casurina glauca)	12	3	500	80	No visual defects	2a May only live for 15-40 years	Good	Mature		6000
95	Acacia baileyana			0	0	No visual defects	1a >40 years	Good	Mature	Dead	0
96	Swamp mahogany (Eucalyptus robusta)	15	6	650	0	Included codom stems	2a May only live for 15-40 years	Good	Mature		7800

Tree	Species	Height (m)	Spread (m)	DBH (mm)	Live canopy %	Defects	SULE	Condition	Age	Comments	TPZ (mm)
97	Lemon-scented gum tree (Corymbia citriodora)	6	4	400	0	No visual defects	2a May only live for 15-40 years	Poor	Mature	Tree appears mutated	4800
98	Swamp mahogany (Eucalyptus robusta)	8	3	200	80	No visual defects	2a May only live for 15-40 years	Poor	Sapling	Tree is a memorial tree with a plaque	2400
99	Swamp she oak (Casuarina glauca)	12	4	600	80	No visual defects	2a May only live for 15-40 years	Good	Mature		7200
100	Swamp oak (Casurina glauca)	12	3	500	80	No visual defects	2a May only live for 15-40 years	Good	Mature		6000
101	Swamp oak (Casurina glauca)	12	3	500	80	No visual defects	2a May only live for 15-40 years	Good	Mature		6000
102	Swamp oak (Casurina glauca)	12	3	500	80	No visual defects	2a May only live for 15-40 years	Good	Mature		6000
103	Willow Bottle brush (Callistemon salignus)	5	3	200	0	No visual defects	2a May only live for 15-40 years	Good	Mature	All basal suckers	2400
104	Lemon-scented gum tree (Corymbia citriodora)	10	3	400	90	No visual defects	2a May only live for 15-40 years	Good	Mature		4800
105	Broad leaved paperbark (Melaleuca quinquenervia)	12	4	600	90	Included codom stems	2a May only live for 15-40 years	Good	Mature		7200
106	Broad leaved paperbark (Melaleuca quinquenervia)	12	4	600	90	Included codom stems	2a May only live for 15-40 years	Good	Mature		7200
107	Broad leaved paperbark (Melaleuca quinquenervia)	12	4	600	90	Included codom stems	2a May only live for 15-40 years	Good	Mature		7200
108	Sydney red gum (Angophora costata)	5	3	150	80	No visual defects	2a May only live for 15-40 years	Good	Mature		1800
109	Broad leaved paperbark (Melaleuca quinquenervia)	12	3	600	80	No visual defects	2a May only live for 15-40 years	Good	Mature		7200
110	Broad leaved paperbark (Melaleuca quinquenervia)	12	3	200	80	No visual defects	2a May only live for 15-40 years	Good	Mature		2400

Tree	Species	Height (m)	Spread (m)	DBH (mm)	Live canopy %	Defects	SULE	Condition	Age	Comments	TPZ (mm)
111	Broad leaved paperbark (Melaleuca quinquenervia)	12	3	700	80	No visual defects	2a May only live for 15-40 years	Good	Mature		8400
112	Broad leaved paperbark (Melaleuca quinquenervia)	12	3	200	80	No visual defects	2a May only live for 15-40 years	Good	Mature		2400
112	Broad leaved paperbark (Melaleuca quinquenervia)	12	3	200	80	No visual defects	2a May only live for 15-40 years	Good	Mature		2400
113	Broad leaved paperbark (Melaleuca quinquenervia)	12	3	200	80	No visual defects	2a May only live for 15-40 years	Good	Mature		2400
114	Lemon-scented gum tree (Corymbia citriodora)	15	6	800	80	No visual defects	2a May only live for 15-40 years	Good	Mature		9600
115	Deodar Cedar (<i>Cedrus deodara</i>)	7	3	200	90	No visual defects	2a May only live for 15-40 years	Good	Mature		2400
116	Lemon-scented gum tree (Corymbia citriodora)	12	6	400	70	Open cavity with evidence of decay	2a May only live for 15-40 years	Good	Mature		4800
117	Broad leaved paperbark (Melaleuca quinquenervia)	12	3	400	80	No visual defects	2a May only live for 15-40 years	Good	Mature		4800
118	Broad leaved paperbark (Melaleuca quinquenervia)	12	3	600	80	Included codom stems	2a May only live for 15-40 years	Good	Mature		7200
119	Broad leaved paperbark (Melaleuca quinquenervia)	12	3	500	80	Included codom stems	2a May only live for 15-40 years	Good	Mature		6000
120	Broad leaved paperbark (Melaleuca quinquenervia)	12	3	500	80	Included codom stems	2a May only live for 15-40 years	Good	Mature		6000
121	Broad leaved paperbark (Melaleuca quinquenervia)	12	3	1000	80	Included codom stems	2a May only live for 15-40 years	Good	Mature		12000

