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15 December 2020

REEF APARTMENTS
75 – 77 FOAMCREST AVENUE
NEWPORT, NSW

DEVELOPMENT PROPOSAL

ARBORICULTURAL IMPACT ASSESSMENT REPORT
Report Ref No- 20520

Prepared for
Provent Property Group Pty Limited
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INTRODUCTION

This report has been commissioned by Provent Property Group C/- Richard Cole Architects 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 residential apartments within Lots 1 & 2 in DP 22450 known as 75 - 77 Foamcrest Avenue, NEWPORT 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 low, moderate to high level impacts within the TPZ. 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.

METHODOLOGY

1 In preparation for this report a ground level Visual Tree Assessment (VTA) was conducted 4th November 2020 by the author of this report from within 75 Foamcrest Avenue, with limited access and tree inspection within 77 Formcrest Avenue. The principles of VTA 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 assessment of 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 VTA the retention value of the tree was summarised utilizing the tree assessment Checklist provided within Appendix- B.

2 The inspection was limited to visual assessment 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. 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.

Unless specified otherwise all distances and development offsets within this report are taken from the centre of the tree.

4 Plans and/or documentation received to assist in preparation of this assessment include:

Richard Cole Architects project No. 1612 *specific to*:

- Site Plan Dwg No. DA02 rev G dated 11.12.2020
- Basement Plan Dwg No. DA03 rev G dated 11.12.2020
- Ground Floor Plan Dwg No. DA04 rev G dated 11.12.2020
- First Floor Plan Dwg No. DA05 rev G dated 11.12.2020
- Roof Plan Dwg No. DA06 rev G dated 11.12.2020
- Elevations Dwg No's. DA07 & 08 rev G dated 11.12.2020
- Landscape Area Dwg No. DA20 rev G dated 11.12.2020
- Demolition Plan Dwg No. DA27 rev G dated 11.12.2020

Karen Ruthven Landscape Architecture

- Tree Protection & Removal Plan Dwg No: LA-03 rev B dated 9.11.20

Barrenjoey Consulting Engineers job No: 201107

- Site Stormwater management Plan Dwg No: SW1 dated 27.11.2020

Bee & Lethbridge Pty Limited

- Survey Plan ref No21796 rev 00, dated 3.9.2020

1. SUMMARY OF ASSESSMENT

1.1 General tree assessment

1.1.1 Twenty four (24) trees have been assessed under this development proposal which consist of two (2) Council verge trees, one (1) neighbouring tree and fourteen (14) non-prescribed (exempt) species.

Council verge trees: Council verge trees are unlikely to be detrimentally affected by the 6.5m building setback with more detail required for excavation within the SRZ of T2 to determine pathway impacts.

Neighbouring tree: Neighbouring Jacaranda T24 is a non-prescribed tree located at or near the boundary. Canopy projection is mostly east & west having minimal encroachment within the site. Tree protection requires existing levels and deep soil to remain within the tree protection zone (TPZ).

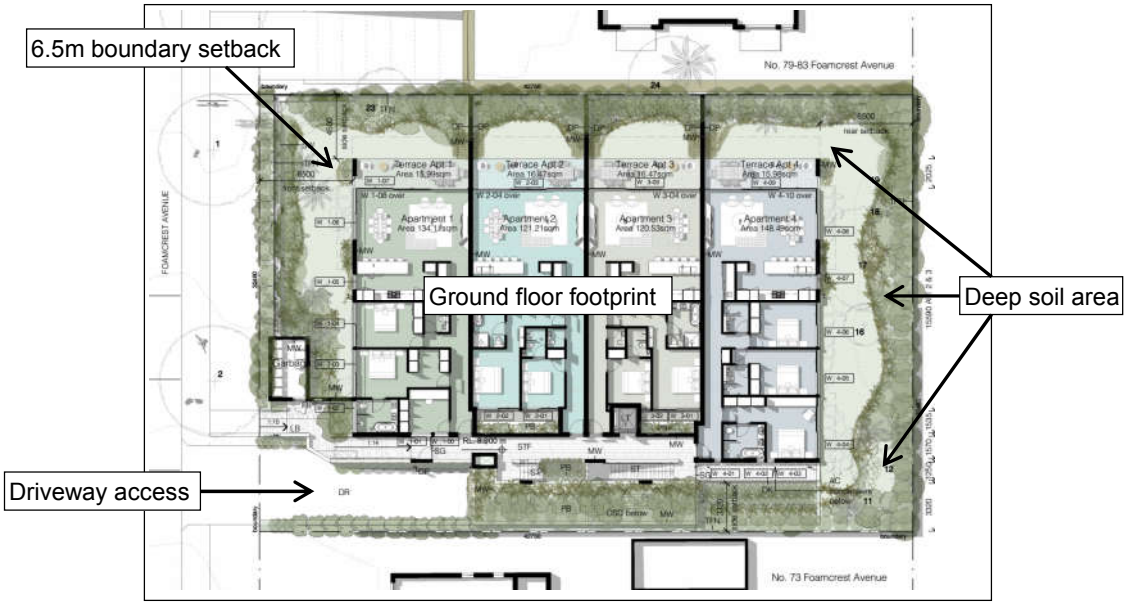
Exempt non-prescribed species: noted within Northern Beaches Council Exempt species list trees 3, 4x4, 5, 6x3, 7, 8, 9, 10, 13, 15, 16, 18, 19 & 22 are identified as exempt species. Being exempt non-prescribed species the trees are permitted to be managed (pruned, removed or relocated) without Council consent. Should an exempt species require retention further arborist advice and protection methodology is required prior to works occurring within their tree protection zones.

