



Arboricultural Consultants
ABN: 41 063 751 928

Phone: 9785 4591 Mobile: 0419 71 71 70 PO Box 534, PANANIA NSW 2213
info@nswtrees.com www.nswtreeservices.com.au



ARBORICULTURAL IMPACT ASSESSMENT

Cadi Development Pty Ltd

1110 Victoria Rd,

WEST RYDE

Report Reference: AIA CAD (WR) 11/21

25th November , 2021



Prepared by:

Sam Allouche

Diploma of Arboriculture (AQF Level 5)

Cert IV in Horticulture (Arboriculture)

Member of Arboriculture Australia | Member of International Society of Arboriculture

Table of Contents

1.0	Introduction	3
2.0	Methodology.....	3
3.0	Observations	5
3.1	Site Observations.....	5
3.2	Tree Observations & Impact Summary (AS4970:2009)	7
4.0	Indirect Impacts	9
5.0	Discussion and Conclusion	10
6.0	Recommendations	11
7.0	Tree Protection Specifications	11
	Appendix A	13
	Tree Location Plan	13
	Appendix B	14
	Photographs	14
	Appendix C	18
	Tree Assessment & Impacts Evaluation Table Notes	18
	Appendix D.....	19
	Indicative TPZ and SRZ (AS 4970/2009)	19
	Appendix E	20
	IACA Significance of a Tree, Assessment Rating System (STARS) (IACA 2010)©	20
	Appendix E	22
	Tree AZ Categories (Version 10.10 ANZ)	22
	Appendix F	23
	Glossary of Terms.....	23
	Disclaimer	25
	Bibliography	26

1.0 Introduction

- I. This Arboricultural Impact Assessment (AIA) was commissioned by Cadi Development , on behalf of property owners of 1110 Victoria Rd, West Ryde, for trees potentially impacted by proposed Development Application (DA) to Ryde City Council for redevelopment of the site.
- II. The proposal entails the demolition of existing structures, and construction of attached duplexes with common driveways , renewed stormwater and landscape.
- III. The Arborist has identified a total of twelve (12) trees, all neighbouring trees on 29 Hay Street, and 1008 and 1112 Victoria Rd, wher their TPZ extends into the clients site. All trees are assessed with respect to the Australian *Standard- Protection of trees on development sites* (AS 4970/2009).
- IV. Trees on site are all below the nominated 5m threshold as per 9.5 Tree Preservation – City Of Ryde Development Control Plan 2014, and are exempt from all tree works, and can be removed without any formal approval.
- V. All neighbouring trees are to be retained and protected in accordance with AS4970:2009, with some design parameters stipulated in this report for such trees to remain viable.
- VI. This AIA is to be sent to Ryde Council , as supporting documentation for the Development Application, and for final determination of trees to be made.

2.0 Methodology

- I. The Arborist accessed the site and inspected trees, by way of Visual Tree Assessment (VTA), at ground level only, on 16th November, 2021.
- II. All dimensions are estimated by diameter tape or by eye sight.
- III. Advanced assessment by means of sounding decay, subterranean investigation or canopy inspections were not undertaken at the time, nor warranted.
- IV. Tree species are identified by foliage and or fruit only, with no formal testing undertaken.
- V. Neighbouring trees were only observed from the clients site only, and observations may be somewhat limited.
- VI. The Arborist tables the following in 3.2 Tree Observations -Table 1 - Tree Assessment & Impacts Evaluation;

- a. Genus & species, Common name, age, vigour and crown characteristics, general health and condition, defects and the presence of pest and disease.
 - b. An appraisal of trees with reference to Tree AZ; determination of the worthiness of trees in the planning process, and a Tree Retention Value (STARS Matrix) that assesses the trees significance and value for retention on the site where development occurs. (Refer to Appendix for further clarification of all scales and values)
 - c. Calculation of Tree Protection Zones (TPZ) and Structural Root Zones (SRZ), proposed setbacks to works and degree of incursion characterised by minor, moderate, major or no impact to trees.
- VII. Findings in Table 1.0 are to be read in conjunction with Notes in Appendix.
- VIII. Calculations of impacts are undertaken by using an interactive calculator. (Treetec, 2014)
- IX. A Site Plan is included in Appendix, using survey provided by the client, and overlaid by the Arborist, to annotate tree locations only.
- X. Photographs in this report were taken by the Arborist using an iPhone 11Pro.
- XI. A Glossary of terms is provided in the Appendix of this report, for clarification of Arboricultural terms and meanings
- XII. The following documentation was used as part of this assessment;

Plan Type/Document	Provided by	Reference	Date
Survey	East West Surveyors	20/2342-DET	07.07.2020
Site Plan	CAD Plan Designs Solutions	Sheet 20020 DA 01 Issue P1	18.08.2020
Elevations, Sections	CAD Plan Designs Solutions	Sheet 20020 DA 05 Issue P1	18.08.2020

3.0 Observations

3.1 Site Observations

- I. The site is referred to as Lot 13 DP 7742 of Cumberland Council, and zoned R2-Low Density Residential.
- II. The site is a traditional rectangular allotment, predominately facing west. See NSW Planning Portal Maps with site in yellow outline.
- III. Site context notes a freestanding fibro dwelling with detached garage.
- IV. Topographically, grounds drop approx. 1m average from the street and continues to softly slope east bound, to the rear boundary.



