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11 October 2023

74 SOLDIERS AVENUE
FRESHWATER, NSW

DEVELOPMENT PROPOSAL

ARBORICULTURAL IMPACT ASSESSMENT REPORT
Ref No- 11323

Prepared for
Margaret Kaye & Nick Richter
74 Soldiers Avenue
FRESHWATER, NSW

Prepared by
Mark A. Kokot
AQF Level 5 Consulting arborist

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INTRODUCTION

This report has been commissioned by Margaret Kaye & Nick Richter 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 residential dwelling within Lot 1 of DP954849, known as 74 Soldiers Avenue, FRESHWATER NSW.

Recommendations for retention or removal of trees is based on the tree's protection status, being prescribed or non-prescribed trees, tree structural condition, estimated remaining Useful Life Expectancy (U.L.E.) and potential impact to trees by the design proposal.

Development incursions within tree protection zones (TPZ) are based on percentages of incursion noted within Note 2 of Appendix- A and are described as Negligible (0%), Minor (<10%) & Major (>10%) TPZ occupancy having low, moderate to high level impacts within the Tree Protection Zone (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 has been accorded a temporary identification number and is referred to by number throughout this report. For additional trees not plotted in 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 have been detailed 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.

METHODOLOGY

1. In preparation for this report a site and ground level visual tree inspection was conducted on Friday 22 September 2023 by the author of this report. The principles of visual 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 (tree risk) 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 where 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). Where multi stems at the base exist the stem group diameter was estimated as a tight clump. The height of palms was taken from ground level to the top of the crown shaft only and excludes the central apical spear projection with palm Tree Protection Zones (TPZ) determined as 1m outside the canopy projection area.

3. This report acknowledges and utilizes the current Australian Standards 'Protection of Trees on Development Sites' AS4970 – 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 as indicated within provided survey and/or design documentation.

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

   MOJO Homes project 652201 *specific to*:
   - Site Plan Sheet 4 / 25 rev 5 dated 2023.6.29
   - Water Management (GF) Sheet 5 / 25 rev 5 dated 2023.6.29
   - Ground Floor Sheet 7 / 25 rev 5 dated 2023.6.29
   - Elevations & Sections Sheet 11 / 25 rev 5 dated 2023.6.29
   - Elevations Sheet 12 / 25 rev 5 dated 2023.6.29

   Survey Plus
   - Survey Plan No: 18714_DET_1A, rev A dated 8.5.2020

1. SUMMARY OF ASSESSMENT

1.1 General tree assessment

1.1.1 Fifteen (15) trees have been assessed for the purpose of this arboricultural report. Of the fifteen trees, within the site three (3) trees are exempt non-prescribed species and eleven (11) trees are within adjoining properties.

1.1.2 Exempt non-prescribed trees are identified as trees:

- T13, 14 & 15.

Being exempt non-prescribed species, the above trees are permitted to be managed (pruned, removed or relocated) without Council consent. Several small exempt trees and palms <3m in height are scattered throughout the site where their location may require removal to accommodate works. For the purpose of this development application exempt trees T13, 14 & 15 are proposed for removal.

1.1.3 Neighbouring trees are identified as trees:

- T1, 2, 3, 4, 5, 6, 7, 8, 9, 11 & 12.

The subject trees are to be retained and protected throughout development works as indicated within Australian Standard AS4970 Protection of Trees on Development Sites– 2009 and content of this report.

1.2 The development proposal

1.2.1 The development proposal consists of constructing a new residential dwelling with slight cut & fill to accommodate design within Tree Protection Zone (TPZ) radiuses of prescribed and non-prescribed trees.

1.3 Tree removal to accommodate design – *prescribed trees*

1.3.1 No prescribed (protected) trees have been identified for removal to accommodate this development proposal.

1.3.2 The identified development impacts and design requirements adjacent trees to be retained have been detailed within Appendix- D and summarized within the following sections.

