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75 Victor Road, Dee Why

Arbor Impact Assessment
Version 1.0

Client: Mr & Mrs Bloch
c/- Niwa Designs

Prepared By

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Arboriculture Australia™



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1. DISCLAIMER

The information provided within this report from Smart Arbor Professional Consulting is independently gathered by the author as an unbiased party and represents only the opinions and summations of the consulting arborist; compiled using the data gathered from the site inspection/s and any relevant information provided to the author.

All recommendations and information provided in this report relates to the time and date of the initial, and any following, site assessment/s. In the absence of historical records or information provided to the author, assumptions and findings of the consulting arborist are made based off observations at the time of inspection.

Measurements and locations noted in this report are an approximation and may be based on information found in surveys and further documentation not necessarily completed by the author. Exact locations and measurements of landscape require the assessment of a qualified surveyor.

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No guarantees are implied for any findings or recommendations made within this report. Deficiencies, defects, climatic impacts, environmental changes, vandalism, mechanical impacts, or any other variable that may change the current state of the tree/s assessed are not covered in this report and may change the relevance to the opinions and findings provided.

2. EXECUTIVE SUMMARY

This report has been commissioned by Mr & Mrs Bloch, c/- Niwa Designs to provide a qualified assessment of multiple tree specimens on and adjacent to a proposed development site located at 75 Victor Road, Dee Why; a residential property located in the Northern Beaches Council LGA and subject to Local Government Tree Management policies.

The general vegetation on the site is noted to be a combination made up of native and exotic tree specimens. The vegetation assessed were 7 x trees on the property and 1 x tree in a neighbouring property (1 Lewis Street).

The proposed development that bears any impact to trees on site includes the construction of a garage addition to the existing dwelling with associated modifications to the existing driveway; and a landscape upgrade that includes a new access boardwalk alongside the north edge of the premise, new concrete and paved hardstands, stairs and retaining walls, gravel pathways and relevelled and turfed areas in the rear yard and pool area. This will involve construction activities including demolition of existing structures and regrading site levels by excavation, cut/fill processes, installation of steel posts for the boardwalk and trenching. No hydraulic or underground services plans have been submitted prior to report completion.

A summary of the recommendations in reference to the vegetation assessed and information on the proposed development provided within this report is as follows:

- Tree No.'s 6, 7 & 8 are suitable for retention as no measurable impact is posed to the Tree Protection Zone (TPZ). Tree protection measures must be implemented as prescribed below and in the **DISCUSSION** section of this report (page 17).
- Tree 1 has a low impact and sustainable encroachment posed to the Tree Protection Zone by the proposed development and is suitable for retention. Tree sensitive construction techniques must be utilised, and protection measures must be implemented as prescribed in the **DISCUSSION** section of this report (pages 13 & 14).
- Tree No.'s 2, 3 & 5 have a moderate, yet sustainable impact encroachment posed to the Tree Protection Zone by the proposed development and are suitable for retention. Tree sensitive construction techniques must be utilised, and protection measures must be implemented as prescribed in the **DISCUSSION** section of this report (pages 14 & 15).
- Tree 5 has a higher impact posed to the measured Tree Protection Zone, however the tree may be sustainably retained if tree sensitive construction techniques and protection measures are implemented as prescribed in the **DISCUSSION** section of this report (page 16).

- Tree 9 is unsuitable for retention if the proposed development is to proceed due to being located within the footprint of the proposed new paved area within the pool complex. This tree should be removed prior to site establishment.
- Tree removal works should be completed by an experienced Arborist who holds Public Liability and Workers Compensation insurance.
- A Project Arborist with a minimum AQF V qualification must be engaged for the duration of the project to manage implemented TPZs for retained trees, monitor retained tree health with intermittent site visits over the course of the development, supervise excavation works within a measured Tree Protection Zone of retained trees, and certify Tree Protection Measures.
- A fenced exclusion zone must be implemented that extends around as much of the TPZ within the client's property as feasible for Tree 5, while providing a minimum 0.5m offset from the proposed stairs and hardstand to allow clear access for construction activities (as indicated on the **TREE LOCATION & IMPACT PLAN**, page 20). This exclusion zone must be installed as per **10.2- TREE PROTECTION FENCING**, page 21 of this report.
- A fenced exclusion zone must be implemented that extends around as much of the TPZ of Tree No.'s 6 & 8, while providing a reasonable offset from soft landscape works within the pool complex to allow clear access for construction activities (as indicated on the **TREE LOCATION & IMPACT PLAN**, page 20). This exclusion zone must be installed as per **10.2- TREE PROTECTION FENCING**, page 21 of this report.
- Tree No.'s 1, 2, 3 & 4 must have protective battening installed on the lower trunk (as per **10.3 – OTHER TREE PROTECTION MEASURES**, page 22) that shall consist of internal cushioning and battens strapped together consistent with the Australian Standard for the Protection of Trees on Development Sites (AS 4970 - 2009), Section 4 and paragraph 4.5.2 and Figure 4. The battens shall consist of 2.5m lengths on Tree 1, 3m lengths on Tree 2, and 2m lengths on Tree No.'s 3 & 4 that are 35 x 70mm (or similar to accommodate tree structure) structural timber secured side by side, spaced 50-100mm apart with galvanised steel banding for the full circumference of the trunk and fixed by straps without driving nails or screws into the trunk or branches. These battens should be installed prior to site establishment and removed after completion of the development.

Schedule of Tree Management Processes

Stage	Task	Responsible Parties	Process Timing
1	Engagement of Project Arborist to oversee tree health and management	Principal Contractor	Prior to site establishment
2	Undertake removal of Tree 9	Principal Contractor	Prior to site establishment
3	Install Tree Protection battens on Trees 1, 2, 3 & 4 and Protective fencing around Trees 5, 6, 7 & 8	Principal Contractor	Prior to site establishment.
4	Certification of Tree Protection Measures	Project Arborist	Prior to site establishment.
5	Supervise all excavation works proposed within the TPZ and complete intermittent visits to assess retained tree health.	Principal Contractor Project Arborist	As required prior to the works proceeding adjacent to tree
6	Final Inspection and certification of retained tree health	Project Arborist	Following the removal of tree protection measures from Stage 3

3. PURPOSE

3.1 - PROPOSAL

This report has been commissioned by Mr & Mrs Bloch, c/- Niwa Designs to provide a qualified assessment of multiple tree specimens on and adjacent to a proposed development site located at 75 Victor Road, Dee Why; a residential property located in the Northern Beaches Council LGA and subject to Local Government Tree Management policies.

The objective of this report is to complete a Visual Tree Assessment (Mattheck and Breloer 1994 standard)^(c) and take data to assess and provide advice on the impacts posed to vegetation protected by Local Government policies and provide recommendations to assist and guide management of tree species with the view of retaining and protecting suitable specimens.

Determinations and conclusions are drawn in this report by identifying key factors such as:

- Significant tree specimens
- Trees protected under the Warringah Development Control Plan 2011^(h) and the Warringah Local Environmental Plan 2011⁽ⁱ⁾
- Trees protected under the NSW Biodiversity Conservation Act 2016 and the State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017.
- Trees suitable/unsuitable for retention
- The impacts by proposed structures to currently existing tree specimens

The data collected can be read in summarized table form in **TREE DATA COLLECTION FORM** (page 12).

