
rain Tree consulting

Arboricultural Management

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47 HILLTOP ROAD

AVALON BEACH, NSW

PROPOSED NEW GARAGE DEVELOPMENT PROPOSAL

ARBORICULTURAL IMPACT ASSESSMENT REPORT

Report Ref No- 0522

Prepared for
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INTRODUCTION

This report has been commissioned by Andrew Utiger to assess the remaining Useful Life Expectancy (ULE) and potential impacts that may occur to significant trees in relation to a new development proposal. The new development proposal consists of constructing a new garage facility with proposed new vehicle & person access servicing 47 Hilltop Road, AVALON BEACH NSW.

Recommendations for retention or removal of trees is based on the trees condition, accorded ULE category, current design and potential impacts to trees under this development application.

Development incursions within tree protection zones (TPZ) and impacts to trees have been outlined within Note 2 of Appendix- A where incursions are described as Minor (<10%) & Major (>10%) TPZ occupancy having low, moderate to high level impacts within the TPZ. Where site restrictions within notional root zone radiuses exist development impacts or encroachment disturbances are based on author's experience, observations of site conditions, soil type and topography.

Each tree assessed has been accorded a temporary identification number and is referred to by number throughout this report. For additional trees not plotted on provided documentation their location has been estimated by taking offsets from existing trees and structures. The trees, their location, development impact and design requirements may be referenced within the Tree Assessment Schedule and Tree Location Plan of Appendices D & E.

Care has been taken to obtain information from reliable sources. All data has been verified as far as possible, however, I can neither guarantee nor be responsible for the accuracy of information provided by others.

DISCLAIMER & LIMITATION ON THE USE OF THIS REPORT

This report is to be utilized in its entirety only. Any written or verbal submission, report or presentation that includes statements taken from the findings, discussions, conclusions or recommendations made in this report, may only be used where the whole of the original report (or copy) is referenced in, and directly to that submission, report or presentation. Unless stated otherwise: Information contained in this report covers only the tree/s that were examined and reflects the condition of the trees at the time of inspection: and the inspection was limited to visual examination of the subject tree without dissection, excavation, probing or coring. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the subject tree/s may not arise in the future. Arborist cannot guarantee that a tree will be healthy or safe under all circumstances, or for a specific period of time. Trees are a living entity and change continuously, they can be managed but not controlled and to be associated near one involves some degree of risk.

METHODOLOGY

1. In preparation for this report a site and ground level visual tree inspection was conducted on Thursday 27th January 2022 by the author of this report. The principles of tree inspection were primarily adopted from components of Mattheck & Breloer 1994 'The Body Language of Trees' with basic risk values determined by criteria explained within the ISA TRAQ manual 2017. The inspection included observing the overall health and vigour of trees, tree form, structure and structural condition commencing from near the lower trunk to the upper first order branch division as best as site conditions would allow. On completion of the inspection the retention value of the tree was summarised utilizing the tree inspection Checklist provided within Appendix- C.
2. The inspection was limited to visual observations from within the subject site where the retention value, condition and diameters of neighbouring trees was estimated. No aerial (climbing) inspections, woody tissue testing, or tree root investigation was undertaken as part of this tree assessment. Within the site tree height and canopy spread was estimated and expressed in metres with trunk diameters measured at approximately 1.4 metres above ground level, rounded off to the nearest 50mm and expressed as DBH (Diameter at Breast Height). The height of palms was taken from ground level to the top of the crown shaft only and excludes the central apical spear projection.
3. This report acknowledges and utilizes the current Australian Standards 'Protection of Trees on Development Sites' AS 4970 – 2009 as explained within Notes of Appendix- A.
4. Unless specified otherwise all distances and development offsets within this report are taken from the centre of the tree.
5. Plans and/or documentation received to assist in preparation of this assessment include:
 - John Cochrane architect, preliminary drawings *specific to*:
 - Plan-Site, Dwg No. A010 rev 1 dated 28.12.2
 - Plan-Level 0 (Ground) Dwg No. A100 rev 1 dated 28.12.2
 - Plan-Level 1 Dwg No. A110 rev 1 dated 28.12.2
 - Elevations-NTH+WST Dwg No. A400 rev 1 dated 28.12.2
 - Elevations-STH+EST Dwg No. A401 rev 1 dated 28.12.2
 - Sections Dwg No. A500 rev 1 dated 28.12.2
 - Sketch Plan of existing secondary dwelling location
 - Not referenced and detailed within Appendix-E.
 - Adam Clarke Surveyors P/L
 - Survey Plan ref No: 11692A dated 2.2.2011

1. SUMMARY OF ASSESSMENT

1.1 General tree assessment

- 1.1.1 Eight (8) trees have been assessed for the purpose of this development proposal. Of the eight trees three (3) trees are located within the front Council verge, one (1) tree is partly located on an adjoining boundary line and two (2) trees are exempt non-prescribed trees. Several small exempt palms are also located within the development footprint area and are likely to require removal or relocation to accommodate design.

