Arboricultural Impact Assessment

Proposed Alterations & Additions at

10 Taminga Street, Bayview

Date: January 2021
Author: Alexis Anderson
Qualifications: -Diploma Horticulture (Arboriculture) –AQF Level 5.
-Bachelor of Applied Science (CM)
Membership: -Arboriculture Australia-Member No.2268
-International Society of Arboriculture –Professional Member
A.B.N: 989 613 015 96
Contact: 0431 286 080 info@bluegumarborist.com.au

1 Contents

2 Introduction

2.1 Background

This Arboricultural Impact Assessment (AIA) was prepared for Niels & Lenore Walters in relation to the existing trees and proposed alterations and additions at 10 Taminga Street, Bayview.

The purpose of this AIA is to assess the likely impacts of the proposed works on the existing site trees and to make recommendations regarding construction methods and tree protection measures to limit adverse impacts on trees recommended for retention.

This AIA has been guided by the principles set out in the Australian Standard 4970-2009, *Protection of trees on development sites.*

2.2 Subject Site/Proposed Works

The subject site is a residential lot, currently occupied by a two storey residential dwelling. The proposed works include an upper level addition and alterations to the entry level structure. No landscaping changes are proposed as part of this application.

2.3 Subject Trees

Seven (7) trees have been assessed due to their proximity to the proposed works. Refer to Figure A for tree locations. These are made up of the following species:

- Cheese Tree, *Glochidion Fedinandi* (Tree 1 and 2)
- Spotted Gum, *Corymbia maculata* (Tree 3)
- Jacaranda, *Jacaranda mimosifolia* (Tree 4)
- Sydney Peppermint, *Eucalyptus piperita* (Tree 5)
- Canary Island Date Palm, *Phoenix canariensis* (Tree 6)
- Camphor Laurel, *Cinnamomum camphora* (Tree 7)

Trees 1, 2, 3 and 5 are protected under Part 3 of SEPP (Vegetation in Non-Rural Area) 2017.

Trees 4, 6 and 7 are exempt from protection within the Northern Beaches LGA and could be removed without Council approval.

None of the trees were assessed as having major significance including heritage significance and no tree is listed on a register of significant trees.

None of the assessed trees are protected under the Threatened Species Conservation Act (1995) or Biodiversity Conservation Act (1999).

A detailed description of the subject trees is included in the Tree Assessment Table (Section 4 –page 6).