VIII. Aerial imagery, below, with the site highlighted in yellow.

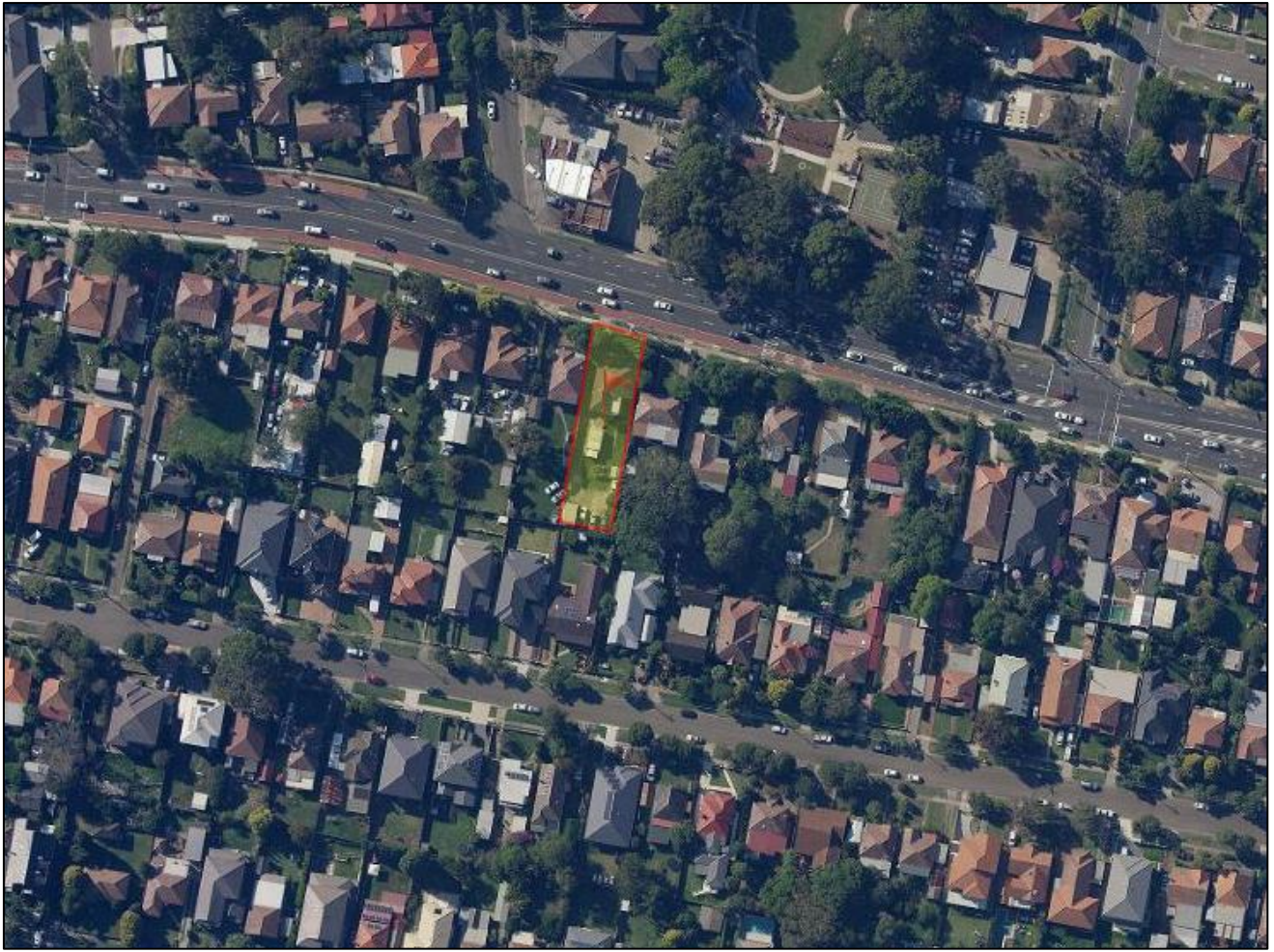


Figure 2: SixMaps aerial imagery

3.2 Tree Observations & Impact Summary (AS4970:2009)

	Genus Species	Common Name	Height (m)	Spread (m)	Age	Condition	TREEAZ	Retention Value	DBH (mm)	DAB (mm)	TPZ (m)	SRZ (m)	Impacts/ Incursion %	Comments / Impact Summary
													Nil	
													Low	
													Major	
													Total Loss	
													Exempt	
1	<i>Schefflera actinophylla</i>	Umbrella tree	3.5	2	M	P	Z3	L	180x4	580	4.32	2.63	0	Tree located on 29 Hay Street. Noted weed. Not impacted by the proposal.
2	<i>Photinia sp</i>	Photinia	6+	7	M		A2	M	350	400	4.2	2.25	0	Tree located on 1008 Victoria Rd. Not impacted by the proposal.
3	<i>Photinia sp</i>	Photinia	6+	4	M		A2	M	380	420	4.56	2.3	0	Tree located on 1008 Victoria Rd. Not impacted by the proposal.
4	<i>Photinia sp</i>	Photinia	6+	5	M		A2	M	160x2	280	2.76	1.94	0	Tree located on 1008 Victoria Rd. Not impacted by the proposal.
5	<i>Photinia sp</i>	Photinia	5	4	M		A2	M	160x3	350	3.36	2.13	0	Tree located on 1008 Victoria Rd. Not impacted by the proposal.
6	<i>Ochna serrulata</i>	Mickey mouse tree	3.6	3	M		A2	M	80x2	130	2.0	1.5	0	Tree located on 1008 Victoria Rd. Not impacted by the proposal.
7	<i>Morus sp.</i>	Mulberry	5.5	3	M		Z3	L	200	280	2.4	1.94	7.21%	Tree located on 1008 Victoria Rd. Plans indicate ground remaining intact adjacent to tree , but building is approx. 1.5m away and technically in SRZ. Management of impacts required.
8	<i>Bamboo</i>	Bamboo	4.5	5	M		Z3	L	200	200	2.4	1.5	0	Located on 1008 Victoria Rd in planter box. Plans indicate soil to be cut along the boundary, but roots likely kerbed by planter box. Building outside SRZ. Not impacted by the proposal.
9	<i>Camellia japonica Ligustrum sp</i>	Camellia x 5 Privet	4.5	3	M		A2	M	70x3	250	2.0	1.85	7.21%	Row of trees, located on 1008 Victoria Rd. Plans indicate soil to be cut along the boundary, with roots likely kerbed with current retainer.

