

Moore Trees
Arboricultural Services

ABN 90887347745

Arboricultural Impact Assessment Report

**Rouse Hill High School Upgrade
240 Withers Road
Rouse Hill NSW 2155**

December 2024
Updated March 2025
FINAL



Prepared for: School Infrastructure NSW
C/o Savills Australia

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Summary

This report has been compiled for Savills Australia on behalf of School Infrastructure NSW (SINSW) Level 8, 259 George Street, Sydney NSW 2000. The report concerns an upgrade to Rouse Hill High School, 240 Withers Road, Rouse Hill NSW 2155.

This report contains the following information regarding the site trees:-

- 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) calculated for each tree.
- 6) Any branch or root pruning that may be required for trees.

Trees impacted within the new Emergency Accessway entry point are Trees 1-4. The adjoining trees in this area will not be affected by the works. Tree 5 will be retained.

Within the site, Trees 6-12 are within the footprint of the new Emergency Accessway and the hall and, as such, will be removed. Tree group 13 which contains nine (9) trees is mostly outside the building footprint, however it is more than likely Tree group 13 will ultimately be removed due to surface level changes required for the Emergency Accessway construction. Tree group 13 is a collection of trees would not be considered highly significant specimens and could be readily replaced with new plantings.

Trees 6, 7, 8, 9 and 13 – 20 have been approved for removal under The Hills Shire Council Tree Management Permit 261/2025/TR, dated 19/2/2025.

The trees that are proposed to be retained will require tree protection to be installed prior to works commencing. A Tree Protection Plan, included in this report, shows the trees proposed to be retained and removed. This plan is attached in Appendix 1. It is recommended that signage is used for tree protection areas. A sample tree protection sign has been included in Appendix 6.

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VERSION CONTROL

Date of Issue	Details
20 th September 2024	Draft 1 issued
10 th December 2024	Final version issued
7 th February 2025	Updated for Planner
12 th March 2025	Final Version 2 - updated for TMP removals

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1 INTRODUCTION

1.1 This Arboricultural Impact Assessment (AIA) report has been conducted to assess the health and condition of trees located at Rouse Hill High School, 240 Withers Road, Rouse Hill NSW 2155. This report has been prepared for Savills Australia on behalf of School Infrastructure NSW (SINSW) Level 8, 259 George Street, Sydney NSW 2000 as required for the application process for the construction of a new school hall and Emergency Accessway at the site.

This report has been prepared to accompany a Review of Environmental Factors (REF) for the Department of Education (DoE) for upgrades to Rouse Hill High School (the activity) under Part 5 of the Environmental Planning and Assessment Act 1979 (EP&A Act) and State Environmental Planning Policy (Transport and Infrastructure) 2021 (SEPP TI).

This document has been prepared in accordance with the Guidelines for Division 5.1 assessments (the Guidelines) by the Department of Planning, Housing and Infrastructure.

This report examines and takes into account the relevant environmental factors in the Guidelines and Environmental Planning and Assessment Regulations 2021 under Section 170, Section 171 and Section 171A of the EP&A Regulation as outlined in Table 1 (*Impacts* Section of this report).

The purpose of this report is to collect the appropriate tree related data on the subject trees and to provide advice and recommendations to the design and possible construction alternatives to aid against any adverse impacts on the health of the subject trees' to be retained. Australian Standard *Protection of trees on development sites*, AS 4970, 2009 has been used as a basis for this report.

The subject trees were assessed for their health and condition. Also included in this report are generic 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 works. These tree protection specifications may need to be amended for tender documentation.

As specified in Council Development Application guidelines the following data was collected for each tree:

- 1) A site plan locating all trees over 6 metres in height within the study area.
- 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 Proposed Activity Description: The proposed activity for the alterations and additions to Rouse Hill High School including:

- Demolition of existing footpaths, stairs, and the relocation of existing seating shelters to the west of Block F;
- Tree removal;
- Construction of a two (2) storey classroom building (known as Building L), comprising ten (10) general learning spaces (GLS), one (1) enhanced Multi-Purpose Space for senior study and 2 Science Labs;
- Construction of new footpaths and a new covered bicycle parking space;
- New emergency vehicle accessway; and
- Landscaping, including the planting of trees.

1.3 Location: The project site is located on Withers Road in Rouse Hill and is legally described as Lot 105 in Deposited Plan (DP) 1108407. Rouse Hill High School is located on the western side of Withers Road. The proposed development site from herein will be referred to as "the Site".