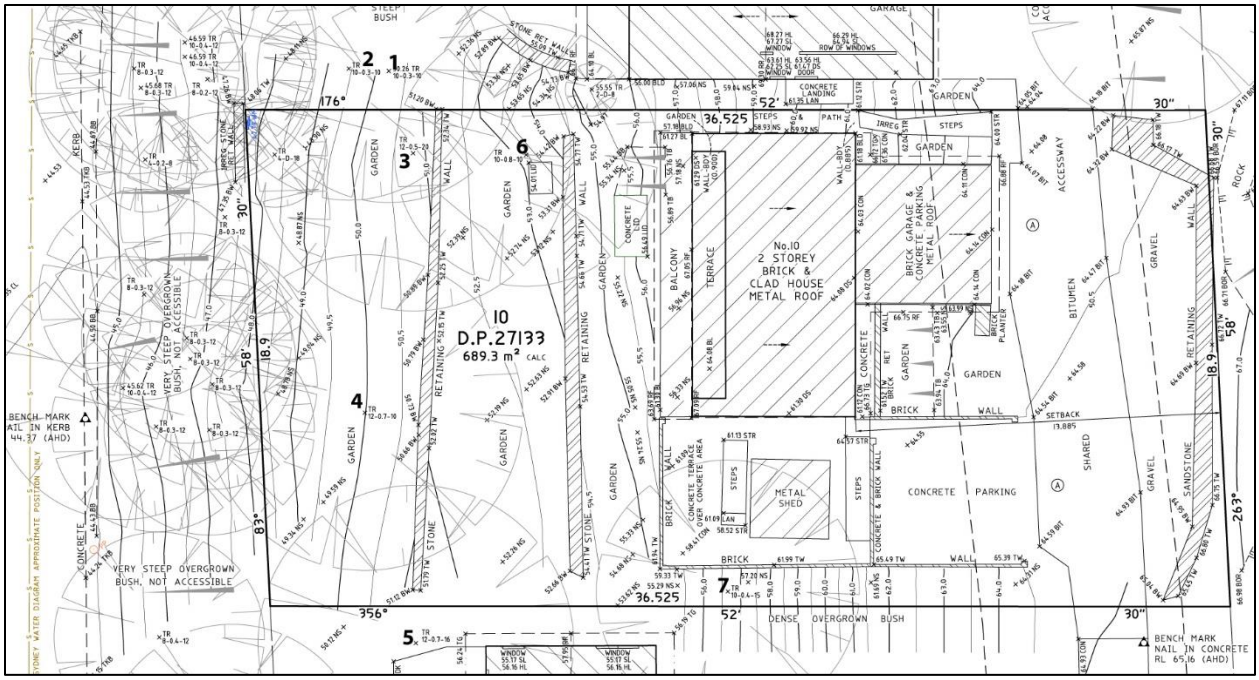

Figure A: Excerpt from the Survey Plan showing tree locations and numbering.

3 Methodology

3.1 Site Inspection/Tree Assessment

Site inspection and tree assessment was undertaken by Alexis Anderson on the 30th of December, 2021. The trees were assessed from ground level using a Tree Assessment Table, as outlined in Section 4. The definitions and explanations of terms used are outlined in the Tree Table Definitions page which is included at Attachment A.

3.2 Plan Review

This report is based upon a review of the set of plans provided by JJ Drafting (Revision E). The plans shown within this report have been derived from the Site Analysis Plan.

No landscaping plans, or engineering detail were available for review at the time of this assessment.

3.3 Tree Protection Zones

Tree assessments in accordance with the Australian Standard 4970-2009, *Protection of trees on development sites*, require calculation of a Tree Protection Zone (TPZ) and Structural Root Zone (SRZ). The following is a brief explanation of these terms:

Tree Protection Zone -TPZ: This is the area that should be isolated from construction disturbance so that the tree remains viable. Some disturbance within the TPZ may be possible following arboricultural assessment.

Structural Root Zone -SRZ: This is the area of undisturbed soil and roots required to maintain tree stability. Excavation within the SRZ can lead to whole tree failure.

3.4 Retention Values

Retention values are derived from a combination of Estimated Life Expectancy rating and Landscape and Environmental Significance ratings.

- **HIGH Retention Value**: These trees are worthy of retention and design consideration should be made where possible to allow their retention. Removal of these trees will have an impact on the landscape amenity or local environment.
- **MEDIUM Retention Value**: These trees are worthy of retention and minor design consideration should be made to retain these trees wherever possible (e.g. placement of ancillary structures, garden retaining walls, driveway levels). Removal of these trees will not have a significant impact on the landscape amenity or local environment.
- **LOW Retention Value**: These trees should not be considered to be a constraint to design layout. Some of these trees should be removed irrespective of any proposed development.

The method of determining and defining retention values used in this report has been derived from the ©Retention Index developed by Tree Wise Men® Australia Pty Ltd.

3.5 Consideration for Tree Retention and Removal

Tree removal recommendations have been based on tree Retention Values and construction offsets. Trees may generally be recommended for removal in the following circumstances:

- Trees located within construction footprints.
- Trees with construction proposed within the SRZ where root loss cannot be avoided through sensitive design.
- Trees with a TPZ loss of more than 25%, may be recommended for removal providing tree sensitive design cannot be implemented to avoid significant root and canopy loss.
- Trees with low Retention Values may be recommended for removal irrespective of proposed development.