	Genus Species	Common Name	Height (m)	Spread (m)	Age	Condition	TREEAZ	Retention Value	DBH (mm)	DAB (mm)	TPZ (m)	SRZ (m)	Impacts/ Incursion %	Comments / Impact Summary
													Nil	
													Low	
													Major	
													Total Loss	
													Exempt	
														Not impacted by the proposal.
10	<i>Murraya sp</i>	Murraya x 2	4	4	M		A2	M	140x3	300	2.88	2.0	<10%	Trees located on 1008 Victoria Rd. Plans indicate soil levels to remain unchanged , with roots likely kerbed with current retainer
11	<i>Camellia sp</i>	Camellia	4	4	M		A2	M	140x3	300	2.88	2.0	18.41%	Row of trees, , located on 1012 Victoria Rd. Plans suggest that trees are approx. 1.5m from grade modifications along this boundary for driveway and turning bays, resulting in major impact. Incursion well within SRZ, compromising tree stability .
12	<i>Jacaranda mimosifolia</i>	Jacaranda	10+	12x9	M		A2	M	530	650	6.36	2.76	36.1%	Tree located on 1012 Victoria Rd. Good amenity. Plans suggest that tree is approx. 1.4m from grade modifications along this boundary for driveway and turning bays, resulting in major impact. Incursion well within SRZ, compromising tree stability .

4.0 Indirect Impacts

The following are indirect impacts that trees may succumb to during construction related activities. It is imperative that these be taken into consideration and all attempts made to minimise indirect impacts, as they can occur over the duration of construction and indeed accumulate to have significant effect on trees longevity.

- I. Mechanical damage from plant/machinery; Direct wounding and damage of stems and branches by large plant & machinery, including excavator, bob cat, crane, etc., during construction activities will have some impact in the form of cambium damage/abrasion to tree trunks and branch tearing well into collar attachments in turn exposing live woody tissue and predisposing the tree to pest and disease. Similarly, plant/machinery is also responsible for soil compaction within the trees TPZ.
- II. Indirect root injury from soil compaction; When soil is compacted either via building materials/debris stockpiled on the TPZ or TPZ is utilised as a thoroughfare for heavy plant and machinery, the soil inevitable becomes compacted and impacts on the air and moisture uptake and ultimately affecting the gaseous exchange within the drip line that is vital for the trees health and longevity.
- III. Soil contamination; where chemicals, cement, and paint products etc, get washed or spilled into the soil and the tree absorbs the soluble content through its roots in addition lime from cement wash off can alter the soil PH
- IV. Soil grade changes; when the top soil cover down to a depth of approximately 150mm is striped it can illuminate vital feeder roots and can temporarily shock the tree. This process is common particularly during the landscape process. In addition, these fine roots if exposed can prematurely dehydrate and die
- V. Landscaping Impact; Side paths and driveways comprised of concrete and non-porous materials can deprive roots of air and water and affect gaseous exchange. This is particularly true when there has been lack of consideration for trees located on adjacent properties and within close proximity to building envelope. In addition, masonry fence lines require sub grade footings and usually at the expense of root loss of nearby trees. Furthermore, there can be an increase in reflected heat to the remaining trees as a result from surrounding hard surfaces.

5.0 Discussion and Conclusion

- I. The Arborist notes the site is devoid any prescribed vegetation, and any shrubs on the clients site can be removed without formal approval.
- II. The bulk of trees assessed are not impacted given sufficient setback from the proposal, that being T1-T6.
- III. For T7, T8 and T9, the building is setback 1.5m from the trees , with the incursion calculated at less than 10% , but within the SRZ of both T7 and T9. For T8, the Bamboo is growing in planter box and confined. Likewise for T9, the Camellias and Privet are behind a robust retainer that has likely kerbed its roots, and should protect the tree from any undue impact.
- IV. T10 is also behind the retainer , with plans suggesting no soil cuts along this area.
- V. For the trees along this eastern boundary , it should also be noted that the removal of any existing hardstands, and demolition of dwelling will be inevitably in the TPZ of trees, and this requires some management to minimise adverse impacts.
- VI. The main concern is for T11 and T12, where the incursions have been calculated at 18.41% and 36.1% respectively , and considered major , where trees could not remain viable. The incursion extends as far as the SRZ for T12, and even though Jacarandas can afford *some* impact from construction , the potential for loss of structural roots and tree stability being compromised is not acceptable as per AS4970:2009.
- VII. The impact is primarily imposed by the grade reduction of up to 300mm for the proposed driveway. Consultation with designers have alerted the Arborist that the extent of grading to allow for the driveway and turning bay is to ensure compliance with the required controls pertaining to sites like this on main roads, where the access and egress for vehicles must be designed to be safe and efficient. It should be stated that the current driveway is a hardstand and indeed root activity *may* be somewhat suppressed.
- VIII. The Arborist is unable to make any judgments on *other* planning controls specific to this project, but notes that more often than not, new proposals are mandated by design parameters that often see vegetation be impacted, with new protocols often taking precedence.
- IX. In this scenario the Arborist can only provide the required design parameters to ensure that both T11 and T12 can remain viable, and it will then be a negotiation between designers, clients, tree owners and Ryde Council, whether such parameters can be achieved through design of the new driveway and turning bay.