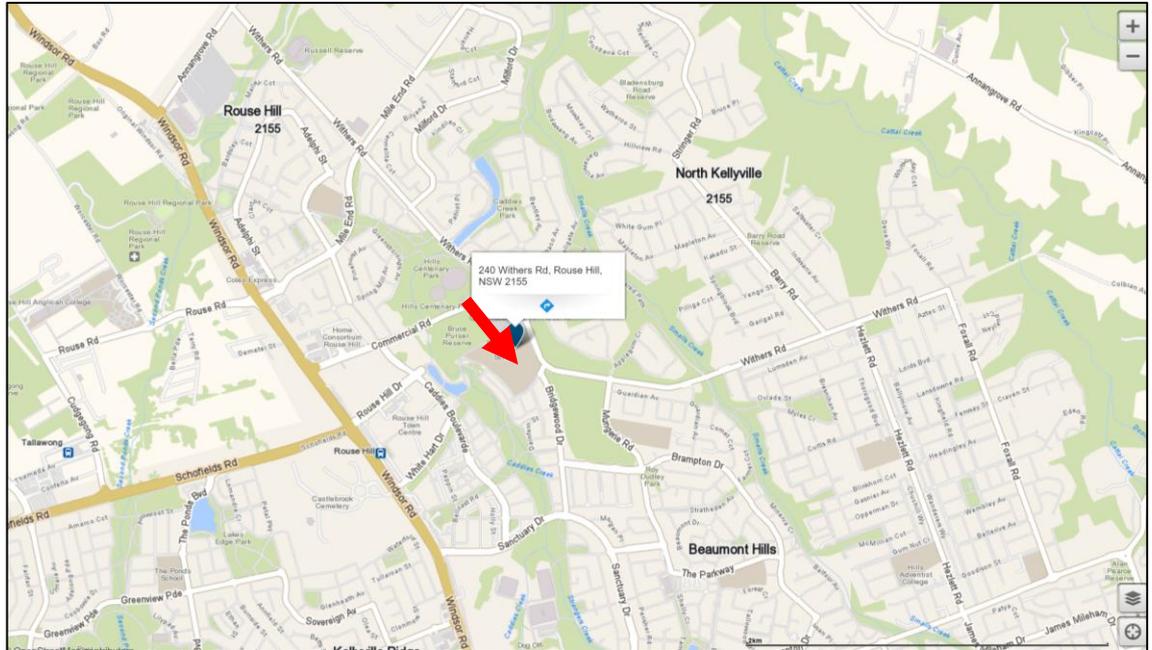


Diagram 1: Location of subject site, Rouse Hill High School (Red arrow) (google maps, 2024)



Diagram 2: Location of the study area (Google maps 2024).



Diagram 3: Image showing the overall Rouse Hill High School site.

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 9th April 2024. 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 **Height:** The heights and distances within this report have been measured with a Bosch DLE 50 laser measure.
- 2.3 **Tree Protection Zone (TPZ):** The 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 for each tree to determine construction impacts. The TPZ calculation is based on the Australian Standard *Protection of trees on development sites*, AS 4970, 2009.
- 2.4 **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 the SRZ area. A detailed methodology on the TPZ and SRZ calculations can be found in Appendix 4.
- 2.5 **Safe Useful Life Expectancy (SULE):** The subject trees were assessed for a Safe Useful Life Expectancy (SULE). The SULE rating for each tree can be seen in the Tree Assessment Schedule (Appendix 2). A detailed explanation of SULE can be found in Appendix 3.

2.6 Documents and information provided: For this Arboricultural Report I was supplied the following documents:

Architectural Plan set by DJRD Architects marked project #22-409, including

- Existing Site Plan, RHHS-DJRD-00-00-DR-A-00003 issue P06 dated 01.03.2024;
- Proposed Site Plan, RHHS-DJRD-00-00-DR-A-00004 issue P11 dated 21.11.2024;
- Demolition / Staging Plan – Stage 1, -001101 issue P07 dated 08.03.2024;
- Demolition / Staging Plan – Stage 3, -001103 issue P06 dated 08.03.2024;
- Preliminary Tree Assessment Report by Tree Management Strategies dated 14.09.2022.
- Construction driveway sketch 2 by Enstruct Group Pty Limited dated 02/09/24.

I have not been provided any plans for engineering specifications or service diagrams for the site.

2.7 Impact Assessment: An impact assessment was conducted on the site trees. This was conducted by assessing the site survey and plans provided by Savills Australia. 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 Rouse Hill High School is located at 240 Withers Road, Rouse Hill NSW 2155. The project area contains a mixture of native and exotic specimens in varying conditions of health.

The proposed activity for the alterations and additions to Rouse Hill High School including:

- Demolition of existing footpaths, stairs, and the relocation of an existing seating shelters towards the west of Block F;
- Removal of seven (7) trees;
- Construction of a two (2) storey classroom building (known as Building L), comprising eleven (11) general learning spaces (GLS) and 2 Science Labs;
- Construction of new footpaths and a new covered bicycle parking space;
- New emergency vehicle accessway; and
- Landscaping, including the planting of twelve (12) new trees within the school grounds.

3.2 **Environmental Significance:** This report is only concerned with trees on the site that come under The Hills Shire Council tree management guidelines. For the purpose of preserving the existing tree amenity of the Shire, Council has included in its Local Environment Plan provisions requiring the preservation of trees and bushland. A tree for the purposes of this guideline is a perennial plant with a self-supporting woody stem that has spread of more than three (3) metres or a height of more than six (6) metres or has a trunk diameter of more than three hundred (300) millimetres, measured at the base.

3.3 **The Site Trees:** The site was inspected on 9th April 2024. Each tree has been given a unique number for this site and can be viewed on the Tree Protection Plan (Appendix 1). This plan is based on the plan undertaken by DJRD Architects. The subject trees within this report are numbered as Trees 1-12. Tree group 13 is a group of similar sized species.