1.4 Discussion of development impacts

Trees receiving negligible to Minor (<10%) & manageable impacts by design

1.4.1 The following prescribed trees receive negligible (0%), Minor (<10%) or manageable (<15%) TPZ encroachments where the trees are capable of being managed in accordance with Section 2.3 *General tree protection requirements*.

- T1, 2, 3, 10 & 11.

1.4.2 Of the above trees T11 receives additional SW excavation impact just within the SRZ where deeper excavation to accommodate services pipes requires retention of tree roots at or >25mm(Ø) to mitigate impacts by design.

Trees receiving Major (>10%) TPZ encroachments without SRZ occupancy

1.4.3 The following trees (palms) receive Moderate (20%) or Moderate to High (20-25%) TPZ occupancy where given specific on-site arborist management the mitigating of impacts of Major encroachment impacts is required to ensure the trees remain viable:

- T4, 5, 6 & 7.

Given the building setback and design requirement the following recommendations are provided to mitigate impacts by the design proposal:

a) *Proposed water tank*: The water tank stand is recommended to be constructed on top of natural ground level without significant site leveling & compaction within tree protection zone radiuses. Further arborist advice and certification relating to final footing & construction design is recommended to be reviewed & certified by an appointed project arborist prior to works commencing.

b) *Excavation within tree protection zones*: The proposed batter cut shown within Sheet 4 ideally should be in line with the water tank setback (450mm) from the boundary or increased to a retaining wall setback of at or near 0.9m (900mm) from the boundary as the proposed batter may likely conflict with underlying roots, and may affect palm 6 being close to the centre of the palm.

c) *Stormwater(SW) / hydraulics within tree protection zones*: The location of hydraulic service lines shown within Sheet 5 are likely to have little impact on underlying roots given the extent of cut proposed within Sheet 4.

Trees receiving Major (>10%) TPZ encroachments with SRZ occupancy

1.4.4 The following trees receive Moderate (20%) or Moderate to High (20-25%) TPZ occupancy with Structural Root Zone (SRZ) incursion:

- T8, 9 & 12.

Understanding that the existing building footprint is located within the SRZ & TPZ of select trees the following guidelines are provided to mitigate impacts by the design proposal:

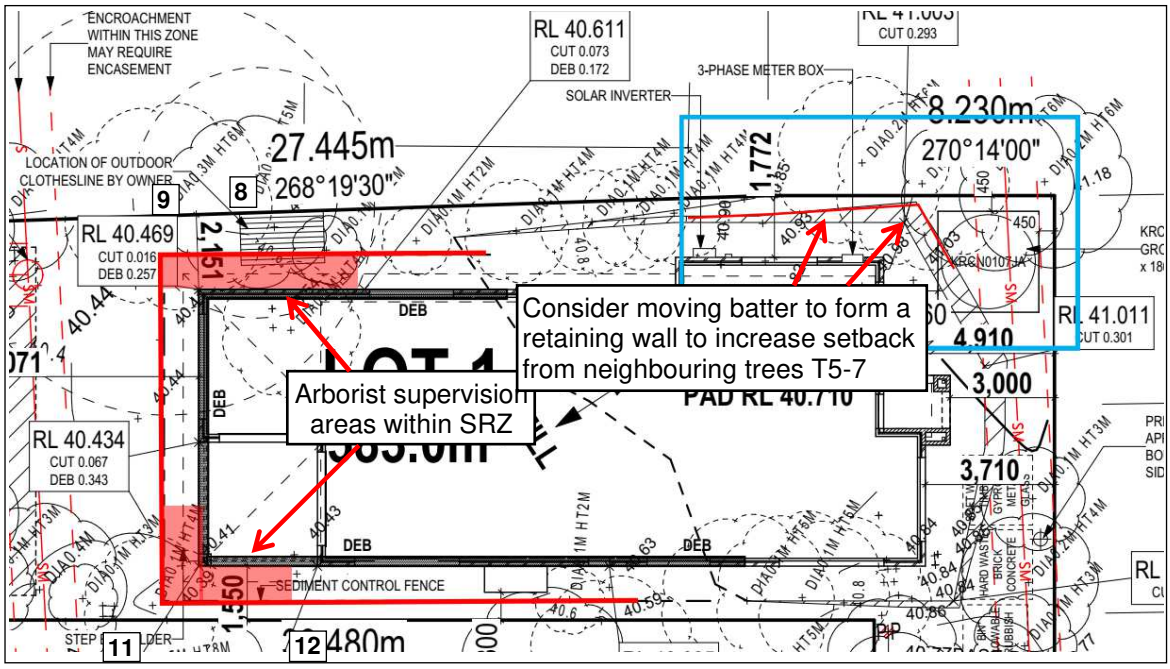
a) *Excavation within the TPZ & SRZ*: Based on Sheet 4 the proposed cut for side access path RL; no over excavation beyond the line of the proposed pathway is recommended to mitigate encroachment impacts within the SRZ.