6.0 Recommendations

- I. The Arborist recommends the following be implemented as part of the proposal to ensure neighbouring trees remain viable:
 - a. A Project Arborist be engaged to oversee the management of neighbouring trees for this project, and provide compliance.
 - b. The demolition of the dwelling, and removal of any hardstands in the TPZ of trees, must be supervised by the Project Arborist, with the stairs along the eastern boundary removed by hand until the Arborist is satisfied that no roots of trees are unduly impacted.
 - c. The robust retainer at the front portion of the eastern boundary must remain intact to continue to retain soils and protect any roots of trees.
 - d. Any excavation for the footings in TPZ of T7 and T9 must be hand dug initially, under the supervision of the Project Arborist. Mechanical excavation can only take place once the Arborist is satisfied that no major roots will be severed and tree stability will not be compromised.
 - e. Where any soil cuts are approved within the TPZ of trees, it is anticipated underlying tree roots will be cut. Such roots, greater than 25mm, must be blocked, clean cut, with sterilised tools, that will ensure rapid compartmentalisation (forming walls that protect the wound area from decay) denying the entry of fungal pathogens. Ground soil/root treatment within the TPZ is crucial in this vicinity.
 - f. For the viability of T11 and T12, the Arborist can only endorse that the natural ground remain in tact for a specified radius from the trunks of both trees, that being 2.0m for T11 and 3.0m for T12. This will form an exclusion zone to limit ground and root disturbance for both trees.
 - g. If the introduction of an exclusion zone is not feasible for *any* reason, the Arborist endorses Root Mapping, in accordance with AS4970:2009, to truly ascertain the size and character of roots potentially harmed by the grading and provide a more conclusive setback for any grade changes and works.
 - h. All retained trees are to be protected in accordance with AS4970:2009.

7.0 Tree Protection Specifications

- I. For neighbouring trees (T2-T10), a continuous panel of fencing can be splayed along the entire eastern fence and splayed at the southern fence to protect T1. The same fencing can be erected along the front western fence. The fence shall consist of chain link wire and no less than 1.8 metres high and anchored down with concrete blocks/stirrups in a non-intrusive manner. (Figure 3)



Figure 3: Continuous fencing

II. Tree protection fencing must be covered with shade cloth tightly woven to not allow cement debris/dust to contact any lower tree parts. Grounds within the tree protection fencing must contain mulch cover with a min 150mm thick layer atop tightly woven cover of Geotech fabric. Mulch shall be organic and comply with AS-4454-2003.

III. All fencing must have a TPZ sign, weather proof and visible to contractors, and in accordance with AS4970-2009. Signage to read '**TREE PROTECTION ZONE**': **Entry not permitted without Project Arborist consultation**. Sign must be A3 min. size and include Project Arborist details. See Figure 4.



Figure 4: TPZ signage

- V. All TPZ fencing is to be retained during works and monitored by the Project Arborist. If it requires readjustment, it must be approved first.
- VI. Approved excavation methods within the TPZ shall be supervised and photographed by the Project Arborist.
- VII. The following, is **not** allowed to occur within the TPZ, unless, endorsed and approved by the Project Arborist, Council or the PCA:
- a. Stationing of plant and machinery
 - b. Changes in natural soil levels
 - c. Storage, preparation and disposal of soluble substances i.e. plumbers glue, termite deterrent chemicals, acidic chemicals and herbicides
 - d. Stock piling of building materials within the TPZ of retention trees i.e. bricks, cement bags, spoil etc.
 - e. Construction waste wash-off within the TPZ
 - f. Fill soil, or any other waste mounds
- VIII. Scaffolding should stay clear of the TPZ, however, if required, must be placed on top of mulch or additional ground protection.
- IX. All Indirect Impacts as stated in this report are to be minimised

Yours Faithfully,



Sam Allouche

Diploma of Arboriculture (AQF Level 5)

