REPORT: **Arboricultural Impact Assessment**

REPORT COMMISSIONED FOR:

Gridline Projects Pty Ltd
c/o Gumar Orakov

**DA-217/2023**

Lot D, DP 38390
50 Proctor Parade
Chester Hill NSW 2162

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20th of March, 2023

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# Table of Contents



# Document Tracking

| Name | Contribution | Date |
|---|---|---|
| Michelle King<br>Environmental Document Writer | Report Writer | 20/03/2023 (V1) |
| Jim McArdle<br>AQF Level 5 Arborist | Site Assessor<br>Editor | 20/03/2023 (V2) |

# 1. EXECUTIVE SUMMARY

1.1 The client commissioned an Arboricultural Impact Assessment to evaluate the potential impacts on trees by a proposed development and, if viable, to make recommendations that reduce the impacts on trees at 50 Proctor Parade, Chester Hill NSW 2162.

1.2 The proposed development (**DA-217/2023**) involves the demolition of the existing dwelling and ancillary structures and the construction of a proposed attached duplex and associated works.

1.3 The assessment was conducted on the 10th of March, 2023 by Jim McArdle B.Ed. Sci (ACU), Dip. Arb AQF L5 (Ryde), Tree Risk Assessment Qualified (TRA), Quantified Tree Risk Assessment (QTRA) & Tree Contractors Association of Australia (TCAA) Vice President.

1.4 One (1) tree in the adjacent surrounding area was assessed and is summarised as follows:

***Table 1:*** *Retention Values.*

| Retention Values | | | | |
|---|---|---|---|---|
| High (0 trees) | Moderate (0 trees) | Low-Moderate (0 trees) | Low (1 tree) | Very Low (0 trees) |
| - | - | - | 1. | - |

***Table 2:*** *Tree Works.*

| Tree Works | |
|---|---|
| Retain (0 trees) | Remove (1 tree) |
| - | 1. |

1.5 **Remove** one (1) tree numbered 1, due to major anticipated impacts from the proposed development and the tree's poor condition.

# 2. INTRODUCTION

## 2.1 AIMS

The aim of the report is to:

2.1.1 To assess the trees' health and retention value and to evaluate the potential impacts on trees by the proposed development.

2.1.2 To provide options, if viable, to reduce potential impacts on trees and make recommendations for tree management and protection during development.

## 2.2 SCOPE

2.2.1 Gumar Orakov of Gridline Projects Pty Ltd commissioned an Arboricultural Impact Assessment for the site at 50 Proctor Parade, Chester Hill NSW 2162.

2.2.2 The assessment was conducted on the 10th of March, 2023 by Jim McArdle B.Ed. Sci (ACU), Dip. Arb AQF L5 (Ryde), Tree Risk Assessment Qualified (TRA), Quantified Tree Risk Assessment (QTRA) & Tree Contractors Association of Australia (TCAA) Vice President.

2.2.3 Tree management measures are regulated by Bankstown Development Control Plan (DCP) 2015 and Bankstown Local Environmental Plan (LEP) 2015.

2.2.4 One (1) tree in the adjacent surrounding area was assessed.

2.2.5 The inspection does not include below ground root excavation, and no expert laboratory analyses – including internal diagnostics, inaccessible trunk and aerial inspections – were conducted. No pathology tests or soil analyses were conducted. Sketches, diagrams, graphs, and photographs in this report, being intended as visual aids, are not necessarily to scale.

2.2.6 The owner or manager of this site has not provided other documentation relating to the trees. Apart from post-site research and comparisons of similar sites, our observations are the only details analysed.

## 2.3 METHODOLOGY

2.3.1 The inspection was primarily conducted using ground-based collection of data to identify visible signs of tree health, structure and potential hazards. Collection data methods may include the use of a mallet for sound testing, the use of a trowel to test for soil compaction, and the use of a screwdriver to probe cavities for pathogens, pests and disease. The assessments do not involve laboratory analysis. Methods may include the following:

**Visual Tree Assessment (VTA**) (Mattheck and Breloer 1994), a method for assessing biological and lower-level mechanical functions and signs of decay, damage or defects (Appendix A).

**Tree AZ Categories** (Barrell 2010) classifies the importance of trees on development sites (Appendix B).

- **Category A** – suitable for retention.
- **Category Z** – not worthy of constraint.

**Tree Useful Life Expectancy (TULE)** (Barrell 2014) determines the time a tree can be expected to be usefully retained in normal circumstances (Appendix C).

- **Long** > 40 years.
- **Medium** 15 – 40 years.
- **Short** 5 – 15 years.
- **No retention potential** 0 – 5 years.

**Landscape Significance Rating** (Morton 1996), (Appendix D).

- **Significant** – based on heritage or ecological value.
- **Very High** – based on adjacent area surrounding the site.
- **High** – neighbourhood status but may have some conditions or health issues.
- **Moderate** – good and worthy of preservation, may have minor health issues.
- **Low** – worthy of preservation, may have major conditions or health issues.
- **Very Low** – retain if possible.
- I**nsignificant** – exempt from retention.

**Retention Value Rating** (Morton 2011), determined by considering both TULE and the Landscape Significance (Appendix E).

- **High** retention value trees are a priority for retention.
- **Medium** retention value trees are retained where possible.
- **Low** retention value trees are generally not a constraint to development.
- **Very Low** retention value trees may have potential hazards.

**Planting Specifications from NATSPEC** (Clark 2003) and Australian Standard® AS 2303-2018 – Tree Stock for Landscape Use (Appendix F).

2.3.2 **Tree Contractors** must have a minimum AQF Level 3 Certificate in Arboriculture and work in accordance with Australian Standard® AS 4373-2007 – Pruning of Amenity Trees, the Work Health & Safety (WHS) Act 2011 and the WHS Regulations 2017, the SafeWork NSW – Guide to Managing Risks of Tree Trimming and Removal Work 2016, and the Code of Practice for The Amenity Tree Industry 1998. Work near powerlines should be carried out in accordance with the Code of Practice for Work Near Overhead Power Lines.

# 3. RESULTS

## 3.1 THE SITE

3.1.1 The site is 50 Proctor Parade, Chester Hill NSW 2162.

3.1.2 This landscape slopes gently down to the east, and the soils[1] are classified generally as loam.


***Figure 1:*** *Aerial site map of 50 Proctor Parade, Chester Hill NSW 2162 (Nearmap 2023). The site perimeter is outlined in yellow.*

[1] *Espade.environment.nsw.gov.au*

## 3.2 LEGISLATION AND SIGNIFICANCE IN THE ENVIRONMENT

Trees are subject to the following commonwealth and State Legislation:

3.2.1 NSW and Commonwealth Legislation regulates the **Biosecurity Act 2015**(diseases and pests) and the **Environmental Protection & Biodiversity Conservation Act 1999 (EPBC Act)**, which manages nationally endangered ecological communities (EEC) and national heritage items. The EPBC Act delegates to the **NSW Biodiversity Conservation Act 2016 (BC Act)**[2] and allows state and local authorities to manage ecological and heritage matters of significance. The BC Act repealed (but still has some transitional arrangements) the NSW Threatened Species Conservation Act 1995. The BC Act may require a Species Impact Statement and Biodiversity Banking and Offset Scheme agreements determined by the Biodiversity Assessment Method (BAM).

3.2.2 NSW State Legislation[3] is regulated under the **NSW Environmental Planning and Assessment Act 1979 (EP&A Act),** which manages significant development and infrastructure in NSW. The EP&A Act utilises **Environmental Planning Instruments (EPI)**[3]. These instruments include **State Environment Planning Policies (SEPP)** that deal with matters of state or regional environmental planning significance and **Local Environmental Plans (LEP)** that provide local councils a framework for land usage. **SEPP (Vegetation in Non-Rural Areas) 2017** applies to this local government area (LGA) and prohibits clearing vegetation without council consent.

