



**SEASONED TREE
CONSULTING**

ARBORICULTURAL IMPACT ASSESSMENT REPORT

Prepared for
**Du Plessis + Du Plessis
Architects**

Site address
**2 Bardoo Avenue, North
Balgowlah**

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1. INTRODUCTION

- 1.1 This report has been commissioned by Du Plessis + Du Plessis Architects on behalf of the site owner to assess trees located on and adjoining the site that may be impacted by a proposed development.

Table 1: Plans and documents reviewed or prepared as part of this assessment:

Title	Author	Date	Reference on document
DA Drawings	Du Plessis + Du Plessis Architects	08.04.2025	Issue A

- 1.2 Tree data collected for the purpose of this assessment and report was collected on 5th November 2024 where all trees were surveyed.
- 1.3 The weather at the time of the site assessment was clear with good visibility.

2. ASSIGNMENT

- 2.1 This report has been carried out to meet the objectives listed below.
- 2.1.1 Conduct a Visual Tree Assessment from ground level of all trees identified on the survey plan provided that may be impacted by a proposed development.
- 2.1.2 In accordance with the relevant Consent Authority, a 'tree' is defined as "over 5m in height".
- 2.1.3 Determine the trees estimated useful life expectancy and award retention values to each tree.
- 2.1.4 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).
- 2.1.5 Recommend methods to mitigate development impacts where appropriate.
- 2.1.6 Provide tree protection advice in accordance with AS4970 Protection of Trees on Development Sites (2009) and a site-specific tree protection plan where reasonably practical.

3. METHODOLOGY

3.1 The following data was collected from each tree during the site assessment.

- 3.1.1 Age class
- 3.1.2 Diameter at Breast Height (DBH Trunk/Stem diameter at breast height/1.4m above ground level) – millimetres (generally estimated if access to the base of the tree is not available in the instance of neighbours trees or inaccessible vegetation)
- 3.1.3 Diameter at Base (DAB trunk diameter above the root flare near the base of the tree- (generally estimated if access to the base of the tree is not available in the instance of neighbours trees or inaccessible vegetation)
- 3.1.4 Estimated height - metres
- 3.1.5 Estimated crown spread (diameter of crown) - metres
- 3.1.6 Health
- 3.1.7 Structural condition
- 3.1.8 Amenity value
- 3.1.9 Safe Useful Life expectancy (SULE)¹
- 3.1.10 Trees AZ retention value ²
- 3.1.11 An assessment of the trees condition was made using the Visual Tree Assessment (VTA) method (Mattheck & Breloer, 1994).³
- 3.1.12 Trunk diameter was measured using a calculated diameter tape measure. Where this was not possible the measurements have been estimated. All other measurements were estimations unless otherwise stated.
- 3.1.13 All tree protection zones and structural root zones have been calculated in accordance with AS4970 Protection of trees on development sites (2009).
- 3.1.14 The TPZ of palms and other monocots, cycads and tree ferns has been calculated at one metre outside the crown projection.
- 3.1.15 Details of how the observations in this report have been assessed are listed in the appendices.

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. GLOSSARY OF BASIC TERMS

- 4.1.1 **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 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 retain 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). The TPZ of palms and other monocots, cycads and tree ferns has been calculated at one metre outside the crown projection.
- 4.1.2 **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.
- 4.1.3 **Minor encroachment:** 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.
- 4.1.4 **Major encroachment:** 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.
- 4.1.5 The TPZ and SRZ measurements should be measured in radius from the centre of the tree trunk.

5. THE SITE AND PROPOSED WORKS

5.1 The subject site is located within the Northern Beaches Council LGA. The trees on or close to the site are managed under the following policy and legislation.

5.1.1 Warringah Local Environmental Plan 2011

5.1.2 Warringah Development Control Plan 2011

5.1.3 State Environmental Planning Policy (SEPP Biodiversity and Conservation Act 2021)

Tile 1. Site location ⁴



⁴ <https://maps.six.nsw.gov.au/>

Table 3: Site Considerations

Site Considerations	Application to site Yes/No	Source/References
Heritage Conservation Area	No	https://www.planningportal.nsw.gov.au/spatialviewer/#/find-a-property/address https://www.lmbc.nsw.gov.au/Maps/index.html?viewer=BOSETMap
Heritage Item	No	
Biodiversity	No	
Ecologically Sensitive	No	
Bushfire Prone Land	No	

- 5.2 The site is a residential block totalling approx. 829sqm in size. The site is zoned as R2: Low density residential. The site very gently slopes from the rear boundary (in the north) down towards the front boundary along Woodbine Street. There is an existing small house and garage located within the middle of the site, with a single driveway crossover off Woodbine Street.
- 5.3 Only 1 tree is located within the site. The owner desires to retain this tree so tree sensitive design has been undertaken to reduce the impact to the tree where possible. There are 4 street trees located outside of the site, one being on Bardoo Avenue and 3 being located along Woodbine Avenue. There is an additional small tree located within the eastern neighbours adjoining site.
- 5.4 The proposal consists of the demolition of all site features, with the subdivision of the site into two sites. Two x new 2 storey dwellings are proposed to be constructed plus separated new driveways within the site. The existing driveway crossover position is to be retained and slightly widened. There is an additional driveway crossover proposed off Woodbine Street, with a garage proposed in the front setback.

6. ASSESSEMENT OF CONSTRUCTION IMPACTS

6.1 **Table 4:** Summary of the impact of proposed development impact to all trees included in the report.

