Vertical

Tree Management & Consultancy

Preliminary

Arboricultural Impact Assessment

--Proposed Subdivision--

Commissioned by: Mark Meshkat

Site: 69 Melwood Avenue Forestville NSW 2087

Date of Inspection: 17 June 2021

Version: 2

Prepared by

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1.1. Introduction

This Arboricultural Impact Assessment has been prepared by Michael Garton on behalf of Vertical Tree Management and Consultancy for the client, Mark Meshkat. The report shall assess the viability of the site trees, nature strip tree and a neighbouring property tree in relation to the proposed subdivision.

The trees mentioned within this report are located within 69 Melwood Avenue (1/-/DP208183), neighbouring property of 71 Melwood Avenue Forestville and Council nature strip.

The site is located within the Northern Beaches Local Government Area and is subject to the relevant local government and legislative framework. All trees within this report are considered 'Trees' according to the Warringah Development Control Plan and Local Environmental Plan.

The trees to be inspected for the purpose of this report are trees numbered 1 to 16.

1.2. Aims

This report shall assess the site trees, neighbouring property tree and nature strip tree and assess any impacts from the proposed subdivision. The report shall include the following requirements;

- Methodology used in tree evaluation, retention value and Tree Protection Zones & Structural Root Zones.
- Tree data table with retention values.
- A scale plan showing the location of the trees on the subject site and neighbouring properties.
- Allocation of a number to each tree.
- Provide canopy spread and diameter at breast height and at ground level of each tree.
- Indicate the tree retention values, Tree Protection Zone (TPZ), Structural Root Zone (SRZ) and assessment of the developable environment.
- Address the impacts of the proposed development on the retained trees and discuss mitigation measures to minimise adverse impact.

1.3. Objectives

- Assess the condition of the trees.
- Determine the impact of development on the site trees.
- Provide recommendation for management and protection strategies for site trees.

1.4. The site

Located within the Northern Beaches Local Government Area, 8 trees in total have been assessed in relation to the proposed construction of an easement.

The site does not form part of Endangered Ecological Community (EEC) surrounding the site is a mixture of native and exotic urban vegetation.

The site is neither a Heritage Item nor forms part of a Heritage Conservation Area.

The site is zoned R2 – Low Density Residential

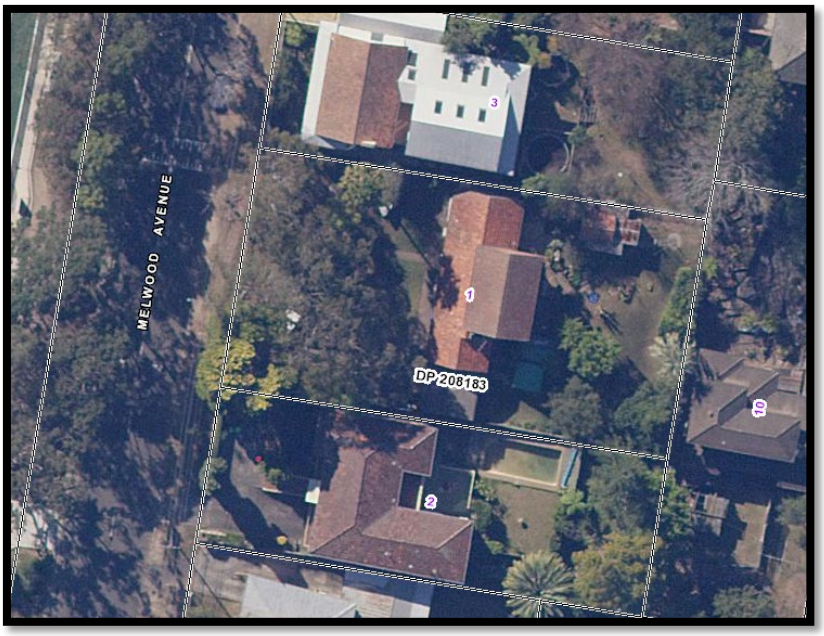

Figure 1 - Aerial photo of the site.

Figure 2 - Site photo, street view.

