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Arboricultural Impact Assessment Report

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1. INTRODUCTION

1.1 This report has been commissioned by the client Mark Berridge to assess trees located on and adjoining the site that may be impacted by a proposed development.

1.2 The tree data collection was carried out on 21st May 2025. The weather at the time of the assessment was clear with average visibility.

1.3 **Table 1: Documents And Plans Assessed**

Title	Author	Date on Document	Plan/Doc. Ref.
Survey Plan	CMS Surveyors	26/11/2024	24012detail
Proposed Architectural Plans	Action Plans	08/07/2025	DA Submission
Proposed Stormwater Site Plan	Action Plans	July 2025	SW 0-1 Revision A

2. SCOPE OF THE REPORT

2.1 **This report has been undertaken to meet the following objectives.**

2.1.1 Conduct a visual assessment from ground level for trees located on and adjoining the site as identified by the survey plan provided site that may be impacted by the proposed works.

2.1.2 For the purpose of this report a prescribed tree is a tree with a height equal to or greater than 5 metres in height.

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

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 (2025).

2.1.5 Provide pragmatic recommendations for the management of trees and mitigation of construction impacts on retained trees.

2.1.6 Specify tree protection measures for trees to be retained in accordance with AS 4970-2025.

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3. LIMITATIONS

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

3.2 Where access was limited due to trespass issues, measurements have been estimated.

3.3 All of the observations were carried out from ground level. The accuracy of the assessment of the subject trees structural condition and health is limited to the visibility of the tree at the time of inspection.

3.4 The tree inspections were visual from ground level only. No soil or tissue testing was carried out as part of the tree inspection. None of the surrounding surfaces adjacent to trees were lifted or removed during the tree inspections.

3.5 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.

3.6 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.

3.7 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.

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

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

3.10 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 trees at the site.

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).

- 4.1.1 Tree common name
- 4.1.2 Tree botanical name
- 4.1.3 Tree age class
- 4.1.4 DSH (Trunk/Stem Diameter at Standard Height/1.4m above ground level) - millimetres.
- 4.1.5 Estimated height - metres.
- 4.1.6 Estimated crown spread (Radius of crown) - metres.
- 4.1.7 Health
- 4.1.8 Structural condition
- 4.1.9 Amenity value
- 4.1.10 Estimated remaining contribution years (SULE)[1]
- 4.1.11 Retention value (Tree AZ)[2]
- 4.1.12 Notes/comments

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

4.3 Tree diameter was measured using a diameter tape or in some cases estimated. All other measurements were estimations unless otherwise stated.

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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).

4.4 All DSH measurements, Notional Root Zones, and structural root zones were calculated in accordance with methods set out in AS4970 Protection of trees on development sites (2025). See appendices for more information.

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

5. SITE LOCATION AND BRIEF DESCRIPTION OF THE PROPOSAL

5.1 The site is located in the suburb of Beacon Hill within the Northern Beaches Local Government Area (LGA). This assessment has been carried out in accordance with the following legislation and policy. The trees and vegetation located on and adjoining the site are managed under the following documents.

5.1.1 Warringah Local Environmental Plan (LEP) 2011

5.1.2 Warringah Development Control Plan (DCP) 2011

5.1.3 Northern Beaches Tree Management Controls

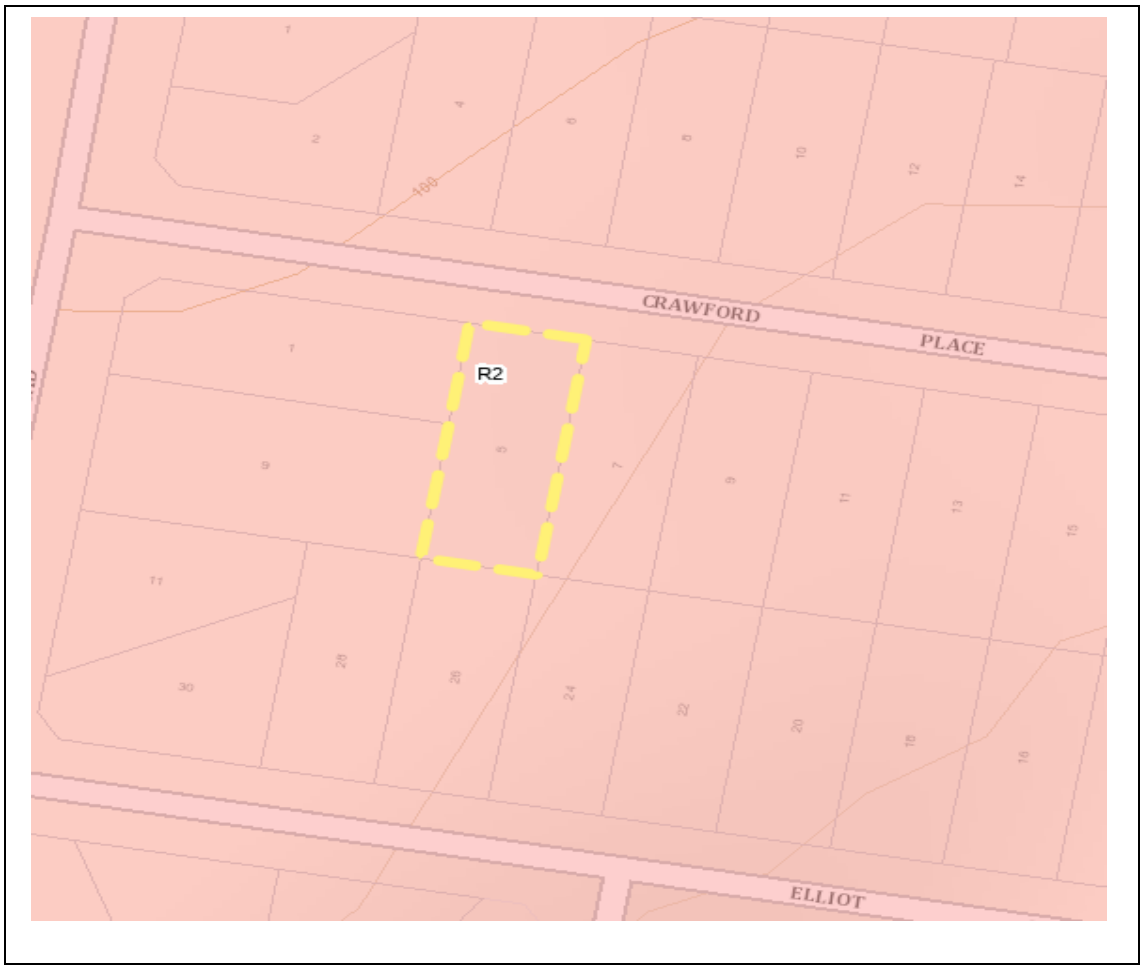
5.1.4 State Environmental Planning Policy (Biodiversity and Conservation 2021)