1.1.2 Remaining trees are 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- C.

1.2 The development proposal

1.2.1 The development proposal requires demolition of existing dwellings and site infrastructure with excavation for basement levels to accommodate parking facilities with the building footprint located within notional tree protection zone radiuses.

Figure 1, showing proposed development footprint

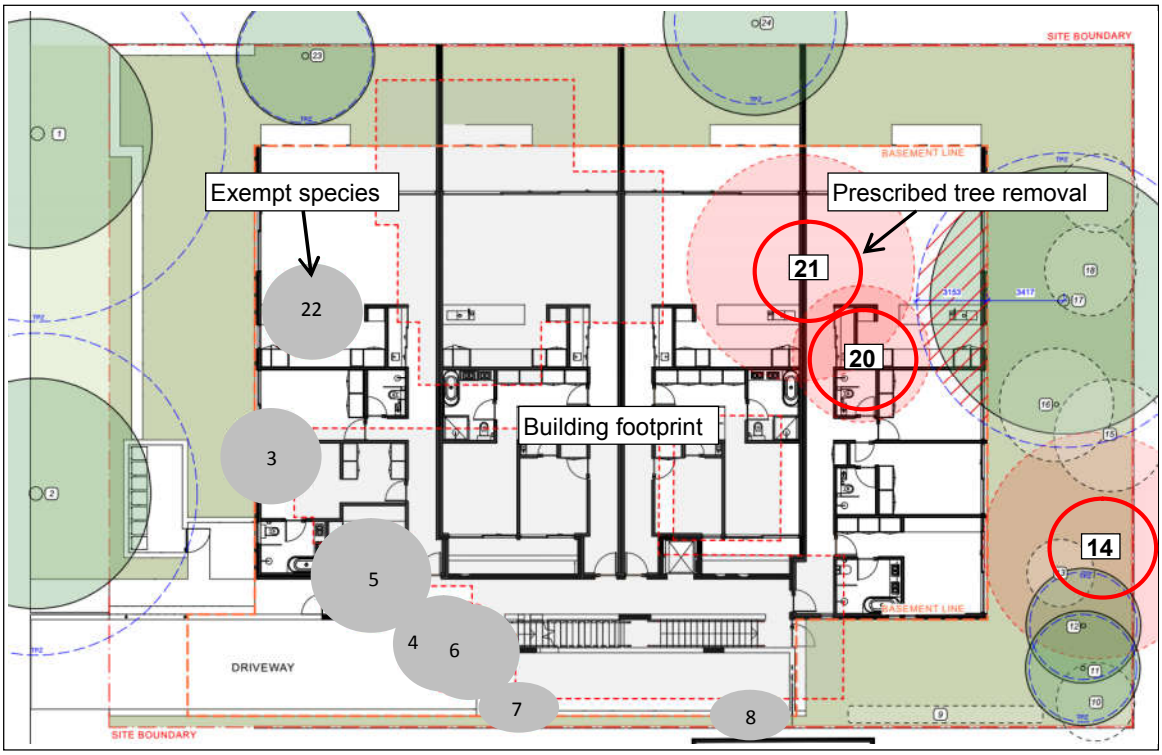


1.3 Tree removal to accommodate design – *prescribed trees*

1.3.1 Three (3) prescribed trees have been identified for removal to accommodate design. The subject trees are identified as trees:

- 14, 20 & 21.

Figure 2, showing proposed prescribed tree removal plan



1.4 Discussion of development impacts

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

1.4.1 As shown above trees locate within the development footprint requiring removal to accommodate design are identified as trees: 20 & 21.

1.4.2 Proposed tree removal for landscape design: T14, where the tree may be pathogen affected showing signs of slight environmental stress.

1.4.3 Those trees receiving negligible (0%) or low level and manageable (<10%) TPZ encroachments by design are identified as trees:

- T11, 12, 23 & 24.

Of these trees T24 may likely be affected by roofline conflicts requiring reduction pruning to Australian Standards AS 4373 Pruning of Amenity Trees 2007 to achieve appropriate clearances.