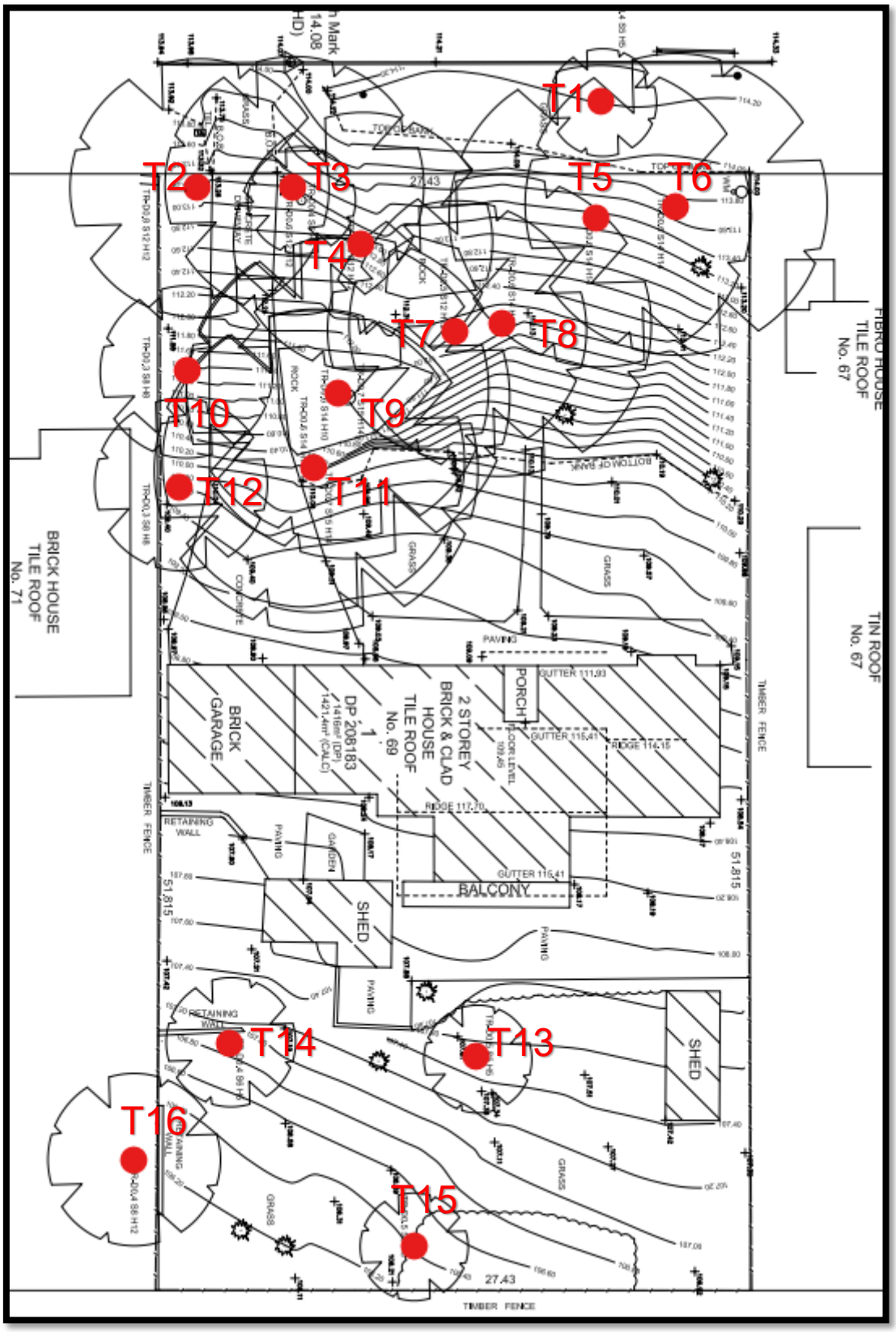

Figure 3 – Survey plan showing tree location and number.

2. Methodology:

A summary of the methodology used in the tree impact assessment took into consideration the possible location of the proposed structures, the depth of excavations, fill and their proximity to the tree including the tree roots. The incursion to the Tree Protection Zones and Structural Root Zones was also considered in the assessment. Construction techniques and the required space for excavation adjacent to the site dwelling were taken into consideration in the assessment. No plans for proposed dwellings were supplied by the client.

2.1 Site inspection was undertaken by the author on 17 June 2021.

2.2 Assessment of potential impacts on the trees in the immediate vicinity of the development site was based on various PDF plans supplied by the client and includes the following;

- Concept Easement Plan SDS Engineering Drawing Number C001 – 16/6/21
- Site Survey – CC Surveying 2/12/20

2.3 Tree numbering system was assigned to the trees (No tree tagging was conducted)

2.4 Tree Protection Zone (TPZ) -.Calculated using the Australian standard AS4970- "Protection of Trees on Development Sites" formula.

2.5 Structural Root Zone (SRZ) – Calculated using the Australian standard AS4970- "Protection of Trees on Development Sites" formula.

2.6 Recommendations for amendments for the proposed development were based on Australian Standards for AS 4970 - 2009 "Protection of Trees on Development Sites".

2.7 Allowable incursions to Tree Protection Zones were based on Australian Standards for AS 4970 2009 "Protection of Trees on Development Sites" and the author's extensive experience with trees on development sites.

2.8 Potential destabilization from root severance within the Structural root Zone (SRZ) based on data compiled from findings of Matheck (1994).

2.9 Plans showing canopy, retention value, Tree Protection Zone and Structural Root zone and tree protection device locations indicated in Appendix.

2.10 Tree protection & specification in accordance with AS4970-2009

2.11 Assumptions:

- The information provided is accurate and true to the conditions of the site.
- The information provided has been ground truth or has been otherwise stated.
- The techniques for excavation, construction boring, and dismantling are in keeping with traditional methods unless otherwise stated.