b) All excavations along the line of cut within the SRZ is to be conducted manually (by hand) for the first 0.5m (500mm) or proposed depth under the supervision of an appointed site arborist.

c) The pruning of roots located along the line of cut shall be conducted in accordance with AS4970 – 2009 Section 4.5.4 *Root protection during works within the TPZ*. All cuts shall be clean cuts made with sharp tools such as secateurs, pruners, handsaws, chainsaws or specialized pruning equipment as per Section 9 *Root pruning* of AS4373 Pruning of Amenity Trees 2007.

d) *Stormwater(SW) / hydraulics within the SRZ*: The location of hydraulic service lines shown within Sheet 5 are likely to be deeper than the proposed cut or site grading to accommodate the building base or foundation at ground level. In this case where deeper excavation is required to accommodate services lines manual excavation is required to 0.5m (500mm) or proposed depth such that tree roots at or >25mm(Ø) can be retained. All services are recommended to tunnel beneath such roots to mitigate impacts of root loss within the tree protection zones.

Figure 1, showing excavation tree management areas



2. CONCLUSIONS & RECOMMENDATIONS

2.1 Tree Removal

2.1.1 No prescribed trees require removal to accommodate this development proposal.

2.1.2 Non prescribed trees permitted to be managed (pruned, removed or relocated) without Council consent to accommodate design requirements are identified as trees:

- T13, 14 & 15.

Several smaller shrubs & palms located along boundary lines and adjacent the building footprint are likely to require removal to accommodate works. Where smaller exempt species require retention, the trees should be protected in accordance with arborist advice and management as indicated within Section 2.3 General tree protection requirements.

2.2 Specific tree management recommendations

2.2.1 In addition to the recommendations provided within this report the following additional recommendations are provided as a guide for tree protection during works:

a) Unless specified otherwise, no access or excavation shall occur within Structural Root Zone (SRZ) radiuses without prior arborist advice. Where excavations are required within the SRZ tree root investigations are recommended to be conducted to identify impacts on critical underlying tree roots. Given Minor SRZ encroachments adjacent trees T8, 9, 11 & 12 direct arborist supervision is required to ensure roots are clean cut and ripped or damaged beyond the line of cut shown within construction drawings.

b) The proposed batter cut adjacent neighbouring palms T5, 6 & 7 is recommended to be reduced to mitigae excavation impacts within tree protection zones.

c) To assist in minimizing development disturbances to underlying tree roots fenced or designated Tree Protection Zones (TPZ) forming tree protection areas (TPA's) are recommended to be installed prior to works commencing. Within Tree Protection Areas (TPA) or TPZ radiuses the area is to be managed in accordance with Section 2.3 *General tree protection requirements*, where ground / root protection mats will likely be required within confined working space areas.

d) Within the SRZ & TPZ radiuses SW / hydraulic service excavation is recommended to be conducted manual under the supervision of appointed site arborist to a depth of 0.5m (500mm) or proposed service depth to ensure tree roots at or >25mm(Ø) are retained and not damaged.