4 Tree Assessment Details

4.1 Tree Assessment Table

	Species	Trunk Diameter @ 1.4m	Height	Canopy Spread Radius	Age Class	Health/ Vitality	Structural Condition	Estimated Life Expectancy	Landscape and Environmental Significance	Retention Value
1	Cheese Tree, *Glochidion ferdinandi*	30cm	10m	5m	Mature	Good	Good	Long (30+ yrs)	3	Medium
		Comments: Locally native species. Located on the adjoining property.								
2	Cheese Tree, *Glochidion ferdinandi*	24cm	9m	4m	Mature	Good	Good	Long (30+ yrs)	3	Medium
		Comments: Locally native species. Located on the adjoining property.								
3	Spotted Gum, *Corymbia maculata*	56cm	20m	4m	Mature	Fair	Poor	Short (0-10 yrs)	3	Low
		Comments: Trunk decay from the base to 14m height (Photo A and B). The remaining section of the canopy is weakly attached to the perimeter of the decaying trunk. Canopy failure is foreseeable.								
4	Jacaranda, *Jacaranda mimosifolia*	36cm, 30cm, 30cm, 16cm	13m	6m	Mature	Good	Good	Long (30+ yrs)	3	Medium
		Comments: Roots are causing damage to the stone retaining wall. This tree is exempt from protection within the Northern Beaches LGA.								
5	Sydney Peppermint, *Eucalyptus piperita*	76cm	15m	6m	Mature	Fair	Fair	Medium (10-30 yrs)	2	High
		Comments: Trunk hollow and decay at 2.0m height. The crown thinning indicates stress. Further arboricultural investigation and monitoring of this tree is recommended.								
6	Canary Island Date Palm, *Phoenix canariensis*	57cm	10m	3m	Mature	Good	Good	Long (30+ yrs)	4	Low
		Comments: Likely to have self-sown as a weed. Loose fronds with sharp spines. This tree is exempt from protection within the Northern Beaches LGA.								
7	Camphor Laurel, *Cinnamomum camphora*	42cm	13m	5m	Mature	Good	Good	Long (30+ yrs)	4	Low
		Comments: Weed species. This tree is exempt from protection within the Northern Beaches LGA.								

Photo A and B: Trunk decay and weakly attached canopy of Tree 3.

Photo C: Trees 4, 5 and 5 taken facing north-west.

Photo D: Tree 7 (Camphor Laurel) taken facing south.

4.2 Tree Protection Zones

Tree Protection Offsets based on AS4970-2009-*Protection of Trees on Development Sites*		
Tree Number	**Tree Protection Zone radius**	**Structural Root Zone radius**
1	3.6m	2.0m
2	2.9m	1.9m
3	6.7m	2.6m
4	6.9m	2.6m
5	9.1m	3.0m
6	4.0m	1.0m
7	5.0m	2.3m