Tree ID	Species	Retention value	TPZ radius (m)	SRZ Radius (m)	TPZ Area (sqM)	TPZ encroachment	Discussion/ Conclusion	Recommendation
1	<i>Lophostemon confertus</i> , Brushbox	A1	5.4	2.5	91.6	Nil	Medium sized street tree that will not be subject to encroachment from proposed development activities.	Retain and protect.
2	<i>Eucalyptus haemastoma</i> , Scribbly gum	Z10	9.96	3.2	311.7	Major	Side yard tree that will be subject to a major calculated encroachment of up to 68.5sqm (= 22%, not including SRZ encroachment) from construction of the replacement dwelling. The terrace area is noted as being constructed out of raised timber decking boards and therefore of low impact. Canopy pruning is not required as the tree has been recently pruned. Due to the major encroachment, root investigations must therefore be undertaken to determine if the tree is retainable with the current proposal. I have marked up multiple pink highlighted lines of where root investigations should be considered to be undertaken.	Root Investigations.
3	<i>Lophostemon confertus</i> , Brushbox	A1	6.6	2.8	136.8	Major	Street tree that will be subject to a major calculated encroachment of up to 10.6sqm (= 7.7%, including SRZ encroachment) from construction of the wider driveway and front entry gate area. Due to the construction type (which is presumed to be 100-150mm depth of excavation required for hard surfacing), root investigations are not required and the tree can be retained in a viable condition. The project arborist should directly supervise the required excavation works.	Retain and protect.
4	<i>Lophostemon confertus</i> , Brushbox	Z4	10.44	3.2	342.4	Major	Street tree that will be subject to a major calculated encroachment of up to 71.5sqm (= 21%, including SRZ encroachment) from construction of the secondary driveway crossover plus garage within the front yard area. Due to the major encroachment, root investigations must therefore be undertaken to determine if the tree is retainable with the current proposal. It is noted that the tree is in major canopy decline so this tree could be considered for removal. I have marked up multiple pink highlighted lines of where root investigations should be considered to be undertaken.	Root Investigations.

Tree ID	Species	Retention value	TPZ radius (m)	SRZ Radius (m)	TPZ Area (sqM)	TPZ encroachment	Discussion/ Conclusion	Recommendation
5	<i>Lophostemon confertus</i> , Brushbox	A1	6.96	2.7	152.2	Major	<p>Street tree that will be subject to a major calculated encroachment of up to 36.8sqm (= 24%, including SRZ encroachment) from construction of the secondary driveway crossover plus garage within the front yard area.</p> <p>Due to the major encroachment, root investigations must therefore be undertaken to determine if the tree is retainable with the current proposal.</p> <p>I have marked up multiple pink highlighted lines of where root investigations should be considered to be undertaken.</p>	Root Investigations.
6	<i>Glochidion ferdinandi</i> , Cheese tree	A1	3	1.8	28.3	Nil	<p>Neighbours small tree that will not be subject to encroachment from proposed development activities (as the existing concrete slab and shed will have likely modified the typical root spread of this tree)</p>	Retain and protect.

7. CONCLUSIONS

7.1 Table 5: Summary of development impacts on trees assessed.

Impact	Reason	Retention Category		
		AA	A	Z
Trees to be removed	Building construction, new surfacing and/or proximity, or trees in poor condition.	-	-	-
Retained trees that will be subject to TPZ encroachment	Removal of existing surfacing/structures and/or installation of new surfacing/structures	-	T3 (1 tree)	-
Trees to be retained that will not be subject to TPZ encroachment	Trees are located sufficiently away from the development not to be impacted.	-	T1, T6 (2 trees)	-
Retained trees that will require root investigations + project arborist supervision + sensitive installation of structures	Refer to section 6 specifications	-	T5 (1 tree)	T2, T4 (2 trees)

8. RECOMMENDATIONS AND MITIGATION STRATEGIES

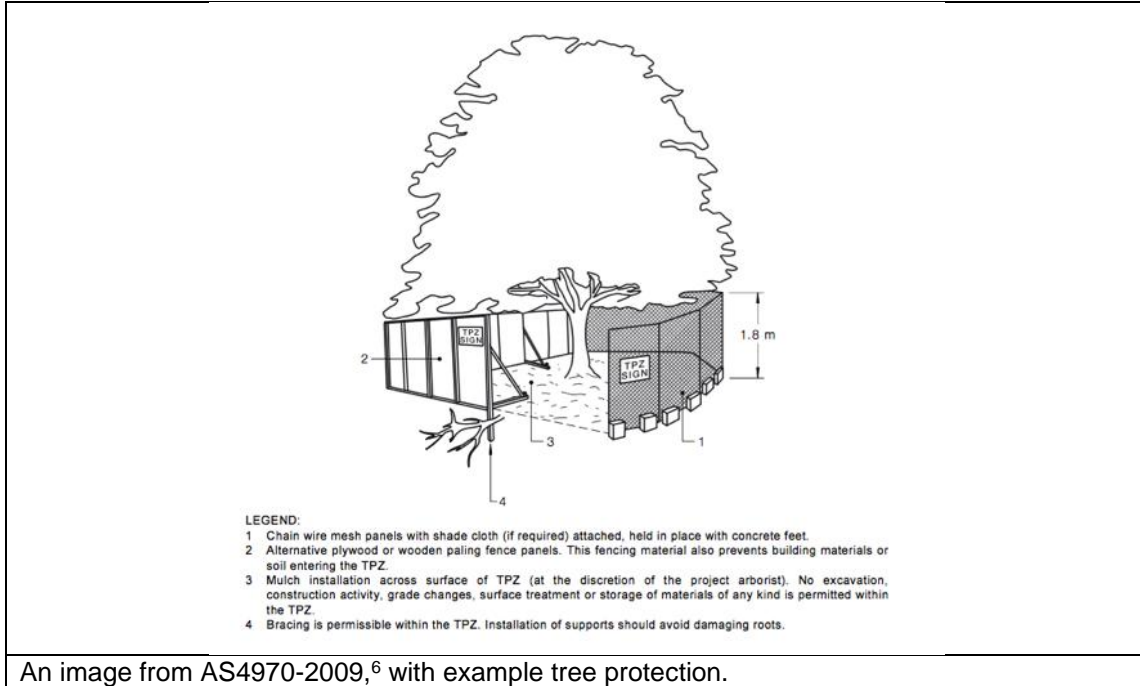
- 8.1 This report assesses the impact of a proposed development at the site on **6 trees** in accordance with AS4970 Protection of trees on development sites (2009).
- 8.2 No trees will be required to be removed to facilitate the proposed works.
- 8.3 It is recommended that trees **T1, T2, T3, T4, T5 and T6 (total of 6 trees) all be retained and protected.**
- 8.4 **Trees T2, T4 and T5 will require root investigations due to major calculated encroachments. If significant roots are encountered, tree sensitive design will likely be required.**
- 8.5 **A site-specific tree protection plan should be written following the root investigation works.**
- 8.6 Tree protection measures are recommended to be installed prior to the commencement of any site activity, inclusive of demolition and installed in accordance with the recommendations made within this report and be compliant to AS4970 Protection of Trees on Development Sites (2009).
- 8.7 All works within the TPZ areas are to be carried out in consultation with the project Arborist who is to monitor the condition of the trees and the site activities throughout the development process.
- 8.8 All construction activity is to comply with Australian Standard AS4970 Protection of Trees on Development Sites (2009), sections 7, 10 and 11 of this report.
- 8.9 No 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. Section 4.5.5 of AS4970-2009 says that 'The directional drilling bore should be at least 600 mm deep. The project Arborist should assess the likely impacts of boring and bore pits on retained trees. For manual excavation of trenches the project Arborist should advise on roots to be retained and should monitor the works'.⁵
- 8.10 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.