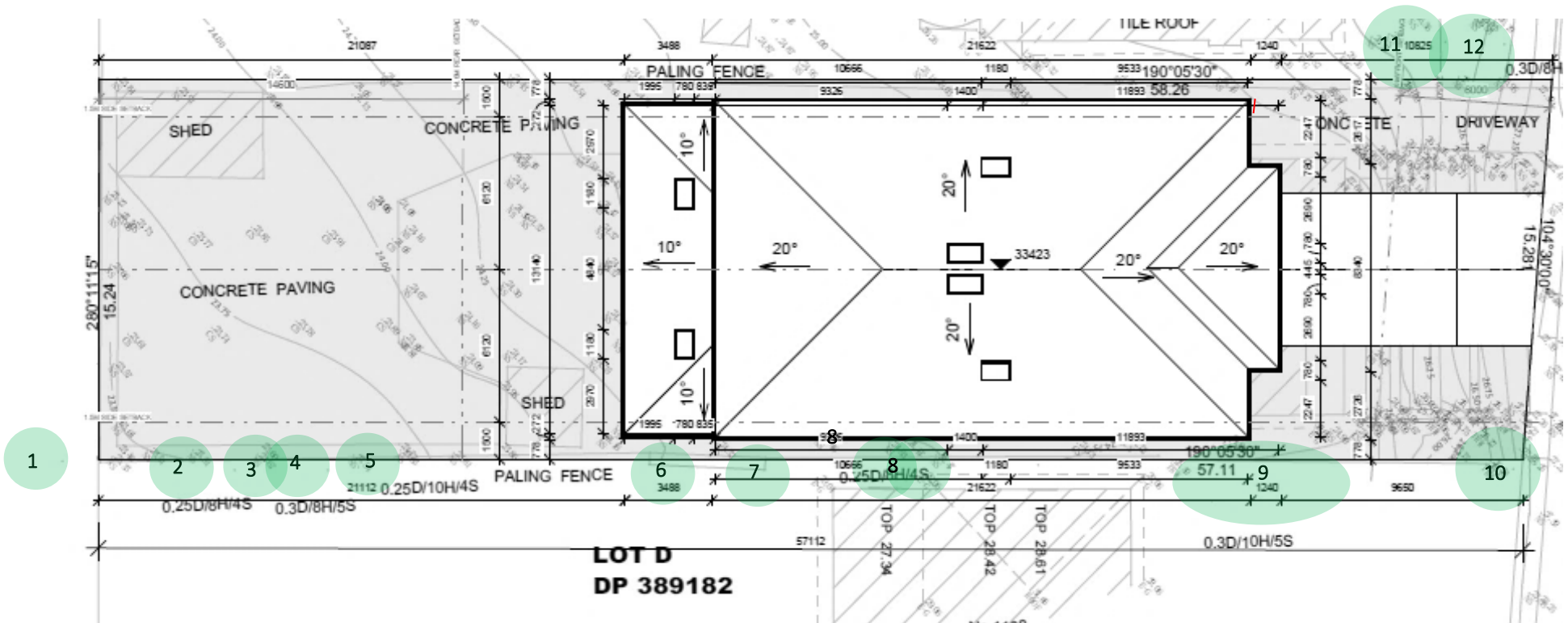
Cert IV in Horticulture

Arboriculture Australia (Consultant Arborist) | Member No. 1469

Member of International Society of Arboriculture | Member No. 173439

Appendix A

Tree Location Plan



Appendix B

Photographs



Photo 1: T1, in 29 Hay Street, and T2- T5 reside in No.1008 Victoria, looking east