3.2 - LOCAL GOVERNMENT TREE PROTECTION

The site is located within the Northern Beaches Council LGA and is thus governed by their relevant adopted Development Control Plans and Local Environment Plans from former Councils and Tree Management Policy. The Warringah Development Control Plan^(h) requires a Vegetation Clearing Permit for:

- a. Removal or cutting down of any tree over five (5) metres in height;
- b. Pruning of more than ten percent (10%) of a tree canopy.
- c. The removal or cutting down of vegetation in "Bushland".

The policy applies to all trees addressed in this report.

4. METHOD

4.1 – METHODOLOGY

A visual assessment of the trees (VTA⁸ - Mattheck and Breloer 1994 standard)^(c) was performed on 16th April, 2024. VTA⁸ is an industry recognised and standard assessment of an individual tree from ground level to identify tree health and structural symptoms. VTA⁸ is limited to view at ground level, and does not observe symptoms below ground level, or up in the canopy not viewable from ground.

In order to view tree conditions below ground level, excavation around the root base would be required. For viewing areas of the canopy not viewable from ground, an aerial inspection would be required. Neither of these methods were completed at the time of assessment.

4.2 - INSPECTION DATA

- Genus and species
- Height (Estimation),
- Canopy Spread (Estimation)
- DBH (Diameter at Breast Height) and DRB (Diameter at Root Base) with Diameter Tape
- Age
(Juvenile, Semi-Mature, Mature, Late-Maturity, Senescent)
- Vigor
(Good, AVERAGE, Fair, Poor, Dead, DORMANT)
- Growth Habit
(Upright, Spreading, Leaning, Over-Extended, Dominant, Co-Dominant leaders, Multi-Stemmed)
- Crown¹ Form
(Symmetrical, ASymmetrical, DENSE, SParse)
- IACA STARS[®] Significance value
(High, Medium, Low)
- Defects
- General Comments

Data collected is then subject to the SULE (© Jeremy Barrell 2001)^(d) methodology of assessment, which influences any conclusions drawn and recommendations made.

4.3 - TREE DATA DEFINITIONS

- **Age:** The definitions for tree age refer to the stage of life and maturity the tree is currently in that is relevant to tree species. Juvenile (**J**) is where the tree is in a small or sapling form and has not yet reached a stage where it is producing fruit. This category can often refer to a tree specimen that is under Local Government minimum requirements for classification of a tree but is not necessarily defined by this parameter. A juvenile specimen can grow at an accelerated rate in comparison to the other categories depending on competing species. Semi-Mature (**SM**) is an age of the tree where it may have reached fruiting ability, however the size and habit does not reflect what would be classified as a fully mature example of its species. This category is governed by tree species and their growth habits. Mature (**M**) is the category where the tree has reached fruiting ability and the size and habit reflect what is expected from a fully mature specimen. A mature tree will continue to have steady annual growth. Late Maturity (**LM**) is a mature tree that has considerably slowed its growth rate and has neared its useful life expectancy. Senescent (**S**) is a stage where the tree is still alive, but no longer capable of putting on new growth. This is the final live stage of a tree.
- **Vigor:** The definitions for vigor correlate with how well the tree is performing in its environment and inclusive of canopy growth, branch growth and habit, and expression of general shape from the species in question. Good (**G**) is signs of new growth both in leaf/canopy and branches. 'Flushing'⁴ is a general good indicator. Average (**AV**) is little to no signs of 'Flushing'⁴, however growth is stabilizing and there is no significant loss of canopy growth, nor is there excessive presence of deadwood. Fair (**F**) has an increased presence of deadwood, or moderate signs of decline and dieback to branch extremities. The tree's significance value is usually decreased when in this state, however it is generally reversible with appropriate management. Poor (**P**) is when the tree shows heavier signs of decline, usually with excessive amounts of deadwood or epicormic³ growth, along with less canopy leaf presence and little to no progress in branch and trunk growth. Dead (**D**) means no signs of growth, and the tree is irreversible of its condition. Dormant (**DO**) describes the canopy as being non-existent, i.e. no leaves, however this is not necessarily a sign of death or poor vigor as the tree may be deciduous and in its dormancy stage.
- **Growth Habit:** The definitions for growth habit apply to condition and habit of the tree and the form features that impact its shape and other factors. Upright (**U**) means the tree is generally growing straight up and reaching skyward with little deviation of direction from the point of the root base. Leaning (**L**) means the tree has deviated from the point of the root base and is favoring a direction that is leaning away. Over-extended (**OE**) means the tree has an excessive lean that could over-balance the tree, and extreme weather conditions may pose a threat of uprooting the tree. Co-Dominant (**CD**) means the main leader of the tree has split into two or more main leaders that have started growing their own primary and secondary laterals. Multi-Stemmed (**MS**) means the tree has begun growth of multiple leaders from the root base that have started their own scaffold of primary and secondary branches.
- **Crown Form:** The definitions for crown form describe the shape and habit of the canopy, or crown, and touch upon the vigor or leaf growth habit of the crown also. Symmetrical (**S**)

describes the canopy as being generally even and balanced in all directions, without favoring a direction. Asymmetrical (**AS**) could refer to a lean or unbalanced canopy, generally seen in species inhibited by other species or unevenly pruned. Dense (**DE**) describes the canopy as generally full for its species, with decent or 'Flushing'⁴ growth. Sparse (**SP**) describes the canopy as having less decent growth, or open gaps in the canopy.

- **Significance Value:** The definitions for significance value are determined using the IACA Significance of a Tree, Assessment Rating System (STARS)^{®(e)}. This rating system assists with tree management in the planning processes for a proposed development that impacts trees protected under Local Government Tree Management Policies. The system defines three categories of significance as **High**, **Medium** and **Low** within the landscape. Once assessment criteria define the significance of the tree in the landscape, a retention value can then be determined utilising the below Priority Matrix:

		Significance				
		1. High	2. Medium	3. Low		
		Significance in Landscape	Significance in Landscape	Significance in Landscape	Environmental Pest / Noxious Weed Species	Hazardous / Irreversible Decline
Estimated Life Expectancy	1. Long >40 years					
	2. Medium 15-40 Years					
	3. Short <1-15 Years					
	Dead					

Legend for Matrix Assessment



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

Other variations on values defined and attributed to the significance value of a tree is at the discretion of the author utilizing experience and professional opinion. All such results are discussed in a report's recommendations.

5. SITE OBSERVATIONS

5.1 - SITE DESCRIPTION

The trees are located on a residential block with a northerly aspect that composes of a two-storey residence with attached garage and associated driveway, an in-ground pool with paved coppice, concrete pathways, stairs and footways, and landscaped tiered gardens with brick and timber retaining walls supporting the slope of the block. An easement with concrete drain travels through the north side of the property running between the west to east boundary, which divides a narrow garden area from the remainder of the property to the south. Vegetation on the north side of the the drain has not been assessed due to lack of impact from proposed construction. The approximate location of each tree specimen can be identified on the **TREE LOCATION & IMPACT PLAN** (page 20).