3. Tree Assessment Data of trees located on site

Number	Species	Height	Spread	*DBH	**DGL	***TPZ	^SRZ	Age Class	Health	Condition	Significance	ULE	Retention Value
1	*Liquidambar styraciflua* (Liquid Amber)	4	3	400	400	2	2	Over Mature	Poor	Poor	Low	3 (Short)	Priority for Removal
Notes: Liquidambar on council nature strip is a poor specimen. It is 4 m in height and has been significantly lopped due to powerline clearance.													
Number	**Species**	**Height**	**Spread**	***DBH**	****DGL**	*****TPZ**	**^SRZ**	**Age Class**	**Health**	**Condition**	**Significance**	**ULE**	**Retention Value**
2	*Chamaecyparis obtusa 'Crippsii'* (Golden Hinoki Cypress)	13	9	1240	900	14.88	3.17	Over Mature	Fair	Poor	Moderate	3 (Short)	Consider for Removal
Notes: The Golden Hinoki Cyprus is located on the southern side of the driveway and is in fair health with poor structure throughout. Significant Included bark unions throughout the stem at ground level to 3m from ground level. Various locations of included bark and transverse cracks are contained within the canopy. Previous branch failures is evident. The tree has been constantly lopped for powerline clearance.													
Number	**Species**	**Height**	**Spread**	***DBH**	****DGL**	*****TPZ**	**^SRZ**	**Age Class**	**Health**	**Condition**	**Significance**	**ULE**	**Retention Value**
3	*Chamaecyparis obtusa 'Crippsii'* (Golden Hinoki Cypress)	10	7	450	490	5.4	2.45	Over Mature	Fair	Poor	Moderate	3 (Short)	Consider for Removal
Notes: The Golden Hinoki Cyprus is located on the northern side of the driveway and is in fair health with poor structure throughout. There is significant included bark unions throughout the stem at ground level to 2m from ground level. Various locations of included bark and transverse cracks are contained within the canopy. Previous branch failures are evident. This tree is heavily suppressed and has poor form and shape. The tree has been constantly lopped for powerline clearance.													
Number	**Species**	**Height**	**Spread**	***DBH**	****DGL**	*****TPZ**	**^SRZ**	**Age Class**	**Health**	**Condition**	**Significance**	**ULE**	**Retention Value**
4	*Eucalyptus haemastoma* (Scribbly Gum)	12	12	490	490	5.88	2.45	Mature	Fair	Poor	Low	3 (Short)	Priority for Removal
Notes: The scribbly gum located within the front yard of the property is growing on a rock shelf. The tree is in fair health with poor structure. The tree is heavily phototropic to the west with a 35° lean. At 1.5 m from ground level is a significant hollow within the tree. When sounded with a mallet, decay indicated throughout entire stem up to 5 m. Tip dieback was observed.													
Number	**Species**	**Height**	**Spread**	***DBH**	****DGL**	*****TPZ**	**^SRZ**	**Age Class**	**Health**	**Condition**	**Significance**	**ULE**	**Retention Value**
5	*Eucalyptus haemastoma* (Scribbly Gum)	12	10	460	540	5.52	2.55	Over Mature	Poor	Poor	Moderate	4 (Remove)	Priority for Removal
Notes: The scribbly gum located on the front boundary line is in poor health and poor structure. At 3 m from ground level at a bifurcated branch union there is significant decay with evidence of termite activity. The crown of the tree is sparse with significant chip dieback observed throughout. Tree is in advanced stages of decline.													
***DBH-Diameter at Breast Height; **DGL – Diameter at Ground Level ***TPZ – Tree Protection Zone; ^SRZ – Structural Root Zone – Explanatory notes in Appendix.**													

Number	Species	Height	Spread	*DBH	**DGL	***TPZ	^SRZ	Age Class	Health	Condition	Significance	ULE	Retention Value
6	*Eucalyptus haemastoma* (Scribbly Gum)	13	12	600	740	7.2	2.92	Over Mature	Poor	Poor	Moderate	4 (Remove)	Priority for Removal
Notes: The overmature scribbly gum located on the front corner boundary is in advanced stages of decline. Significant decay was observed through various locations on every branch union and every stem. The tree contains 30% deadwood within the canopy. There are various locations of conflicting branches. Significant internal decay likely throughout.													
Number	**Species**	**Height**	**Spread**	***DBH**	****DGL**	*****TPZ**	**^SRZ**	**Age Class**	**Health**	**Condition**	**Significance**	**ULE**	**Retention Value**
7	*Eucalyptus haemastoma* (Scribbly Gum)	6	9	300	500	3.6	2.47	Mature	Poor	Poor	Low	4 (Remove)	Priority for Removal
Notes: The scribbly gum has significant decay extending from the root crown to 1 m from ground level. There is 20% sound wood remaining with significant decay throughout the internal structure of the tree.													
Number	**Species**	**Height**	**Spread**	***DBH**	****DGL**	*****TPZ**	**^SRZ**	**Age Class**	**Health**	**Condition**	**Significance**	**ULE**	**Retention Value**
8	*Eucalyptus haemastoma* (Scribbly Gum)	12	10	430	670	5.16	2.8	Mature	Fair	Poor	Low	4 (Remove)	Priority for Removal
Notes: The scribbly gum is located within the centre of the block and has significant decay extending from the root crown to 1 m from ground level. This decay is columnar and extends to 5 m from ground level.													
Number	**Species**	**Height**	**Spread**	***DBH**	****DGL**	*****TPZ**	**^SRZ**	**Age Class**	**Health**	**Condition**	**Significance**	**ULE**	**Retention Value**
9	*Eucalyptus haemastoma* (Scribbly Gum)	13	12	710	1350	8.52	3.75	Mature	Good	Fair	Moderate	3 (Short)	Consider for Removal
Notes: The mature scribbly gum is growing on top of a rock shelf. The tree appears to have split the boulder and is growing within and on top. The tree appears to be in good health and fair structure however there are concerns about its overall stability in the ground. On the western stem at 3 m from ground level at a branch location there appears to be decay within the branch bark ridge. This decay is likely to be extending into the internal structure of the tree. At this location on the southern side is an occluded wound.													
Number	**Species**	**Height**	**Spread**	***DBH**	****DGL**	*****TPZ**	**^SRZ**	**Age Class**	**Health**	**Condition**	**Significance**	**ULE**	**Retention Value**
10	*Jacaranda mimosifolia* (Jacaranda)	11	6	320	360	3.84	2.15	Mature	Fair	Poor	Low	3 (Short)	Priority for Removal
Notes: The mature Jacaranda tree is located on the side boundary of the property and is in poor health and poor structure. The tree is largely epicormic and has been significantly pruned over its lifetime. Low retention value.													