2.3 General tree protection requirements

a) Prior to site works Tree Protection Fencing (TPF) and/or zones as identified within this report or 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 as indicated within the SRZ & TPZ distance column Appendix- D. Where design & construction access may be restrictive by tree protection fencing 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 tree protection areas (TPA) where work constraints exist.

b) Unless approved otherwise activities to be excluded within TPZ radius or specified tree protection areas (TPA) include:

- Machine access & excavation.
- Minor works including trenching & installation of utility services.
- Storage & work preparation including wash down areas.
- Soil level change and physical damage to trees.

c) In accordance with AS4970 - 2009 (1.4.4) during works 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 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) Approved excavation within TPZ setbacks; there shall be no over excavation beyond the line of cut as shown within construction drawings without arborist advice. 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.

g) Unless specified otherwise during approved excavation within TPZ setbacks excavation is to be conducted manually (by hand) under the supervision of an appointed site 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.

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 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) *Hold points*: specific to no works are to commence without arborist advice, inspections & certifications:

1) Prior to construction arboricultural certification is to be provided ensuring that all trees have been adequately protected in accordance with this report, or as indicated within Australian Standard AS 4970 Protection of Trees on Development Sites– 2009.
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.

l) 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.

m) 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).

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

Yours sincerely

Mark A Kokot

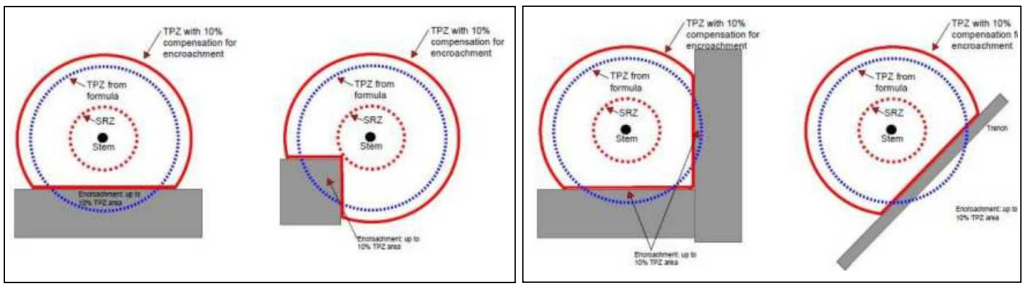
AQF Level 5 consulting arborist

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, 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. **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**: *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* >35% incursion.
WBF = located within design or building footprint where design necessitates tree removal.
NOTE-3: Showing acceptable 10% incursion within TPZ radiuses (AS4970)



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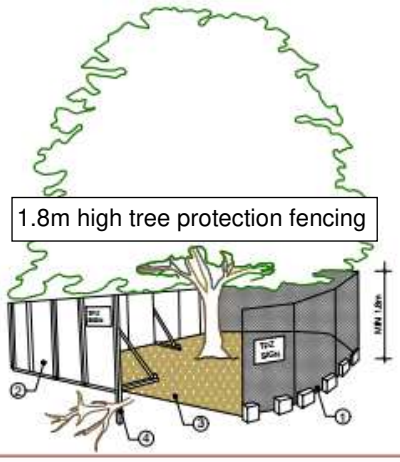
Mattheck, C. & Breloer, H.(1994) *The Body Language of Trees.* Research for Amenity Trees No.4 the Stationary Office, London.
Matheny N. & Clark J. 1998, Trees & Development *'A Technical Guide to Preservation of Trees During Land Development'* International Society of Arboriculture, Champaign USA.
ProSafe: TPZ encroachment calculator https://proofsafe.com.au/tpz_incursion_calculator.htmlStandards 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

A



1.8m high tree protection fencing

1. CHAIN WIRE MESH PANELS WITH SHADE CLOTH (IF REQUIRED) ATTACHED, HELD IN PLACE WITH CONCRETE FEET

2. ALTERNATIVE PLYWOOD OR WOODEN PALING FENCE PANELS. THE FENCING MATERIAL ALSO PREVENTS BUILDING MATERIALS OR SOIL ENTERING THE TPZ

