
rainTree consulting

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1 MONTAUBAN AVENUE

SEAFORTH, NSW

DEVELOPMENT PROPOSAL

ARBORICULTURAL IMPACT ASSESSMENT REPORT

Report Ref No- 17420

Prepared for
Valerius Investments P/L
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INTRODUCTION

This arboricultural report has been commissioned by Valerius Investments P/L for the purpose of determining 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 two new multi-level dwellings within the property known as Lot 42 in DP 35319 being 1 Montauban Avenue SEAFORTH NSW.

Recommendations for retention or removal of trees is based on tree condition, accorded ULE category and potential impacts to trees under this development proposal.

Development incursions within tree protection zones and impacts to trees have been outlined within Note 2 of Appendix- A where incursions are described as low, moderate to high level impacts within tree protection zones. Where site restrictions within notional root zone radiuses exists 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 assessed, their location, development impact and design requirements may be referenced within the Tree Assessment Schedule and Tree Location Plan of Appendices C and D.

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

- i In preparation for this report a limited site and ground level Visual Tree Assessment (VTA) was conducted on Thursday 23rd July 2020 by the author of this report. The principles of VTA were primarily adopted from components of Mattheck & Breloer 1994 '*The Body Language of Trees*' with very basic risk values determined by criteria explained within the ISA TRAQ manual 2017. The inspection included assessment of the overall health and vigour of the 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 VTA the retention value of the tree was summarised utilizing the tree assessment Checklist shown within Appendix- B.
- ii The inspection was limited to a visual assessment from within the subject site where the retention value, condition and diameters of neighbouring trees was estimated. 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.
- iii This report acknowledges the current Australian Standards 'Protection of Trees on Development Sites' AS4970 – 2009. As explained within Note 1 of Appendix- A. To retain specific trees and ensure their viability development must take into consideration protection of the Tree Protection Zone (TPZ) radius as shown within the *acceptable incursion diagram*. As a guide to determining impacts the Structural Root Zone (SRZ) & Tree Protection Zone (TPZ) setbacks have been provided within Appendix- C the SRZ & TPZ distance column.

Unless specified otherwise all distances and development offsets within this report are taken from the centre of the tree.
- iv Plans and documentation received to assist in preparation of this report include:
Pittwater Design & Draft project 1907, *specific to*:
 - Site Plan Dwg No: DA-01, issue 3 dated 25.9.20
 - Garage Plan Plan Dwg No: DA-02, issue 3 dated 25.9.20
 - Ground Floor Plan Dwg No: DA-03, issue 3 dated 25.9.20
 - East West Elevations Dwg No. DA-06, issue 3 dated 25.9.20
 - South & North Elevations Dwg No. DA-07 & 08, issue 3 dated 25.9.20
 - Sections Dwg No. DA-09, issue 3 dated 25.9.20
 - Demolition Plan Dwg No. DA-13, issue 3 dated 25.9.20
 - Excavation & Fill Plan Dwg No. DA-14, issue 3 dated 25.9.20
 - Landscape Plan Dwg No. DA-11, issue 3 dated 25.9.20TSS Total Surveying Solutions job No. 192159
 - Survey Plan ref No: 192150_A, dated 26.9.2019

1. SUMMARY OF ASSESSMENT

1.1 General tree assessment

1.1.1 Twelve (12) trees have been assessed under this development proposal which consist of three (3) neighbouring trees, five (5) non-prescribed exempt trees and one (1) tree on site containing a low retention value.

Neighbouring trees: Neighbouring trees are identified as trees 10, 11 & 12. Of these trees T12 Africa Olive may be affected by a proposed boundary retaining wall.

Low retention value tree: is identified as T2 Swamp Mahogany containing a large open lower trunk to ground level wound on the eastern side.

Exempt non-prescribed trees: noted within Northern Beaches Council Development Control Plan (DCP) are identified as trees:

- 3, 5, 7, 8 & 9.

