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# rainTree consulting

Arboricultural Management

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13 April 2022

## 1 PACKARD AVENUE

CASTLE HILL, NSW

## DEVELOPMENT PROPOSAL

## ARBORICULTURAL IMPACT ASSESSMENT REPORT

*Report Ref No- 2322*

Prepared for  
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## INTRODUCTION

This arboricultural report has been commissioned by Boyded Industries Pty Limited C/- Brompton Group 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 additions and alterations to the existing Heartland Motors car sales and service centre located within Lot 52 of DP 1060302, known as 1 Packard Avenue CASTLE HILL 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 (TPZ) and impacts to trees have been outlined within Note 2 of Appendix- A where incursions are described as Minor (<10%) & Major (>10%) TPZ occupancy having low, moderate to high level impacts within the TPZ. Where site restrictions within notional root zone radiuses 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 D & E.

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

### DISCLAIMER & LIMITATION ON THE USE OF THIS REPORT

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

## METHODOLOGY

1. In preparation for this report an initial site and ground level Visual Tree Assessment (VTA) was conducted on Tuesday 18<sup>th</sup> August 2020 with an additional inspection primarily of neighbouring trees for driveway addition conducted Monday 4<sup>th</sup> April 2022 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 >5m in height, 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- C. Throughout this report the trees are referred to by their retention value and condition as indicated within the original August 2020 assessment schedule.
2. The inspection was limited to visual inspection from within the subject site and roadside verge. No aerial (climbing) inspections, woody tissue testing, or tree root investigation was undertaken as part of this tree assessment. Within the site tree height and canopy spread was estimated and expressed in metres with trunk diameters measured at approximately 1.4 metres above ground level, rounded off to the nearest 50mm and expressed as DBH (Diameter at Breast Height). The height of palms was taken from ground level to the top of the crown shaft only and excludes the central apical spear projection.
3. This report acknowledges and utilizes the current Australian Standards 'Protection of Trees on Development Sites' AS 4970 – 2009 as explained within Notes of Appendix- A.
4. Unless specified otherwise all distances and development offsets within this report are taken from the centre of the tree.
5. Plans and documentation received to assist in preparation of this report include:  
H&E Architects project No: 2554 *specific to:*
  - Site Plan Existing & Demolition Dwg No: DA1-0400 rev 12 dated 12.4.2022
  - Site Plan Earthworks Dwg No. DA1-0401 rev 5 dated 12.4.2022
  - Site Plan Proposed Dwg No: DA1-0501, rev 18 dated 12.4.2022
  - Basement Plan Dwg No: DA1-1000 rev 17 dated 13.4.2022
  - Ground Floor Plan 01 Dwg No: DA1-1010 rev 19 dated 13.4.2022
  - Elevations NTH & EST Dwg No: DA1-300 rev 8 dated 12.4.2022
  - Sections 01 & 02 Dwg No: DA1-4000 rev 05 file dated 8.3.2022Stuart De Nett Land Surveyors
  - Survey Plan ref No: 12261 dated 2.4.2020

## 1. SUMMARY OF ASSESSMENT

### 1.1 General tree assessment

- 1.1.1 Eighteen (18) trees have been assessed for the purpose of this development proposal. Of the eighteen trees seven (7) trees are located within an adjoining property. Within the site one (1) palm is an exempt non-prescribed species and one (1) tree has been identified as containing a low retention value.

Exempt non-prescribed tree / palm: Mexican Fan Palm T7 is noted as an exempt palm species within The Hills Shire Council Tree Management Fact Sheet. Being an exempt non-prescribed species, the palm is permitted to be managed (pruned, removed or relocated) without Council consent. Should an exempt species require retention further advice from an appointed project arborist is required prior to works within Tree Protection Zone (TPZ) setbacks.

Low retention value tree: is identified as tree T1. The tree has been identified with defined main stem and upper branch scaffold stem inclusion faults. Without going into great detail branch bark stem inclusions are a weak fault having poor branch attachment. *Shigo* states that in time and age they have the capability to fail (split apart) as decay develops within the branch core wood with *Matheny & Clark* noting that stems with included bark do not form connective tissues between stems and are prone to failure. The risk of stem snap failure increases in age progression, with large crown development and during periods of strong winds. The faults indicate that T1 is a developing high-risk tree and capable of large limb failure in age progression.

Minor stem inclusion development is visually evident within trees 3, 5, 6 & 10 where the condition may likely become problematic in the future. Of these trees T3 contained a stem inclusion split at 3m on the eastern side where complete stem failure or pruning out of the defective part would alter natural canopy form.