3. MULCH INSTALLATION ACROSS SURFACE OF TPZ (AT THE DISCRETION OF THE PROJECT ARBORIST). NO EXCAVATION, CONSTRUCTION ACTIVITY, GRADE CHANGES, SURFACE TREATMENT OR STORAGE OF MATERIALS OF ANY KIND IS PERMITTED WITHIN THE TPZ

4. BRACING IS PERMISSIBLE WITHIN THE TPZ. INSTALLATION OF SUPPORTS TO AVOID DAMAGING ROOTS

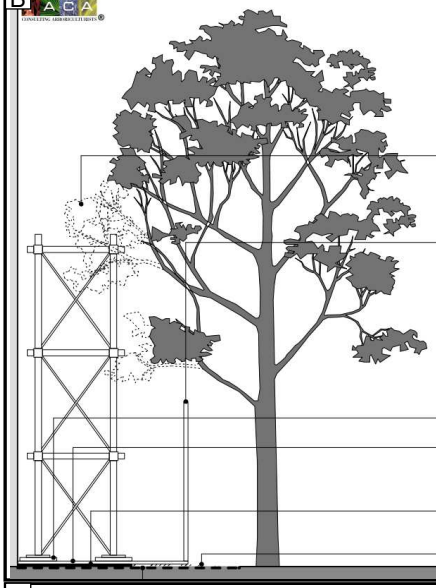
5. PRUNING & MAINTENANCE TO TREE REFER TO AS 4373-2007 PRUNING OF AMENITY TREES

All tree protection fencing or areas requires appropriate signage clearly stating *a TPZ restriction zone* being a designated Tree Protection Area

PROVIDE FENCING AS DETAILED TO ALL TREES PROPOSED TO BE RETAINED ON THE SUBJECT SITE. FENCING TO BE LOCATED TO THE DRIP LINE OF TREES OR AS INDICATED ON PLANS OR DIRECTED ON-SITE BY ARBORIST. NO STOCKPILING WITHIN FENCE PERIMETERS.

TREE PROTECTION ZONE

B



Scaffolding within the Tree Protection Zone

Branches may require pruning to erect scaffolding. Pruning may be subject to local regulations. Flexible branches should be tied back in preference to pruning.

Minimum 1.8m high hoarding. Temporary fencing may be incorporated into scaffolding as either containment screening or as hoarding.

Note:
If excavation is required for installation of support post for fencing, the Project Arborist should assess any pruning of roots greater than 20mm diameter.

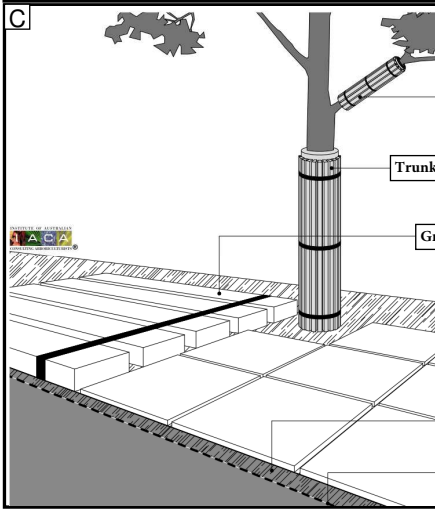
Scaffold planks

Boards or plywood to be installed over mulch or aggregate layer for any areas requiring access within the TPZ.

Soleplate over geotextile. No excavation for soleplate within TPZ.

Maximum 100mm and minimum 50mm depth mulch or aggregate layer within TPZ.

C



Ground, trunk & branch protection

Branch protection

Branch Protection - use boards and padding to prevent damage to bark on branch. Boards are to be strapped, not screwed or nailed to the branch.

Trunk protection

Trunk Protection - use boards and padding to prevent damage to bark (minimum 2m). Boards are to be strapped, not screwed or nailed to the trunk.

Ground protection

Ground Protection - use device strapped over mulch or aggregate layer. Ground protection device should be of a suitable thickness to prevent soil compaction and root damage.

Steel plates (or approved equivalent) with or without mulch or aggregate layer below.