Council verge trees are identified as trees 1, 2 & 3. The proposed driveway crossover is located within the Structural Root Zone (SRZ) of trees 1 & 3 where T1 is likely to be significantly compromised by excavation to accommodate design. Trees 2 & 3 are not accurately plotted within documentation with T3 likely requiring tree root investigations to determine design work impacts within the Structural Root Zone (SRZ), *the area required for tree stability* (AS4970).

Part boundary tree is identified as Lilly Pilly tree T4. A high level of TPZ encroachment is proposed by the design footprint with design works within the SRZ. The tree including site tree T5 having works within the SRZ require tree root investigations to determine impacts to underlying structural tree roots.

Exempt tree species are identified as trees Jacaranda trees T6 & 8. Being exempt non-prescribed trees the trees are permitted to be managed (pruned, removed or relocated) without Council consent. Both trees are recommended for removal due to high level impacts by the design proposal. Should an exempt tree require retention further advice and protection methodology is required prior to obtaining a Construction Certificate (CC).

- 1.1.2 The subject prescribed trees are generally considered viable for retention without change in existing site conditions or modification within Tree Protection Zone (TPZ) radiuses as indicated within the SRZ & TPZ distance column of Appendix- D.

1.2 The development proposal

- 1.2.1 The development proposal consists of constructing a new garage facility with new driveway and person access to accommodate design. The proposal requires deep excavation within both the SRZ & Tree Protection Zone (TPZ) radiuses of prescribed trees.

1.3 Tree removal to accommodate design

- 1.3.1 Exempt trees permitted to be removed without Council consent or recommended for removal to accommodate design are identified as trees T6 & 8.
- 1.3.2 Council verge tree T1 should be considered for removal due to significant excavation impact by the proposed new driveway crossover. Should the tree require retention design is to ensure tree anchorage and vitality is not compromised or disrupted by works.

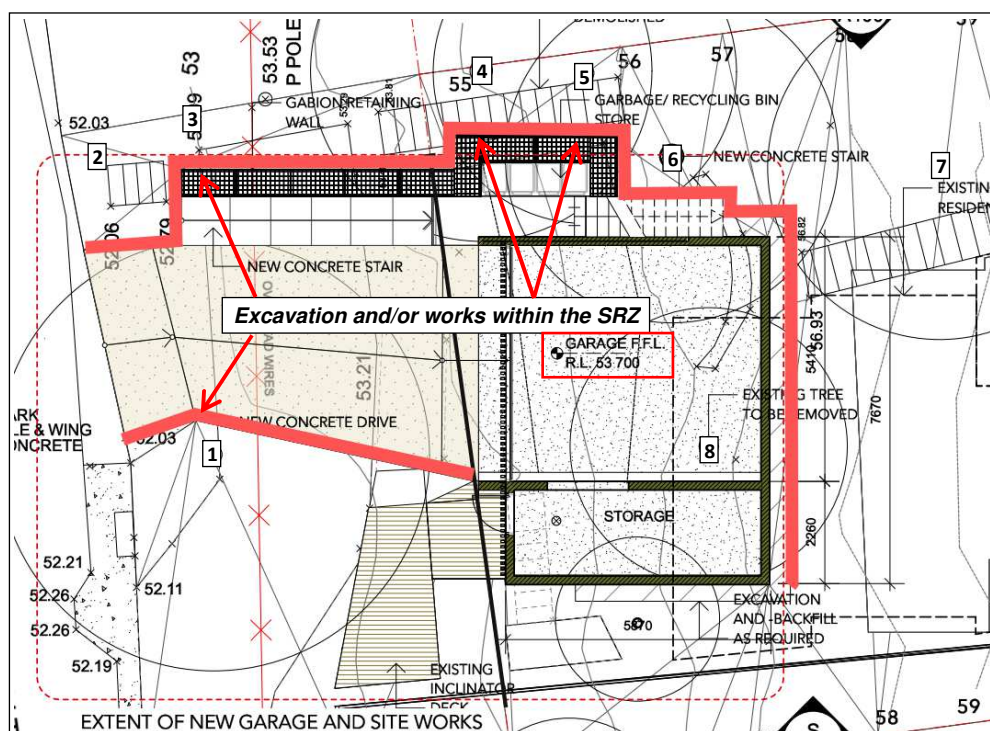
1.4 Details which require further information

1.4.1 The design footprint proposes excavation and encroachment within the Structural Root Zone (SRZ) of trees 3, 4 & 5. In accordance with Australian Standard AS 4970 – 2009 Protection of Trees on Development Sites tree root investigations are required to provide more information on the location, distribution and impact on critical underlying tree roots. The subject trees should be managed in accordance with the results of the investigation with site observations noting large and likely significant surface roots lifting the existing pathway and likely extending towards the proposed excavation area.