The above trees are recommended to be protected in accordance with Section 2.3 *General tree protection requirements*, where existing RL's within tree protection zones are recommended to remain.

Council verge trees T1 & 2

1.4.4 Tree 1: The proposed building footprint is located outside of a notional 8.4m TPZ having negligible building footprint occupancy.

Within the TPZ new front boundary fence / wall and SW line is proposed at or near 4.5m from the tree. Tree sensitive design is required to ensure critical roots are retained and not damaged by the proposal with specific protection methodology outlined within Section 1.4.5 below.

1.4.5 Tree 2: The proposed driveway crossover is located on the existing driveway footprint with part public access and garbage bin bay occupying an additional at or near 10% TPZ occupancy within the site, being outside of existing site features. Within the site new occupancy is likely to be a low level impact where the existing foundations of the front masonry wall may have acted as a root barrier and restricted root encroachment. Proposed works within the SRZ consist of additional public verge pathway located parallel with the driveway crossover. Visually surface roots are evident indicating excavation within this area would likely have a high level of SRZ impact. Tree root investigations are required to determine the impact on critical roots with the following guidelines provided to mitigate impacts by design.

a) Tree 2; conduct tree root investigations to determine the impact of excavation within the SRZ by the proposed additional public access path running parallel to the driveway footprint. The tree should then be manage in accordance with the results of the investigation, or removing the pathway from within the SRZ should be considered.

b) Trees 1 & 2; the front boundary fence is to be constructed to bridge over critical roots, being on or suspended above ground level. Pier footings should be located where no critical root >30mm(Ø) are situated with no continuous trench excavation recommended within tree protection zones.

Prior to construction a detailed front fence or masonry wall construction plan is recommended to be reviewed and endorsed by an appointed site arborist prior to obtaining a Construction Certificate (CC).

c) Within the TPZ the SW trench line is to be excavated manually (by hand) to avoid ripping of roots by site machinery. Within the TPZ carful excavation is to be conducted under the supervision of an appointed site arborist ensuring that significant roots are retained, and services tunneled beneath encountered tree roots at or >30mm(Ø) where possible. Where root conflicts exist the appointed site arborist is recommended to manage tree roots in accordance with AS4970 – 2009 Section 4.5.4 *Root protection during works within the TPZ* and/or Section 2.3 f) of this report.

d) The trees are to be protected with tree protection fencing extending the canopy dripline within the deep soil (landscape) area of the front Council verge as indicated within the Tree Protection Plan of Appendix F.

1.4.6 Tree 17: The proposed building encroachment within the TPZ is considered at a moderate (15-20%) level of impact being at or near a notional 18.4% TPZ occupancy. Additionally the broad canopy may conflict with the proposed roofline located at or near 4.5m from the boundary indicating pruning will likely be required to provide adequate roofline clearances. As the tree appears environmentally stressed the extent of disruption may not be favorable in maintaining tree vigour with the following recommendations provided to mitigate impacts by design.

a) To avoid additional encroachment within the TPZ there should be no over excavation beyond the line of the basement footprint as shown within construction drawings.

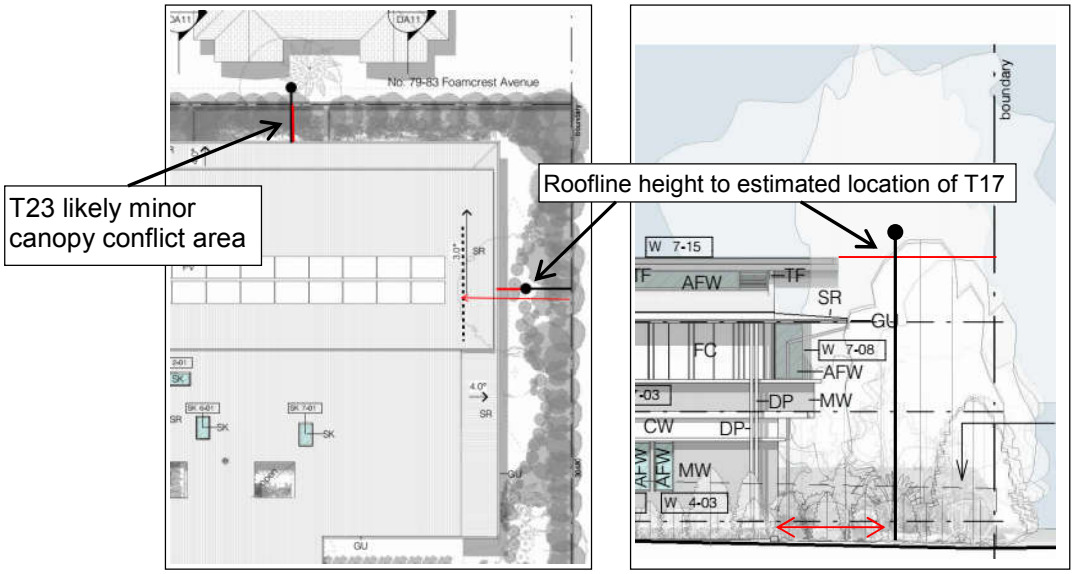
b) The basement excavation cut within the TPZ is to be conducted manually for the first 0.7m (700mm) in depth under the supervisor of appointed site arborist. All tree roots encountered are to be managed in accordance with AS4970 – 2009 Section 4.5.4 *Root protection during works within the TPZ* and/or Section 2.3 f) of this report. Appropriate arborist certification shall be provided to the PCA prior to machinery excavation occurring within the TPZ.

