HUGH
THE ARBORIST

Arboricultural Impact Assessment

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1. INTRODUCTION

1.1 This report has been commissioned by Sydney Water, to assess trees located within the site and adjoining sites that may be impacted by a proposed development.

1.2 The following table contains all documents and information provided to me by the client.

Table 1: Documents provided for the assessment.

Title	Author	Date	Reference on document
Plan of Details and Levels	Steve Davey & Associates Pty Ltd Land & Engineering Surveyors	07/2020	SJD/CP/090220/A
Architectural Plans	RJK Architects Pty Ltd	07/2020	Issue A: DA000, DA100, DA101, DA102, DA103, DA104, DA105, DA106, DA107, DA108, DA109, DA110, DA111, DA112, DA113, DA114, DA115, DA116, DA117

1.3 The site and tree inspections were carried out on 14 July 2020 and 11 August 2020. Access was available to the subject site and adjoining public areas only. All tree data contained in this report was collected during these site inspections.

2. SCOPE OF THE REPORT

2.1 This report has been undertaken to meet the following objectives;

2.1.1 Conduct a ground level visual assessment of all significant trees located within 10 metres of development works. For the purpose of this report, a significant tree is a tree with a height equal to or greater than 5 metres.

2.1.2 Determine the trees estimated contribution years and remaining, useful life expectancy and award the trees a retention value.

2.1.3 Provide an assessment of the potential impact the proposed development is likely to cause to the condition of the subject trees in accordance with AS4970 Protection of trees on development sites (2009).

2.1.4 Recommend methods to mitigate development impacts where possible.

2.1.5 Recommend tree protection measures for any tree to be retained in accordance with AS4970 Protection of trees on development sites (2009).

3. LIMITATIONS

3.1 Access was not available to neighbouring sites, therefore the tree measurements for trees located within neighbouring sites have been estimated from within the subject site.

3.2 The observations and recommendations are based on one site inspection. The findings of this report are based on the observations and site conditions at the time of the inspection.

3.3 All observations were carried out from ground level. No additional detailed testing was carried out on trees or soil on site and none of the surrounding surfaces were lifted for investigated.

3.4 Root decay can sometimes be present with no visual indication above ground. It is also impossible to know the extent of any root damage caused by mechanical damage such as underground root cutting during the installation of services without undertaking detailed root investigation. Any form of tree failure due to these activities is beyond the scope of this assessment.

3.5 The report reflects the subject tree(s) as found on the day of the inspection. Any changes to the growing environment of the subject trees, or tree management works beyond those recommended in this report may alter the findings of the report. There is no warranty, expressed or implied, that problems or deficiencies relating to the subject tree, or subject site may not arise in the future.

3.6 Tree identification is based on accessible visual characteristics at the time of inspection. As key identifying features are not always available the accuracy of identification is not guaranteed. Where tree species is unknown, it is indicated with a spp.

3.7 All diagrams, plans and photographs included in this report are visual aids only, and are not to scale unless otherwise indicated.

3.8 Hugh The Arborist neither guarantees, nor is responsible for, the accuracy of information provided by others that is contained within this report.

3.9 While an assessment of the subject trees estimated useful life expectancy is included in this report, no specific tree risk assessment has been undertaken for any of the trees at the site.

3.10 Where trees are stated as retainable under the current proposal, this will only be possible if all recommendations and specifications are followed with consultation with the Project Arborist.

3.11 The ultimate safety of any tree cannot be categorically guaranteed. Even trees apparently free of defects can collapse or partially collapse in extreme weather conditions. Trees are dynamic, biological entities subject to changes in their environment, the presence of pathogens and the effects of ageing. These factors reinforce the need for regular inspections. It is generally accepted that hazards can only be identified from distinct defects or from other failure-prone characteristics of a tree or its locality.

3.12 Alteration of this report invalidates the entire report.

4. METHODOLOGY

4.1 The following information was collected during the assessment of the subject tree(s).

4.2 Tree common name

4.3 Tree botanical name

4.4 Tree age class

4.5 DBH (Trunk/Stem diameter at breast height/1.4m above ground level) - millimetres.

4.6 Estimated height - metres

4.7 Estimated crown spread (Radius of crown) - metres

4.8 Health

4.9 Structural condition

4.10 Amenity value

4.11 Estimated remaining contribution years (SULE)[1]

4.12 Retention value (Tree AZ)[2]

4.13 Notes/comments

4.14 An assessment of the trees condition was made using the visual tree assessment (VTA) model (Mattheck & Breloer, 1994).[3]

4.15 Trunk diameter and root diameter was measured using a DBH tape or in some cases estimated. All other measurements were estimations unless otherwise stated. The other tools I used during the assessment were a digital camera and a Leica DistoD410 digital laser tape.

4.16 All DBH measurements, tree protection zones, and structural root zones were calculated in accordance with methods set out in AS4970 Protection of trees on development sites (2009) [4] and in some cases estimated. See appendices for information.

4.17 Details of how the observations in this report have been assessed are listed in the appendices.

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[1] Barrell Tree Consultancy, *SULE: Its use and status into the New Millennium*, TreeAZ/03/2001, http://www.treeaz.com/.

[2] Barrell Tree Consultancy, *Tree AZ version 10.10-ANZ*, http://www.treeaz.com/.

[3] Mattheck, C. & Breloer, H., *The body language of trees - A handbook for failure analysis*, The Stationary Office, London, England (1994).

[4] Council of Standards Australia, *AS4970 Protection of trees on development sites* (2009).

5. SITE LOCATION AND BRIEF DESCRIPTION OF PROPOSAL

5.1 The site is located in the Northern Beaches LGA, this assessment has been carried out in accordance with the following legislation and policy;

5.1.1 Warringah Local Environmental Plan (LEP) 2011

5.1.2 Warringah Development Control Plan (DCP) 2011

5.1.3 State Environmental Planning Policy (Vegetation in Non-Rural Areas 2017)

Site location plan provided by Sixmaps [5]

5.2 The site is not located within a heritage conservation area and has not been identified as a heritage item in the Warringah LEP heritage maps[6].

5.3 The site is densely vegetated to the West, North and East, with a dirt track/road located adjacent to the North boundary and a clearing located centrally within the site. During the site inspection, recent earthworks and stock piling of soil within the cleared area was identified. Hugh the Arborist Pty Ltd has been advised that the earthworks are being completed for the removal of asbestos/soil contaminants.

5.4 Thirty trees included in this report have not been identified in the received plans. Therefore, the location of these trees has been estimated based on the available information. If an accurate assessment of these trees is required, a registered surveyor must identify and locate these trees.

5.5 The proposed development include the construction of a proposed single dwelling, including driveway, garage, hard surfacing, cut and fill earthworks, retaining walls and additional structures.

5 https://maps.six.nsw.gov.au/

6 *Warringah LEP Heritage Map - Sheet Her_008,* https://legislation.nsw.gov.au/maps/3c2f4d2f-ce55-400b-a154-f068b6c9dbb9/1800_COM_HER_008_020_20161221.pdf, accessed 16 July 2020.

6. OBSERVATIONS AND GENERAL INFORMATION IN RELATION TO PROTECTING TREES ON DEVELOPMENT SITES

6.1 **Tree information**: Details of each individual tree I have assessed, including the observations taken during the site inspection can be found in the tree inspection schedule in appendix 2, where I have calculated the indicative tree protection zone (TPZ) for the subject trees. The TPZ and SRZ should be measured in radius from the centre of the trunk. I awarded the subject trees a retention value based on my observations. The system I have used to award the retention value is Tree AZ. Tree AZ is used to identify higher value trees worthy of being a constraint to development and lower value trees that should generally not be a constraint to the development. I have included the Tree AZ categories sheet (Barrell Tree Consultancy) to assist with understanding the retention values. The retention value that has been allocated to the subject trees in this report is not definitive and should only be used as a guideline.

6.2 **Site plan:** In appendix 1 two site plans have been prepared, where the tree information including canopy spread, TPZ and SRZ have been overlaid onto the received site plans. The following site plans are included;

- Appendix 1A: Existing Site Plan
- Appendix 1B: Proposed Site Plan

6.3 **Tree protection zone (TPZ)**: The TPZ is principle means of protecting trees on development sites and is an area required to maintain the viability of trees during development. It is commonly observed that tree roots will extend significantly further than the indicative TPZ, however the TPZ is an area identified AS4970-2009 to be the extent where root loss or disturbance will generally impact the viability of the tree. The TPZ is identified as a restricted area to prevent damage to trees either above or below ground during a development. Where trees are intended to be retained proposed developments must provide an adequate TPZ around trees. The TPZ is set aside for the tree's root zone, trunk and crown and it is essential for the stability and longevity of the tree. The tree protection also incorporates the SRZ (see below for more information about the SRZ). I have calculated the TPZ of palms, other monocots, cycads and tree ferns at one metre outside the crown projection. In appendix 4 I have included additional information about the TPZ including information about calculating the TPZ and examples of TPZ encroachment.

6.4 **Structural Root Zone (SRZ)**: This is the area around the base of a tree required for the trees stability in the ground. An area larger than the SRZ always needs to be maintained to preserve a viable tree. There are several factors that can vary the SRZ which include height, crown area, soil type and soil moisture. It can also be influenced by other factors such as natural or built structures. Generally work within the SRZ should be avoided. Soil level changes should also generally be avoided inside the SRZ of trees to be retained. Palms, other monocots, cycads and tree ferns do not have an SRZ. See appendix 5 for more information about the SRZ.

6.5 **Minor encroachment into TPZ**: Sometimes encroachment into the TPZ is unavoidable. Encroachment includes but is not limited to activities such as excavation, compacted fill and machine trenching. Minor encroachment of up to 10% of the overall TPZ area is normally considered acceptable, providing there is space adjacent to the TPZ for the tree to compensate and the tree is displaying adequate vigour/health to tolerate changes to its growing environment.