1.4.2 Given the extent of cut required within the SRZ & TPZ of trees a detailed cut & fill plan showing intended over excavation to accommodate construction is recommended to be provided for arborist review. Specific areas of concern are likely to be over excavation required within SRZ setbacks where existing retaining walls or solid structures may already be restricting radial root distribution.

The identified development impacts and design requirements have been detailed within Appendix- D and summarized within the following sections.

Figure 1, showing design footprint & excavation area



1.5 Discussion of development impacts – prescribed trees

Council verge trees.

1.5.1 Tree 1: Excavation to accommodate the driveway crossover will directly sever the SRZ adjacent the face of the tree and likely compromise tree anchorage. Given the proximity of the cut tree removal is required to accommodate design.

- 1.5.2 Tree 2: The tree appears sufficiently located away from excavation activities having likely Minor (<10%) TPZ occupancy by design. Given a likely low-level impact the tree should be protected in accordance with Section 2.3 *General tree protection requirements*.
- 1.5.3 Tree 3: Given that works are located within the SRZ tree root investigations are required to provide more information on proposed disturbances within the structural root zone. Having Moderate to Low (<15%) SRZ & TPZ occupancy tree sensitive design with arborist advice may suffice in mitigating impacts.

Boundary tree.

- 1.5.4 Tree 4: Given that works are located within the SRZ tree root investigations are required to provide more information on proposed disturbances within the structural root zone. A High level (25-35%) TPZ occupancy occurs by the design footprint where it is unclear if over excavation within the SRZ is required to accommodate construction. Site observations noted surface root activity disrupting the existing pathway and likely extending towards the building footprint. Given that the tree is located against an existing retaining wall the wall may have restricted radial root development indicating root activity may be greater within the site.

Trees within the site

- 1.5.5 Tree 5. Similar to tree 4 given that works are located within the SRZ tree root investigations are required to provide more information on proposed disturbances within the structural root zone. A Moderate to High (20-25%) TPZ occupancy occurs by the design footprint where the tree should be managed in accordance with the results of the tree root investigation. A detailed cut and fill plan may provide clearer information as to the limit of occupancy within the SRZ & TPZ of the trees.
- 1.5.6 Tree 7. A low level or Minor (<10%) TPZ encroachment is proposed by the design footprint where a detailed excavation plan showing any over excavation should be provided for arborist review. The extent of cut is also recommended to be identified within North Elevation Plan A400 that incorporates proposed cut adjacent trees 4 & 5.

2. CONCLUSIONS & RECOMMENDATIONS

2.1 Tree Removal

- 2.1.1 With the consent of Council the removal of one (1) prescribed tree T1 is recommended due to excavation required to accommodate the proposed driveway crossover.
- 2.1.2 Exempt non-prescribed trees T6 & 8 are permitted to be managed without the consent of Council and are recommended for removal to accommodate design.

2.2 Recommended tree management & protection principles

2.2.1 In addition to the recommendations provided within this report and Australian Standard AS4970 – 2009 Protection of Trees on Development Sites the following summary and/or additional recommendations are provided as a guide for tree protection during works:

Specific recommendations

- a) Trees 3, 4 & 5: In accordance with AS4970-2009 tree root investigations are required to provide more information on the location, distribution and impact to critical roots where Major or SRZ encroachments occur. The management of the trees should be based on the outcome of the investigation with details of specific exclusion zones shown within a tree management or protection plan.
- b) Prior to tree root investigations a detailed excavation plan showing areas of cut & fill and any over excavation required to accommodate construction is recommended to be provided for arborist review. The line of over excavation to the building footprint should be used as a guide to assess the impact of cut or disruption to underlying tree roots.
- c) Where exposed soil profile cut or deep excavation is required within the TPZ engineers' advice and certification is recommended to ensure the soil profile responsible for tree support remains stable, is not damaged or disrupted to an extent that would contribute to tree collapse.

2.3 General tree protection requirements

- a) Prior to demolition works Tree Protection Fencing (TPF) and/or zones as identified within Appendix- B are recommended to be located under the guidance of an appointed site arborist. Unless specified otherwise the location of tree protection fencing is to be positioned to allow for adequate work access and/or be located at the extremity of the TPZ radius, see SRZ & TPZ distance column Appendix- D. Where design & construction access may be restrictive timber beam trunk protection is recommended to be installed, with ground protection mats provided to protect underlying tree roots within tree protection zones or designated protection areas.
- b) Unless approved otherwise activities prevented within the TPZ include: machine excavation, including trenching, storage & work preparation, wash down areas, soil level change, utility services and physical damage to trees.
- c) In accordance with AS4970 - 2009 (1.4.4) a Project or Site Arborist is to be engaged to monitor, supervise excavation within TPZ setbacks, advise and provide certification of protection works conducted. The project arborist is recommended to hold a minimum Australian Qualification Framework (AQF) Level 4 certification and be competent in methodology of protecting trees on development sites.