⁵ Council of Standards Australia, *AS 4970 Protection of trees on development sites* (2009) page 18.

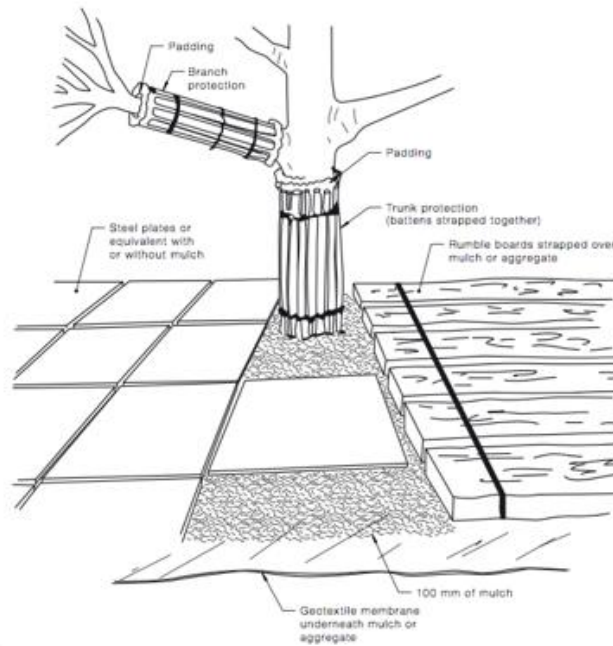
9. ARBORICULTURAL WORK METHOD STATEMENT (AWMS) AND TREE PROTECTION REQUIREMENTS

- 9.1 **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 a copy of this report.
- 9.2 **Tree protection Specifications:** It is the responsibility of the principle 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.
- 9.3 **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.
- 9.4 **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).
- 9.5 **Variations to 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 is 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.
- 9.6 **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
- 9.7 **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.
- 9.8 **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.

- 9.9 **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.



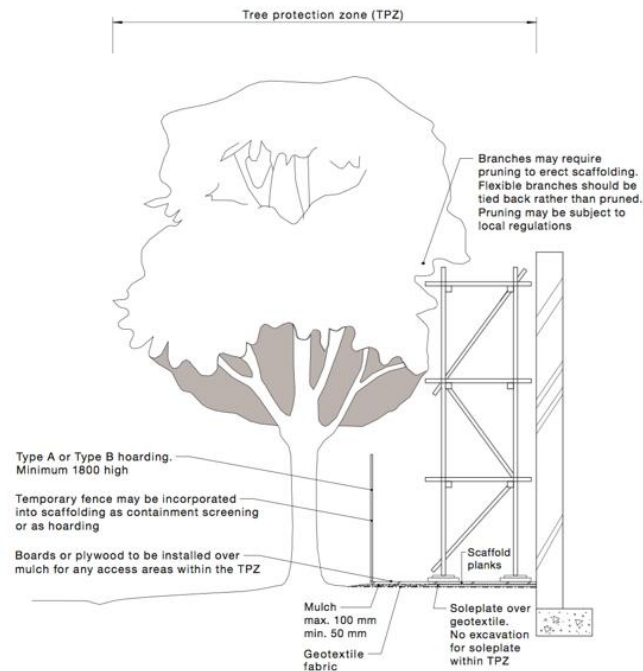
⁶ Council of Standards Australia, *AS4970 Protection of trees on development sites* (2009), page 16.



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 AS4970-2009,⁷ 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.

Image 3: An image from AS4970-2009,⁸ with example tree protection involving scaffold.

⁷ Council of Standards Australia, *AS4970 Protection of trees on development sites* (2009), page 17.

⁸ Council of Standards Australia, *AS4970 Protection of trees on development sites* (2009), page 19.

- 9.10 **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.
- 9.11 **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.
- 9.12 **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.

- 9.13 **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).⁹ 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.
- 9.14 **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.
- 9.15 **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.
- 9.16 **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.
- 9.17 **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.
- 9.18 **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.
- 9.19 **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.
- 9.20 **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.

