

# New High School for Medowie

# ARBORICULTURAL IMPACT ASSESSMENT

Aaron Bath ASSURANCE TREES | 80 HORNS CROSSING ROAD, VACY, NSW, 2421

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We acknowledge the Traditional Custodians of the land, the Worimi people. We pay our respects to their Elders past, present, and emerging, and extend that respect to all Aboriginal and Torres Strait Islander.

#### Table 1 - Document Control

Document Control											
Version	Issued Date	Reviewed By									
DRAFT v1	9 <sup>th</sup> Jan 2025	GYDE, NBRS, Colliers									
DRAFT v2	19 <sup>th</sup> Jan 2025	Colliers									
Final v1	22 <sup>nd</sup> Jan 2025										

## Table 2 - REF Checklist

Requirement	Υ	Ν	Comments
General Requirements	Y		
Does the REF include an acknowledgement of	Y		Just below Contents
country?			
Details of the proposed activity?	Y		Project Description
A description of the site (including address and	Y		Site Description
lot/DP) and surrounding environment using text			
and plans/photos including details the			
environmental features and planning			
constraints?			
An assessment of potential impacts of the	Y		Schedule 2 - Tree Data
proposal?			
A statement certifying that the contents are true,	Y		Appendix F – Limitations and
and correct?			Disclaimer
A statement that the proposed activity qualifies	Y		Project Description
as development without consent?			
A schedule of mitigation measures that are	Y		Schedule 1 – Mitigation
specific and deliverable?			Measures
Has an Arboricultural Impact Assessment (AIA)	Y		Whole of Document
been prepared to support the REF which assesses			
existing trees within the proposed works area,			
including street trees, and recommends tree			
protection measures for trees to be retained?			

## 1. Executive Summary

- 1.1. This document has been prepared in accordance with the Guidelines for Division 5.1 assessments by the Department of Planning, Housing and Infrastructure (formerly the Department of Planning and Environment), June 2022) and recent addendum for schools. This can be accessed here: <u>Development without consent |</u> <u>Planning (nsw.gov.au)</u>.
- 1.2. Of the 101 trees within or near to the activity area, there are 40 trees that will require removal. Of these 40 trees, 25 are listed as weeds on the NSW Weedwise website and should be removed regardless of the activities as part of the regional weed program.
- 1.3. The overall impact on the environment from tree loss is as follows:
  - 1.3.1. High Retention Value 4
  - 1.3.2. Moderate Retention Value 6
  - 1.3.3. Low Retention Value 4
  - 1.3.4. Very Low Retention Value 26 (weeds as per Weed Wise NSW)
- 1.4. Tree 1 is listed as Endangered in NSW and Vulnerable in Australia. This tree will be subject to multiple construction activities that will need to be carefully managed to enable the successful retention of the tree.
- 1.5. This report details all require mitigation measures to ensure that retained trees are protected and remain viable beyond the completion of the project.
- 1.6. Schedule 2 Tree Data and Schedule 3 Maps can be found in this report and will provide location and detailed information on each tree and all mitigation measures required.
- 1.7. In summary the overall impact of the activities is easily managed with the mitigation measures as outlined in this report. The number of high and moderate retention value trees being removed for the development is very minimal with compared to even standard home construction on residential land in the Port Stephens area. Particularly when considering that a high number of weed species will be removed from the environment.

## 2. Introduction

#### 2.1. Consultant Details

Company: Assurance Trees Pty Ltd ABN: 87 158 399 350 Consulting Arborist: Aaron Bath Mobile: (+61) 434523566 Email: aaron@assurancetrees.com.au

#### 2.2. Proponent

The *Department of Education* (DoE) is the landowner, proponent and determining authority pursuant to *Section 5.1* of the *Environmental Planning and Assessment Act 1979 (the Act)*.

## 2.3. Site Details

Site Address: 6 Abundance Street, Medowie, NSW

Deposited Plan: Lot 3 in DP788451

Map of Site: Appendix B

## 2.4. Introduction

This *Arboricultural Impact Assessment (AIA)* has been prepared to support a Review of Environmental Factors (REF) for the proposed New High School for Medowie (the activity). The purpose of the REF is to assess the potential environmental impacts of the activity prescribed by State Environmental Planning Policy (Transport and Infrastructure) 2021 (T&I SEPP) as "development permitted without consent" on land carried out by or on behalf of a public authority under *Part 5* of the *Environmental Planning and Assessment Act 1979 (EP&A Act)*.

The activity is to be undertaken pursuant to Chapter 3, Part 3.4, Section 3.37A of the T&I SEPP.

The activity will be carried out at 6 Abundance Street, Medowie (the site). The purpose of this report is to investigate the impacts of the activity on the existing tree population within the development footprint. This involves quantifying the total loss/benefit of trees removed and establishing the overall loss of moderate and high retention value trees which contribute positively to the local environment.

The AIA also specifies any trees that can be retained and any required protection measures that will need to be utilised during the construction process. This is to ensure high quality trees are retained as assets that contribute positively to the development and the local environment upon the completion of the project. The AIA will provide the evidence required to make a clear determination of the total effect on the environment from all clearing works.



# 3. Site Description

Figure 1 - Summary map of tree removals.

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The site has a street address of 6 Abundance Road, Medowie. It is 6.51ha in area, and comprises 1 allotment, legally described as Lot 3 in DP788451. A large proportion of the site is currently unused and vacant. A small, shed structure and caravan are located adjacent to the northern boundary. A cluster of buildings including a single storey dwelling, an outhouse/shed structure and temporary greenhouse are located within the southeastern corner. The site contains a largely vegetated area to the southwest corner. The site is relatively flat with a gradual fall from west to east toward Abundance Road. The site has a primary frontage to Abundance Road to the east and Ferodale Road to the north. Abundance Road and Ferodale Road are both classified Local Roads. Medowie Road, approximately 1km east of the site, is a classified Regional Road. The area surrounding the site mostly consists of industrial, rural residential, educational, and agricultural lands. Adjacent to the northwestern boundary is a Shell petrol station and mechanic garage. Adjacent to the northeastern boundary is a medical health clinic. Across Abundance Road along the eastern boundary are several warehouse and light industrial developments. Directly north of the site across Ferodale Road are large lots used for agricultural purposes. Medowie Public School is located on Ferodale Road, to the northwest of the site, opposite the Shell petrol station.



## 4. Project Description

### Figure 2 - Site Plan (NBRS)

The proposed activity involves the construction of school facilities on the site for the purpose of the New High School for Medowie. The site contains a densely vegetated area to the southwest corner which is identified as land with high biodiversity values corresponding to the areas of remnant native vegetation (*PCT 3995 – Hunter Coast Paperbark-Swamp Mahogany Forest*). The existing dwelling house and other structures on the site will be demolished as part of the works. No other works are proposed within this area. The proposed new school will accommodate 640 students in 29 permanent teaching spaces including 3 support teaching spaces across 3-storeys of buildings on the site. The proposed activity be delivered across 1 stage, and will consist of the following:

29 permanent teaching spaces including 3 support teaching spaces, to accommodate 640 students, and school hall to accommodate 1,000 students. Approximately 10,500 sqm of GFA is proposed.

- Main vehicular ingress and egress to Ferodale Road to the north, with a new pedestrian and vehicle crossing proposed.
- Main pedestrian access to Abundance Road.
- Kiss and ride, and bus drop and pick up areas to Abundance Road (6 x parallel spaces).
- New pedestrian wombat crossing to Abundance Road
- Approximately 55 x car parking spaces and 3 x accessible car parking spaces.
- Approximately 70 x bicycle parking spaces.
- Block A (Admin) consisting of administration and learning spaces.
- Block B (Foodtech/Workshop) consisting of food technology rooms and workshops.
- Block C (Hall) consisting of school hall to accommodate 1,000 students.
- Central quad, 1 playing field, and 1 sports courtyard.

The proposed school development will include the following spaces; general learning spaces, General support learning spaces, administrative services, staff areas, gym and canteen, library areas for science, wood and metal, food and textiles, health PE, performing arts, additional learning spaces, student amenities, storage, movement (stairs and covered walkways).

## 5. Report Methodology

- 5.1. A review of all plans was undertaken to understand the planned activities onsite prior to a site inspection.
- 5.2. A Preliminary Tree Assessment (PTA) was undertaken in 2023 by AQF5 consulting arborist Joseph Pidutti and a report dated 3<sup>rd</sup> November 2023 issued. The tree data from Joseph Pidutti's PTA have been used as the basis for this report.
- 5.3. Site inspection was completed on 12<sup>th</sup> of December 2024 by Aaron Bath. A walk around the site on foot to gain an understanding of the topography and the context of trees in the landscape.
- 5.4. A detailed review of all tree data was undertaken as follows:
  - 5.4.1. Complete recalculation of Tree Retention Values for all trees.
  - 5.4.2. Complete recalculation of all TPZ and SRZ values.
  - 5.4.3. Checks on all tree data collected, looking for obvious errors.
- 5.5. Detailed review of all impacts on trees that may occur from the activity. This includes footprints of all structures, civil works, services, temporary structures and site requirements for construction activities.
- 5.6. Prepare a Tree Location Plan.
- 5.7. Prepare a Tree Protection Plan for all retained trees onsite.
- 5.8. Prepare a detailed Tree Protection Plan for tree 1 at entrance from Ferodale Road. Considering impacts from electrical, stormwater and civil works.
- 5.9. Summary of all tree removals and the overall impact to the environment.

## 6. Due Diligence

## 6.1. Site Description

The site is a 6.51-hectare parcel of land (Lot 3 in DP788451) located with primary frontages to Abundance Road and Ferodale Road, both classified as Local Roads. It features a mix of unused vacant land, a small shed and caravan near the northern boundary, and a cluster of buildings, including a dwelling, outhouse, and greenhouse in the southeastern corner. The site slopes gradually from west to east towards Abundance Road and includes a largely vegetated area in the southwest. Surrounding land uses include industrial, rural residential, agricultural, and educational zones, with a petrol station, mechanic garage, medical clinic, and warehouses nearby, as well as large agricultural lots to the north and Medowie Public School to the northwest.

### 6.2. Tree Species

Tree species within the activity area are dominated by weed species including African Olive (*Olea europaea*), Privet (*Ligustrum spp.*) and Camphor Laurel (*Cinnamomum camphora*). These weed species make up most of the trees requiring removal due to the activities onsite.

Native species onsite comprise Blackbutt (*Eucalyptus pilularis*), Sydney Peppermint (*Eucalyptus piperita*), Silky Oak (*Grevillea robusta*), Native Daphne (*Pittosporum undulatum*), Smooth-barked Apple (*Angophora costata*), Cheese Tree (*Glochidion ferdinandii*), various other local *Eucalyptus* species and a small number of exotic trees common to urban areas.

## 6.3. Protected Species

A single occurrence of Wallangarra White Gum (*Eucalyptus scoparia*) is located at the front of the site along Ferodale Road. This tree, numbered tree 1, is listed as Vulnerable under the *Environmental Protection and Biodiversity Conservation Act 1999* and Endangered under the NSW *Biodiversity Conservation Act 2016*. Protection of this tree during construction activities is a high priority.

#### 6.4. Ecology, Hollows and Koala

For all ecological matters refer to reports by ecologist.

6.5. Heritage Links

A search on the State Heritage Inventory shows no heritage trees on the property.

#### 6.6. Significant Trees

No significant trees are located on the subject site, or adjoining properties.

## 7. Tree Removal

- 7.1. Of the 101 trees within or near to the activity area, there are 40 trees that will require removal. Of these 40 trees, 26 are listed as weeds on the NSW Weedwise website and should be removed as part of the regional weed program, regardless of the activities onsite.
- 7.2. For identification and all locations of trees to be removed see Figure 7 TreeLocation Plan and Schedule 2 Tree Data
- 7.3. All reasoning/justification for tree removals is shown in Schedule 2 Tree Data.
- 7.4. A breakdown of the Retention Value of trees requiring removal below:
  - 4 x High Retention Value
  - 6 x Moderate Retention Value
  - 4 x Low Retention Value
  - 26 x Very Low Retention Value
- 7.5. Standards for the contractor that is engaged to conduct the tree removals are listed in Appendix C Contractor Guidelines/Standards.
- 7.6. There is many small shrubs and weeds in clusters that do not fit the definition of a tree that will be removed. Most of the are weed species such as Lantana, African Olive and Tobacco Bush.
- 7.7. The overall impact of the activities on the trees is very low with most of the vegetation removal being weed and undesirable species.