c) A designated tree protection area (TPA) shall be installed where the existing ground level (RL) within the TPZ is to remain. Within the TPA there is to be no additional excavation conducted without prior arborist advice and certification.

d) The TPA is to consist of ground mats covering the remaining TPZ area with the trunk of the tree protected with timber beam trunk protection. Prior to installing ground / root protection mats the area shall be mulched and provided with drip irrigation prior to main construction works occurring.

e) The extent of canopy reduction pruning is to be made clear by detailing the roofline encroachment within the canopy. Both the building footprint and extent of roofline incursion should be clearly marked on site for arborist review. Where scaffolding is required a detailed scaffolding plan should also be provided for assessment.

Figure 3, showing T17 & 23 potential canopy conflict areas



2. CONCLUSIONS & RECOMMENDATIONS

2.1 Tree Removal

2.1.1 Based on the design proposal and with the consent of Council the following three (3) prescribed trees have been identified for removal to accommodate design.

- T14, 20 & 21

Non-prescribed trees permitted to be removed or managed without Council consent are identified as trees: 3, 4x4, 5, 6x3, 7, 8, 9, 10, 13, 15, 16, 18, 19 & 22. Should a non-prescribed tree require retention no works should occur within TPZ without prior arborist advice.

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) *Council verge trees:* Trees 1 & 2, design of the front fence or masonry wall should be constructed utilizing tree sensitive techniques being constructed to bridge over critical roots within the TPZ. The SW line excavation is to be conducted manually (by hand) to retain significant roots ensuring the services are tunneled beneath bridging any critical root(s) where possible.

Tree 2 requires further information by tree root investigations due to excavation within the SRZ by the proposed public verge pathway running parallel to the driveway crossover. The management of the tree should be based on the results of the investigation where removing the pathway from design should be considered.

b) Tree 17; the tree appears slightly environmentally stressed where the moderate level of impact (15-20%) occupancy may not be favorable for maintaining tree vigour. As the TPZ area lost cannot be compensated elsewhere mitigating impacts should consist of no over excavation beyond the line of the proposed basement cut. Manual hand excavation within the first 0.7m (700mm) of soil depth is to be conducted such that encountered tree roots can be appropriately managed by an appointed site arborist with a tree protection area (TPA) installed as indicated within the tree protection plan of Appendix- E.

Canopy impacts should also be addressed by clearly marking out the building footprint and roof extension on site for arborist assessment. Given the roofline setback to the boundary it is likely a moderate to high percentage of canopy loss may occur. The extent of canopy allowable to the building footprint should also be addressed by a certified Bushfire Consultant.

2.3 General tree protection requirements

a) Prior to demolition works Tree Protection Fencing (TPF) and/or zones as identified within Figure 4 are recommended to be located under the guidance of an appointed site arborist. Unless specified otherwise, and/or within Tree Management Plans the location of tree protection fencing is to be positioned to allow for adequate work access 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 designated protection areas.

b) At completion of demolition and prior to construction tree protection fencing or zones may require modification to allow for construction activities. Reduction of tree protection zones shall be certified by appointed site arborist prior to main construction including basement excavations occurring.

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 5 certification and be competent in methodology of protecting trees on development sites.

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.*

e) Monthly inspections are recommended to be conducted by the appointed arborist ensuring that all tree protection measures are adhered to.