⁹ Council Of Standards Australia, AS 4373 *Pruning of amenity trees* (2007) page 18

10. HOLD POINTS

- 10.1 **Hold Points:** Below is a sequence of standard hold points requiring project Arborist certification throughout the development process.
- 10.2 It provides a list of hold points that must be checked and certified where specified by the Consent Authority.
- 10.3 Certification is recommended to be provided in written format upon completion of each point. The final certification must include details of any instructions for remediation undertaken during the development.

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 initial pier 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 40mm 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	Upon completion of construction	Principle contractor	Project Arborist	

of protective fencing. If changes to condition are identified the project Arborist should provide recommendations for remediation.				
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	

11. BIBLIOGRAPHY/REFERENCES

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- Barrell Tree Consultancy, *Tree AZ version 10.10-ANZ*, <http://www.treeaz.com/>.
- State Environmental Planning Policy (SEPP) (Biodiversity and Conservation Act 2021)

12. LIMITATIONS AND ASSUMPTIONS

- 12.1 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 inspection. All observations were carried out from ground level. No detailed additional testing was carried out on trees or soil on site and none of the surrounding surfaces were lifted for investigation.
- 12.2 Where access was not available to neighbouring trees, their dimensions have been estimated from within the property boundary or from public land.
- 12.3 It is possible that root decay and defects can be present below ground with no visual indication above ground. It is 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 or being present at the time of the works. Any form of tree failure due to these occurrences is beyond the scope of this assessment.
- 12.4 The report reflects the subject tree(s) as found on the day of inspection. Any changes to the growing environment of the subject tree, 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.
- 12.5 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.
- 12.6 Seasoned Tree Consulting neither guarantees, nor is responsible for, the accuracy of information provided by others that is contained within this report.
- 12.7 Trees useful life expectancy has been estimates however this report is not an assessment of risk or probability of failure.
- 12.8 Trees stated as 'retainable' in this report may only be retained in a viable condition in the event they are correctly managed as per the recommendations and specifications in this report. In the event deviations occur the level of impact will increase and likely further impact the trees.
- 12.9 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.
- 12.10 Alteration of this report invalidates the entire report.

13. PHOTOGRAPHS



Image a: T1,



T2,



Image b:

T2,



Image c: T3,



T4,

T3



Image d:

T4,



T5

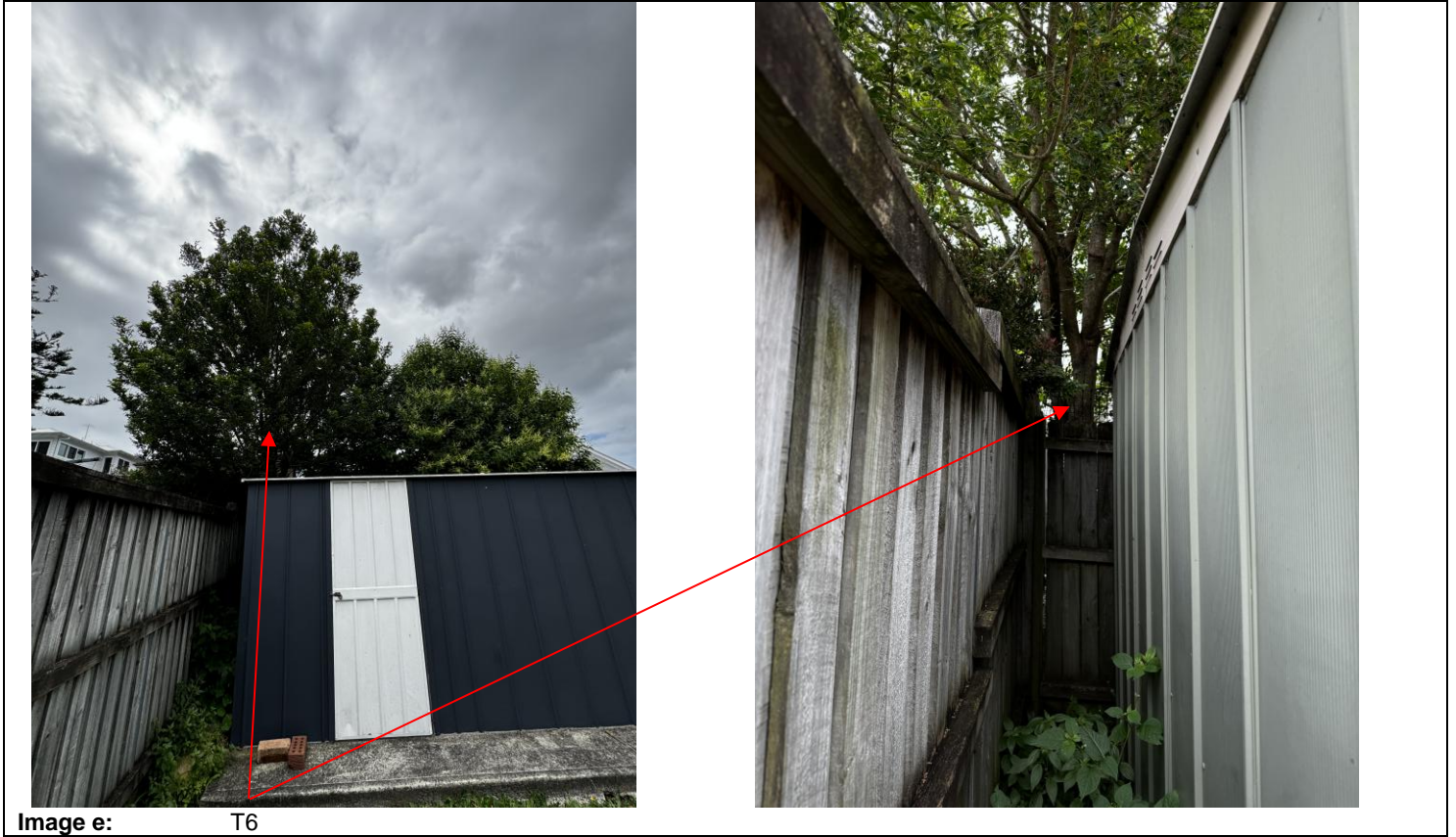


Image e:

T6

14. LIST OF APPENDICIES

The following are included in the appendices:

- Appendix 1 – Tree Location Plan
- Appendix 1A – Proposed Site Plan and Tree Protection Plan
- Appendix 2 - Tree Inspection Schedule
- Appendix 3 – Health
- Appendix 4 – Structural Condition
- Appendix 5 – Age Class
- Appendix 6 – Landscape Value
- Appendix 7 – SULE Categories
- Appendix 8 – Trees AZ Field Sheet
- Appendix 9 – TPZ Encroachment Examples

Regards



David Gowenlock- Seasoned Tree Consulting

Diploma of Arboriculture AQF5
Diploma of Conservation and Land Management AQF5
TRAQ (International Society of Arboriculture – Tree Risk Assessment Qualification)
VALID Tree Risk Assessment Qualified
AQF2 + AQF3 Arboriculture

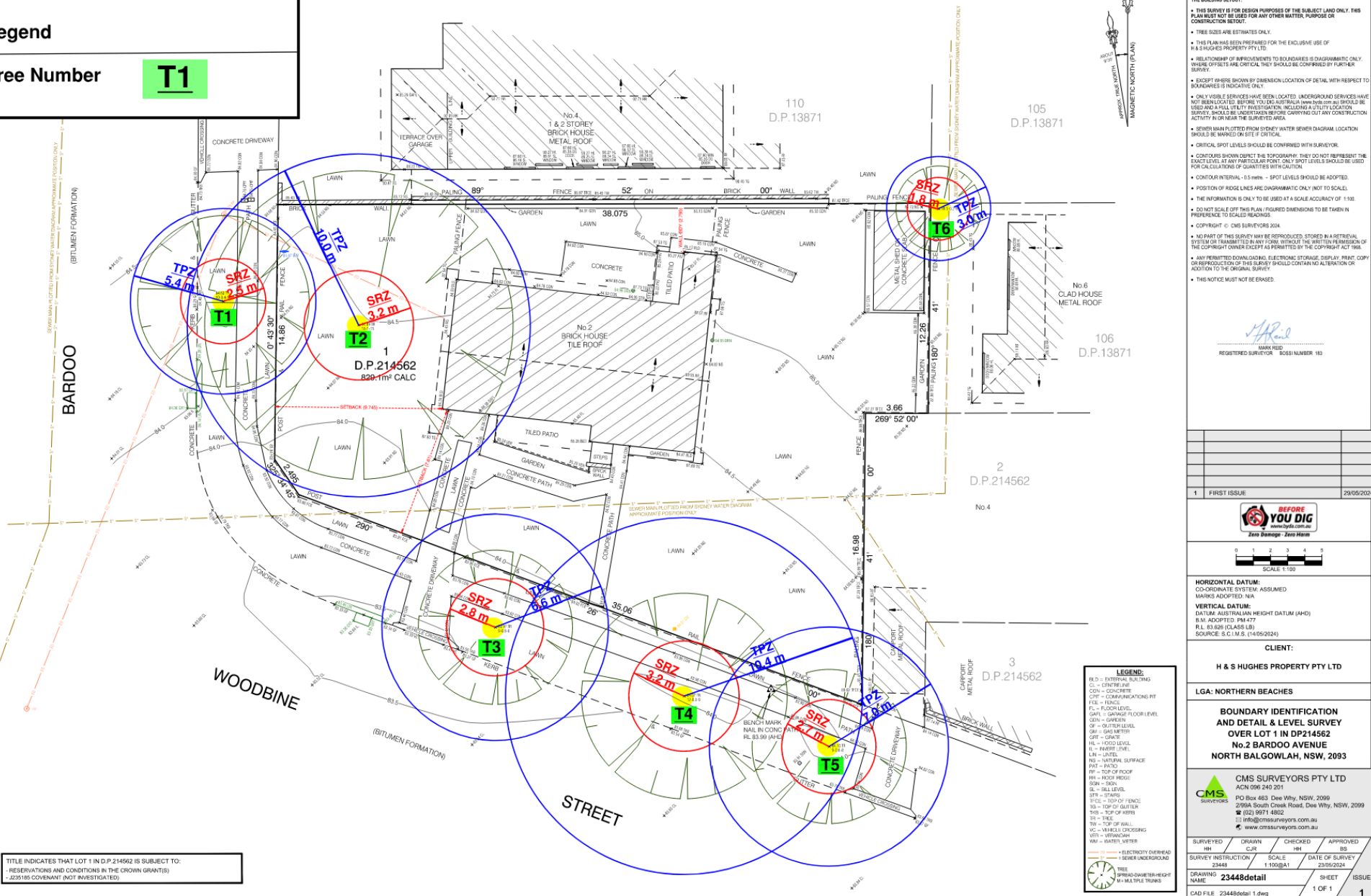
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(Seasoned Tree Consulting 30.04.2025)