Maximum 100mm and minimum 50mm depth mulch or aggregate layer.

Geotextile fabric underneath mulch or aggregate layer.

APPENDIX- C: Tree Retention Value *Check list* *©rainTree consulting*

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	Tree 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 compromise tree anchorage. Tree(s) may be contained by sloid structures with restricted anchoring root(s)
0A	Noxious or invasive weed species located within heritage conservation areas		
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 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, or 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, 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 canopy, 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- D: Tree Assessment Schedule

Refer Appendix- C Tree retention value Checklist

	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 (health)	Condition (structure)	LS	VTA	RV	U. L.E.	Comments CV = Council verge tree NT= Neighbouring tree
1 NT	*Schefflera actinophylla* Umbrella Tree	6 x 4	250at base	1.8 / 3	ESM	Fair / Good	Fair / Good	4	7	1	1	Neighboring tree, located in raised garden bed / retaining wall at boundary
Design impact summary: Proposed building footprint located outside of TPZ having Negligible (0%) TPZ incursion. Having negligible or likely Minor (<10%) work activity within TPZ tree to be managed in accordance with Section 2.3 General tree protection requirements, specific to: no works within SRZ without prior arborist advice & certification												
2 NT	*Archontophoenix cunninghamiana* Bangalow Palm	7 x 3.5	150	- / 2.7	SM	Fair / Good	Fair / Good	4/3	7	1	1	Neighboring palm, above ground visual parts appear in good order
Design impact summary: Proposed building footprint located outside of TPZ having Negligible (0%) TPZ incursion. Having negligible or likely Minor (<10%) work activity within TPZ tree to be managed in accordance with Section 2.3 General tree protection requirements, specific to: no works within SRZ without prior arborist advice & certification												
3 NT	*Archontophoenix cunninghamiana* Bangalow Palm	6 x 3.5	200	- / 2.7	SM	Fair / Good	Fair / Good	4/3	7	1	1	Neighboring palm, above ground visual parts appear in good order
Design impact summary: Proposed building footprint located outside of TPZ with proposed cut of Minor (<10%) TPZ occupancy. Given Minor (<10%) TPZ incursion palm recommended to be managed in accordance with Section 2.3 General tree protection requirements, specific to: arborist supervision for excavation & management of roots within the TPZ.												
4 NT	*Archontophoenix cunninghamiana* Bangalow Palm	7 x 4.5	250	- / 3	SM	Fair / Good	Fair / Good	4/3	2C	2	2	Neighboring exempt species, minor lean W with no significant visual faults
Design impact summary: Proposed ground water tank located within TPZ, at or near 0.9m from palm having an estimated Moderate to Low (10-15%) TPZ encroachment, at or near 12.7% where structure location may be problematic on underlying tree roots where structure base is recommended to be located on top of ground level without cut or compaction within the TPZ. Design requires arborist advice prior to works within the TPZ with palm managed under Minor (<10%) TPZ encroachments noted within Section 2.3 General tree protection requirements.												
5 NT	*Archontophoenix cunninghamiana* Bangalow Palm	7 x 3	200	- / 2.5	SM	Fair / Good	Fair / Good	4/3	4	2	2	Neighboring exempt species, appears environmentally stressed, displays low vitality
Design impact summary: Proposed ground water tank located within TPZ, at or near 0.7m from palm with estimated coverage of Moderate to High (20-25%) occupancy, at or near a manageable 24.7% with proposed minor cut at extremity of the TPZ. As with T4 structure location may be problematic on underlying tree roots where structure base is recommended to be located on top of ground level without cut or compaction within the TPZ. Proposed cut requires arborist supervision for managing tree roots where palm appears capable of being managed under Minor (<10%) TPZ encroachments noted within Section 2.3 General tree protection requirements due to adventitious root system.												