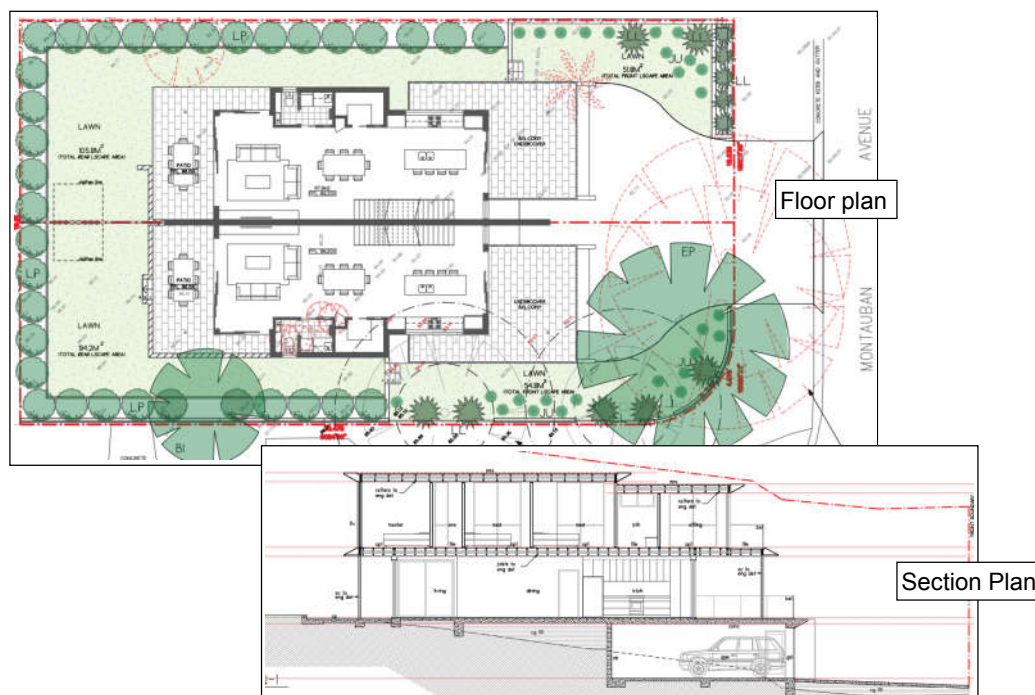
Being exempt non-prescribed trees the trees are permitted to be managed (pruned, removed or relocated) without Council consent. The five trees have been specified for removal to accommodate the design proposal.

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

1.2 The development proposal

1.2.1 The development proposal consists of constructing two new residential dwellings with provisions for lower level cut to accommodate access, car parking and garage facilities. Entry level is proposed at or near RL83.5 with cut & fill located within tree protection zones of T4 & 6.

Figure 1, showing proposed design footprint



1.3 Tree removal to accommodate design – prescribed trees

1.3.1 Two (2) prescribed trees T1 & 2 have been specified for removal to accommodate the proposed driveway access.

Tree 6 containing a significant lean towards the adjacent bus shelter should be considered for removal and replacement as the tree will likely become problematic in the future.

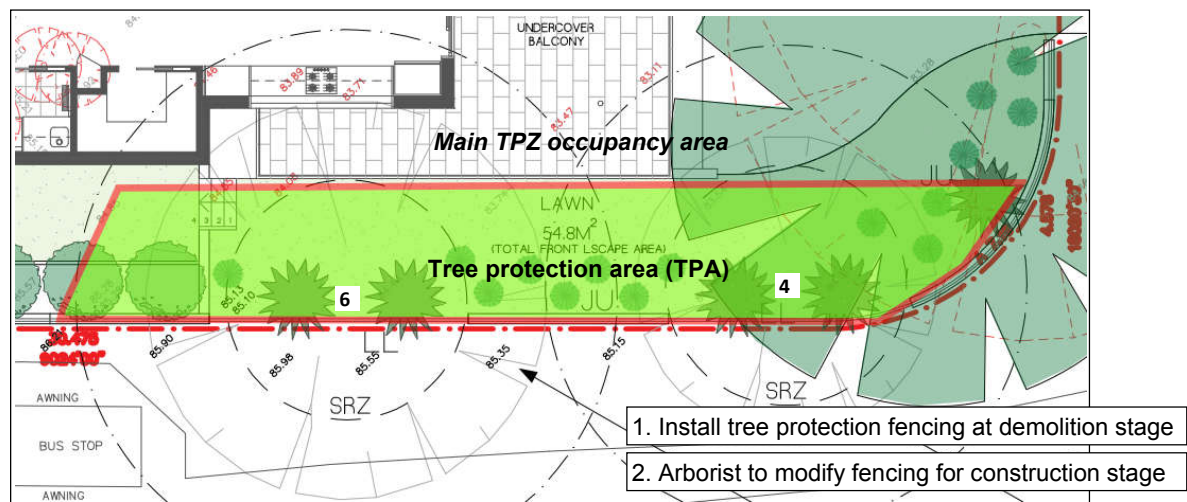
Within the following sections development impacts to prescribed trees are discussed with summary of the assessment provided within the tree assessment schedule of Appendix- C.