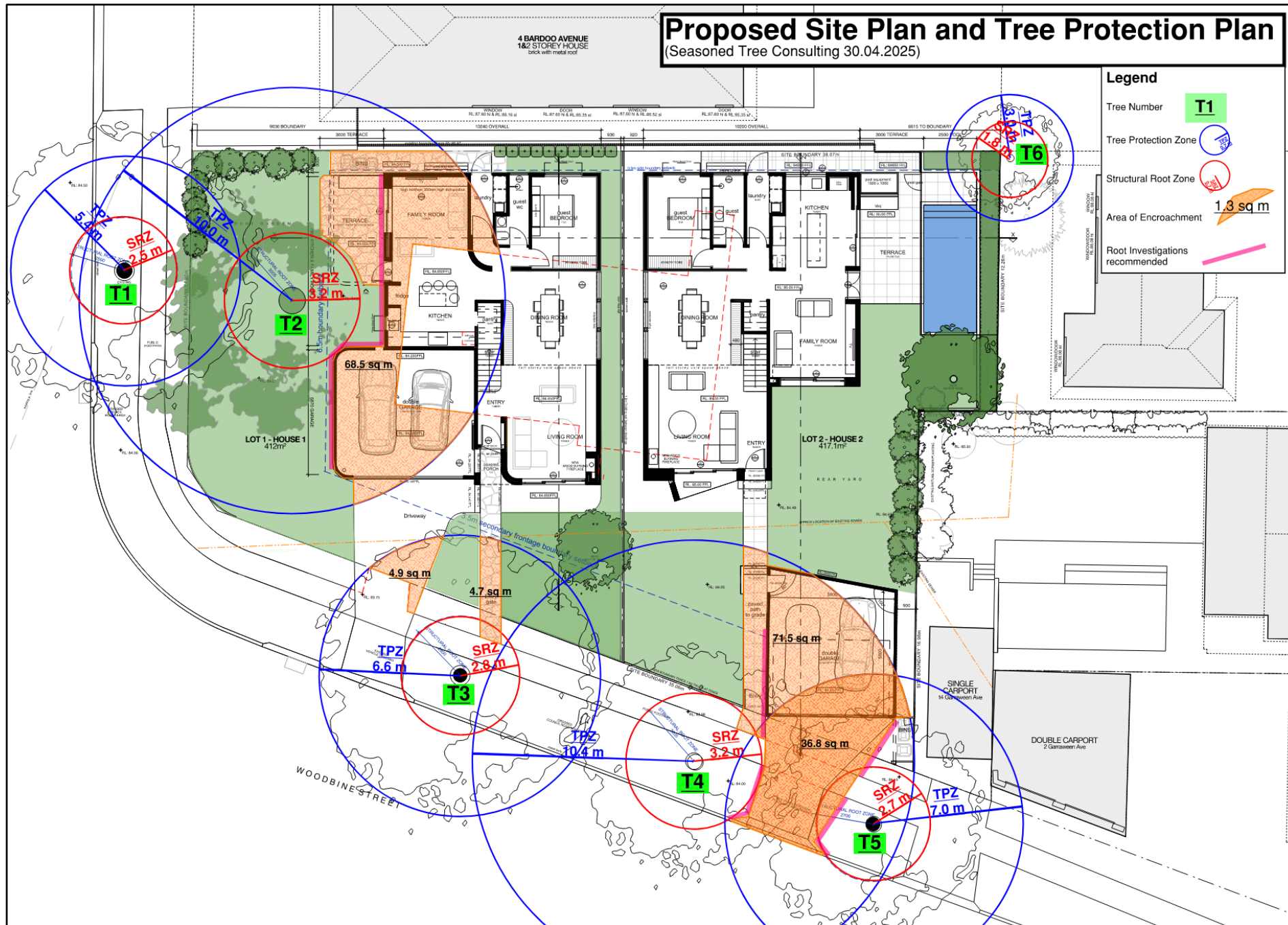
Tree Number

T1



TITLE INDICATES THAT LOT 1 IN D.P.214562 IS SUBJECT TO:
- RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
- J235185 COVENANT (NOT INVESTIGATED)

APPENDIX 1A – PROPOSED SITE PLAN AND TREE PROTECTION PLAN



APPENDIX 2- TREE INSPECTION SCHEDULE

Tree Inspection Site: 2 Bardoo Avenue, North Balgowlah

Surveyed by: David Gowenlock Date of Inspection: 5th November 2024 Tagged: No

Tree ID	Tree Species	DBH (CM)	TPZ radius (M)	TPZ Area (Sq.M)	DAB (CM)	SRZ radius (M)	Height (M)	Spread (M)	Age Class	Health	Structure	Amenity value	SULE (yrs.)	TreeAZ retention Value	Comments
1	<i>Lophostemon confertus</i> , Brushbox	45	5.4	91.6	49	2.5	9	10	Semi-mature	Good	Good	High	>40	A1	Street tree.
2	<i>Eucalyptus haemastoma</i> , Scribbly gum	83	9.96	311.7	95	3.2	16	18	Mature	Good/ Fair	Good/ Fair	High	5 > 15	Z10	Canopy in minor decline. Large amounts of sap sucking insects. termite tracks up multiple first order branches to open and decayed branches. Large dead branch over footpath.
3	<i>Lophostemon confertus</i> , Brushbox	49*25 (=55)	6.6	136.8	66	2.8	11	10	Semi-mature	Good	Good	High	>40	A1	
4	<i>Lophostemon confertus</i> , Brushbox	87	10.44	342.4	90	3.2	15	14	Mature	Poor / fair	Fair	High	5 > 15	Z4	Major canopy decline, at least 50% of canopy is dead.
5	<i>Lophostemon confertus</i> , Brushbox	58	6.96	152.2	60	2.7	14	10	Semi-mature	Good	Good	High	>40	A1	
6	<i>Glochidion ferdinandi</i> , Cheese tree	25	3	28.3	25	1.8	9	7	Semi-mature	Good	Good	Medium	>40	A1	Large leaf privet beside.

Explanatory Notes

Tree Species - Botanical name followed by common name in brackets. Where species is unknown it is indicated with an 'spp'.