Neighbouring trees: are identified as tree 11 - 18. Of these trees T15 is a near dead tree and T16 displays upper canopy decline. All trees are located directly adjacent the neighbouring property driveway access indicating the trees' location to infrastructure is likely to become problematic in the future. Based on the design footprint the proposed area of bitumen car park has negligible to Minor (<10%) occupancy within protection zones.

- 1.1.2 With exception of T1 within the site remaining trees are considered viable for retention without change in existing site conditions or modification within their Tree Protection Zone (TPZ) radiuses.

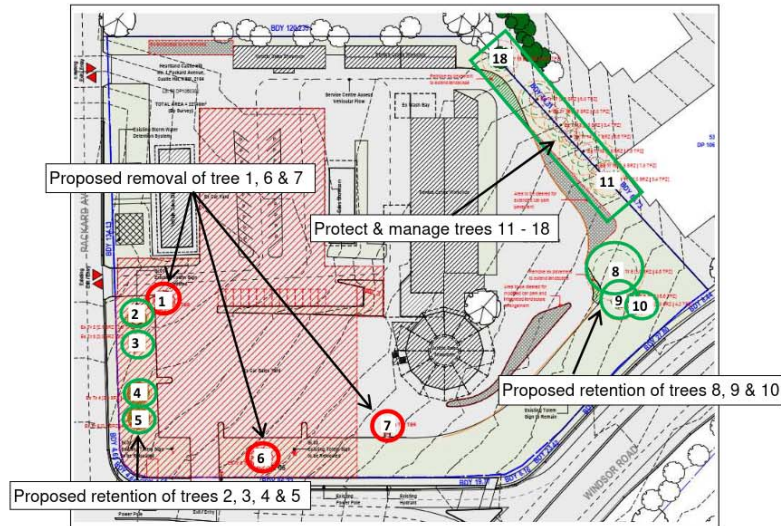
### 1.2 The development proposal

- 1.2.1 The development proposal consists of additions and alterations to the existing vehicle dealership providing new vehicle parking for a pub development known as The Range Hotel. To accommodate design deep soil excavation and driveway access areas are proposed within tree protection zone radiuses of prescribed (protected) and non-prescribed (exempt) trees.

### 1.3 Tree removal to accommodate design

- 1.3.1 Prescribed trees proposed or recommended for removal due to high level impacts by the design footprint are identified as trees:
- T1 & 6.
- 1.3.2 Exempt palm requiring or recommended for removal to accommodate construction is identified as small tress & shrubs <5m in height and Palm:
- T7.
- 1.3.3 The identified development impacts and design requirements have been detailed within Appendix- D and summarized within the following sections.

Figure 1, showing tree retention & removal plan



### 1.4 Discussion of development impacts – prescribed trees

#### *Trees which fall within the footprint of design requiring removal*

- 1.4.1 Based on the design footprint trees 1 & 6 fall within the proposed building footprint, or where basement excavations are proposed that require tree removal to accommodate design.

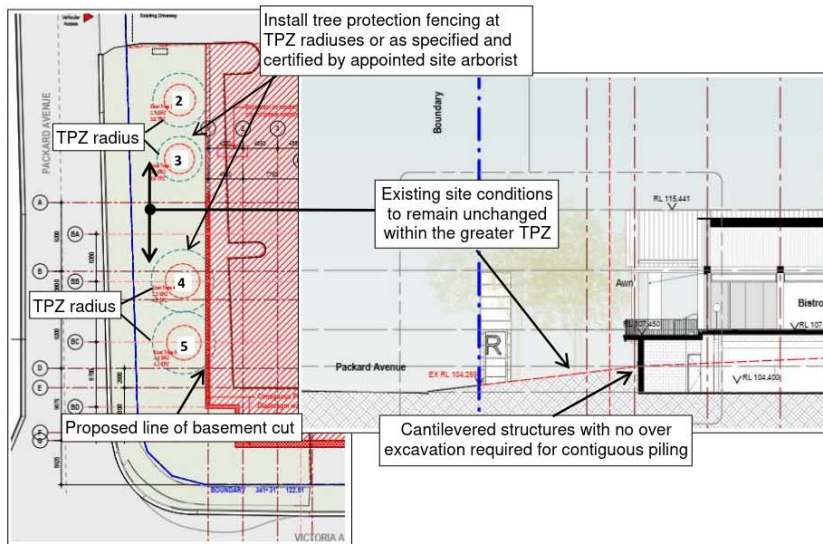
#### *Trees receiving negligible to Minor (<10%) manageable impacts by design*

- 1.4.2 The following trees receive negligible or Minor (<10%) and manageable work disturbances within the TPZ where the trees are capable of being retained and managed in accordance with Section 2.3 *General tree protection requirements*.
- T2, 3, 4, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17 & 18.