Tree	Species	Height (m)	Spread (m)	DBH (mm)	Live canopy %	Defects	SULE	Condition	Age	Comments	TPZ (mm)
122	Broad leaved paperbark (Melaleuca quinquenervia)	12	3	600	80	Included codom stems	2a May only live for 15-40 years	Good	Mature		7200
123	Broad leaved paperbark (Melaleuca quinquenervia)	7	3	400	80	Included codom stems	2a May only live for 15-40 years	Good	Mature		4800
124	Broad leaved paperbark (Melaleuca quinquenervia)	7	3	400	80	Included codom stems	2a May only live for 15-40 years	Good	Mature		4800
125	Broad leaved paperbark (Melaleuca quinquenervia)	7	3	400	80	Included codom stems	2a May only live for 15-40 years	Good	Mature		4800
126	Broad leaved paperbark (Melaleuca quinquenervia)	7	3	400	80	Included codom stems	2a May only live for 15-40 years	Good	Mature		4800
127	Bangalay (Eucalyptus botryoides)	12	3	400	70	Stem wounds	2a May only live for 15-40 years	Good	Mature		4800
128	Broad leaved paperbark (Melaleuca quinquenervia)	7	3	200	80	Included codom stems	2a May only live for 15-40 years	Good	Mature		2400
129	Broad leaved paperbark (Melaleuca quinquenervia)	7	3	400	80	Included codom stems	2a May only live for 15-40 years	Good	Mature		4800
130	Broad leaved paperbark (Melaleuca quinquenervia)	7	3	400	80	Included codom stems	2a May only live for 15-40 years	Good	Mature		4800
131	Bangalay (Eucalyptus botryoides)	8	2	150	70	Stem wounds	2a May only live for 15-40 years	Poor	Mature		1800
132	Lemon-scented gum tree (Corymbia citriodora)	8	3	400	80	No visual defects	2a May only live for 15-40 years	Good	Mature		4800
133	Lemon-scented gum tree (Corymbia citriodora)	12	3	400	80	No visual defects	2a May only live for 15-40 years	Good	Mature		4800

Tree	Species	Height (m)	Spread (m)	DBH (mm)	Live canopy %	Defects	SULE	Condition	Age	Comments	TPZ (mm)
134	Broad leaved paperbark (Melaleuca quinquenervia)	5	2	150	0	No visual defects	2a May only live for 15-40 years	Poor	Mature		1800
135	Lemon-scented gum tree (Corymbia citriodora)	10	2	250	80	No visual defects	2a May only live for 15-40 years	Good	Mature		3000
136	Broad leaved paperbark (Melaleuca quinquenervia)	7	2	400	0	Included bark	2a May only live for 15-40 years	Poor	Mature		4800
137	Lemon-scented gum tree (Corymbia citriodora)	12	10	600	80	No visual defects	2a May only live for 15-40 years	Good	Mature		7200
138	Lemon-scented gum tree (Corymbia citriodora)	15	5	500	95	No visual defects	2a May only live for 15-40 years	Good	Mature		6000
139	Weeping bottle brush (Callistemon viminalis)	6	3	150	95	No visual defects	3c Removed for a better specimen.	Good	Mature	Multi stemmed specimen	1800
140	Weeping bottle brush (Callistemon viminalis)	6	3	150	95	No visual defects	3c Removed for a better specimen.	Good	Mature	Multi stemmed specimen	1800
141	Podocarpus falcatus	8	4	200	100	No visual defects	1a >40 years	Good	Mature		2400
142	Flooded Gum (Eucalyptus grandis)	12	5	300	100	No visual defects	1a >40 years	Good	Mature		3600
143	Jacaranda (Jacaranda mimosifolia)	11	5	250	80	No visual defects	2a May only live for 15-40 years	Good	Mature		3000
144	Cocos palm (Syagrus romanzoffiana)	8	2	200	95	No visual defects	3c Removed for a better specimen.	Good	Mature		2400
145	Alnus sp	4	1.5	180	95	No visual defects	5a Small tree <5 m in height.	Fair	Mature		2160
146	Alnus sp	4	1.5	180	95	No visual defects	5a Small tree <5 m in height.	Fair	Mature		2160
147	Alnus sp	4	1.5	180	95	No visual defects	5a Small tree <5 m in height.	Fair	Mature		2160
148	Elder (Acer negundo)	6	3	350	90	No visual defects	2a May only live for 15-40 years	Fair	Mature		4200
149	Jacaranda (Jacaranda mimosifolia)	9	4.5	450	95	No visual defects	2a May only live for 15-40 years	Good	Mature	Pruned for driveway clearance	5400

Tree	Species	Height (m)	Spread (m)	DBH (mm)	Live canopy %	Defects	SULE	Condition	Age	Comments	TPZ (mm)
150	Jacaranda (Jacaranda mimosifolia)	9	2	250	95	No visual defects	2a May only live for 15-40 years	Fair	Mature		3000
151	Alnus sp	4	1.5	180	95	No visual defects	5a Small tree <5 m in height.	Fair	Mature		2160
152	Broad leaved paperbark (Melaleuca quinquenervia)	8	3	200	95	No visual defects	2a May only live for 15-40 years	Good	Mature		2400
153	Jacaranda (Jacaranda mimosifolia)	9	4.5	450	95	No visual defects	2a May only live for 15-40 years	Good	Mature	Pruned for driveway clearance	5400
154	Alnus sp	4	1.5	180	95	No visual defects	5a Small tree <5 m in height.	Fair	Mature		2160
155	Cupresses sp.	6	2	150	95	No visual defects	3c Removed for a better specimen.	Fair	Mature		1800
156	Cupresses sp.	6	2	150	95	No visual defects	3c Removed for a better specimen.	Fair	Mature		1800
157	Jacaranda (Jacaranda mimosifolia)	9	4.5	450	95	No visual defects	2a May only live for 15-40 years	Good	Mature	Pruned for driveway clearance	5400
158	Cupresses sp.	6	2	150	95	No visual defects	3c Removed for a better specimen.	Fair	Mature		1800
159	Cupresses sp.	6	2	150	95	No visual defects	3c Removed for a better specimen.	Fair	Mature		1800
160	Cupresses sp.	6	2	150	95	No visual defects	3c Removed for a better specimen.	Fair	Mature		1800
161	Alnus sp	4	1.5	180	95	No visual defects	5a Small tree <5 m in height.	Fair	Mature		2160
162	Alnus sp	8	2	180	95	No visual defects	2a May only live for 15-40 years	Fair	Mature		2160
163	Alnus sp	10	2.5	300	95	No visual defects	2a May only live for 15-40 years	Fair	Mature		3600
164	Broad leaved paperbark (Melaleuca quinquenervia)	10	3.5	350	95	No visual defects	2a May only live for 15-40 years	Good	Mature		4200
165	Broad leaved paperbark (Melaleuca quinquenervia)	10	3.5	350	95	No visual defects	2a May only live for 15-40 years	Good	Mature		4200