5.2 The subject site is a north facing lot that contains numerous level changes within the front setback supported by retaining walls and suspended structures. There are few trees within the site but several trees located on adjoining sites that are predominantly native species. The proposed works consist of alterations and additions to include landscaping, a swimming pool and a carport within the front setback of the site.

5.3 This site is not located within a Heritage Conservation Area, is not Heritage listed and does not contain mapped biodiversity according to the NSW Planning Portal Spatial Viewer.[4] Accessed 28/08/2025.

[4,5] https://www.planningportal.nsw.gov.au/spatialviewerhistoric/#/find-a-property/address

Tile 1: Site Location[5]



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

6.1 **Tree information**: Details of each individual tree assessed, including the observations taken during the site inspection, can be found in the tree inspection schedule in appendix 2, where the indicative Notional Root Zone (NRZ) and Structural Root Zone (SRZ) has been calculated for each of the subject trees. The NRZ and SRZ should be measured in radius from the centre of the trunk. Each of the subject trees have been awarded a retention value based on the observations using the Tree AZ method. 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. The Tree AZ categories sheet (Barrell Tree Consultancy) has been included in appendix 3 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 **Notional Root Zone (NRZ):** The area of root zone enclosed by a radius of 12 times the DSH (Diameter at Standard Height) which is the primary trigger for Arboricultural input on a development site.

6.3 **Tree protection zone (TPZ)**: Specified Zone above and below the ground at given offsets from the trunk set aside to protect a trees roots and crown where these might be damaged by development.

6.4 **Structural Root Zone (SRZ)**: The theoretical area around the base of a tree required for the trees stability in the ground.

6.5 **Minor encroachment into NRZ**: The proposed encroachment is considered minor if it is less than or equal to 10% of the NRZ and is not within the SRZ and there are no other recent NRZ encroachments. Generally it is unlikely that minor encroachments will be of significant impact to the tree providing an area equivalent to the net loss is incorporated into the TPZ, unless the project Arborist otherwise demonstrates the tree will remain viable.

6.6 **Moderate encroachment into NRZ:** The proposed encroachment is considered moderate is it is greater than 10% but equal to or less than 20% of the NRZ and is outside of the SRZ. A project Arborist shall be engaged to review the proposed impact and undertake any other necessary investigation to address factors that may affect the TPZ area such as but not limited to, the age and health of the tree, proposed staging and timing of cutting roots, the presence of other trees with overlapping roots, the presence of existing or past structures that may have affected root growth or the lean and stability of the tree to demonstrate how the tree will remain viable. This may be achieved through the implementation of suitable design measures and construction controls to mitigate impacts during the development process. To avoid a net loss of soil area an area equivalent to the net loss shall be incorporated into the TPZ, unless the project Arborist otherwise demonstrates the tree will remain viable.

6.7 **Major encroachment into NRZ:** The proposed development is considered major if it is greater than 20% of the NRZ or inside the SRZ. The project Arborist shall be engaged to explore alternative designs with the design team and/or demonstrate that the tree will remain viable. Detailed investigations such as root investigation, soil analysis, historical site data, relevant literature or examples of similar encroachments may be required to achieve this. To avoid a net loss of soil area an area equivalent to the net loss shall be incorporated into the TPZ, unless the project Arborist otherwise demonstrates the tree will remain viable.

6.8 **Site plans:** The following site plans have been prepared. Notional Root Zone, Structural Root Zone and the indicative canopy projection have been overlaid on all plans.

- Appendix 1 - Existing Site Plan
- Appendix 1A – Proposed Site Plan
- Appendix 1B – Proposed Stormwater Plan

7. ASSESSEMENT OF CONSTRUCTION IMPACTS

7.1 **Table 2:** In the table below the impact of proposed development impact to all trees included in the report has been assessed.

7.2 **Abbreviations used in the table:** AS4970 Protection of Trees on Development Sites (2025) is referred to as Australian Standards, Notional Root Zone is referred to as NRZ and Structural Root Zone is referred to as SRZ.

1Tree ID	Species	Retention value	NRZ radius (m)	SRZ radius (m)	NRZ encroachment	Discussion/ Conclusion	Recommendation
1	*Eucalyptus scoparia*	Z10	7.8	2.9	Major	Tree 2 will be subject to numerous encroachments throughout the NRZ and the SRZ from the proposed works. Modifications to the front setback include the construction of a new wall and paving to the east to provide for the new proposed front entrance path, replacement of the existing front boundary wall within the SRZ area to the north, a new low retaining wall to the north and to the west to contain landscaping fill of up to 200mm. The combined encroachment is greater than 50% and is a major encroachment. There are several tree sensitive considerations that have been made during the design process such as limiting the depth and soil texture of fill and allowing for sleeper retaining walls which can reduce the impact of the structures. However, the species and condition of the tree has also been considered in terms of how the tree will respond to the proposed works. The *E. scoparia* species is not renowned for tolerating disturbance and the proposed works are likely to affect the condition of the tree despite tree sensitive design. In addition to the associated impact, the tree has been assessed as in poor structural condition. The canopy of the tree has no central apical dominance caused by past pruning and is currently heavily asymmetric to the north towards the road and numerous service lines. It is assumed the tree has been pruned on the south and western sides as a result of conflict with the existing overhead services and has now only got primary branches on the northern side. Remedial pruning to assist with improving the structure of the tree is considered to be limited given the available canopy; the	Remove