1.4 Discussion of development impacts (prescribed trees)

1.4.1 Design encroachments, disturbances and landscape modifications by design are summarised as follows:

- Tree 1: requires removal falling within the construction footprint of the proposed driveway access.
- Tree 2: requires removal being located just within the proposed driveway and Council verge crossover.
- Trees 4: Receives a moderate level (<20%) at or near 17% encroachment & modification within the TPZ. Very slight SRZ incursion occurs by the driveway footprint which is considered manageable with onsite arborist supervision. Minimising impacts within the TPZ should consist of no more than 200mm over excavation to accommodate construction, arborist supervision during excavation to detail root management and no excavation within the SRZ for boundary walls or fencing without prior arborist advice. Given the leaning nature of the tree towards the adjacent bus shelter tree removal and replacement should be considered.
- Tree 6: Receives a high level (>25%) at or near 28% encroachment & modification within the TPZ. That which would likely compensate for TPZ disturbance is the removal of the adjacent large tree T7 where tree removal would reduce nutrient & water competition. Removal of T7 may also expose T6 showing poor canopy form and balance from being suppressed by the dominant nature of T7. After removal of T7 arborist inspection of the tree should be conducted to determine any pruning requirements to make long exposed branches safe, or if the exposed tree contains a low retention value due to being suddenly exposed. Minimising impacts within the TPZ should consist of no more than 200mm over excavation to accommodate construction which includes adjacent stairs and retaining wall, arborist supervision during excavation to detail root management and no excavation within the SRZ for boundary walls or fencing without prior arborist advice, see Figure 2 p7.

Figure 2, showing T4 & 6 tree protection area (TPA)



1.4.2 Neighbouring trees:

- Trees 10 & 11: receive negligible TPZ occupancy by design where canopy reduction pruning to Australian Standards AS4373 Pruning of Amenity Trees 2007 is recommended to reduce stem overhang back to the boundary. No excavation for landscape requirements should occur within the SRZ of the trees.
- Tree 12: a non-prescribed tree, the proposed retaining wall at the boundary may conflict with extending tree roots. Given the location of the tree at the boundary appropriate root pruning would be required where AS4373 2007 states *the effects of root pruning are not always predictable*.

2. CONCLUSIONS & RECOMMENDATIONS

2.1 Tree Removal

2.1.1 Based on the current design proposal and with the consent of Council two (2) prescribed trees T1 & 2 require removal to accommodate design.

Tree 4 should be considered for removal due tree lean towards the adjacent bus shelter & person target areas as tree lean may become problematic in the future.

Tree 6 may also display problematic traits when suddenly exposed by removal of the adjacent dominant tree T7. A loss of adjacent tree protection factors that have suppressed natural canopy growth may occur where remediation pruning may not be able to correct poor form due to a long term suppressed growth habit.

Non-prescribed trees permitted to be removed without Council consent are identified as trees:

- 3, 5, 7, 8 & 9.

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:

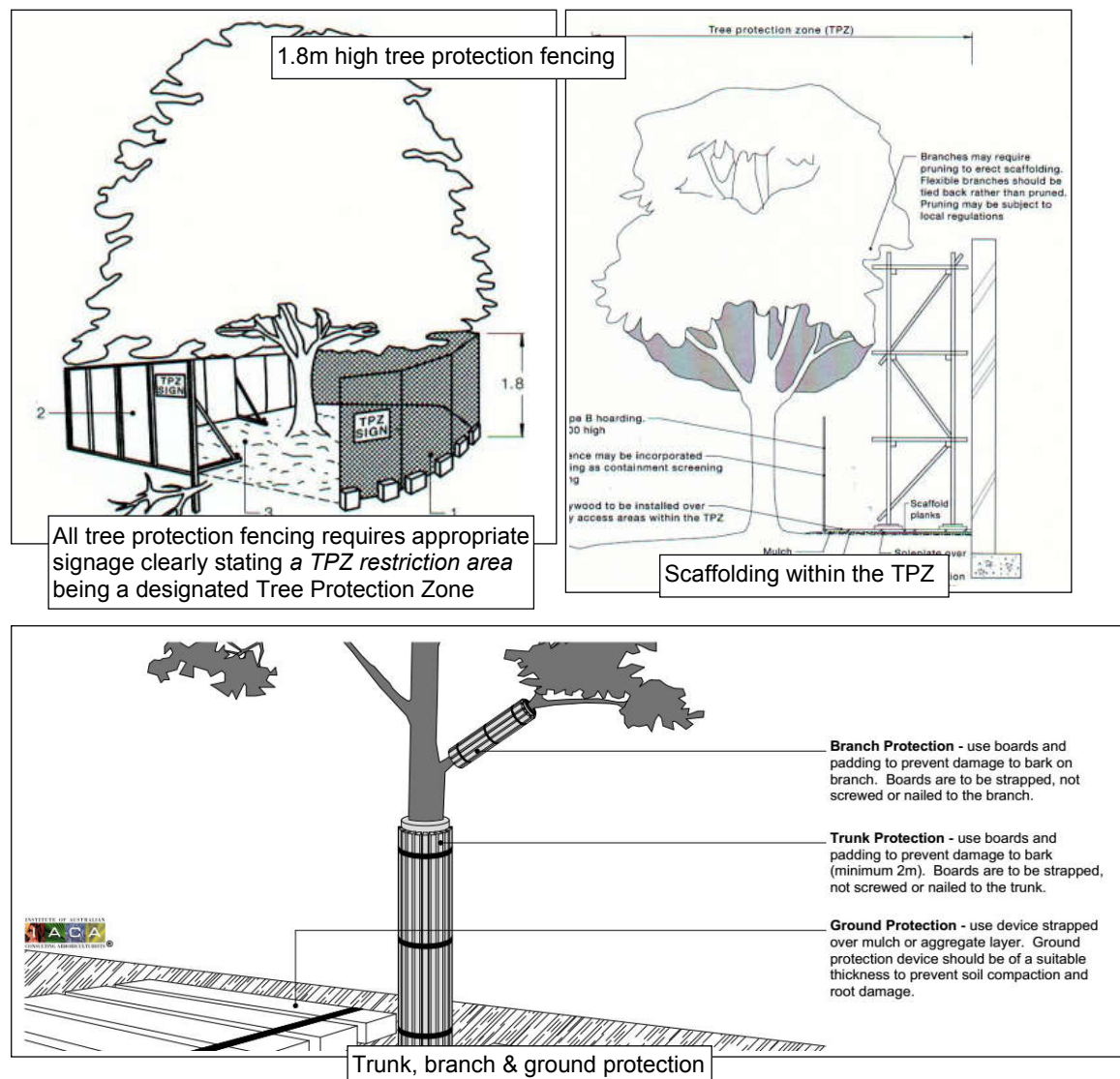
Specific recommendations

- a) Trees 4 & 6: There is to be no site modification within radial SRZ setbacks. Over excavation to accommodate the design footprint should be limited to 0.2m (200mm) beyond the line of the proposed design shown within construction drawings with arborist supervision for excavation within the TPZ managing encountered tree roots in accordance with Section 2.3 e). Tree protection fencing shall be installed at a 3m setback from the tree during demolition and only be modified and certified by an appointed site arborist to allow for construction activities where trunk and ground protection may suffice.
- b) Neighbouring trees: The pruning of neighbouring trees back to the boundary is to be conducted in accordance with Section 2.3 g). Where root pruning may be required for T12 root pruning is to be conducted in accordance with Section 2.3 e).

2.3 General tree protection requirements

- a) Prior to demolition works Tree Protection Fencing (TPF) and/or zones as identified within Figure 3 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- C.
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 areas.
- b) 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.
- c) 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*).
- d) 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*.