3.2.3 NSW **Rural Fire Act 1997**[4] regulates a **10/50 Vegetation Clearing Code**, which may allow a designated area to clear trees within 10 metres of a home and clear underlying vegetation such as shrubs (but not trees), within 50 metres of a home to reduce risk from bushfires. The 10/50 Vegetation Clearing Code does not apply to this site.

3.2.4 An analysis of state and local legislation, development controls and planning instruments concludes the following:

- **Tree management measures**[5] are regulated by Bankstown DCP 2015 and Bankstown LEP 2015.
- **Land Zoning:** R2: Low Density Residential.
- **Local Aboriginal Land Council:** Gandangara.

[2] *https:// https://www.environment.nsw.gov.au*
[3] *https://www.planningportal.nsw.gov.au/*
[4] *https://www.rfs.nsw.gov.au/*
[5] *https://www.cbcity.nsw.gov.au/*

## 3.3 LOCAL PLANNING AND ZONING CONTROLS

**Site Address:** 50 Proctor Parade, Chester Hill NSW 2162.

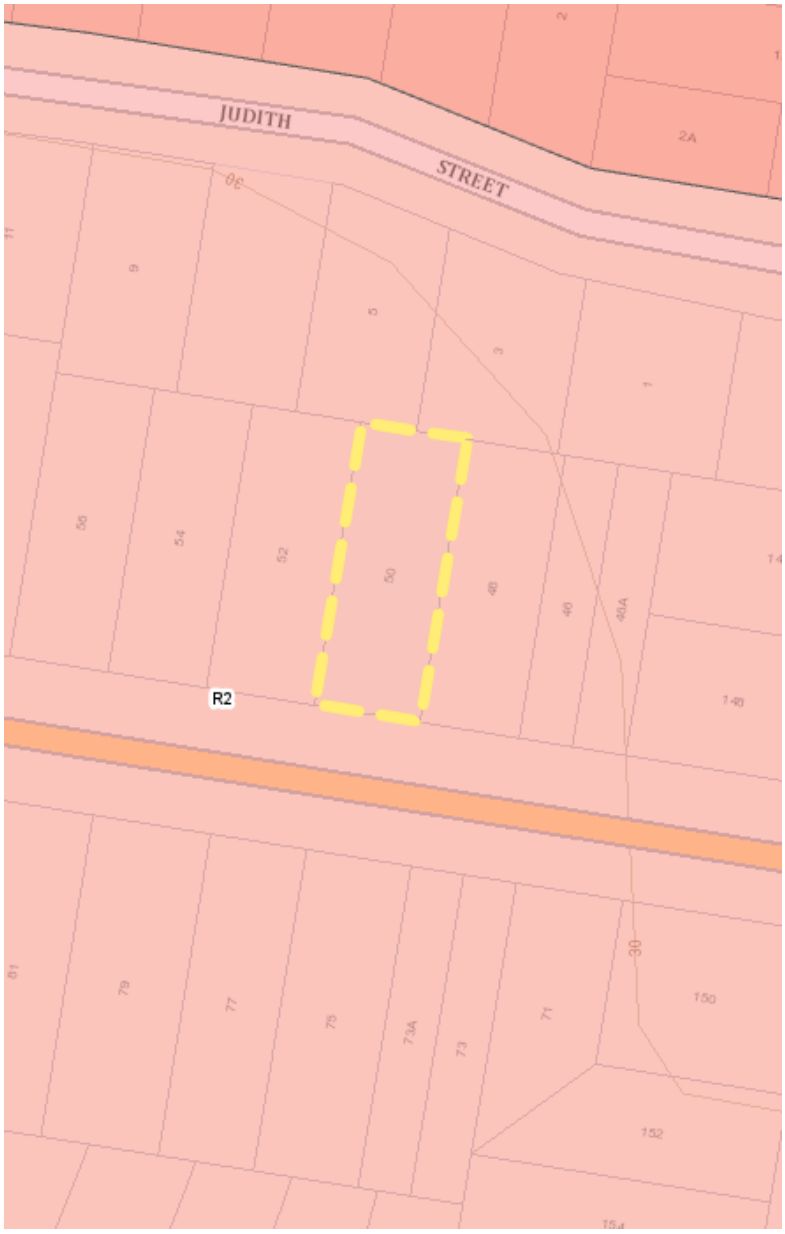



***Figure 2:*** *Land Zoning.*
*R2: Low Density Residential (red).*

## 3.4 TREE SCHEDULE

***Table 3:*** *Tree Schedule – Health and Structural Condition of Trees.*
(*DBH – Diameter Breast Height, *DRC – Diameter Root Collar, *TPZ – Tree Protection Zone, *SRZ – Structural Root Zone, *TULE – Tree Useful Life Expectancy).

| Tree No. | Location | Botanical Name Common Name | Crown (m) | Height (m) | DBH* DRC* (cm) | TPZ* SRZ* (m) | Tree Health & Condition | TULE* A-Z | Retention Value | Control Measures |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Council curtilage, 1m from gutter. | *Callistemon viminalis* Weeping Bottlebrush | N 5<br>S 4<br>E 4<br>W 5 | 8 | 13/14/17/18/20/22/26<br>43 | 6.0<br>2.3 | Mature, poor condition, heavily pruned under the power lines, previously pruned to the west at 1m height (100mm diameter cut), with an inclusion to the south at 1m height, and inclusion to the north at 1.5m height, physical damage from a bus zone sign, a branch failure to the south at 30cm height, and physical damage to the south from vehicular impacts. | 3d-4c<br>Z5 | Low | **Remove** and **replenish.** |

## 3.5 OBSERVATIONS


***Plate 1:*** *Tree 1, Callistemon viminalis (Weeping Bottlebrush).*

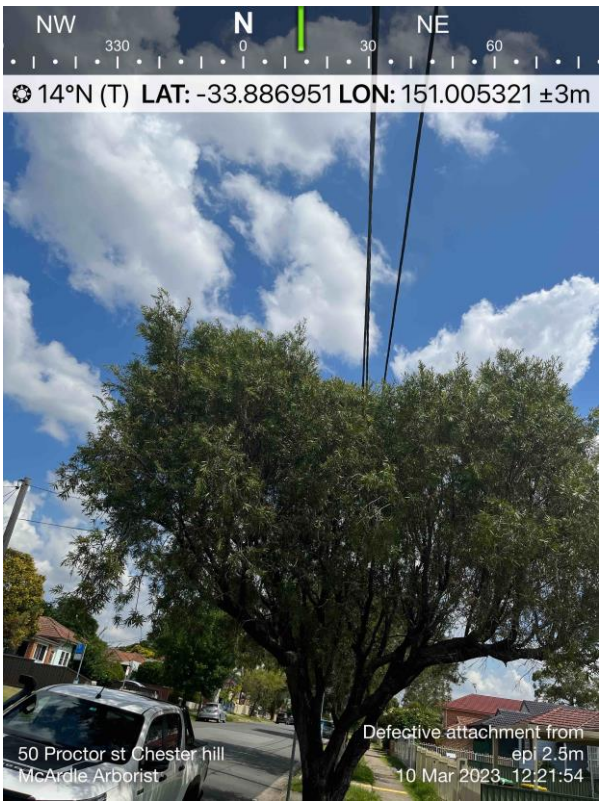



***Plate 2:*** *Tree 1 has been heavily pruned for clearance under the power lines, and there is a defective attachment from at 2.5m height.*