The proposed development that bears any impact to trees on site includes the construction of a garage addition to the existing dwelling with associated modifications to the existing driveway; and a landscape upgrade that includes a new access boardwalk alongside the north edge of the premise, new concrete and paved hardstands, stairs and retaining walls, gravel pathways and relevelled and turfed areas in the rear yard and pool area. This will involve construction activities including demolition of existing structures and regrading site levels by excavation, cut/fill processes, installation of steel posts for the boardwalk and trenching. No hydraulic or underground services plans have been submitted prior to report completion.

REF: Proposed Site Plan by R&R Building Design; 26/04/24

5.2 - VEGETATION COMMUNITY

The nearest relevant mapped and vegetation community for this site is located approximately 650m to the east where a section of the Sydney Coastal Dry Sclerophyll Forest is situated near Council chambers. This community is an open eucalypt forest and woodland with prominent and diverse sclerophyll shrub understorey and open groundcover of sclerophyll sedges.

The dominant tree species across the topography of this ecological community includes *Angophora costata* (Sydney red gum) and *Corymbia gummifera* (Red Bloodwood). In gullies *Eucalyptus piperita* (Sydney Peppermint) is frequent, while ridges house canopy species consisting of *Eucalyptus capitellata* (Brown Stringybark), *Eucalyptus haemastoma* (Broad-leaved Scribbly Gum), *Eucalyptus oblonga*, *Eucalyptus racemosa* (Narrow-leaved Scribbly Gum) and *Eucalyptus sieberi* (Silvertop Ash). *Banksia serrata* (Old Man Banksia) and *Ceratopetalum gummiferum* (NSW Christmas Bush) make up a tree mid-canopy in gullies.

REF: NSW Government; The SEED Initiative; 2018 data^[9]

There are no species representative of this community assessed as part of this report.



ADDRESS: 75 Victor Road, Dee Why

INSPECTION: 16/04/24

NO#	Genus	Species	Common Name	Age	Vigor	Growth Habit	Crown Form	Height (m)	Canopy Spread (m)	DBH 1 (mm)	DBH 2 (mm)	Avg DBH (mm)	DRB (mm)	SRZ (mm)	TPZ (mm)	STARS® Rating	Defects & Attributes	General Comments	Encroachment
1	Jacaranda	mimosifolia	Jacaranda	M	G	CD, L	Skew, Sp	12	12	540		540	690	2832	6480	M	Basal sweep to W, correcting @ 1.4m. Spreading laterals favouring SW. Low laterals overhanging nature strip and driveway.	Tree located on lower garden level below proposed development gradient (approx 650mm)	Located 180mm from proposed new boardwalk posing a 6% discontinuous cut encroachment within the TPZ and SRZ
2	Brachychiton	acerifolius	Illawarra Flame Tree	M	G	CD, U	As, Dom	14	8.5	380	400	552	560	2594	6624	M-H	Corominant leaders from 0.8m, included typical for species. Most dominant crown.	Tree located on lower garden level below proposed development gradient (approx 650mm)	Located 280mm from proposed new boardwalk posing an 11% discontinuous cut encroachment within the TPZ and SRZ
3	Jacaranda	mimosifolia	Jacaranda	M	Av-G	CD, L	As, Sp	11	11	320	350	475	480	2431	5700	M	Codominant spreading leaders from 0.9m. S side of lower crown suppressed from existing premises. Small timber cubby foundations resting in lower crown.	Tree located on same gradient as proposed works.	Located 380mm from proposed new boardwalk posing an 14% discontinuous cut encroachment within the TPZ and SRZ
4	Tristaniaopsis	laurina	Water Gum	M	G	CD, U	As, Skew	10	7	420		420	570	2613	5040	M	Straps on lower trunk attached as support for adjacent cinderblock wall. Minor upper crown suppression from neighbouring specimens.	Tree located on lower garden level below proposed development gradient (approx 700mm)	Located 0.5m from proposed new boardwalk and steps posing a 9% discontinuous cut encroachment; and 1.6m from proposed new lawn posing an 18% fill encroachment within the TPZ and SRZ.
5	Jacaranda	mimosifolia	Jacaranda	M	Av-G	CD, L	As, Sp, Skew	11	13	450		450	550	2575	5400	M	Cotoneaster growing up through lower crown. Overhanging above existing premises roofline.	Tree located in neighbouring property to E (1 Lewis St). DBH and DRB estimated due to access.	Located 1.8m from proposed new lawn posing a 10% fill encroachment; and 2.8m from proposed new concrete steps and hardstand posing a 7% cut encroachment within the TPZ
6	Syzigium	sp.	Brush Cherry	M	G	CD, U	As	9	4	180	140	229	220	1752	2748	L	2 x stems. Suppressed to E from T7		No measurable impact
7	Banksia	integrifolia	Coastal Banksia	M	Av-G	CD, L	As, Skew	10	6	430		430	560	2594	5160	L-M	Buttress located on lower gradient to pool enclosure surface. Crown favouring E.		No measurable impact
8	Syzigium	Sp.	Brush Cherry	M	Av	U	As	9	3 (NW)	190		190	210	1718	2280	L	Lower crown suppression from Bird of Paradise to S.		No measurable impact
9	Howea	forsteriana	Kentia Palm	M	F-Av	Pole	S	3.5	3.5	180		180	N/A	N/A	2250	L	Tree is moderate state of stress	Exempt species	With development footprint

7. DISCUSSION

The majority of the proposed development that bears any impact to trees on site is associated with proposed hard and soft landscaping in the side and rear yard of the property. A boardwalk that connects access between the proposed modified driveway and rear yard has been designed with the view of retaining tree specimens on the north side of the premises. Specifications from an engineer are yet to be supplied, but the construction of this boardwalk has been assumed as a composite timber decking and frame installed with steel posts roughly 100mm x 100mm and has been calculated as a discontinuous encroachment.

A new lawn area proposed at the rear of the premises has been calculated as a fill encroachment as no finished levels have been supplied at this time. Fill material utilised for the new lawn area should be interfaced with a large diameter gravel or pebble to provide aeration and percolation to the natural soil below, helping to mitigate the development of anaerobic soil conditions within the root zone of trees impacted by this part of the development.

The extent of impacts to trees on development sites can be broadly rated using the following scale of impact to the tree's health and structure (as utilised by Guy Paroissien – Landscape Matrix Pty Ltd):

0% of encroachment into the Tree Protection Zone –	No Impact
0 to 10% of encroachment into the Tree Protection Zone –	Low Impact
10 to 15% of encroachment into the Tree Protection Zone –	Low to Moderate Impact
15 to 20% of encroachment into the Tree Protection Zone –	Moderate Impact
20 to 25% of encroachment into the Tree Protection Zone –	Moderate to High impact
25 to 35% of encroachment into the Tree Protection Zone –	High Impact
>35% of encroachment into the Tree Protection Zone –	Significant Impact

7.1 – Trees with a Low Impact (<10%)

- Tree 1 is a Jacaranda (*Jacaranda mimosifolia*) located in the side yard of the property and is 180mm from the proposed new boardwalk, providing a 6% discontinuous cut encroachment within the Tree Protection Zone and Structural Root Zone. This tree is considered as having a Medium STARS© Significance rating and should be retained and protected.