Figure 3: tree protection fencing, ground and trunk protection detail



- e) 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 $<30\text{mm}(\varnothing)$ 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.

- f) **Hold points:** Hold points specific to *no works are to commence without arborist advice, inspections & certifications*:
- 1) No works 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 required to identify the location, distribution and impact to underlying tree roots.
 - 2) No excavation shall occur within the TPZ without prior project arborist notification and/or site supervision.
 - 3) It is the responsibility of the principle contractor to manage tree protection zones and complete each task identified within Table 1.

Table 1, certification requirements & hold points

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

- g) *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).
- h) *Additional inground services* which may include landscape works, 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) 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.

Yours sincerely



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Ref No: 17420

1 Montauban Ave, SEAFORTH – arborist DA – 4.11.2020



APPENDICES

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APPENDIX- A: Terminology, notes & 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.'

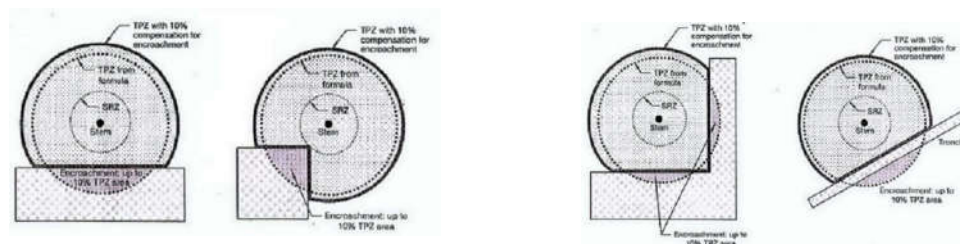
Age classes: (I) Immature refers to a well established but juvenile tree. (ESM) refers to an early semi mature tree not of juvenile appearance. (SM) Semi-mature refers to a tree at growth stages advancing into maturity and full size. (LSM) Late Semi-Mature, refers to a tree between semi-mature and close 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. (LM) Late mature refers to a tree entering into over maturity (OM) and likely first stages of senescence. **Health:** Refers to a tree's 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 to negligible impact (<10%) of minor consequence, 10 - <15% incursion of moderate to low impact, 15 - <20% Medium to moderate level of impact and incursion where the project arborist is to demonstrate the tree/s remain viable by tree sensitive construction techniques, 20 - <25% incursion of Medium to high level of impact, 25 - <35% of High level impact to significant >35% incursion where moderate to high level impacts may require design changes or further information to manage tree vitality. **WBF** = 100% within building footprint.

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.
- Northern Beaches Council DCP <https://www.northernbeaches.nsw.gov.au/planning-and-development/building-and-renovations/planning-controls>