***Plate 3:*** *An inclusion to the south at 1m height.*


***Plate 4:*** *Tree 1 has physical damage from a bus zone sign.*


***Plate 5:*** *Tree 1 has a fractured stem to the south.*


***Plate 6:*** *Tree 1 has physical damage from vehicular branches.*


***Plate 7:*** *Tree 1 has physical damage from vehicular branches.*

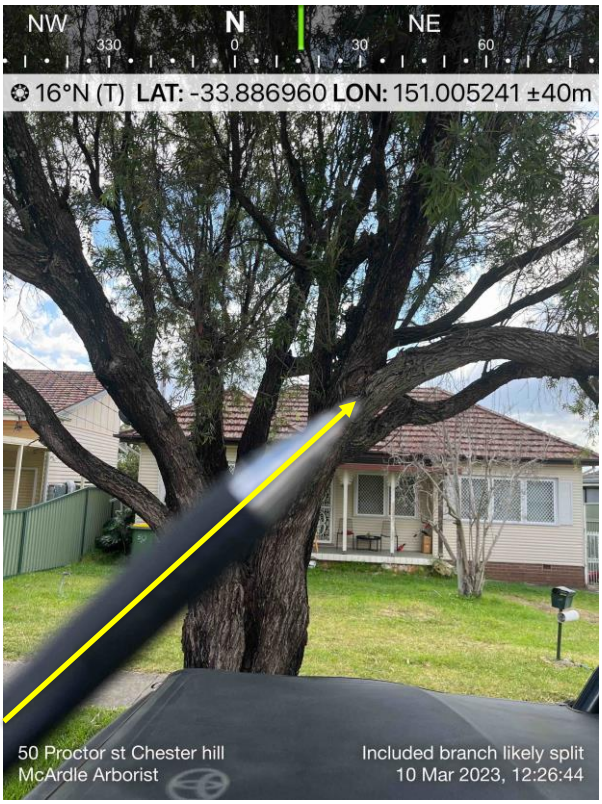



***Plate 8:*** *Tree 1 has an included branch that is likely to split and fail.*

# 4. DISCUSSION

4.0.1 One (1) tree along the Council curtilage was assessed and is proposed for **removal** to support the proposed works. Current tree location is unsafe from a perspective of the vehicular impacts and further relocation of smaller trees under the powerlines must be designed to not be greater than 5metres. The *Callistemon viminalis* has a mature height of eight(8)metres and 8 metres crown spread.

## 4.1 SIGNIFICANCE IN THE LANDSCAPE AND USEFUL LIFE EXPECTANCY

4.1.1 Tree 1, *Callistemon viminalis* (Weeping Bottlebrush), has a **short** useful life expectancy rating (3d-4c) and an estimated life duration of 5 to 15 years. This tree would typically be considered to have **moderate** value in the landscape, as it is a native Australian species with a medium live crown size exceeding 40m$^2$; however, as the tree is potentially hazardous and has deviations from the typical form of its species, the tree is considered to have **low** value in the landscape.

## 4.2 RETENTION VALUES

4.2.1 Retention values are determined by considering both TULE and Significance in The Landscape (Appendix E). The retention values of the assessed trees are as follows:

***Table 4:*** *Retention Values.*

| Retention Values | | | | |
|---|---|---|---|---|
| High (0 trees) | Moderate (0 trees) | Low-Moderate (0 trees) | Low (1 tree) | Very Low (0 trees) |
| - | - | - | 1. | - |

4.2.5 Tree 1 has **low** retention value. This tree does not have special ecological or amenity value and it is not considered to be worthy of preservation.

## 4.3 IMPACT ASSESSMENT

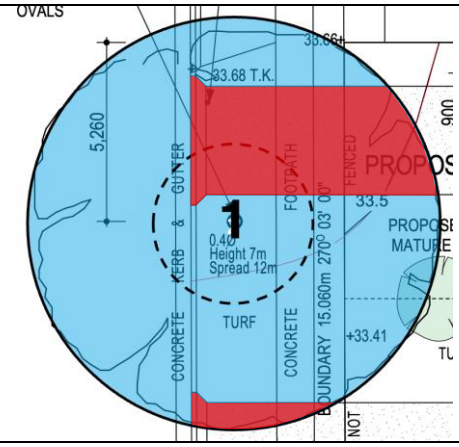
4.3.1 The assessment evaluates how the proposed development will impact the Tree Protection Zones (TPZ) and canopies of the assessed trees. The impacts are classified as minor or major TPZ encroachments.

***Table 5:*** *TPZ Encroachments.*

| Tree No. | *Botanical Name* (Common Name) | TPZ Encroachment | Category |
|---|---|---|---|
| 1 | *Callistemon viminalis* (Weeping Bottlebrush) | 20.7% | **Major** (more than 10%) |

***Table 6:*** *Major TPZ Encroachments. Encroachments are highlighted in red.*

| **Major TPZ Encroachments** | |
|---|---|
| Tree 1, *Callistemon viminalis* (Weeping Bottlebrush)<br>**Retention Value:** Low<br>**TPZ Encroachment:** 20.7%<br>**Likely Impacts:**<br>• Driveways and crossovers within SRZ and TPZ. | |

| | |
|---|---|
| **Recommendations:** Remove due to major anticipated impacts from encroachments of greater than 10% within the tree's TPZ. This tree is in poor condition and it is not suitable or worthy of preservation. |  |

## 5. RECOMMENDATIONS

***Table 7:*** *Tree Works.*

| Tree Works | |
|---|---|
| Retain<br>(0 trees) | Remove<br>(1 tree) |
| - | 1. |

5.1 **Remove** one (1) tree on the Council curtilage numbered 1, due to major anticipated impacts from encroachments of greater than 10% within the tree's TPZ. The tree is in poor condition and has several structural defects (included branch unions, and physical damage from vehicular impacts) that increase the tree's risk of failure. This tree has low retention value and is not suitable or worthy of preservation.

5.2 **Suitably Qualified Arborist:** Most councils require written consent prior to tree removal. Tree 1 is to be marked for removal prior to the proposed works. Tree contractors must have a minimum AQF Level 3 Certificate in Arboriculture and work in accordance with Australian Standard® AS 4373-2007 – Pruning of Amenity Trees, the Work Health & Safety (WHS) Act 2011 and the WHS Regulations 2017, the SafeWork NSW – Guide to Managing Risks of Tree Trimming and Removal Work 2016, and the Code of Practice for The Amenity Tree Industry 1998. Work near powerlines should be carried out in accordance with the Code of Practice for Work Near Overhead Power Lines. Tree contractors shall be members of Tree Contractors Association Australia (TCAA) or Arborists Australia (AA) and hold Workers Compensation and Public Liability Insurance. Tree contractors must liaise with the consulting arborist to ensure that the tree is removed in accordance with specification.

5.3 **Canopy Cover Loss:** Replenish tree removals with new tree plants within the site to compensate for loss of amenity in accordance with council requirements. To compensate for the reduced canopy cover, planting of indigenous trees which are appropriate to the local environment and provide koala habitat should be considered using the canopy cover formula $((½ \times \text{canopy diameter})^2 \times \pi)$. The removal of Tree 1 will result in a canopy cover loss of approximately 63.62m$^2$. The tree should be replenished with a tree that can reach a canopy diameter at maturity of at least 9 metres.