*Trees receiving Major (>10%) encroachments or works within the SRZ*

- 1.4.3 One (1) tree T5 receives Major encroachments within the TPZ with no works located within SRZ setback.
- 1.4.4 Tree 5: The proposed basement cut is considered as having a Moderate to Low (10-15%) TPZ occupancy of at or near 10.2%. The TPZ occupancy is considered a low-level impact where the tree can be suitably protected under the general guidelines specified within Section 2.3 *General tree protection requirements*.
- Having a Major (>10%) encroachment the guidelines set within Section 2.2 *Specific tree management & protection recommendations* apply being specific to the following recommendations:
- Within the tree protection zone there is to be no over excavation beyond the proposed contiguous piling as shown within Site Plan Dwg No: DA0401 and Figure 2 below.
  - Prior to works tree protection fencing shall be installed, and certified by an appointed site arborist to allow for construction site access and tree protection as indicated within Appendix- B *Tree protection detail* items [A], [B] & [C].
  - To allow for works within the TPZ ground & root protection mats should be considered opposite the building footprint where scaffolding within the TPZ is to ensure protection of extending canopies.
  - There shall be no access, soil disruption or modification of levels within the greater TPZ or within 2m of the extending canopy.

Figure 2, showing T1 – 5 encroachment & management area

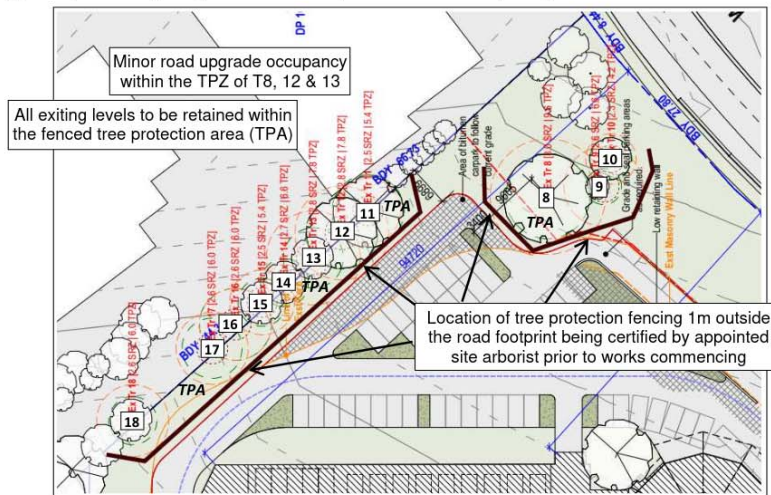




## 1.5 Neighbouring trees - specific

- 1.5.1 Tree 11 - 18: Having negligible to Minor (<10%) low level impact and encroachment within the TPZ to ensure the trees remain viable the following specific recommendations are provided:
- As indicated within Figure 3 tree protection fencing forming a tree protection area (TPA) is to be located 1m off the proposed bitumen road footprint as shown within construction drawings.
  - The TPA is to remain a development access exclusion zone preventing any activities such as machine access & excavation, trenching, storage & work preparation, wash down areas, soil level change, utility service installation and physical damage to trees.
  - Where excavation or site modification is required within the TPZ of trees 12 & 13 works are to be supervised and certified by an appointed site arborist. Within the TPZ excavation is to be conducted manually along the line of cut ensuring all tree roots encountered are managed 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. Root pruning should also be conducted in accordance with Section 9 of Australian Standards AS4373 Pruning of Amenity Trees 2007 specific to: all cuts shall be clean cuts made with sharp tools such as secateurs, pruners, handsaws, chainsaws or specialized root pruning equipment.
  - Under the direction & certification of the site arborist mechanical excavation is permitted to complete works when root pruning along the perimeter of the manual line of excavation has been completed.

Figure 3, showing T8, 11 – 18 tree protection area (TPA)





## 2. CONCLUSIONS & RECOMMENDATIONS

### 2.1 Tree Removal

- 2.1.1 With the consent of Council the removal of two (2) prescribed trees T1 & 6 are required or recommended to accommodate the design proposal. The removal and/or management of exempt palm tree T7 and smaller trees & shrubs <5m in height is permitted without the Council consent.

### 2.2 Specific tree management recommendations

- 2.2.1 In addition to the recommendations provided within this report the following summary and/or additional specific recommendations are provided as a guide for tree protection during works:
- a) Prior to works commencing an appointed project arborist is recommended to supervise and certify the location of tree protection fencing. Unless specified otherwise protective fencing is recommended to be located at the extremity of tree protection zones radiuses or placed 1m off the line of proposed excavation footprints as specified within this report. Tree protection fencing shall be secured to ground, remain in place, and only be modified or removed with arborist advice and certification.
  - b) The inner fenced tree protection area (TPA) shall remain as a development access exclusion zone.
  - c) To ensure no additional encroachment within the TPZ occurs there is to be no over excavation beyond proposed building or road access footprints as indicated within construction drawings.
  - d) Prior to works occurring for road upgrade final Civil design plans are recommended to be reviewed and endorsed by an appointed site arborist providing any additional tree management advice where encroachment occurs within the TPZ.