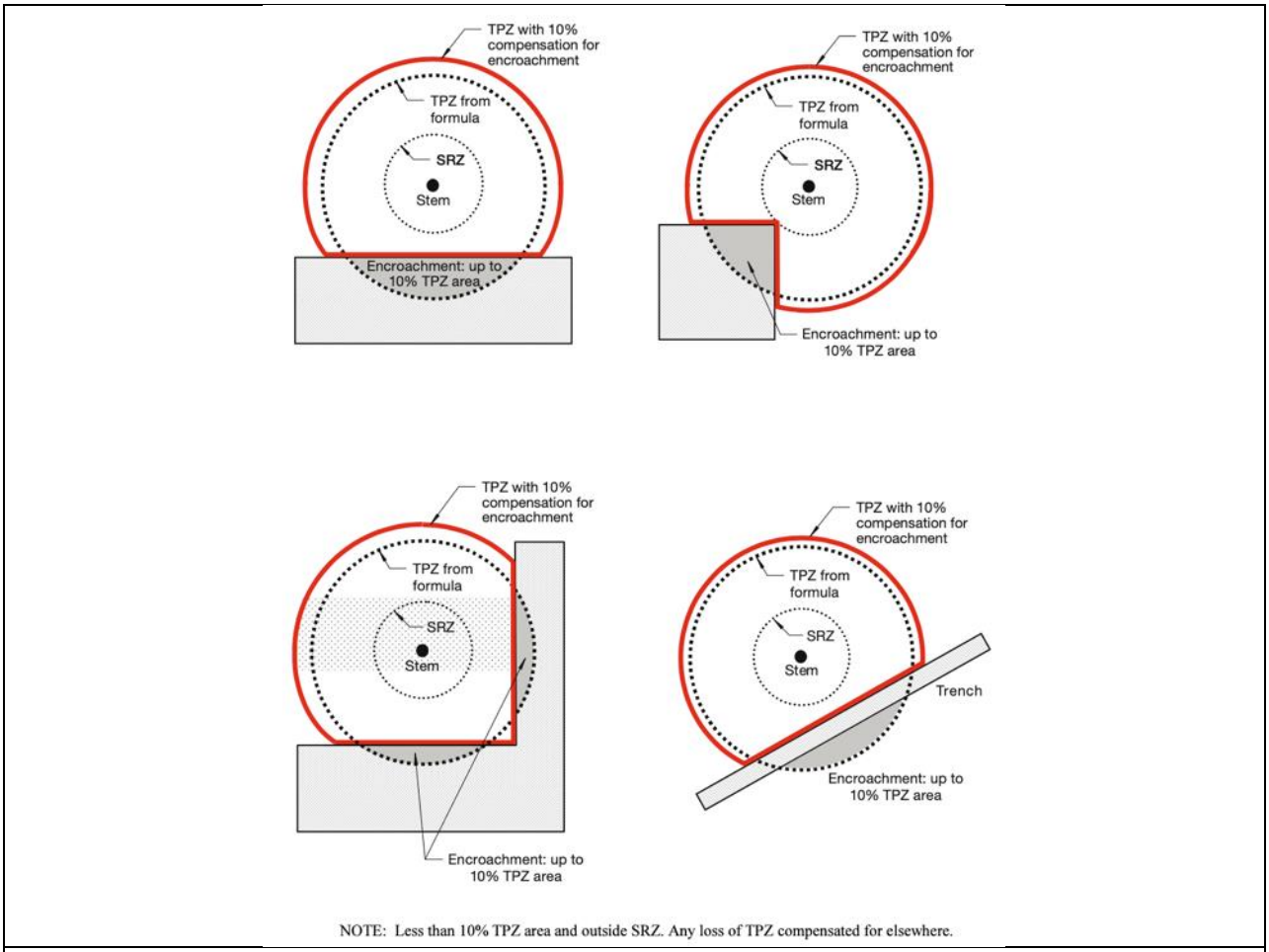


Image 1: Example minor TPZ encroachment from AS4970-2009.

6.6 **Major encroachment into TPZ**: Where encroachment of more than 10% of the overall TPZ area is proposed the project Arborist must investigate and demonstrate that the tree will remain in a viable condition. In some cases, tree sensitive construction methods such as pier and beam footings, suspended slabs, or cantilevered sections, can be utilised to allow additional encroachment into the TPZ by bridging over roots and minimising root disturbance. Major encroachment is only possible if it can be undertaken without severing significant size roots, or if it can be demonstrated that significant roots will not be impacted.

7. ASSESSMENT OF CONSTRUCTION IMPACTS

7.1 **Table 2:** In the table below, the impact of the proposed development has been assessed for all trees included in the report. The assessed TPZ encroachments include proposed structures and hard landscaping only. All soft landscaping should be completed in accordance with section 11.10 of this report.

Tree ID	Botanical Name	Retention value	TPZ radius (m)	TPZ area (m^2)	SRZ radius (m)	TPZ encroachment	Discussion/ Conclusion	Recommendation
1	*Liquidambar styraciflua*	Z3	3.1	30.2	2.1	None	Located within nature strip. No proposed TPZ encroachment.	Retain and protect
2	*Liquidambar styraciflua*	Z3	2.6	21.2	1.9	None	Located within nature strip. No proposed TPZ encroachment.	Retain and protect
3	*Liquidambar styraciflua*	Z3	4.6	66.5	2.4	Minor	Located within nature strip. The proposed driveway will encroach into the TPZ by less than 1%. This is considered to be a minor and acceptable TPZ encroachment and the proposed works will not significantly impact the tree.	Retain and protect
4	*Eucalyptus microcorys*	A1	4.8	72.4	2.5	Minor	The proposed pedestrian entry stairs will encroach into the TPZ by less than 1%. This is considered to be a minor and acceptable TPZ encroachment and the proposed works will not significantly impact the tree.	Retain and protect
5	*Eucalyptus microcorys*	A1	2.9	26.4	2.0	None	No proposed TPZ encroachment.	Retain and protect
6	*Eucalyptus microcorys*	Z10	2.2	15.2	1.8	None	No proposed TPZ encroachment.	Retain and protect
7	*Allocasuarina littoralis*	A1	2.0	12.6	1.5	None	The tree has not been identified on the received plans. No proposed TPZ encroachment.	Retain and protect
8	*Acacia elata*	Z4	4.9	75.4	2.4	Minor	The tree has not been identified on the received plans and is located in the adjoining property. The proposed dwelling will encroach into the TPZ by 2% ($1.5m^2$) but not into the SRZ. This is considered to be a minor and acceptable TPZ encroachment and the proposed works will not significantly impact the tree.	Retain and protect
9	*Elaeocarpus reticulatus*	Z4	2.0	12.6	1.5	None	The tree has not been identified on the received plans. No proposed TPZ encroachment.	Retain and protect

Tree ID	Botanical Name	Retention value	TPZ radius (m)	TPZ area (m^2)	SRZ radius (m)	TPZ encroachment	Discussion/ Conclusion	Recommendation
10	*Banksia serrata*	Z9	2.9	26.4	1.9	Footprint	The trunk of the tree is located within the footprint of the proposed dwelling.	Remove
12	*Allocasuarina littoralis*	A1	2.0	12.6	2.5	Footprint	The tree has not been identified on the received plans. The trunk of the tree is located within the footprint of the proposed dwelling.	Remove
13	*Allocasuarina littoralis*	Z9	2.0	12.6	2.0	Footprint	The tree has not been identified on the received plans. The trunk of the tree is located within the footprint of the proposed dwelling.	Remove
14	*Allocasuarina littoralis*	A1	2.0	12.6	1.8	Footprint	The tree has not been identified on the received plans. The trunk of the tree is located within the footprint of the proposed dwelling.	Remove
15	*Eucalyptus haemastoma*	Z4	2.6	21.2	1.5	Footprint	The trunk of the tree is located within the footprint of the proposed dwelling/entrance pathway.	Remove
16	*Allocasuarina littoralis*	Z1	2.0	12.6	2.4	Major	The tree has not been identified on the received plans. The proposed entrance pathway and dwelling will encroach into the TPZ by 55% (6.9m^2) and into the SRZ. This is considered to be a major TPZ encroachment and the proposed works could potentially impact the condition and stability of the tree. The tree is recommended for removal due to impacts from the proposed development.	Remove
17	*Eucalyptus microcorys*	Z1	2.0	12.6	1.5	Major	The tree has not been identified on the received plans. The proposed entrance pathway will encroach into the TPZ by 18% (2.3m^2) and into the SRZ. This is considered to be a major TPZ encroachment and the proposed works could potentially impact the condition and stability of the tree. The tree is recommended for removal due to impacts from the proposed development.	Remove
18	*Eucalyptus microcorys*	A1	3.0	28.3	2.1	Minor	The proposed dwelling will encroach into the TPZ by less than 1%. This is considered to be a minor and acceptable TPZ encroachment and the proposed works will not significantly impact the tree.	Retain and protect
19	*Eucalyptus microcorys*	Z1	2.0	12.6	1.8	None	The tree has not been identified on the received plans. No proposed TPZ encroachment.	Retain and protect

Tree ID	Botanical Name	Retention value	TPZ radius (m)	TPZ area (m^2)	SRZ radius (m)	TPZ encroachment	Discussion/ Conclusion	Recommendation
20	*Eucalyptus saligna*	A2	4.7	69.4	1.5	Minor	The proposed driveway will encroach into the TPZ by 14% (9.6m^2) but not into the SRZ. This is considered to be a major TPZ encroachment and the proposed works could potentially impact the condition of the tree. To reduce the impact to the tree, the proposed driveway within the TPZ must be constructed on or above existing grades and in accordance with section 8.3 of this report.	Retain and protect*
21	*Allocasuarina littoralis*	A1	2.0	12.6	1.7	Footprint	The trunk of the tree is located within the footprint of the proposed garage.	Remove
22	*Allocasuarina littoralis*	A1	2.9	26.4	1.5	Footprint	The trunk of the tree is located within the footprint of the proposed driveway.	Remove
23	*Allocasuarina littoralis*	A1	2.0	12.6	2.0	Footprint	The tree has not been identified on the received plans. The trunk of the tree is located within the footprint of the proposed driveway.	Remove
24	*Melaleuca spp*	ZZ 4	2.6	21.2	1.5	Footprint	The tree has not been identified on the received plans. The trunk of the tree is located within the footprint of the proposed terrace fill and the proposed garage will encroach into the TPZ and SRZ. The tree is dead and should not be a constraint to the development.	Remove
25	*Allocasuarina littoralis*	A1	2.0	12.6	1.5	Footprint	The tree has not been identified on the received plans. The trunk of the tree is located within the footprint of the proposed terrace fill.	Remove
26	*Eucalyptus microcorys*	A2	4.3	58.1	2.1	Footprint	The trunk of the tree is located within the footprint of the proposed terrace fill and a stair case is proposed within the SRZ of the tree.	Remove
27	*Allocasuarina littoralis*	ZZ 4	2.4	18.1	1.5	Footprint	The tree has not been identified on the received plans. The trunk of the tree is located within the footprint of the proposed terrace fill and the proposed dwelling will encroach into the TPZ and SRZ. The tree is dead and should not be a constraint to the development.	Remove
28	*Allocasuarina littoralis*	Z4	2.0	12.6	2.4	Major	The tree has not been identified on the received plans. The proposed dwelling will encroach into the TPZ by 7% (0.9m^2) and into the SRZ. This is considered to be a major TPZ encroachment and the proposed works could potentially impact the condition and stability of the tree. The tree is in early stages of decline. The tree is recommended for removal due to its current condition and impacts from the proposed development.	Remove