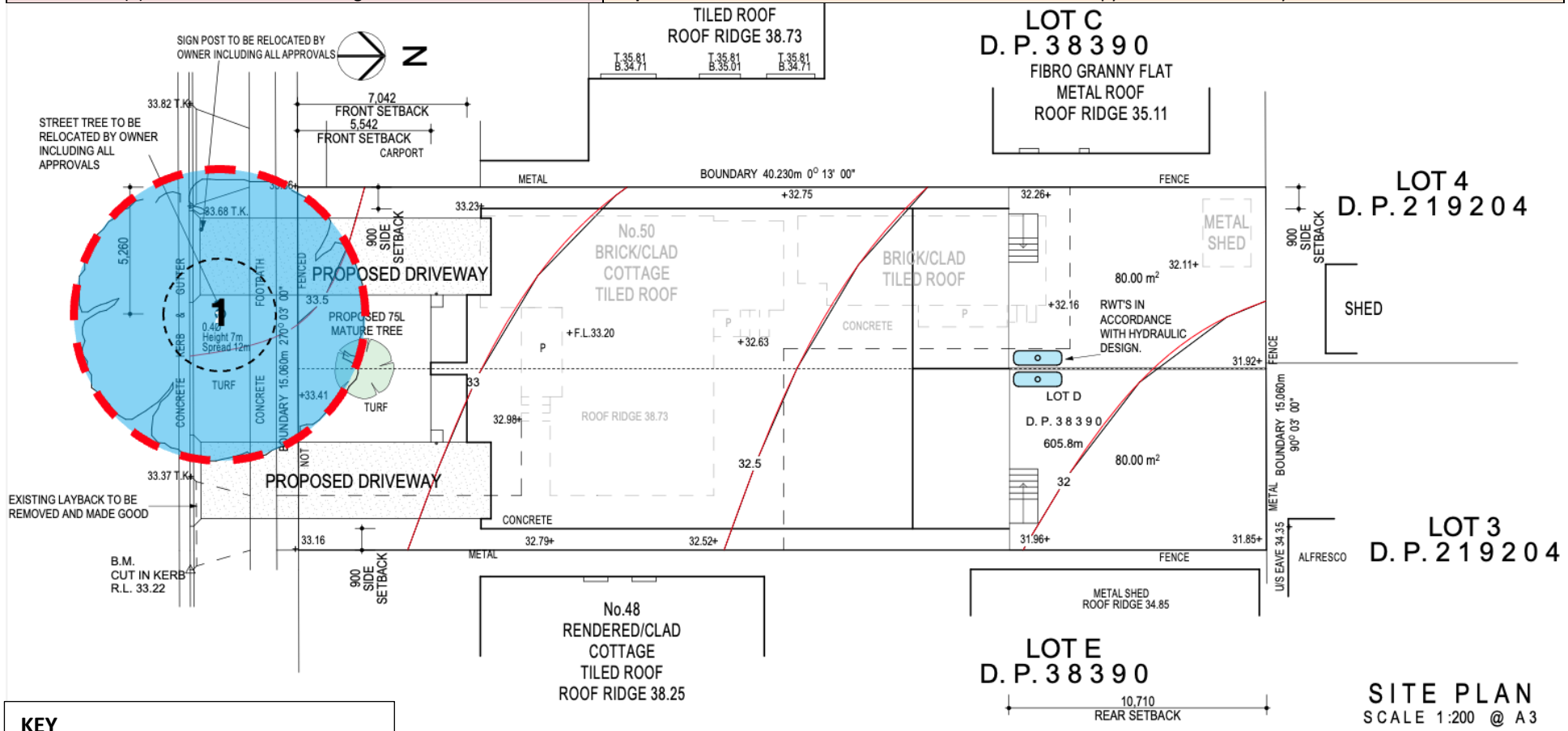
5.4 **Replenishment Planting:** One (1) 45L potted volume replenishment tree is required (see Appendix G for recommended species) with a mature height of no more than 5 metres in height due to constraints with services and vehicular access.. In accordance with Council requirements, new tree plantings should be a native species or from a vegetation community present on site to compensate for loss of amenity. Replenishment is to be completed in accordance with planting specifications from NATSPEC (Clark 2003) and Australian Standard® AS 2303-2018 – Tree Stock for Landscape Use (Appendix F).

5.5 **Mulch:** Maintain aged *Eucalyptus spp.* mulch around the replenished tree in accordance with Australian Standard® AS 4454-2003 – Compost, Soil Conditioners and Mulches.

5.6 **Watering Schedule:** Maintain a watering schedule for the replenished tree. A 45L potted volume requires approximately 35L of water daily (Trees Impact: 2021).

## 6. TREE REMOVAL MAP

| **Remove** one (1) tree on the Council curtilage numbered 1. | **Replenish** the removed tree with a tree that can reach a canopy diameter at maturity of at least 9 metres. |
|---|---|




**KEY**

**TREE PROTECTION ZONES (TPZ):**
**LOW** retention value

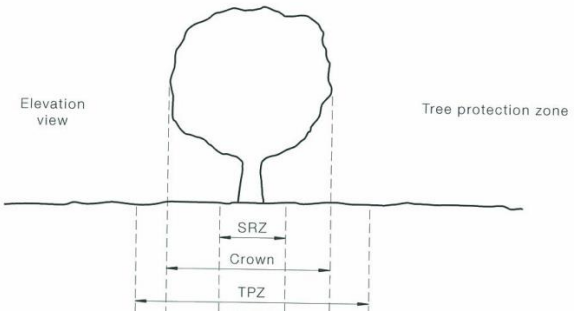
**STRUCTURAL ROOT ZONES (SRZ)**

**TREE REMOVAL**

| Site Plan (Issue A) | Abode Drafting | 50 Proctor Parade, Chester Hill NSW 2162 | **Scale:** 1:200 | **Dated:** 16/02/2023 |
|---|---|---|---|---|

## 7. TREE MANAGEMENT SPECIFICATIONS

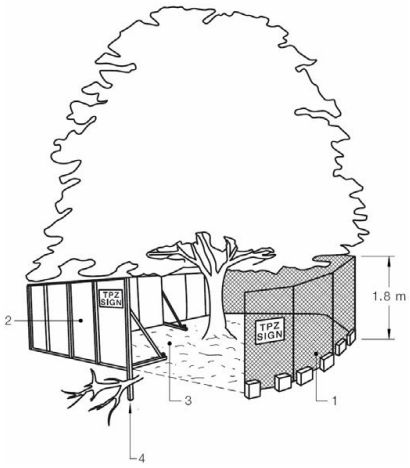
**Tree Protection Zone (TPZ) Specifications**




Tree protection fencing ensures construction does not encroach into a tree's TPZ. The Structural Root Zone (SRZ) of a tree is the area essential for tree stability. Works conducted within the SRZ may destabilise the tree and lead to potential failure.

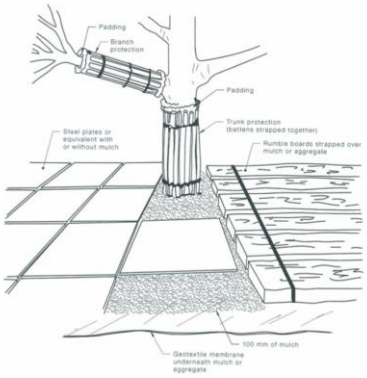
**Tree Protection Fencing:** Fencing must not be removed or altered. Specifications for tree protection fencing must be as follows:

- Installed prior to development and certified by a project arborist.
- Fully enclosed around a tree's TPZ.
- 1.8-metre-high temporary chain wire mesh cyclone fencing.
- Signposted with 300mm x 450mm signage that reads "No Entry. Tree Protection Zone".
- Add mulch across the surface of the TPZ and water regularly.




Specifications for tree protection fencing on slopes or uneven ground must be as follows:

- Star pickets spaced at 2 metre intervals with a minimum height of 1 metre.
- Connected by a continuous high-visibility barrier or hazard mesh.
- Alternative plywood or wooden paling fence panels.



**Tree Trunk and Branch Protection:** Specifications for tree trunk protection when fencing is impractical must be as follows:

- A layer of padding, geotextile fabric or similar wrapped around the trunk to a minimum height of 2 metres.
- 1.8 metre lengths of timbers aligned vertically and spaced at small gaps evenly around the trunk.
- Boards are to be strapped to trees, not nailed or screwed to the tree.