- d) The project arborist is to provide final certification outlining tree protection measures with photographic evidence of ongoing works retained for certification purposes (AS4970 S/5.5.2 *Final certification*).
- e) The project arborist is to be familiar with protection measures specific to Australian Standard AS4970 'Protection of Trees on Development Sites' – 2009 requirements with any modification in Tree Protection Fencing (TPF) or Zones (Z) to be compliant with AS4970 Section 4.5 *Other Tree Protection Measures*.
- f) Unless specified otherwise during approved excavation within TPZ setbacks excavation is to be conducted manually (by hand) under the supervision of an appointed project arborist. Where approved by the arborist the pruning of roots at or <30mm(Ø) is to be conducted in accordance with AS4970 – 2009 Section 4.5.4 *Root protection during works within the TPZ*, such that tree roots are not damaged or ripped beyond the point of excavation by site machinery. Where larger roots have been encountered, they are to be referred to an independent Level 5 arborist for further advice. For deep excavations exposed roots at the excavated cut face are to be protected with jute mesh, geotextile fabric or similar being secured in place to avoid drying of roots and the exposed soil profile.
- g) During approved excavation within TPZ setbacks there shall be no over excavation beyond the line of cut as shown within construction drawings. Should over excavation be required the extent of excavation should be detailed within approved drawings or a construction management plan for arborist review and certification.
- h) *Additional inground services* which may include landscape works, fencing, sewer, stormwater, water and electrical services, final design and impact to trees shall be reviewed and endorsed by the project arborist prior to their installment. Where landscaping (excavation) is required within the SRZ further advice from an appointed project arborist is recommended.
- i) *Tree sensitive construction measures* such as pier and beam bridging over critical roots, suspended slabs, cantilevered building sections, screw piles and contiguous piling can minimise the impact of encroachment (AS4970). Where Bushfire BAL construction conflicts exist with tree management advice the appointed project arborist shall be consulted to advise on an appropriate design outcome.
- j) *Canopy pruning / tree removal*: where required tree removal and canopy reductions are to be approved by the Local Government Authority. Works are to be conducted by a suitably qualified AQF Level 3 certified arborist in accordance with AS4373 Pruning Standards, and specifically be conducted in accordance with Safe Work Australia – Guide to managing risks of tree trimming and removal works 2016 (www.swa.gov.au).

- k) To ensure tree(s) are appropriately protected the development site superintendent is recommended to be familiar with all tree protection and ongoing certification requirements. The superintendent is responsible for informing all subcontractors of the responsibilities and requirements of tree protection prior to their engagement.
- l) Should there be any uncertainty with tree protection requirements the site superintendent shall contact the appointed project arborist for advice prior to works occurring within tree protection zones (TPZ) or specified tree protection areas (TPA).
- m) *Hold points:* specific to no works are to commence without arborist advice, inspections & certifications:
 - 1) Prior to construction arboricultural certification is required ensuring that all trees have been adequately protected in accordance with this report or being compliant with Australian Standard AS 4970 – 2009 Protection of Trees on Development Sites.
 - 2) No works (including landscaping) shall occur within the SRZ of any tree without prior arborist advice and certification. Where excavation may be required prior exploratory tree root investigation are to identify the location, distribution and impact to underlying tree roots.
 - 3) No excavation shall occur within the TPZ without prior project arborist notification and/or site supervision.
 - 4) No access or work activity is permitted within fenced or designated tree protection areas (TPA's) without arborist advice.

Table 1; certification requirements

1	Pre-construction	Prior to works install tree protection fencing & zones as specified within this report or as directed and certified by the site arborist.
2	During construction	Project arborist to supervise & certify approved excavation works within tree protection areas.
3	Post construction	Prior to handover project arborist to provide final inspection & certification of tree health & vitality

Yours sincerely



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Diploma of Hort/Arboriculture (AQF5), Associate Diploma Parks Management (AQF4)
Certified Arborist / Tree Surgeon (AQF3), ISA Tree Risk Assessment Qualified 6/2024
Member: ISA, Arboriculture Australia & IACA, Working With Children No: WWC0144637E



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APPENDIX- A: Terminology & references