## 8. Mitigation Measures

All retained trees as per Table 3 - Mitigation Measures, shall be retained and protected in accordance with the instructions for each tree. Standard protection measures apply to all retained trees onsite and it is the responsibility of the Principal Contractor to ensure that all TPZ's that are close to construction activities are protected in accordance with the standard protection measures and ongoing advice from the Project Arborist (PA).

## 8.1. Project Arborist

As per the requirements of *AS4970-2009 Protection of Trees on Development Sites*, a suitably qualified and experienced Project Arborist (PA) must be appointed at the start of the project by the principal contractor to manage and ensure trees are managed in accordance with this plan.

The PA must be an independent consultant not associated with any tree lopping or clearing contractor. The PA must have a minimum 5 years' experience as an AQF5 Consulting Arborist and have demonstratable experience conducting root investigations.

The PA must be appointed before any practical works onsite commence including any site establishment. The PA is to conduct the inspections as per the schedule below, and provide evidence that this has been completed:

- Pre-clearing inspection to positively ID all trees listed for removal.
- Inspection of all Tree Protection as per the requirements of this report.
- Inspection of TPZ prior to removal of Tree Protection upon completion of works.
- Final report certifying that all protection measures have been completed throughout the life of the project.

The PA must approve any access and works that are to occur inside any TPZ prior to the works occurring. This is to ensure that all compounding effects over the course of the project can be properly assessed.

All works inside the TPZ of a retained tree must be supervised by the PA.

## 8.2. Standard Tree Protection

Below is the specification for protection measures as per AS4970 Protection of Trees on Development Sites.

Tree protection measures include a range of activities and structures. Structures are used to

identify and isolate the TPZ.

The TPZ is a restricted area usually delineated by protective fencing (or use of an existing structure such as an existing fence or wall). It is installed prior to site establishment and retained intact until completion of the works.

Any works inside a TPZ must be supervised by the project arborist. Any additional encroachment that becomes necessary as the site works progress must be reviewed by the project arborist and be acceptable to the determining authority before being carried out. Approved tree removal and pruning should be carried out before the installation of tree protection measures.

## 8.2.1. Activities Restricted Within the TPZ

Activities generally excluded from the TPZ include but are not limited to-

- machine excavation including trenching;
- excavation for silt fencing;
- cultivation;
- storage;
- preparation of chemicals, including preparation of cement products;
- parking of vehicles and plant;
- refuelling;
- dumping of waste;
- wash down and cleaning of equipment;
- placement of fill;
- lighting of fires;
- soil level changes;
- temporary or permanent installation of utilities and signs, and
- physical damage to the tree.

## 8.2.2. Protective Fencing

Fencing should be erected before any machinery or materials are brought onto the site and before the commencement of works including demolition. Once erected, protective fencing must not be removed or altered without approval by the project arborist. The TPZ should be secured to restrict access. Fence posts and supports should have a diameter greater than 20 mm and be located clear of roots. Existing perimeter fencing and other structures may be suitable as part of the protective fencing.

## 8.2.3. Signs

Signs identifying the TPZ should be placed around the edge of the TPZ and be visible from within the development site (see image below).



Figure 3 - Tree Protection Zone fencing example and example of a sign format

## 8.2.4. Other Protection Measures

When tree protection fencing cannot be installed or requires temporary removal, other tree protection measures should be used, including those set out below.

## 8.2.4.1. Trunk and branch protection

Where necessary, install protection to the trunk and branches of trees as shown below. The materials and positioning of protection are to be specified by the project arborist. A minimum height of 2 m is recommended.

Do not attach temporary powerlines, stays, guys and the like to the tree. Do not drive nails into the trunks or branches.

## 8.2.4.2. Ground protection

If temporary access for machinery is required within the TPZ ground protection measures will be required. The purpose of ground protection is to prevent root damage and soil compaction within the TPZ. Measures may include a permeable membrane such as geotextile fabric beneath a layer of mulch or crushed rock below rumble boards as per figure below. These measures may be applied to root zones beyond the TPZ



Figure 4 - Tree Protection Measures if fencing cannot be maintained or must be removed

## 8.2.5. Root protection during works within the TPZ

All excavation inside the TPZ should be carried out under the supervision of the project arborist to identify roots critical to tree stability. Relocation or redesign of works may be required, depending on actual location of roots.

Where the project arborist identifies roots to be pruned within or at the outer edge of the TPZ, they should be pruned with a final cut to undamaged wood. Pruning cuts should be made with sharp tools such as secateurs, pruners, handsaws or chainsaws. It is not acceptable for large roots within the TPZ to be 'pruned' with machinery such as backhoes or excavators.

Where roots within the TPZ are exposed by excavation, temporary root protection should be installed to prevent them drying out. This may include jute mesh or hessian sheeting as multiple layers over exposed roots and excavated soil profile, extending to the full depth of the root zone. Root protection sheeting should be pegged in place and kept moist during the period that the root zone is exposed.

Other excavation works in proximity to trees, including landscape works such as paving, irrigation and planting can adversely affect root systems. Seek advice from the project arborist.

## 8.2.6. Installing underground services within TPZ

All services should be routed outside the TPZ. If underground services must be routed within the TPZ, they should be installed by directional drilling or in manually excavated trenches. The directional drilling bore should be at least 600 mm deep. The project arborist should assess the likely impacts of boring and bore pits on retained trees. For manual excavation of trenches the project arborist should advise on roots to be retained and should monitor the works. Manual excavation may include the use of pneumatic and hydraulic tools.

## 8.2.7. Scaffolding

Where scaffolding is required, it should be erected outside the TPZ. Where it is essential for scaffolding to be erected within the TPZ, branch removal should be minimized. This can be achieved by designing scaffolding to avoid branches or tying back branches. Where pruning is unavoidable it must be specified by the project arborist in accordance with AS 4373. Ground below the scaffolding should be protected by boarding (e.g. scaffold board or plywood sheeting) as shown in Figure 5. Where access is required, a board walk, or other surface material should be installed to minimize soil compaction. Boarding should be placed over a layer of mulch and impervious sheeting to prevent soil contamination. The boarding should be left in place until the scaffolding is removed. Image below shows an example of appropriate scaffolding setup with a TPZ.

### 8.2.8. Tree 99, 100 & 101

These trees are located to the north of the Services Area. A modified Tree Protection Plan has been prepared for these trees. Figure 9 - Tree Protection Plan 2 (Tree 99, 100, 101).

### 8.2.9. Tree 1

Tree 1 is listed as Endangered in NSW and Vulnerable in Australia. This tree will be subject to multiple construction activities that will need to be carefully managed to enable the successful retention of the tree. A modified Tree Protection Plan has been prepared for this tree. Figure 8 - Tree Protection Plan 1 (tree 1).



Figure 5 - Scaffolding Setup Example

## 8.2.10. Mulching

The area within the TPZ should be mulched. The mulch must be maintained to a depth of 50–100 mm using leaf or forest mulch. Where the existing landscape within the TPZ is to remain unaltered (e.g. garden beds or turf) mulch may not be required.

## 8.2.11. Watering

Soil moisture levels should be regularly monitored by the project arborist. Temporary irrigation or watering may be required within the TPZ. An above-ground irrigation system should be installed and maintained by a competent individual.

## 8.2.12. Weed removal

All weeds should be removed by hand without soil disturbance or should be controlled with appropriate use of herbicide.

Schedule 1 – Mitigation Measures

#### Table 3 - Mitigation Measures

Tree	Botanical Name	Retention Value	TPZ	SRZ	Risks	Incursion %	Risk Rating	Method	Method Risk Rating	Comments
#	Common Name		radius m	radius m						
1	Eucalyptus scoparia Wallangarra White Gum	High	13.92	3.52	Root impact from electrical trenching	0%	Nil	Redesign electrical trench to fall outside TPZ.	Nil	Preferred option as the electrical trenching will remove all roots on the outside of the TPZ due to depth of excavation. This is highly impacting the TPZ.
						Less 30% - Current Design	Moderate	Dig all electrical services inside the TPZ with horizontal drilling at a depth greater than 1000mm. PA to assess impacts of boring pits if inside the TPZ. PA to monitor works and methods.	Low	This option would allow for a more flexible service location and is typical installation method around trees for mains power.
								Ground mats to prevent compaction used for all plant and equipment inside the TPZ		
						Less 20% Moderate	Moderate	Move trenching outside SRZ and conduct non-destructive digging methods such as vac truck.	Low/Moderate	
								PA to approve final design and to monitor works.		
						Less 10%		Ground mats to prevent compaction used for all plant and equipment inside the TPZ		
						Less 10%	Low	Conduct trenching works with traditional excavation with hand digging and NDD if required under supervision of PA	Low	
								Ground mats to prevent compaction used for all plant and equipment inside the TPZ		
					Root impact from stormwater and OSD	0%	Nil	Redesign stormwater trench to fall outside TPZ	Nil	
						Less 10% - Current Design	Moderate	Trenching route to be pre inspected by PA using slot trenching either side of the proposed route completed with a Vac Truck under low water pressure. PA to determine root density and advise if traditional excavation can be used of NDD only to retain roots in sections of the trench while still allowing for install of pipes. Ground mats to prevent compaction used for all plant and equipment inside the TPZ	Low	
						Less 5%	Low	Standard construction methods to be approved and supervised by PA.	Low	

Tree #	Botanical Name Common Name	Retention Value	TPZ radius m	SRZ radius m	Risks	Incursion %	Risk Rating	Method	Method Risk Rating	Comments
								Ground mats to prevent compaction used for all plant and equipment inside the TPZ		
					Driveway Crossover	Less 5% - Current Design	Low	Works to be supervised by PA No machinery allowed inside TPZ area that is not part of the driveway. Ground mats to prevent compaction used for all plant and equipment inside the TPZ	Low	
					Driveway	Less 5% - Current Design	Low	Standard construction methods to be approved and supervised by PA. Ground mats to prevent compaction used for all plant and equipment inside the TPZ	Low	
					Pathway	Less 6% - Current Design	Moderate	Subbase excavation depth to be not more than 100mm lower than existing ground level. 20mm of sand as sublayer and 125mm concrete pathway. Standard construction methods to be approved and supervised by PA.	Low	
								Ground mats to prevent compaction used for all plant and equipment inside the TPZ		
					Vegetation removal inside TPZ	Less 2%	Moderate	All removals inside the TPZ must be supervised by the PA. All works must be completed by hand and in dry conditions. Trucks and chipping machines to remain outside the TPZ and vegetation dragged out by winch or hand.	Low	
					Site and Silt Fencing	Less 2%	Moderate	Silt fencing must not be installed inside the TPZ. Silt fencing can be installed along the outer edges of the TPZ fencing.	Low	
34	Eucalyptus pilularis Blackbutt	Moderate	2.16	1.61	Any construction activities	Nil	Low	If construction activities risk impacting the TPZ, install standard protection fencing around the TPZ.	Low	
35	Dead tree	Very Low	2.40	1.68	Any construction activities in SRZ	Nil	Low	If construction activities risk impacting the TPZ, install standard protection fencing around the TPZ.	Low	
36	Eucalyptus piperita Sydney Peppermint	High	2.23	1.63	Any construction activities	Nil	Low	If construction activities risk impacting the TPZ, install standard protection fencing around the TPZ.	Low	