1Tree ID	Species	Retention value	NRZ radius (m)	SRZ radius (m)	NRZ encroachment	Discussion/ Conclusion	Recommendation
						species is also not well known for its tolerance to pruning which is likely to also increase the impact of the development. As a result, the tree has been allocated a category Z10 rating and a short useful life expectancy. The tree is likely to be affected by the proposed works but its removal can be offset with a replacement planting within the front setback. Refer to the photographs section.	
2	*Glochidion ferdinandi*	A1	2.0	1.6	Major	The tree is located within the footprint of the proposed sleeper retaining wall. To retain the tree the wall would require relocating to a sufficient distance to allow for future growth. The replacement of tree 1 and 2 could be offset with one advanced sized (100-200 Litre) replacement tree.	Remove
3	*Melaleuca linarifolia*	A1	6.7	2.6	Major	Tree located on adjoining land and its base is up to 500mm lower than the existing driveway, noting the land falls slightly from west to east towards the tree. There is an existing driveway within the NRZ but not the SRZ of the tree which represents an existing moderate encroachment. Up to 27% of the NRZ and the SRZ will be subject to encroachment (including the existing structures), which is a major encroachment that has the potential to affect the tree. Design considerations have been made to minimise the associated impacts on the tree and there are several components the encroachment can be broken down into. In terms of loss of NRZ area and change in growing environment, the proposed structures only extend approximately one metre closer to the tree (measured from the center of the trunk) and the remaining area is already covered by the concrete driveway. Therefore the change in the trees growing environment is considered to be minimal as the eastern side of the carport is raised on piers that	Tree sensitive construction

1Tree ID	Species	Retention value	NRZ radius (m)	SRZ radius (m)	NRZ encroachment	Discussion/ Conclusion	Recommendation
						will allow water and airflow to still access the soil below. The proposed swimming pool and the OSD tank are new in ground structures that may require root pruning in the event roots are encountered. The combined encroachment from both of these structures is 10% which in terms of potential root pruning will not affect the viability of the tree and is outside of the SRZ area. The proposed new driveway and the carport are predominantly located within the footprint of the existing driveway. Referring to DA17 and DA12, the construction of the carport slab is a combination of in ground to the west, fill material towards the center and a suspended section on the eastern side where the setback to the tree has been reduced. The area of carport which is closest to the tree is suspended over the NRZ and the fringe of the SRZ indicating tree roots on the eastern side of the carport will not be affected by the structure. The in-ground section and fill to the center and west are less likely to encounter roots as the tree base is on a lower RL than the existing driveway and the level increases to the west. There is a section of driveway close to the front boundary that is proposed as in ground however this is located within the footprint of the proposed OSD and will not increase the impacts assessed. It is also noted that the species grows naturally in wetlands and has a higher tolerance to anerobic conditions. The significance of this is that the tree is more capable of growing roots deeper in the soil than other species and is less likely to be affected by soil conditions with limited resources. The proposed landscaping stepping stones and the eastern stairs are proposed as steppers on the existing grade and the stairs suspended off a central pad and	

1Tree ID	Species	Retention value	NRZ radius (m)	SRZ radius (m)	NRZ encroachment	Discussion/ Conclusion	Recommendation
						spine that is located outside of the SRZ area and will not significantly contribute to the impacts assessed. Canopy pruning. The eastern eave of the carport is measured at 3.5 metres and the current ground clearance of the lowest branches to the existing driveway is approximately 3 metres indicating canopy pruning will be required. The pruning required is estimated to be second and third order branches to crown raise the tree on the eastern side with pruning cuts ranging from 20mm to 80mm in diameter. The canopy removal is unlikely to exceed 15% which will not significantly contribute to the overall impact or natural appearance of the tree. Stormwater is proposed within the NRZ and the fringe SRZ of the tree which has the potential to increase the impacts on the tree. It is recommended that no pipes be installed within the SRZ of the tree which will require the relocation of one pipe slightly to the west. To avoid impacting significant tree roots the proposed stormwater pipes must be installed via tree sensitive construction methods. It is noted the OSD tank may require roots pruning which is discussed in the paragraphs above. Refer to section 8.2 for all tree sensitive construction specifications.	
4	*Acmena smithii*	A1	3.0	2.1	Major	Tree located on adjoining land. Up to 18% encroachment is proposed within the NRZ and the SRZ from the proposed retaining wall, level change and stormwater pipes. The proposed wall and fill are unlikely to significantly affect the tree as the wall will be constructed of sleepers that can be laid with minimal in ground footings. The proposed fill for the level lawn is less than 200mm deep and is also unlikely to affect the tree. The proposed stormwater pipe must be installed via	Tree sensitive construction required

1Tree ID	Species	Retention value	NRZ radius (m)	SRZ radius (m)	NRZ encroachment	Discussion/ Conclusion	Recommendation
						tree sensitive methods to avoid damaging significant tree roots. Refer to section 8.2 for specifications.	
5	*Acer Palmatum*	Z1	3.6	2.4	Minor	Tree located on adjoining land. Less than 10% encroachment into the NRZ with none in the SRZ from the proposed building and stormwater combined. This is a minor encroachment that will not affect the viability of the tree.	Retain and protect
6	*Araucaria heterophylla*	A1	5.4	2.6	None	Tree located on adjoining land. No encroachment proposed.	Retain and protect
7	*Photinia robusta*	Z1	2.0	1.8	Major	Tree located on Council land. The crossover to meet the widened driveway will encroach into the NRZ and the SRZ by up to 40% which is a major encroachment that will affect the viability of the tree.	Remove
8	*Photinia robusta*	Z1	2.0	1.9	None	Tree located on Council land. No encroachment proposed.	Retain and protect

8. CONCLUSIONS

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

Impact	Reason	Retention Value		Total
		A & AA	Z	
Trees to be removed	Building/landscape construction, new surfacing and/or proximity, or trees in poor condition.	2	1,7	**3**
Retained trees subject to NRZ encroachment or no encroachment	Removal of existing surfacing/structures and/or installation of new surfacing/structures will not significantly impact the tree	6	5,8	**3**
Trees requiring tree sensitive construction and design	Removal of existing surfacing/structures and/or installation of new surfacing/structures impacting trees and requiring mitigation strategies	3,4	-	**2**

8.2 **Construction Design/Specification Requirements:** The proposed works have the potential to affect the viability of several trees on and adjoining the site. To ensure the trees are 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.