Tree	Species	Height (m)	Spread (m)	DBH (mm)	Live canopy %	Defects	SULE	Condition	Age	Comments	TPZ (mm)
166	Port jackson fig (Ficus rubiginosa)	12	5	600	100	No visual defects	1a >40 years	Good	Mature	On adjoining property	7200
167	Melaleuca bracteata	9	5	480	90	No visual defects	2a May only live for 15-40 years	Fair	Mature		5760
168	Cook Island Pine (Araucaria columnaris)	13	3	400	100	No visual defects	1a >40 years	Good	Mature		4800
169	Cook Island Pine (Araucaria columnaris)	13	3	400	100	No visual defects	1a >40 years	Good	Mature		4800
170	Magenta lilly pilly (Syzigium paniculatum)	7	3	280	95	No visual defects	1a >40 years	Good	Mature		3360
171	Lemon-scented gum tree (Corymbia citriodora)	17	8	800	95	No visual defects	1a >40 years	Good	Mature		9600
172	Broad leaved paperbark (Melaleuca quinquenervia)	12	3.5	250	95	No visual defects	2a May only live for 15-40 years	Good	Mature	Asymmetric lean over adjoining property.	3000
173	Silky oak (Grevillea robusta)	16	4	350	95	No visual defects	2a May only live for 15-40 years	Fair	Mature		4200
174	Silky oak (Grevillea robusta)	16	4	350	95	No visual defects	2a May only live for 15-40 years	Fair	Mature		4200
175	Broad leaved paperbark (Melaleuca quinquenervia)	12	3.5	250	95	No visual defects	2a May only live for 15-40 years	Good	Mature	Asymmetric lean over adjoining property.	3000
176	Broad leaved paperbark (Melaleuca quinquenervia)	4.5	2	150	95	No visual defects	1a >40 years	Fair	Mature		1800
177	Swamp she oak (Casuarina glauca)	11	3.5	200	95	No visual defects	1a >40 years	Good	Mature		2400
178	Broad leaved paperbark (Melaleuca quinquenervia)	13	4	350	95	No visual defects	2a May only live for 15-40 years	Good	Mature		4200
179	Broad leaved paperbark (Melaleuca quinquenervia)	4.5	2	150	95	No visual defects	1a >40 years	Fair	Mature		1800
180	Sydney blue gum (Eucalyptus saligna)	17	5	480	90	No visual defects	2a May only live for 15-40 years	Fair	Mature	Heavily pruned. Asymmetric over adjoining property.	5760
181	Cook Island Pine (Araucaria columnaris)	13	3	400	100	No visual defects	1a >40 years	Good	Mature		4800

Tree	Species	Height (m)	Spread (m)	DBH (mm)	Live canopy %	Defects	SULE	Condition	Age	Comments	TPZ (mm)
182	Silky oak (<i>Grevillea robusta</i>)	6.5	2.5	350	80	Storm damage	3c Removed for a better specimen.	Fair	Mature	Suppressed specimen. Lost central leader.	4200
183	Cook Island Pine (<i>Araucaria columnaris</i>)	18	4	450	100	No visual defects	1a >40 years	Good	Mature		5400
184	Hill's weeping fig (<i>Ficus microcarpa</i> var. <i>Hillii</i>)	16	12	1200	100	No visual defects	1a >40 years	Excellent	Mature	Large dominant feature specimen. Best tree on site.	14400
185	<i>Cedar Fig</i> (<i>Ficus superba</i> var. <i>henneana</i>)	8	7	600	95	No visual defects	1a >40 years	Good	Mature		7200
186	Cook Island Pine (<i>Araucaria columnaris</i>)	16	4	500	100	No visual defects	1a >40 years	Good	Mature		6000
187	Silky oak (<i>Grevillea robusta</i>)	11	4.5	380	95	No visual defects	2a May only live for 15-40 years	Fair	Mature		4560
188	Lemon-scented gum tree (<i>Corymbia citriodora</i>)	12	7	500	95	Storm damage	1a >40 years	Good	Mature	Old failures but not dangerous	6000
189	Cocos palm (<i>Syagrus romanzoffiana</i>)	7	2	250	100	No visual defects	3c Removed for a better specimen.	Good	Mature		3000
190	Cocos palm (<i>Syagrus romanzoffiana</i>)	7	2	250	100	No visual defects	3c Removed for a better specimen.	Good	Mature		3000
191	Swamp she oak (<i>Casuarina glauca</i>)	8	3	280	100	No visual defects	1a >40 years	Good	Mature	On harbor edge.	3360
192	Port jackson fig (<i>Ficus rubiginosa</i>)	6	5.5	450	100	No visual defects	1a >40 years	Good	Mature	On harbor edge.	5400
193	Magenta lilly pilli (<i>Syzigium paniculatum</i>)	6	3	200	95	No visual defects	2a May only live for 15-40 years	Fair	Mature		2400
194	Crepe myrtle (<i>Lagerstroemia indica</i>)	4.5	3	200	95	No visual defects	5a Small tree <5 m in height.	Fair	Mature		2400
195	Cupresses sp.	6	2	300	80	No visual defects	2a May only live for 15-40 years	Fair	Mature		3600
196	Cocos palm (<i>Syagrus romanzoffiana</i>)	5	2	200	95	No visual defects	3c Removed for a better specimen.	Fair	Mature		2400
197	Cupresses sp.	6	2	300	80	No visual defects	2a May only live for 15-40 years	Fair	Mature		3600