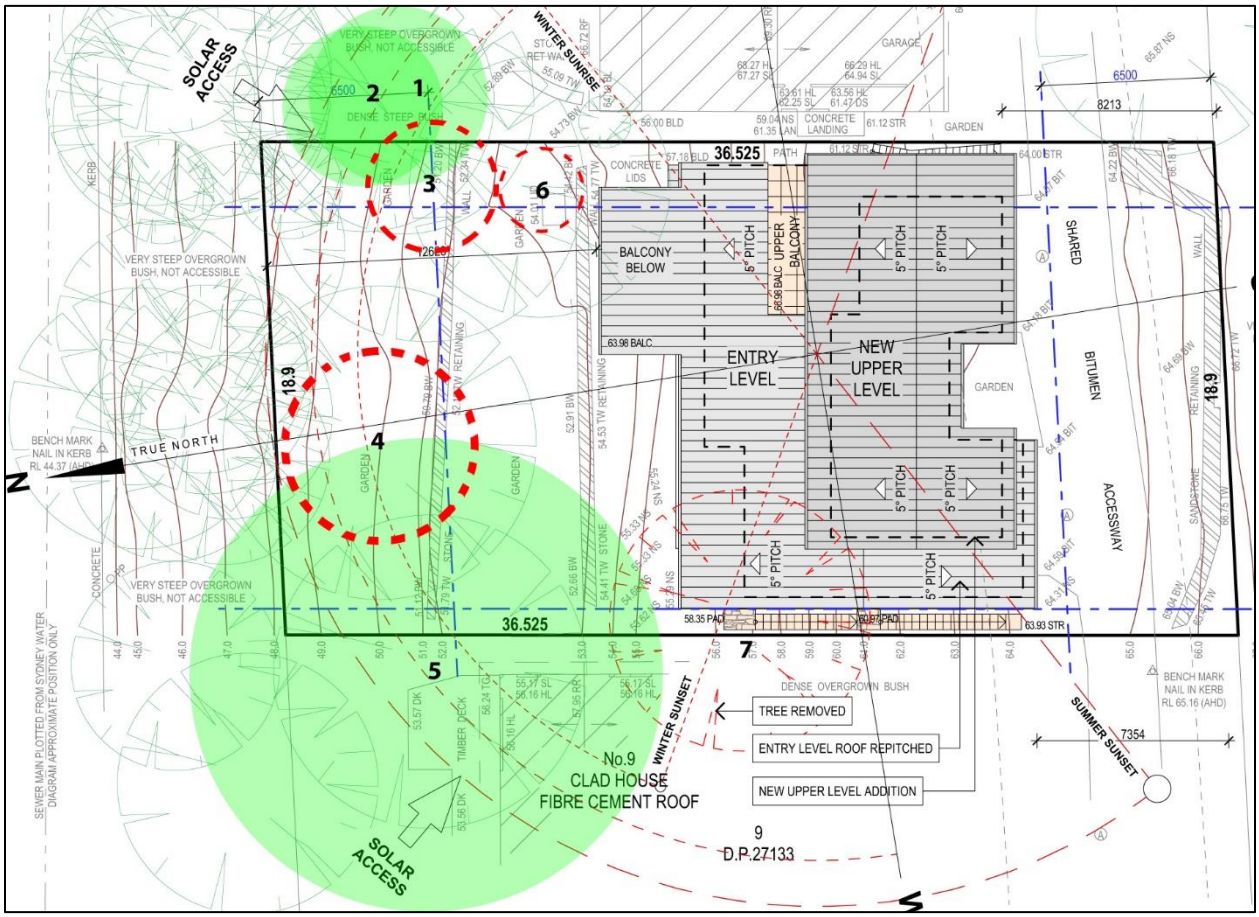

Figure B: Excerpt from the Site Plan showing the TPZ of retained trees.

5 Potential Impacts of Proposed Works

5.1 Trees Proposed for Removal

Tree Number/Species	Retention Value	Reason for Removal
3 Spotted Gum	Low	Poor structural condition. Trunk decay from the base to 14m height (Photo A and B). The remaining section of the canopy is weakly attached to the perimeter of the decaying trunk. Canopy failure is foreseeable.
4 Jacaranda	Medium	Roots are causing damage to the stone retaining wall. This tree is exempt from protection within the Northern Beaches LGA.
6 Canary Island Date Palm	Low	Shallow structural are likely to have self-sown as a weed. Loose fronds with sharp spines. This tree is exempt from protection within the Northern Beaches LGA.

5.2 Potential Impacts of Proposed Works on Retained Trees

Tree Number/Species	Retention Value	Works Proposed Within the Tree Protection Zone (TPZ)
5 Sydney Peppermint	High	Connection of the new stormwater drainage line to the existing line is proposed within the TPZ. The new section of stormwater line can be installed above the shallow bedrock with no excavation required. No impact is expected.

Incidental Impacts: Trees are commonly impacted on construction sites in the following ways. These impacts can be easily avoided through awareness and basic tree protection measures.

- Stripping of existing ground cover, topsoil and removal of organic material from the soil surface.
- Compaction of the topsoil and damage to surface roots through use of heavy machinery and frequent foot traffic.
- Soil contamination through washing out barrows and disposal or spillage of chemical materials.
- Root loss due to unforeseen excavation for plumbing upgrades and landscape construction.
- Bark/trunk and branch injuries from accidental contact with machinery.

6 Recommendations

6.1 Site Establishment –Prior to Construction

Appointment of a Project Arborist: An Arborist with an AQF Level 5 qualification should be engaged prior to the commencement of work on the site. The Project Arborist may be required at the following times:

- At the project start-up to discuss tree protection requirements with the site foreman.
- Following installation of tree protection fencing.
- During any earthworks within the TPZ of retained trees.
- At project completion to verify tree protection and retention.

Tree Protection Fencing: Tree Protection Fencing should be erected in the areas defined in Figure C. Tree Protection Fencing should consist of 1.8 metre high chainlink panels on moveable concrete pads. Tree Protection Fencing should not be moved at any time without consultation with the Project Arborist.