### 2.3 General tree protection requirements

- a) Prior to demolition works Tree Protection Fencing (TPF) and/or zones as identified within Appendix- B are recommended to be located under the guidance of an appointed site arborist. Unless specified otherwise the location of tree protection fencing is to be positioned to allow for adequate work access and/or be located at the extremity of the TPZ radius, see SRZ & TPZ distance column Appendix- D. Where design & construction access may be restrictive timber beam trunk protection is recommended to be installed, with ground protection mats provided to protect underlying tree roots within tree protection zones or designated protection areas. The SRZ is to remain a specified work access and development activity exclusion zone.
- b) Unless approved otherwise activities to be prevented within the TPZ include machine excavation, including trenching, storage & work preparation, wash down areas, soil level change, utility services and physical damage to trees.

- c) In accordance with AS4970 - 2009 (1.4.4) a Project or Site Arborist is to be engaged to monitor, supervise excavation within TPZ setbacks, advise and provide certification of protection works conducted. The project arborist is recommended to hold a minimum Australian Qualification Framework (AQF) Level 4 certification and be competent in methodology of protecting trees on development sites.
- d) The project arborist is to provide final certification outlining tree protection measures with photographic evidence of ongoing works retained for certification purposes (AS4970 S/5.5.2 *Final certification*).
- e) The project arborist is to be familiar with protection measures specific to Australian Standard AS4970 'Protection of Trees on Development Sites' – 2009 requirements with any modification in Tree Protection Fencing (TPF) or Zones (Z) to be compliant with AS4970 Section 4.5 *Other Tree Protection Measures*.
- f) Unless specified otherwise during approved excavation within TPZ setbacks excavation is to be conducted manually (by hand) under the supervision of an appointed arborist. Where approved by the arborist the pruning of roots at or <30mm(Ø) is to be conducted in accordance with AS4970 – 2009 Section 4.5.4 *Root protection during works within the TPZ*, such that tree roots are not damaged or ripped beyond the point of excavation by site machinery. Where larger roots have been encountered, they are to be referred to an independent Level 5 arborist for further advice.  
  
For deep excavations exposed roots at the excavated cut face are to be protected with jute mesh, geotextile fabric or similar being secured in place to avoid drying of roots and the exposed soil profile.
- g) During approved excavation within tree protection zones there shall be no over excavation beyond the line of cut as shown within construction drawings. Should over excavation be required the extent of excavation should be detailed within approved drawings or a construction management plan for arborist review and certification.
- h) *Additional inground services* which may include landscape works, fencing, sewer, stormwater, water and electrical services, final design and impact to trees shall be reviewed and endorsed by the project arborist prior to their installment. Where landscaping (excavation) is required within the SRZ further advice from an appointed project arborist is recommended.
- i) *Tree sensitive construction measures* such as pier and beam bridging over critical roots, suspended slabs, cantilevered building sections, screw piles and contiguous piling can minimise the impact of encroachment (AS4970). Where Bushfire BAL construction conflicts exist tree management advice with an appointed project arborist is recommended to achieve 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](http://www.swa.gov.au)).
- k) To ensure tree(s) are appropriately protected the development site superintendent is recommended to be familiar with all tree protection measures and ongoing certification requirements with specific attention to hold points and certification requirements.  
The superintendent is also responsible for informing all subcontractors of the responsibilities and requirements of tree protection prior to their engagement.
- l) *Hold points*: specific to no works are to commence without arborist advice, inspections & certifications:
- 1) Prior to construction arborist certification is required ensuring that all trees have been adequately protected in accordance with this report, or Australian Standard AS 4970 – 2009 Protection of Trees on Development Sites.
  - 2) No works (including landscaping) shall occur within the SRZ of any tree without prior arborist advice and certification. Where excavation may be required prior exploratory tree root investigation are to identify the location, distribution and impact to underlying tree roots.
  - 3) No excavation shall occur within the TPZ without prior project arborist notification and/or site supervision.
  - 4) No access or work activity is permitted within fenced or designated tree protection zones (TPZ's) areas (TPA's) without arborist advice.
- m) At a minimum arborist certification is recommended to be provided at the following stages:

1) Prior to works install tree protection fencing	Project arborist certification required
2) Demolition & excavation within the TPZ	Arborist supervision and certification required for compliance providing any remediation activity & advice
3) Stormwater	Project arborist to certify location of hydraulic services as having no adverse impact on tree(s)
4) Installation of scaffolding	Arborist certification of compliance for tree protection and managing canopy overhang
5) Final inspection of tree condition	Project arborist certification required to detailed tree health & condition