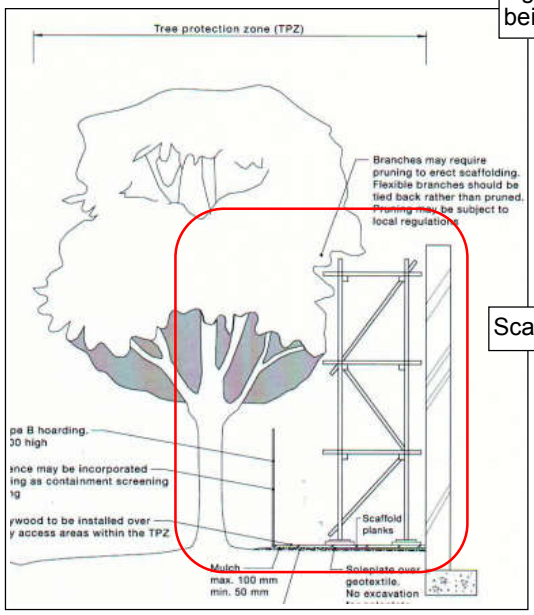
f) Unless specified otherwise during approved excavation within TPZ setbacks excavation is to be conducted manually (by hand) under the supervision of an appointed project arborist. Where approved by the arborist the pruning of roots is to be conducted in accordance with AS4970 – 2009 Section 4.5.4 *Root protection during works within the TPZ*, such that tree roots are not damaged or ripped beyond the point of excavation by site machinery. It should be noted that AS4373-2007 states *the effects of root pruning are not always predictable.*

   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.

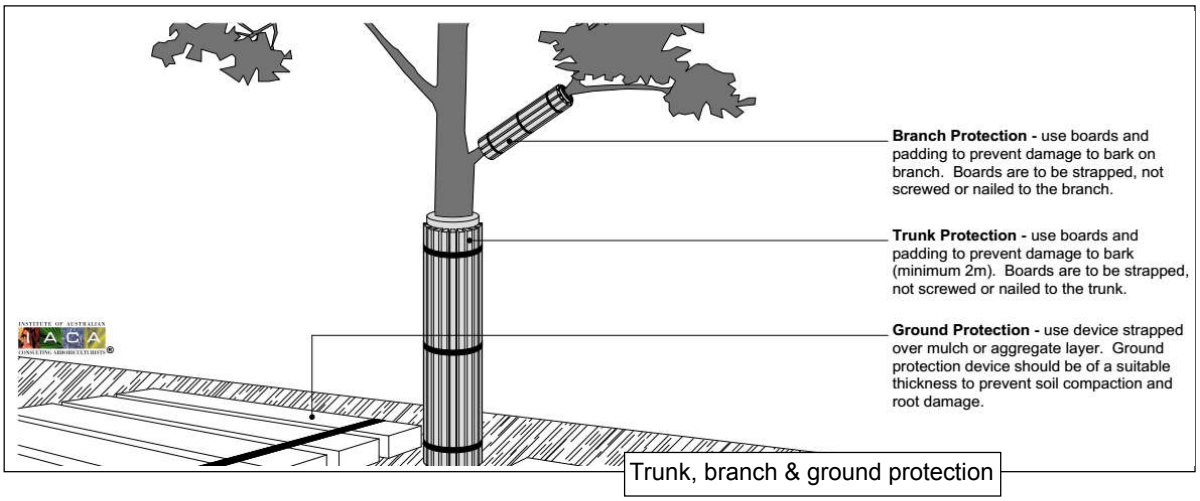
Figure 4: Tree protection fencing, ground and trunk protection detail

1.8m high tree protection fencing

All tree protection fencing requires appropriate signage clearly stating *a TPZ restriction area* being a designated Tree Protection Zone



Scaffolding within the TPZ



Trunk, branch & ground protection

g) 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 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.

Table 1, certification requirements & hold points

1	Pre- construction	T17; clearly mark out building and roofline setback on site for arborist review of canopy conflicts
		T2; conduct tree root investigation to determine root zone impacts within the SRZ
		Install tree protection fencing to accommodate construction activities & obtain arborist certification
		Engage arborist to supervise works during excavation within tree protection zones or specified protection areas
2	During construction	Project arborist to supervise & certify approved excavation works within tree protection zones.
		Engage arborist to undertake monthly tree inspections
3	Post construction	Prior to handover project arborist to provide final inspection & certification of tree health & vitality

h) 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*).

i) *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).

j) *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.

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.

Should you require further liaisons in this matter please contact me direct on 0419 250 248
Yours sincerely

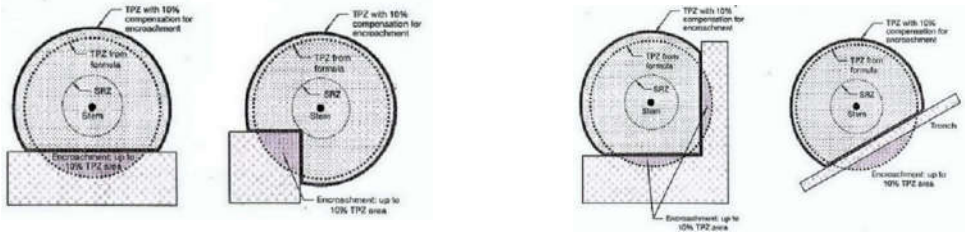
Mark A Kokot
AQF Level 5 consulting arborist
Diploma of Hort/Arboriculture (AQF5), Associate Diploma Parks Management (AQF4)
Certified Arborist / Tree Surgeon (AQF3), ISA Tree Risk Assessment Qualified 6/2024
Member: ISA, Arboriculture Australia & IACA, Working With Children No: WWC0144637E