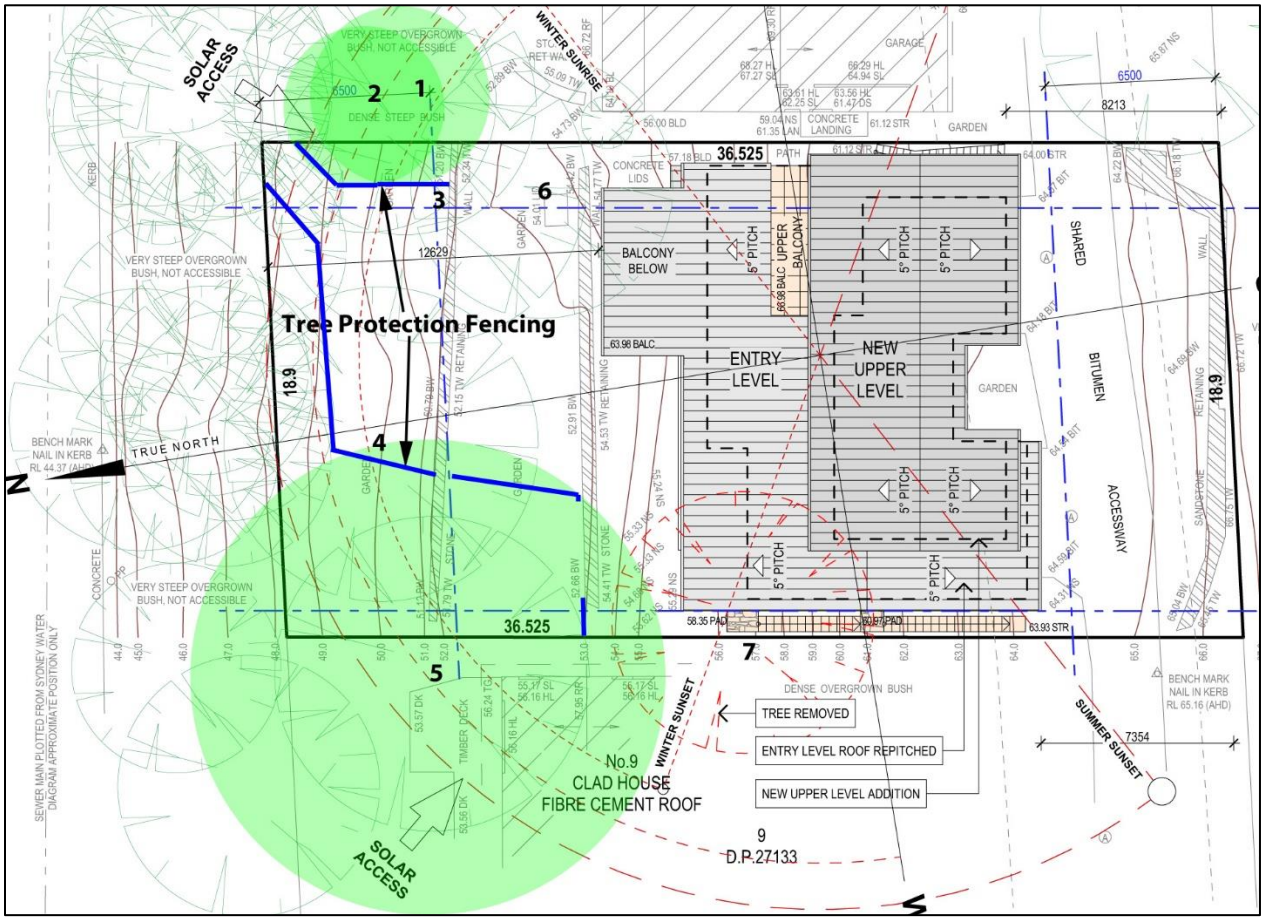

Figure C: Areas where tree protection fencing is recommended.

Tree Removal: Trees 3, 4 and 6 are proposed to be removed. Tree removal works should be undertaken in accordance with the WorkSafe Australia *Guide to Managing Risks of Tree Trimming & Removal Work.*

6.2 During Construction

Tree Protection Zones: The following should be prohibited within the Tree Protection Zones of Trees 1, 2 and 5:

- Removal or stripping of topsoil / organic surface material.
- Disposal of solid, liquid or chemical waste.
- Any excavation, fill or other construction activity other than that discussed in this report.