- n) Should there be any uncertainty with this report or 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).
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Should you require further liaisons in this matter please contact me direct on 0419 250 248

Yours sincerely



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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



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## APPENDIX- A: Terminology & references

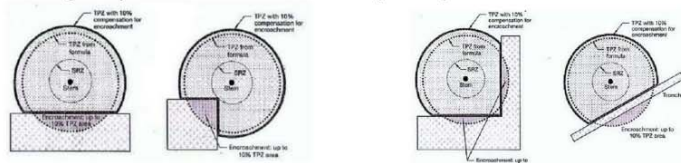
**Acceptable Risk:** Exposure to or reject risk of varying degrees. The acceptable risk is defined as 'The person who accepts some degree of risk in return for a benefit being exposed to some risk of varying degree. **Age classes:** (I) Immature refers to a well established but juvenile tree. (ESM) refers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

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

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

No impact (0%) incursion, Low 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)**

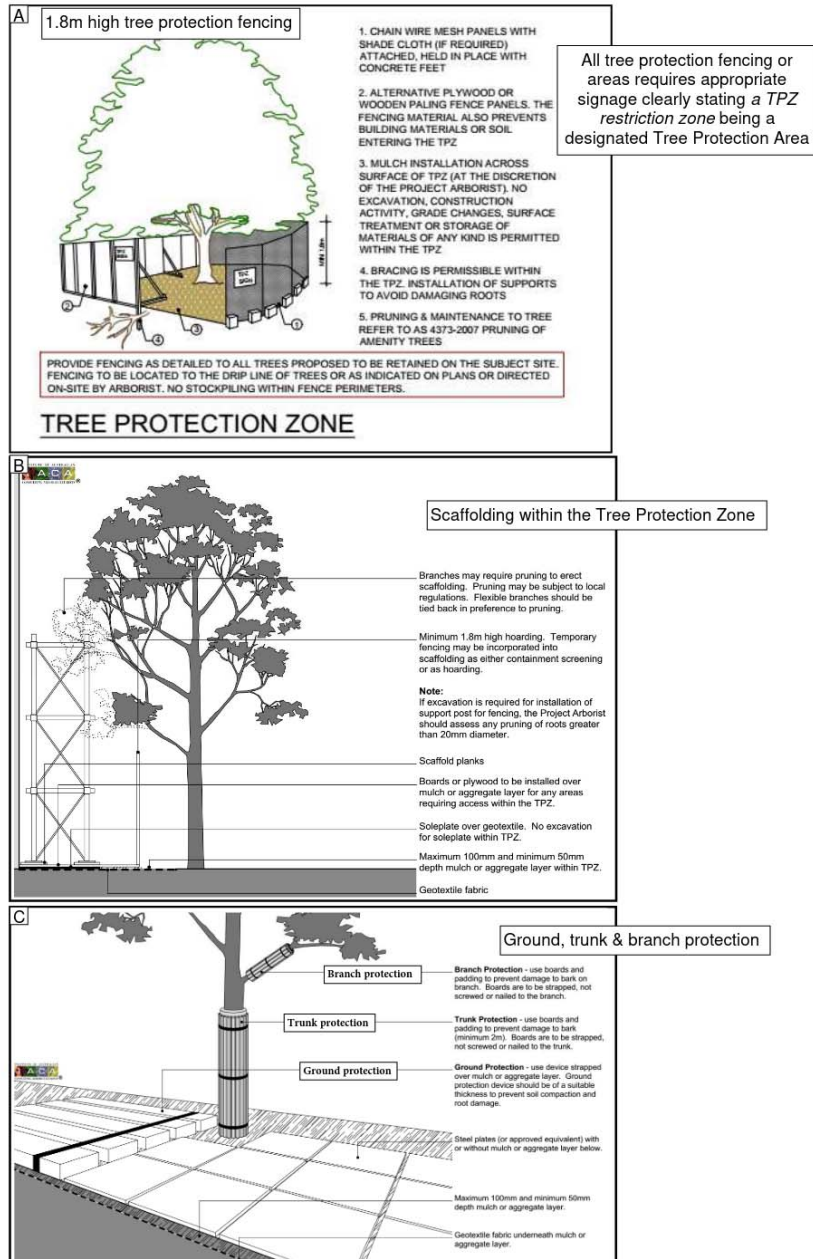


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- Barrell J. 1993. 'Preplanning Tree Surveys: Safe useful Life expectancy (SULE) is the Natural Progression', Arboricultural Journal 17: 1, February 1993, pp. 33-46.
- International Society of Arboriculture (ISA) 2013. Tree Risk Assessment Manual, 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](https://proofsafe.com.au/tpz_incursion_calculator.html) Standards Australia 2009, Australian Standards 4970 Protection of Trees on Development Sites - Standards Australia, Sydney, Australia.
- Standards Australia 2007, Australian Standards 4373 Pruning of Amenity Trees - Standards Australia, Sydney, Australia.
- The Hills Shire Council Tree Management Fact Sheet <https://www.thehills.nsw.gov.au/Council/Fact-Sheet-Directory/Fact-Sheets-Tree-and-Vegetation-Management>