Diameter at Breast Height (DBH) - Measured with a DBH tape or estimated at approximately 1.4m above ground level. If trees are inaccessible due to dense bush or being located in private property they are generally estimated.

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

TPZ Area (Sq.M)- The area of the TPZ calculated in square metres.

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

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

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

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

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

Health - Good/Fair/Poor/Dead

Structure - Good/Fair/Poor

Amenity Value - Very High/High/Medium/Low/Very Low.

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.

TreeAZ retention Value- See Appendix 10

Site Address: 2 Bardoo Avenue, North Balgowlah

Client Name: Du Plessis + Du Plessis Architects

Date prepared: 30 April 2025

Revision: 001

Appendix 3 – Assessment of Health

<u>Category</u>	<u>Example condition</u>	<u>Summary</u>
Good	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • The tree is in above average health and condition and no remedial works are required.
Fair	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • The tree is in below average health and condition and may require remedial works to improve the trees health.
Poor	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • The tree is displaying low levels of health and removal or remedial works may be required.
Dead	<ul style="list-style-type: none"> • The tree is dead or almost dead. 	<ul style="list-style-type: none"> • The tree should generally be removed.

Appendix 4 - Structural condition

<u>Category</u>	<u>Example condition</u>	<u>Summary</u>
Good	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • The tree is considered structurally good with well developed form.
Fair	<ul style="list-style-type: none"> • The tree may have minor structural defects within the structure of the crown that could potentially develop into more significant defects. • The tree may have 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. 	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • The identified defects are likely to cause either partial or whole failure of the tree.

Appendix 5 - Age class

Determining the exact age of a tree is difficult without carrying out potentially invasive testing. The age class of the subject tree has been estimated using the definitions below.

<u>Category</u>	<u>Description</u>
Young/Newly planted	<ul style="list-style-type: none"> • Young or recently planted tree.
Semi Mature	<ul style="list-style-type: none"> • Up to 20% of the usual life expectancy for the species.
Early mature/Mature	<ul style="list-style-type: none"> • Between 20% - 80% of the usual life expectancy for the species.
Over mature	<ul style="list-style-type: none"> • Over 80% of the usual life expectancy for the species.
Dead	<ul style="list-style-type: none"> • Tree is dead or almost dead.

Appendix 7 - Safe Useful Life Expectancy (SULE), (Barrel, 2001)

A tree's 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	Useful life expectancy over 40 years
2. Medium	Useful life expectancy 15 to 40 years
3. Short	Useful life expectancy 5 to 15 years
4. Remove	Useful life expectancy under 5 years
5. Small/Young	Trees that could be transplanted or replaced with similar specimen.
6. Unstable	Tree has become hazardous or structurally unstable.

Appendix 6 Landscape Value

RATING	HERITAGE VALUE	ECOLOGICAL VALUE	AMENITY VALUE
1. SIGNIFICANT	The subject tree is listed as a Heritage Item under the Local Environment Plan (LEP) with a local, state or national level of significance or is listed on Council's Significant Tree Register	The subject tree is scheduled as a Threatened Species as defined under the Threatened Species Conservation Act 1995 (NSW) or the Environmental Protection and Biodiversity Conservation Act 1999	The subject tree has a very large live crown size exceeding 300m ² with normal to dense foliage cover, is located in a visually prominent position in the landscape, exhibits very good form and habit typical of the species
	The subject tree forms part of the curtilage of a Heritage Item (building /structure /artefact as defined under the LEP) and has a known or documented association with that item	The tree is a locally indigenous species, representative of the original vegetation of the area and is known as an important food, shelter or nesting tree for endangered or threatened fauna species	The subject tree makes a significant contribution to the amenity and visual character of the area by creating a sense of place or creating a sense of identity
	The subject tree is a Commemorative Planting having been planted by an important historical person (s) or to Commemorate an important historical event	The subject tree is a Remnant Tree, being a tree in existence prior to development of the area	The tree is visually prominent in view from surrounding areas, being a landmark or visible from a considerable distance
2. VERY HIGH	The tree has a strong historical association with a heritage item (building/structure/artefact/garden etc) within or adjacent the property and/or exemplifies a particular era or style of landscape design associated with the original development of the site.	The tree is a locally-indigenous species, representative of the original vegetation of the area and is a dominant or associated canopy species of an Endangered Ecological Community (EEC) formerly occurring in the area occupied by the site.	The subject tree has a very large live crown size exceeding 200m ² ; a crown density exceeding 70% (normal-dense), is a very good representative of the species in terms of its form and branching habit or is aesthetically distinctive and makes a positive contribution to the visual character and the amenity of the area
3. HIGH	The tree has a suspected historical association with a heritage item or landscape supported by anecdotal or visual evidence	The tree is a locally-indigenous species and representative of the original vegetation of the area and the tree is located within a defined Vegetation Link / Wildlife Corridor or has known wildlife habitat value	The subject tree has a large live crown size exceeding 100m ² ; The tree is a good representative of the species in terms of its form and branching habit with minor deviations from normal (e.g. crown distortion/suppression) with a crown density of at least 70% normal); The subject tree is visible from the street and surrounding properties and makes a positive contribution to the visual character and the amenity of the area
4. MODERATE	The tree has no known or suspected historical association, but does not detract or diminish the value of the item and is sympathetic to the original era of planting.	The subject tree is a non-local native or exotic species that is protected under the provisions of this DCP.	The subject tree has a medium live crown size exceeding 40m ² ;The tree is a fair representative of the species, exhibiting moderate deviations from typical form (distortion/suppression etc) with a crowndensity of more than 50% (thinning to normal); and The tree is visible from surrounding properties, but is not visually prominent – view may be partially obscured by other vegetation or built forms. The tree makes a fair contribution to the visual character and amenity of the area.
5. LOW	The subject tree detracts from heritage values or diminishes the value of a heritage item	The subject tree is scheduled as exempt (not protected) under the provisions of this DCP due to its species, nuisance or position relative to buildings or other structures.	The subject tree has a small live crown size of less than 40m ² and can be replaced within the short term (5–10 years) with new tree planting
6. VERY LOW	The subject tree is causing significant damage to a heritage Item.	The subject tree is listed as an Environment Weed Species in the Local Government Area, being invasive, or is a known nuisance species.	The subject tree is not visible from surrounding properties (visibility obscured) and makes a negligible contribution or has a negative impact on the amenity and visual character of the area. The tree is a poor representative of the species, showing significant deviations from the typical form and branching habit with a crown density of less than 50% (sparse).
7. INSIGNIFICANT	The tree is completely dead and has no visible habitat value	The tree is a declared Noxious Weed under the Noxious Weeds Act (NSW) 1993 within the relevant Local Government Area.	The tree is completely dead and represents a potential hazard.