Tree ID	Botanical Name	Retention value	TPZ radius (m)	TPZ area (m^2)	SRZ radius (m)	TPZ encroachment	Discussion/ Conclusion	Recommendation
29	*Eucalyptus robusta*	A1	2.8	24.6	1.7	Major	The proposed dwelling will encroach into the TPZ by 36% (8.9m^2) and into the SRZ. This is considered to be a major TPZ encroachment and the proposed works could potentially impact the condition and stability of the tree. The tree is recommended for removal due to impacts from the proposed development.	Remove
30	*Angophora costata*	AA	10.2	326.9	2.0	Minor	The proposed dwelling will encroach into the TPZ by 2% (6.3m^2) but not into the SRZ. The proposed dwelling will not significantly impact the tree as a single component of the development. The proposed garden edging will encroach into the TPZ and into the SRZ. The garden edge is considered to be minor landscape works only as excavations will not be required to install the edge. Therefore, the proposed works will not significantly impact the tree and the tree can be retained in a viable condition.	Retain and protect
31	*Allocasuarina littoralis*	ZZ 4	2.4	18.1	1.5	None	The tree has not been identified on the received plans. No proposed TPZ encroachment. The tree is dead and is recommended for removal based on its current condition only.	Remove
32	*Eucalyptus robusta*	A1	4.1	52.8	1.8	None	The tree has not been identified on the received plans. No proposed TPZ encroachment.	Retain and protect
33	*Eucalyptus robusta*	A1	2.3	16.6	1.5	None	The tree has not been identified on the received plans. No proposed TPZ encroachment.	Retain and protect
34	*Eucalyptus robusta*	A1	3.6	40.7	2.4	None	The tree has not been identified on the received plans. No proposed TPZ encroachment.	Retain and protect
35	*Eucalyptus robusta*	A1	3.2	32.2	1.9	None	The tree has not been identified on the received plans. No proposed TPZ encroachment.	Retain and protect
36	*Allocasuarina littoralis*	A1	2.2	15.2	1.7	None	The tree has not been identified on the received plans. No proposed TPZ encroachment.	Retain and protect
37	*Allocasuarina littoralis*	A1	2.7	22.9	1.9	None	The tree has not been identified on the received plans. No proposed TPZ encroachment.	Retain and protect
38	*Allocasuarina littoralis*	A1	2.2	15.2	3.4	None	The tree has not been identified on the received plans. No proposed TPZ encroachment.	Retain and protect

Tree ID	Botanical Name	Retention value	TPZ radius (m)	TPZ area (m^2)	SRZ radius (m)	TPZ encroachment	Discussion/ Conclusion	Recommendation
39	*Allocasuarina littoralis*	A1	2.9	26.4	1.9	None	The tree has not been identified on the received plans. No proposed TPZ encroachment.	Retain and protect
40	*Glochidion ferdinandi*	A1	3.4	36.3	2.3	None	The tree has not been identified on the received plans. No proposed TPZ encroachment.	Retain and protect
41	*Allocasuarina littoralis*	A1	2.8	24.6	1.8	Minor	The proposed garden edge will encroach into the TPZ by 4% ($0.9m^2$) but not into the SRZ. This is considered to be a minor and acceptable TPZ encroachment and the proposed works will not significantly impact the tree.	Retain and protect
42	*Allocasuarina littoralis*	A1	2.0	12.6	2.1	None	The tree has not been identified on the received plans. No proposed TPZ encroachment.	Retain and protect
43	*Glochidion ferdinandi*	A1	3.8	45.4	2.1	None	No proposed TPZ encroachment.	Retain and protect
44	*Cotoneaster glaucophyllus*	Z3	3.0	28.3	1.8	None	The tree has not been identified on the received plans. Located in adjoining property. No proposed TPZ encroachment.	Retain and protect
45	*Eucalyptus microcorys*	A1	3.5	38.5	2.3	Minor	The proposed driveway excavations (cut of up to 1m below existing grades) will encroach into the TPZ by 3% ($1.2m^2$) but not into the SRZ. This is considered to be a minor and acceptable TPZ encroachment and the proposed works will not significantly impact the tree.	Retain and protect
46	*Glochidion ferdinandi*	A1	3.0	28.3	1.8	Minor	The proposed fence will encroach into the TPZ by 5% ($1.3m^2$) but not into the SRZ. This is considered to be a minor and acceptable TPZ encroachment and the proposed works will not significantly impact the tree.	Retain and protect
47	*Eucalyptus microcorys*	A1	4.8	72.4	1.9	Major	The proposed driveway excavations (cut of up to 1m below existing grades) will encroach into the TPZ by 20% ($14.7m^2$) and into the SRZ. This is considered to be a major TPZ encroachment and the proposed works could potentially impact the condition and stability of the tree. The tree is recommended for removal due to impacts from the proposed development.	Remove

Tree ID	Botanical Name	Retention value	TPZ radius (m)	TPZ area (m^2)	SRZ radius (m)	TPZ encroachment	Discussion/ Conclusion	Recommendation
48	*Corymbia gummifera*	Z4	3.7	43.0	2.2	Major	The proposed driveway excavations will encroach into the TPZ by 19% (8.3m^2) and into the SRZ. This is considered to be a major TPZ encroachment and the proposed works could potentially impact the condition and stability of the tree. The tree is in early stages of decline and should not be a constraint to the development. The tree is recommended for removal due to its current condition and impacts from the proposed development.	Remove
49	*Banksia ericifolia*	A1	2.0	12.6	2.3	Footprint	The tree has not been identified on the received plans. The trunk of the tree is located within the footprint of the proposed driveway.	Remove
50	*Cinnamomum camphora*	Z3	3.4	36.3	1.5	None	The tree has not been identified on the received plans. No proposed TPZ encroachment.	Retain and protect

Notes:
Retain and protect* = The proposed driveway must be constructed in accordance with section 8.3 to reduce the impact to the tree.

8. CONCLUSIONS

8.1 **Table 3:** Summary of the impact to trees during the development;

Impact	Reason	Category A		Category Z	
		AA	A	Z	ZZ
Trees recommended to be removed	Building construction, new surfacing and/or proximity, or trees in poor condition.	None	12, 14, 21, 22, 23, 25, 26, 29, 47, 49 (Ten trees)	10, 13, 15, 16, 17, 28, 48 (Seven trees)	24, 27, 31 (Three trees)
Trees recommended to be retained subject to tree sensitive construction/additional information of construction details	Removal of existing surfacing/structures and/or installation of new surfacing/structures may impact the viability of the trees	None	20* (One tree)	None	None
Trees recommended to be retained	Removal of existing surfacing/structures and/or installation of new surfacing/structures will not impact the viability of the trees	30 (One tree)	4, 5, 7, 18, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 45, 46 (Eighteen trees)	1, 2, 3, 6, 8, 9, 19, 44, 50 (Nine trees)	None

Notes:
* = The proposed driveway must be constructed in accordance with section 8.3 to reduce the impact to the tree.

8.2 **Photographs**

Image 2: Looking East towards tree 30. Tree 30 will not be significantly impacted by the proposed garden edging.

8.3 **Construction Design/Specification Requirements for Tree 20:** The proposed construction will encroach into the TPZ of tree 20. To ensure the tree is not adversely impacted by the construction, it must be demonstrated the following design and construction specifications can be implemented within the TPZ of the tree. If the construction cannot be completed in accordance with these specifications, the tree may not be viable for retention.

8.3.1 **Tree Sensitive Hard Surfacing Construction**: Where proposed hard surfacing encroaches into the TPZ by more than 10%, the hard surfacing must be constructed in a tree sensitive method. The hard surfacing should be constructed above existing grades in the TPZ of the tree.

If excavations are essential, they must not exceed 100mm below the existing grades. The excavations should be supervised by a project Arborist with a minimum AQF level 5 qualification. All excavations for the hard surfacing should be carried out manually to avoid impacting retained tree roots. All tree roots greater than 40mm in diameter should be retained, unless the project arborist has assessed and advised that the pruning/severing of the root will not impact the condition or stability of the tree. Manual excavation may include the use of pneumatic and hydraulic tools, high-pressure air or a combination of high-pressure water and a vacuum device.

Where tree roots greater than 40mm are encountered that must be retained, the hard surfacing should be elevated over the individual tree root to allow for its retention. Examples of methods that can be used to bridge individual tree roots have been included below (Image A and B). Using pier and beam bridges as per image B is the recommended/preferred method, as it will allow for future growth of the tree roots, reducing future damage to the pavement from the roots.

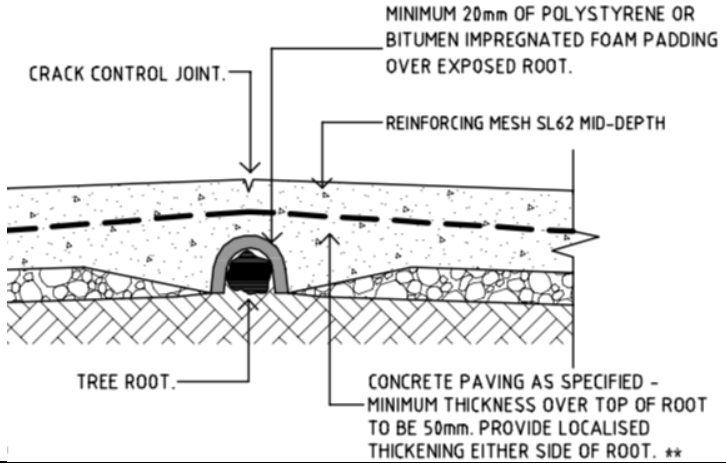


Image A: Example method for bridging concrete surfacing over tree roots provided in the Canterbury Bankstown Council standard drawings.[7]

[7] *Canterbury Bankstown Council standard drawing S-209 Existing street tree treatments*, https://www.cbcity.nsw.gov.au/development/planning-control-policies/council-standard-drawings, accessed 3 October 2019.

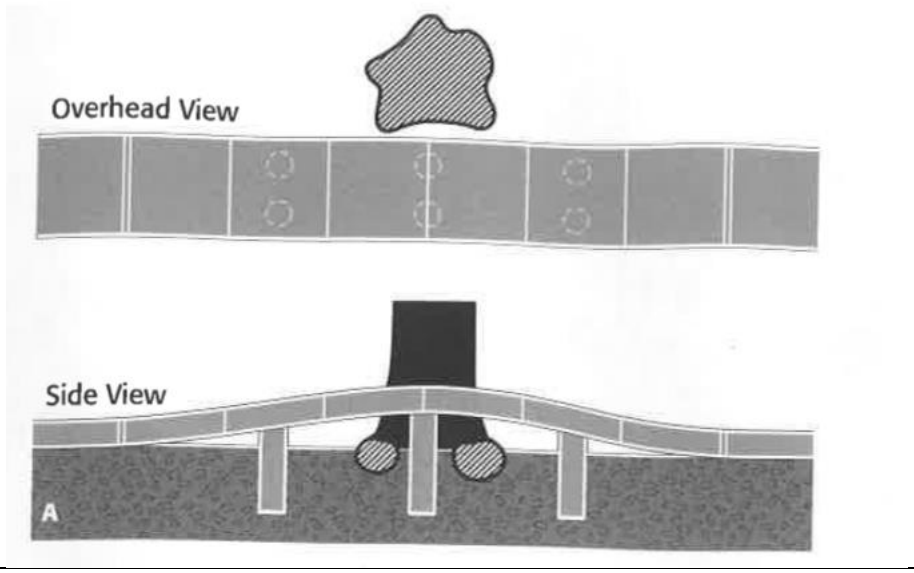


Image B: Example method from Reducing infrastructure damage by tree roots: A compendium of strategies.[8]

[8] Costello, L. R., & Jones, K. S, *Reducing infrastructure damage by tree roots: A compendium of strategies*, Western Chapter of the International Society of Arboriculture, 31883 Success Valley Drive, Porterville, CA (2003), page 27.

9. RECOMMENDATIONS

9.1 This report assesses the impact of a proposed development at the subject site to all significant trees located within 10 metres of development works. Forty-nine trees have been identified and assessed.