Photo 2: T6 - T8 reside in No.1008 Victoria. looking east



Photo 3: T8 and T19 reside in No.1008 Victoria ,looking north-east



Photo 4: T9 and T10, reside in No.1008 Victoria ,looking north



Photo 5: T9, resides in No.1008 Victoria, looking east



Photo 6: Streetscape perspective of T11 and T12 residing in No.1112 Victoria

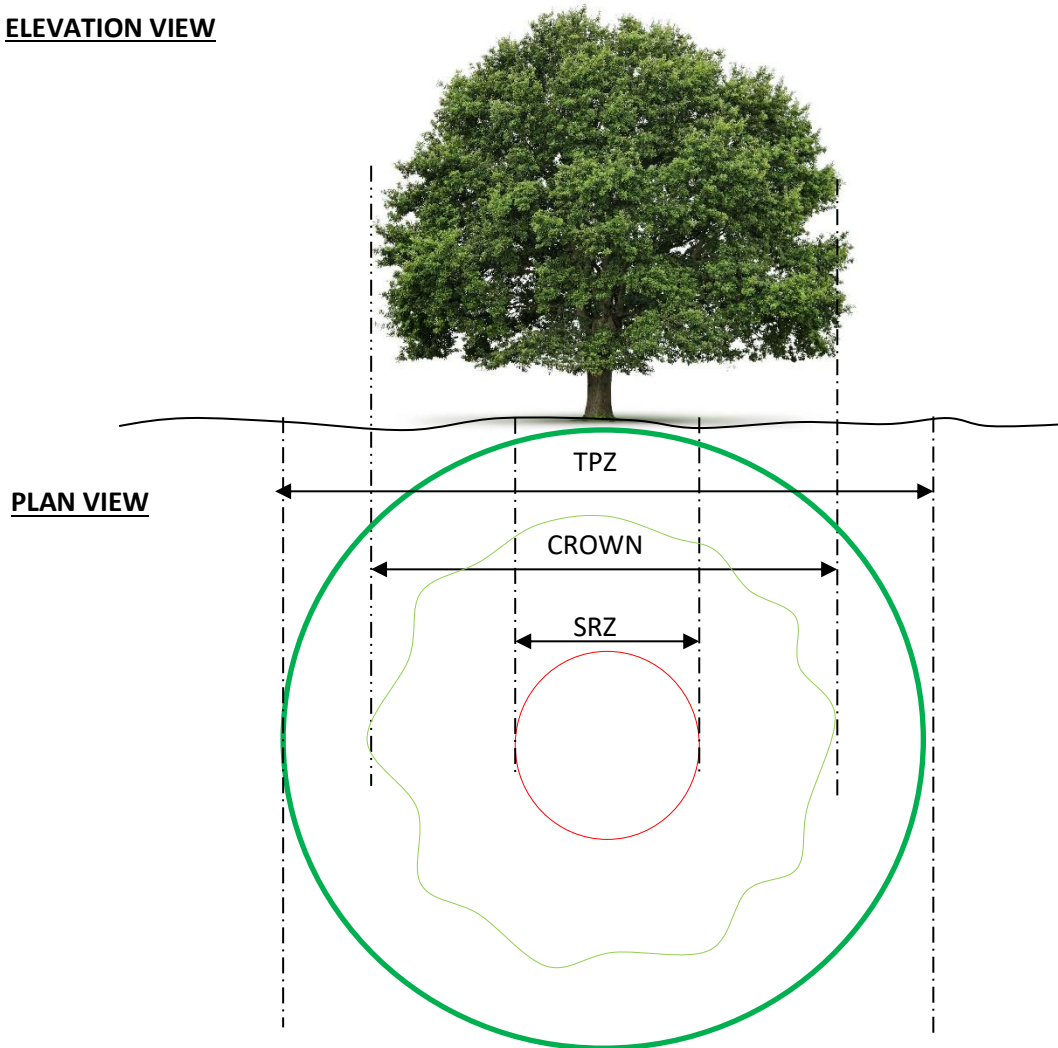
Appendix C

Tree Assessment & Impacts Evaluation Table Notes					
H	Height of tree (estimated)				
S	Spread of tree (estimated)				
Age	Y = Young J= Juvenile M= Mature O=Over mature S=Senescent EM = Early Mature				
Condition	G= Good F=Fair P= Poor D= Dead				
TREES AZ	Categorisation of trees with regards to development Refer to <u>Appendix – Tree AZ</u>				
Retention Value	H=High M=Medium L=Low R=Removal (Refer to <u>Appendix - Significance of a Tree, Assessment Rating System (STARS)©</u>)				
DBH	Diameter at Breast Height (estimated circumference of tree at approximately 1400mm)				
DAB	Diameter at Basal				
TPZ	Calculated area above and below ground at a radial distance form centre of trunk. Exclusion zone for the protection of tree roots and crown to ensure tree viability				
SRZ	Calculated area below ground at a radial distance from centre trunk of tree, required exclusively for tree stability				
Setback	Calculated setback for proposed works from tree, measured at centre of trunk.				
Impacts/Incursion	Calculated degree of incursion				
	<u>Nil</u> No impact	<u>Low</u> 0% - 15%	<u>Significant</u> 25%+	<u>Total Loss</u> Lost to proposal	Exempt
Tree data/Impacts Summary	Arborist commentary on tree location, health, structure and relationship to development.				

Appendix D

Indicative TPZ and SRZ (AS 4970/2009)

ELEVATION VIEW



CALCULATIONS

$$\text{TPZ (Radius)} = \text{DBH} \times 12$$

$$\text{SRZ (Radius)} = (D \times 50)^{0.42} \times 0.64$$

- The Australian Standards provides a formula for calculating both the TPZ and SRZ. The TPZ is a combination of both root and crown area requiring protection for viable tree retention. Basically, it is the area isolated from construction disturbances. The TPZ incorporates the SRZ, the area required for tree stability.
- It should be noted that the TPZs have been calculated with the following in mind; tree characteristics, topography of the site and the TPZ reconfiguration allowance as stated in AS 4970-2009. (Refer to Appendix E for calculation methods of TPZ.) The Standards allow 10% of the radii from one edge of the TPZ to be offset and added to another edge whilst still maintaining total surface area required for TPZ
- TPZ of palms is calculated as no greater than 1m of its radial canopy span and no SRZ is calculated.
- TPZ and SRZ estimated only and cannot be relied on as accurate with trees on neighbouring properties

Appendix E

IACA Significance of a Tree, Assessment Rating System (STARS) (IACA 2010)©

In the development of this document IACA acknowledges the contribution and original concept of the Footprint Green Tree Significance & Retention Value Matrix, developed by Footprint Green Pty Ltd in June 2001. The landscape significance of a tree is an essential criterion to establish the importance that a particular tree may have on a site. However, rating the significance of a tree becomes subjective and difficult to ascertain in a consistent and repetitive fashion due to assessor bias. It is therefore necessary to have a rating system utilising structured qualitative criteria to assist in determining the retention value for a tree. To assist this process all definitions for terms used in the *Tree Significance - Assessment Criteria* and *Tree Retention Value - Priority Matrix*, are taken from the IACA Dictionary for Managing Trees in Urban Environments 2009.

This rating system will assist in the planning processes for proposed works, above and below ground where trees are to be retained on or adjacent a development site. The system uses a scale of *High, Medium and Low significance* in the landscape. Once the landscape significance of an individual tree has been defined, the retention value can be determined. An example of its use in an Arboricultural report is shown as Appendix A.