Tree	Species	Height (m)	Spread (m)	DBH (mm)	Live canopy %	Defects	SULE	Condition	Age	Comments	TPZ (mm)
198	Cocos palm (<i>Syagrus romanzoffiana</i>)	5	2	200	95	No visual defects	3c Removed for a better specimen.	Fair	Mature		2400
199	Cocos palm (<i>Syagrus romanzoffiana</i>)	5	2	200	95	No visual defects	3c Removed for a better specimen.	Fair	Mature		2400
200	<i>Melaleuca bracteata</i>	9	4	180	95	No visual defects	3c Removed for a better specimen.	Fair	Mature	Row of 6	2160
201	<i>Melaleuca bracteata</i>	9	4	180	95	No visual defects	3c Removed for a better specimen.	Fair	Mature		2160
202	Trident Maple (<i>Acer buergerianum</i>)	6	3	280	95	No visual defects	3c Removed for a better specimen.	Good	Mature		3360
203	False Arailia (<i>Dizygothica elegantissima</i>)	8	2.5	180	100	No visual defects	3c Removed for a better specimen.	Good	Mature		2160
204	<i>Melaleuca bracteata</i>	9	4	180	95	No visual defects	3c Removed for a better specimen.	Fair	Mature	Row of 9	2160
205	Water gum (<i>Tristaniaopsis laurina</i>)	4.5	2	150	95	No visual defects	2a May only live for 15-40 years	Good	Mature	Multi stemmed specimen. Watergum street tree.	1800
206	Jacaranda (<i>Jacaranda mimosifolia</i>)	8	3.5	200	95	No visual defects	1a >40 years	Good	Mature	Street tree	2400
207	Jacaranda (<i>Jacaranda mimosifolia</i>)	8	3.5	200	95	No visual defects	1a >40 years	Good	Mature	Street tree	2400
208	Water gum (<i>Tristaniaopsis laurina</i>)	4.5	2	150	95	No visual defects	2a May only live for 15-40 years	Good	Mature	Multi stemmed specimen. Watergum street tree.	1800
209	Water gum (<i>Tristaniaopsis laurina</i>)	4.5	2	150	95	No visual defects	2a May only live for 15-40 years	Good	Mature	Multi stemmed specimen. Watergum street tree.	1800
210	Water gum (<i>Tristaniaopsis laurina</i>)	4.5	2	150	95	No visual defects	2a May only live for 15-40 years	Good	Mature	Multi stemmed specimen. Watergum street tree.	1800
211	Water gum (<i>Tristaniaopsis laurina</i>)	4.5	2	150	95	No visual defects	2a May only live for 15-40 years	Good	Mature	Multi stemmed specimen. Watergum street tree.	1800
212	Water gum (<i>Tristaniaopsis laurina</i>)	4.5	2	150	95	No visual defects	2a May only live for 15-40 years	Good	Mature	Multi stemmed specimen. Watergum street tree.	1800

KEY

Tree No: Relates to the number allocated to each tree for the Tree Protection Plan.

Height: Height of the tree to the nearest metre.

Spread: The average spread of the canopy measured from the trunk.

DBH: Diameter at breast height. An industry standard for measuring trees at 1.4 metres above ground level, this measurement is used to help calculate Tree Protection Zones.

Live Crown Ratio: Percentage of foliage cover for a particular species.

Age Class: Young:	Recently planted tree	Semi-mature:< 20% of life expectancy
Mature:	20-90% of life expectancy	Over-mature:>90% of life expectancy

SULE: See SULE methodology in the Appendix 3

Tree Protection Zone (TPZ): The minimum area set aside for the protection of the trees trunk, canopy and root system throughout the construction process. Breaches of the TPZ will be specified in the recommendations section of the report.