Tree #	Botanical Name Common Name	Retention Value	TPZ radius m	TPZ SRZ Risks Incursion % Risk Rating		Risk Rating	Method	Method Risk Rating	Comments	
37	Eucalyptus piperita Sydney Peppermint	High	2.00	1.50	Any construction activities	Nil	Low	If construction activities risk impacting the TPZ, install standard protection fencing around the TPZ.	Low	
38	Eucalyptus pilularis Blackbutt	High	4.92	2.28	Fire Trail	Less 10% Moderate Protect tree with standard protection fencing around the TPZ area. Protective fencing can be moved to facilitate construction activities only under PA supervision. PA to supervise all works inside the TPZ.		Protect tree with standard protection fencing around the TPZ area. Protective fencing can be moved to facilitate construction activities only under PA supervision. PA to supervise all works inside the TPZ.	Low	
39	Eucalyptus piperita Sydney Peppermint	High	3.60	2.00	Any construction activities	Nil	Low If construction activities risk impacting the TPZ, install standard protection fencing around the TPZ		Low	
40	Eucolyptus piperita Sydney Peppermint	High	2.88	1.82	Fire Trail     Less 10%     Moderate     Protect tree with standard protection fencing around th TPZ area.       Protective fencing can be moved to facilitate construction activities only under PA supervision.     PA to supervise all works include to TPZ.		Protect tree with standard protection fencing around the TPZ area. Protective fencing can be moved to facilitate construction activities only under PA supervision. PA to supervise all works inside the TPZ.	Low		
41	Eucalyptus piperita Sydney Peppermint	High	2.00	1.50	Any construction activities	Nil	Low	If construction activities risk impacting the TPZ, install standard protection fencing around the TPZ.	Low	
42	Eucalyptus signata Scribbly Gum	Moderate	5.16	2.32	Any construction activities	Nil	Low	If construction activities risk impacting the TPZ, install standard protection fencing around the TPZ.	Low	
43	Eucalyptus piperita Sydney Peppermint	High	3.67	2.01	Any construction activities	Nil	Low	If construction activities risk impacting the TPZ, install standard protection fencing around the TPZ.	Low	
44	Eucalyptus spp.	Moderate	2.00	1.50	Any construction activities	Nil	Low	If construction activities risk impacting the TPZ, install standard protection fencing around the TPZ.	Low	
45	Eucalyptus spp.	Moderate	2.00	1.50	Any construction activities	Nil	Low If construction activities risk impacting the TPZ, install standard protection fencing around the TPZ		Low	
46	Eucalyptus spp.	Moderate	Moderate     2.00     1.50     Any construction activities     Nil     Low     If construction activities rimpacting the TPZ, install standard protection fencing the TPZ.		If construction activities risk impacting the TPZ, install standard protection fencing around the TPZ.	Low				
47	Eucalyptus spp.	Moderate	2.00     1.50     Any construction activities     Nil     Low     If construction activities risk impacting the TPZ, install standard protection fencing around the TPZ.		If construction activities risk impacting the TPZ, install standard protection fencing around the TPZ.	Low				
48	Eucalyptus spp.	Moderate	2.04	1.57	Any construction activities	ties Nil Low If construction activities risk impacting the TP2, install standard protection fencing around the TP2.		If construction activities risk impacting the TPZ, install standard protection fencing around the TPZ.	Low	
48.1	<i>Eucalyptus pilularis</i> Blackbutt	Moderate	2.00	2.00 1.50 Any construction activities Nil Low		If construction activities risk impacting the TPZ, install standard protection fencing around the TPZ.	Low			

Tree #	Botanical Name Common Name	Retention Value	TPZ radius m	SRZ radius m	Risks	Incursion %	Risk Rating	Method	Method Risk Rating	Comments
48.2	Eucalyptus pilularis Blackbutt	Moderate	2.00	1.50	Any construction activities	Nil	Low	If construction activities risk impacting the TPZ, install standard protection fencing around the TPZ.	Low	
48.3	Eucalyptus pilularis Blackbutt	Moderate	2.00	1.50	Any construction activities	Nil	Low	If construction activities risk impacting the TPZ, install standard protection fencing around the TPZ.	Low	
48.4	Eucalyptus pilularis Blackbutt	Moderate	2.00	1.50	Any construction activities	Nil	Low	If construction activities risk impacting the TPZ, install standard protection fencing around the TPZ.	Low	
49	Eucalyptus piperita Sydney Peppermint	High	4.67	2.23	Fire Trail Less 10% Moderate Protect tree with standard protection fencing around t TPZ area. Protective fencing can be moved to facilitate construction activities only under PA supervision. PA to supervise all works incident to TD7		Protect tree with standard protection fencing around the TPZ area. Protective fencing can be moved to facilitate construction activities only under PA supervision. PA to supervise all works inside the TPZ.	Low		
49.1	Eucalyptus pilularis Blackbutt	Moderate	2.00	1.50	Any construction activities Nil Low If construction activities ri impacting the TPZ, install standard protection fencing around the TPZ.		If construction activities risk impacting the TPZ, install standard protection fencing around the TPZ.	Low		
50	Eucalyptus pilularis Blackbutt	Moderate	2.06	1.58	Any construction activities	Nil	Low	If construction activities risk impacting the TPZ, install standard protection fencing around the TPZ.	Low	
57	Angophora costata Smooth-barked Apple	Very Low	10.48	3.13	Any construction activities	Nil	Low	If construction activities risk impacting the TPZ, install standard protection fencing around the TPZ.	Low	
58	Angophora costata Smooth-barked Apple	Moderate	6.60	2.57	Landscaping and Hardscapes	Less 10%	0% Low Protect tree with standar protective with standar Protective fencing aroun TPZ area. Protective fencing can be moved to facilitate construction activities on under PA supervision. PA to supervise all works incide the TPL.		Low	
59	Angophora costata Smooth-barked Apple	Low	2.52	1.72	Any construction activities	Nil	Low	If construction activities risk impacting the TPZ, install standard protection fencing around the TPZ.	Low	
60	Angophora costata Smooth-barked Apple	Moderate	Image: And the TPZ.     Image: Any construction activities     Nil     Low     If construction activities risk impacting the TPZ.       Anderate     2.40     1.68     Any construction activities     Nil     Low     If construction activities risk impacting the TPZ.     If construction activities risk impacting the TPZ.       Image: Standard protection fencing a round the TPZ.     Image: Standard protection fencing a round the TPZ.		Low					
61	Angophora costata Smooth-barked Apple	Moderate	5.40 2.37 Any construction activities Nil Low If construction activities risk Low impacting the TPZ, install standard protection fencing around the TPZ.		Low					
62	Eucalyptus spp.	Low	3.56	1.99	Any construction activities	Nil	Low	If construction activities risk impacting the TPZ, install standard protection fencing around the TPZ.	Low	
63	Eucalyptus pilularis Blackbutt	s Low 3.96 2.08 Any con		Any construction activities	Nil	Low	If construction activities risk impacting the TPZ, install standard protection fencing around the TPZ.	Low		

Tree #	Botanical Name Common Name	Retention Value	TPZ radius m	SRZ radius m	Risks	Incursion %	Risk Rating	Method	Method Risk Rating	Comments
64	Corymbia gummifera Red Bloodwood	Very Low	3.14	1.89	Any construction activities	Nil	Low	If construction activities risk impacting the TPZ, install standard protection fencing around the TPZ.	Low	
65	Eucalyptus pilularis Blackbutt	Low	3.60	2.00	Any construction activities	Nil	Low	If construction activities risk impacting the TPZ, install standard protection fencing around the TPZ.	Low	
66	Eucalyptus spp.	Very Low	3.12	1.88	Any construction activities	Nil	Low	If construction activities risk impacting the TPZ, install standard protection fencing around the TPZ.	Low	
67	<i>Melia azedarach</i> White Cedar	Very Low	7.56	2.73	Any construction activities	Nil	Low	If construction activities risk impacting the TPZ, install standard protection fencing around the TPZ.	Low	
68	Pinus radiata Radiata Pine	Moderate	5.40	2.37	Any construction activities	Activities Nil Low If construction activities ri impacting the TPZ, install standard protection fencing around the TPZ.		If construction activities risk impacting the TPZ, install standard protection fencing around the TPZ.	Low	
69	Fraxinus griffithii Evergreen Ash	Low	2.00	1.50	Any construction activities	Nil	Low	If construction activities risk impacting the TPZ, install standard protection fencing around the TPZ.	Low	
70	Fraxinus griffithii Evergreen Ash	Moderate	5.36	2.36	Fire Trail and Demolition of House	Less 10%	Less 10% Moderate Protect tree with standard protection fencing aroun TPZ area. Protective fencing can be moved to facilitate construction activities on under PA supervision. PA to supervise all works inside the TPZ. Existing driveway to form of fire trail so impacts wi		Low	
71	Populus nigra 'Italica' Lombardy Poplar	Low	7.76	2.76	Fire Trail	Less 20% Moderate Existing driveway so impact will be minimal despite significant encroachment 9 Protection fencing can allo access along existing driver without supervise all ground disturbing works inside the		Existing driveway so impacts will be minimal despite significant encroachment %. Protection fencing can allow access along existing driveway without supervision of PA. PA to supervise all ground disturbing works inside the TPZ.	Low	
72	Fraxinus griffithii Evergreen Ash x 3	Low	2.00	1.45	Fire Trail	Less 5%	Low	Existing driveway so impacts will be minimal. Protection fencing can allow access along existing driveway without supervision of PA. PA to supervise all ground disturbing works inside the TPZ.	Low	
73	Eucalyptus piperita Sydney Peppermint	Moderate	9.96	3.06	Any construction activities	Nil	Low	If construction activities risk impacting the TPZ, install standard protection fencing around the TPZ.	Low	
74	Dead tree	Very Low	5.44	2.37	Any construction activities	Nil	Low If construction activities risk impacting the TPZ, install standard protection fencing around the TPZ.		Low	

Tree #	Botanical Name Common Name	Retention Value	TPZ radius m	SRZ radius m	Risks	Incursion %	Risk Rating	Method	Method Risk Rating	Comments
75	<i>Eucalyptus pilularis</i> Blackbutt	High	5.52	2.39	Any construction activities	Nil	Low	If construction activities risk impacting the TPZ, install standard protection fencing around the TPZ.	Low	
76	Eucalyptus pilularis Blackbutt	High	4.92	2.28	Any construction activities	Nil	Low	If construction activities risk impacting the TPZ, install standard protection fencing around the TPZ.	Low	
77	Eucalyptus pilularis Blackbutt	Very Low	7.80	2.76	Any construction activities	Nil	Low	Low If construction activities risk Low impacting the TPZ, install standard protection fencing around the TPZ.		
78	Eucalyptus pilularis Blackbutt	High	8.33	2.84	Any construction activities	Nil	Low	If construction activities risk impacting the TPZ, install standard protection fencing around the TPZ.	Low	
79	Eucalyptus piperita Sydney Peppermint	High	4.44	2.18	Any construction activities	Nil	Low	If construction activities risk impacting the TPZ, install standard protection fencing around the TPZ.	Low	
80	Eucalyptus piperita Sydney Peppermint	High	4.56	2.20	Any construction activities	Nil	Low	If construction activities risk impacting the TPZ, install standard protection fencing around the TPZ.	Low	
81	Dead tree	Very Low	3.36	1.94	Any construction activities	Nil	Low	If construction activities risk impacting the TPZ, install standard protection fencing around the TPZ.	Low	
82	Eucalyptus piperita Sydney Peppermint	Moderate	4.08	2.10	Any construction activities	Nil	Low	If construction activities risk impacting the TPZ, install standard protection fencing around the TPZ	Low	
83	Eucalyptus piperita Sydney Peppermint	Moderate	4.32	2.15	Any construction activities	Nil	Low	If construction activities risk impacting the TPZ, install standard protection fencing around the TPZ	Low	
84	Eucalyptus pilularis Blackbutt	Moderate	6.72	2.59	Any construction activities	Nil	Low	If construction activities risk impacting the TPZ, install standard protection fencing around the TPZ.	Low	
85	Eucalyptus piperita Sydney Peppermint	High	14.98	3.63	Any construction activities	Nil	Low	If construction activities risk impacting the TPZ, install standard protection fencing around the TPZ.	Low	
86	Dead tree	Very Low	2.52	1.72	Any construction activities	Nil	Low	If construction activities risk impacting the TPZ, install standard protection fencing around the TPZ.	Low	
87	Eucalyptus pilularis Blackbutt	High	5.88	2.45	Any construction activities	Nil	Low	If construction activities risk impacting the TPZ, install standard protection fencing around the TPZ.	Low	
88	Eucalyptus piperita Sydney Peppermint	High	5.40	2.37	Any construction activities	Nil	Low	If construction activities risk impacting the TPZ, install standard protection fencing around the TPZ.	Low	
89	Eucalyptus pilularis Blackbutt	Very Low	2.00	1.50	Any construction activities	Nil	Low	If construction activities risk impacting the TPZ, install standard protection fencing around the TPZ.	Low	
90	<i>Eucalyptus pilularis</i> Blackbutt	High	6.72	2.59	Any construction activities	Nil	Low	If construction activities risk impacting the TPZ, install	Low	