9.2 Twenty (20) trees have been recommended for removal within this report, including tree 10, 12, 13, 14, 15, 16, 17, 21, 22, 23, 24, 25, 26, 27, 28, 29, 31, 47, 48 and 49. Tree 12, 14, 21, 22, 23, 25, 26, 29, 47 and 49 are higher value category A retention value trees. Tree 10, 13, 15, 16, 17, 24, 27, 28, 31 and 48 are lower value category Z retention value trees.

9.3 One (1) tree will be subject to major TPZ encroachments greater than 10%, including tree 20. It must be demonstrated the proposed works will not significantly impact the tree. To retain tree 20 in viable condition, the proposed hard surfacing within the TPZ must be completed in accordance with section 8.3 of this report.

9.4 The remaining twenty-eight (28) trees can be retained in a viable condition, including tree 1, 2, 3, 4, 5, 6, 7, 8, 9, 18, 19, 30, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46 and 50.

9.5 All trees to be retained must be protected in accordance with AS4970-2009, details of which are included in section 10.

9.6 Retained trees are to be provided remedial care prior to the commencement of works, during and post construction phases to assist with mitigating the development impacts.

9.7 One month prior to the commencement of works, all trees are to be provided with soil conditioner (Seasol or GoGo) and a balanced NPK fertiliser (Nitrosol). This is to be carried out by the project Arborist and repeated midway through the development phase. Additional remedial measures are to be implemented by the project Arborist during the development depending on site and climatic conditions.

9.8 No landscaping plan has been assessed as part of this report. See section 10.16 – 10.20 for general guidance when landscaping within the TPZ of trees to be retained.

9.9 No detailed services plan has been assessed as part of this report. All underground services located inside the TPZ of any tree to be retained must be installed via tree sensitive techniques. This should include either directional drilling methods or manual excavations to minimise the impact to trees identified for retention, see section 10.21 for more information.

9.10 This report does not provide approval for tree removal or pruning works. All recommendations in this report are subject to approval by the relevant authorities and/or tree owners. This report should be submitted as supporting evidence with any tree removal/pruning or development application.

10. ARBORICULTURAL WORK METHOD STATEMENT (AMS) AND TREE PROTECTION REQUIREMENTS

10.1 **Use of this report:** All contractors must be made aware of the tree protection requirements prior to commencing works at the site and be provided with a copy of this report.

10.2 **Project Arborist:** Prior to any works commencing at the site a project Arborist should be appointed. The project Arborist should be qualified to a minimum AQF level 5 and/or equivalent qualifications and experience, and should assist with any development issues relating to trees that may arise. If at any time it is not feasible to carryout works in accordance with this, an alternative must be agreed in writing with the project Arborist.

10.3 **Tree work:** All tree work must be carried out by a qualified and experienced Arborist with a minimum of AQF level 3 in arboriculture, in accordance with NSW Work Cover Code of Practice for the Amenity Tree Industry (1998) and AS4373 Pruning of amenity trees (2007).

10.4 **Initial site meeting/on-going regular inspections:** The project Arborist is to hold a pre-construction site meeting with principle contractor to discuss methods and importance of tree protection measures and resolve any issues in relation to tree protection that may arise. In accordance with AS4970-2009, the project Arborist should carryout regular site inspections to ensure works are carried out in accordance with this document throughout the development process. I recommend regular site inspections on a frequency based on the longevity of the project, this is to be agreed in the initial meeting.

10.5 **Table 5: Site Specific Tree Protection Recommendations**

Tree ID	Tree Species	TPZ Radius (m)	SRZ Radius (m)	Recommendations
1	*Liquidambar styraciflua*	3.1	2.1	Retain and protect. Tree protection fencing is to encompass the grass area of the nature strip adjacent to the tree. The fencing must not encroach onto the road and space between the site boundary and fencing must be maintained for pedestrian access. TPZ signage is required on fencing.
2	*Liquidambar styraciflua*	2.6	1.9	Retain and protect. Tree protection fencing is to encompass the grass area of the nature strip adjacent to the tree. The fencing must not encroach onto the road and space between the site boundary and fencing must be maintained for pedestrian access. TPZ signage is required on fencing.
3	*Liquidambar styraciflua*	4.6	2.4	Retain and protect. Tree protection fencing is to encompass the grass area of the nature strip adjacent to the tree and is to be set back from the proposed driveway by 0.5m. The fencing must not encroach onto the road and space between the site boundary and fencing must be maintained for pedestrian access. TPZ signage is required on fencing.

4	*Eucalyptus microcorys*	4.8	2.5	Retain and protect. Tree protection fencing is to create a combined exclusion zone for tree 4, 5, 6, 7, 8 and 9. Fencing is to run along the TPZ perimeter of the trees where practical and is to be set back from the proposed works by 1m. Fencing within site only. TPZ signage is required on the fencing, mulch and temporary irrigation is required within the fenced area.
5	*Eucalyptus microcorys*	2.9	2.0	Retain and protect. See tree protection recommendations from tree 4.
6	*Eucalyptus microcorys*	2.2	1.8	Retain and protect. See tree protection recommendations from tree 4.
7	*Allocasuarina littoralis*	2.0	1.5	Retain and protect. See tree protection recommendations from tree 4.
8	*Acacia elata*	4.9	2.4	Retain and protect. See tree protection recommendations from tree 4.
9	*Elaeocarpus reticulatus*	2.0	1.5	Retain and protect. See tree protection recommendations from tree 4.
10	*Banksia serrata*	2.9	1.9	Remove.
12	*Allocasuarina littoralis*	2.0	2.5	Remove.
13	*Allocasuarina littoralis*	2.0	2.0	Remove.
14	*Allocasuarina littoralis*	2.0	1.8	Remove.
15	*Eucalyptus haemastoma*	2.6	1.5	Remove.
16	*Allocasuarina littoralis*	2.0	2.4	Remove.
17	*Eucalyptus microcorys*	2.0	1.5	Remove.
18	*Eucalyptus microcorys*	3.0	2.1	Retain and protect. Tree protection fencing is to create a combined exclusion zone for tree 18, 19 and 20. Fencing is to run along the TPZ perimeter of the trees where practical and is to be set back from the proposed works by 1m. Fencing within site only. TPZ signage is required on the fencing, mulch and temporary irrigation is required within the fenced area.
19	*Eucalyptus microcorys*	2.0	1.8	Retain and protect. See tree protection recommendations from tree 18.
20	*Eucalyptus saligna*	4.7	1.5	Retain and protect. See tree protection recommendations from tree 18.
21	*Allocasuarina littoralis*	2.0	1.7	Remove.
22	*Allocasuarina littoralis*	2.9	1.5	Remove.
23	*Allocasuarina littoralis*	2.0	2.0	Remove.
24	*Melaleuca spp*	2.6	1.5	Remove.
25	*Allocasuarina littoralis*	2.0	1.5	Remove.
26	*Eucalyptus microcorys*	4.3	2.1	Remove.
27	*Allocasuarina littoralis*	2.4	1.5	Remove.

28	*Allocasuarina littoralis*	2.0	2.4	Remove.
29	*Eucalyptus robusta*	2.8	1.7	Remove.
30	*Angophora costata*	10.2	2.0	Tree protection fencing will be required to create a combined exclusion zone for tree 30, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42 and 43. The fencing is to run from the South boundary to the North boundary and is to be set back from the proposed dwelling by 2m. Fencing within site only. TPZ signage will be required on the fencing. Mulch and temporary irrigation will be required adjacent to the base of tree 30.
31	*Allocasuarina littoralis*	2.4	1.5	Remove.
32	*Eucalyptus robusta*	4.1	1.8	Retain and protect. See tree protection recommendations for tree 30.
33	*Eucalyptus robusta*	2.3	1.5	Retain and protect. See tree protection recommendations for tree 30.
34	*Eucalyptus robusta*	3.6	2.4	Retain and protect. See tree protection recommendations for tree 30.
35	*Eucalyptus robusta*	3.2	1.9	Retain and protect. See tree protection recommendations for tree 30.
36	*Allocasuarina littoralis*	2.2	1.7	Retain and protect. See tree protection recommendations for tree 30.
37	*Allocasuarina littoralis*	2.7	1.9	Retain and protect. See tree protection recommendations for tree 30.
38	*Allocasuarina littoralis*	2.2	3.4	Retain and protect. See tree protection recommendations for tree 30.
39	*Allocasuarina littoralis*	2.9	1.9	Retain and protect. See tree protection recommendations for tree 30.
40	*Glochidion ferdinandi*	3.4	2.3	Retain and protect. See tree protection recommendations for tree 30.
41	*Allocasuarina littoralis*	2.8	1.8	Retain and protect. See tree protection recommendations for tree 30.
42	*Allocasuarina littoralis*	2.0	2.1	Retain and protect. See tree protection recommendations for tree 30.
43	*Glochidion ferdinandi*	3.8	2.1	Retain and protect. See tree protection recommendations for tree 30.
44	*Cotoneaster glaucophyllus*	3.0	1.8	Retain and protect. Tree protection fencing is to run along the TPZ perimeter within the site only. TPZ signage is required on the fencing.
45	*Eucalyptus microcorys*	3.5	2.3	Retain and protect. Tree protection fencing is to create a combined exclusion zone for tree 45 and 46. Fencing is to run along the TPZ perimeter of the trees where practical and is to be set back from the proposed works by 1m. Fencing within site only. TPZ signage is required on the fencing, mulch and temporary irrigation is required within the fenced area.
46	*Glochidion ferdinandi*	3.0	1.8	Retain and protect. See tree protection recommendations for tree 45.
47	*Eucalyptus microcorys*	4.8	1.9	Remove.
48	*Corymbia gummifera*	3.7	2.2	Remove.

49	*Banksia ericifolia*	2.0	2.3	Remove.
50	*Cinnamomum camphora*	3.4	1.5	Retain and protect. Tree protection fencing is to run along the TPZ perimeter within the site only. TPZ signage is required on the fencing.

10.6 **Tree protection Specifications:** It is the responsibility of the principal contractor to install tree protection prior to works commencing at the site (prior to demolition works) and to ensure that the tree protection remains in adequate condition for the duration of the development. The tree protection must not be moved without prior agreement of the project Arborist. The project Arborist must inspect that the tree protection has been installed in accordance with this document and AS4970-2009 prior to works commencing.

10.7 **Protective fencing:** Where it is not feasible to install fencing at the specified location due to factors such restricting access to areas of the site or for constructing new structures, an alternative location and protection specification must be agreed with the project Arborist. Where the installation of fencing in unfeasible due to restrictions on space, trunk and branch protection will be required (see below). The protective fencing must be constructed of 1.8 metre 'cyclone chainmesh fence'. The fencing must only be removed for the landscaping phase and must be authorised by the project Arborist. Any modifications to the fencing locations must be approved by the project Arborist.