8.2.1 **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.

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

- 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 200mm without assessment by a consulting Arborist.
- 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.
- 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.
- Where fill/sub base is used inside the TPZ, fill material should be a coarse granular material that does not restrict the flow of water and air to the root system below. This type of material will also reduce the impact of soil compaction during construction.
- 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 40mm in diameter.

8.2.3 **Tree Sensitive Pier Footings (eastern side of the proposed carport)**: To minimise root loss in the TPZ of the trees, the footings of the proposed post/pier must be located to avoid significant tree roots in the TPZ and SRZ. To ensure that significant tree roots are retained, it must be demonstrated that the following construction methods can be implemented;

- Excavations in the TPZ should be for pier footings only. All excavations for piers must be carried out manually under the supervision of the project Arborist (see section 11 for details of manual excavation and project Arborist).

- The location of piers must be flexible to avoid significant roots (roots greater than 40mm in diameter). If practical, it is recommended that piers are located to avoid the SRZ of the trees.
- All roots greater than 40mm in diameter must be retained unless the project arborist has assessed and approved in writing that the root(s) are not critical to the health or stability of the tree.

8.2.4 **Underground Services:** AS4970 Protection of trees on development sites (2009) recommends that all underground services located inside the TPZ of any tree to be retained should 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.

If directional drilling is proposed, 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'.[6]
If manual excavations are proposed, all excavations for the services should be carried out manually under the supervision of the project Arborist (minimum qualification AQF 5). 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. All roots greater than 40mm in diameter should be retained in the service trench. The service pipe should then be threaded below the retained roots where practical. Roots greater than 40mm within the alignment of the service pipe should only be severed/pruned under the approval of the project Arborist. All root pruning should be in accordance with AS4373 Pruning of amenity trees (2007). Open trenching in the SRZ of trees can be impractical without impacting significant roots, as often dense root growth is present in the SRZ. Open trenching should therefore be avoided in the SRZ. It is recommended that any section of pipe that is located in the SRZ of trees to be retained is installed via sub-surface boring/directional drilling methods only. The feasibility of sub-surface boring/directional drilling will need to be investigated by a sub-surface boring/directional drilling specialist. The project Arborist should provide advice and supervise excavations for bore pits, which must be carried out manually if located within the TPZ. The top of the pipe must be at least 600mm below the existing soil grade. The location of bore pits should be flexible in the TPZ to avoid significant roots, the project Arborist should assess and advise in writing the impact of any significant root severance to the condition of the tree.

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

9. PHOTOGRAPHS

Photo A: Tree 1 has been assessed as in poor structural condition with minimal potential for improvement or scope for remedial pruning to improve the structure.

Photo B: Tree 3 will require canopy pruning to crown raise the lower branches to achieve the 3.5 metre height of the carport eaves. The yellow hatch indicates the estimated pruning.

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10. RECOMMENDATIONS

10.1 **Refer to tables 2 and 3 for individual tree identification and discussions.**

10.2 This report assesses the impact of a proposed development on eight trees located on and adjoining the site.

10.3 Three trees consisting of two category Z trees and one category A tree are recommended to be removed to facilitate the proposed development.

10.4 Three trees consisting of one category Z tree and two category A trees can be retained in a viable condition under the proposed works.

10.5 Two category A trees (Trees 3 and 4) will require tree sensitive construction methods and design to assist with minimising the development impacts. Refer to section 8.2 for full specifications on how to carry out the development. If the tree sensitive construction is not implemented the trees may not be viable for retention.

10.6 Canopy pruning has been estimated based on available information at the time of the assessment. It is recommended that the project Arborist prepared a detailed pruning schedule to identify individual branches that are required to be removed prior to the commencement of the works as part of the Tree and Site Specific Management Plan.

10.7 **Tree protection:** Tree protection specifications have been provided in section 10 of this report and the appendices section which provide an indicative location of the protection required for the purpose of development assessment and approval. In accordance with AS4970 Protection of Trees on Development Sites (2025), Tree Protection Specifications (TPS) and a Tree Protection Plan (TPP) shall be prepared by the Project Arborist and consider measures necessary to protect and manage trees throughout all stages of the development. The TPS and TPP may require updating prior to the issue of a Construction Certificate.

10.7.1 **The specified Tree Protection Zone** is defined as the area above and below ground to include the trees canopy and root system that requires protecting from development activity. Trees root systems and canopies are seldom symmetrical and can be affected in shape by environmental factors such as the weather, topography and existing structures.

10.7.2 The TPS and TPP are required to consider all stages of the development which will be most effectively produced in conjunction with the Construction Management Plan, post approval but prior to the issue of the commencement of works including demolition and tree clearing.

10.8 All works within the NRZ and SRZ of retained trees are to be overseen by an AQF5 Consulting Arborist to assist with minimising development impact.

10.9 All services plans should be subject to review by a consulting Arborist. Where possible underground services should be located outside the NRZ of trees to be retained. All underground services located inside the NRZ 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.

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

11.1 **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.

11.2 **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.

11.3 **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).

11.4 **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 AS4970-2025, 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.

11.5 **Site Specific Tree Protection Recommendations:**

Table 4: Protection Requirements: See appendix 1A for indicative protection location.

Tree Number	Protection Specification
1,2,7	- Proposed removals.
3,4,5,6,8	- Due to the level of tree sensitive design and construction it is recommended a tree protection plan and specification be developed in conjunction with the Construction Management Plan prior to the commencement of works.

11.6 **Tree protection Specifications:** See sections below for site/tree specific requirements. 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 AS4970-2025 prior to works commencing.

11.7 **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.