- 3.4** The proposed area for the new hall is located in a slightly sloping area of the school grounds. It has scattered tree species along the borders, none of which would be considered remnant, and most would have been planted in the last 30 years.
- 3.5** Trees 1-5 are located along Caballo Street (Plate 1). The species consist of Iron bark (*Eucalyptus crebra*), Forest red gum (*Eucalyptus tereticornis*), Swamp she oak (*Casuarina glauca*), Black wattle (*Acacia decurrens*). These specimens are quite young and have been planted along a raised embankment along the school boundary.
- 3.6** Trees within the site include Trees 6-13. Trees 6, 7 and 8 are single specimens of Claret Ash (*Fraxinus oxycarpa*) 'Raywoodii'. These trees are growing in harsh, compacted conditions.
- 3.7** Trees 9-13 are specimens of Spotted gum (*Corymbia maculata*), Grey box (*Eucalyptus moluccana*), Lemon-scented (*Corymbia citriodora*, Forest red gum (*Eucalyptus tereticornis*). These trees have been planted as a group and are of a similar size and condition to each other (Plate 7).
- 3.8** Trees 6, 7, 8, 9 and 13 – 20 have been approved for removal under The Hills Shire Council Tree Management Permit 261/2025/TR, dated 19/2/2025
- 3.9** None of the site trees assessed for this report are old enough to have hollows.



Plate 1: Image showing Trees 1-5 (red area). P. Vezgoff.



Plate 2: Image showing Tree 6. P. Vezgoff.



Plate 3: Image showing Tree 8. P. Vezgoff.



Plate 4: Image showing Tree 7. P. Vezgoff.



Plate 5: Image showing Tree 9. P. Vezgoff.



Plate 6: Image showing Trees 10-12. P. Vezgoff.



Plate 7: Image showing Tree group 13. P. Vezgoff.

3.10 Trees outside the site: There are four (4) trees outside the site that will be affected by the proposed development. The Emergency Accessway entry will require the removal of Trees 1-4.

3.11 Critically Endangered Plants: Vegetation maps from the Office of Environment and Heritage were assessed for records of Critically Endangered Plants. None of the site trees were found to be Critically Endangered tree species.

- 3.12 Impacts:** Trees impacted within the new Emergency Accessway entry point are Trees 1-4. The adjoining trees in this area will not be affected by the works.
- 3.13** Within the site, Trees 6-12 are within the footprint of the new Emergency Accessway and the hall and, as such, will be removed. Tree group 13 which contains nine (9) trees is mostly outside the building footprint, however it is more than likely Tree group 13 will ultimately be removed due to surface level changes required for the Emergency Accessway construction. Tree group 13 is a collection of trees would not be considered highly significant specimens and could be readily replaced with new plantings.
- 3.14** Trees 6, 7 and 8 are all exotic specimens of Claret Ash (*Fraxinus oxycarpa*) 'Raywoodii' and would be considered low value specimens.
- 3.15** Trees 1-4 and 10-12 are proposed to be removed under Chapter 2 through Review of Environmental Factors (REF) pathway. Trees 6, 7, 8, 9 and 13 – 20 have been approved for removal under The Hills Shire Council Tree Management Permit 261/2025/TR, dated 19/2/2025
- 3.16** Root growth is opportunistic; that is, roots proliferate in areas conducive to root growth. In fertile soils, in the absence of competition, individual roots may extend in more or less a symmetrical manner. Roots of most plants, including large trees, grow primarily in the top one (1) metre of soil (Diagram 3). For this reason, it will be important to limit root damage and severing of roots for the proposed works. It should be noted that Diagram 3 shows a tree growing in ideal ground conditions. The roots from Tree group 13 are likely to be quite close to the surface and easily impacted.

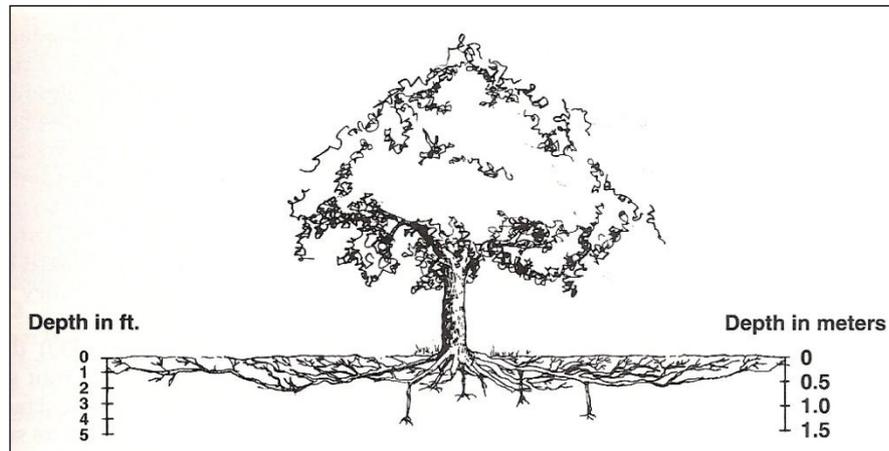


Diagram 3: In the mature tree the tap root is either lost or reduced in size. The vast majority of the root system is composed of horizontally oriented lateral roots (Harris, Clark, Matheny, 1999).