Tree #	Botanical Name Common Name	Retention Value	TPZ radius m	SRZ radius m	Risks	Incursion % Risk Rating		Method	Method Risk Rating	Comments
								standard protection fencing		
91	Eucalyptus piperita Sydney Peppermint	Moderate 6.72 2.59 Fire Trail		Fire Trail	Less 10%	Moderate	Protect tree with standard protection fencing around the TPZ area. Protective fencing can be moved to facilitate	Low		
								under PA supervision. PA to supervise all works inside the TPZ.		
92	Eucalyptus pilularis Blackbutt	High	9.60	3.01	Any construction activities	Nil	Low	If construction activities risk impacting the TPZ, install standard protection fencing around the TPZ.	Low	
93	Eucalyptus pilularis Blackbutt	High	2.40 1.68		Any construction activities	Nil	Low	If construction activities risk impacting the TPZ, install standard protection fencing around the TPZ.	Low	
94	Eucalyptus pilularis Blackbutt	bilularis High 2.00 1.50		1.50	Any construction activities	Nil	Low	If construction activities risk impacting the TPZ, install standard protection fencing around the TPZ.	Low	
94.1	Eucalyptus pilularis Blackbutt	is Moderate 2.00 1.50		1.50	Any construction activities	Nil	Low	If construction activities risk impacting the TPZ, install standard protection fencing around the TPZ.	Low	
95	Eucalyptus pilularis Blackbutt	Moderate	2.00	1.50	Any construction activities	Nil Low If construction activities risk Low impacting the TPZ, install standard protection fencing around the TPZ.		Low		
96	Eucalyptus pilularis Blackbutt	Moderate	2.00	1.50	Any construction activities	Nil	Low	If construction activities risk impacting the TPZ, install standard protection fencing around the TPZ.	Low	
97	Eucalyptus piperita Sydney Peppermint	High	4.20	2.13	Any construction activities	Nil	Low	If construction activities risk impacting the TPZ, install standard protection fencing around the TPZ.	Low	
98	Eucalyptus piperita Sydney Peppermint	Eucalyptus piperita High 4.20 Sydney Peppermint		2.13	Any construction activities	Nil	Low	If construction activities risk impacting the TPZ, install standard protection fencing around the TPZ.	Low	
99	<i>Quercus palustris</i> Pin Oak	High	4.20	2.13	Root damage from trenching underground services	Less 10%	Moderate	All Underground services are to be installed outside the TPZ.	Low	
					Slabs for above ground services	Less 5%	Low	All slabs are to be engineered to favour drilled piers rather than edge beams inside the TPZ. PA to supervise all construction activities inside the TPZ.	Low	
					Landscaping along boundary	Less 5%	Low	No excavation of existing soil along boundary. PA to approve final landscaping methodology.	Low	
					Site and Silt Fencing	Less 2%	Moderate	Silt fencing must not be installed inside the TPZ. Silt fencing can be installed along	Low	

Tree #	Botanical Name Common Name	Retention Value	TPZ radius m	SRZ radius m	Risks	Incursion %	Risk Rating	Method	Method Risk Rating	Comments											
								the outer edges of the TPZ													
100	<i>Quercus palustris</i> Pin Oak	High	5.40	2.37	Root damage from trenching underground services	Less 20%	High	All Underground services are to be installed outside the TPZ.	Low												
					Slabs for above ground services	Less 10%	Moderate	All slabs are to be engineered to favour drilled piers rather than edge beams inside the TPZ. PA to supervise all construction activities inside the TPZ.	Low												
						Landscaping along boundary	Less 5%	Low	No excavation of existing soil along boundary. PA to approve final landscaping methodology.	Low											
					Site and Silt Fencing	Less 2%	Moderate	Silt fencing must not be installed inside the TPZ. Silt fencing can be installed along the outer edges of the TPZ fencing.	Low												
101	<i>Liquidambar styraciflua</i> Sweetgum	High	4.80	2.25	2.25	Root damage from trenching underground services	Less 15%	High	All Underground services are to be installed outside the TPZ.	Low											
																Slabs for above ground services	Less 10%	Moderate	All slabs are to be engineered to favour drilled piers rather than edge beams inside the TPZ. PA to supervise all construction activities inside the TPZ.	Low	
						Landscaping along boundary	Less 5%	Low	No excavation of existing soil along boundary. PA to approve final landscaping methodology.	Low											
					Site and Silt Fencing	Less 2%	Moderate	Silt fencing must not be installed inside the TPZ. Silt fencing can be installed along the outer edges of the TPZ fencing.	Low												

Schedule 2 - Tree Data

#### Table 4 - Tree Data

Tree #	Botanical Name Common Name	DBH mm	DRC mm	Height m	Crown Spread NSEW m	Age Class	Structure	Health	Condition	SULE	Sustainability	Landscape Significance	Retention Value	TPZ radius m	SRZ radius m	Outcome	Reason
1	Eucalyptus scoparia Wallangarra White Gum	1160	1276	22	8565	М	Good/Fair	Fair	4	2d	15 - 40 years	Significant	High	13.92	3.52	Retained	Endangered Tree. Protect during construction. All TPZ works supervised by PA.
2	Cinnamomum camphora Camphor Laurel	437	481	14	5435	м	Good	Good	5	3c	15 - 40 years	Insignificant	Very Low	N/A	N/A	Remove	Pathway and weed species
3	Cinnamomum camphora Camphor Laurel	170	187	10	1311	SM	Good	Good	5	3c	15 - 40 years	Insignificant	Very Low	N/A	N/A	Remove	Pathway and weed species
4	<i>Olea europaea</i> African Olive	420	462	7	2517	М	Good/Fair	Good	5	3c	5 - 15 years	Insignificant	Very Low	N/A	N/A	Remove	Regional Priority Weed Species
5	<i>Olea europaea</i> African Olive	200	220	5	3122	SM	Good	Good	5	3c	5 - 15 years	Insignificant	Very Low	N/A	N/A	Remove	Regional Priority Weed Species
6	<i>Olea europaea</i> African Olive	216	238	5	4423	SM	Good	Good	5	3c	5 - 15 years	Insignificant	Very Low	N/A	N/A	Remove	Regional Priority Weed Species
7	<i>Olea europaea</i> African Olive	160	176	10	7555	М	Good/Fair	Good	4	3c	5 - 15 years	Insignificant	Very Low	N/A	N/A	Remove	Regional Priority Weed Species
8	Pittosporum undulatum Native Daphne	170	187	5	1141	SM	Fair	Good	5	3c	5 - 15 years	Low	Low	N/A	N/A	Remove	Low value, remove for landscaping, hardscape encroachments
9	Pittosporum undulatum Native Daphne	149	164	5	1221	SM	Good/Fair	Good	5	3c	5 - 15 years	Low	Low	N/A	N/A	Remove	Low value, remove for landscaping, hardscape encroachments
10	<i>Olea europaea</i> African Olive	141	155	5	1311	SM	Good	Good	5	3c	5 - 15 years	Insignificant	Very Low	N/A	N/A	Remove	Regional Priority Weed Species
11	Pittosporum undulatum Native Daphne	100	110	5	1111	SM	Good	Good	5	3c	5 - 15 years	Low	Low	N/A	N/A	Remove	Low value, remove for landscaping, hardscape encroachments
12	Olea europaea African Olive	141	155	5	1221	SM	Good	Good	5	3c	5 - 15 years	Insignificant	Very Low	N/A	N/A	Remove	Regional Priority Weed Species
13	Olea europaea African Olive	311	342	7	3432	SM	Good	Good	5	3c	5 - 15 years	Insignificant	Very Low	N/A	N/A	Remove	Regional Priority Weed Species
14	Olea europaea African Olive	141	155	5	1211	SM	Good	Good	5	3c	5 - 15 years	Insignificant	Very Low	N/A	N/A	Remove	Regional Priority Weed Species
15	Ligustrum sinense Small-leaf Privet	150	165	5	2212	SM	Good/Fair	Good	5	3c	5 - 15 years	Insignificant	Very Low	N/A	N/A	Remove	Regional Priority Weed Species
16	Olea europaea African Olive	141	155	6	3322	SM	Good	Good	5	3c	5 - 15 years	Insignificant	Very Low	N/A	N/A	Remove	Regional Priority Weed Species
17	Olea europaea African Olive	110	121	5	1311	SM	Good	Good	5	3c	5 - 15 years	Insignificant	Very Low	N/A	N/A	Remove	Regional Priority Weed Species
18	Olea europaea African Olive	191	210	5	3312	SM	Good	Good	5	3c	5 - 15 years	Insignificant	Very Low	N/A	N/A	Remove	Regional Priority Weed Species
19	Olea europaea African Olive	160	176	5	2311	SM	Good	Good	5	3c	5 - 15 years	Insignificant	Very Low	N/A	N/A	Remove	Regional Priority Weed Species
20	<i>Olea europaea</i> African Olive	156	172	5	2311	SM	Good	Good	5	3c	5 - 15 years	Insignificant	Very Low	N/A	N/A	Remove	Regional Priority Weed Species
21	<i>Olea europaea</i> African Olive	156	172	5	1311	SM	Good	Good	5	3c	5 - 15 years	Insignificant	Very Low	N/A	N/A	Remove	Regional Priority Weed Species
22	<i>Olea europaea</i> African Olive	160	176	5	2311	SM	Good/Fair	Good	5	3c	5 - 15 years	Insignificant	Very Low	N/A	N/A	Remove	Regional Priority Weed Species
23	Cinnamomum camphora Camphor Laurel	361	397	10	3432	М	Good/Fair	Good	5	3c	15 - 40 years	Insignificant	Very Low	N/A	N/A	Remove	Hardscape area and weed species
24	<i>Olea europaea</i> African Olive	141	155	5	2211	SM	Good	Good	5	3c	5 - 15 years	Insignificant	Very Low	N/A	N/A	Remove	Regional Priority Weed Species
25	<i>Olea europaea</i> African Olive	196	216	5	1322	SM	Good/Fair	Good	5	3c	5 - 15 years	Insignificant	Very Low	N/A	N/A	Remove	Regional Priority Weed Species
26	Ligustrum lucidum Large-Leaf Privet	227	250	7	2323	м	Good/Fair	Good	5	3c	5 - 15 years	Insignificant	Very Low	N/A	N/A	Remove	Regional Priority Weed Species
27	Grevillea robusta Silky Oak	913	1004	20	9877	М	Fair	Good/Fair	4	3d	15 - 40 years	Moderate	Moderate	N/A	N/A	Remove	Fire hydrant, entry plaza hardscape, fair structure, higher ongoing risk of failure.
28	Grevillea robusta Silky Oak	870	957	20	8877	м	Good/Fair	Good/Fair	5	3b	Greater 40 years	High	High	N/A	N/A	Remove	Block B structure