11.8 **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:

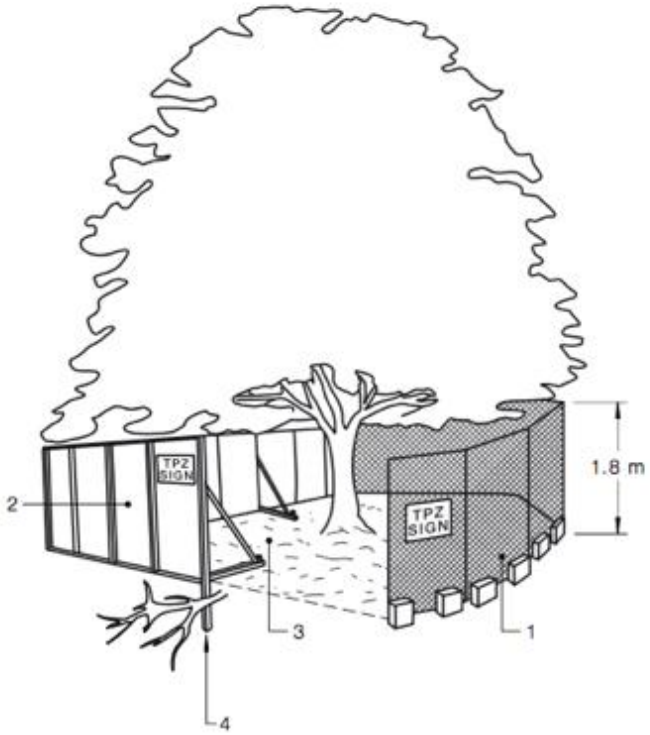
- Tree Protection Zone/No access.
- This fence has been installed to prevent damage to the tree/s and their growing environment both above and below ground. Do not move fencing or enter TPZ without the agreement of the project Arborist.

- The name, address, and telephone number of the developer/builder and project Arborist

11.9 **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.

11.10 **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.

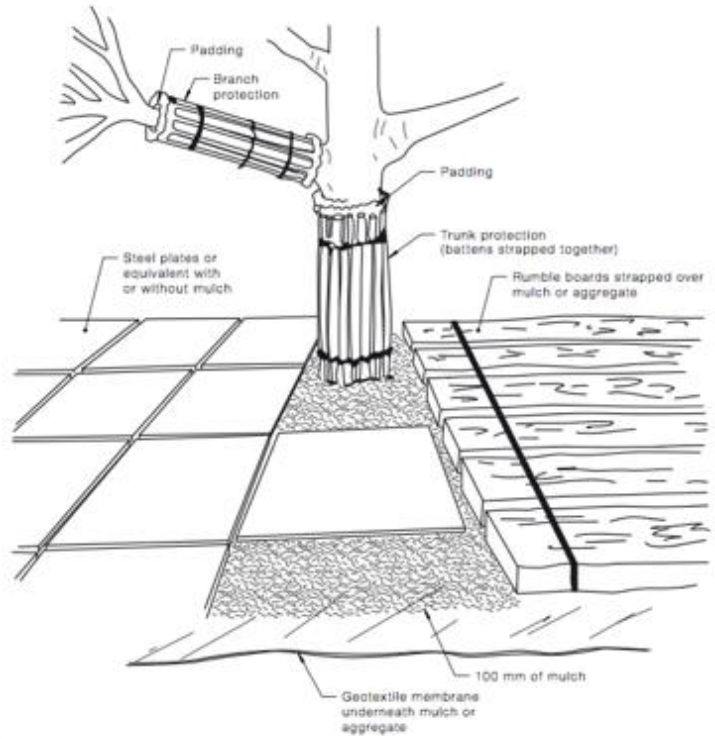
11.11 **Ground Protection:** Ground protection is required to protect the underlying soil structure and root system in areas where it is not practical to restrict access to whole TPZ, while allowing space for construction. Ground protection must consist of good quality composted wood chip/leaf mulch to a depth of between 150-300mm, laid on top of geo textile fabric, overlaid with durable timber boards/plywood. 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 AS4970-2025,[7] with example tree protection.

[7] Council of Standards Australia, *AS4970 Protection of trees on development sites* (2025), 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 AS4970-2025,[8] with example tree protection.

11.12 **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.

[8] Council of Standards Australia, *AS4970 Protection of trees on development sites* (2025), page 17.

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.

11.13 **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.

11.14 **Excavations:** The project Arborist must supervise and certify that all excavations and root pruning are in accordance with AS4373-2007 and AS4970-2025. 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.

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

11.16 **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.

11.17 **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.

11.18 **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.

12. HOLD POINTS

12.1 **Hold Points:** Below is a sequence of hold points requiring project Arborist certification throughout the development process**.** It provides a list of hold points that 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.

Hold Point	Stage	Responsibility	Certification	Complete Y/N and date
Project Arborist to hold pre construction site meeting with principal 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 assess and certify that tree protection has been installed in accordance with section 11 and AS4970-2025 prior to works commencing at site.	Prior to development work commencing.	Principle contractor	Project Arborist	
In accordance with AS4970-2025 the project arborist should carry out regular site inspections to ensure works are carried out in accordance with the recommendations.	Ongoing throughout the development	Principle contractor	Project Arborist	

Hold Point	Stage	Responsibility	Certification	Complete Y/N and date
Project Arborist to oversee all manual excavations for piers 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 AS4970-2025.	Construction	Principle contractor	Project Arborist	
Project arborist to approve relocation of tree protection for landscaping. All landscaping works 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	

13. BIBLIOGRAPHY/REFERENCES

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- Mattheck, C. & Breloer, H., *The body language of trees - A handbook for failure analysis*, The Stationary Office, London, England (1994).
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- Barrell Tree Consultancy, *Tree AZ version 10.10-ANZ*, http://www.treeaz.com/.
- *Warringah Local Environmental Plan 2011*
- *Warringah Development Control Plan 2011*
- State Environmental Planning Policy (Biodiversity and Conservation 2021)

14. LIST OF APPENDICES

The following are included in the appendices:

Appendix 1 - Existing site Plan
Appendix 1A – Proposed Site Plan
Appendix 1B – Proposed Stormwater Plan
Appendix 2 - Tree inspection schedule
Appendix 3 – Health
Appendix 4 – Amenity Value
Appendix 5 – Age Class
Appendix 6 – Structural Condition
Appendix 7 – SULE Categories
Appendix 8 – Retention Values (Trees AZ)
Appendix 9 – Encroachment Examples