	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 (health)	Condition (structure)	LS	VTA	RV	U. L.E.	Comments CV = Council verge tree NT= Neighbouring tree
6 NT	*Archontophoenix cunninghamiana* Bangalow Palm	7 x 3	200	- / 2.5	SM	Good	Good	4/3	7	1	1	Neighboring palm, above ground visual parts appear in good order
Design impact summary: Proposed ground water tank & cut off boundary located within TPZ, at or near 0.7m from palm with estimated coverage of High (25-35%) occupancy, at or near 33.4%. As with T4 & 5 structure location may be problematic on underlying tree roots where structure base is recommended to be located on top of ground level without cut or compaction within the TPZ. Proposed cut ideally should be located in line with proposed tank or >0.9m from boundary to increase excavation setback from trunk base. SW or Hydraulic services within Sheet 5 show additional impact where services may be located within the area of cut. Given likely High level encroachment mitigating impacts requires ensuring cut is >1m from tree (not at boundary) with excavation managed by arborist in accordance with AS4970 Section 4.5.4 Root protection during works within the TPZ.												
7 NT	*Archontophoenix cunninghamiana* Bangalow Palm	7 x 4	250	- / 3	SM	Good	Good	4/3	7	1	1	Neighboring palm, above ground visual parts appear in good order
Design impact summary: Proposed cut off boundary at or near 1.2m from palm with ground water tank located within TPZ having estimated coverage of Moderate to High (20-25%) occupancy at or near a manageable 24.3%. Proposed cut ideally should be located in line with proposed tank or >0.9m from boundary to increase excavation setback from trunk base. Proposed cut ideally should be located in line with proposed tank or >0.9m from boundary to increase excavation setback from trunk base. SW or Hydraulic services within Sheet 5 show likely additional impact where services should be located within the area of cut. Given likely Moderate to High level of TPZ encroachment mitigating impacts requires ensuring cut is >1.6m from tree with excavation managed by arborist in accordance with AS4970 Section 4.5.4 Root protection during works within the TPZ.												
8	*Callistemon viminalis* Bottle Brush	7 x 4	250, 150	2.3 / 4.8	SM	Good	Fair / Good	4/3	2B/7	1	2	Twin stems at ground level with minor stem inclusion development, above ground parts appear in good order
Design impact summary: Proposed works occupy part of the existing building footprint with side building path access RL cut at or near 1.5m from tree being within the SRZ. Proposed building at 2.5m setback outside of the SRZ with TPZ encroachment of building footprint of a manageable Moderate (15-20%) TPZ incursion, estimated at or near a 16.6%, with overall TPZ disturbance of >35% where existing structures already exists occupying the TPZ. SW or Hydraulic services within Sheet 5 show likely additional impact within the SRZ where unless certified otherwise by a site arborist tree roots at or >25mm(Ø) are to be retained and not damaged by excavation. Understanding structures already exists within the SRZ & TPZ mitigating impacts requires no over excavation beyond the line of pathway shown within Site Plan Sheet 4, retention of critical roots >25mm(Ø) within the SRZ for SW service installation with excavation managed by arborist in accordance with AS4970 Section 4.5.4 Root protection during works within the TPZ.												
9	*Leptospermun petersonii* Lemon Scented Tea Tree	6 x 4	450at base	2.4 / 5.4	M	Good	Fair	4/3	2D/7	2	3	Restricted VTA, past pruning cuts modifying form & reducing retention value evident
Design impact summary: As with T8, proposed works occupy part of the existing building footprint with side building path access RL cut at or near 1.5m from tree being within the SRZ. Proposed building at 2.5m setback outside of the SRZ with TPZ encroachment of building footprint at corner of a manageable Moderate-Low (10-15%) TPZ incursion, estimated at or near a 13.3%, with overall TPZ disturbance of >27% where existing structures already exists occupying the TPZ. SW or Hydraulic services within Sheet 5 show likely additional impact within the SRZ where unless specified otherwise by a site arborist tree roots at or >25mm(Ø) are to be retained and not damaged by excavation. Understanding structures already exists within the SRZ & TPZ mitigating impacts requires no over excavation beyond the line of pathway shown within Site Plan Sheet 4, retention of critical roots >25mm(Ø) within the SRZ for SW service installation with excavation managed by arborist in accordance with AS4970 Section 4.5.4 Root protection during works within the 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 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** (health)	**Condition** (structure)	**LS**	**VTA**	**RV**	**U. L.E.**	**Comments** CV = Council verge tree NT= Neighbouring tree