APPENDICES

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 week 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** = 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.
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 development control plans
https://www.northernbeaches.nsw.gov.au/planning-and-development/building-and-renovations/planning-controls
ProSafe: TPZ encroachment calculator https://proofsafe.com.au/tpz_incursion_calculator.html

APPENDIX- B: 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

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 within a vault have 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 (pathogens) 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 or 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 fee 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

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 to15 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	Signifi-cance	VTA	RV	U. L.E.	Comments CV = Council verge tree NT= Neighbouring tree
1 CV	*Melaleuca quinquenervia* Paperbark	9 x 10	700	2.8m / 8.4	SM	Good	Fair	3	2B/D	2	2	Main twin stems at 1.2m with minor stem inclusion development, pruned for power line clearance modifying form, canopy 2m in site at 2m above ground level
Design & impact summary		*Retain; Root system restricted by roadside kerb & guttering indicating a likely asymmetrical / one sided root zone. Within a notional TPZ radius the building footprint has negligible (0%) TPZ occupancy. Impacts by SW & potential front boundary fence may occur where tree sensitive design to retain critical roots is recommended.*										
2 CV	*Melaleuca quinquenervia* Paperbark	10 x 10	600	2.7 / 7.2	SM	Good	Fair	3	2D	2	2	Multi stemmed at 1m, exposed surface roots, pruned for power line clearance modifying form
Design & impact summary		*Retain; Root system restricted by roadside kerb & guttering indicating a likely asymmetrical / one sided root zone. Within a notional TPZ radius the building footprint has negligible (0%) TPZ occupancy with additional pathway & garbage bin bay having an additional Minor (<10%) occupancy beyond existing site features. Impacts by SW & potential front boundary fence may occur where tree sensitive design to retain critical roots is recommended. New verge pathway within SRZ adjacent driveway crossover requires tree root investigations to identify impact to critical underlying tree roots.*										
*3	*Howea forsteriana* Kentia Palm	3 x 3	150	1.6 / 2	SM	Good	Good	5	0/6	1	2/5	Exempt palm species with no significant visual faults
Design & impact summary		*Exempt non-prescribed species manage in accordance with design requirement*										
*4 x4	*Acmena smithii* Lilly Pilly (Hedge)	4 x 3	200at base	1.6 / 2.4	ESM	Good	Good	4/3	0/6	1	2/5	Exempt tree species height class, hedged for height control
Design & impact summary		*Exempt non-prescribed species manage in accordance with design requirement*										
*5	*Dypsis Lutescens* Golden Cane Palm/s	av 5 x 2.5	av 100	- / 2	SM	Good	Good	4	0/6	1	2/5	Exempt palm species with no significant visual faults
Design & impact summary		*Exempt non-prescribed species manage in accordance with design requirement*										
*6 x3	*Archontophoenix cunninghamiana* Bangalow Palm	av 5 x 4	av 250	- / 3	SM	Good	Good	4	0/2E	2	2	Exempt palm species with no significant visual faults
Design & impact summary		*Exempt non-prescribed species manage in accordance with design requirement*										
*7	*Bambuseae sp* Bamboo (clump)	av 6 x 3	av 40	- / 2	SM	Good	Good	4/3	0	1	2	Non-prescribed species (exempt) from protection orders
Design & impact summary		*Exempt non-prescribed species manage in accordance with design requirement*										