**Prohibitions for Tree Protection Zones:** The following activities shall **not** be carried out within any TPZ:

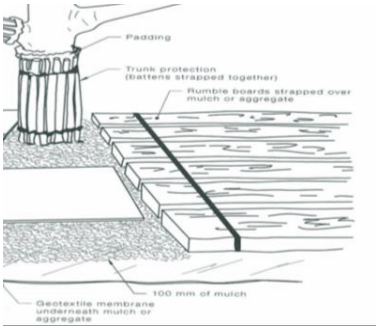
- Disposal of chemicals and liquids (including concrete and mortar slurry, solvents, paint, fuel or oil).
- Stockpiling, storage or mixing of materials.
- Refuelling, parking, storing, washing and repairing tools, equipment, machinery and vehicles.
- Disposal of building materials and waste.

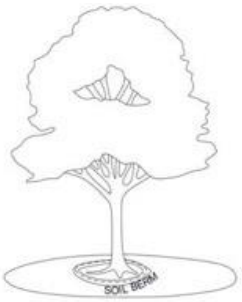
The following activities shall **not** be carried out within any TPZ **unless** under the supervision of a project arborist:

- Increasing or decreasing soil levels (including cut and fill).
- Soil cultivation, excavation or trenching.
- Placing offices or sheds.
- Assembly of scaffolding or hoardings; and/or another act that may adversely affect the tree.

**Root Protection Specifications:** If temporary access for machinery is required within the TPZ, ground protection measures will be required to prevent root damage and soil compaction. Specifications for ground protection are as follows:

- Permeable membrane such as geotextile fabric.
- Layer of mulch or crushed rock (at minimum depth of 100mm).
- Or rumble boards strapped over mulch or aggregate.



CORRECT MULCH METHOD

**Mulch Within TPZ:** Maintain aged *Eucalyptus spp.* mulch around the retained trees for the duration of the development in accordance with Australian Standard® AS 4454-2003 – Compost, Soil Conditioners and Mulches.
Mulch should have at least 70% by mass of its particles, with a maximum size of greater than 16mm and spread 50-75mm deep to the extent of the dripline, (never exceed 100mm depth). Mulch should not have contact with a tree's trunk. Apply 200mm from the trunk, shaping a soil berm dish close to the root ball to facilitate establishment of watering.

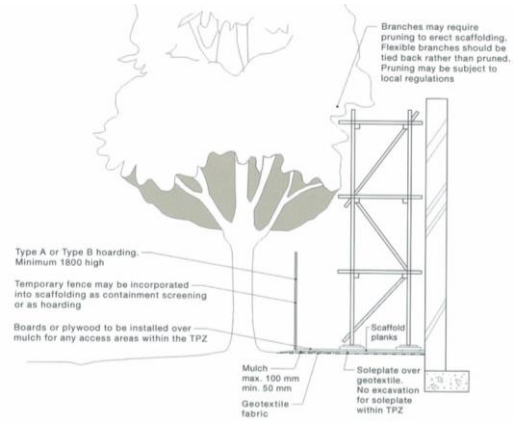
**Watering Schedule:** Maintain a watering schedule for retained trees at a rate of approximately 45 litres daily (Trees Impact: 2021).

**Excavation Within TPZ's**: Excavations shall be undertaken under the supervision of a project arborist, using tree-sensitive, non-destructive methods (e.g. manual excavation with hand tools, air-spade or hydro-vacuum machinery).

- No roots greater than 40mm in diameter are to be damaged, pruned or removed. All care shall be taken to preserve and avoid damaging roots. Excavations should not occur within a tree's SRZ.
- Exposed roots shall be protected from direct sunlight by covering with hessian or similar fabric and kept moist at all times.
- Hand excavation and root mapping shall be undertaken along excavation lines within the TPZ. Any conflicting roots greater than 40mm in diameter shall be pruned using clean, sharp secateurs or a pruning saw to ensure a clean cut that is free from tears.

**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 boring methods, such as horizontal drilling (HDD) may be at least 600mm deep. The project arborist should assess the likely impacts of boring and bore pits on retained trees.
- Excavations for entry/exit pits must be located outside the TPZ.



## 8. GLOSSARY

**Aerial inspection**: Where a tree is climbed by an arborist to inspect the upper stem and crown for signs or symptoms of defects and disease.
**Assets Protection Zone (APZ)**: A fuel-reduced area surrounding a built asset or structure.
**Bracket fungus:** The rigid fruiting body of some fungus species.
**Branch collar:** The ring of wood tissue, which forms around the base of a branch (near the branch attachment).
**Cavity:** A void, initiated by a wound within the trunk, branches or roots. These voids are referred to as hollows.
**Canker:** Fungal infections of the bark and cambium that can occur on all parts of the tree.
**Co-dominant**: Stems or branches equal in size and relative importance.
**Crown**: All the parts of a tree arising above the trunk where it terminates by its division forming branches e.g. the branches, leaves, flowers and fruit, or the total amount of foliage supported by branches.
**Crown lifting:** The removal of the lower branches of the tree.
**Dead wood:** Refers to any whole limb that no longer contains living tissues
**Decay:** Process of degradation of woody tissues by fungi or bacteria through decomposition of cellulose and lignin.
**Deciduous:** Describes trees and bushes that shed their leaves in the autumn (opposite to evergreen).
**Dieback:** Tree deterioration where the branches and leaves die.
**Drip line:** Where the canopy releases water shed from the foliage during precipitation.
**DBH**: Diameter at breast height, about 1.4 metres of trunk height.
**Epicormic Shoots**: These shoots often have a weak point of attachment. Epicormic growth/shoots are generally a survival mechanism, often indicating the presence of a current, or past stress event such as fire, pruning, drought, etc.
**Flush cut:** A cut that damages or removes the branch collar or removes the branch and stem tissue and is inconsistent with the branch attachment as indicated by the bark branch ridge.
**Genus/species:** Identified using its botanical name. Where the species name is not known, species (spp.) is used. The common name for trees may vary considerably in each area by geographical differences.
**Height:** Height has been estimated to +/- 2 metres.
**Inclusion:** The pattern of development at branch or stem junctions where bark is turned inward rather than pushed out. This fault is located at the point where the stems/branches meet.
**Maturity:** Tree age, assessed as over-mature (last 1/3 of life expectancy), mature (1/3 to 2/3 life expectancy) and semi-mature (less than 1/3 life expectancy).
**Remedial (restorative) pruning:** The removal of damaged or dead wood; or the trimming of diseased or infested branches. Trimming branches back to undamaged tissue in order to induce shoots, from which a new crown will be established.
**Resistograph® testing:** A resistograph® is a specialised machine that measures timber density by a drilling a 3mm diameter probe through the wood, simultaneously plotting the results on a graph at full scale.
**Structural integrity:** Describes the internal supporting timber (substantial to frail).
**Structural Root Zone (SRZ):** Refers to the radial distance in metres, measured from the centre of the tree stem, which defines the critical area required to maintain stability of the tree.
**Targets:** Are people, property, or activities that could be injured, damaged, or disrupted by a tree.
**Tree Protection Zone (TPZ):** Refers to the radius distance in metres, measured from the centre of the tree stem which defines the tree protection zone for a tree to be retained. This is generally the minimum distance from the centre of the tree trunk where protective fencing is to be installed to create an exclusion zone associated with construction works.
**Vigour:** Refers to the tree's health as exhibited by the crown density, leaf colour, presence of epicormic shoots, ability to withstand disease/invasion, and the degree of dieback.
**Windthrow:** Tree failure when a force exerted by wind against the foliage crown and trunk overcomes resistance to that force in the root plate.