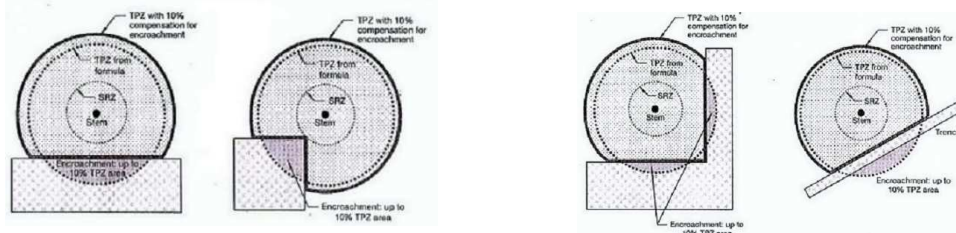
Acceptable Risk: Exposure to or reject risk of varying degrees. The acceptable risk is defined as 'The person who accepts some degree of risk in return for a benefit being exposed to some risk of varying degree. **Age classes:** (I) Immature refers to a well established but juvenile tree. (ESM) refers to an early semi mature tree not of juvenile appearance. (SM) Semi-mature refers to a tree at growth stages advancing into maturity and full size. (LSM) Late Semi-Mature, refers to a tree between semi-mature and close to mature. (EM) refers to a tree at the first stages of maturity. (M) Mature refers to a full size tree with some capacity for future growth. **Health:** Refers to a trees vigor exhibited by the crown density, leaf colour, presence of epicormic shoots, ability to withstand disease invasion and the degree of dieback. **Condition:** Refers to the tree's form and growth habit, as modified by its environment (aspect, suppression by other trees, soils) and the state of the scaffold (i.e. Trunk and major branches), including structural defects such as cavities, crooked trunks or weak trunk / branch junctions. These are not directly connected with health and it is possible for a tree to be healthy but in poor condition. **Decay:** (N) – an area of wood that is undergoing decomposition. (V) – decomposition of an area of wood by fungi or bacteria. **Decline:** Is the response of a tree to a reduction of energy levels resulting from stress. Recovery from decline is difficult and slow; is usually irreversible. **Defect:** A identifiable fault in a tree. **Epicormic Shoots:** Shoots that arise from latent or adventitious buds that occur on stems and branches and on suckers produced from the base of the tree. A symptom / result of stress related factors. **Footprint:** The area occupied by site structures, including the dwelling driveways and hard surfaces. **Included Bark:** (Inclusion) a genetic weak fault, pattern of development at branch junctions where the bark is turned inwards rather than pushed out, can pose a potential hazard. **Order of branches:** First order being those that are the first to extend from the main trunk or codominant limbs, second order branches extend from the first order and third order branches extend from the second order. **Probability:** The likelihood of some event happening. **Risk:** Is the probability of something adverse happening. **Suppression:** Restrained growth pattern from competition of other trees or structures. **Wound:** Damage inflicted upon a tree through injury to its living cells, may continue to develop further weakening of the structure compromising structural integrity.

NOTE 1: This report acknowledges the current **Australian Standards 'Protection of Trees on Development Sites'** AS 4970 – 2009 with reference to the Tree Protection Zone (TPZ): being a combination of the root and crown area requiring protection. The TPZ takes into consideration the Structural Root Zone (SRZ): The area required for tree stability. Determined by AS4970 - 2009 Figure 1, Table of determining the SRZ, section 3.3.5 of the standards. The standard states where a greater than 10% encroachment occurs the arborist is to take into consideration the schedule of determining impacts as set within AS4970 s. 3.3.4. Encroachments are referred to within this report as major or minor encroachments (AS4970 s. 3.3.2 & 3.3.3). Below is the terminology used for estimated percentage of development incursion used within this report. To retain specific trees and ensure their viability development must take into consideration protection of the TPZ radius.

NOTE 2: The extent of inclusion within the TPZ radius has been categorised as follows:

No impact 0% incursion, **Low** impact 0 - 10% of minor consequence. **Low to Moderate** 10 – 15% incursion where the project arborist is to demonstrate the tree(s) remain viable. **Moderate** 15 – 20% incursion where the project arborist is to demonstrate the tree(s) remain viable by tree sensitive construction techniques. **Moderate to high** 20 – 25% incursion requiring specific protection methodology to retain. **High** impact 25 – 35% incursion where design changes or further information is required to manage tree vitality which includes **Significant** impact >35% incursion. **WBF** = tree located within the building footprint where design necessitates tree removal.