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



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

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

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

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

0	If appropriate to VTA - <i>exempt</i> 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 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 have become exposed or are subject to wind loading pressure, or have tall forest form where exposure may result in windthrow or limb snap
		5A	Screen trees or shrubs that are routinely hedged or pruned for height control
2C	Tree may contain minor wounds, pest or minor pathogen activity, altered from storm damaged to an extent that is not considered immediately detrimental - may also display average form. Likely to require close annual monitoring or minor corrective pruning	6	Trees may be typical for species type, of good form and visual condition for age class May have suppressed one sided canopies or are low risk trees
2D	Trees significantly altered by recent storm or over pruning events which may reduce retention values due to average form- or tree extensively pruned for power line clearance	7	VTA restricted by canopy or plant material vine or ivy covering tree parts, or site conditions which do not allow access- fences to neighbouring sites

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

1	High retention	2	Medium retention	3	Low retention	4	Consider removal
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**iv) U.L.E. categories** Useful Life Expectancy (after Barrell 1996, modified by the author). A 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- D: Tree Assessment Schedule (T1 – 7 VTA conducted August 2020)**

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	LS	VTA	RV	U. L.E.	Comments
1	<i>Eucalyptus microcorys</i> Tallowwood	9 x 7	400	2.4 4.8	ESM	Good	Fair / Poor	4/3	2	3	3	Located in garden bed restricting root growth potential, twin stems at 2m with defined stem inclusion development fault, upper branch scaffolds with minor stem inclusion development with faults likely to become problematic in the future = low retention value
Design & impact summary: Proposed removal with tree located within building or excavation footprint adjacent proposed upgraded site access and within loading bay area												
2	<i>Eucalyptus sideroxylon</i> Red Ironbark	13 x 7	300	2.1 3.6	ESM	Good	Good	4/3	6	1	2	Tree with no significant visual faults
Design & impact summary: Retain & protect. Proposed building footprint located outside of the SRZ having negligible (0%) to very Minor (<10%) TPZ encroachment. Having negligible to Minor TPZ encroachment tree to be managed in accordance with Section 2.3 General tree protection requirements												
3	<i>Eucalyptus sideroxylon</i> Red Ironbark	9 x 6	250	2 3	ESM	Good	Fair / Good	4/3	2	2	3	Stem inclusion split (junction failure) at 3m E, lower branch scaffolds with no significant visual faults
Design & impact summary: Retain & protect. Proposed building footprint located outside of the TPZ having negligible (0%) TPZ encroachment. Having negligible TPZ encroachment tree to be managed in accordance with Section 2.3 General tree protection requirements												
4	<i>Eucalyptus sideroxylon</i> Red Ironbark	9 x 7	350	2.3 4.2	ESM	Good	Fair / Good	4/3	2C/4	2	2	Minor wounds at 5m E stem junction, lower stems with epicormic shoot development = reaction to environmental stressed
Design & impact summary: Retain & protect. Proposed basement / building footprint located outside of SRZ and within TPZ. TPZ occupancy of Minor (<10%), at or near 6.7% encroachment having low level occupancy & impact by design. Having Minor (<10%) TPZ encroachment tree to be managed in accordance with Section 2.3 General tree protection requirements												
5	<i>Eucalyptus sideroxylon</i> Red Ironbark	11 x 9	350	2.3 4.2	ESM	Good	Fair / Good	4/3	2B	2	3	Tree with minor stem inclusion development in upper branch scaffolds = faults likely to become problematic in the future
Design & impact summary: Retain & protect. Proposed basement / building footprint located outside of SRZ and within TPZ. TPZ occupancy considered of Moderate to Low level impact (10-15%) at or near 10.2% occupancy within the TPZ. Encroachment is considered at a manageable and low-level impact indicating tree to be managed in accordance with Section 2.3 General tree protection requirements. Prior to works tree protection fencing to be certified by an appointed site arborist, installed at a minimum 2m outside the canopy dripline to compensate for the TPZ encroachment.												