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# APPENDICES

## Appendix A Visual Tree Assessment (VTA)

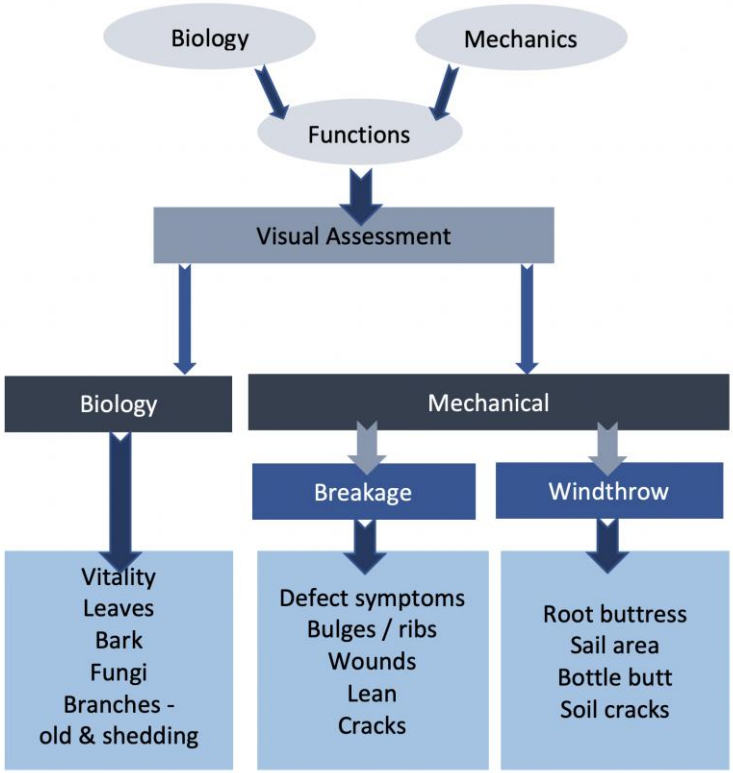


***Diagram 1:*** *VTA Chart by Claus Mattheck (1994) The Body Language of Trees adapted*

***Schedule 1:*** *Categories for VTA.*

| **Visual Tree Diagnostics** | | | |
|---|---|---|---|
| 1 | Maturity: J - Juvenile; IM - Immature; SM - Semi-Mature; M - Mature | | |
| **Health & Vigour** | | **Condition of Tree** | |
| KEY | | KEY | |
| | | 2 | Good condition |
| | | 3 | Good condition but poor development |
| | | 3b | Moderate condition |
| | | 3c | Poor condition |
| 4 | Dieback is more than 20%. | | |
| 4b | Epicormics | | |
| 5 | Sparse foliage | 5b | Unbalanced Canopy |
| | | 6 | Physical Damage |
| 7 | Insect damage – foliage | | |
| 7b | Borers | | |
| 8 | Fungal attack – pathogen | | |
| | | 9 | Cavity |
| 10 | Termite activity | 10b | Inclusions |
| | | 11 | Lean |
| 12b | Dying | 12 | Heavily pruned |
| | | 13 | Damaged roots |
| | | 13b | Encroachment |
| 14 | Parasitic vine present | | |
| 15 | Damage from a climbing plant | | |
| | | 16 | Inclusions |
| 17 | Habitat tree | | |
| 18 | Endangered species | | |

## Appendix B Tree A-Z Categories

***Schedule 2:*** *Tree A-Z Categories Field Sheet (version 10.04-U8C)*

Barrell (2019) Criteria for Assessing the Importance of Trees on Development Sites.

### TreeAZ Categories Field Sheet (Version 10.04-USC)

**CAUTION:** TreeAZ assessments must be carried out by a competent person qualified and experienced in arboriculture. The following category descriptions are designed to be a brief field reference and are not intended to be self-explanatory. They must be read in conjunction with the most current explanations published at www.TreeAZ.com.

#### Category Z: Unimportant trees not worthy of being a material constraint

| | |
|---|---|
| | **Local policy exemptions:** Trees that are unsuitable for legal protection for local policy reasons including size, proximity and species |
| **Z1** | Young or insignificant small trees, i.e. below the local size threshold for legal protection, etc |
| **Z2** | Too close to a building, i.e. exempt from legal protection because of proximity, etc |
| **Z3** | Species that cannot be protected for other reasons, i.e. scheduled noxious weeds, out of character in a setting of acknowledged importance, etc |
| | **High risk of death or failure:** Trees that are likely to be removed within 10 years because of acute health issues or severe structural failure |
| **Z4** | Dead, dying, diseased or declining |
| **Z5** | Severe damage and/or structural defects where a high risk of failure cannot be satisfactorily reduced by reasonable remedial care, i.e. cavities, decay, included bark, wounds, excessive imbalance, overgrown and vulnerable to adverse weather conditions, etc |
| **Z6** | Instability, i.e. poor anchorage, increased exposure, etc |
| | **Excessive nuisance:** Trees that are likely to be removed within 10 years because of unacceptable impact on people |
| **Z7** | Excessive, severe and intolerable inconvenience to the extent that a locally recognized court or tribunal would be likely to authorize removal, i.e. dominance, debris, interference, etc |
| **Z8** | Excessive, severe and intolerable damage to property to the extent that a locally recognized court or tribunal would be likely to authorize removal, i.e. severe structural damage to surfacing and buildings, etc |
| | **Good management:** Trees that are likely to be removed within 10 years through responsible management of the tree population |
| **Z9** | Severe damage and/or structural defects where a high risk of failure can be temporarily reduced by reasonable remedial care, i.e. cavities, decay, included bark, wounds, excessive imbalance, vulnerable to adverse weather conditions, etc |
| **Z10** | Poor condition or location with a low potential for recovery or improvement, i.e. dominated by adjacent trees or buildings, poor architectural framework, etc |
| **Z11** | Removal would benefit better adjacent trees, i.e. relieve physical interference, suppression, etc |
| **Z12** | Unacceptably expensive to retain, i.e. severe defects requiring excessive levels of maintenance, etc |

**NOTE:** Z trees with a high risk of death/failure (Z4, Z5 & Z6) or causing severe inconvenience (Z7 & Z8) at the time of assessment and need an urgent risk assessment can be designated as ZZ. ZZ trees are likely to be unsuitable for retention and at the bottom of the categorization hierarchy. In contrast, although Z trees are not worthy of influencing new designs, urgent removal is not essential and they could be retained in the short term, if appropriate.

#### Category A: Important trees suitable for retention for more than 10 years and worthy of being a material constraint

| | |
|---|---|
| **A1** | No significant defects and could be retained with minimal remedial care |
| **A2** | Minor defects that could be addressed by remedial care and/or work to adjacent trees |
| **A3** | Special significance for historical, cultural, commemorative or rarity reasons that would warrant extraordinary efforts to retain for more than 10 years |
| **A4** | Trees that may be worthy of legal protection for ecological reasons (Advisory requiring specialist assessment) |

**NOTE:** Category A1 trees that are already large and exceptional, or have the potential to become so with minimal maintenance, can be designated as AA at the discretion of the assessor. Although all A and AA trees are sufficiently important to be material constraints, AA trees are at the top of the categorization hierarchy and should be given the most weight in any selection process.