	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	Signifi-cance	VTA	RV	U. L.E.	Comments CV = Council verge tree NT= Neighbouring tree
*8	*Bambuseae sp* Bamboo (clump)	av 5 x 2	av 40	- 1.5	SM	Good	Good	4/3	0	1	2	Non-prescribed species (exempt) from protection orders
Design & impact summary		*Exempt non-prescribed species manage in accordance with design requirement*										
*9	*Marraya paniculata* Marraya (Hedge)	4.5 x 2	av 100	1.6 2	ESM	Good	Good	4/3	0/6	1	2/5	Exempt tree species height class, hedged for height control
Design & impact summary		*Exempt non-prescribed species manage in accordance with design requirement*										
*10	*Bambuseae sp* Bamboo (clump)	av 7 x 4	av 40	- 3	SM	Good	Good	4	0	1	2	Non-prescribed species (exempt) from protection orders
Design & impact summary		*Exempt non-prescribed species manage in accordance with design requirement*										
11	*Waterhousea floribunda* Weeping Lilly Pilly	7 x 5	200	1.8 2.4	ESM	Good	Good	4/3	6	1	2	Co-dominant at2.5m with no significant visual faults
Design & impact summary		*Retain, negligible TPZ encroachment by building footprint with unlikely canopy impact by roofline design, retain existing RL's in TPZ*										
12	*Waterhousea floribunda* Weeping Lilly Pilly	7 x 5	200	1.8 2.4	ESM	Good	Good	4/3	6	1	2	Suppressed canopy form biomass W with no significant visual faults
Design & impact summary		*Retain, negligible TPZ encroachment by building footprint with unlikely canopy impact by roofline design, retain existing RL's in TPZ*										
*13	*Bambuseae sp* Bamboo (clump)	av 6 x 3	av 40	- 2.5	SM	Good	Good	4	0	1	2	Non-prescribed species (exempt) from protection orders
Design & impact summary		*Exempt non-prescribed species manage in accordance with design requirement*										
14	*Casuarina glauca* She Oak	15 x 11	600	2.7 7.2	M	Fair	Fair / Good	4/3	4/3/ 2C	2	2	Slightly low foliage volume and vigour, lower trunk indent seams E & W with sap or wound wood staining indicating potential pathogen or viral infection
Design & impact summary		*Remove; landscape design identifies tree removal where the tree may be pathogen affected being slightly environmentally stressed. Design proposes a Moderate (15-20%) level of impact at or near 17.5% TPZ occupancy by the building footprint, likely to be minor roofline conflict with extending canopy*										
*15	*Bambuseae sp* Bamboo (clump)	av 14 x 7	av 80	- 4	SM	Good	Good	4/3	0	1	2	Non-prescribed species (exempt) from protection orders
Design & impact summary		*Exempt non-prescribed species manage in accordance with design requirement*										
*16	*Plumeria sp* Frangipani	4 x 4	250	2 3	SM	Good	Good	4/3	0	1	2/5	Exempt tree species height class with no significant visual faults
Design & impact summary		*Exempt non-prescribed species manage in accordance with design requirement*										

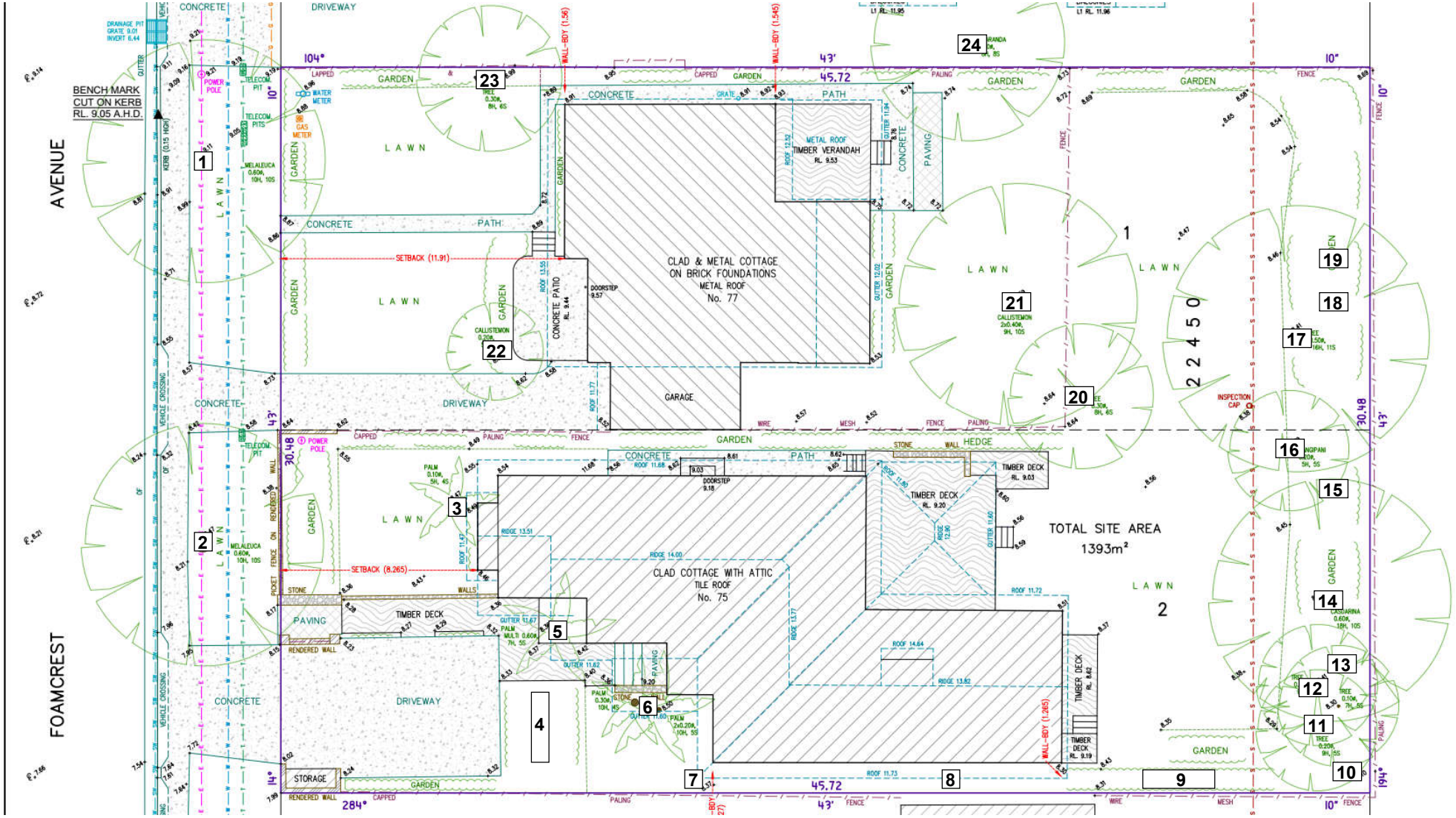
	Trees requiring removal due to hazardous or dead condition - subject to Local Government Authority notification		Trees with low retention values: senescence, developing defects or being *exempt trees from the LGA Tree Preservation Order (TPO)