Tree #	Botanical Name Common Name	DBH mm	DRC mm	Height m	Crown Spread NSEW m	Age Class	Structure	Health	Condition	SULE	Sustainability	Landscape Significance	Retention Value	TPZ radius m	SRZ radius m	Outcome	Reason
29	<i>Grevillea robusta</i> Silky Oak	716	788	20	7274	М	Good	Good/Fair	5	1b	Greater 40 years	High	High	N/A	N/A	Remove	Block B structure
30	Grevillea robusta Silky Oak	660	726	20	1636	м	Good	Good	5	1b	Greater 40 years	High	High	N/A	N/A	Remove	Block B structure
31	Melia azedarach White Cedar	402	442	7	4444	SM	Good/Fair	Good	5	2b	Less 5 years	Low	Very Low	N/A	N/A	Remove	Very Low Value, Hazardous tree in school area due to toxic insects. Hardscapes and Landscaping.
32	Grevillea robusta Silky Oak	870	957	20	8877	м	Good/Fair	Good	5	1b	Greater 40 years	High	High	N/A	N/A	Remove	Hardscapes and Septic tank. Not viable for retention with severe TPZ encroachment.
33	<i>Olea europaea</i> African Olive	245	270	7	4343	М	Good/Fair	Good	5	3c	5 - 15 years	Insignificant	Very Low	N/A	N/A	Remove	Regional Priority Weed Species
34	Eucalyptus pilularis Blackbutt	180	198	10	3111	SM	Good/Fair	Good	5	2d	15 - 40 years	High	Moderate	2.16	1.61	Retained	
35	Dead tree	200	220	10	0	SM	Poor	Poor	1	4a	Dead or hazardous	Low	Very Low	2.40	1.68	Retained	
36	Eucalyptus piperita Sydney Peppermint	186	205	10	1111	SM	Good/Fair	Good	5	1b	Greater 40 years	High	High	2.23	1.63	Retained	
37	Eucalyptus piperita Sydney Peppermint	110	121	10	1111	SM	Good	Good	5	1b	Greater 40 years	High	High	2.00	1.50	Retained	
38	Eucalyptus pilularis Blackbutt	410	451	20	5553	м	Good	Good	5	1b	Greater 40 years	High	High	4.92	2.28	Retained	
39	Eucalyptus piperita Sydney Peppermint	300	330	20	3222	М	Good	Good	5	1b	Greater 40 years	High	High	3.60	2.00	Retained	
40	Eucalyptus piperita Sydney Peppermint	240	264	12	2121	SM	Good	Good	5	1b	Greater 40 years	High	High	2.88	1.82	Retained	
41	Eucalyptus piperita Sydney Peppermint	110	121	10	1111	SM	Good	Good	5	1b	Greater 40 years	High	High	2.00	1.50	Retained	
42	Eucalyptus signata Scribbly Gum	430	473	18	5542	м	Fair	Good	4	2d	15 - 40 years	High	Moderate	5.16	2.32	Retained	
43	Eucalyptus piperita Sydney Peppermint	306	337	18	3112	м	Good/Fair	Good	4	2d	Greater 40 years	High	High	3.67	2.01	Retained	
44	Eucalyptus spp.	110	121	7	1111	SM	Good	Good	5	1b	Greater 40 years	Moderate	Moderate	2.00	1.50	Retained	
45	Eucalyptus spp.	110	121	7	1111	SM	Good	Good	5	1b	Greater 40 years	Moderate	Moderate	2.00	1.50	Retained	
46	Eucalyptus spp.	100	110	7	1111	SM	Good	Good	5	1b	Greater 40 years	Moderate	Moderate	2.00	1.50	Retained	
47	Eucalyptus spp.	110	121	7	1111	SM	Good	Good	5	1b	Greater 40 years	Moderate	Moderate	2.00	1.50	Retained	
48	Eucalyptus spp.	170	187	10	1111	SM	Good	Good	5	1b	Greater 40 years	Moderate	Moderate	2.04	1.57	Retained	
48.1	Eucalyptus pilularis Blackbutt	50	55	5	1111	J	Good	Good	6	1a	Greater 40 years	Moderate	Moderate	2.00	1.50	Retained	
48.2	Eucalyptus pilularis Blackbutt	50	55	5	1111	J	Good	Good	6	1a	Greater 40 years	Moderate	Moderate	2.00	1.50	Retained	
48.3	Eucalyptus pilularis Blackbutt	50	55	5	1111	J	Good	Good	6	1a	Greater 40 years	Moderate	Moderate	2.00	1.50	Retained	
48.4	Eucalyptus pilularis Blackbutt	50	55	5	1111	J	Good	Good	6	1a	Greater 40 years	Moderate	Moderate	2.00	1.50	Retained	
49	Eucalyptus piperita Sydney Peppermint	389	428	18	7164	М	Good/Fair	Good	5	2d	Greater 40 years	High	High	4.67	2.23	Retained	
49.1	Eucalyptus pilularis Blackbutt	50	55	5	1111	J	Good	Good	6	1a	Greater 40 years	Moderate	Moderate	2.00	1.50	Retained	
50	Eucalyptus piperita Sydney Peppermint	172	189	10	1111	SM	Fair	Good	4	1b	Greater 40 years	Moderate	Moderate	2.06	1.58	Retained	
50.1	Eucalyptus piperita Sydney Peppermint	140	154	10	1111	SM	Good	Good	5	1b	Greater 40 years	Moderate	Moderate	2.00	1.45	Remove	Removed for fire trail. Lowest impact pathway through trees and TPZ

Tree #	Botanical Name Common Name	DBH mm	DRC mm	Height m	Crown Spread NSEW m	Age Class	Structure	Health	Condition	SULE	Sustainability	Landscape Significance	Retention Value	TPZ radius m	SRZ radius m	Outcome	Reason
51	Eucalyptus piperita Sydney Peppermint	140	154	10	1111	SM	Good	Good	5	1b	Greater 40 years	Moderate	Moderate	2.00	1.45	Remove	Removed for fire trail. Lowest impact pathway through trees and TPZ
51.1	Eucalyptus piperita Sydney Peppermint	100	110	7	1111	J	Good	Good	6	1b	Greater 40 years	Moderate	Moderate	N/A	N/A	Remove	Removed for fire trail. Lowest impact pathway through trees and TPZ
52	Glochidion ferdinandii Cheese Tree	402	442	5	3222	SM	Good/Fair	Good	5	2d	15 - 40 years	Moderate	Moderate	N/A	N/A	Remove	Nuisance, low amenity value, isolated, future Soccer Oval area,
53	Glochidion ferdinandii Cheese Tree	200	220	5	3222	SM	Good/Fair	Good	5	2d	15 - 40 years	Moderate	Moderate	N/A	N/A	Remove	Nuisance, low amenity value, isolated, future Soccer Oval area,
54	<i>Olea europaea</i> African Olive	156	172	5	4114	SM	Good/Fair	Good	5	3c	5 - 15 years	Insignificant	Very Low	N/A	N/A	Remove	Regional Priority Weed Species
55	Pittosporum undulatum Native Daphne	197	217	5	1233	SM	Good/Fair	Good	5	3c	5 - 15 years	Low	Low	N/A	N/A	Remove	Low value, poor appearance, future Soccer Oval area
56	<i>Olea europaea</i> African Olive	476	524	10	5555	М	Good/Fair	Good	5	3c	5 - 15 years	Insignificant	Very Low	N/A	N/A	Remove	Regional Priority Weed Species
57	Angophora costata Smooth-barked Apple	873	960	10	2434	м	Poor	Poor	2	4a	Dead or hazardous	Low	Very Low	10.48	3.13	Retained	
58	Angophora costata Smooth-barked Apple	550	605	22	5523	М	Fair	Good	4	2b	5 - 15 years	High	Moderate	6.60	2.57	Retained	
59	Angophora costata Smooth-barked Apple	210	231	5	1111	SM	Poor	Poor	2	3b	Less 5 years	High	Low	2.52	1.72	Retained	
60	Angophora costata Smooth-barked Apple	200	220	5	3112	SM	Fair	Good	5	2d	5 - 15 years	High	Moderate	2.40	1.68	Retained	
61	Angophora costata Smooth-barked Apple	450	495	20	5324	м	Good/Fair	Good	5	2d	15 - 40 years	High	Moderate	5.40	2.37	Retained	
62	Eucalyptus spp.	297	327	7	1112	SM	Poor	Good/Fair	3	3b	Less 5 years	High	Low	3.56	1.99	Retained	
63	<i>Eucalyptus pilularis</i> Blackbutt	330	363	15	4214	М	Fair	Good	5	2d	Less 5 years	High	Low	3.96	2.08	Retained	
64	<i>Corymbia gummifera</i> Red Bloodwood	262	288	5	2211	SM	Poor	Good	5	3b	Less 5 years	Moderate	Very Low	3.14	1.89	Retained	
65	<i>Eucalyptus pilularis</i> Blackbutt	300	330	18	2111	М	Poor	Good	4	3b	Less 5 years	High	Low	3.60	2.00	Retained	
66	Eucalyptus spp.	260	286	10	2112	SM	Poor	Good	3	3b	Less 5 years	Moderate	Very Low	3.12	1.88	Retained	
67	<i>Melia azedarach</i> White Cedar	630	693	15	7346	м	Fair	Good	4	2b	Dead or hazardous	Moderate	Very Low	7.56	2.73	Retained	
68	<i>Pinus radiata</i> Radiata Pine	450	495	18	5414	м	Good	Good	5	2d	15 - 40 years	Moderate	Moderate	5.40	2.37	Retained	
69	<i>Fraxinus griffithii</i> Evergreen Ash x 17	80	88	Avg 5	1111	SM	Good	Good	5	3c	5 - 15 years	Low	Low	2.00	1.50	Retained	
70	<i>Fraxinus griffithii</i> Evergreen Ash	447	492	15	6252	м	Good	Good	5	2d	15 - 40 years	Moderate	Moderate	5.36	2.36	Retained	
71	<i>Populus nigra 'Italica'</i> Lombardy Poplar	647	712	23	1111	OM	Good	Good	5	3c	5 - 15 years	Low	Low	7.76	2.76	Retained	
72	<i>Fraxinus griffithii</i> Evergreen Ash x 3	140	154	Avg 5	3333	SM	Good/Fair	Good	5	3c	5 - 15 years	Low	Low	2.00	1.45	Retained	
73	Eucalyptus piperita Sydney Peppermint	830	913	25	6418	м	Good/Fair	Good/Fair	4	2d	15 - 40 years	High	Moderate	9.96	3.06	Retained	
74	Dead tree	453	498	20	3312	М	Poor	Poor	1	4a	Dead or hazardous	Low	Very Low	5.44	2.37	Retained	
75	Eucalyptus pilularis Blackbutt	460	506	25	2322	М	Good/Fair	Good	5	1b	Greater 40 years	High	High	5.52	2.39	Retained	
76	Eucalyptus pilularis Blackbutt	410	451	25	3343	М	Good	Good	5	1b	Greater 40 years	High	High	4.92	2.28	Retained	
77	Eucalyptus pilularis Blackbutt	650	715	25	4657	М	Poor	Poor	1	4a	Dead or hazardous	Low	Very Low	7.80	2.76	Retained	
78	Eucalyptus pilularis Blackbutt	694	763	25	3529	М	Good/Fair	Good	4	1b	Greater 40 years	High	High	8.33	2.84	Retained	