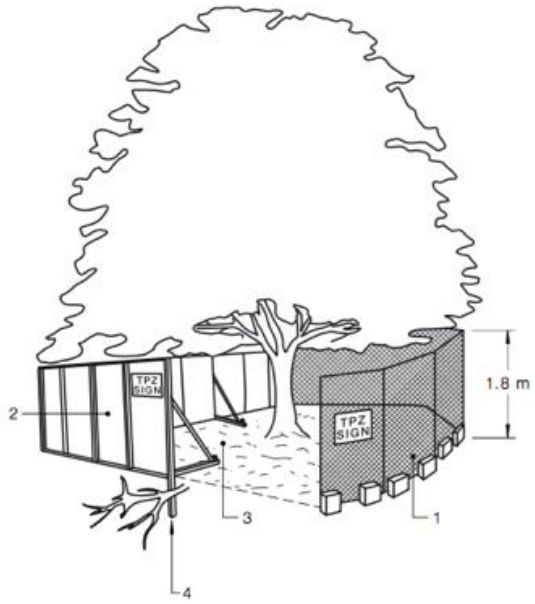
10.8 **TPZ signage:** Tree protection signage is to be attached to the protective fencing, displayed in a prominent position and the sign repeated at 10 metres intervals or closer where the fence changes direction. Each sign shall contain in a clearly legible form, the following information:

- Tree protection zone/No access.
- This fence has been installed to prevent damage to the tree/s and their growing environment both above and below ground. Do not move fencing or enter TPZ without the agreement of the project Arborist.
- The name, address, and telephone number of the developer/builder and project Arborist

10.9 **Trunk and Branch Protection:** The trunk must be protected by wrapped hessian or similar material to limit damage. Timber planks (50mm x 100mm or similar) should then be placed around tree trunk. The timber planks should be spaced at 100mm intervals, and must be fixed against the trunk with tie wire, or strapping and connections finished or covered to protect pedestrians from injury. The hessian and timber planks must not be fixed to the tree in any instance. The trunk and branch protection shall be installed prior to any work commencing on site and shall be maintained in good condition for the entire development period.

10.10 **Mulch:** Any areas of the TPZ located inside the subject site (only trees to be retained directly adjacent to site works must be mulched to a depth of 75mm with good quality composted wood chip/leaf mulch.

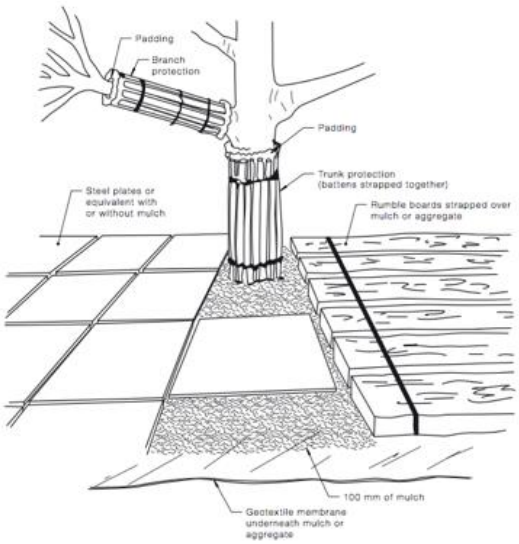
10.11 **Ground Protection:** Ground protection is required to protect the underlying soil structure and root system in areas where it is not practical to restrict access to whole TPZ, while allowing space for construction. Ground protection must consist of good quality composted wood chip/leaf mulch to a depth of between 150-300mm, laid on top of geo textile fabric. If vehicles are to be using the area, additional protection will be required such as rumble boards or track mats to spread the weight of the vehicle and avoid load points. Ground protection is to be specified by the project Arborist as required.



LEGEND:
1 Chain wire mesh panels with shade cloth (if required) attached, held in place with concrete feet.
2 Alternative plywood or wooden paling fence panels. This fencing material also prevents building materials or soil entering the TPZ.
3 Mulch installation across surface of TPZ (at the discretion of the project arborist). No excavation, construction activity, grade changes, surface treatment or storage of materials of any kind is permitted within the TPZ.
4 Bracing is permissible within the TPZ. Installation of supports should avoid damaging roots.

An image from AS4970-2009,[9] with example tree protection.

[9] Council of Standards Australia, *AS4970 Protection of trees on development sites* (2009), page 16.

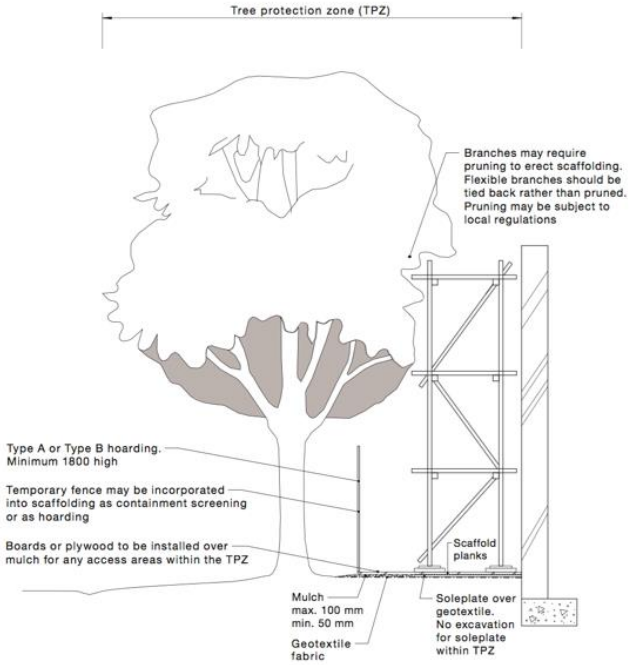


NOTES:

1 For trunk and branch protection use boards and padding that will prevent damage to bark. Boards are to be strapped to trees, not nailed or screwed.

2 Rumble boards should be of a suitable thickness to prevent soil compaction and root damage.

An image from AS4970-2009,[10] with example tree protection.



NOTE: Excavation required for the insertion of support posts for tree protection fencing should not involve the severance of any roots greater than 20 mm in diameter, without the prior approval of the project arborist.

An image from AS4970-2009,[11] with example tree protection involving scaffold.

[10] Council of Standards Australia, *AS4970 Protection of trees on development sites* (2009), page 17.

[11] Council of Standards Australia, *AS4970 Protection of trees on development sites* (2009), page 19.

10.12 **Root investigations:** Where major TPZ encroachments require demonstrating the viability of trees the following method for root investigations is to be used. Non-destructive excavations are to be carried out along the outer edge of proposed or existing structures within the TPZ (excavation methods include the use of pneumatic and hydraulic tools, high-pressure air or a combination of high-pressure water and a vacuum device). Excavations generally consist of a trench to a depth dictated by the location of significant roots, bedrock, unfavourable conditions for root growth, or the required depth for footings up to 1 metre. The investigation is to be carried out by AQF5 consulting Arborist who is to record all roots greater than 30 millimetres in diameter and produce a report discussing the significance of the findings. No roots 30 millimetres in diameter are to be frayed or damaged during excavation and the trench is to be backfilled as soon as possible to reduce the risk of roots drying out. In the event roots must be left exposed, they are to be wrapped in hessian sack and regularly irrigated for the duration of exposure.

10.13 **Restricted activities inside TPZ:** The following activities must be avoided inside the TPZ of all trees to be retained unless approved by the project Arborist. If at any time these activities cannot be avoided an alternative must be agreed in writing with the project Arborist to minimise the impact to the tree.

A) Machine excavation.
B) Ripping or cultivation of soil.
C) Storage of spoil, soil or any such materials
D) Preparation of chemicals, including preparation of cement products.
E) Refueling.
F) Dumping of waste.
G) Wash down and cleaning of equipment.
H) Placement of fill.
I) Lighting of fires.
J) Soil level changes.
K) Any physical damage to the crown, trunk, or root system.
L) Parking of vehicles.

10.14 **Demolition:** The demolition of all existing structures inside or directly adjacent to the TPZ of trees to be retained must be undertaken in consultation with the project Arborist. Any machinery is to work from inside the footprint of the existing structures or outside the TPZ, reaching in to minimise soil disturbance and compaction. If it is not feasible to locate demolition machinery outside the TPZ of trees to be retained, ground protection will be required. The demolition should be undertaken inwards into the footprint of the existing structures, sometimes referred to as the ‘top down, pull back’ method.

10.15 **Excavations and root pruning:** The project Arborist must supervise and certify that all excavations and root pruning are in accordance with AS4373-2007 and AS4970-2009. For continuous strip footings, first manual excavation is required along the edge of the structures closest to the subject trees. Manual excavation should be a depth of 1 metre (or to unfavourable root growth conditions such as bed rock or heavy clay, if agreed by project Arborist). Next roots must be pruned back in accordance with AS4373-2007. After all root pruning is completed, machine excavation is permitted within the footprint of the structure. For tree sensitive footings, such as pier and beam, all excavations inside the TPZ must be manual. Manual excavation may include the use of pneumatic and hydraulic tools, high-pressure air or a combination of high-pressure water and a vacuum device. No pruning of roots greater 30mm in diameter is to be carried out without approval of the project arborist. All pruning of roots greater than 10mm in diameter must be carried out by a qualified Arborist/Horticulturalist with a minimum AQF level 3. Root pruning is to be a clean cut with a sharp tool in accordance with AS4373 Pruning of amenity trees (2007).[12] The tree root is to be pruned back to a branch root if possible. Make a clean cut and leave as small a wound as possible.

10.16 **Landscaping:** All landscaping works within the TPZ of trees to be retained are to be undertaken in consultation with a consulting Arborist to minimize the impact to trees. General guidance is provided below to minimise the impact of new landscaping to trees to be retained.

10.17 **Level changes should be minimised**. The existing ground levels within the landscape areas should not be lowered by more than 50mm or increased by more 100mm without assessment by a consulting Arborist.

10.18 **New retaining walls** should be avoided. Where new retaining walls are proposed inside the TPZ of trees to be retained, they should be constructed from tree sensitive material, such as timber sleepers, that require minimal footings/excavations. If brick retaining walls are proposed inside the TPZ, considerer pier and beam type footings to bridge significant roots that are critical to the trees condition. Retaining walls must be located outside the SRZ and sleepers/beams located above existing soil grades.

10.19 **New footpaths** and hard surfaces should be minimised, as they can limit the availability of water, nutrients and air to the trees root system. Where they are proposed, they should be constructed on or above existing soil grades to minimise root disturbance and consider using a permeable surface. Footpath should be located outside the SRZ.

10.20 **The location of new plantings** inside the TPZ of trees to be retained should be flexible to avoid unnecessary damage to tree roots greater than 30mm in diameter.

[12] Council Of Standards Australia, *AS 4373 Pruning of amenity trees* (2007) page 18

10.21 **Underground Services:** Where possible underground services should be located outside the TPZ of trees to be retained. All underground services located inside the TPZ of any tree to be retained must be installed via tree sensitive techniques. This should include either directional drilling methods or manual excavations to minimise the impact to trees identified for retention. No roots greater than 30mm in diameter should be severed during the installation of service pipes unless approved in writing by the project Arborist

10.22 **Sediment and Contamination:** All contamination run off from the development such as but not limited to concrete, sediment and toxic wastes must be prevented from entering the TPZ at all times.

10.23 **Tree Wounding/Injury:** Any wounding or injury that occurs to a tree during the construction process will require the project Arborist to be contacted for an assessment of the injury and provide mitigation/remediation advice. It is generally accepted that trees may take many years to decline and eventually die from root damage. All repair work is to be carried out by the project Arborist, at the contractor's expense.

10.24 **Completion of Development Works:** After all construction works are complete the project Arborist should assess that the subject trees have been retained in the same condition and vigour. If changes to condition are identified the project Arborist should provide recommendations for remediation.