3.17 This report examines and takes into account the relevant environmental factors in the Guidelines and Environmental Planning and Assessment Regulations 2021 under Section 170 and Section 171 of the EP&A Regulation as outlined in Table 1.

Table 1 – Summary of Relevant Section of the Part 5 Guidelines and EP&A Regulation			
Regulation / Guideline Section	Requirement	Response	Report Section
170	(1) The Planning Secretary may issue guidelines in relation to— (a) the factors to be taken into account by a determining authority when considering the likely impact of an activity (the <i>environmental factors</i>), and	The impact with regards to this report is the quantity of trees required for removal for the purpose of the project.	Whole report.
171	(a) the environmental impact on the community, (b) the transformation of the locality, (c) the environmental impact on the ecosystems of the locality,	(a) Minor impact to the community as the works are within school grounds. Four small trees will be removed for the Emergency Accessway. (b) The trees being removed are all less than 15 metres in height and	Whole report.

	<p>(d) reduction of the aesthetic, recreational, scientific or other environmental quality or value of the locality,</p> <p>(f) the impact on the habitat of protected animals, within the meaning of the <i>Biodiversity Conservation Act 2016</i>,</p> <p>(g) the endangering of a species of animal, plant or other form of life, whether living on land, in water or in the air,</p> <p>(h) long-term effects on the environment,</p> <p>(i) degradation of the quality of the environment,</p> <p>(j) risk to the safety of the environment,</p> <p>(k) reduction in the range of beneficial uses of the environment,</p> <p>(l) pollution of the environment.</p>	<p>not large specimens. There will be no impact the surrounding community.</p> <p>(c) The trees being removed are not old enough to have any habitat hollows and no nests were present.</p> <p>(d) Replacement planting will improve the local environmental quality.</p> <p>(f) This is outside of the scope of this report.</p> <p>(g) no endangered tree species are impacted by the project.</p> <p>(h) No long term effects will occur.</p> <p>(i) There will be no risk to the safety of the environment.</p> <p>(k) There will be no reduction beneficial uses of the environment. There will in fact be an improvement with the planting of trees to the southwest of the new building that will provided shade that will help cool the new structure.</p> <p>(l) The removal and planting of new trees will not cause pollution of the environment.</p>	
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4 RECOMMENDATIONS

- 4.1 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.
- 4.2 Trees numbered as 1-4, 10-12 are required to be removed for the project. Tree 5 appears possible to retain.
- 4.3 Trees 6, 7, 8, 9 and 13 – 20 have been approved for removal under The Hills Shire Council Tree Management Permit 261/2025/TR, dated 19/2/2025
- 4.4 The unnumbered trees located on either side of the new Emergency Accessway crossover will require tree protection fencing as specified in Section 5.2 of this report. These trees, unnumbered, and including Tree 5, are shown in the Tree Protection Plan. This area shall be classed as the Tree Protection Zone (TPZ). The specifications for a TPZ are in Section 5.3 of this report.
- 4.5 **Building material storage:** Areas on the site shall have to be set aside for the exclusive use of:
- Construction access points
 - Position of site sheds and latrines and temporary services
 - Storage of materials

These points are to be outside of any TPZ area. Any area set aside for the stockpiling of soil and waste shall have the appropriate erosion control measures around this area as specified by an engineer. These erosion control measures shall be monitored and maintained regularly throughout the construction period of the site. These measures are to restrict any waste material entering the TPZ areas of the trees to be retained.

4.6 Tree removal: All tree work shall be carried out by a qualified Arborist and work shall be completed following AS 4373 (Pruning of Amenity Trees, 2007).

4.7 Compensatory planting: Should the school require additional plantings following these recommended removals, the following species are medium sized trees suitable for a school area. The replacement species could be selected from either Ivory Curl Flower (*Buckinghamia celsissima*), Grey Myrtle (*Backhousia myrtifolia*), Lemon-scented Backhousia (*Backhousia citriodora*) and Tallowwood (*Eucalyptus microcorys*), Red ironbark (*Eucalyptus sideroxylon*), Ironbark (*Eucalyptus crebra*), Forest red gum (*Eucalyptus tereticornis*), Grey box (*Eucalyptus moluccana*). This list is not extensive however it does provide a start.

5 TREE PROTECTION

5.1 Trees to be protected: The trees located near the new Emergency Accessway 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 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 and SRZ distances are all listed in the Tree Schedule (Appendix 2). The following activities shall be avoided within the TPZ and SRZ of any tree to be retained near the project site;

- 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.

5.4 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.

5.5 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.

5.6 Arborist Certification: It is recommended that the Certifying Authority obtains certification from the Project Arborist two (2) 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 TPZ fencing has been installed;
- (2) At completion of the construction phase to ensure trees are all free of any construction damage.