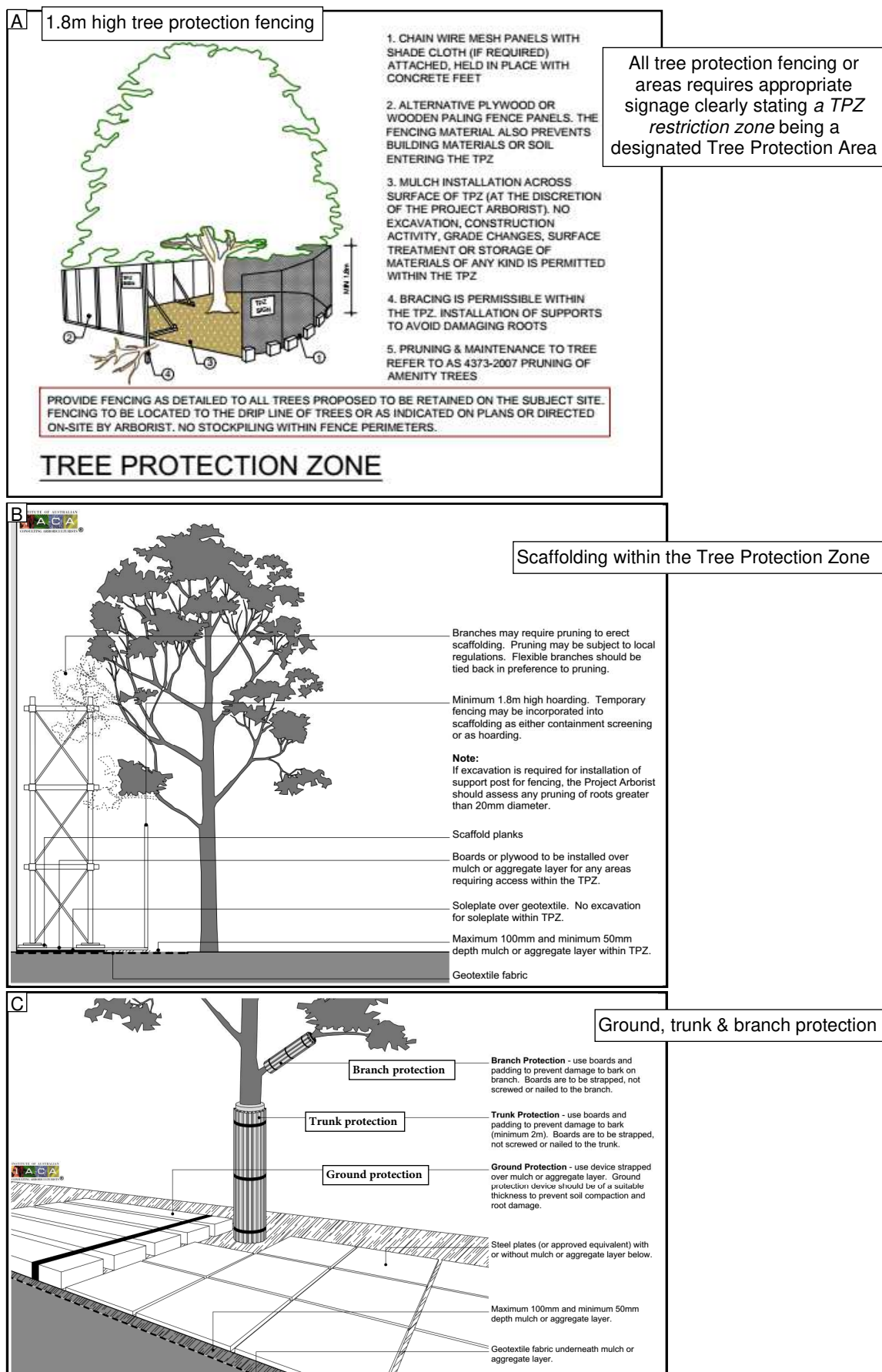
Showing acceptable incursion within the TPZ (AS4970)



SELECTED REFERENCES:

- Barrell J. 1993, 'Preplanning Tree Surveys: Safe useful Life expectancy (SULE) is the Natural Progression', *Arboricultural Journal* 17: 1, February 1993, pp. 33-46.
- International Society of Arboriculture (ISA) 2013, *Tree Risk Assessment Manual*, Martin Graphics, Champaign Illinois U.S.
- Mattheck, C. & Breloer, H.(1994) *The Body Language of Trees*. Research for Amenity Trees No.4 the Stationary Office, London.
- Matheny N. & Clark J. 1998, *Trees & Development 'A Technical Guide to Preservation of Trees During Land Development'* International Society of Arboriculture, Champaign USA.
- ProSafe: TPZ encroachment calculator https://proofsafe.com.au/tpz_incursion_calculator.html
- Standards Australia 2009, *Australian Standards 4970 Protection of Trees on Development Sites* - Standards Australia, Sydney, Australia.
- Standards Australia 2007, *Australian Standards 4373 Pruning of Amenity Trees* - Standards Australia, Sydney, Australia.
- Northern Beaches Council DCP <https://www.northernbeaches.nsw.gov.au/planning-and-development/building-and-renovations/planning-controls>

APPENDIX- B: Tree protection fencing, ground and trunk protection detail



APPENDIX- C: Tree Retention Value Check list @rainTree consulting

VTA i) Landscape Significance (LS): The significance of a tree in the landscape is a combination of its amenity, environmental and heritage values.

Values may be subjective however, offer a visual understanding of the relative importance of the tree to the environment. The Landscape Significance of a tree is described in seven categories to assist in determining the retention value of trees.