Tree Significance - Assessment Criteria

1. High Significance in landscape

- The tree is in good condition and good vigour;
- 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 vigour;
- 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 taxa 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

Table 1.0 Tree Retention Value - Priority Matrix

IACA, 2010, IACA Significance of a Tree, Assessment Rating System (STARS), Institute of Australian Consulting Arboriculturists, Australia, www.iaca.org.au

		Significance				
		1. High	2. Medium	3. Low		
		Significance in Landscape	Significance in Landscape	Significance in Landscape	Environmental Pest / Noxious Weed Species	Hazardous / Irreversible Decline
Estimated Life Expectancy	1. Long >40 years					
	2. Medium 15-40 Years					
	3. Short <1-15 Years					
	Dead					
Legend for Matrix Assessment 						
		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 <i>Protection of trees on development sites</i> . 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.				

Appendix E

Tree AZ Categories (Version 10.10 ANZ)

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	
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.

TreeAZ is designed by Barrell Tree Consultancy (www.barrelltreecare.co.uk) and is reproduced with their permission

Appendix F

Glossary of Terms

Taken from: Draper, D. B and Richards, P.A. (2009) Dictionary for Managing Trees in Urban Environments, CSIRO Publishing, Victoria, Australia

Arborist An individual with competence to cultivate, care and maintain trees from amenity or utility purposes.

Basal Proximal end of the trunk or branch, e.g. trunk wound extending to the ground is a basal wound, or as epicormic shoots arising from lignotuber

Branch failure The structural collapse of a branch that is physically weakened by wounding or from the actions of pests and diseases or overcome by loading forces in excess of its load – bearing capacity.

Buttress A flange of adaptive wood occurring at a junction of a trunk and root or trunk and branch in response to addition loading.

Callus wood Undifferentiated and unligified wood that forms initially after wounding around the margins of a wound separating damaged existing wood from the later forming lignified wood or wound wood.

Canker A wound created by repeated localized killing of the vascular cambium and bark by wood decay fungi and bacteria usually marked by concentric disfiguration. The wound may appear as a depression as each successive growth increment develops around the lesion forming a wound margin (Shigo 1991, p. 140)

Canopy cover The amount of area of land covered by the lateral spread of the tree canopy, when viewed from above that land.

Codominant stem Two or more first order structural branches or lower order branches of similar dimensions arising from about the same position from a trunk or stem.

Crown Of an individual tree all the parts arising above the trunk where it terminates by its division forming branches, e.g. the branches, leaves, flowers and fruits; or the total amount of foliage supported by the branches.

Decline The response of the tree to a reduction of energy levels resulting from stress. Recovery from a decline is difficult and slow, and decline is usually irreversible.

Diameter at Breast Height (DBH) Measurement of a trunk width calculated at a given distance from above ground from the base of the tree often measured at 1.4m.

Dominance A tendency in a leading shoot to maintain a faster rate of apical elongation and expansion other than other nearby lateral shoots, and the tendency also for a tree to maintain a taller crown than its neighbours (Lonsdale 1999, p.313)

Dripline A line formed around the edge of a tree by the lateral extent of the crown.

Dynamic Load Loading force that is moving and changes over time, e.g. from wind movement (James 2003, p. 166)

Endemic A native plant usually with a restricted occurrence limited to a particular country, geographic region or area and often further confined to a specific habitat.

Epicormic Branch derived from an epicormic shoot

Frass The granular wood particles produced from borer insects and can be categorized as fine frass, medium frass, and coarse frass with the different types being of different sizes and caused by different insects.

Habitat tree A tree providing a niche supporting the life processes of a plant or animal

Hazard The threat of danger to people or property from a tree or tree part resulting from changes in the physical condition, growing environment, or existing physical attributes of the tree, e.g. included bark, soil erosion, or thorns or poisonous parts, respectively.

Included bark The bark on the inner side of the branch union, or in within a concave crotch that is unable to be lost from the tree and accumulates or is trapped by acutely divergent branches forming a compression fork

Indigenous A native plant usually with a broad distribution in a particular country, geographic region or area. See also Endemic, Locally indigenous and non-locally indigenous.

In situ Occurring in its original place, e.g. soil level, remnant vegetation, the place from where a tree was transplanted, or where a tree is growing.

Irreversible decline The decline of a tree where it has progressively deteriorated to a point where no remedial works will be sufficient to prevent its demise, usually of poor form and low vigour.

Isolated tree A tree growing as a solitary specimen in an exposed location away from other trees as a result of natural or artificial causes and may be naturally occurring.

Kino The extractive polyphenols (tannins) formed in veins in a cambial zone as a defense in response to wounding in eucalypts. Often visible as an exudate when the kino veins rupture or are injured (Boland, *et al.* 2006, p. 691)

Lignotuber A woody tuber developed in the axils of the cotyledons.

Loading Weight that is carried, e.g. as bending stress on a branch.

Locally Indigenous A native plant as remnant vegetation, self-sown or planted in an area or region where it occurred originally.

Longevity Long lived, referring to a plant living for a long period of time.

Mechanical wound -Wound inflicted by abrasion, by mechanical device

Naturalised A plant introduced from another country or region to a place where it was not previously indigenous where it has escaped from agriculture or horticulture or as a garden escape and has sustained itself unassisted and given rise to successive generations of viable progeny.

Necrotic Dead area of tissue that may be localized e.g. on leaves, branches, bark or roots

Negligence With regard to trees, failure to take reasonable care to prevent hazardous situations from occurring which may result in injury to people or damage to property (Lonsdale 1999, p. 317)

Noxious weed A plant species of any taxa declared a weed by legislation. Treatment for the control or eradication of such weeds is usually prescribed by legislation...