## Appendix C Tree Useful Life Expectancy – (TULE)

***Schedule 3:*** *Adapted with permission Jeremy Barrell (SULE) 2014 for TCAA consulting arborists.*

| | 1<br>LONG TULE | 2<br>MEDIUM TULE | 3<br>SHORT TULE | 4<br>REMOVE | 5<br>NO POTENTIAL FOR RETENTION | 6<br>SMALL, YOUNG OR REGULARLY CLIPPED |
|---|---|---|---|---|---|---|
| | Trees that appear to be retainable for more than 40 years with a low level of risk. | Trees that appear to be retainable for 15-40 years with a low to medium level of risk. | Trees that appear to be retainable for 5-15 years with a medium to high level of risk. | Trees that should be removed within the next 5 years with a high to very high level of risk. | Trees that should be removed immediately with a very high to extreme level of risk. | Trees than can be easily transplanted or replaced. |
| **A** | Structurally sound trees located in positions that can accommodate future growth. | Trees that may only live for between 15 and 40 more years. | Trees that may only live for between 5 and 15 more years. | Dead, dying or declining trees through disease or inhospitable conditions. | Dead, dying or declining trees diseased or inhospitable conditions. | Small trees less than 5 metres in height. |
| **B** | Trees that could be made suitable for retention in the long term by intervention works. | Trees that may live for more than 40 years, but would need to be removed for safety or nuisance reasons. | Trees that may live for more than 15 years, but would need to be removed for safety or nuisance reasons. | Dangerous trees through instability or recent loss of adjacent trees. | Dangerous trees through instability or recent loss of adjacent trees. | Young trees less than 15 years old but over 5 metres in height. |
| **C** | Trees of special significance for historical, commemorative or rarity reasons that would warrant extraordinary efforts to secure their long-term retention. | Trees that may live for more than 40 years, but should be removed to prevent interference with more suitable individuals or to provide space for new planting. | Trees that may live for more than 15 years, but should be removed to prevent interference with more suitable individuals or to provide space for new planting. | Dangerous trees through structural defects including cavities, decay, included bark, wounds or poor form. | Dangerous trees through structural defects including cavities, decay, included bark, wounds or poor form. | Trees that have been regularly pruned to artificially control growth. |
| **D** | | Trees that could be made suitable for retention in the medium term by intervention works. | Trees that require substantial intervention works and are only suitable for retention in the short term. | Damaged trees that are clearly not safe to retain. | Damaged trees that are clearly not safe to retain and must be removed immediately. | |
| **E** | | | | Trees that may live for more than 5 years, but should be removed to prevent interference with more suitable individuals or to provide space for new planting. | High toxicity/allergen trees, asthmatic and poisonous trees that must be removed immediately. | |
| **F** | | | | Trees that may cause damage to existing structures within 5 years. | OTHER, with legitimate explanation to be removed immediately. | |
| **G** | | | | Trees that will become dangerous after removal of other trees for reasons given in 4A to 4F. | | |

| INSPECTION FREQUENCY | | | | | |
|---|---|---|---|---|---|
| Every 1-5 years<br>by a competent inspector, or event monitored. | Every 1-5 years<br>by a competent inspector, or event monitored. | Every 1-3 years<br>by a competent inspector, or event monitored. | Annually by a competent inspector, or event monitored. | Every 1-7 days<br>by a competent inspector and event monitored. | Bi-annually by a competent inspector. |

## Appendix D Landscape Significance Rating

***Schedule 4:*** *Heritage, Ecological and Amenity Significance. Source: Morton, A (2006) Criteria for Assessment of Landscape Significance.*

| RATING | HERITAGE VALUE | ECOLOGICAL VALUE | AMENITY VALUE |
|---|---|---|---|
| **SIGNIFICANT** | The subject tree is listed as a Heritage Item under the Local Environment Plan (LEP) with a local, state, or national level of significance or is listed on Council's Significant Tree Register. | The subject tree is scheduled as a Threatened Species as defined under the Threatened Species Conservation Act 1995 (NSW) or the Environmental Protection and Biodiversity Conservation Act 1999. | The subject tree has a very large live crown size exceeding 300m$^2$ with normal to dense foliage cover, is in a visually prominent position in the landscape, exhibits very good form and habit typical of the species. |
| | The subject tree forms part of the curtilage of a Heritage Item (building/structure/artefact as defined under the LEP) and has a known or documented association with that item. | The tree is a locally indigenous species, representative of the original vegetation of the area and is known as an important food, shelter, or nesting tree for endangered or threatened fauna species. | The subject tree 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. |
| | The subject tree is a Commemorative Planting having been planted by an important historical person (s) or to commemorate an important historical event. | The subject tree is a remnant tree, being a tree in existence prior to development of the area. | The tree is visually prominent in view from surrounding areas, being a landmark or visible from a considerable distance. |
| **VERY HIGH** | The tree has a strong historical association with a heritage item (building/structure/artefact/garden etc..) within or adjacent the property and/or exemplifies a particular era or style of landscape design associated with the original development of the site. | The tree is a locally indigenous species, representative of the original vegetation of the area and is a dominant or associated canopy species of an Endangered Ecological Community (EEC) formerly occurring in the area occupied by the site. | The subject tree has a very large live crown size exceeding 200m$^2$, a crown density exceeding 70% (normal-dense), is a very good representative of the species in terms of its form and branching habit or is aesthetically distinctive and makes a positive contribution to the visual character and the amenity of the area. |
| **HIGH** | The tree has a suspected historical association with a heritage item or landscape supported by anecdotal or visual evidence. | The tree is a locally indigenous species and representative of the original vegetation of the area and the tree is located within a defined Vegetation Link/Wildlife Corridor or has known wildlife habitat value. | The subject tree has a large live crown size exceeding 100m$^2$; 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% (normal); The subject tree is visible from the street and surrounding properties and makes a positive contribution to the visual character and the amenity of the area. |
| **MODERATE** | The tree has no known or suspected historical association, but does not detract or diminish the value of the item and is sympathetic to the original era of planting. | The subject tree is a non-local native or exotic species that is protected under the provisions of this DCP. | The subject tree has a medium live crown size exceeding 40m$^2$; The tree is a fair representative of the species, exhibiting moderate deviations from typical form (distortion/suppression etc.) with a crown density of more than 50% (thinning to normal); and |
| | | | The tree is visible from surrounding properties, but is not visually prominent – view may be partially obscured by other vegetation or built forms. The tree makes a fair contribution to the visual character and amenity of the area. |
| **LOW** | The subject tree detracts from heritage values or diminishes the value of a heritage item. | The subject tree is scheduled as exempt (not protected) under the provisions of this DCP due to its species, nuisance, or position relative to building or other structures. | The subject tree has a small live crown size of less than 40m$^2$ and can be replaced within the short term (5-10 years) with new tree planting. |
| **VERY LOW** | The subject tree is causing significant damage to a heritage Item. | The subject tree is listed as an Environment Weed Species in the relevant Local Government Area, being invasive, or is a known nuisance species. | The subject tree is not visible from surrounding properties (visibility obscured) and makes a negligible contribution or has a negative impact on the amenity and visual character of the area. The tree is a poor representative of the species, showing significant deviations from the typical form and branching habit with a crown density of less than 50% (sparse). |
| **INSIGNIFICANT** | The tree is completely dead and has no visible habitat value. | The tree is a declared Noxious Weed under the Biosecurity Act 2015 (NSW) within the relevant Local Government Area. | The tree is completely dead and presents a potential hazard. |

## Appendix E Retention Value Rating

***Schedule 5:*** *Determining the Tree Retention Value Morton, A (2011).*

| Evaluating Sustainability and Landscape Significance to Determine Retention Value | |
|---|---|
| Retention Value | Criteria and Categories |
| **HIGH** | These trees are worthy of preservation. As such, careful consideration should be given to their retention as a priority.<br>Proposed site design and placement of buildings and infrastructure should consider the Tree Protection Zones (TPZ), as discussed in the following section, to minimise any adverse impact.<br>In addition to TPZs, the extent of the canopy (canopy dripline) should also be considered, particularly in relation to a high-rise development. Significant pruning of the trees to accommodate the building envelope or temporary scaffolding is generally not acceptable. |
| **MODERATE** | The retention of these trees is desirable.<br>These trees should be retained as part of any proposed development, if possible; however, these trees are less critical for retention.<br>If these trees must be removed, replacement planting should be considered in accordance with Council's Tree Replacement Policy to compensate for loss of amenity. |
| **LOW** | These trees are not considered to be worthy of any special measures to ensure their preservation, due to current health, condition, or suitability. They do not have any special ecological, heritage or amenity value, or these values are substantially diminished due to their SULE.<br>These trees should not be considered as a constraint to the future development of the site. |
| **VERY LOW** | These trees are potentially hazardous or very poor specimens, or may be environmental or noxious weeds.<br>The removal of these trees is therefore recommended regardless of the implications of any proposed development. |

## Appendix F Tree Planting Specifications

Tree planting specifications are in accordance with NATSPEC Specification for Trees, Ross Clark (2003) and Australian Standard® AS 2303-2018 – Tree Stock for Landscape Use.