11. HOLD POINTS

11.1 **Hold Points:** Below is a sequence of hold points requiring project Arborist certification throughout the development process**.** The hold points must be checked and certified. All certification must be provided in written format upon completion of the development. The final certification must include details of any instructions for remediation undertaken during the development.

11.2 **Hold points applicable to the development have been shaded in grey.**

Hold Point	Stage	Responsibility	Certification	Complete Y/N and date
Project Arborist to hold pre construction site meeting with principle contractor to discuss methods and importance of tree protection measures and resolve any issues in relation to feasibility of tree protection requirements that may arise.	Prior to work commencing.	Principle contractor	Project Arborist	
Project Arborist To supervise all pruning works to retained trees.	Prior to works commencing	Principal Contractor	Project Arborist	
Project Arborist to assess and certify that tree protection has been installed in accordance with section 11 and AS4970-2009 prior to works commencing at site.	Prior to development work commencing.	Principle contractor	Project Arborist	
In accordance with AS4970-2009 the project arborist should carryout regular site inspections to ensure works are carried out in accordance with the recommendations. I recommend site inspections on a bi-monthly frequency.	Ongoing throughout the development	Principle contractor	Project Arborist	
Project Arborist to oversee all excavations and demolition inside the TPZ of any tree to be retained.	Construction	Principle contractor	Project Arborist	
Project Arborist to certify that all pruning of roots greater than 30mm in diameter has been carried out in accordance with AS4373-2007. All root pruning must be carried out by a qualified Arborist/Horticulturalist with a minimum AQF level 3.	Construction	Principle contractor	Project Arborist	
Project Arborist to certify that all underground services including storm water inside TPZ of any tree to be retained have been installed in accordance with AS4970-2009.	Construction	Principle contractor	Project Arborist	
All landscaping works/boundary walls within the TPZ of trees to be retained are to be undertaken in consultation with the project Arborist to minimize the impact to trees.	Landscape	Principle contractor	Project Arborist	

After all construction works are complete the project Arborist should assess that the subject trees have been retained in the same condition and vigor and authorize the removal of protective fencing. If changes to condition are identified the project Arborist should provide recommendations for remediation.	Upon completion of construction	Principle contractor	Project Arborist	
Any wounding or injury that occurs to a tree during the demolition/construction process will require the project arborist to be contacted for an assessment of the injury and provide mitigation/remediation advice. All remediation work is to be carried out by the project arborist, at the contractor's expense.	Ongoing throughout the development	Principle contractor	Project Arborist	

12. BIBLIOGRAPHY/REFERENCES

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- Warringah Local Environmental Plan (LEP) 2011
- Warringah Development Control Plan (DCP) 2011
- State Environmental Planning Policy (Vegetation in Non-Rural Areas 2017)

13. LIST OF APPENDICES

The following are included in the appendices:

Appendix 1A – Existing Site Plan
Appendix 1B – Proposed Site Plan
Appendix 2 – Tree inspection schedule
Appendix 3 – Health
Appendix 4 – Tree Protection Zone
Appendix 5 – Structural Root Zone
Appendix 6 – Amenity Value
Appendix 7 – Age Class
Appendix 8 – Structural Condition
Appendix 9 – SULE Categories
Appendix 10 – Retention Values
Appendix 11 – Trees AZ

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RFS Tech. Cert. II (UK)
QTRA Registered User
ISA Tree Risk Assessment Qualification

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PROPOSED LOT 2

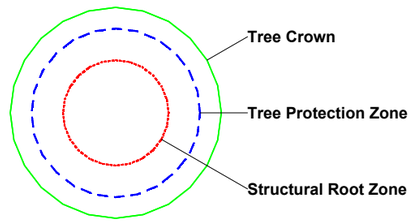
PROPOSED LOT 1

KENS ROAD

BITUMEN DRIVEWAY

MGA N

Tree Legend



0 15m

Hugh the Arborist Pty Ltd

hugh@hughthearborist.com.au - 0426 836 701

Site Location: Lot 1 Kens Rd, Frenchs Forest, NSW

SCALE :	DATE :
1 : 200 @ A3	8/12/2020

Plan Title: Appendix 1A - Existing Site Plan
Rev: A

Prepared by: Hugh Millington

Hugh the Arborist Pty Ltd

hugh@hughthearborist.com.au - 0426 836 701

Site Location: Lot 1 Kens Rd, Frenchs Forest, NSW

SCALE :	DATE :
1 : 200 @ A3	8/12/2020

Plan Title: Appendix 1B - Proposed Site Plan
Rev: A

Prepared by: Hugh Millington

Tree Legend

- Tree Protection Fence
- Tree Crown
- Tree Protection Zone
- Structural Root Zone

0 — 15m

KENS ROAD

Vehicular Entry

Pedestrian Entry

RL 84.90

RL 85.10

RL 85.19

RL 85.725

RL 85.775

TREES TO BE REMOVED

TREE TO BE REMOVED

BINS AREA

Ramp Up 1:20

PERGOLA

UP

METAL ROOF

BALCONY

TREE TO BE REMOVED

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No. 72
Kens Road
two storey dwelling

Appendix 2 - Tree Inspection Schedule

Tree ID	Common Name	Botanical Name	Age Class	Height (m)	Canopy Spread Radius (m)	Stem 1	Stem 2	Stem 3	Stem 4	Stem 5	DBH (mm)	DAB (mm)	Health	Structure	Amenity Value	SULE	Retention Value	TPZ Radius (m)	SRZ Radius (m)	Notes
1	Sweetgum	*Liquidambar styraciflua*	Mature	10	2	260					260	340	Good	Good	Medium	1. Long	Z3	3.1	2.1	Located within nature strip. Exempt species.
2	Sweetgum	*Liquidambar styraciflua*	Semi-mature	10	2	220					220	260	Good	Fair	Medium	2. Medium	Z3	2.6	1.9	Located within nature strip. Branch failure mid crown. Curve in trunk. Exempt species.
3	Sweetgum	*Liquidambar styraciflua*	Mature	10	4	380					380	450	Good	Good	Medium	1. Long	Z3	4.6	2.4	Located within nature strip. Exempt species.
4	Tallowood	*Eucalyptus microcorys*	Mature	15	4	400					400	490	Good	Fair	High	2. Medium	A1	4.8	2.5	Co-dominant stems at 10m.
5	Tallowood	*Eucalyptus microcorys*	Semi-mature	12	2	240					240	310	Good	Fair	Medium	2. Medium	A1	2.9	2.0	Asymmetric crown shape due to adjacent tree.
6	Tallowood	*Eucalyptus microcorys*	Semi-mature	10	2	180					180	240	Good	Fair	Medium	3. Short	Z10	2.2	1.8	Asymmetric crown shape and abrupt curve in trunk at 7m.
7	Black She Oak	*Allocasuarina littoralis*	Semi-mature	8	2	100					100	120	Good	Good	Medium	1. Long	A1	2.0	1.5	The tree has not been identified on the received plans.
8	Cedar Wattle	*Acacia elata*	Mature	14	4	410					410	470	Fair	Fair	Medium	3. Short	Z4	4.9	2.4	The tree has not been identified on the received plans. Low foliage density for species with large diameter deadwood. Early stages of decline.
9	Blueberry Ash	*Elaeocarpus reticulatus*	Semi-mature	7	2	120					120	160	Fair	Fair	Medium	3. Short	Z4	2.0	1.5	The tree has not been identified on the received plans. Low foliage density for species. Early stages of decline.
10	Old Man Banksia	*Banksia serrata*	Mature	8	2	240					240	330	Good	Fair	High	3. Short	Z9	2.9	2.1	Significant earth works have been completed adjacent to the base of the tree. Unknown if significant roots have been damaged.
12	Black She Oak	*Allocasuarina littoralis*	Semi-mature	9	1	130					130	160	Good	Good	Medium	1. Long	A1	2.0	1.5	The tree has not been identified on the received plans.
13	Black She Oak	*Allocasuarina littoralis*	Semi-mature	9	2	100	120				156	200	Good	Fair	Medium	3. Short	Z9	2.0	1.7	The tree has not been identified on the received plans. Co-dominant stems at 1.2m with significant bark inclusion.
14	Black She Oak	*Allocasuarina littoralis*	Semi-mature	8	1	100					100	140	Good	Good	Medium	1. Long	A1	2.0	1.5	The tree has not been identified on the received plans.
15	Broad Leaved Scribbly Gum	*Eucalyptus haemastoma*	Semi-mature	8	2	220					220	290	Fair	Fair	Medium	3. Short	Z4	2.6	2.0	Low foliage density for species. Early stages of decline.
16	Black She Oak	*Allocasuarina littoralis*	Young	7	1	90					90	150	Good	Good	Low	5. Small/Young	Z1	2.0	1.5	The tree has not been identified on the received plans.
17	Tallowood	*Eucalyptus microcorys*	Young	7	1	100					100	120	Good	Good	Low	5. Small/Young	Z1	2.0	1.5	The tree has not been identified on the received plans.
18	Tallowood	*Eucalyptus microcorys*	Semi-mature	11	3	250					250	320	Good	Good	Medium	1. Long	A1	3.0	2.1	Asymmetric crown shape.
19	Tallowood	*Eucalyptus microcorys*	Young	8	2	120					120	150	Good	Good	Low	5. Small/Young	Z1	2.0	1.5	The tree has not been identified on the received plans.
20	Sydney Blue Gum	*Eucalyptus saligna*	Mature	16	5	390					390	470	Good	Fair	High	2. Medium	A2	4.7	2.4	Co-dominant stems at 5m with wide 'U' shaped union. Hangers suspended in crown.
21	Black She Oak	*Allocasuarina littoralis*	Semi-mature	8	2	150					150	200	Good	Good	Medium	1. Long	A1	2.0	1.7	None.
22	Black She Oak	*Allocasuarina littoralis*	Mature	8	2	240					240	290	Good	Good	High	1. Long	A1	2.9	2.0	Co-dominant stems with tight union.
23	Black She Oak	*Allocasuarina littoralis*	Semi-mature	9	1	120					120	150	Good	Good	Medium	1. Long	A1	2.0	1.5	The tree has not been identified on the received plans.
24	Teatree	*Melaleuca spp*	Dead	5	2	220					220	250	Dead	Poor	Low	4. Remove	ZZ4	2.6	1.8	The tree has not been identified on the received plans. Dead tree.
25	Black She Oak	*Allocasuarina littoralis*	Semi-mature	8	1	110					110	140	Good	Good	Medium	1. Long	A1	2.0	1.5	The tree has not been identified on the received plans.
26	Tallowood	*Eucalyptus microcorys*	Mature	16	4	360					360	450	Good	Fair	High	2. Medium	A2	4.3	2.4	Large vertical split in trunk with relatively good response growth adjacent to wound. Damage to large structural root from earthworks.
27	Black She Oak	*Allocasuarina littoralis*	Mature	8	3	160	120				200	260	Poor	Fair	Medium	4. Remove	ZZ4	2.4	1.9	The tree has not been identified on the received plans. Low foliage density for species with significant apical dieback. Advanced stages of decline.
28	Black She Oak	*Allocasuarina littoralis*	Semi-mature	8	2	150					150	200	Fair	Fair	Medium	3. Short	Z4	2.0	1.7	The tree has not been identified on the received plans. Low foliage density for species with apical dieback. Early stages of decline. Earthworks adjacent to base of tree.
29	Swamp Mahogany	*Eucalyptus robusta*	Semi-mature	10	4	230					230	280	Good	Good	Medium	1. Long	A1	2.8	1.9	None.
30	Smooth Barked Apple	*Angophora costata*	Mature	14	9	850					850	1050	Good	Good	Very High	1. Long	AA	10.2	3.4	Tagged with number 27. Excavations near base. No damaged roots identified. DBH estimated through site fence.