		1			1					1				1			
Tree #	Botanical Name Common Name	DBH mm	DRC mm	Height m	Crown Spread NSEW m	Age Class	Structure	Health	Condition	SULE	Sustainability	Landscape Significance	Retention Value	TPZ radius m	SRZ radius m	Outcome	Reason
79	Eucalyptus piperita Sydney Peppermint	370	407	20	2433	м	Good	Good	5	1b	Greater 40 years	High	High	4.44	2.18	Retained	
80	Eucalyptus piperita Sydney Peppermint	380	418	15	7355	м	Good	Good/Fair	5	1b	Greater 40 years	High	High	4.56	2.20	Retained	
81	Dead tree	280	308	7	0	SM	Poor	Poor	1	4a	Dead or hazardous	Low	Very Low	3.36	1.94	Retained	
82	Eucalyptus piperita Sydney Peppermint	340	374	15	8124	м	Good/Fair	Good	5	2d	15 - 40 years	High	Moderate	4.08	2.10	Retained	
83	Eucalyptus piperita Sydney Peppermint	360	396	12	3221	SM	Fair	Good/Fair	5	2c	5 - 15 years	High	Moderate	4.32	2.15	Retained	
84	Eucalyptus pilularis Blackbutt	560	616	25	2265	м	Fair	Good	4	2d	5 - 15 years	High	Moderate	6.72	2.59	Retained	
85	Eucalyptus piperita Sydney Peppermint	1248	1373	25	14 14 10 14	м	Good/Fair	Good/Fair	4	1b	Greater 40 years	High	High	14.98	3.63	Retained	
86	Dead tree	210	231	10	0	SM	Poor	Poor	1	4a	Dead or hazardous	Low	Very Low	2.52	1.72	Retained	
87	Eucalyptus pilularis Blackbutt	490	539	25	3333	м	Good	Good	5	1b	Greater 40 years	High	High	5.88	2.45	Retained	
88	Eucalyptus piperita Sydney Peppermint	450	495	25	5242	м	Good	Good/Fair	5	1b	Greater 40 years	High	High	5.40	2.37	Retained	
89	Eucalyptus pilularis Blackbutt	550	605	25	1542	м	Poor	Poor	1	4a	Dead or hazardous	Low	Very Low	2.00	1.50	Retained	
90	<i>Eucalyptus pilularis</i> Blackbutt	560	616	25	8 2 10 5	М	Good	Good/Fair	5	1b	Greater 40 years	High	High	6.72	2.59	Retained	
91	Eucalyptus piperita Sydney Peppermint	560	616	15	7575	м	Good	Good/Fair	5	2d	15 - 40 years	High	Moderate	6.72	2.59	Retained	
92	Eucalyptus pilularis Blackbutt	800	880	30	79107	м	Good	Good/Fair	4	1b	Greater 40 years	High	High	9.60	3.01	Retained	
93	Eucalyptus pilularis Blackbutt	200	220	15	1121	SM	Good	Good	5	1b	Greater 40 years	High	High	2.40	1.68	Retained	
94	Eucalyptus pilularis Blackbutt	290	319	18	3121	SM	Good	Good	5	1b	Greater 40 years	High	High	2.00	1.50	Retained	
94.1	Eucalyptus pilularis Blackbutt	80	85	5	1111	J	Good	Good	6	1a	Greater 40 years	Moderate	Moderate	2.00	1.50	Retained	
95	Eucalyptus pilularis Blackbutt	368	405	12	2161	SM	Fair	Good/Fair	4	2b	5 - 15 years	High	Moderate	2.00	1.50	Retained	
96	Eucalyptus pilularis Blackbutt	80	80	5	1111	J	Good	Good	6	1a	Greater 40 years	Moderate	Moderate	2.00	1.50	Retained	
97	Eucalyptus piperita Sydney Peppermint	350	380	17	5564	м	Good	Good	5	1b	Greater 40 years	High	High	4.20	2.13	Retained	
98	Eucalyptus piperita Sydney Peppermint	350	380	18	7687	м	Good	Good	5	1b	Greater 40 years	High	High	4.20	2.13	Retained	
99	<i>Quercus palustris</i> Pin Oak	350	380	10	3333	м	Good	Excellent	6	1a	Greater 40 years	High	High	4.20	2.13	Retained	Neighbours tree. Protect during construction
100	<i>Quercus palustris</i> Pin Oak	450	550	15	4444	М	Good	Excellent	6	1a	Greater 40 years	High	High	5.40	2.37	Retained	Neighbours tree. Protect during construction
101	<i>Liquidambar styraciflua</i> Sweetgum	400	450	14	6666	м	Fair	Good	4	1b	Greater 40 years	High	High	4.80	2.25	Retained	Neighbours tree. Protect during construction

Schedule 3 – Maps



Figure 6 - Site Location (Six Maps, 2025)



Figure 7 – Tree Location Plan





Figure 9 - Tree Protection Plan 2 (Tree 99, 100, 101)

Schedule 4 – Site Images



Figure 10 - Tree 1 to be protected and supervised during construction.



Figure 11 - Tree 99, 100 & 101 in neighbour's yard to be protected during construction.



Figure 12 - Small shed to be demolished. Tree 67.



Figure 13 - House to be demolished.



Figure 14 - Trees on LHS of existing entrance to proposed fire trail.



Figure 15 - Hedge on RHS of existing access to proposed fire trail

## References

Bond, J., 2012. Urban Tree Health. s.l.: Urban Forest Analytics LLC.

Julian Dunster, T. S. N. M. S. L., 2013. *Tree Risk Assessment Manual*. Champaign, Illinois: International Society of Arboriculture.

MAPS, S., n.d. *NSW Gov Six Maps.* [Online] Available at: <u>https://maps.six.nsw.gov.au/</u>

Standards Australia, 2007. AS 4373 Pruning of Amenity Trees, Sydney: Standards Australia.

Standards Australia, 2009. *AS 4970 Protection of Trees on Development Sites,* Sydney: Standards Australia.

Environmental Planning and Assessment Act 1979

State Environmental Planning Policy (Transport and Infrastructure) 2021 (T&I SEPP)

Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act 1999)

Biodiversity Conservation Act 2016

## Appendix A – Determining Tree Retention Values

The following steps are a standardised approach for assessing the retention values of trees. This approach is based on the *British Standard BS5837-2012: Trees in Relation to Design, Demolition and Construction*.

## Step 1 – Assess tree sustainability

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

IMPORTANT: Sustainability must only be assessed by a person with a minimum qualification of AQF 5 in Horticulture (Arboriculture).

## Step 2 – Determine landscape significance rating

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

## 1. SIGNIFICANT The tree is listed as a Heritage Item under the LEP with a local, state or national level of significance; or The tree forms part of the curtilage of a heritage item (building /structure/artefact as defined in the LEP, and has a known or documented association with that item; or Aboriginal cultural artefact, evidence by identifiable markings or other documentary evidence; or The tree is a commemorative planting relating to an important historical event; or The tree is scheduled as a Threatened Species, or is a key indicator species of an Endangered Ecological Community as defined under the Threatened Species Conservation Act 1995 (NSW) or the Environmental Protection and Biodiversity Conservation Act 1999: or The tree is an endemic species, representative of the original vegetation of the area and is known as an important food, shelter or nesting tree for endangered or threatened fauna species; or A remnant tree in existence prior to development of the local area; or The tree has a very large live crown size\* greater than 200m<sup>2</sup> with normal to dense foliage cover, is visually prominent in the landscape, exhibits good form and habit typical of the species and makes a significant contribution to the amenity and visual character of the area by creating a sense of place or creating a sense of identity; or The tree is visually prominent in view from surrounding areas, being a landmark or visible from a considerable distance. 2. VERY HIGH

The tree has a strong historical association with a heritage item (building/structure/artefact/garden etc) within or adjacent the property and/or exemplifies a particular style or era of landscape design associated with the original development of the site; or

The tree is a locally-indigenous species and representative of the original vegetation of the area and the tree is located within a key wildlife corridor or has known wildlife habitat value; or is uncommon in cultivation; and

Visible from surrounding properties, the street or other thoroughfares (including waterways); and

The tree has a very large live crown size\* exceeding 200m<sup>2</sup>; a crown density exceeding 70% Crown Cover (normal-dense), good form and branching habit, good representative of the species or is aesthetically distinctive and makes a positive contribution to the visual character and amenity of the area.

#### 3. HIGH

The tree has a suspected historical association with a heritage item or landscape supported by anecdotal evidence or based on knowledge of similar sites, tree age, etc; or

The tree is a locally-indigenous species and representative of the original vegetation of the area; and

The tree is beneficial for native wildlife; or

The tree has a large live crown size\* exceeding 100m<sup>2</sup>; and

The tree is a good representative of the species in terms of its form and branching habit with minor deviations from normal (e.g. crown distortion/suppression) with a crown density of at least 70% Crown Cover (normal); and

The subject tree is visible from surrounding properties and makes a fair/neutral contribution to the amenity of the property/visual character of the area.

#### 4. MODERATE

The tree has a medium live crown size\* exceeding 40m<sup>2</sup>; and

The tree is a fair representative of the species, exhibiting fair form and habit, moderate distortion or suppression with a crown density of more than 50% Crown Cover (thinning to normal); and

The tree makes a fair contribution to the visual character and amenity of the area; and

The tree is visible from surrounding properties. Not visually prominent – view may be partially obscured by other vegetation or built forms, or

The tree has no known or suspected historical value or association.

#### 5. LOW

The tree has a small live crown size\* of less than 40m<sup>2</sup> and can be replaced within the short term with new tree planting; or

The tree is a poor representative of the species, poor form and habit with significant distortion or canopy suppression, with a crown density of less than 50% Crown Cover (sparse); and

The tree is not visible from surrounding properties (obscured by other trees or built forms) and makes a negligible contribution to the amenity of the property/surrounding properties or detracts from the visual character of the area.

#### 6. VERY LOW

The tree is listed as an undesirable species as listed by Council; and

The tree has no heritage importance or value, no known or suspected historical association.

#### 7. INSIGNIFICANT

The tree is a declared noxious weed under the *Noxious Weeds Act (NSW) 1993* or is an undesirable species by the local Council.

## Step 3 – Weigh sustainability and landscape significance

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

Once there is a measure of a tree's sustainability and landscape significance, these two factors can be weighed up using the Tree Retention Value Table which categorises the tree according to its suitability or desirability for retention.

	Landscape Significance Reading											
Tree Sustainability	1	2	3	4	5	6	7					
Greater than 40 years	High Re	etention V	/alue									
15 to 40 years			Modera	te								
5 to 15 years				Low								
Less than 5 years					Very Lo Value	ion						
Dead or hazardous												

Modified by A. Morton from: Couston, Mark and Howden, Melanie (2001) Tree Retention Values Table Footprint Green Pty Ltd, Sydney Australia.

## Appendix B – Calculating TPZ and SRZ Values

## **Tree Protection Zone (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. The TPZ incorporates the structural root zone (SRZ).

## Determining the TPZ

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

## $TPZ = DBH \times 12$

Where DBH = trunk diameter measured at 1.4 m above ground

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

A TPZ should not be less than 2 m nor greater than 15 m (except where crown protection is required).

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

## Variations to the TPZ

It may be possible to encroach into or make variations to the standard TPZ. Encroachment includes excavation, compacted fill and machine trenching.

## **Minor Encroachments**

If the proposed encroachment is less than 10% of the area of the TPZ and is outside the SRZ, detailed root investigations should not be required. The area lost to this encroachment should be compensated for elsewhere and contiguous with the TPZ. Variations must be made by the project arborist considering relevant factors.

### **Major Encroachments**

If the proposed encroachment is greater than 10% of the TPZ or inside the SRZ, the project arborist must demonstrate that the tree(s) would remain viable.

The area lost to this encroachment should be compensated for elsewhere and contiguous with the TPZ. This may require root investigation by non-destructive methods and consideration of relevant factors.

## 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. Root investigation may provide more information on the extent of these roots.

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 0.15 m will be 1.5 m



Figure 16 - TPZ and SRZ Diagram

# Appendix C – Contractor Guidelines/Standards

Below is the recommended guidelines and standards for a Tree Service Provider that is engaged to conduct arboricultural works on a site, including tree removal, pruning, grinding and all other services relating to trees:

**Supervisor Qualifications and Experience** - All tree work must be supervised by a company/individual holding a minimum qualification level of AQF3 in Arboriculture. All work conducted on the site must be supervised by an individual holding this qualification, as a minimum, and they must remain onsite for the entire duration of the works.

**Worker Qualifications** – All tree pruning, and tree removal onsite must be conducted by workers holding a minimum qualification level of AQF2 in Arboriculture and supervised by the above supervisor. All workers feeding chippers, conducting stump grinding and operating machinery must be clearly competent to perform the task and supervised by the above supervisor.

**SEQ Management System** – The contractor must have a documented Safety Management Plan, Environmental Management Plan and it is recommended that they also have a Quality Management Plan.

**Insurances** – The contractor engaged should have public liability cover for a minimum value of \$20 million and hold the appropriate workers compensation policy for any employees working on site, with WIC code 952520. Any company providing consulting services such as a project arborist, must have a Professional Indemnity Policy for over \$2 million.

**Minimum Industry Standards** – The minimum Industry Standards published by Arboriculture Australia must be the minimum standards of the contractor in the way works are performed onsite and the safety procedures followed. The contractor must be able to demonstrate that they have access to these standards. These standards can be purchased at https://trees.org.au/education/minimum-industry-standards

**Australian Standards** – All pruning is to be in accordance with AS4373 *Pruning of Amenity Trees.* 

**Environmental Standards** - Mulch from all native tree removal should be retained onsite for use within the school grounds if possible. If not possible, the mulch should be taken to an approved recycling facility to be solarised. This is a requirement under the *Mulch Order 2016* enforced by the EPA.