Excavation for post holes associated with the construction of the boardwalk poses an impact to the tree's root system within an area that is required to be maintained for tree stability (the SRZ). However, this type of excavation may be deemed as sustainable by the tree if undertaken under the supervision of a Project Arborist with a minimum AQF5 level qualification.

Exploratory excavation to a depth of the first 600mm of proposed post locations within the measured TPZ should be performed prior to completion of the post hole. If roots greater than 30mm diameter are identified, the Project Arborist at their discretion should advise whether the

root must be retained and the post relocated, or it should be clean cut with a pruning saw or chainsaw under their direction.

A fenced exclusion zone around the tree would impede adequate access for construction of the boardwalk and is not suitable. As an alternative measure, the tree must have protective battening installed on the lower trunk (as per **10.3 – OTHER TREE PROTECTION MEASURES**, page 22) that shall consist of internal cushioning and battens strapped together consistent with the Australian Standard for the Protection of Trees on Development Sites (AS 4970 - 2009), Section 4 and paragraph 4.5.2 and Figure 4. The battens shall consist of 2.5m lengths of 35 x 70mm (or similar to accommodate tree structure) structural timber secured side by side, spaced 50-100mm apart with galvanised steel banding for the full circumference of the trunk and fixed by straps without driving nails or screws into the trunk or branches. This should be installed prior to site establishment and removed after completion of the development.

7.2 - Moderately Impacted Trees (>10%; <20%)

- Tree 2 is an Illawarra Flame Tree (*Brachychiton acerifolius*) located in the side yard of the property and is 280mm from the proposed new boardwalk, providing an 11% discontinuous cut encroachment within the Tree Protection Zone and Structural Root Zone. This tree is considered as having a Medium-High STARS© Significance rating and should be retained and protected.

Excavation for post holes associated with the construction of the boardwalk poses an impact to the Tree Protection Zone (TPZ) and Structural Root Zone (SRZ). However, this type of excavation may be sustainable if undertaken under the supervision of a Project Arborist with a minimum AQF5 level qualification. Exploratory excavation to a depth of the first 600mm of proposed post locations within the measured TPZ should be performed prior to completion of the post hole. If roots greater than 30mm diameter are identified, the Project Arborist at their discretion should advise whether the root must be retained and the post relocated, or it should be clean cut with a pruning saw or chainsaw under their direction.

A fenced exclusion zone around the tree would impede adequate access for construction of the boardwalk and is not suitable. As an alternative measure, the tree must have protective battening installed on the lower trunk (as per **10.3 – OTHER TREE PROTECTION MEASURES**, page 22) that shall consist of internal cushioning and battens strapped together consistent with the Australian Standard for the Protection of Trees on Development Sites (AS 4970 - 2009), Section 4 and paragraph 4.5.2 and Figure 4. The battens shall consist of 3m lengths of 35 x 70mm (or similar to accommodate tree structure) structural timber secured side by side, spaced 50-100mm apart with galvanised steel banding for the full circumference of the trunk and fixed by straps without driving nails or screws into the trunk or branches. This should be installed prior to site establishment and removed after completion of the development.

- Tree 3 is a Jacaranda (*Jacaranda mimosifolia*) located in the side yard of the property and is 380mm from the proposed new boardwalk, providing a 6% discontinuous cut encroachment

within the Tree Protection Zone and Structural Root Zone. This tree is considered as having a Medium STARS© Significance rating and should be retained and protected.

As with Tree No.'s 1 & 2, excavation for post holes associated with the construction of the boardwalk poses an impact to the TPZ and SRZ. Exploratory excavation under the supervision of a Project Arborist to a depth of the first 600mm of proposed post locations within the measured TPZ should be performed prior to completion of the post hole. If roots greater than 30mm diameter are identified, the Project Arborist at their discretion should advise whether the root must be retained and the post relocated, or it should be clean cut with a pruning saw or chainsaw under their direction.

The tree must have protective battening installed on the lower trunk (as per **10.3 – OTHER TREE PROTECTION MEASURES**, page 22) that shall consist of internal cushioning and battens strapped together consistent with the Australian Standard for the Protection of Trees on Development Sites (AS 4970 - 2009), Section 4 and paragraph 4.5.2 and Figure 4. The battens shall consist of 2m lengths of 35 x 70mm (or similar to accommodate tree structure) structural timber secured side by side, spaced 50-100mm apart with galvanised steel banding for the full circumference of the trunk and fixed by straps without driving nails or screws into the trunk or branches. This should be installed prior to site establishment and removed after completion of the development.

- Tree 5 is a Jacaranda (*Jacaranda mimosifolia*) located in the rear yard of the neighbouring property to the east (#1 Lewis Street) and is 1.8m from the proposed new lawn providing a 10% fill encroachment within the Tree Protection Zone and Structural Root Zone; and is 2.8m from proposed new concrete steps and hardstand area posing a 7% cut encroachment within the TPZ. This tree is considered as having a Medium STARS© Significance rating and should be retained and protected.

The excavation required for construction of the concrete steps and associated hardstand area poses an impact to the tree's root system that would be deemed as sustainable by the tree if undertaken under the supervision of a Project Arborist with a minimum AQF5 level qualification. If roots greater than 30mm diameter are identified, the Project Arborist at their discretion should advise whether the root must be retained, or they should be clean cut with a pruning saw or chainsaw under their direction. The tree is displaying good signs of vigor and recovery from the impact is highly likely.

The additional impacts from the fill encroachment of the proposed lawn area within the measured TPZ can be minimized by utilising gravel-based landfill below the top soil layer that provides aeration and percolation to the root zone.

A fenced exclusion zone should be implemented in order to protect as much of the measured TPZ as feasible, while providing a minimum 0.5m offset from the proposed steps and hardstand to allow clear access for construction activities (as indicated in the **TREE LOCATION & IMPACT PLAN**, page 20).

7.3 - Highly Impacted Trees (>20%; <35%)

- Tree 4 is a Water Gum (*Tristaniposis laurina*) located in the rear yard of the property and located 0.5m from the proposed new boardwalk, providing a 9% discontinuous cut encroachment within the Tree Protection Zone and Structural Root Zone; and 1.6m from the proposed new lawn area providing an 18% fill encroachment. This tree is considered as having a Medium STARS© Significance rating and should be retained and protected.

As with Tree No.'s 1, 2 & 3, excavation for post holes associated with the construction of the boardwalk poses an impact to the TPZ and SRZ. Exploratory excavation under the supervision of a Project Arborist to a depth of the first 600mm of proposed post locations within the measured TPZ should be performed prior to completion of the post hole. If roots greater than 30mm diameter are identified, the Project Arborist at their discretion should advise whether the root must be retained and the post relocated, or it should be clean cut with a pruning saw or chainsaw under their direction.