Hugh Millington

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NC Forestry and Arboriculture III (UK)
RFS Tech. Cert. II (UK)
ISA Tree Risk Assessment Qualification
MAA, MISA

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A1

APPROX. TRUE NORTH
ABOUT 9.90°
MAGNETIC NORTH (PLAN)

No.9
KANDRA ROAD
2 STOREY
BRICK HOUSE
TILE ROOF

No.1
UPPER BALCONY
2 STOREY
BRICK HOUSE
TILE ROOF

ONLY UPPER FLOOR HL VISIBLE
LIMITED VISIBILITY TO WINDOWS, ONLY HL ON EACH LEVEL VISIBLE
UPPER BALCONY
LOWER WINDOW INACCESSIBLE
GROUND FLOOR AWNING

79
D.P.204344
No.28
ELLIOT STREET

2
D.P.736247

1
D.P.736247

PLACE

SEWER MAIN PLOTTED FROM SYDNEY WATER DIAGRAM APPROXIMATE POSITION ONLY

METAL SHED
METAL SHED
BRICK WALL
WALL-BDY (1.32)
WALL-BDY (1.31)
0° METAL FENCE (1.8HIGH)
26' PALING FENCE (2HIGH)
10" FENCE
SETBACK (19.385)
SETBACK (18.26)
38.265
38.26
CONCRETE PATH
GARDEN
GARDEN PLANTER
CONCRETE WALL
LAWN
LAWN/GARDEN
BOXES
WALL
PLANTER BRICK
BRICK WALL
GARDEN
STEPS
TILED BALCONY OVER PAVED PATIO
CONCRETE BALCONY
PAVED
CONCRETE
LOW WALL
FENCE
BRICK WALL REMAINS
DRIVEWAY
VEHICLE CROSSING
GUTTER
CONCRETE VEHICLE CROSSING
(BITUMEN FORMATION)
HIGH VEGETATION
FENCE
PALING
20"
26'
15.24
270°
180°
90°
27'
20"
10"

No.5
1 & 2 STOREY
BRICK HOUSE
TILE ROOF

23
D.P.217829
583.1m² CALC

No.7
BRICK & CLAD HOUSE
METAL ROOF

22
D.P.217829

DECK

T1 T2 T3 T4 T5 T6 T7 T8

BENCH MARK
NAIL IN KERB
RL 95.08 (AHD)

CRAWFORD

No.26
ELLIOT STREET

Tree Crown
Tree Protection Zone
Structural Root Zone

0 15m

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5 Crawford Place, Beacon Hill NSW

SCALE :	DATE :
1 : 100 @ A1	28/08/2025

MAP FILENAME : Appendix 1 - Exisitgn Site Plan

HUGH
THE ARBORIST

Prepared by Hugh Millington

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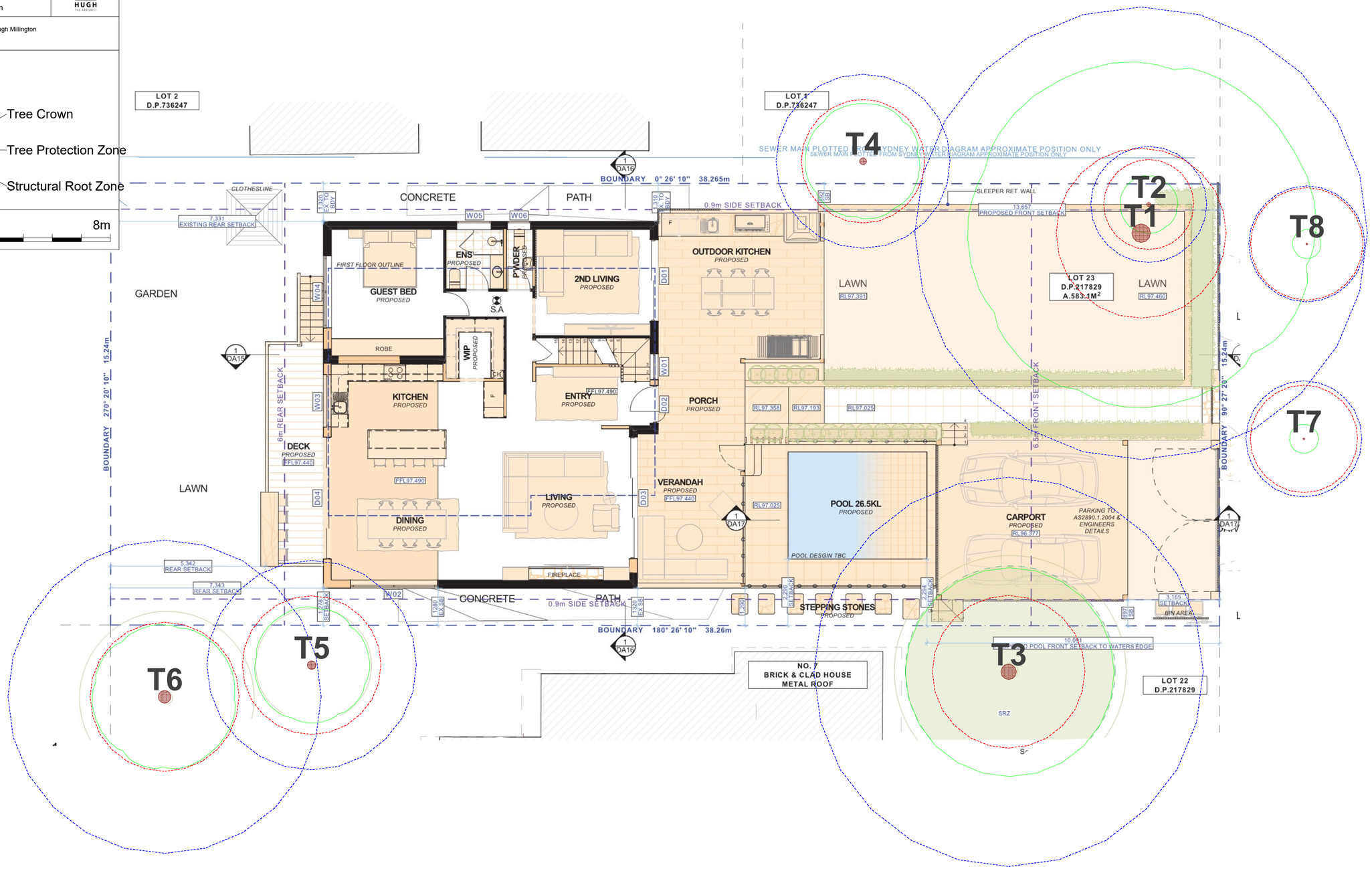
SCALE :	DATE :
1 : 100 @ A3	28/08/2025