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Tree ID	Common Name	Botanical Name	Age Class	Height (m)	Canopy Spread Radius (m)	Stem 1	Stem 2	Stem 3	Stem 4	Stem 5	DBH (mm)	DAB (mm)	Health	Structure	Amenity Value	SULE	Retention Value	TPZ Radius (m)	SRZ Radius (m)	Notes
31	Black She Oak	*Allocasuarina littoralis*	Dead	7	2	200					200	280	Dead	Poor	Medium	4. Remove	ZZ4	2.4	1.9	The tree has not been identified on the received plans. Dead tree. Multiple fungal brackets identified (Phellinus spp).
32	Swamp Mahogany	*Eucalyptus robusta*	Mature	17	4	340					340	440	Good	Good	High	1. Long	A1	4.1	2.3	The tree has not been identified on the received plans.
33	Swamp Mahogany	*Eucalyptus robusta*	Semi-mature	11	2	190					190	240	Good	Good	Medium	1. Long	A1	2.3	1.8	The tree has not been identified on the received plans.
34	Swamp Mahogany	*Eucalyptus robusta*	Mature	15	3	300					300	350	Good	Fair	High	2. Medium	A1	3.6	2.1	The tree has not been identified on the received plans. Asymmetric crown shape.
35	Swamp Mahogany	*Eucalyptus robusta*	Mature	14	3	270					270	340	Good	Good	High	1. Long	A1	3.2	2.1	The tree has not been identified on the received plans.
36	Black She Oak	*Allocasuarina littoralis*	Semi-mature	10	2	180					180	220	Good	Good	Medium	1. Long	A1	2.2	1.8	The tree has not been identified on the received plans.
37	Black She Oak	*Allocasuarina littoralis*	Mature	10	3	130	180				222	400	Good	Good	Medium	1. Long	A1	2.7	2.3	The tree has not been identified on the received plans. Co-dominant stems.
38	Black She Oak	*Allocasuarina littoralis*	Semi-mature	9	2	180					180	230	Good	Good	Medium	1. Long	A1	2.2	1.8	The tree has not been identified on the received plans.
39	Black She Oak	*Allocasuarina littoralis*	Mature	10	4	240					240	280	Good	Fair	High	2. Medium	A1	2.9	1.9	The tree has not been identified on the received plans. Asymmetric crown shape.
40	Cheese Tree	*Glochidion ferdinandi*	Mature	10	3	280					280	360	Good	Good	High	1. Long	A1	3.4	2.2	The tree has not been identified on the received plans.
41	Black She Oak	*Allocasuarina littoralis*	Mature	9	3	120	200				233	400	Good	Good	Medium	1. Long	A1	2.8	2.3	Co-dominant stems at base.
42	Black She Oak	*Allocasuarina littoralis*	Semi-mature	9	1	120					120	160	Good	Good	Medium	1. Long	A1	2.0	1.5	The tree has not been identified on the received plans.
43	Cheese Tree	*Glochidion ferdinandi*	Mature	9	3	320					320	360	Good	Good	High	1. Long	A1	3.8	2.2	None.
44	Cotoneaster	*Cotoneaster glaucophyllus*	Semi-mature	5	3	250					250	250	Good	Fair	Low	2. Medium	Z3	3.0	1.8	The tree has not been identified on the received plans. Located in adjoining property. Exempt species.
45	Tallowood	*Eucalyptus microcorys*	Mature	13	4	290					290	340	Good	Fair	High	2. Medium	A1	3.5	2.1	Asymmetric crown shape.
46	Cheese Tree	*Glochidion ferdinandi*	Semi-mature	8	3	250					250	300	Good	Good	Medium	1. Long	A1	3.0	2.0	None.
47	Tallowood	*Eucalyptus microcorys*	Mature	18	4	400					400	480	Good	Good	High	1. Long	A1	4.8	2.4	None.
48	Red Bloodwood	*Corymbia gummifera*	Mature	14	3	310					310	360	Fair	Fair	High	3. Short	Z4	3.7	2.2	Low foliage density for species with apical dieback. Early stages of decline.
49	Heath-leaved Banksia	*Banksia ericifolia*	Mature	6	2	150					150	180	Good	Good	Medium	1. Long	A1	2.0	1.6	The tree has not been identified on the received plans.
50	Camphor Laurel	*Cinnamomum camphora*	Semi-mature	7	3	180	180	120			281	420	Fair	Fair	Low	3. Short	Z3	3.4	2.3	The tree has not been identified on the received plans. Low foliage density for species. Exempt species.

Explanatory Notes

Tree Species - Common name followed by botanical name. Where species is unknown it is indicated with an *'spp'.*

Age Class - Over mature (OM), Mature (M), Early mature (EM), Semi mature (SM), Young (Y).

Diameter at Breast Height (DBH) - Measured with a DBH tape or estimated at approximately 1.4m above ground level.

Diameter Above root Buttresses (DAB): Measured with a DBH tape or estimated above root buttresses (DAB) for calculating the SRZ.

Height - Height from ground level to top of crown. All heights are estimated unless otherwise indicated.

Spread - Radius of crown at widest section. All tree spreads are estimated unless otherwise indicated.

Tree Protection Zone (TPZ) - DBH x 12. Measured in radius from the centre of the trunk. Rounded to nearest 0.1m. For monocots, the TPZ is set at 1 metre outside the crown projection.

Structural Root Zone (SRZ) - $(DAB \times 50)^{0.42} \times 0.64$. Measured in radius from the centre of the trunk. Rounded up to nearest 0.1m.

Health - Good/Fair/Poor/Dead

Structure - Good/Fair/Poor

Safe Useful Life Expectancy (SULE) - 1. Long (40+years), 2. Medium (15 - 40 years), 3. Short (5 - 15 years), 4. Remove (under 5 years), 5. Small/young.

Appendix 3 – Condition/Overall health

Category	Example condition	Summary
Good	• Crown has good foliage density for species. • Tree shows no or minimal signs of pathogens that are unlikely to have an effect on the health of the tree. • Tree is displaying good vigour and reactive growth development. • Branch unions appear to be strong with no sign of defects. • There are no significant cavities. • The tree is unlikely to fail in usual conditions. • The tree has a balanced crown shape and form.	• The tree is in above average health and condition and no remedial works are required. • The tree is considered structurally good with well developed form.
Fair	• The tree may be starting to dieback or have over 25% deadwood. • Tree may have slightly reduced crown density or thinning. • There may be some discolouration of foliage. • Average reactive growth development. • There may be early signs of pathogens which may further deteriorate the health of the tree. • There may be epicormic growth indicating increased levels of stress within the tree. • The tree may have minor structural defects within the structure of the crown that could potentially develop into more significant defects. • The tree may a cavity that is currently unlikely to fail but may deteriorate in the future. • The tree is an unbalanced shape or leans significantly. • The tree may have minor damage to its roots. • The root plate may have moved in the past but the tree has now compensated for this. • Branches may be rubbing or crossing.	• The tree is in below average health and condition and may require remedial works to improve the trees health. • The identified defects are unlikely cause major failure. • Some branch failure may occur in usual conditions. • Remedial works can be undertaken to alleviate potential defects.
Poor	• The may be in decline, have extensive dieback or have over 30% deadwood. • The canopy may be sparse or the leaves may be unusually small for species. • Pathogens or pests are having a significant detrimental effect on the tree health. • The tree has significant structural defects. • Branch unions may be poor or weak. • The tree may have a cavity or cavities with excessive levels of decay that could cause catastrophic failure. • The tree may have root damage or is displaying signs of recent movement.	• The tree is displaying low levels of health and removal or remedial works may be required. • The identified defects are likely to cause either partial or whole failure of the tree.

	• The tree crown may have poor weight distribution which could cause failure.	
Dangerous	• The tree is dead or almost dead. • The tree is an imminent danger to people or property.	• The tree should generally be removed.

Appendix 4 - Tree Protection Zone (TPZ)

The tree protection zone (TPZ) is the principle means of protecting trees on development sites. The TPZ is a combination of the root area and crown area requiring protection. It is an area isolated from construction disturbance, so that the tree remains viable. The TPZ incorporates the structural root zone (SRZ).

Determining the TPZ

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

TPZ = DBH × 12

Where

DBH = trunk diameter measured at 1.4 m above ground

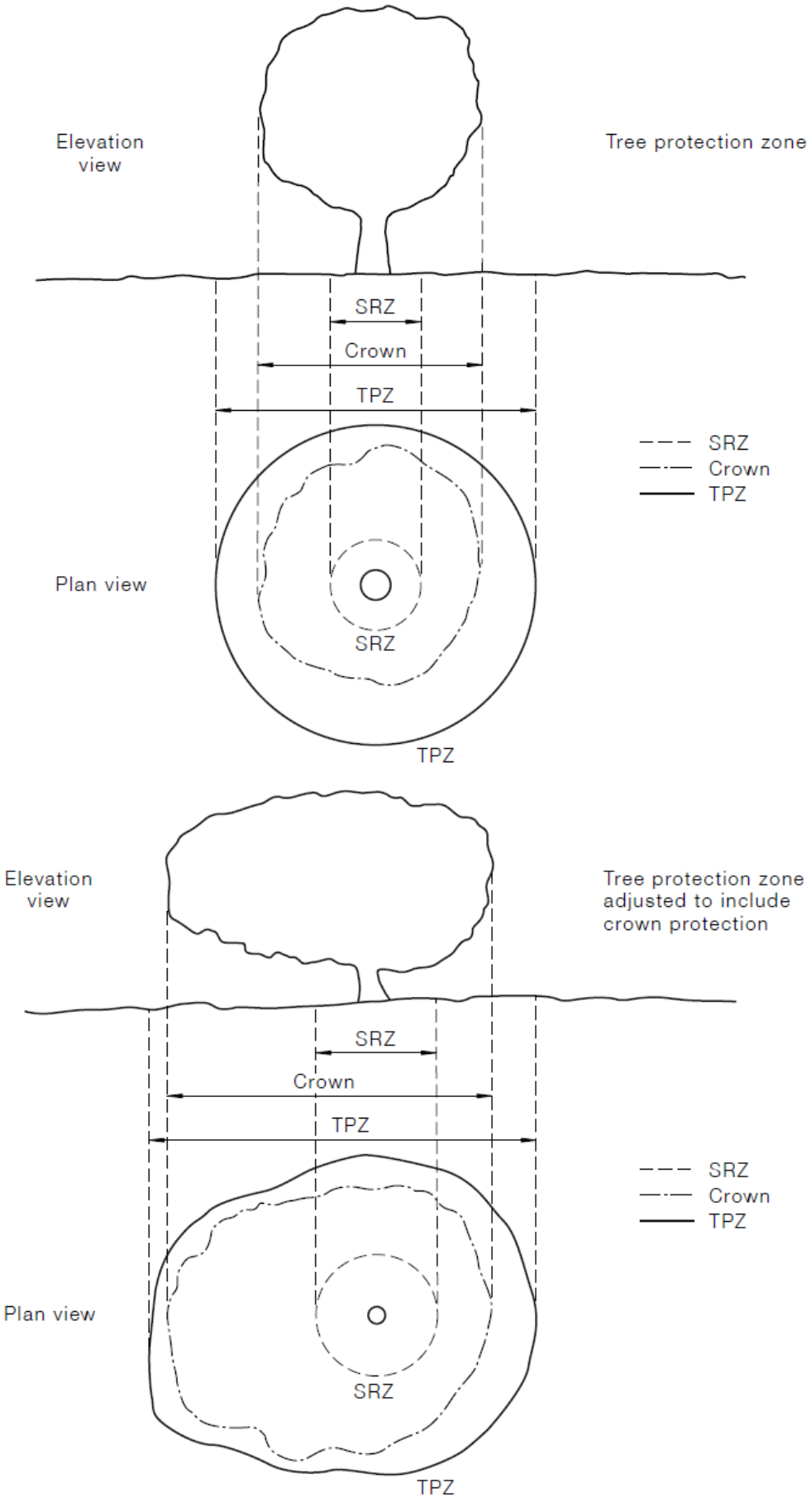
Radius is measured from the centre of the stem at ground level.
A TPZ should not be less than 2 m nor greater than 15 m (except where crown protection is required).