The additional impacts from the fill encroachment of the proposed lawn area within the measured TPZ can be minimized by utilising gravel-based landfill below the topsoil layer that provides aeration and percolation to the root zone and is not built up against or above the root buttress. Generally, this type of fill does not adversely impact the structural integrity of a root system and is of less concern within the measured SRZ of the tree.

The tree must have protective battening installed on the lower trunk (as per **10.3 – OTHER TREE PROTECTION MEASURES**, page 22) that shall consist of internal cushioning and battens strapped together consistent with the Australian Standard for the Protection of Trees on Development Sites (AS 4970 - 2009), Section 4 and paragraph 4.5.2 and Figure 4. The battens shall consist of 2m lengths of 35 x 70mm (or similar to accommodate tree structure) structural timber secured side by side, spaced 50-100mm apart with galvanised steel banding for the full circumference of the trunk and fixed by straps without driving nails or screws into the trunk or branches. This should be installed prior to site establishment and removed after completion of the development.

7.4 - Trees within the development footprint

- Tree 9 is a Kentia Palm located in the existing fenced pool area and is within the proposed development footprint. This tree is listed on the Northern Beaches exempt tree species list and is considered as having a Low STARS© Significance rating. This tree should not be viewed as a constraint on the development. The tree cannot be retained if the development is approved in its current form.

7.6 - Other Trees Assessed and General Notes

- Tree No.'s 6 & 8 are Brush Cherries (*Syzigium* sp.) respectively located on the tiered garden level within the fenced pool area, with their measured TPZs above or outside the development area. There is no measurable impact on these trees from construction. While excavation associated with the development will not impact these trees' root zone, the trees will be in close proximity to hard landscaping works within the pool area.

A fenced exclusion zone should be implemented in order to protect as much of the measured TPZ of these trees as feasible, while providing a reasonable offset from proposed soft landscape works within the pool area to allow clear access for construction activities (as indicated in the **TREE LOCATION & IMPACT PLAN**, page 20).

- Tree 7 is a Coastal Banksia (*Banksia integrifolia*) located in a lower tiered garden level behind the fenced pool area, with its measured TPZ likely unaffected by the proposed area of development. There is no measurable impact on this tree from construction.

The fenced exclusion zone proposed for protection Tree No.'s 6 & 8 (as indicated in the **TREE LOCATION & IMPACT PLAN**, page 20) will provide adequate protection to this tree's crown and root zone over the course of the construction phase of the development.

- A canopy included on the Proposed Site Plan by R&R Building Design; 26/04/24 at the south-east rear corner of the property indicates the crown of a Bird Of Paradise (*Strelitzia* sp.) proposed for removal. This specimen is of low significance and should not be viewed as a constraint on development.
- A canopy included on the Proposed Site Plan by R&R Building Design; 26/04/24 at the north-west corner of the property indicates the crown of an Evergreen Alder (*Alnus jorullensis*) proposed for removal. This tree is listed on the Northern Beaches exempt tree species list and should not be viewed as a constraint on development.
- Other trees surveyed on the Proposed Site Plan by R&R Building Design; 26/04/24 located to the north of the easement and concrete drain are outside the development area and were not assessed as part of this report. There would be no impact to these trees' crown or root zone from any works associated with the proposed development.

8. RECOMMENDATIONS

8.1 - TREES SUITABLE FOR RETENTION

- Tree No.'s 6, 7 & 8 are suitable for retention as no measurable impact is posed to the Tree Protection Zone (TPZ). Tree protection measures must be implemented as prescribed below and in the **DISCUSSION** section of this report (page 17).
- Tree 1 has a low impact and sustainable encroachment posed to the Tree Protection Zone by the proposed development and is suitable for retention. Tree sensitive construction techniques must be utilised, and protection measures must be implemented as prescribed in the **DISCUSSION** section of this report (pages 13 & 14).
- Tree No.'s 2, 3 & 5 have a moderate, yet sustainable impact encroachment posed to the Tree Protection Zone by the proposed development and are suitable for retention. Tree sensitive construction techniques must be utilised, and protection measures must be implemented as prescribed in the **DISCUSSION** section of this report (pages 14 & 15).
- Tree 5 has a higher impact posed to the measured Tree Protection Zone; however, the tree may be sustainably retained if tree sensitive construction techniques and protection measures are implemented as prescribed in the **DISCUSSION** section of this report (page 16).

8.2 - TREES UNSUITABLE FOR RETENTION

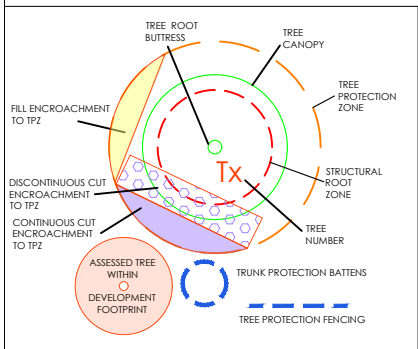
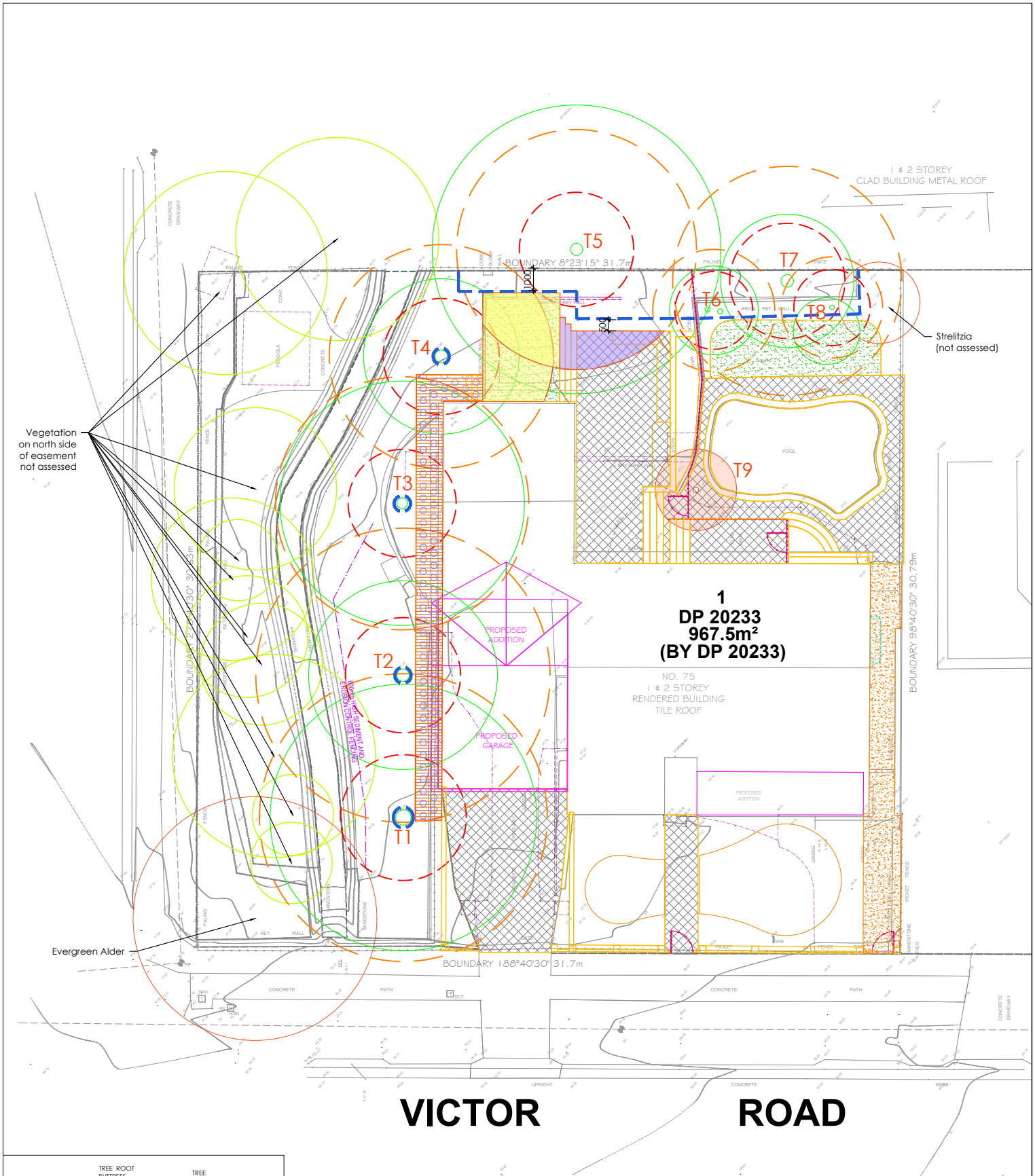
- Tree 9 is unsuitable for retention if the proposed development is to proceed due to being located within the footprint of the proposed new paved area within the pool complex. This tree should be removed prior to site establishment.
- Tree removal works should be completed by an experienced Arborist who holds Public Liability and Workers Compensation insurance.