1	Significant	2	Very High	3	High	4	Moderate	5	Low	6	Very Low	7	Insignificant
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ii) Visual Tree Assessment (VTA)

0	If appropriate to VTA - *exempt trees from Local Government Authority (LGA) Tree Management or Preservation Orders (TPO)	2E	Trees location likely to be affected by infrastructure restricting root growth potential, or tree has potential to cause infrastructure damage &/or risk mitigation or rectification works may compromise tree anchorage. Tree(s) may be contained by solid structures with restricted anchoring root potential
0A	Noxious or invasive species located within heritage conservation area		
1	Trees that are dead, significantly declining >75% volume or obviously hazardous	3	This rating incorporates trees that may require further investigation of defects such as cavities or symptoms indicating internal decay to an extent that cannot be quantified under visual examination. Further inspections may be in the way of arborist climbing inspection within the canopy, root crown investigation and/or drill penetrating or Picus Sonic Tomograph ultrasound testing procedures to determine percentage of internal decay.
2	Trees that are structurally damaged. Have poor structure or weak & detrimental large stem inclusions capable of failure opposed to 2B. Tree also may be affected by extensive borer damage, fungal pathogens (wood rot) or viruses. Some symptoms may be reversible, remediated or controlled give appropriate management.		
2A	Tree damage specific to basal and/or root plate damage, very shallow soils or steep topography resulting in poor anchorage where condition may become problematic in near future / may include trees with included bark splits to ground level	4	Trees which appear specifically environmentally stressed by drought, poor soil or site conditions. Symptoms may be reversible given appropriate management
2B	Defect specific to stem inclusions development (weak branch attachments) where the condition may not be immediately detrimental however, require annual to biannual monitoring with control to prevent stem failure by installing slings, cable or bracing. Tree may also contain multi stems or codominant twin stems	5	Trees that have become exposed or are subject to wind loading pressure, or have tall forest form where exposure may result in windthrow or limb snap
		5A	Screen trees or shrubs that are routinely hedged or pruned for height control
2C	Tree may contain minor wounds, pest or minor pathogen activity, altered from storm damaged to an extent that is not considered immediately detrimental - may also display average form. Likely to require close annual monitoring or minor corrective pruning	6	Trees may be typical for species type, of good form and visual condition for age class May have suppressed one sided canopies or are low risk trees
2D	Trees significantly altered by recent storm or over pruning events which may reduce retention values due to average form- or tree extensively pruned for power line clearance	7	VTA restricted by canopy or plant material vine or ivy covering tree parts, or site conditions which do not allow access- fences to neighbouring sites

iii) Retention Value (RV): Determined by [1] tree free of visual defects and viable for retention, [2] viable for retention with minor faults which may reduce ULE, [3] trees which should not restrict development applications containing faults that are likely to become problematic in the short term, [4] trees to be considered for removal due to average condition.

1	High retention	2	Medium retention	3	Low retention	4	Consider removal
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iv) U.L.E. categories Useful Life Expectancy (after Barrell 1996, modified by the author). A tree's U.L.E. category is the life expectancy of the tree modified first by its age, health, condition, safety and location. U.L.E. assessments are not static but may be modified as dictated by changes in trees health and environment.

1. Long U.L.E. - Appear retainable at the time of assessment for over 40 years with an acceptable degree of risk assuming reasonable maintenance.
2. Medium U.L.E. - Appear to be retainable at the time of assessment for 15 to 40 years with an acceptable degree of risk assuming reasonable maintenance.
3. Short U.L.E. - Trees appear to be retainable at the time of assessment for 5 to 15 years with an acceptable degree of risk assuming reasonable maintenance.
4. Very short - Removal- Trees which should be scheduled for removal within the very short term or as specified within this report.
5. Small, young or regularly pruned – Trees under 5m in height that can be easily moved or replaced, includes screen plantings or hedge lines.