## Appendix D – SULE, Condition and Age Class

## SULE - Safe Useful Life Expectancy

## 1. Long SULE

- a. Structurally sound and can accommodated future growth
- b. Long term potential with minor remedial treatment
- c. Trees of special significance which warrant extra care

## 2. Medium SULE

a. Will live between 15-40 years

b. Will live for more than 40 years but would be removed for safety or nuisance reasons

c. May live for more than 40 years but will interfere with more suitable specimens and need removal eventually

d. More suitable for retention in the medium term with some remedial care

## 3. Short SULE

a. Trees that may only live between 5-15 more years

b. May live for more than 15 years but would need removal for safety or other reasons

c. Will live for more than 15 years but will interfere with more suitable specimens or provide space for replacement plantings

d. Require substantial remedial care but are only suitable for short term retention

## 4. Removals

- a. Dead, dying or seriously diseased
- b. Dangerous trees through instability or loss of adjacent trees
- c. Structural defects such as cavities
- d. Damaged that are clearly not safe to retain
- e. May or are causing damage to structures
- f. That will become dangerous

## 5. Moved or Replaced

Trees, which can be reliably moved or replaced

- a. Small trees less than 5 meters
- b. Young trees between 5-15 years
- c. Trees that have been regularly pruned to control growth

## **CONDITION RATINGS**

Each tree or group of trees has been placed into categories ranging from 1 to 6, with no.1 being in the worst condition through to no.6 in a healthly condition. This is based on observations of their health and structure.

1. A dead tree.

2. A tree in severe decline. Major structural damage that cannot be repaired, dieback of trunk or scaffold branches and the majority of foliage consist of epicormic growth.

3. A tree in decline. Significant structural damage that cannot be repaired, dieback of medium to larger branches and epicormic growth.

4. A tree moderate vigor, dieback of smaller branches and twigs, thinning of crown, poor leaf colour and moderate structural defects that could be mitigated with regular care.

5. A tree in slight decline with only a small amount of twig dieback and minor structural damage that could be easily rectified.

6. A healthy vigorous tree that shows reasonably free signs of pest and diseases and good structural form

## AGE CLASS

Each tree has been categorized into four maturity or age classes.

- J = Juvenile
- S/M = Semi Mature
- M = Mature
- O/M = Over Mature

Trees are categorized according to the species type, height and diameter at breast height (DBH). Recording these factors and comparing them to descriptions of the same species when fully grown can estimate maturity.

Crown radius can be taken into consideration where suppression to growth of natural habit has not been restricted.

## Appendix E – Common Management Activities

**Pruning** – Trees require pruning for a variety of reasons:

- Pruning of the lower limbs of a tree to allow for clearance for maintenance, pedestrians, buildings, services, line of sight for traffic and appearance.
- Reduction of the height of a tree can be achieved to a certain extent through pruning. The extent to which this can be done is determined by the species, age, shape, previous pruning and appearance requirements.
- Thinning of branches to improve appearance, allow light penetration or reduce wind load
- Structural Pruning is completed when a tree is forming a defect such as a V shaped codominant branch union. Structural pruning is a critical maintenance activity for urban trees to achieve maximum safe useful life expectancy.
- Remedial Pruning is completed in response to an identified problem with the tree. This may be a pest, disease, or root disturbance from a development.
- Deadwood Removal is one of the most common pruning activities undertaken during the life of a tree. It involves the cutting out of dead branches that are likely to fall.

All tree pruning should be carried out in accordance with AS4373 Pruning of Amenity Trees and the superior MIS308 Tree Pruning.

**Tree Removal** – trees can be removed in four ways. The method chosen will depend on the location and condition of the tree, contractor's equipment, experience, and the client's requirements. The four methods are:

- Cutting down from the ground. Also called felling or falling the tree. The tree is then
  processed through a machine called a mulcher or woodchipper that reduces the
  wood and leaves to a product called leaf mulch. Depending on the size of the
  machinery used, the larger wood may be removed off site in separate trucks or cut
  up and fed through the machine.
- Accessing and removing the tree in pieces, this can involve rigging the pieces so to allow them to be lowered to the ground in a controlled manner. The 2 most common access methods are climbing the tree or using an EWP (cherry picker) to move around the tree to conduct the work.
- Accessing the tree and removal of pieces with a crane or helicopter. This involves lifting the pieces up and out of the area.
- Using machinery to push the tree over and process with large machinery.

**Stump Grinding** – this is to remove the stump from the ground entirely or to reduce the height to a certain depth below the ground to allow for the intended use of the area. This task is earthmoving by nature and thus checking for underground services should always be conducted prior to undertaking this activity.

**Mulching** – this is one of the most beneficial activities that can be completed for the longterm health of the tree. Spreading of a locally sourced, native leaf mulch is the most beneficial type of mulch to be used for your trees. This mulch has a mix of wood and leaf material so breaks down more rapidly, returning nutrients and organic matter into the soil that will improve the health of the tree. Mulch helps retain moisture in the soil by more than 100%. It also improves soil conditions for beneficial fungi, bacteria and worms. It regulates ground temperatures and reduces compaction of soil in trafficable areas. It helps reduce the chances of mechanical damage to the root and trunk from lawn care activities and reduces competition of grasses below the canopy. Mulch should be spread to a thickness of approximately 100mm over the area directly below the canopy. The larger the mulched area, the more beneficial.

**Fertilising** – this should normally be in the form of organic nutrients such as manure. Adding nutrients to soils can improve the growth rates of trees and the resistance to pests and diseases. It can also increase flowing and fruit production if required.

**Supporting** – this is normally only undertaken for high value trees in areas of frequent or constant use. It involves the installation of a supporting structure such as a cable or a prop to provide support for a defect of a part of the tree that has partially failed. Tree Support Systems should be installed following the requirements in *MIS310 Tree Support Systems*.

**Irrigation** – Provision of regular water is critical for tree health, particularly with newly planted and establishing trees.

**Root Pruning** – Cutting of selected roots by first removing soil then cutting the roots with a sharp blade or tool that provides a clean cut on the root end. Large structural roots should always be cut under the supervision of a AQF5 arborist as these roots may be holding the tree upright.

**Stem Injection** – This is the practice of injection of a chemical or liquid into the stem of the tree to treat a particular issue. This can be for treatment of sap or leaf sucking bugs, fungi or even bacteria in the soil. This is done either by a high-pressure injection or low-pressure injection tool.

**Habitat Creation** – This involves the deliberate creation of hollows, cracks, and splits. Installation of artificial boxes, hollow logs and similar into the canopy of suitable trees to provide habitat for a wide range of arboreal dwelling creatures. These practices should follow the guidelines established in the *MIS312 Environmental Arboriculture*.

# Appendix F – Limitations and Disclaimer

- 1. The contents of this report are true and correct to the best of my ability and knowledge.
- 2. The conclusions and recommendations contained in this report, relate only to the trees that have been inspected, at the time of inspection.
- 3. The details of this report are specific to the site/tree(s) assessed and may not constitute general advice to be used in other applications.
- 4. This report and any attachments should be read in its entirety, and no individual part of the report or its attachments should be interpreted without reference to the entire report.
- 5. The consultant shall not be required to give testimony or attend court for matters pertaining to this report unless a separate contract is arranged to provide expert witness services or the like with a fee payable for these services.
- 6. Care has been taken when referencing supporting documents or the opinions of others in this report, however no responsibility can be taken for the accuracy or correctness of the information provided by others.
- 7. It is assumed that all legal information provided by the client pertaining to the ownership of property is correct. The consultant takes no responsibility for any legal matters.
- 8. This report and any values expressed herein represent the opinion of the consultant and the consultant's fee is not contingent upon the reporting of a specified value, a stipulated result, the occurrence of a subsequent event, nor upon any finding to be reported.
- 9. Following significant weather events, the condition of a tree onsite may change.
- 10. Maps, images, and graphics are not necessarily to scale.

## Appendix G – Glossary of Terms

Abatement - Reduction in hazard, either by remedial tree works and/or removal of target(s).

Abnormal Lean - Abnormal departure of trunk from the vertical or near vertical position.

**Amenity Value** - The environmental and landscape benefits of a tree as opposed to its commercial value for timber. Many of these benefits are intangible or difficult to measure.

**Arboriculture** - The care, cultivation and management of individual trees or groups of trees in the landscape primarily for their amenity value.

**Arborist** - A specialist in the cultivation and care of trees and shrubs, including tree surgery, tree identification, the diagnosis, treatment, and prevention of tree diseases, and the control of pests.

**Basal Flare** - The rapid increase in diameter that occurs at the confluence of the trunk and roots, associated with stem and root tissue.

**Bifurcation** - To divide or fork into two parts, usually equal in size and occurring at a narrow angle.

**Bleeding/Sap flow** - The exudation of sap/resin from wounds and/or other injuries, may be accompanied by a foul odour.

Bole - The central stem of the tree. Another meaning for trunk.

Bow - The gradual curve of a branch or stem.

**Bracket Fungi/Fungal Fruiting Body** - Fruiting of spore producing body of wood decay fungi, forming on the external surface of the stem or trunk.

Branch Attachment - The structural linkage of branch to stem.

**Branch Collar Wood** - which forms around branch attachments, frequently more pronounced below the branch.

**Brash Wood Type** - of reaction wood which is weaker than normal due to thin cell walls and decreased fibre content; presence increases the likelihood of failure.

**Burl** - More correctly identified as a Lignotuber (a mass of dormant, tightly arranged buds). It is a generally circular swelling on the main stem or branch; not considered a defect.

Buttress Support - of branch, stem or root; usually associated with exaggerated growth.

**Buttress Root** - A large woody root located at the base of the trunk (the root crown) which is important to the overall stability of the tree due to its contributions to basal flare.

**Buttress Wood** - Wood under tension, in a structurally critical portion of a trunk or branch.

**Callus** - Can be detected within weeks after cells on the edge of a wound die and is produced by the enlargement or increased division of cells adjacent to the edge of cell dieback. Often associated with wound wood development post pruning.

**Cambium** - A layer of delicate meristematic cells between the inner bark or phloem and the wood or xylem, which produces new phloem on the outside and new xylem on the inside in stems, roots,etc., originating all secondary growth in plants and forming the annual rings of wood.

**Canker** - A localised area of dead tissue on a stem or branch, caused by fungal or bacterial organisms, characterised by wound wood development on the periphery; may be perennial or annual.

Canopy - Parts of the tree above the trunk, including leaves, and lateral and scaffold branches.

Cavity - An open wound, often characterised by the presence of decay and resulting in a hollow.

**CODIT** - An acronym for Compartmentalisation of Decay in Trees, this scientific theory was developed by the late Dr. Alex Shigo which now forms the basis of our knowledge of how trees respond to wounding, infection and decay.

**Co-dominant Stems** - Equal in size and relative importance, usually associated with either the trunks/stems or scaffold limbs/branches in the crown. Not necessarily a structural defect.

**Compartmentalisation** - Physiological process which creates the chemical and mechanical boundaries that act to limit the spread of disease and decay organisms within trees (see also CODIT).

**Compression Wood** - Type of reaction wood produced on the underside of branches and leaning trunks.

**Coppice** - To cut a tree to ground level to stimulate regenerative growth.

**Core Drill** - A technique involving creating a series of vertical cores within a tree's root zone which can be filled with a variety of materials to stimulate root initiation and growth. Often used on ageing and/or stressed trees.

Crack - Breakage in the stem, involving bark, cambium, and xylem.

**Crown** - Parts of the tree above the trunk, including leaves, and lateral and scaffold branches (see also Canopy).

**Crown Uplift** - Pruning technique where lower limbs are removed, thereby raising the overall crown above the ground.

**DBH** - Diameter of the trunk, measured at breast height i.e. 1.4m from ground level.

**Deadwood** - Branch or stem wood bearing no live tissues. (Small deadwood <2cm, medium deadwood 2-10cm, large deadwood >10cm).

Deadwooding - The act of removing deadwood from the canopy.

**Decay** - Process of degradation of woody tissues by fungi and bacteria through decomposition of cellulose and lignin.

Decorticate - To remove bark, rind, or husk.