***DBH-Diameter at Breast Height; **DGL – Diameter at Ground Level ***TPZ – Tree Protection Zone; ^SRZ – Structural Root Zone – Explanatory notes in Appendix.**

Number	Species	Height	Spread	*DBH	**DGL	***TPZ	^SRZ	Age Class	Health	Condition	Significance	ULE	Retention Value
11	*Eucalyptus haemastoma* (Scribbly Gum)	12	12	570	740	6.84	2.92	Mature	Fair	Fair	Low	3 (Short)	Consider for Removal
Notes: The mature scribbly gum is located adjacent to the dwelling and is in poor health and poor structure. The tree is believed to be reaching over maturity and is in advanced stages of decline. There are several locations of sapwood decay leading into internal hardwood structural decay. Multiple locations throughout various stems with significant pockets of decay. The tree is unlikely to recover.													
Number	**Species**	**Height**	**Spread**	***DBH**	****DGL**	*****TPZ**	**^SRZ**	**Age Class**	**Health**	**Condition**	**Significance**	**ULE**	**Retention Value**
12	*Brachychiton acerifolius* (Illawarra Flame Tree)	10	6	410	440	4.92	2.34	Mature	Fair	Poor	Low	3 (Short)	Priority for Removal
Notes: The mature Illawarra Flame tree is located on the side boundary adjacent to the driveway and is in poor health and structure. The tree at some point has failed at 8 m from ground level. Four branches have been intentionally lopped at this location. The tree is 100% epicormic with low landscape significance and low retention value. Tree is located approximately 2.5 m from external wall of neighbouring dwelling.													
Number	**Species**	**Height**	**Spread**	***DBH**	****DGL**	*****TPZ**	**^SRZ**	**Age Class**	**Health**	**Condition**	**Significance**	**ULE**	**Retention Value**
13	*Tibouchina granulosa* (Purple Glory)	5	5	Multi	420	2	2	Over Mature	Fair	Poor	Low	3 (Short)	Priority for Removal
Notes: The overmature Tibouchina is in fair health and poor structure. Tree has been continually lopped over its lifetime at 2 m from ground level. Significant internal decay at various locations throughout various stems. Low landscapes significance and retention value.													
Number	**Species**	**Height**	**Spread**	***DBH**	****DGL**	*****TPZ**	**^SRZ**	**Age Class**	**Health**	**Condition**	**Significance**	**ULE**	**Retention Value**
14	*Callistemon viminalis* (Weeping Bottle Brush)	6	8	480	430	5.76	2.32	Mature	Fair	Fair	Low	3 (Short)	Priority for Removal
Notes: The mature bottle brush tree is in fair health and poor structure. Tree is included at ground level. There are various locations of decay observed at ground level. Tree is largely epicormic with 30% deadwood contained within the canopy.													
Number	**Species**	**Height**	**Spread**	***DBH**	****DGL**	*****TPZ**	**^SRZ**	**Age Class**	**Health**	**Condition**	**Significance**	**ULE**	**Retention Value**
15	*Palm spp* (Unknown palm species)	8	3	410	410	2	2	Mature	Good	Good	Low	2 (Medium)	Consider for Removal
Notes: The palm located on the rear boundary of the property is in good health and good structure with no defects observed. The palm tree is on a minor lean towards the neighbouring dwelling. Tree has low landscape significance and contributes little to the surrounding canopy cover of the area.													
Number	**Species**	**Height**	**Spread**	***DBH**	****DGL**	*****TPZ**	**^SRZ**	**Age Class**	**Health**	**Condition**	**Significance**	**ULE**	**Retention Value**
16	*Araucaria heterophylla* (Norfolk Island Pine)	17	7	380	410	4.56	2.28	Mature	Good	Good	High	2 (Medium)	High
Notes: The mature Pine tree is in good health and good structure with no obvious defects observed. All care should be taken in an attempt to reduce impact within the tree protection zone of this tree.													

***DBH-Diameter at Breast Height; **DGL – Diameter at Ground Level ***TPZ – Tree Protection Zone; ^SRZ – Structural Root Zone – Explanatory notes in Appendix.**

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4. Tree Protection Zone & Structural Root Zone

Tree Protection Zone (TPZ) - The TPZ is the principal means of protecting trees on development sites. The TPZ is a combination of the root area and crown area requiring protection. It is an area isolated from construction disturbance, so that the tree remains viable. It is calculated using the Australian standard AS4970- “Protection of Trees on Development Sites” formula.

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. It is calculated using the Australian standard AS4970- “Protection of Trees on Development Sites” formula.

5. Tree Protection Zone & Structural Root Zone Incursion Calculations.

The trees identified to have an incursion within the calculated TPZ or SRZ by excavations, disturbance or soil fill require an assessment of the impact to the tree. The incursion must be assessed and determined in accordance with AS4970 “Protection of Trees on Development Sites”. Trees with major incursions may be adversely impacted with long term health and stability problems. Identification of work within the TPZ or SRZ will allow the site Arborist to recommend alternative solutions where possible.

Due to the low retention value of all trees within the site, Council nature strip and neighbouring property, no trees require tree protection or calculations of incursion.

6. Discussion

Tree 1 – *Liquidambar styraciflua* – Liquid Amber

Liquidambar on council nature strip is a poor specimen. It is 4 m in height and has been significantly lopped due to powerline clearance. It has low landscape significance or ecological value. Priority for removal (figure 4).