Appendix 8 – Trees AZ Field Sheet

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 <u>cannot</u> 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 <u>temporarily</u> reduced by reasonable remedial care, i.e. cavities, decay, included bark, wounds, excessive imbalance, vulnerable to adverse weather conditions, etc
Z10	Poor condition or location with a low potential for recovery or improvement, i.e. dominated by adjacent trees or buildings, poor architectural framework, etc
Z11	Removal would benefit better adjacent trees, i.e. relieve physical interference, suppression, etc
Z12	Unacceptably expensive to retain, i.e. severe defects requiring excessive levels of maintenance, etc

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

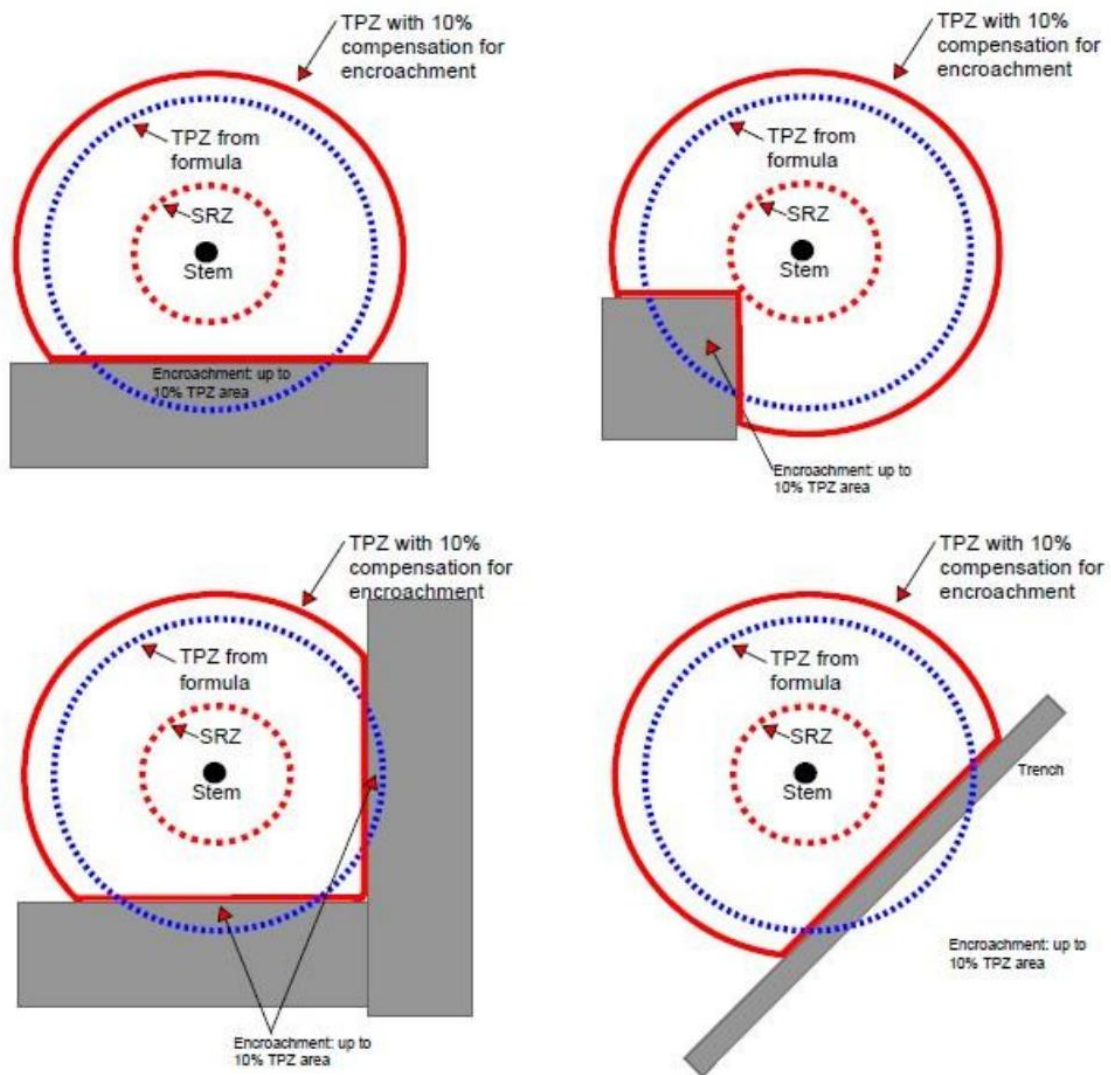
Category A: Important trees suitable for retention for more than 10 years and worthy of being a material constraint

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

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

Appendix 9- Examples of TPZ encroachment

Encroachment into the Tree Protection Zone is sometimes unavoidable. The following diagram shows examples of acceptable levels of encroachment and how they may be compensated for by providing additional space contiguous to the TPZ area.



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