MAP FILENAME :
Appendix 1A - Proposed Site Plan

Prepared by Hugh Millington

Tree Crown
Tree Protection Zone
Structural Root Zone

0 8m



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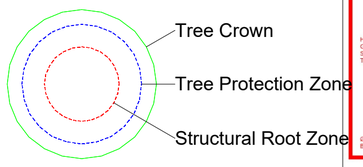
SCALE : 1 : 100 @ A3

DATE : 28/08/2025

MAP FILENAME : Appendix 1B - Proposed Stormwater Plan

Prepared by Hugh Millington



0 8m

SECTION A
OSD OUTLET DETAIL

ORIFICE PLATE CALCULATION

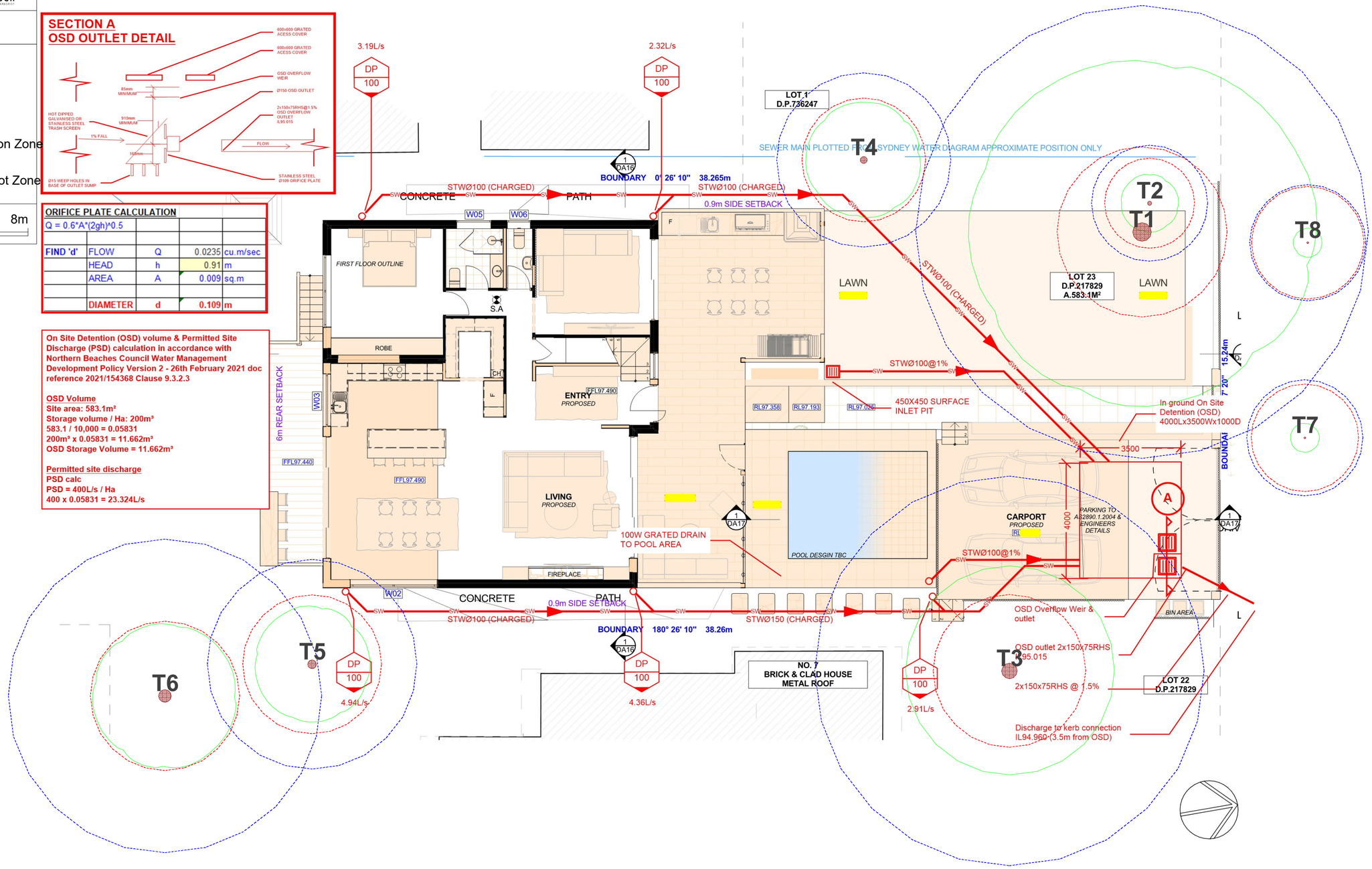
Q = 0.6*A*(2gh)^0.5

FIND 'd'	FLOW	Q	0.0235	cu.m/sec
	HEAD	h	0.91	m
	AREA	A	0.009	sq.m
	DIAMETER	d	0.109	m

On Site Detention (OSD) volume & Permitted Site Discharge (PSD) calculation in accordance with Northern Beaches Council Water Management Development Policy Version 2 - 26th February 2021 doc reference 2021/154368 Clause 9.3.2.3

OSD Volume
Site area: 583.1m²
Storage volume / Ha: 200m³
583.1 / 10,000 = 0.05831
200m³ x 0.05831 = 11.662m³
OSD Storage Volume = 11.662m³