BEFORE PLANTING

- Don't plant trees too close to buildings, in-ground pools, avoid planting under power lines and over drainage pipes or near other large trees.
- A consider the effect on neighbouring properties (i.e. shade, loss of views, impact on foundations, fences and services).
- Plant deciduous trees if you want in summer shade and winter sun. Consider shadows cast from evergreen trees.
- Use locally native to attract native fauna and to reduce watering required.

BASIC TREE PLANTING

1. Dig the hole at least twice as wide as the pot size.
2. Loosen the soil at the sides of the hole. Fill hole with water and allow to drain away.
3. Place the loosened root ball in the hole. Fill back soil. The top of the root ball should be level with the surrounding soil.
4. Water the plant deeply after planting, once a week for the first two months.

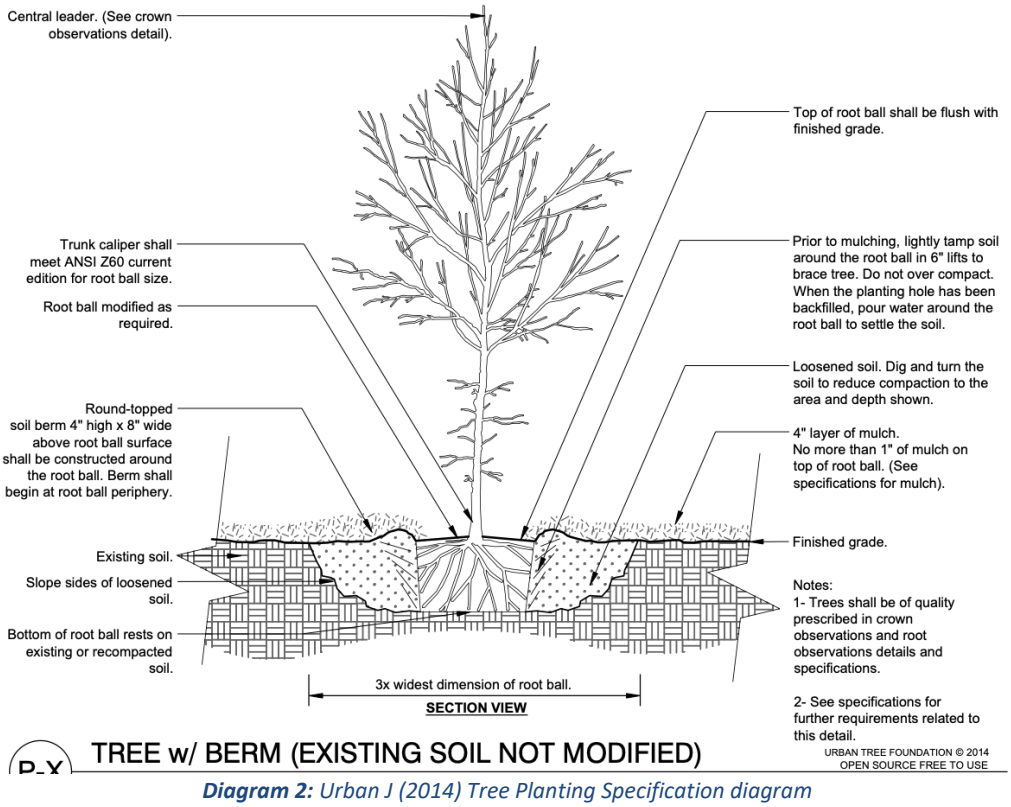


***Diagram 2:*** *Urban J (2014) Tree Planting Specification diagram*

***Schedule 6:*** *Watering Frequency Table.*

| | ***Watering frequency for 45L pot*** | | |
|---|---|---|---|
| ***Time of year*** | *1st month* | *2nd and 3rd month* | *4th to 6th month* |
| Sept-Feb. | 4x week | 3 x week | 2 x week |
| Mar-May | 3 x week | 2 x week | 1 x week |
| Jun-August | 2 x week | 1 x week | 1x fortnight |

## Appendix G Replenishment of Native Trees Species

***Schedule 7:*** *Tree Species and Sizes.*

| Botanical Name | Common Name | Height (m) at maturity | Crown Spread (m) |
|---|---|---|---|
| **Leptospermum petersonii* | Lemon-Scented Tea Tree | 5 | 6 |
| *Melaleuca adnata* | (Sandhill Honey-myrtle), | 5 | 5 |
| *Magnolia grandiflora* | Little Gem Magnolia | 5 | 4 |
| *Waterhousia floribunda* | Weeping lilly pilly, | 5 | 5 |
| *Breynia sp.* | breynia'Ironstone Range | 4 | 4 |
| *Melicope rubra* | *'Little Evodiella'* | 5 | 5 |
| *Grevillia lineariifolia* | Spider plant | 5 | 5 |
| | | | |

**MULCH:** Adding a layer of mulch to reach 75mm, encourages water retention and microbes, that will break down and incorporate organic matter into the soil. Organic mulch will reduce weeds and root development.

CORRECT MULCH METHOD

- Add at least 70% by mass of its particles with a maximum size of greater than 16 mm in accordance with Australian Standard® AS 4454-2003 – Compost, Soil Conditioners and Mulches. Apply 200mm from trunk and shaping a soil berm dish close to the root ball to facilitate establishment of watering.
- The TPZ of retained trees should be maintained with a 75mm depth of organic, certified, coarse Eucalyptus mulch.
- Mulch should be retained at 5075mm depth and never exceed 100mm in depth.
- Do not allowed mulch to contact the tree trunk. Retain a mulch free gap of not less than 75mm and preferably 200mm clear from the base of the tree trunk.

## Disclaimer

McArdle Arboricultural Consultancy Pty Ltd does not assume responsibility for liability associated with the tree on/or adjacent to this project site, the future demise and/or any damage which may result therefrom. They take care to obtain all information from reliable sources. All data has been verified insofar as possible; however, the consultant can neither guarantee nor be responsible for the accuracy of information provided by others.

McArdle Arboricultural Consultancy Pty Ltd cannot be held responsible for any consequences as result of work carried out outside specifications, not in compliance with Australian Standard® or by inappropriately qualified staff. If further investigations such as, aerial, drill and root test are recommended, the report shall not be considered final until all investigations have been completed, as further defects may be found.

## STATEMENT OF LIMITATIONS

McArdle Arboricultural Consultancy Pty Ltd makes every effort to accurately identify current tree health and hazards. Results may or may not correlate to actual tree structural integrity. There are many factors that may contribute to limb or total tree failure. Not all these symptoms are visible. There can be hidden defects that may result in a failure even though it would seem that other, more obvious defects would be the likely cause of failure. All standing trees have an element of unpredictable risk.

The inspection was limited to a visual ground examination of the tree, without aerial inspections and below ground excavations. The assessments are limited and do not include specialised analysis. No internal diagnostics, aerial inspection and pathology test were conducted. Sketches, diagrams, graphs, and photographs in this report, being intended as visual aids, are not necessarily to scale.

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