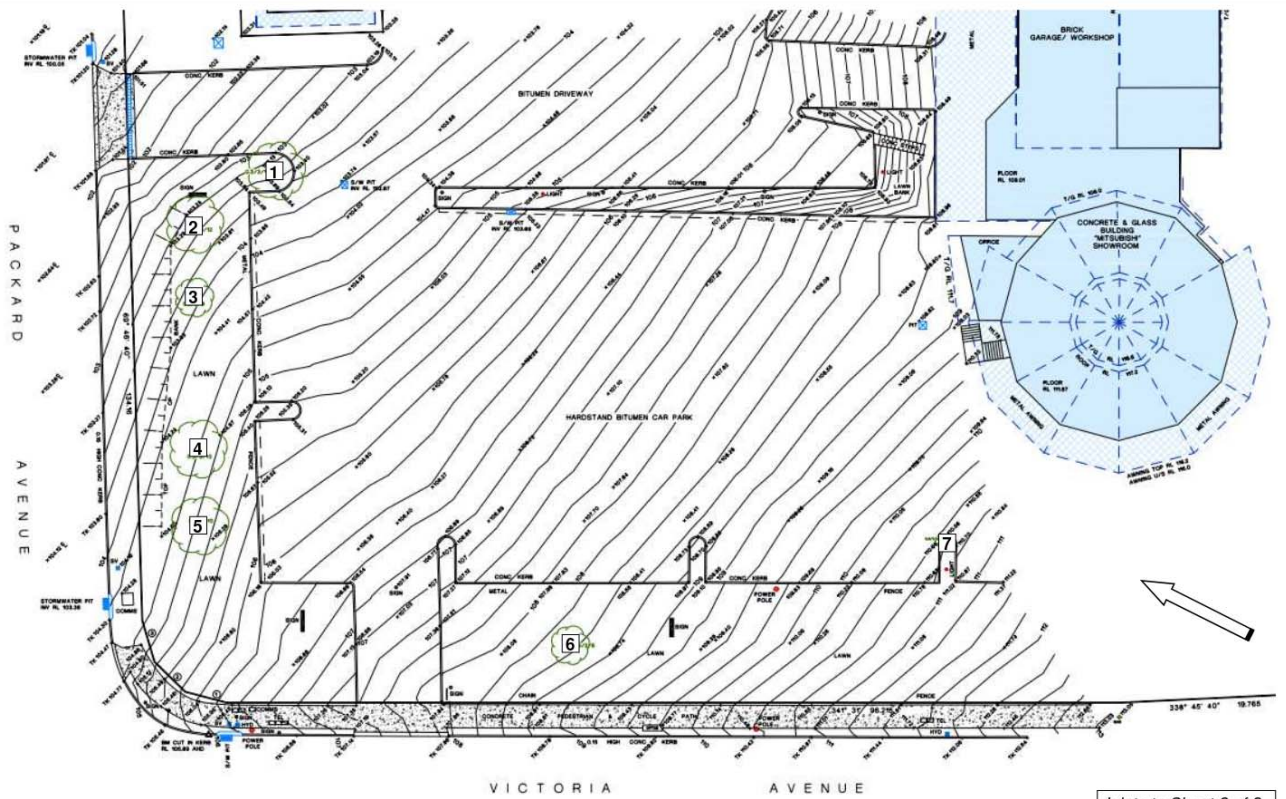
Trees requiring removal due to hazardous or dead condition - subject to Local Government Authority notification							Trees with low retention values: senescence, developing defects or being low significant or *exempt trees within the site from the LGA tree management orders					
Tree No	Botanical Name COMMON NAME	Height x spread (m)	DBH (mm)	SRZ TPZ (m)	Age	Vigour (health)	Condition	LS	VTA	RV	U. L.E.	Comments
6	<i>Eucalyptus sideroxylon</i> Red Ironbark	7 x 5	250	2 3	ESM	Fair / Good	Fair	4/3	2B	2	3	Twin stems at 1.5m with minor stem inclusion development = faults likely to become problematic in the future
Design & impact summary: Proposed removal with tree located within building or excavation footprint for basement level												
*7	<i>Washingtonia robusta</i> Mexican Fan Palm	4 x 3	600	- 2.5	ESM	Good	Fair	4	2E	3	3	Exempt palm species. Located in garden bed, restricted with poor anchoring root development E side, location to infrastructure likely to become problematic in the near future
Design & impact summary: Proposed exempt palm species removal to accommodate design proposal.												
8	<i>Eucalyptus nicholii</i> Black Peppermint	17 x 13	800	3 9.6	M	Good	Fair / Good	3	2C	2	<2	Canopy slightly environmentally stressed with decline in lower branch scaffolds, slight lean NW, mid to lower trunk seam wounds extending to 7m N side / appear pathogen or viral related
Design & impact summary: Retain & protect. Proposed works of new driveway bitumen carpark to follow current grade with road upgrade having Minor (<10%) occupancy within the TPZ, being <5% encroachment of low-level impact. Having Minor TPZ encroachment tree to be managed in accordance with Section 2.3 General tree protection requirements specific to: installation of tree protection fencing located no less than 1m outside the line of proposed road construction footprint extending to the extremity of the TPZ acting as a development exclusion zone that incorporates the TPZ of adjacent trees 9 & 10.												
9	<i>Eucalyptus sideroxylon</i> Red Ironbark	10 x 6	250, 300	2.6 6.6	ESM	Good	Good	3	6	1	1	Tree with no significant visual faults
Design & impact summary: Retain & protect. Proposed works of road construction located outside of the TPZ having negligible encroachment. Given negligible to low level impact tree to be protected in accordance with Section 2.3 General tree protection requirements												
10	<i>Eucalyptus sideroxylon</i> Red Ironbark	10 x 7	350	2.3 4.2	ESM	Good	Fair / Good	3	2B	2	2	Codominant / twin stems at 4m with minor stem inclusion development
Design & impact summary: Retain & protect. Proposed works of road construction located outside of the TPZ having negligible encroachment. Given negligible to low level impact tree to be protected in accordance with Section 2.3 General tree protection requirements												
11 NT	<i>Eucalyptus microcorys</i> Tallowwood	17 x 12	450	2.5 5.4	ESM	Good	Fair / Good	3	2B/E	2	2	Slight bowing lower trunk lean with minor stem inclusion development at 5m
Design & impact summary: Retain & protect. Proposed works of road construction at 6.9m from boundary located outside of the TPZ having negligible encroachment. Given negligible to low level impact tree to be protected in accordance with Section 2.3 General tree protection requirements specific to no access within the SRZ. Mitigating impacts should consist of tree protection fencing installed 1m off the proposed road construction footprint acting as a development exclusion zone.												