Permitted site discharge
PSD calc
PSD = 400L/s / Ha
400 x 0.05831 = 23.324L/s



Appendix 2 - Tree Inspection Schedule

Tree ID	Common Name	Botanical Name	Age Class	Height (m)	Canopy Spread Radius (m)	Stem 1 (mm)	Stem 2 (mm)	Stem 3	Stem 4	Stem 5	Stem 6	DBH (mm)	DAB (mm)	Health	Structure	Amenity Value	SULE	Retention Value	TPZ Radius (m)	SRZ Radius (m)	Notes
1	Wallangarra White Gum	*Eucalyptus scoparia*	Mature	8	6	650						650	750	Good	Poor	Low	3.Short (b)	Z10	7.8	2.9	Heavily asymmetric canopy bias. Poor apical dominance and service lines.
2	Cheese Tree	*Glochidion ferdinandi*	Semi-mature	5	1	140						140	165	Good	Good	Medium	1. Long	A1	2.0	1.6	Not on survey
3	Snow In Summer	*Melaleuca linarifolia*	Mature	6	3.6	400	390					559	580	Good	Good	Medium	1. Long	A1	6.7	2.6	Neighbors tree estimated
4	Lilly Pilly	*Acmena smithii*	Semi-mature	5	2	250						250	350	Good	Good	Medium	1. Long	A1	3.0	2.1	Neighbors tree not on survey and estimated
5	Japanese maple	*Acer Palmatum*	Mature	4	2	220	140					301	460	Good	Fair	Low	2. Medium	Z1	3.6	2.4	Neighbors tree lopped
6	Norfolk Island Pine	*Araucaria heterophylla*	Semi-mature	16	2.5	450						450	550	Good	Good	High	1. Long	A1	5.4	2.6	Neighbors tree
7	Photinia Robusta	*Photinia robusta*	Semi-mature	2	0.5	20	20	25	30	40		63	250	Fair	Fair	Low	2. Medium	Z1	2.0	1.8	Street tree
8	Photinia Robusta	*Photinia robusta*	Semi-mature	2	0.5	20	20	25	30	40		63	280	Fair	Fair	Low	2. Medium	Z1	2.0	1.9	Street tree

Explanatory Notes

Tree Species - Botanical name followed by common name in brackets. 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), Dead (D).
Diameter at Breast Height (DBH) - Measured with a DBH tape or estimated at approximately 1.4m above ground level. Where DBH has been estimated it is indicated with an 'est'.

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.
Amenity Value - Very High/High/Medium/Low/Very Low.
(x) Indicates the measurement taken for the diameter at tree base above the buttress roots.
(E) Indicates estimated measurements.

Appendix 3 – Assessment of 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.	• The tree is in above average health and condition and no remedial works are required.
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 is in below average health and condition and may require remedial works to improve the trees health.
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 is displaying low levels of health and removal or remedial works may be required.
Dead	• The tree is dead or almost dead.	• The tree should generally be removed.

Appendix 4 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 300m² 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 200m²; 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 100m²; 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 40m²;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 40m² 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.

Ref: *Determining the retention value of trees of development sites,* presentation handouts at TAFE NSW Ryde College, March 2012

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.

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 6 - 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 7 - 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	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 8 Retention Values

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.

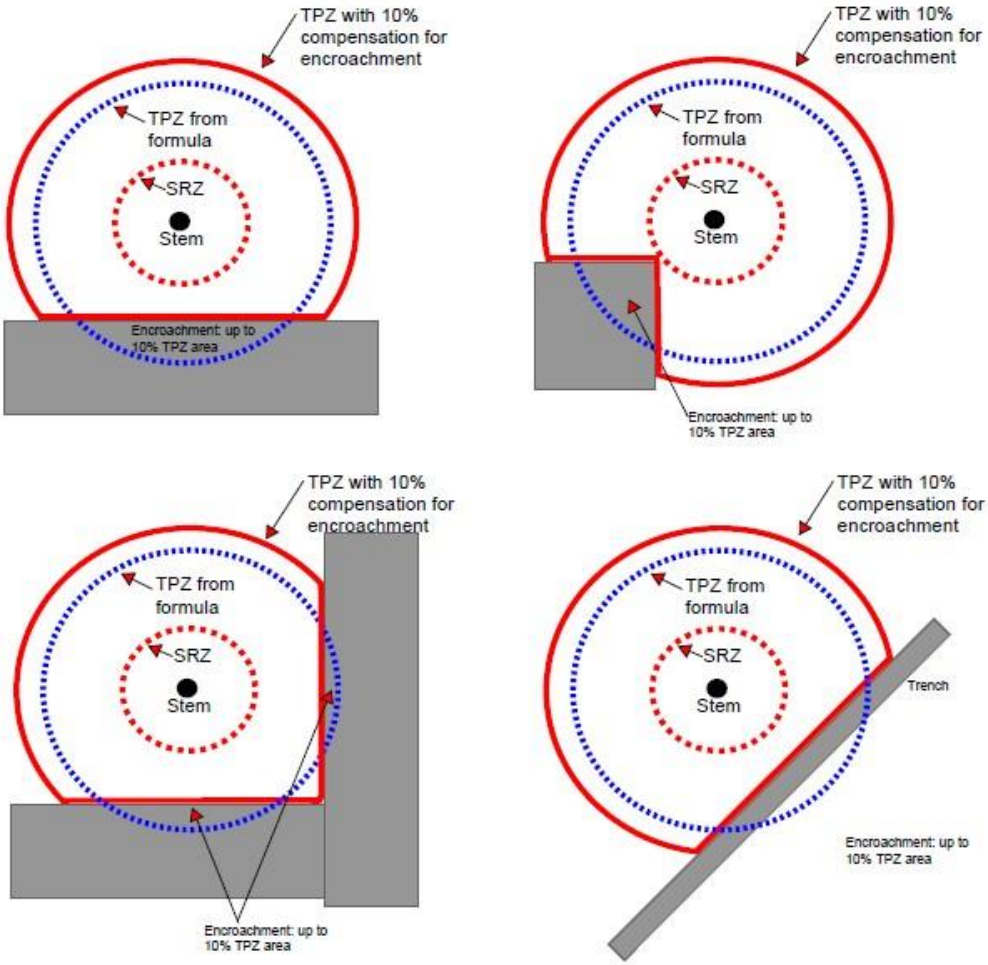
Category A: Important trees suitable for retention for more than 10 years and worthy of being a material constraint

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.

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.