Trees 2 & 3 – *Chamaecyparis obtusa* - Golden Hinoki Cypress

The Golden Hinoki Cypress located on both sides of the driveway are in fair health with poor structure throughout. Significant included bark unions throughout the stem at ground level to 2m from ground level. Various locations of included bark and transverse cracks are contained within the canopy. Previous branch failures are evident. This tree is heavily suppressed and has poor form and shape. The tree has been constantly lopped for powerline clearance. To facilitate the installation of the easement these trees are required to be removed (figure 5).

Tree 4 – *Eucalyptus haemastoma* – Scribbly Gum

The scribbly gum located within the front yard of the property is growing on a rock shelf. The tree is in fair health with poor structure. The tree is heavily phototropic to the west with a 35° lean. At 1.5 m from ground level is a significant hollow within the tree. The internal structure of the tree has been reduced and is a priority for removal (figure 6).

Tree 5 – *Eucalyptus haemastoma* – Scribbly Gum

The overmature scribbly gum is located on the front corner boundary and is in advanced stages of decline. Significant decay was observed through various locations on every branch union and every stem. The tree is a priority for removal (figure 7).

Tree 6 – *Eucalyptus haemastoma* – Scribbly Gum

The overmature scribbly gum is located on the front corner boundary and is in advanced stages of decline. Significant decay was observed through various locations on every branch union and every stem. The tree contains 30% deadwood within the canopy and has a short ULE. Priority for removal (figure 7).

Tree 7 – *Eucalyptus haemastoma* – Scribbly Gum

The scribbly gum has significant decay extending from the root crown to 1 m from ground level. 20% sound wood remaining with significant decay throughout the internal structure of the tree. This tree is considered an immediate risk and is a priority for removal (figure 8).

Tree 8 – *Eucalyptus haemastoma* – Scribbly Gum

The scribbly gum is located within the centre of the block and has significant decay extending from the root crown to 1 m from ground level. This decay is columnar and extends to 5 m from ground level. The tree is considered a priority for removal (figure 9).

Tree 9 – *Eucalyptus haemastoma* – Scribbly Gum

The mature scribbly gum is growing on top of a rock shelf. The tree appears to have split the boulder and is growing within and on top. The tree appears to be in good health and fair structure however there are concerns about its overall stability in the ground. On the western stem at 3 m from ground level at a branch location there appears to be decay within the branch bark ridge. This decay is likely to be extending into the internal structure of the tree. At this location on the southern side is and occluded wound. This tree is considered for removal (figure 10).

Tree 10 – *Jacaranda mimosifolia* - Jacaranda

The mature Jacaranda tree is located on the side boundary of the property, it is in poor health and poor structure. The tree is largely epicormic and has been significantly pruned over its lifetime. The tree has a low retention value and low landscape significance and is considered for removal (figure 11).

Tree 11 – *Eucalyptus haemastoma* – Scribbly Gum

The mature scribbly gum is located adjacent to the dwelling and is in poor health and poor structure. The tree is believed to be reaching over maturity and is in advanced stages of decline. There are several locations of sapwood decay leading into internal hardwood structural decay. There are various locations throughout various stems with significant pockets of decay. The tree is unlikely to recover and is a considered for removal (figure 12).

Tree 12 – *Brachychiton acerifolius* - Illawarra Flame Tree

The mature Illawarra Flame tree located on the side boundary adjacent to the driveway is in poor health and structure. The tree has failed at 8 m from ground level. The tree is 100% epicormic. The tree has a low retention value and low landscape significance and is a priority for removal.

Tree 13 – Tibouchina granulosa – Purple Glory

The overmature Tibouchina is in fair health and poor structure. Tree has been continually lopped over its lifetime at 2 m from ground level. Significant internal decay at various locations throughout various stems. Low landscapes significance and retention value and is a priority for removal.

Tree 14 – *Callistemon viminalis* - Weeping Bottle Brush

The mature bottle brush tree is in fair health and poor structure. Tree is included at ground level. Tree is largely epicormic with 30% deadwood contained within the canopy. The tree has a low retention value and low landscape significance and is a priority for removal.

Tree 15 – Palm species - Unknown species

The palm is located on the rear boundary of the property and is in good health and good structure with no defects observed. The palm tree is on a minor lean towards the neighbouring dwelling. The tree contributes little to the canopy cover of the surrounding area. The tree has a low retention value and low landscape significance and is considered for removal.

Tree 16 – *Araucaria heterophylla* - Norfolk Island Pine

The mature Pine trees is in good health and good structure with no obvious defects observed. All care should be taken in attempt to reduce impact within the tree protection zone of this tree. This tree has a high retention value.

7. Recommendations:

Retention Value	Tree Number
Priority for Retention (High)	16
Consider for Retention (Medium)	
Consider for Removal (Low)	2, 3, 9, 11, 15
Priority for Removal (Low)	1, 4, 5, 6, 7, 8, 10, 12, 13, 14

- A total of 15 trees have a low retention value and are considered a 'priority for removal' and 'consider for removal' due to low landscape significance, low useful life expectancy, poor and declining health and structure and low retention value.

- Tree 16 is located within the neighbouring property at 71 Melwood Avenue and has a high retention value. No excavations are to take place within 2m of the tree at ground level. No tree protection fencing is required.

8. Standards

It is the responsibility of the owner/builder to make this report available to all contractors associated with the development at site.

All tree related work relevant to this report is to be conducted in accordance with;

The NSW Workcover Code of Practice: Amenity Tree Industry 1998.

The AS4970-2007 "Protection of Trees on Development Sites"

All tree related work must be undertaken by an Arborist with an Australian Qualification Framework Level 3 in Arboriculture or above.

All tree related work carried out in the vicinity of overhead power lines must be undertaken by a qualified Arborist with a current Power lines Awareness Certificate.