10	*Plumeria sp* Frangipani	5 x 4.5	300at base	2.1 / 3.6	LM	Good	Fair / Good	4/3	2C/0	2	2/5	Typical aging specimen tree with no significant visual faults
Design impact summary: Proposed building footprint located outside of TPZ having Negligible (0%) TPZ incursion. Having negligible or likely Minor (<10%) work activity within TPZ tree to be managed in accordance with Section 2.3 General tree protection requirements, specific to: no works within SRZ without prior arborist advice & certification												
11 NT	*Callistemon viminalis* Bottle Brush	9 x 7	500	2.6 / 6	M	Fair / Good	Fair / Good	4/3	6	1	2	Above ground visual parts appear in good order, 2x tree ferns at base
Design impact summary: Poposed works occupy the existing building footprint with side building path access at or near 2m from tree being just within the SRZ. Proposed building at 3.8m setback is outside of the SRZ with TPZ encroachment of building footprint at corner of a manageable Minor (<10%) TPZ incursion. The overall TPZ disturbance is estimated at a manageable Moderate-Low (10-15%) disturbance of 13.8% where SW or Hydraulic services within Sheet 5 show likely additional impact within the SRZ. Unless specified otherwise by an appointed site arborist tree roots at or >25mm(Ø) are to be retained and not damaged by excavation. Understanding structures already exists within the SRZ & TPZ mitigating impacts requires no over excavation beyond the line of pathway shown within Site Plan Sheet 4, retention of critical roots >25mm(Ø) within the SRZ for SW service installation with excavation managed by arborist in accordance with AS4970 Section 4.5.4 Root protection during works within the TPZ. Specific management to consist of: no excavation within the SRZ without arborist advice.											
12 NT	*Plumeria sp* Frangipani	4.5 x 3.5	200, 150	2.1 / 4.2	M	Fair / Good	Fair / Good	4	7	1	2	Neighboring tree, above ground visual parts appear in good order, has very minor canopy extension within site
Design impact summary: As with T11, proposed works occupy the existing building footprint with side building path access likely within the SRZ. The proposed building at 1.8m setback is outside of the SRZ as is the existing building with TPZ encroachment of building footprint at corner of a manageable Moderate-High (20-25%) at or near 21.7% disturbance within the SRZ & TPZ. SW or Hydraulic services within Sheet 5 show likely additional impact within the SRZ. Mitigating impacts requires no over excavation beyond the line of pathway shown within Site Plan Sheet 4, retention of critical roots >25mm(Ø) within the SRZ for SW service installation with excavation managed by a site arborist in accordance with AS4970 Section 4.5.4 Root protection during works within the TPZ. Specific management to consist of: no excavation within the SRZ without arborist advice.											
*13	*Acacia frimbriata* Fringe Wattle	5.5 x 3.5	200at base	1.6 / 2.4	M	Fair / Good	Fair / Good	4	2E	2	3	Exempt tree species located within 2m of an existing building. Confined in timber garden bed, generally short-lived tree = likely low retention value
Design impact summary: Proposed tree removal to accommodate pathway & building footprint												
*14	*Acacia frimbriata* Fringe Wattle	5 x 2.5	100at base	1.5 / 2	SM	Fair / Good	Fair / Good	4	2E	2	3	Exempt tree species located within 2m of an existing building, generally short-lived tree
Design impact summary: Proposed tree removal to accommodate pathway & building footprint												
*15	*Grevillea sp 'cv'* Grevillea	3 x 3	100	1.5 / 2	SM	Fair / Good	Fair / Good	4	2E	2	3	Exempt non-prescribed tree, confined in garden bed
Design impact summary: Proposed tree removal to accommodate pathway & building footprint												

APPENDIX- D: Tree Location Plan