8.3 – SITE SPECIFIC TREE PROTECTION MEASURES

- A Project Arborist with a minimum AQF V qualification must be engaged for the duration of the project to manage implemented TPZs for retained trees, monitor retained tree health with intermittent site visits over the course of the development, supervise excavation works within a measured Tree Protection Zone of retained trees, and certify Tree Protection Measures.
- A fenced exclusion zone must be implemented that extends around as much of the TPZ within the client's property as feasible for Tree 5, while providing a minimum 0.5m offset from the proposed stairs and hardstand to allow clear access for construction activities (as indicated on

the **TREE LOCATION & IMPACT PLAN**, page 20). This exclusion zone must be installed as per **10.2- TREE PROTECTION FENCING**, page 21 of this report.

- A fenced exclusion zone must be implemented that extends around as much of the TPZ of Tree No.'s 6 & 8, while providing a reasonable offset from soft landscape works within the pool complex to allow clear access for construction activities (as indicated on the **TREE LOCATION & IMPACT PLAN**, page 20). This exclusion zone must be installed as per **10.2- TREE PROTECTION FENCING**, page 21 of this report.
- Tree No.'s 1, 2, 3 & 4 must have protective battening installed on the lower trunk (as per **10.3 – OTHER TREE PROTECTION MEASURES**, page 22) that shall consist of internal cushioning and battens strapped together consistent with the Australian Standard for the Protection of Trees on Development Sites (AS 4970 - 2009), Section 4 and paragraph 4.5.2 and Figure 4. The battens shall consist of 2.5m lengths on Tree 1, 3m lengths on Tree 2, and 2m lengths on Tree No.'s 3 & 4 that are 35 x 70mm (or similar to accommodate tree structure) structural timber secured side by side, spaced 50-100mm apart with galvanised steel banding for the full circumference of the trunk and fixed by straps without driving nails or screws into the trunk or branches. These battens should be installed prior to site establishment and removed after completion of the development.



REV	ISS	BY	DATE	DESCRIPTION	PROJECT	ADDITIONS & ALTERATIONS	DATE
A		LS	20.06.24	TREE LOCATION & IMPACT PLAN	75 VICTOR ROAD, DEE WHY	TREE LOCATION & IMPACT PLAN	
					MR & MRS BLOCH	NTS @ A4	V1.0
						TLP-S1	20.06.24
							LS
							A



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Registered User of QTRA



10. TREE PROTECTION PLANNING

10.1 – Engagement of A Project Arborist

The engagement of a Project Arborist is required to oversee and certify tree protection measures implemented prior to any site establishment works and maintained for the duration of the construction process. The Project Arborist is to perform additional site inspections as required at each stage of the development that may impact tree health including supervision of construction works with a tree's measure TPZ, pruning of trees away from construction activities, etc. The Project Arborist should also be notified in the event the protected trees are damaged or are showing signs of decline which may require further management recommendations.

10.2 - Tree Protection Fencing

When required as part of an approved Development Application, tree protection fencing shall be installed prior to site establishment to establish the TPZ for trees to be retained. Tree protection fencing shall be maintained for the duration of the development schedule. The Tree Protection Fencing should enclose as much of the TPZ as can reasonably be fenced off, allowing for pedestrian access and a reasonable offset around the construction footprint and scaffolding. The fencing should be made up of steel with a chain mesh or fence palings with plywood panels that is lockable and a minimum 1.8m in height. All Tree Protection Fencing should be sign posted with a 'no access' instruction and contact details for the Project Manager and Project Arborist. This should all be certified by the Project Arborist.

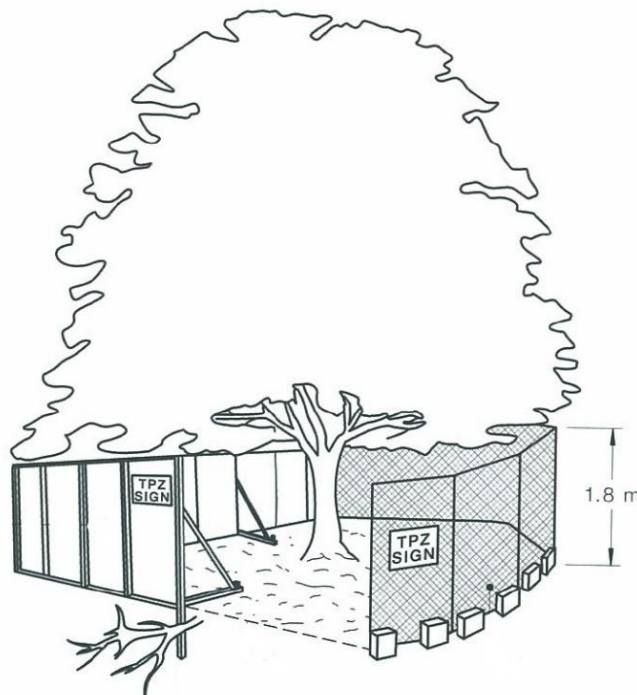


Image from AS 4970 'Protection of Trees on Development Sites'; Standards Australia; 2009

10.3 - Other Tree Protection Measures

Other measures that can assist with the protection of the canopy, trunk, branches, or roots from the risk of damage can include:

- A 100mm layer of approved mulch to be installed to the TPZ.
- A temporary drip irrigation system to be installed to the TPZ.
- Ground protection matting for staff, equipment and machinery access over tree roots.
- Trunk and branch battens and/or wrapping.