Tree No	*Botanical Name* COMMON NAME	Height x spread (m)	DBH (mm)	SRZ / TPZ	Age	Vigour	Condition	Signifi-cance	VTA	RV	U. L.E.	Comments CV = Council verge tree NT= Neighbouring tree
17	*Eucalyptus robusta* Swamp Mahogany	14 x 12	550	2.7 6.6	SM	Fair / Good	Fair / Good	3	4/7	2	2	Restricted VTA vegetation covering lower trunk, appears environmentally stressed with slightly low foliage volume and minor decline in canopy
Design & impact summary		*Retain; Medium (15-20%) building encroachment at or near 18.4% within TPZ, with amount of TPZ occupied unable to be compensated elsewhere. Canopy conflicts likely to exist where reduction pruning will likely be required to provide appropriate building clearances. Mitigating impacts would require no over excavation beyond the proposed line of basement cut, with correct root management (mulching & irrigation) and appropriate tree protection prior, during & post works.*										
*18	*Bougainvillea glabra* Bougainvillia vine	6 x 8	multi 350at base	2.1 4.2	M	Good	Good	4/3	0/6	1	2	Non-prescribed species (exempt) from protection orders
Design & impact summary		*Exempt non-prescribed species manage in accordance with design requirement*										
*19	*Strelitzia reginae* Giant Bird of Paradise	av 6 x 4	av 150	- 3	ESM	Good	Good	4	0/6	1	2	Non-prescribed species (exempt) from protection orders
Design & impact summary		*Exempt non-prescribed species manage in accordance with design requirement*										
20	*Banksia integrifolia* Costal Banksia	9 x 4	250	2 3	ESM	Good	Fair / Good	3	2B/C	2	2	Minor upper branch scaffolds pruning cuts evident, with minor stem inclusion development at lower branch scaffolds SE side
Design & impact summary		*Remove; located within building footprint*										
21	*Callistemon viminalis* Bottle Brush	8 x 10	450	2.5 5.4	LM	Fair	Fair / Good	4	2B/C	2	3	Aging specimen tree, storm damage E side, with minor stem inclusion development at 1m N stem, low foliage volume and vigour
Design & impact summary		*Remove; located within building footprint*										
*22	*Callistemon viminalis* Bottle Brush	4 x 2.5	250at base	1.8 3	ESM	Good	Fair / Good	4	0/2C	1	2	Exempt tree species height class. Minor pruning cuts evident S side with no significant visual faults
Design & impact summary		*Exempt non-prescribed species manage in accordance with design requirement*										
23	*Banksia integrifolia* Costal Banksia	5 x 4	250	2 3	ESM	Good	Good	4/3	6	1	2	Tree with no significant visual faults
Design & impact summary		*Retain, negligible TPZ encroachment by building footprint with unlikely canopy impact by roofline design, retain existing RL's in 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	Signifi-cance	VTA	RV	U. L.E.	Comments CV = Council verge tree NT= Neighbouring tree
24 NT	*Jacaranda mimosifolia* Jacaranda	8 x 8	300?	2 3.6	ESM	Good	Good?	4/3	0/7	1	2	Restricted VTA above ground visual parts appear in good order
Design & impact summary		*Protect; negligible TPZ root zone encroachment by building footprint, retain existing RL's in TPZ. Potential canopy impact by roofline setback from boundary, may require minor pruning to Australian Standards AS 4373 Pruning of Amenity Trees 2007 to appropriately clear roofline*										

APPENDIX- D: Tree Location Plan



APPENDIX- E: Tree Protection Plan, *not to scale*