APPENDIX- D: Tree Assessment Schedule

Trees requiring removal due to hazardous or dead condition - subject to Local Government Authority notification							Trees with low retention values: senescence, developing defects or being low significant or *exempt trees within the site from the LGA tree management orders					
Tree No	Botanical Name COMMON NAME	Height x spread (m)	DBH (mm)	SRZ TPZ (m)	Age	Vigour	Condition	Significance	VTA	RV	U. L.E.	Comments
1 CV	<i>Glochidion ferdinandi</i> Cheese Tree	12 x 10	500	2.6 6	EM	Good	Fair	3	2C/D	2	2	CV = Council verge tree NT= Neighbouring tree Past pruning cuts W side modifying form, declining stub end at 1.8m E may become problematic in the future, contained with retaining wall garden bed driveway access area
<i>Design & impact summary: Consider removal & replacement. Driveway excavation cut within SRZ, at or near 650mm centre of tree to 350mm from the face of the tree, where excavation for road access would likely compromise tree & anchorage. Within a notional TPZ radius design encroachment at or near 46% of Significant impact (>35%) TPZ occupancy where roots may have been restricted by adjacent retaining wall & roadside infrastructure indicating a potential for root confinement within the excavation area.</i>												
2 CV	<i>Callicoma serratifolia</i> Callicoma Black Wattle	15 x 7	250at base	1.8 3	SM	Good	Fair / Good	3	2C/5	2	3	Stub end decline at base S side adjacent past stem included site = condition may become problematic in the future. Tall forest form with suppressed canopy & biomass to NW
<i>Design & impact summary: With tree estimated for location proposed driveway cut, stair & gabion wall appears of Minor (<10%) TPZ encroachment. Having low level TPZ occupancy tree to be managed in accordance with Section 2.3 General tree protection requirements, with colour coded excavation plan recommended for arborist review.</i>												
3 CV	Unidentified, likely rainforest species	16 x 8	250	2 3	SM	Fair / Good	Good	3	6	1	2	Benefit from flower & fruit for correct identification. Appears littoral rainforest species. Suppressed canopy form with minor decline in lower canopy, located near 1.6m from Power Pole (PP)
<i>Design & impact summary: With tree estimated for location proposed stair & gabion wall appears of Moderate to Low (10-15%) encroachment at or near 14.5% TPZ occupancy with excavation & works proposed within the SRZ. Having works within the SRZ tree requires further information by tree root investigations to determine impact within the structural (anchoring) root zone.</i>												
4	<i>Acmena smithii</i> Lilly Pilly	20 x 13	600	2.7 7.2	M	Good	Fair / Good	3	2C/E	2	2	Restricted VTA by vegetation, located on boundary at edge of retaining wall with restricted root zone, raised pathway by surface root activity, SRZ likely to be greater, decaying stub end at 1.2m N side.
<i>Design & impact summary: Proposed design footprint, excavation, stair, bin bay & gabion wall within a notional TPZ radius proposes a High level impact (25->35%) encroachment, at or near 33.5% TPZ occupancy with works proposed within the SRZ. Tree roots may have been restricted by adjacent retaining wall indicating a potential for higher root impact within the site where observations noted large surface roots disrupting the existing pathway. Having works within the SRZ tree requires further information by tree root investigations to determine impact within the structural (anchoring) root zone and/or tree sensitive design to retain critical roots, with potential reduction of TPZ occupancy recommended.</i>												

Trees requiring removal due to hazardous or dead condition - subject to Local Government Authority notification							Trees with low retention values: senescence, developing defects or being low significant or *exempt trees within the site from the LGA tree management orders					
Tree No	Botanical Name COMMON NAME	Height x spread (m)	DBH (mm)	SRZ TPZ (m)	Age	Vigour	Condition	Significance	VTA	RV	U. L.E.	Comments CV = Council verge tree NT= Neighbouring tree
5	<i>Corymbia maculata</i> Spotted Gum	20 x 12	350	2.3 4.2	ESM	Good?	Good?	3	7/4	2	2	Restricted VTA by vegetation, canopy slightly environmentally stressed with minor decline S side
<i>Design & impact summary: Proposed design footprint, excavation, stair, bin bay & gabion wall within a notional TPZ radius proposes a Moderate to High (20-25%) encroachment, at or near 21.3% TPZ occupancy with works proposed within the SRZ. Having works within the SRZ tree requires further information by tree root investigations to determine impact within the structural (anchoring) root zone and/or tree sensitive design to retain critical roots. Tree to be managed in accordance with results of tree root investigation activities</i>												
*6	<i>Jacaranda mimosifolia</i> Jacaranda	18 x 12	300, 250, 150	2.8 8.4	ESM	Good	Good?	4	0/7	2	2	Exempt tree species. Three (3) stems at or near ground level, large surface root activity SW side
<i>Design & impact summary: Exempt tree species, consider tree removal due to High level (25-35%) design encroachment, at or near 33% TPZ occupancy with excavation within the SRZ. Excavation likely to comprise tree or tree anchorage. Benefit from removal & replacement to accommodate design.</i>												
7	<i>Corymbia maculata</i> Spotted Gum	17 x 10	400	2.4 4.8	ESM	Fair	Good	3	4	2	2	Canopy slightly environmentally stressed with slight decline, low foliage volume and vigour evident
<i>Design & impact summary: Design footprint excluding any over excavation to accommodate garage proposes a Minor (<10%) TPZ occupancy. Given low level occupancy within the TPZ tree to be managed in accordance with Section 2.3 General tree protection requirements, with detailed excavation plan provided for arborist review detailing any over excavation required to accommodate construction.</i>												
*8	<i>Jacaranda mimosifolia</i> Jacaranda	17 x 12	450, 250	2.8 8.4	ESM	Good	Fair / Good	4	2A	2	2	Exempt tree species located on very steep topography. Significant lean & biomass W producing weight loading on lower root zone
<i>Design & impact summary: Exempt tree species, located within building or excavation footprint requiring removal to accommodate design.</i>												