The Site Arborist (Vertical Tree Management & Consultancy) has record tree health prior to commencement of construction.

All tree related work must have written consent from the relevant control authority (local Council).

This report has been prepared and written by Consulting Arborist Michael Garton and reviewed by Principal Consultant Derek Arnaiz.

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Date	Version	Prepared By	Checked by Principal
17 June 2021	1	Michael Garton	Derek Arnaiz

Disclaimer statement. The response of a living tree to its immediate environment is dynamic throughout its entire life cycle due to external influences giving each tree a unique natural variability. A visual tree assessment addresses the external symptoms presented by a tree. This cannot exclude a tree from the potential for failure due to unforeseen circumstances. This report cannot provide a conclusive recommendation regarding any part of a tree root system that is not exposed for visual inspection. Additionally, it cannot not be assumed, that a tree will be safe in all conditions in the future. Appropriate management, assessment, and maintenance aim to mitigate risks to an acceptable level. This report is the opinion, advise or recommendation based on the information supplied by the client or observation of the author.

9. Appendix

Figure 4 - Tree 1

Figure 5 - Tree 2

Figure 6 - Tree 4 - Internal Decay visible

Figure 7 - Trees 5 and 6

Figure 8 - Tree 7

Figure 9 - Tree 8

Figure 10 - Tree 9

Figure 11 - Tree 10

Figure 12 - Tree 11

Figure 13 - Tree 12

Figure 14 - Tree 13

Figure 15 - Tree 14

Figure 16 - Tree 15

Figure 17 - Tree 16

S.U.L.E. CATEGORIES (Barrell, 1995)

SULE is an acronym for Safe Useful Life Expectancy. It is a tree assessment method that estimates how long trees can be expected to be retained on a site, safely and usefully. It is best described as a planning tool that is used to indicate the most important and the least important trees on a construction site. Complex Arboricultural information is collected and transferred into an easy to interpret format that planners can use without too much distortion. This information is then used by a planner to design a development around the most appropriate of the existing trees.

1: LONG; Trees whose retention is most desirable and appeared retainable at the time of assessment for over 40 years with an acceptable degree of risk, assuming reasonable maintenance.
1A: - Structurally sound trees located in positions that can accommodate future growth.
1B: - Trees which could be made suitable for the long term by remedial care.
1C: - Significant trees which would warrant extraordinary efforts to secure retention.

2: MEDIUM; Trees where retention is desirable and appeared retainable at the time of assessment for 15 – 40 years with an acceptable degree of risk, assuming reasonable maintenance.
2A: - Trees which may only live between 15 and 40 years.
2B: - Trees which may live for 40 years but would be removed for safety or nuisance reasons.
2C: - Trees which may live for more than 40 years but would be removed to prevent interference with more suitable individuals or provide space for new plantings.
2D: - Trees which could be made suitable for retention in the medium term by remedial care.

3: SHORT; Trees which could be retained and appeared retainable at time of assessment for 5 – 15 years with an acceptable degree of risk, assuming reasonable maintenance.
3A: - Trees which may only live between 5 and 15 years.
3B: - Trees which may live for 15 years but would be removed for safety reasons.
3C: - Trees which may live for more than 15 years but would be removed to prevent interference with more suitable individuals or provide space for new plantings.
3D: - Trees which require substantial remediation and are only suitable for retention in the short term.

4: REMOVAL; Trees which should be removed within the next 5 years.
4A: - Dead, dying, suppressed or declining trees.
4B: - Dangerous trees through structural faults, instability or exposed to wind throw.
4C: - Trees which may live for more than 5 years but would be removed to prevent interference with more suitable species or provide space for new plantings.
4D: - Trees which are damaging or may cause damage to existing structures within the next 5 years.
4E: - Trees listed as noxious weed species.

5: SMALL TREES; Trees less than 5 metres tall
5A: - Small tree which could be retained.
5B: - Small tree with limited amenity value could be removed or replaced.

Tree Significance - Assessment Criteria

1. High Significance in landscape

- The tree is in good condition and good vigor,
- The tree has a form typical for the species,
- The tree is a remnant or is a planted locally indigenous specimen and/or is rare or uncommon in the local area or of botanical interest or of substantial age,

- The tree is listed as a Heritage Item, Threatened Species or part of an Endangered ecological community or listed on Councils Significant Tree Register,
- The tree is visually prominent and visible from a considerable distance when viewed from most directions within the landscape due to its size and scale and makes a positive contribution to the local amenity,
- The tree supports social and cultural sentiments or spiritual associations, reflected by the broader population or community group or has commemorative values,
- The tree's growth is unrestricted by above and below ground influences, supporting its ability to reach dimensions typical for the taxa *in situ* - tree is appropriate to the site conditions.

2. Medium Significance in landscape

- The tree is in fair-good condition and good or low vigour,
- The tree has form typical or atypical of the species,
- The tree is a planted locally indigenous or a common species with its taxa commonly planted in the local area,
- The tree is visible from surrounding properties, although not visually prominent as partially obstructed by other vegetation or buildings when viewed from the street,
- The tree provides a fair contribution to the visual character and amenity of the local area,
- The tree's growth is moderately restricted by above or below ground influences, reducing its ability to reach dimensions typical for the taxa *in situ*.