Remnant A plant /s of any taxa and their progeny as part of the floristics of the recognised endemic ecological community remaining in a given location after alteration of the site or its modification or fragmentation by activities on that land or on adjacent land

Useful Life Expectancy (ULE) A system used to determine the time a tree can be expected to be usefully retained

Shedding - Shedding of plant organs when it is mature or aged, by the formation of a corky layer across its base. This may be influenced by stress, drought, senescence, declining condition, reduced vigour and also occurs

Stability Resistance to change especially from loading forces or physical modifications to a trees growing environment

Stress A factor in a plants environment that can have adverse impacts on its life processes e.g. altered soil conditions, root damage, toxicity, drought or water logging. The impact of stress may be reversible given good arboricultural practices that may lead to plant decline.

Structural defect A weak point in or on a tree causing its structural deterioration diminishing its stability in full or part

Structural integrity The ability of a load bearing part of a tree, and its resistance to loading forces

Structural roots- Roots supporting the infrastructure of the root plate providing strength and stability of the tree.

Symbiotic An association between different species usually but not always mutually beneficial.

Termite leads Tunnels of mud on the stem and between the bark created by termites that may be active or inactive.

Tree Protection Zone (TPZ) A combination of RPZ and CPZ as an area around the tree set aside for the protection of a tree and a sufficient proportion of its growing environment above and below ground established prior to demolition or construction and maintained until the completion of works to allow for its viable retention including stability.

Visual Tree Assessment (VTA) A visual inspection of a tree from the ground. Such assessment should only be undertaken by suitably competent practitioners.

Disclaimer

This report has been compiled using knowledge & expertise relating to trees, and makes recommendations based on this. It should be noted that trees are affected by many elements, environmental and situational, some of which cannot be predicted or foreseen even by Qualified Arborists.

The client when reading this report should take the following factors into consideration;

- ❖ It is not feasible to assume that Arborists identify all hazards or risks associated with trees at the time of consultation or indeed in this report.
- ❖ This Assessment is valid for 3 months from the date stipulated on the report, and may need to be updated after this.
- ❖ Regular maintenance and monitoring by a Qualified Arborist will minimize the risks associated with tree and contribute to its longevity in its growing environment, however there is no guarantee that all risks are to be eliminated and that the tree is not privy to external factors that will impact on the tree after it has been assessed by our service.
- ❖ The report is compiled in good faith, where any information given to our service is correct and true, and where interested parties and /or stakeholders are notified. This includes title and ownership of property, orders as directed by relevant authorities, development application determinations and other matters that affect the tree/s in question.
- ❖ The Arborist shall not be required to give testimony or to attend court by reason of this report unless other arrangements are made prior.
- ❖ This Arborist Report does not issue permission for any recommendations made in this report, particularly where trees are to be removed. Permission must be sought and obtained from Council and owner/s of trees.
- ❖ Any treatments recommended by the Arborist cannot be guaranteed, due to the volatile environment in which trees are growing.
- ❖ Clients may choose to accept or disregard the recommendations of the Arborist, or to seek additional advice.
- ❖ This report is intended for the Recipient, no part of this report is to be copied or altered without the authors permission

Bibliography

- Australian Standards, 2009. *“Protection of Trees on Development Sites”*, (AS 4970-2009) Standards Australia, Sydney, Australia.
- Australian Standards, 2007. *“Pruning of Amenity Trees”*, (AS 4373/2007) Standards Australia, Sydney, Australia
- Barrell, J.D., (2009) TreeAZ. Detailed guidance on its use. Version 10.10 – ANZ. United Kingdom
- Botanica (2001), Trees & Shrubs, Random House, Australia
- Cronin, L. (2002), Australian Trees, 2nd edition, Envirobook, Australia
- Draper, D. B and Richards, P.A. (2009), Dictionary for Managing Trees in Urban Environments, CSIRO Publishing, Victoria, Australia
- Environmental Protection & Biodiversity Conservation Act 1999 (Commonwealth Government) http://www.austlii.edu.au/au/legis/cth/consol_act/epabca1999588/
- Footprint Green Pty Ltd. 2001, *Footprint Green Tree Significance & Retention Value Matrix* , Avalon, NSW Australia, www.footprintgreen.com.au
- Holliday, I. ,and Watton, G. (2002) Gardeners Companion to Eucalypts 4th revised Edition Reed New Holland, Australia
- IACA, 2010, IACA Significance of a Tree, Assessment Rating System (STARS), Institute of Australian Consulting Arboriculturists, Australia, www.iaca.org.au
- Matheny, N. & Clark, J (1994). A Photographic guide to Hazard Trees in Urban Areas. 2nd Edition. Illinois, (USA).
- Matheny, N. & Clark, J (1998). Trees & Development, A technical Guide to Preservation of Trees during Land Development. International Society of Arboriculture, Champaign, USA.
- Matheny, N. & Clark, J (2004), Arboriculture. Fourth Edition. Pearson Education Incorporated. New Jersey, USA.
- Mattheck, C. (1999). Body Language of trees. Forschungszentrum Karlsruhe, Germany
- State of New South Wales (Department of Planning, Industry and Environment, 2020) www.eSPADEV2.1.nsw.gov.au.
- Treetec (2014) www.treetec.net.au . Melbourne, Australia