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

9th December 2024

Updated 11 March 2025

Appendix 1

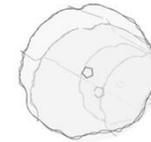
Plan 1

Tree Protection Plan

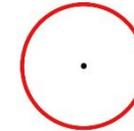


Tree protection plan

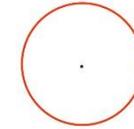
Moore Trees



Tree to be retained



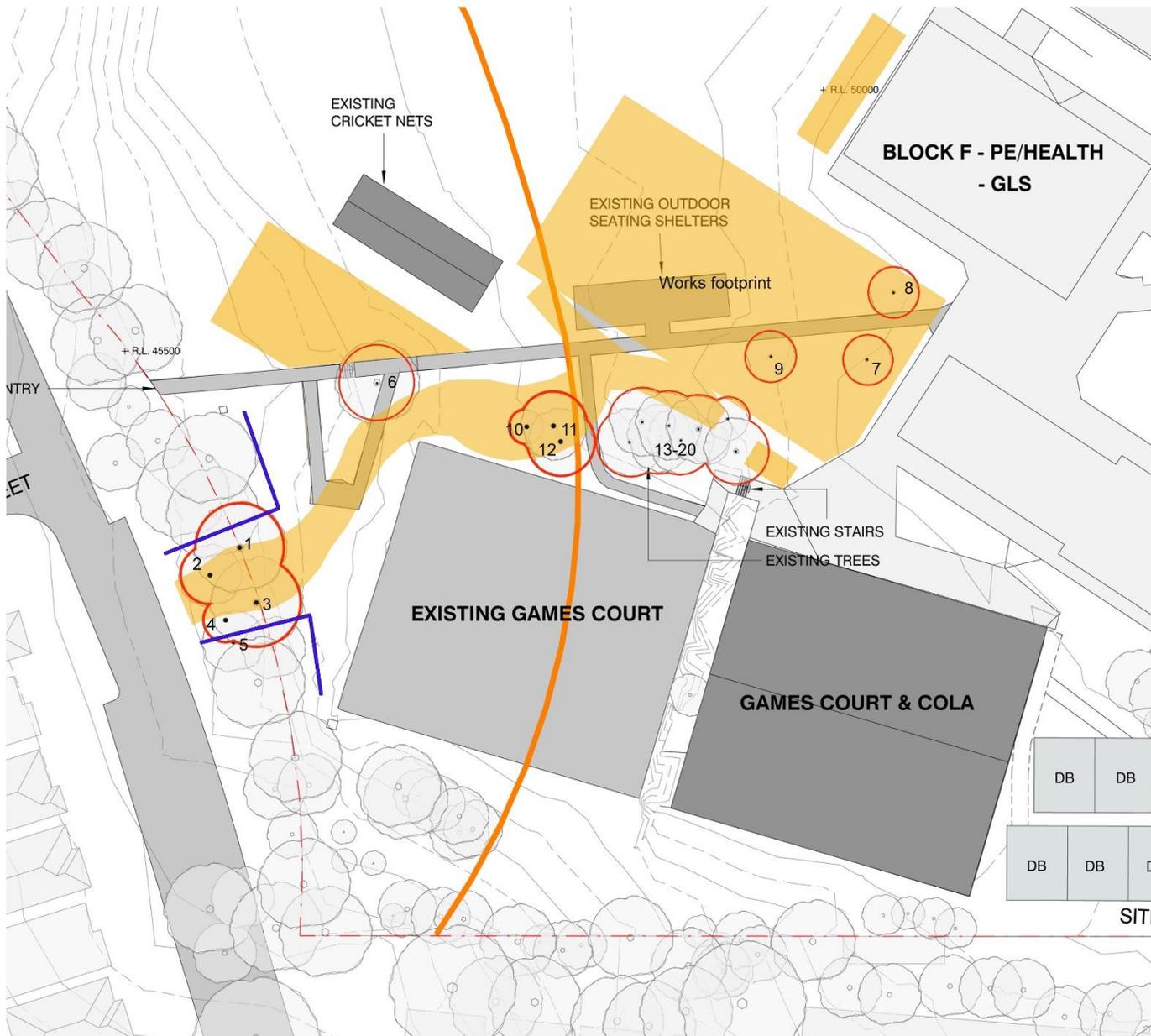
Tree to be removed



Tree removal approved under separate application being:
Tree Management Permit 261/2025/TR



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: 10.03.2025
 Drawn: P.Vezgoff
 Site Address: 240 Withers Rd
 Rouse Hill NSW 2155