Minor encroachment into the TPZ

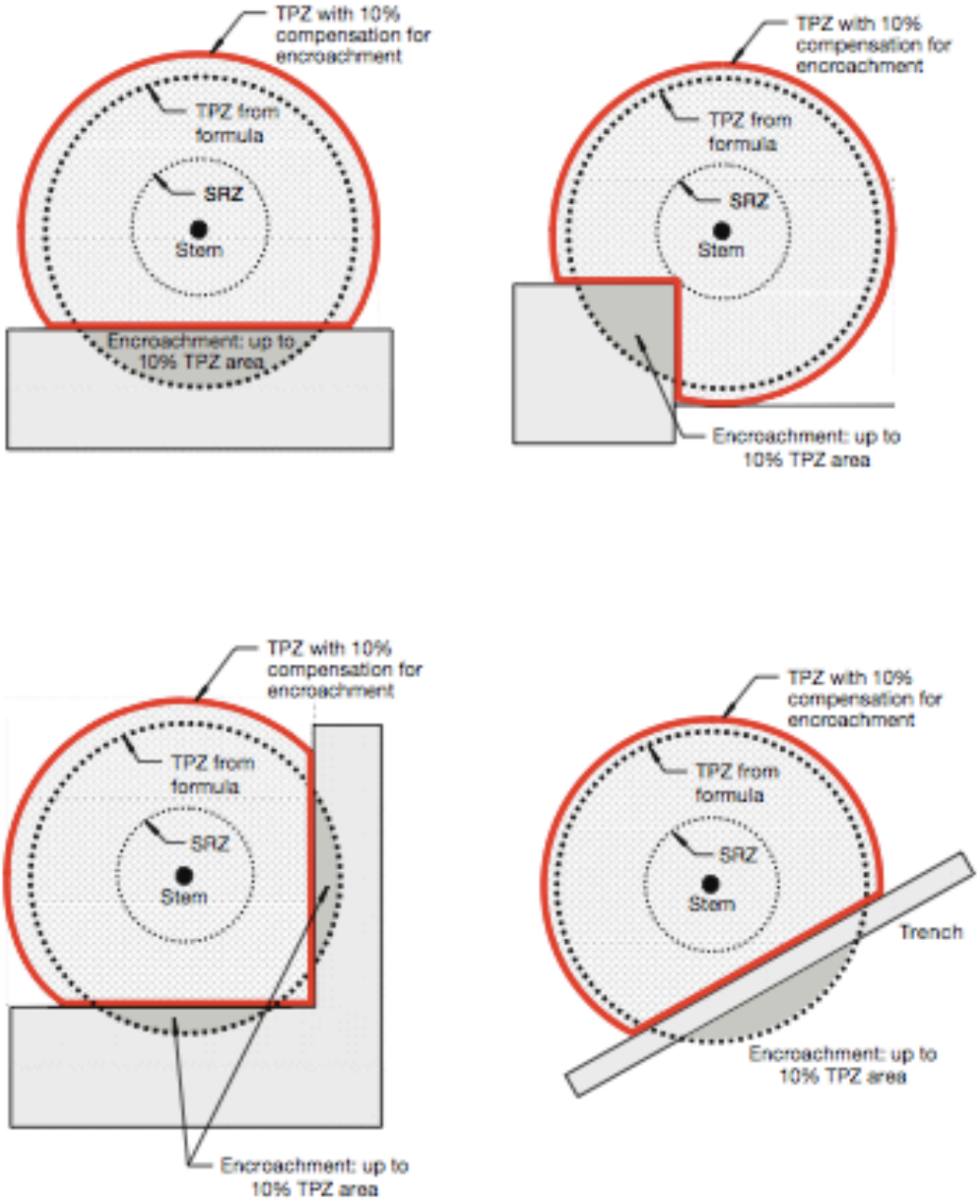
Where encroachment into the TPZ is unavoidable it is generally accepted that encroachment of under 10% of the total TPZ is possible without carrying out detailed root investigations. This minor loss of root area is normally compensated by the roots developing elsewhere.

Major encroachment into the TPZ

If an encroachment of more than 10% is proposed into the TPZ it would be necessary to demonstrate that the tree would remain viable. None destructive root investigations may be required to determine any potential impact the encroachment may have on the tree.


Elevation view
Tree protection zone
SRZ
Crown
TPZ
SRZ
Crown
TPZ
Plan view
SRZ
TPZ
Elevation view
Tree protection zone adjusted to include crown protection
SRZ
Crown
TPZ
SRZ
Crown
TPZ
Plan view
SRZ
TPZ

Encroachment into the tree protection zone (TPZ) is sometimes unavoidable. Figure D1 provides examples of TPZ encroachment by area, to assist in reducing the impact of such incursions.



NOTE: Less than 10% TPZ area and outside SRZ. Any loss of TPZ compensated for elsewhere.

Appendix 5 - Structural root zone (SRZ)

This is the area around the base of a tree required for the trees stability in the ground. An area larger than the SRZ always need to be maintained to preserve a viable tree as it will only have a minor effect on the trees vigour and health. There are several factors that determine the SRZ which include height, crown area, soil type and soil moisture. It can also be influenced by other factors such as natural or built structures. Generally work within the SRZ should be avoided.

Determining the SRZ

An indicative SRZ radius can be determined from the diameter of the trunk measured immediately above the root buttresses. Root investigation could provide more information about the extent of the SRZ. The following formula should be used to calculate the SRZ.

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

where

D = trunk diameter in m, measured above the root buttress.

Note - The SRZ for trees with trunk diameters less than 0.15 will be 1.5m.

Appendix 6 - Amenity value

To determine the amenity value of a tree we assess a number of different factors which include but are not limited to the information below.

- The visibility of the tree to adjacent sites.
- The relationship between the tree and the site.
- Whether the tree is protected by any statuary conditions.
- The habitat value of the tree.
- Whether the tree is considered a noxious weed species.

Appendix 7 - Age class

If can be difficult to determine the age of a tree without carrying out invasive tests that may damage the tree, so we have categorised there likely age class which is defined below.

Category	Description
Young/Newly planted	• Young or recently planted tree.
Semi Mature	• Up to 20% of the usual life expectancy for the species.
Early mature/Mature	• Between 20% - 80% of the usual life expectancy for the species.
Over mature	• Over 80% of the usual life expectancy for the species.
Dead	• Tree is dead or almost dead.

Appendix 8 - Structural condition

Category	Example condition	Summary
Good	• Branch unions appear to be strong with no sign of defects. • There are no significant cavities. • The tree is unlikely to fail in usual conditions. • The tree has a balanced crown shape and form.	• The tree is considered structurally good with well developed form.
Fair	• The tree may have minor structural defects within the structure of the crown that could potentially develop into more significant defects. • The tree may a cavity that is currently unlikely to fail but may deteriorate in the future. • The tree is an unbalanced shape or leans significantly. • The tree may have minor damage to its roots. • The root plate may have moved in the past but the tree has now compensated for this. • Branches may be rubbing or crossing.	• The identified defects are unlikely cause major failure. • Some branch failure may occur in usual conditions. • Remedial works can be undertaken to alleviate potential defects.
Poor	• The tree has significant structural defects. • Branch unions may be poor or weak. • The tree may have a cavity or cavities with excessive levels of decay that could cause catastrophic failure. • The tree may have root damage or is displaying signs of recent movement. • The tree crown may have poor weight distribution which could cause failure.	• The identified defects are likely to cause either partial or whole failure of the tree.

Appendix 9 - Safe Useful Life Expectancy (SULE), (Barrel, 2001)

A trees safe useful life expectancy is determined by assessing a number of different factors including the health and vitality, estimated age in relation to expected life expectancy for the species, structural defects, and remedial works that could allow retention in the existing situation.

Category	Description
1. Long - Over 40 years	(a) Structurally sound trees located in positions that can accommodate future growth. (b) Trees that could be made suitable for retention in the long term by remedial tree care. (c) Trees of special significance for historical, commemorative or rarity reasons that would warrant extraordinary efforts to secure their long term retention.
2. Medium - 15 to 40 years	(a) Trees that may only live between 15 and 40 more years. (b) Trees that could live for more than 40 years but may be removed for safety or nuisance reasons. (c) Trees that could live for more than 40 years but may be removed to prevent interference with more suitable individuals or to provide space for new planting. (d) Trees that could be made suitable for retention in the medium term by remedial tree care.
3. Short - 5 to 15 years	(a) Trees that may only live between 5 and 15 more years. (b) Trees that could live for more than 15 years but may be removed for safety or nuisance reasons. (c) Trees that could live for more than 15 years but may be removed to prevent interference with more suitable individuals or to provide space for new planting. (d) Trees that require substantial remedial tree care and are only suitable for retention in the short term.
4. Remove - Under 5 years	(a) Dead, dying, suppressed or declining trees because of disease or inhospitable conditions. (b) Dangerous trees because of instability or recent loss of adjacent trees. (c) Dangerous trees because of structural defects including cavities, decay, included bark, wounds or poor form. (d) Damaged trees that are clearly not safe to retain. (e) Trees that could live for more than 5 years but may be removed to prevent interference with more suitable individuals or to provide space for new planting. (f) Trees that are damaging or may cause damage to existing structures within 5 years. (g) Trees that will become dangerous after removal of other trees for the reasons given in (a) to (f). (h) Trees in categories (a) to (g) that have a high wildlife habitat value and, with appropriate treatment, could be retained subject to regular review.

5. Small/Young	(a) Small trees less than 5m in height. (b) Young trees less than 15 years old but over 5m in height. (c) Formal hedges and trees intended for regular pruning to artificially control growth.

TreeAZ Categories (Version 10.04-ANZ)

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

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

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

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

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

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

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