Appendix 3

SULE categories (after Barrell, 2001)¹

SULE Category	Description
<i>Long</i>	<i>Trees that appeared to be retainable at the time of assessment for more than 40 years with an acceptable level of risk.</i>
1a	Structurally sound trees located in positions that can accommodate for future growth
1b	Trees that could be made suitable for retention in the long term by remedial tree care.
1c	Trees of special significance that would warrant extraordinary efforts to secure their long term retention.
<i>Medium</i>	<i>Trees that appeared to be retainable at the time of assessment for 15-40 years with an acceptable level of risk.</i>
2a	Trees that may only live for 15-40 years
2b	Trees that could live for more than 40 years but may be removed for safety or nuisance reasons
2c	Trees that could live for more than 40 years but may be removed to prevent interference with more suitable individuals or to provide for new planting.
2d	Trees that could be made suitable for retention in the medium term by remedial tree care.
<i>Short</i>	<i>Trees that appeared to be retainable at the time of assessment for 5-15 years with an acceptable level of risk.</i>
3a	Trees that may only live for another 5-15 years
3b	Trees that could live for more than 15 years but may be removed for safety or nuisance reasons.
3c	Trees that could live for more than 15 years but may be removed to prevent interference with more suitable individuals or to provide for a new planting.
3d	Trees that require substantial remedial tree care and are only suitable for retention in the short term.
<i>Remove</i>	<i>Trees that should be removed within the next five years.</i>
4a	Dead, dying, suppressed or declining trees because of disease or inhospitable conditions.
4b	Dangerous trees because of instability or loss of adjacent trees
4c	Dangerous trees because of structural defects including cavities, decay, included bark, wounds or poor form.
4d	Damaged trees that are clearly not safe to retain.
4e	Trees that could live for more than 5 years but may be removed to prevent interference with more suitable individuals or to provide for a new planting.
4f	Trees that are damaging or may cause damage to existing structures within 5 years.
4g	Trees that will become dangerous after removal of other trees for the reasons given in (a) to (f).
4h	Trees in categories (a) to (g) that have a high wildlife habitat value and, with appropriate treatment, could be retained subject to regular review.
<i>Small</i>	<i>Small or young trees that can be reliably moved or replaced.</i>
5a	Small trees less than 5m in height.
5b	Young trees less than 15 years old but over 5m in height.
5c	Formal hedges and trees intended for regular pruning to artificially control growth.

updated 01/04/01)

1 (Barrell, J. (2001) "SULE: Its use and status into the new millennium" in *Management of mature trees*, Proceedings of the 4th NAAA Tree Management Seminar, NAAA, Sydney.

Appendix 4

TPZ and SRZ methodology

Determining the Tree Protection Zone (TPZ)

The radius of the TPZ is calculated for each tree by multiplying its DBH x 12.

$$\text{TPZ} = \text{DBH} \times 12$$

Where

DBH = trunk diameter measured at 1.4 metres above ground

Radius is measured from the centre of the stem at ground level.

A TPZ should not be less than 2 metres no greater than 15 metres (except where crown protection is required.). Some instances may require variations to the TPZ.

The TPZ of palms, other monocots, cycads and tree ferns should not be less than 1 metre outside the crown projection.

Determining the Structural Root Zone (SRZ)

The SRZ is the area required for tree stability. A larger area is required to maintain a viable tree.

The SRZ only needs to be calculated when major encroachment into a TPZ is proposed.

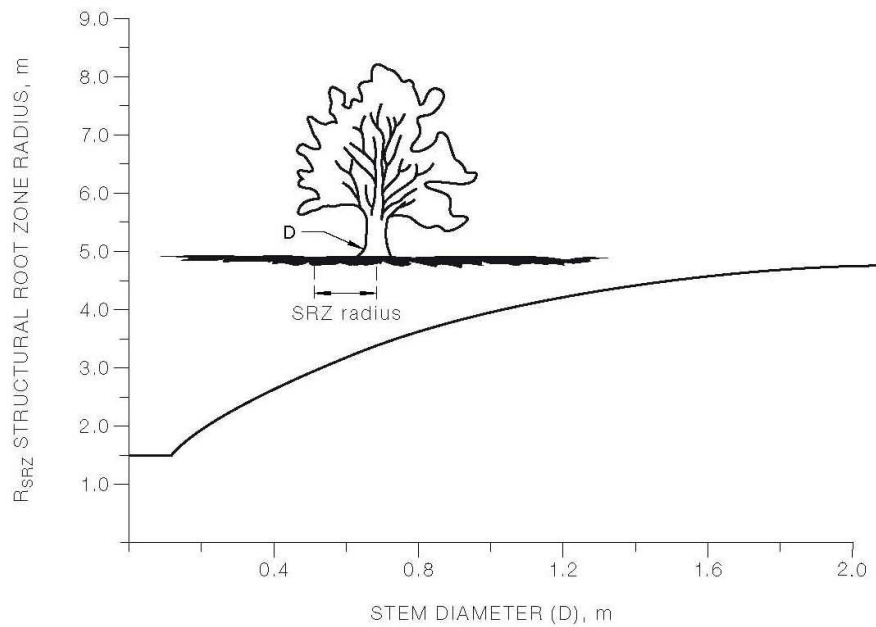
There are many factors that affect the size of the SRZ (e.g. tree height, crown area, soil type, soil moisture). The SRZ may also be influenced by natural or built structures, such as rocks and footings. An indicative SRZ radius can be determined from the trunk diameter measured immediately above the root buttress using the following formula or Figure 1. Root investigation may provide more information on the extent of these roots.

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

Where

D = trunk diameter, in m, measured above the root buttress

NOTE: The SRZ for trees with trunk diameters less than 0.15m will be 1.5m (see Figure 1).