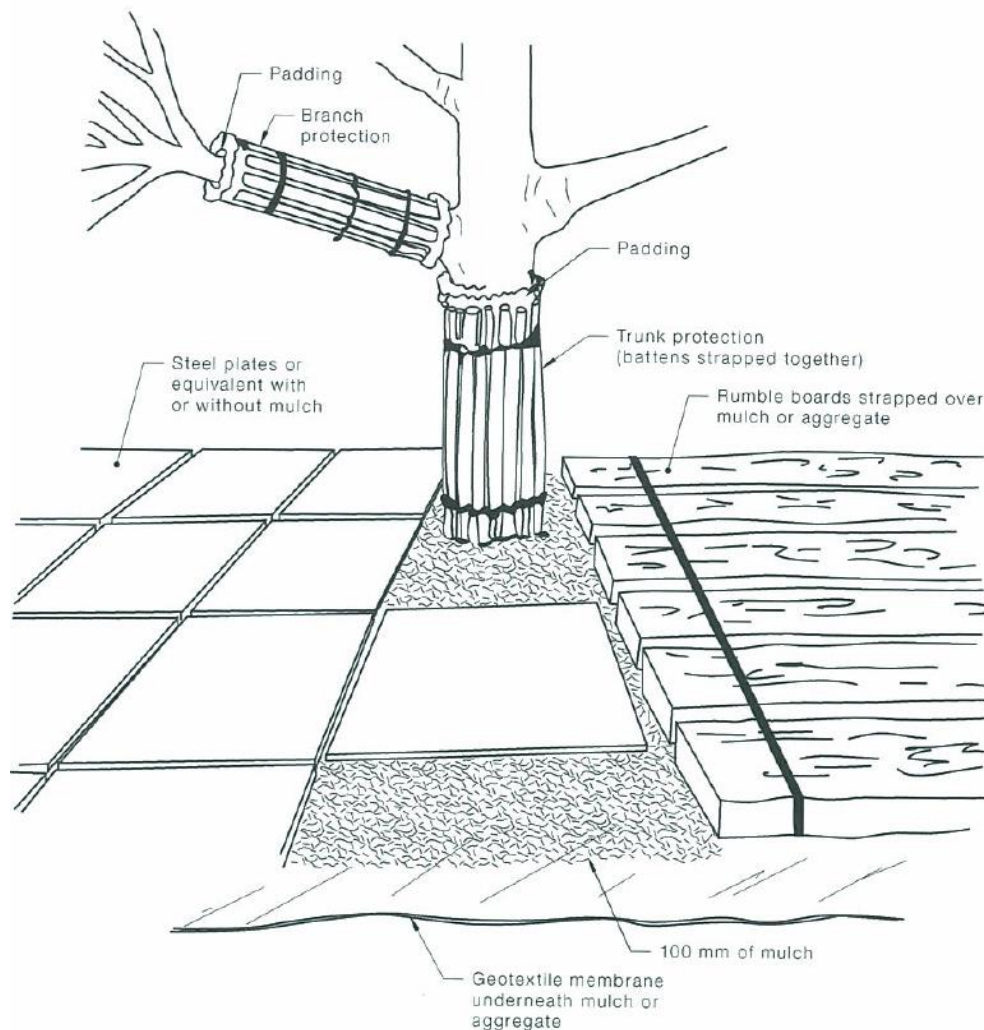


Image from AS 4970 'Protection of Trees on Development Sites'; Standards Australia, 2009

10.4 - Excavation within the TPZ

Excavation within the TPZ should be avoided, however this is not always realistically the case during a development. All efforts to preserve tree root systems should be taken including:

- Supervision from the Project Arborist during excavation.
- Excavation to be completed by hand when reasonable to avoid damage to roots.
- Root mapping may be required prior to excavation and should be completed with the use of either ground penetrating radar, air spade, water laser or by hand excavation; and should be certified by the Project Arborist.
- Where roots >50mm diameter are encountered, alternative construction methods should be considered to ensure roots are not damaged. Allowance should also be made for future root growth.
- Under-boring for services proposed below the root ball of the tree should be considered and certified by the Project Arborist.

10.5 - Fill

All fill material to be placed within the TPZ should be approved prior by the Project Arborist and be interfaced with a large diameter gravel or pebble to provide aeration and percolation to the root zone.

10.6 - Paving

Proposed paved areas within the TPZ That are to be installed on or above grade should ensure to minimise excavation and avoid surface root severance and/or damage. If proposed pavement materials are not permeable or porous, consideration should be given to forms of irrigation to the soil area below where tree roots have been retained.

10.7 - Pruning

All recommended pruning works (including root pruning) should be in accordance with Australian Standard for Pruning of amenity trees (AS4373 - 2007)^(a). If required, roots should be severed with clean sharp implement flush with the face of the excavation and maintained in a moist condition. Root pruning shall be performed under the supervision of the Project Arborist.

10.8 - Tree Removal

Tree removal work shall be carried out by an experienced Arborist in accordance with the NSW Work Cover Code of Practice for the Amenity Tree Industry (1998) and holds Public Liability and Workers Compensation insurance. Care shall be taken to avoid damage to trees during the felling operation. Stumps shall be grinded using a mechanical stump grinder to a minimum depth of 300mm without damage to other retained root systems.

10.9 - Tree Damage

In the event of damage to a tree or the TPZ of a tree to be retained, the Project Arborist should be advised in order to provide advice on remedial action. This should be implemented as soon as practicable and certified by the Project Arborist.

10.10 - Post Construction Tree Management

Tree protection fencing with additional trunk and root protection shall be removed following completion of the development schedule. Any mulch layer installed for root protection should be reduced to a 75mm layer and retained on site. In the event of any tree deteriorating in health after the development schedule is complete, the Project Arborist should be engaged to provide advice on any remedial action.

11. GLOSSARY OF INDUSTRY TERMS

1. **Crown:** The canopy of the tree from the starting point of the tree's first primary lateral.
2. **Deadwood:** Leaves and branches that have died back and are of an irreversible condition.
3. **Epicormic:** The growth that occurs at the point of the epicormic bud that become active shoots when reacting to damage or stress in the tree.
4. **Flushing:** Fast green leaf growth occurring in reaction to ideal or high nutrient conditions for the tree.
5. **Tree Protection Zone (TPZ):** The area calculated $(DBH \times 12)$ as a protective buffer to isolate a tree from construction and excavation disturbance so the tree may remain viable.
6. **Structural Root Zone (SRZ):** The area calculated $((DRB \times 50)^{0.42} \times 0.64)$ that estimates root growth requiring to be retained for stability of the tree.
7. **Encroachment:** An activity or disturbance that takes place within proximity to the tree and inside the Tree Protection Zone that has potential for impact to tree health and structure.
8. **Visual Tree Assessment (VTA):** a non-invasive biomechanically based system of Tree Assessment developed by Claus Mattheck and Helge Breloer, examining the health and structural condition of individual trees.
9. **Canker:** A symptom of an infectious fungal pathogen that has entered between the bark cambium and heartwood that can display as a discolouration, a depression in the bark, or a wound that continues to attempt to heal but is continuously expanding.
10. **Stem taper:** The rate of decrease in stem diameter with increasing height from ground level to the highest point of a singular stem canopy point. Symptoms of good stem taper is an obvious, but not disproportionate decrease in stem diameter from root buttress to a height of 1.4m that continues evenly up the stem. Symptoms outside these proportions can be considered as poor taper.