**Decurrent** - Referring to crowns which are made up of a system of co-dominant scaffold branches, lacking a central leader.

Defect - Any structural weakness or deformity.

Dehisce - (of a pod or seed vessel, or a cut or wound) Gape or burst open.

**Dieback** - Death of shoots and branches, generally from tip to base.

**Disease/Pathogens** - A malfunction in, or destruction of tissues within a living organism, usually excluding mechanical damage; in trees, usually caused by pathogenic micro-organisms.

**Dominant** - In crown class, trees whose crowns extend above the general stand canopy and are not restricted by adjacent trees.

**DRC (Diameter at Root Crown)** - The diameter of the very lowest part of the trunk where root buttressing begins and often used to calculate a tree's structural root zone (SRZ).

End Weight - The concentration of excessive foliage toward the branch extremity.

**Epicormic Growth** - Shoots which result from adventitious or latent buds, generally initiated in times of distress, and are generally poorly attached.

EWP - Elevated Work Platform.

**Excessive Thinning** - Having relatively little extent from one side of the canopy to the opposite. In relation to pruning; excessive pruning of lateral branches at their point of origin, usually associated with removal of large amounts of live tissue.

**Exclude Site Use** - Implement control measures to prevent people from entering an area that has the capacity to cause harm or damage i.e. due to hazardous trees.

Fasciation - (or Cresting) Abnormal twig proliferation.

**Flush Cut** - Pruning technique where both branch and trunk tissue are removed behind the branch collar; considered poor practice.

Frass Bore Dust - Excrement and other debris left by wood boring insects.

Fungal Fruiting Body - (see Bracket Fungi)

**Gall** - In branches and stems, an abnormal, localised growth, generally seen as a large knob of undifferentiated woody tissues.

**Girdling Root** - A root or roots which circles and constricts the stem or roots causing death of phloem and/or cambial tissue.

**Habitat Prune** - (or King Prune) Reducing or removing the crown of a tree and retaining its trunk as a habitat for wildlife.

**Hanger** - A partially attached (but clearly broken) or unattached branch which remains lodged in the crown.

**Hazard** - A hazard is an action or item that has the capacity to cause harm or damage, which may be serious.

**Hydrophobic** - Used to describe a soil profile that is difficult to rehydrate as water either pools on it or runs off it. Generally associated with very dry, nutrient-poor soils.

**Ilex** - A tree or shrub of a genus that includes holly and its relatives.

**Inappropriate Location** - The tree's present growing environment is not suitable due to its surroundings, such as buildings, car parks etc. in relation to the inherent characteristics of the tree species.

**Included Bark** - Pattern of development at branch junctions where bark is turned inward rather than pushed out; contrasting with branch bark ridge. Also referred to as Embedded bark. Such a formation generally results in weakened attachment.

Infection - The establishment of parasitic micro-organism in the tissues of a tree.

Irrigation - The watering of land by artificial means to foster plant growth.

Kino - The resin which flows from Eucalypts and its relatives such as Corymbia sp. and

Angophora sp.

Leader - The primary terminal shoot or trunk of a tree.

Lean/Leaning - Departure of trunk from the vertical or near vertical position.

Lerp - A type of Psyllid that commonly predates on many species of Eucalypts and its relatives.

**Loading** - Refers to the mechanical stresses imposed by the weight, orientation etc. of trees and branches in relation to the site, the architecture of the tree and the weather. The amount of loading upon a tree can be directly influenced by its level of exposure to the prevailing winds.

**Lopping** - The removal of the crown of a tree, or a major proportion of it. Incorrect pruning method of removing branches to stubs, resulting in poor form and weak branch unions.

**Mycorrhiza** - A mutual association between certain fungi and the roots of vascular plants often resulting in an increased efficiency in the absorption of mineral nutrients.

**Mulch** - Material laid down over the rooting area to help conserve soil moisture, supress weeds and regulate soil temperature.

**Nutrition** - The elements and compounds required to support healthy plant growth, of which at least 17 are known.

**Parasitic and semi parasitic plants** - Vascular plants such as Mistletoes which infect host plants via the penetration of specialised roots called haustorium to gain access to the host's vascular system for water and mineral nutrients.

Pathogen - (See Disease/Pathogens).

**Pests/Pest Insects** - Pests such as Wood Borers, Termites, Leaf Beetles, Gumleaf Skeletoniser, Leafblister Sawfly, Lerps or Elm Leaf Beetle that cause tree decline. There are various methods of treatment to remove pests as well as prevent their return.

**Phellinus sp**. - A genus of bracket forming, wood decaying fungi which occurs in native and exotic species. Whilst the decay associated with this fungus is often localised it has a reputation for being quite destructive.

Phytotoxic - A substance which is toxic to plants.

**Phloem** - The part of a vascular bundle consisting of sieve tubes, companion cells, parenchyma, and fibres and forming the food-conducting tissue of a plant.

**PICUS Sonic Tomograph** - A specialised piece of diagnostic equipment generally used to determine the level of internal decay within a branch or trunk using sound waves.

**Pollard** - The removal of the tree canopy, back to the stem or primary branches. Pollarding may involve the removal of the entire canopy in one year, or may be phased over several years.

**Poor Pruning** - Pruning techniques (such as lopping) which are undertaken without regard for the tree's natural biology and which can cause decline, decay and potentially lead to part or whole tree failure.

**Potenz Hydrogenous (pH)** - The measure of soluble Hydrogen ions in a solution which is used to measure its acidity or alkalinity. Affects nutrient availability to plants.

**Previous Failures** - Denotes a tree has previously had a leader or branches fail. Previous failures can result in wounding if a required action is not attended to (see Wound).

**Propagate/Propagation** - To reproduce a plant, sexually by means of seed or asexually by cuttings, grafting or divisions, so that it is genetically identical to the parent (true to type).

Pruning - The removal or cutting back of twigs or branches.

**Psyllid** - A common and diverse group of sap-sucking insects related to whiteflies, aphids, and scales. They are regularly associated with native plants and most species appear to be host specific or confined to a group of closely related plants. Sustained infestations can lead to tree decline if untreated.

**Reactive Growth/Reaction Wood** - Production of woody tissue in response to altered mechanical loading, often in response to internal defect or decay and loss of strength.

Risk - The likelihood that a hazard will cause harm within a variable period of lime.

**Root Collar/Root Crown** - The transitional area between the stem/sand roots.

**Saprophyte** - An organism which obtains its nutrition from dead or decaying organic matter. This term is often associated with fungi and with some groups of vascular plants such as Orchids.

Scaffold Limb - Primary structural branch of the crown.

**Senescence** - The stage of a tree's life cycle between maturity and death, whereby a tree will naturally decline over several years.

Softfall - An impact absorbing layer that is laid beneath a finished surface

**Soil Compaction** - Area of compacted soil covering the root system. Affected soil becomes less able to absorb rainfall and water, thus increasing runoff and erosion. Trees have difficulty growing in compacted soil because soil particles are pressed together leaving little space for oxygen and water, which are essential for root growth.

**Soil Problems** - Soil problems such as compaction, salinity, erosion can cause tree decline and potentially lead to tree failure.

**Split** - Breakage in stem, affecting bark, cambium and xylem.

SRZ - Structural Root Zone.

**Stress** - In plant physiology, a condition under which one or more physiological functions are not operating within their optimum range, e.g. A lack of soil moisture, inadequate nutrition or extremes of temperature.

**Structural Defect** - Internal or external points of weakness which reduce the structural integrity of branches and/or stems or roots. Defects in roots may impact upon tree stability.

**Structural Roots** - Contribute significantly to the structural support, anchorage and stability of a tree, often found close to the base.

Sucker - A shoot which appears from an underground root.

**Suppressed** - In crown class, trees which have been heavily shaded by others from above or the side and whose crown development is wholly or partially restricted.

**Symbiosis** - A mutual association between two organisms whereby the presence of one is beneficial to the other.

**Target** - Persons or property or other things of value which might be harmed by mechanical failure of the tree or by objects falling from it.

Terminally Reduce - Cutting back/reducing branches from their extremity.

**Thinning/Excessive Thinning** - Having relatively little extent from one side of the canopy to the other. In relation to pruning; excessive pruning of lateral branches at their point of origin, usually associated with removal of large amounts of live tissue.

TLE - Tree Life Expectancy (see Useful Life Expectancy).

**Topping** - Synonymous with lopping it is the indiscriminate removal of the crown of a tree, or a major proportion of it. Incorrect pruning method of removing branches to stubs, resulting in poor form and weak branch unions.

**TPZ** - Tree Protection Zone.

**ULE** - Useful Life Expectancy refers to an expected period of years that a tree can be retained before its amenity values decline to a point where it may detract from the appearance of the landscape and/or becomes potentially hazardous to people and/or property.

Understorey - Vegetation beneath the main canopy.

**VTA** - An acronym for Visual Tree Assessment which is the process undertaken when systematically assessing trees for attributes such as their species, health, age, defects and pest or disease infestations.

**Wall 4** - A chemical and anatomical barrier formed by the cambium present at the time of wounding, which inhibits the spread of decay into xylem tissue formed after the time

of wounding.

**Weak Unions** - A stem or branch union which is exhibiting signs of a potential structural weakness through its growth habit and/oras a result of pest and/or disease infestation.

**Weed** - A plant that is not valued where it is growing and is usually of vigorous growth; especially one that tends to overgrow or suppress desirable plants.

**Whorl** - The arrangement of foliage or flower parts around a stem whereby they radiate from a single point.

Windthrow - The blowing over of a tree at its roots.

Wound - Any injury which induces a compartmentalisation response.

**Wound Wood** - Develops from callus tissue or from uninjured vascular cambium at the margins of injuries/wounds that have damaged or exposed the phloem, vascular cambium, or sapwood.

**Xylem** - A compound tissue in vascular plants that helps provide support and that conducts water and nutrients upward from the roots, consisting of tracheids, vessels, parenchyma cells and woody fibres.

# Appendix H – Qualifications and Experience

Between 2006 and 2012 Aaron completed a Carpentry apprenticeship, Certificate 3 in Joinery, Certificate 4 in Building and Construction and obtained a builder's licence in 2010 and started working as a contractor. Working full time in the construction industry on high end residential projects as a contracting site supervisor Aaron was managing teams up to 10 people onsite daily. In 2012 Aaron began training and going to TAFE to complete a Certificate 3 in Arboriculture after being exposed to the industry through Rope Access Work and recreational rock climbing. In 2012 Aaron established Assurance Trees Pty Ltd and continued to work across the Construction Industry and Arboricultural industry simultaneously. In 2016 Aaron completed a Diploma of Arboriculture allowing him to start to complete consulting arborist services to expand his growing company. Over the next few years Aaron continued to build Assurance Trees Pty Ltd and establish himself as a respected and knowledgeable arborist both practically and academically. Aaron led Assurance Trees Pty Ltd to obtain ISO triple certification for Quality (ISO9001), Environment (ISO14001) and Safety (AS4801) in 2018 and continues to improve and generate value.

Since 2016 Aaron has developed his consulting arborist skill set to become a leading provider in the industry throughout the Hunter Region. In combination with his practical experience and understanding of the construction industry Aaron has a reputation of providing excellent solutions for design and construction projects in the field of Arboriculture.

## Qualifications:

- Diploma in Arboriculture (2016)
- ISA Tree Risk Assessment Qualification (2016)
- Certificate in Arboriculture (2014)
- NSW Builders Licence (2011) (Supervisor Cert #69092S)
- Certificate 4 in Building and Construction (2010)
- Certificate 3 in Joinery and Carpentry (2009)
- Many other certificates including Cert 3 in Chemical Application, Occupational First Aid, Powerlines Training, Rescue Training, Rail Corridor certificates, EWP tickets, Truck Licences and many other courses and training events.

## Experience

- Consulting arborist Arboriculture impact assessments, risk assessments, expert witness, project arborist, pruning specifications, planting specifications, health reports and many other specialised consulting jobs.
- Trade Arborist 1000's of tree dismantles, crane work, pruning, shaping, large scale clearing, root investigations, cabling and bracing, injections, and treatments and many other specialised tree work operations.
- Building and Construction Site supervisor, Carpentry and many other building skills and disciplines.

End of Report