The curve can be expressed by the following formula:
 $R_{SRZ} = (D \times 50)^{0.42} \times 0.64$

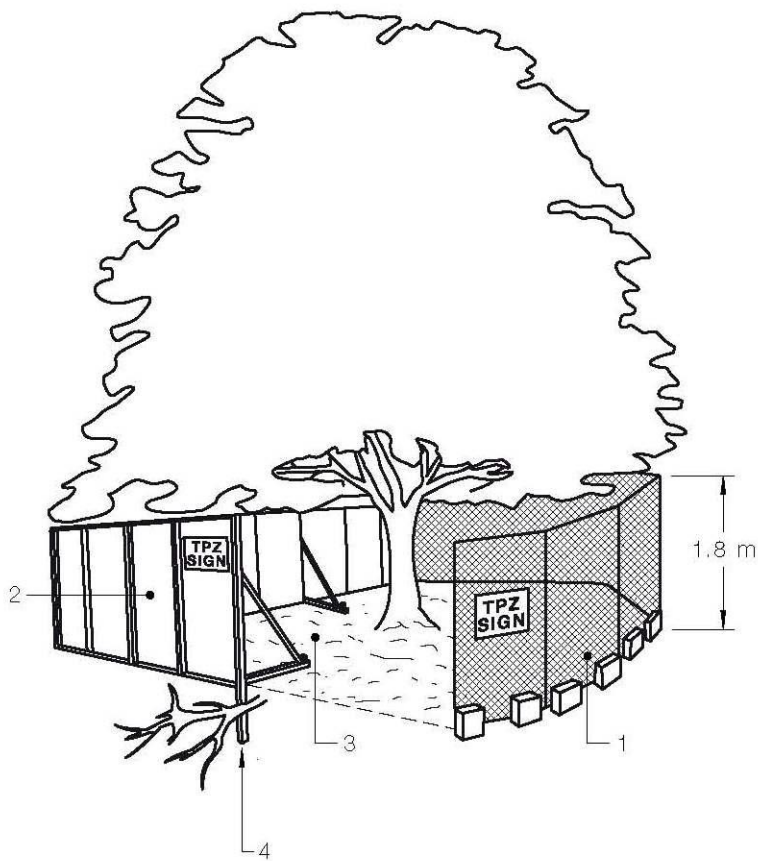
FIGURE 1 - STRUCTURAL ROOT ZONE

Notes:

- 1 R_{SRZ} is the structural root zone radius.
- 2 D is the stem diameter measured immediately above root buttress.
- 3 The SRZ for trees less than 0.15 metres diameter is 1.5 metres.
- 4 The SRZ formula and graph do not apply to palms, other monocots, cycads and tree ferns.
- 5 This does not apply to trees with an asymmetrical root plate.

Appendix 5

Tree protection fencing
specifications



LEGEND:

- 1 Chain wire mesh panels with shade cloth (if required) attached, held in place with concrete feet.
- 2 Alternative plywood or wooden paling fence panels. This fencing material also prevents building materials or soil entering the TPZ.
- 3 Mulch installation across surface of TPZ (at the discretion of the project arborist). No excavation, construction activity, grade changes, surface treatment or storage of materials of any kind is permitted within the TPZ.
- 4 Bracing is permissible within the TPZ. Installation of supports should avoid damaging roots.

Figure 1: Protective fencing as specified in AS 4970, 2009.