3. Low Significance in landscape

- The tree is in fair-poor condition and good or low vigor,
- The tree has form atypical of the species,
- The tree is not visible or is partly visible from surrounding properties as obstructed by other vegetation or buildings,
- The tree provides a minor contribution or has a negative impact on the visual character and amenity of the local area,
- The tree is a young specimen which may or may not have reached dimension to be protected by local Tree Preservation orders or similar protection mechanisms and can easily be replaced with a suitable specimen,
- The tree's growth is severely restricted by above or below ground influences, unlikely to reach dimensions typical for the taxonomy *in situ* - tree is inappropriate to the site conditions,
- The tree is listed as exempt under the provisions of the local Council Tree Preservation Order or similar protection mechanisms,
- The tree has a wound or defect that has potential to become structurally unsound.

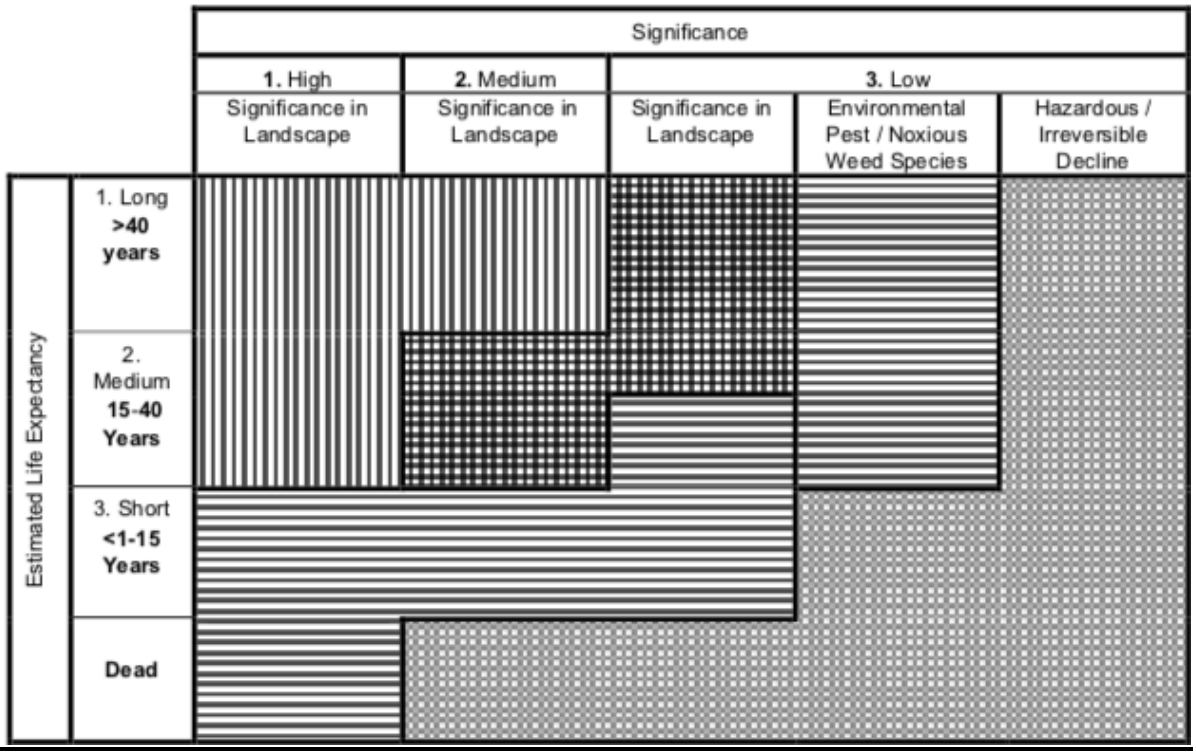
Environmental Pest / Noxious Weed Species

- The tree is an Environmental Pest Species due to its invasiveness or poisonous/ allergenic properties,
- The tree is a declared noxious weed by legislation.

Hazardous/Irreversible Decline

- The tree is structurally unsound and/or unstable and is considered potentially dangerous,
- The tree is dead, or is in irreversible decline, or has the potential to fail or collapse in full or part in the immediate to short term.

***The tree is to have a minimum of three (3) criteria in a category to be classified in that group. Note: The assessment criteria are for individual trees only, however, can be applied to a monocultural stand in its entirety e.g., hedge.**



Legend for Priority Rating

	Priority for Retention (High) - These trees are considered important for retention and should be retained and protected. Design modification or re-location of building/s should be considered to accommodate the setbacks as prescribed by the Australian Standard AS4970 *Protection of trees on development sites*. Tree sensitive construction measures must be implemented e.g. pier and beam etc if works are to proceed within the Tree Protection Zone.
	Consider for Retention (Medium) - These trees may be retained and protected. These are considered less critical; however their retention should remain priority with removal considered only if adversely affecting the proposed building/works and all other alternatives have been considered and exhausted.
	Consider for Removal (Low) - These trees are not considered important for retention, nor require special works or design modification to be implemented for their retention.
	Priority for Removal - These trees are considered hazardous, or in irreversible decline, or weeds and should be removed irrespective of development.

10. Glossary

Aerial inspection - a close inspection of the aerial part of a tree, either by elevated work platform (EWP) or by an AQF level 3 arborist (climbing inspection).

Air spade - equipment providing a jet of compressed air to a hand-held device which helps to excavate roots almost non-destructively.

Amenity tree – a tree grown for purposes other than for production**.**

***AS4373*-2007** – Current Australian Standard for the Pruning of Amenity Trees**.**

AQF – Australian Qualification Framework for all educational and training purposes.

Axiom of uniform stress - is a self-optimizing structure because the growth of new wood tends to eliminate any stress concentrations, maintaining a uniform stress distribution.

Bacteria - one of the five kingdoms of living things. Some cause disease, many are decomposers and some are beneficial (such as nitrifying bacteria and those in the gut of animals).