Appendix 2

Tree health & condition
assessment schedule

TREE HEALTH AND CONDITION ASSESSMENT SCHEDULE – Rouse Hill High School

Tree	Species	Height (m)	Spread (m)	DBH (m)	SRZ basal	Live canopy %	SULE	Condition	Age	Comments	TPZ (m)	SRZ (m)
1	Iron bark (Eucalyptus crebra)	8	1.8	0.15	0.2	95	5b <15 years old but over 5m.	Good	Mature		1.8	1.6
2	Acacia baileyana	2.2	2	0.05	0.2	80	5a Small tree <5 m in height.	Poor	Mature		0.6	1.6
3	Forest red gum (Eucalyptus tereticornis)	9	3.8	0.34	0.44	95	1a >40 years	Good	Mature		4.1	2.3
4	Swamp she oak (Casuarina glauca)	5.8	2.2	0.16	0.2	95	5b <15 years old but over 5m.	Good	Mature		1.9	1.6
5	Black wattle (Acacia decurrens)	2.2	2	0.05	0.2	80	5a Small tree <5 m in height.	Poor	Mature	To be retained	0.6	1.6
6	Claret Ash (Fraxinus oxycarpa) 'Raywoodii'	6	3.2	0.12	0.15	95	5b <15 years old but over 5m.	Good	Mature	Tree removal approved under separate application - see Tree Management Permit 261/2025/TR.	1.4	1.4
7	Claret Ash (Fraxinus oxycarpa) 'Raywoodii'	5.5	1.9	0.19	0.25	95	2c removed for more suitable planting	Good	Mature		2.3	1.8
8	Claret Ash (Fraxinus oxycarpa) 'Raywoodii'	5.5	1.9	0.21	0.31	95	2c removed for more suitable planting	Good	Mature		2.5	2
9	Spotted gum (Corymbia maculata)	11	3.5	0.27	0.37	95	1a >40 years	Good	Mature		3.2	2.1
10	Grey box (Eucalyptus moluccana)	8	3	0.15	0.2	95	2c removed for more suitable planting	Good	Mature		1.8	1.6
11	Lemon-scented (Corymbia citriodora)	14	4	0.32	0.4	95	2c removed for more suitable planting	Fair	Mature		3.8	2.3
12	Forest red gum (Eucalyptus tereticornis)	13	3.5	0.25	0.4	95	2c removed for more suitable planting	Fair	Mature		3	2
13-20	Mixed group	15	4	0.27	0.37	95	1a >40 years	Good	Mature	Tree removal approved under separate application - see Tree Management Permit 261/2025/TR.	3.2	2.1

KEY

Tree No: Relates to the number allocated to each tree for the Tree 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 tree's trunk, canopy and root system throughout the construction process. Breaches of the TPZ will be specified in the recommendations section of the report.

Structural Root Zone (SRZ): The SRZ is a specified distance measured from the trunk that is set aside for the protection of the tree's roots both structural and fibrous.

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.

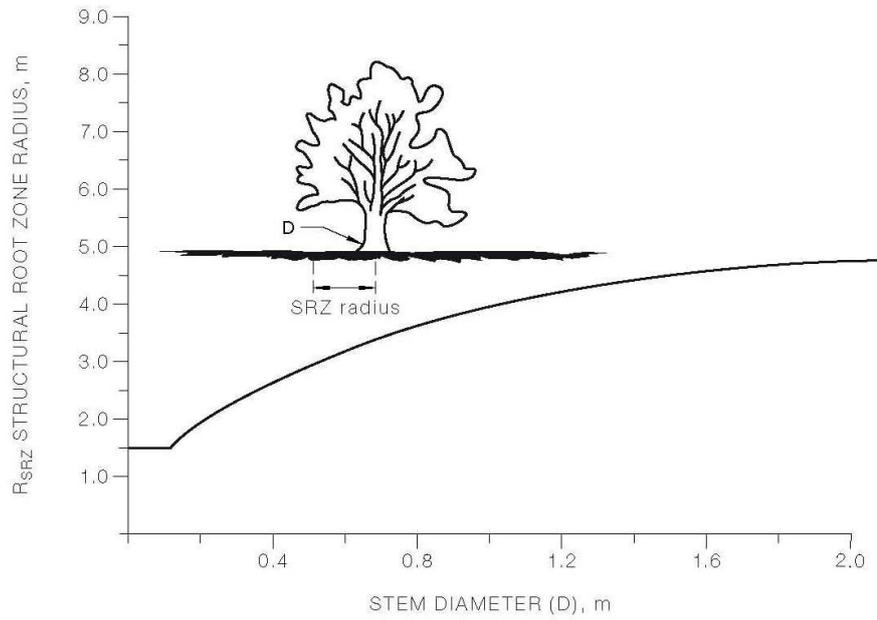
There are many factors that affect the size of the SRZ (e.g. tree height, crown area, soil type, soil moisture). The SRZ may also be influenced by natural or built structures, such as rocks and footings. An indicative SRZ radius can be determined from the trunk diameter measured immediately above the 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:
 $R_{SRZ} = (D \times 50)^{0.42} \times 0.64$