Appendix 6

Tree protection sign
sign sample

Tree Protection Zone

Fence not to be moved without approval from Arborist

Within this fence there is to be

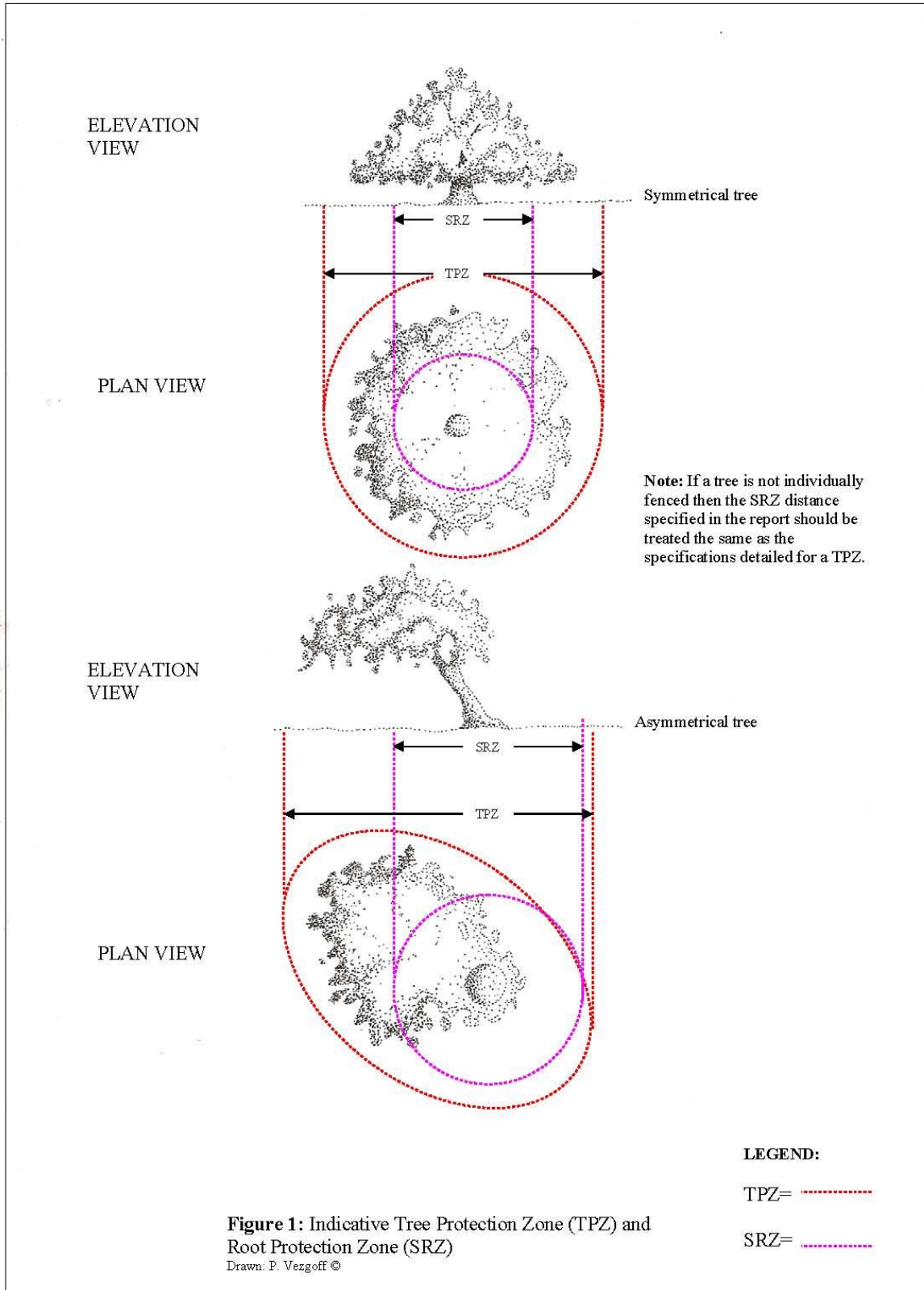
NO

Storage of materials

Trenching or excavation

Washing of tools or equipment

Appendix 7



Appendix 8

Tree structure information diagram

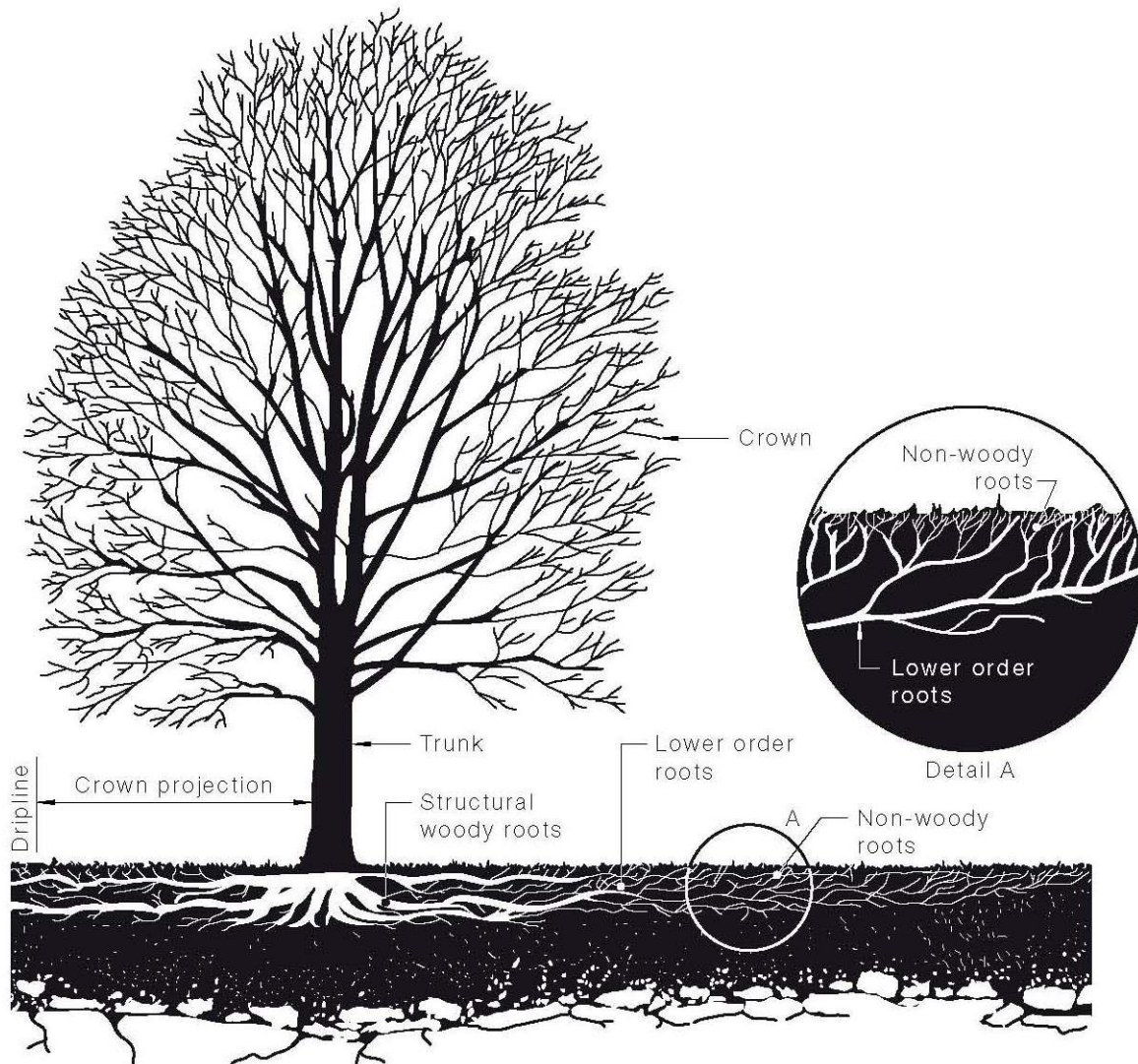


Figure 2: Structure of a tree in a normal growing environment (AS 4970, 2009.).