Bark cambium (cork cambium, phellogen) - Layers of meristematic cells on the outer side of the phloem that give rise to the bark.
Branch order - The seedling axis, typically giving rise to the main stem, has a branch order of 0. Branches arising from axillary buds on the seedling axis are first-order branches, branches arising from them are second-order and so on, the shoots at the periphery of the crown having the highest order.

Callus - cells that forms over an injury or scar, that develops from actively dividing plant tissue.

Canker - A discrete area of dead or malformed bark caused by a pathogen.

Canopy - Of a single tree, its crown, emphasizing its spreading and enclosing character. Of a forest, the crowns of the larger trees considered collectively.

Chlorophyll - The pigment in green plants and a kind of bacteria (cyanobacteria) that permits photosynthesis. Chlorophyll is green because it absorbs light most strongly in the blue and red regions of the visible spectrum, reflecting the green.

Compartmentalization - A form of defense in woody plants, in which barriers resistant to invasion by pathogens or wood decay fungi are laid down while the wood is living (sapwood), and which continue to act passively once the wood is incorporated into heartwood.

Deadwood - Dead and decomposing wood including dead trees (whether standing, snapped or fallen), branches of any size, stumps and roots.

Defect - Any feature of a tree that is likely to make it less safe (in the case of a structural defect) or otherwise to reduce its health, longevity, landscape prominence or conservation value for any other reason.

Diameter - Broadly, the width of a cylindrical object like the main stem of a tree.
dbh – the diameter of a stem measured at breast height i.e. 1000mm.

Dip. Arb. – Diploma in Arboriculture.

Drip zone – the area from one edge of the canopy to the other.
Expert witness - Someone capable of giving an expert opinion, to be relied upon in some official or legal process.

Fastigiate - A growth habit with branches strongly ascending, like Lombardy poplar. A common ornamental form.

Fibre buckling A local transverse failure in compression of the outer wood of a stem as it sways in a strong wind. The resulting adaptive growth gives rise to a characteristic ring-like bulge around the stem.

First-order branch – a branch which emanates directly from the trunk, in contrast to a scaffold branch, sometimes referred to as a primary branch.

Flush cut - A pruning cut that removes the branch collar and/or part of the branch ridge, slowing the occlusion of the wound.

Footing - A relatively broad base to a foundation to help spread load and improve the stability of a structure.

Fungi (singular 'fungus') - One of the four main groups (kingdoms) of organisms. There are two groups of higher fungi, the Basidiomycetes and Ascomycetes, while other groups are moulds. Many fungi are decomposers, including the relatively specialized wood decay fungi. Some are plant pathogens, some are symbiotic (see mycorrhiza, lichen) and some are cultivated by insects for food (see ambrosia beetle).

Included bark - Areas of bark on adjacent parts of a tree, typically on the inner faces of a narrow fork, which become grown over to occupy part of the internal joint.

Ganoderma spp. - A common wood decay fungus of the selective delignification type, causing root rot and butt rot mainly in

broadleaf trees. The fruiting bodies of the fungus are woody brackets, commonly occurring in the flutes between the buttresses of big trees near ground level.

Heartwood - In a branch, main stem or root of sufficient diameter, the non-living inner wood, in contrast to the sapwood in which the xylem parenchyma cells are alive.

Lignin - A constituent of some plant cell walls making them stiff and woody. About 1/3 of the dry weight of wood is lignin.

Lion-tailing - A long branch with a tuft of secondary branches near the tip, a marked form of end loading, either arising naturally or from poor pruning practice.

Mistletoe - A semi-parasite, having green leaves for photosynthesis but growing into the host to obtain water and nutrients.

Mycelium - A network of hyphae making up the vegetative part of a fungus.

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Osmosis - The flow of water across a semi-permeable membrane from a dilute solution to a more concentrated one, as from the soil water into a root cell or from the xylem into a leaf cell.

Quantified tree risk assessment (QTRA) - A refinement of visual tree assessment with emphasis on seeking to quantify the component probabilities of tree risk, particularly the occupancy of the target area, to arrive at an overall numerical or categorical risk.

Root Zone - Area encompassing the trees roots

Scaffold branch – a branch which emanates from a first-order branch, also known as a second-order branch.

Structural defect - A defect in a structure that makes it less able to withstand the forces applied to it.

t/R ratio - In hollow tree stems, the ratio of the thickness of sound wood to the radius. A criterion helpful in evaluating tree risk developed by Mattheck & Breloer (1994)

Tension wood - The kind of reaction wood found in broadleaf trees which is strong in tension and is characterized by a low lignin content.

Tree risk - The risk that a tree causes damage or injury if it (or part of it) suffers structural failure. Tree risk is a composite of several variables: hazard, probability, target value and occupancy.

Urban forest - Trees and other woody vegetation in the built environment considered collectively over an extensive area (eg. the jurisdiction of a local authority).

Vigour – the genetic capacity (potential) of a tree to resist strain. Vigour can be measured by applying a known stimulus [such as a wound] and then measuring the trees response. Vigour cannot be increased. Vigour is classified as either ‘normal’ or ‘low’ (Shigo, 1986, p.120).

Vitality – the ability (dynamic) of a tree to adapt to the conditions in which it finds itself. Vitality can be improved by; watering, mulching, fertilizing, aerating etc. (Shigo, 1986, p. 120). For the purpose of this report vitality shall be classified as either low or good.

VTA - Visual Tree Assessment

Windthrow- The fall of a tree in a high wind, with the breakage of the outer roots, so that the tree is uprooted. There are three main modes of windthrow.