Underground Services: Existing services alignments must be used where possible within the TPZ's of retained trees to avoid the need for any new ground disturbance. Any new services required within the TPZ's must be installed above the shallow sandstone bedrock and run overland wherever possible. Any trenching into the shallow overlaying soil must be undertaken under guidance of the Project Arborist.
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6.3 Post Construction Tree Care

At the completion of the project, all retained trees should be inspected by the Project Arborist. Depending on the health and vitality of retained trees, the Project Arborist may prescribe some remedial tree care. This may include installation of temporary or permanent irrigation, application of soil conditioners, compost application, fertiliser application and installation of mulch.

7 Statement of Impartiality

- This report prepared by Bluegum Tree Care & Consultancy (BTCC) reflects the impartial and expert opinion of Alexis Anderson.
- BTCC is acting independently of and not as the advocate for the owners of the subject trees.
- BTCC does not undertake tree pruning and removal works and will not have any involvement with pruning or removing trees which are the subject of this report.

8 Limitations

- The tree assessment was undertaken for the purpose of pre-development planning. Detailed tree risk assessment was not requested or included in the scope of works.
- The findings of this report are based upon and limited to visual examination of trees from ground level without any climbing, internal testing or exploratory excavation.

- This report reflects the health and structure of trees at the time of inspection. Bluegum cannot guarantee that a tree will be healthy and safe under all circumstances or for a specified period of time. There is no guarantee that problems or defects with assessed trees, will not arise in the future. Liability will not be accepted for damage to person or property as a result of failure of assessed trees.
- This report must be read in its entirety. No part of this report may be referred to, verbally or in writing, unless taken in full context of the whole report.

Attachment A: TREE ASSESSMENT DEFINITIONS

Height. Tree height is estimated from ground level. This assessment is made independently of data plotted on survey plan. These measurements have not been confirmed with clinometer or other surveying instrument.

Diameter at Breast Height (DBH). Trunk diameter is measured at 1.4 metres above ground level. A diameter tape is used which calculates the diameter from a measurement of the circumfrence. DBH is primarily used for the calculation of the TPZ and SRZ.
If a tree has more than 4 trunks, the diameter of the four largest trunks is recorded. For irregular trunk formations the DBH is calculated as outlined in Appendix A of AS4970-2009 -*Protection of Trees on Development Sites*.

Canopy Spread Radius. Average canopy spread radius is estimated from the centre of trunk to the outer edge of canopy. Refer to Comments column for detail of heavily skewed canopy spread.

Age Class - This is an estimation of the tree's current age class based on size, growth habit, local environmental conditions and comparison with surrounding trees.

- **Immature (IM)**: This is a juvenile specimen that is likely to have germinated within the previous 5 years.
- **Early Mature (EM)**: This is a tree that is established within its growing environment, though has not reached an age of reproductive maturity or the natural growth habit of a mature individual.
- **Mature (M)**: This is a tree has reached both reproductive maturity and a physical form and shape typical for the species. Trees can have a Mature Age Class for the majority of their life span.
- **Late-Mature (LM)**: There trees show early signs of senescence with symptoms such as reduced canopy density and an accumulation of dead branches.
- **Over-mature (OM)**: These trees show symptoms of irreversible decline such as canopy dieback with dead branches concentrated in the upper canopy.

Health/Vitality - Good (G), Fair (F) or Poor (P). This is primarily based on the extent of vigorous new foliage growth at branch tips and the colour, size and density of foliage generally. The percentage of live branches to dead branches is considered. The location of any dead branches is also considered. The presence of any pest or disease is considered as part of this assessment. Health can vary with climatic conditions.

Structural Condition - **Good (G), Fair (F) or Poor (P).** This is an assessment of tree structure and stability. Root anchorage, trunk lean, structural defects, canopy skew and any hazardous features are considered. Dead branches can be considered as part of Structural Condition if they are of a size and location that could cause injury or property damage.