APPENDIX- B: Tree Retention Value Checklist ©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 where risk mitigation or rectification works may likely compromise tree, trees may be contained within a vault having restricted root development / anchorage
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 Picos 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 would benefit from crown maintenance pruning as identified within the Australian Standards AS 4373 – 2007 Pruning of Amenity Trees
		5A	Trees that require little or no maintenance at time of inspection other than close monitoring
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 trees 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- C: 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 *exempt trees from the LGA Tree Preservation Order (TPO)					
Tree No	Botanical Name COMMON NAME	Height x spread (m)	DBH (mm)	SRZ TPZ	Age	Vigour	Condition	Significance	VTA	RV	U. L.E.	Comments CV = Council verge tree NT= Neighbouring tree
1	<i>Eucalyptus robusta</i> Swamp Mahogany	16 x 12m	550	2.7m 6.6	ESM	Good	Fair / Good	3	2C/B	1	2	Suppressed canopy form biomass N, lower trunk with slight bowing sweep, minor stem inclusion development at 6m W stem may become problem if exposed
Design & impact summary		Remove; tree located within driveway access footprint										
2	<i>Eucalyptus robusta</i> Swamp Mahogany	18 x 14	650	2.8 7.8	ESM	Good	Fair?	3	3/2A	3	<3	Requires further investigations (structural testing), large open wound with sound wound wood face, wound extends from ground level to 1.8m E side, torsion twisted base with reaction wood development indicates decay at base
Design & impact summary		Remove; tree located within driveway access footprint										
*3	<i>Grevillea robusta</i> Silky Oak	12 x 6	600	2.7 7.2	ESM	Fair / Good	Good	4	0/2C	1	2	Exempt tree species with lower trunk torsion twist and slight lean S, located on raised mound at base
Design & impact summary		Remove; exempt tree species										
4	<i>Banksia integrifolia</i> Costal Banksia	11 x 5	400	2.4 4.8	ESM	Good	Fair / Good	3	6	1	2	Located at edge of embankment with moderate to strong lean W= likely to become problematic in the future
Design & impact summary		Proposed retention; minor disturbance within SRZ by driveway footprint, at or near 16.5% TPZ occupancy of medium impact, tree on steep slope, bowing towards Bus shelter, should be considered for removal due to failure target area of person & Bush shelter, requires detailed tree management to minimise impacts within TPZ										
*5	<i>Jacaranda mimosifolia</i> Jacaranda	5 x 3	150at base	1.5 2	ESM	Good	Fair / Poor	6	0/2A	2	3	Exempt tree species with stem inclusion development at base
Design & impact summary		Remove; exempt tree species										
6	<i>Glochidion ferdinandi</i> Cheese Tree	6 x 8	250, 200	2.4 5.4	ESM	Good	Fair / Good	3	2/2A	2	3	Suppressed canopy form biomass E with stem inclusion development throughout lower branch scaffolds & at or near ground level of twin stems = conduction may become problematic in the future particularly if exposed by removal of T7
Design & impact summary		Proposed retention; high level disturbance at or near 28% within TPZ, considered manageable due to removal of adjacent dominant tree, tree on steep slope, Bus shelter adjacent, requires arborist evaluation after removal of adjacent tree & detailed tree management to minimise impacts within TPZ										

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 *exempt trees from the LGA Tree Preservation Order (TPO)					
Tree No	Botanical Name COMMON NAME	Height x spread (m)	DBH (mm)	SRZ TPZ	Age	Vigour	Condition	Significance	VTA	RV	U. L.E.	Comments CV = Council verge tree NT= Neighbouring tree
*7	<i>Olea europaea susp cuspidate</i> African Olive	7 x 9	300, 300	2.7 7.2	ESM	Good	Fair / Good	5	0	1	2	Exempt tree species suppressing canopy development of T6
Design & impact summary		Remove; exempt tree species										
*8	<i>Pinus radiata</i> Monterey Pine	15 x 10	600	2.7 7.2	ESM	Fair	Fair / Good	4	0/4/2 C	2	2	Exempt tree species. Environmentally stressed with slight decline in canopy and lower branch scaffold reduction pruning on N side to 7m above ground level
Design & impact summary		Remove; exempt tree species										
*9	<i>Syagrus romanzoffiana</i> Cocos Palm	6 x 4	250	- 3	ESM	Good	Good	5	0	1	2	Exempt palm species with no significant visual faults
Design & impact summary		Remove; exempt palm species										
10 NT	<i>Callistemon viminalis</i> Bottle Brush	5 x 4	200	1.8 2.4	ESM	Fair	Fair / Good?	4	4/7/2 B	2	3	Environmentally stressed with slight decline on lower canopy, minor stem inclusion development noted throughout upper branch scaffolds = may become problematic in the future. Canopy near 3m within site at 2.5m above ground level
Design & impact summary		Retain & protect; negligible occupancy & impact, prune back to boundary under AS4373-2007 pruning standards										
11 NT	<i>Grevillea sp</i> Grevillea Moonlight	5 x 6	200	1.8 2.4	ESM	Good	Good?	4	7	1	3	Above ground visual parts appear in good order, canopy near 1.5m in site at 1.8m above ground level
Design & impact summary		Retain & protect; negligible occupancy & impact, prune back to boundary under AS4373-2007 pruning standards										
12 NT	<i>Olea europaea susp cuspidate</i> African Olive	4 x 3	150	1.5 2	ESM	Good	Good?	5	7	1	3	Mixed group of three (3) environmental weed species, Cassia & Broad Leaved Privet slightly overhanging boundary
Design & impact summary		Retain; likely high level impact by excavation at boundary, likely to affect retention value, appropriate root management required prior to construction										

APPENDIX- D: Tree Location Plan