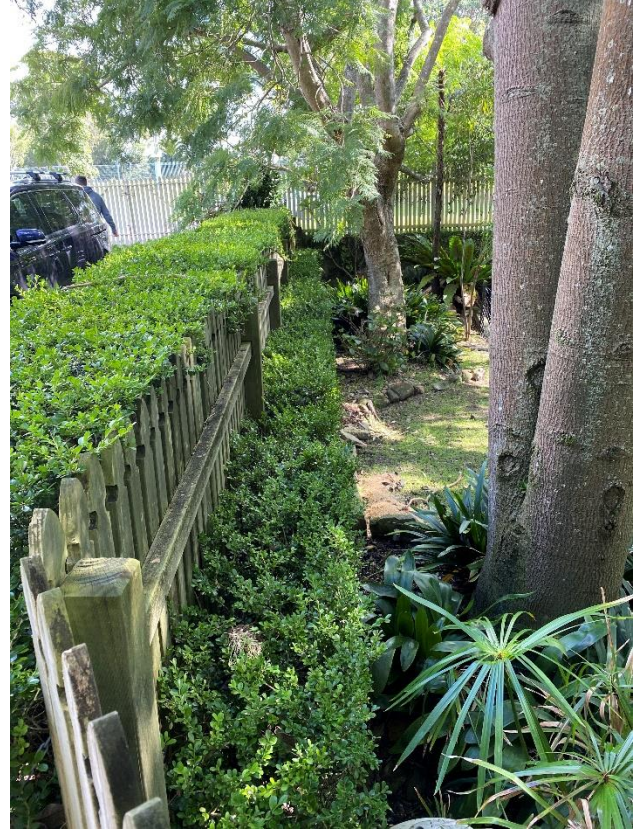
12. REFERENCES

- a) Standards Australia; **AS 4373 Pruning of amenity trees**; 2007
- b) Standards Australia; **AS 4970 Protection of trees on development sites**; 2009
- c) Claus Mattheck; Helge Breloer; **The body language of trees: a handbook for failure analysis**; 1994
- d) Jeremy Barrell; **SULE: Its use and status into the New Millennium**; modified paper, 2001
- e) Institute of Australian Consulting Arboriculturalists; **IACA Significance of a Tree, Assessment Rating System (STARS)®**; 2010
- f) Richard W. Harris; James R. Clark; Nelda P. Matheny; **Arboriculture: Integrated Management of Landscape Trees, Shrubs, and Vines**; 4th Edition 2004
- g) NSW Government; **The SEED Initiative**; 2024
- h) Warringah Council (adopted by Northern Beaches Council); **Warringah Development Control Plan**; 2011
- i) Warringah Council (adopted by Northern Beaches Council); **Warringah Local Environmental Plan**; 2011

13. PHOTO REFERENCE



Tree 1



Proximity of Tree 1 & 2 to upper level



Tree 2



Tree 3



Proximity of Tree 3 to existing premises



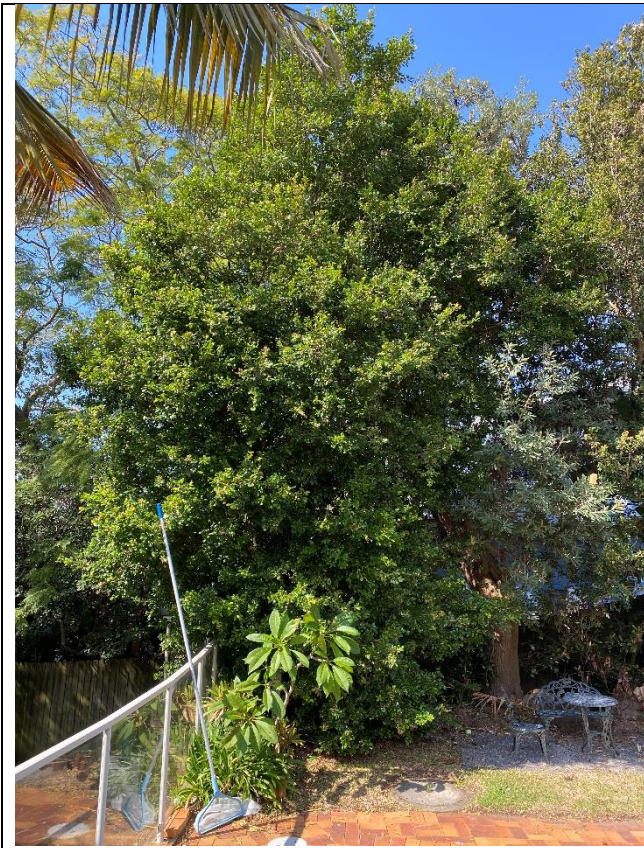
Tree 4



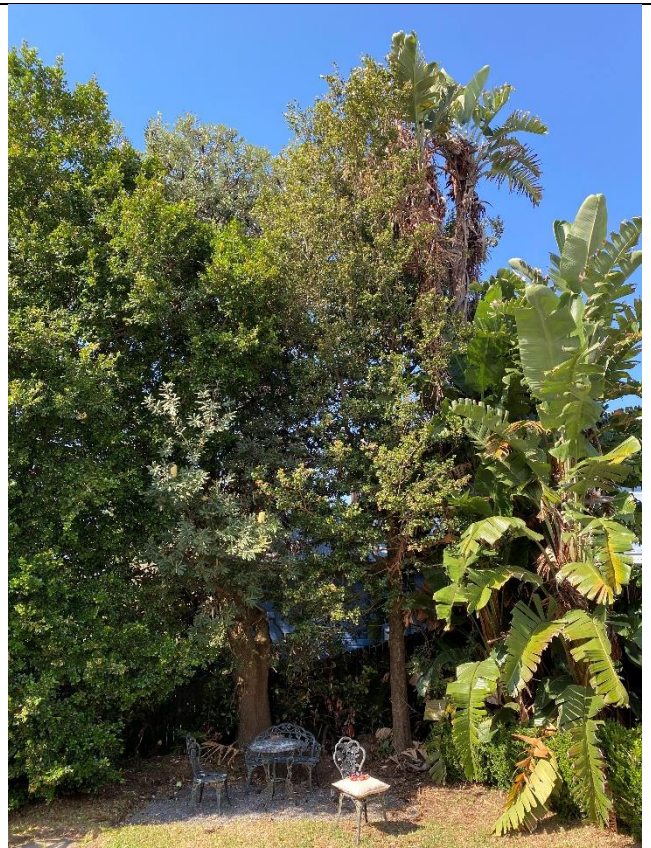
Proximity of Tree 4 to existing premises



Tree 5



Tree 6



Trees 7 & 8