Appendix 9

Explanatory Notes

- **Mathematical abbreviations:** > = Greater than; < = Less than.
- **Measurements/estimates:** All dimensions are estimates unless otherwise indicated. Less reliable estimated dimensions are indicated with a '?'.
- **Species:** The species identification is based on visual observations and the common English name of what the tree appeared to be is listed first, with the botanical name after in brackets. In some instances, it may be difficult to quickly and accurately identify a particular tree without further detailed investigations. Where there is some doubt of the precise species of tree, it is indicated with a '?' after the name in order to avoid delay in the production of the report. The botanical name is followed by the abbreviation sp if only the genus is known. The species listed for groups and hedges represent the main component and there may be other minor species not listed.
- **Height:** Height is estimated to the nearest metre.
- **Spread:** The maximum crown spread is visually estimated to the nearest metre from the centre of the trunk to the tips of the live lateral branches.
- **Diameter:** These figures relate to 1.4m above ground level and are recorded in centimetres. If appropriate, diameter is measure with a diameter tape. 'M' indicates trees or shrubs with multiple stems.
- **Estimated Age:** Age is estimated from visual indicators and it should only be taken as a provisional guide. Age estimates often need to be modified based on further information such as historical records or local knowledge.
- **Distance to Structures:** This is estimated to the nearest metre and intended as an indication rather than a precise measurement.

Appendix 10

Bibliography

Draper D B & Richards P A (2009) *Dictionary for managing trees in urban environments*

CSIRO Publishing

Collingwood, Vic

Harris R.W, Clark J.R, Matheny N.P (1999). *Arboriculture*. Third edition.

Prentice Hall

New Jersey.

Matheny N.P & Clark J.R. (1994) *Evaluation of hazard trees in Urban areas*

Second edition, International Society of Arboriculture

Illinois.

Mattheck C & Breloer H (2003) *The Body Language of Trees: A handbook for failure*

analysis. Research for Amenity Trees No. 4,

Seventh edition, The Stationary Office, London.

Shigo A.L. (2002) *A New Tree Biology*.

Shigo and Trees, Associates, Durham, New Hampshire.

Schwarze, F.W.M.R, Engels, J. Mattheck. C (2000) *Fungal strategies of wood decay in trees*

Springer-Verlag Berlin Heidelberg

Germany

Standards Australia, 2007, *Pruning of amenity trees AS 4373, 2007*

Standards Australia Ltd

Sydney

Standards Australia, 2009. *Protection of trees on development sites, AS 4970, 2009*

Standards Australia Ltd

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EDUCATION and QUALIFICATIONS

- 2007 – Diploma of Arboriculture (AQF Cert V) Ryde TAFE. (Distinction)
- 1997 – Completed Certificate in Crane and Plant Electrical Safety
- 1996 – Attained Tree Surgeon Certificate (AQF Cert II) at Ryde TAFE
- 1990 – Completed two month intensive course on garden design at the Inchbald School of Design, London, United Kingdom
- 1990 – Completed patio, window box and balcony garden design course at Brighton College of Technology, United Kingdom
- 1989 – Awarded the Big Brother Movement Award for Horticulture (a grant by Lady Peggy Pagan to enable horticulture training in the United Kingdom)
- 1989 – Attained Certificate of Horticulture (AQF Cert IV) at Wollongong TAFE

INDUSTRY EXPERIENCE

Moore Trees Arboricultural Services

January 2006 to date

Tree Consultancy and tree ultrasound. Tree hazard and risk assessment, Arborist development application reports
Tree management plans.

Woollahra Municipal Council

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ARBORICULTURE TECHNICAL OFFICER

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Tree asset management, programmed inspection, inventory and condition surveys of council trees, hazard and risk appraisal,
Tree root damage investigation and reporting, assessment of impacts of capital works projects on council trees.

ACTING COORDINATOR OF TREES MAINTENANCE

June – July 2005, 2006

Responsible for all duties concerning park and street trees. Prioritising work duties, delegation of work and staff supervision.

TEAM LEADER

January 2003 – June 2005

TEAM LEADER

September 2000 – January 2003

HORTICULTURALIST

October 1995 – September 2000

Northern Landscape Services

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Sept 1991 to April 1995

CONFERENCES AND WORKSHOPS ATTENDED

- International Society of Arboriculture Conference (Brisbane 2008)
- Tree related hazards: recognition and assessment by Dr David Lonsdale (Brisbane 2008)
- Tree risk management: requirements for a defensible system by Dr David Lonsdale (Brisbane 2008)
- Tree dynamics and wind forces by Ken James (Brisbane 2008)
- Wood decay and fungal strategies by Dr F.W.M.R. Schwarze (Brisbane 2008)
- Tree Disputes in the Land & Environment Court – The Law Society (Sydney 2007)
- Barrell Tree Care Workshop- Trees on construction sites (Sydney 2005).
- Tree Logic Seminar- Urban tree risk management (Sydney 2005)
- Tree Pathology and Wood Decay Seminar presented by Dr F.W.M.R. Schwarze (Sydney 2004)
- Inaugural National Arborist Association of Australia (NAAA) tree management workshop- Assessing hazardous trees and their Safe Useful Life Expectancy (SULE) (Sydney 1997).