Tree Protection Zone (TPZ). This is a radial distance of (12X) the DBH measured from centre of trunk. TPZ is rounded to the nearest 0.1 metre. A TPZ should not be less than 2m or greater than 15m. The TPZ for palms and other monocots should not be less than 1m outside of the crown projection. Existing constraints to root spread can vary the TPZ. For a tree to remain viable, construction activity should be excluded or undertaken with care within the TPZ. Disturbance within up to 10% of the TPZ area is considered to be a minor encroachment. Disturbance to more than 10% of the TPZ area is considered a major encroachment. Major encroachment into the TPZ is possible depending on the type of disturbance, and species tolerance to disturbance. Exploratory excavation may be required to quantify the presence of roots at the alignment of proposed ground disturbance.
This is based upon the Australian Standard AS 4970, 2009, *Protection of trees on development sites* and the Matheney & Clarke "*Guidelines for adequate tree preservation zones for healthy, structurally stable trees*".

Structural Root Zone (SRZ). This is a radial distance based on the following formula- **SRZ =(D x 50) $^{0.42}$ x 0.64** (for trees less than 150mm Diameter, a minimum SRZ of 1.5 metres). SRZ measurements are rounded to the nearest 0.1m. .
The Structural Root Zone is the area of soil and roots required to maintain tree stability. Excavation within the SRZ can result in whole tree failure. Fully elevated construction is possible within SRZ with specific rootzone assessment. Existing constraints to root spread can vary the SRZ. This method of determining SRZ is outlined at Section **3.3.5** of Australian Standard AS 4970, 2009, *Protection of trees on development sites.*

Estimated Remaining Life Expectancy: This gives a length of time that the Arborist believes a particular tree can be retained from the time of assessment with an acceptable level of risk based on the information available at the time of the inspection. This system of rating does not take into consideration the likely impacts of any proposed development. Ratings are **Long** (retainable for 30 years or more with an acceptable level of risk), **Medium** (retainable for 10-30 years), **Short** (retainable for 0-10 years) and **Removal** (tree requiring removal due to risk/hazard or absolute unsuitability).

Landscape & Environmental Significance*. This is an assessment of the impact of the tree on the surrounding landscape amenity and natural environment. Rarity, habitat value, physical prominence, historical and cultural significance of the tree are considered in this rating system. The Landscape & Environmental Value ratings used in this report are:

1. Very High Value: This is an outstanding specimen that holds irreplaceable environmental, landscape or cultural value.

2. High Value: An excellent specimen that holds environmental, landscape or cultural value that is present in other site trees or that could be replaced.

3. Moderate Value: Can be a good to fair specimen with environmental, landscape or cultural value that is common within other trees in the locality.

4. Low Value: Removal would not result in any loss of site amenity or environmental value. Can include undesirable or weed species or trees growing in unsuitable locations.

5. Very Low Value : Dead or hazardous with no other environmental or cultural value. Could also include weed species. These trees should be removed or pruned in a way to make safe irrespective of any development.

***Note**: The concept of using a five (5) point scale to assess tree significance was derived from the Tree Wise Men® Australia Pty Ltd ©Significance Rating Scale.

Retention Value*. Retention values are derived from a combination of Estimated Life Expectancy rating and Landscape and Environmental Significance ratings.

<table>
<tr><td rowspan="6">Landscape & Environmental Significance</td><td></td><td colspan="4">Estimated Life Expectancy</td></tr>
<tr><td></td><td>Long</td><td>Medium</td><td>Short</td><td>Removal</td></tr>
<tr><td>Very High (1)</td><td colspan="2" rowspan="2">HIGH</td><td rowspan="2">MEDIUM</td><td rowspan="2"></td></tr>
<tr><td>High (2)</td></tr>
<tr><td>Medium (3)</td><td colspan="2">MEDIUM</td><td rowspan="3" colspan="2">LOW</td></tr>
<tr><td>Low (4)</td><td colspan="2" rowspan="2"></td></tr>
<tr><td>Very Low (5)</td></tr>
</table>

HIGH Retention Value: These trees are worthy of retention and major design consideration should be made where feasible to allow this.

MEDIUM Retention Value: These trees are worthy of retention and minor design consideration should be made to retain these trees wherever possible (e.g. placement of ancillary structures, garden retaining walls, driveway levels).

LOW Retention Value: These trees should not be considered to be a constraint to design layout. Some of these trees should be removed irrespective of any proposed development.

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