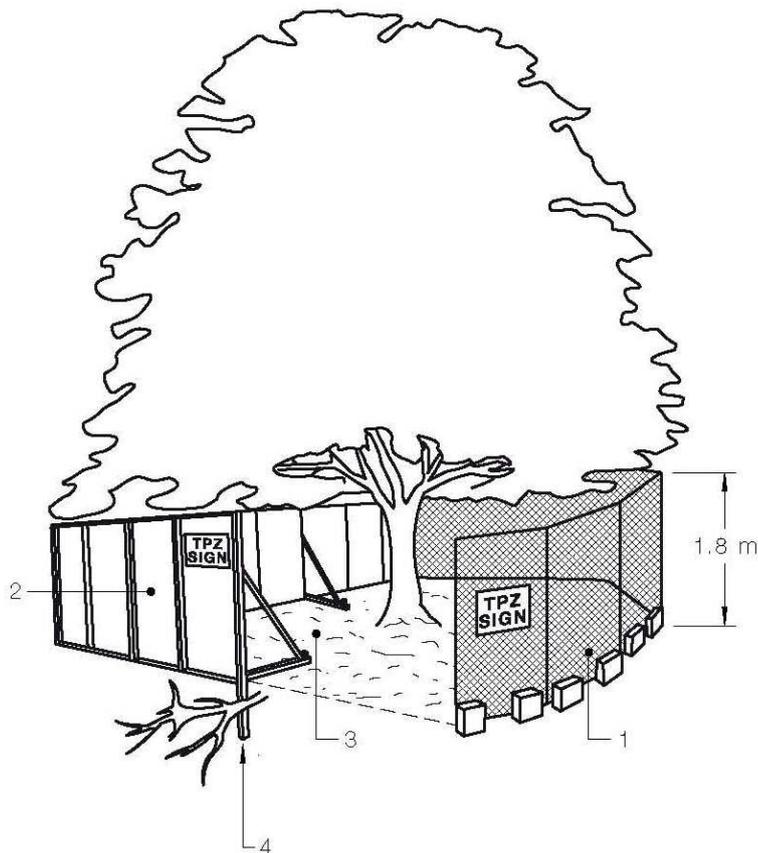
FIGURE 1 - STRUCTURAL ROOT ZONE

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

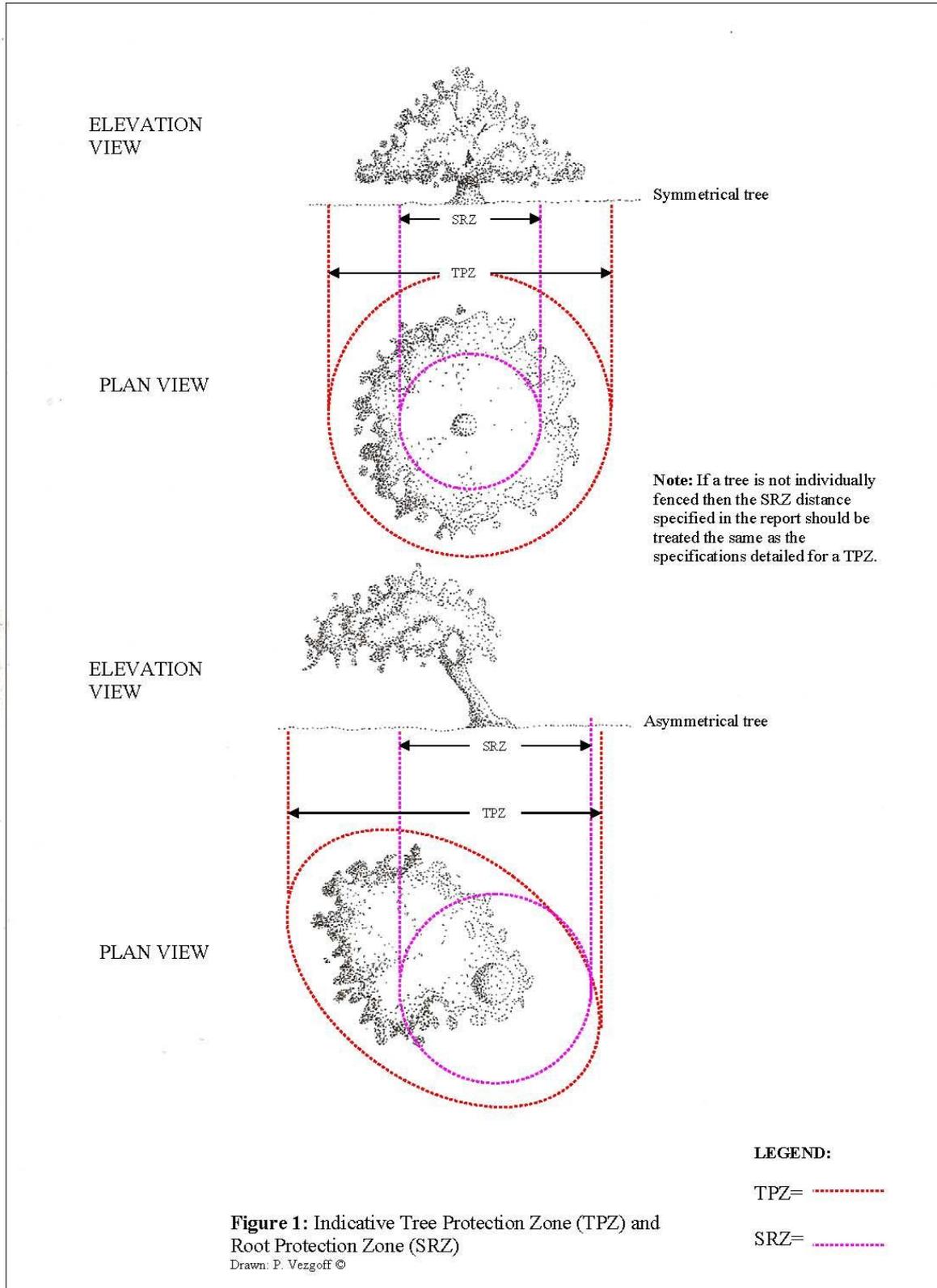
NO

Storage of materials

Trenching or excavation

Washing of tools or equipment

Appendix 7



Appendix 8

Tree structure information diagram

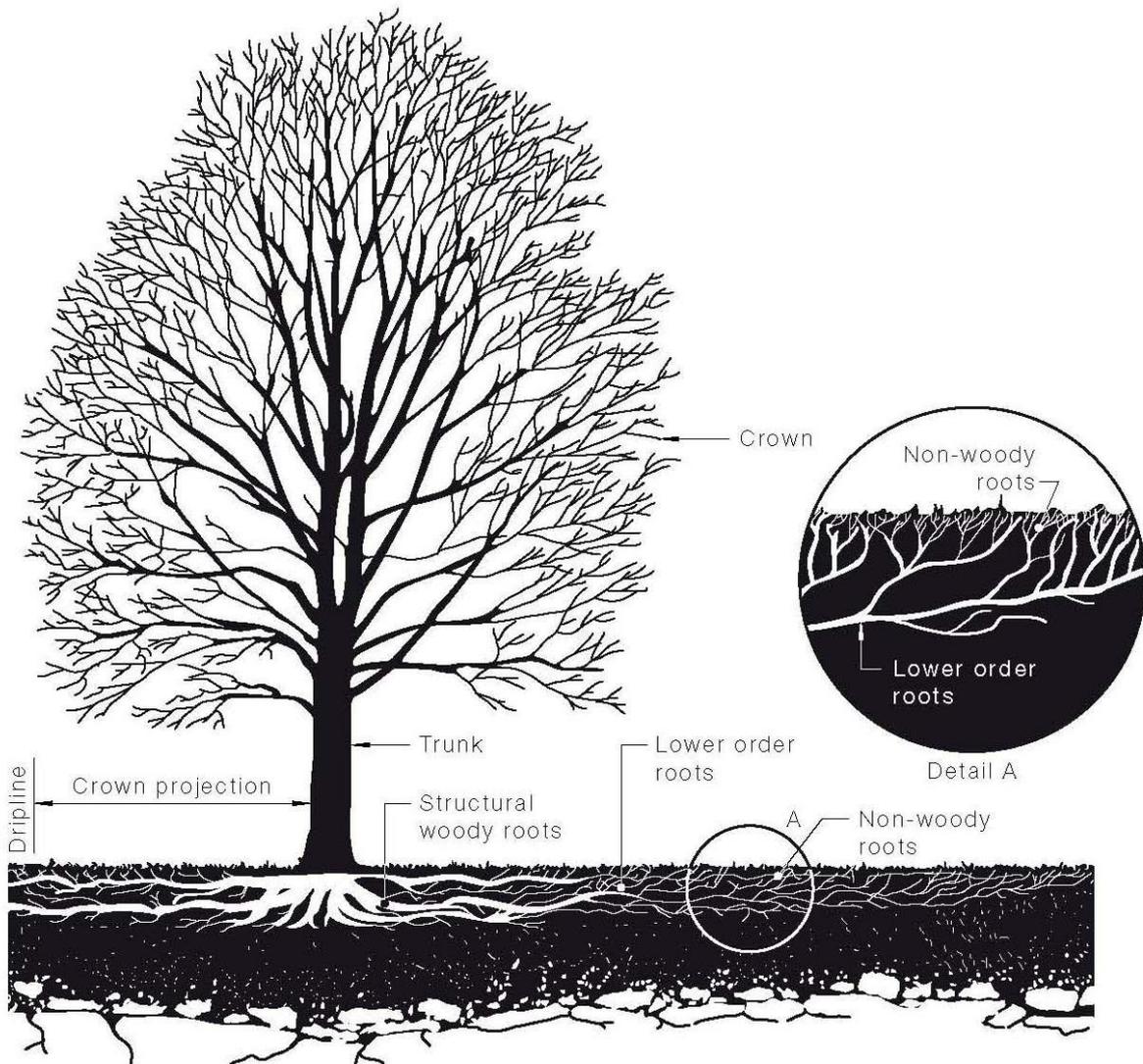


Figure 2: Structure of a tree in a normal growing environment (AS 4970, 2009.).

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.
- Leonard, Gary (2007) *Eucalypts of the Sydney region*. Second edition
University of New South Wales
Sydney, Australia
- 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
Sydney

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EDUCATION and QUALIFICATIONS

- 2013 / 2018 – ISA TRAQ qualification
- 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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Responsible for all duties concerning park and street trees. Prioritising work duties, delegation of work and staff supervision.

TEAM LEADER

January 2003 – June 2005

September 2000 – January 2003

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October 1995 – September 2000

Northern Landscape Services

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Sept 1991 to April 1995

CONFERENCES AND WORKSHOPS ATTENDED

- TRAQ Conference, Auckland NZ / Sydney (2023)
- International Society of Arboriculture Conference (Canberra May 2017)
- QTRA Conference, Sydney Australia (November 2016)
- 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).