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	LS	VTA	RV	U. L.E.	Comments
12 NT	<i>Eucalyptus microcorys</i> Tallowwood	17 x 16	650	2.8 7.8	SM	Good	Fair / Good	3	2C/E	2	2	Located at edge of embankment, surface root damage 4m NW, location to infrastructure likely to become problematic in the future, upper branch scaffolds with poor branch taper
Design & impact summary: Retain & protect. Proposed road footprint of Minor (<10%) TPZ occupancy having low level impact by design. Given Minor & low-level impact tree to be protected in accordance with Section 2.3 General tree protection requirements specific to no access within the SRZ. Mitigating impacts should consist of tree protection fencing installed 1m off the proposed road construction footprint acting as a development exclusion zone.												
13 NT	<i>Eucalyptus microcorys</i> Tallowwood	17 x 13	650	2.8 7.8	SM	Good	Fair / Good	3	2C/E	2	2	Located at edge of embankment with minor lean NW, location to infrastructure likely to become problematic in the future with poor branch taper evident
Design & impact summary: Retain & protect. As above T12. Proposed road footprint of Minor (<10%) TPZ occupancy having low level impact by design. Given Minor & low-level impact tree to be protected in accordance with Section 2.3 General tree protection requirements specific to no access within the SRZ. Mitigating impacts should consist of tree protection fencing installed 1m off the proposed road construction footprint acting as a development exclusion zone.												
14 NT	<i>Eucalyptus microcorys</i> Tallowwood	17 x 15	550	2.7 6.6	SM	Good	Fair	3	2B/E	2	2	Multi stems at 5m, all with minor stem inclusion development. Located at edge of embankment where location to infrastructure likely to become problematic in the future
Design & impact summary: Retain & protect. Proposed works of road construction at 6.9m from boundary located outside of the TPZ having negligible encroachment. Given negligible to low level impact tree to be protected in accordance with Section 2.3 General tree protection requirements specific to no access within the SRZ. Mitigating impacts should consist of tree protection fencing installed 1m off the proposed road construction footprint acting as a development exclusion zone.												
15 NT	<i>Eucalyptus microcorys</i> Tallowwood	9 x 5	450	2.5 5.4	ESM	Poor	Poor	5	1	3	4	Near dead tree. Located at edge of embankment = low retention value
Design & impact summary: Retain & protect. As above T14. Proposed road footprint located outside of the TPZ having negligible encroachment. Given negligible to low level impact tree to be protected in accordance with Section 2.3 General tree protection requirements specific to no access within the SRZ. Mitigating impacts should consist of tree protection fencing installed 1m off the proposed road construction footprint acting as a development exclusion zone.												

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	LS	VTA	RV	U. L.E.	Comments
16 NT	<i>Eucalyptus microcorys</i> Tallowwood	15 x 14	500	2.6 6	ESM	Good	Fair / Poor	3	2C	3	3	Located at edge of embankment, minor wound at base NW side, poor branch taper, location to infrastructure likely to become problematic in the future
<i>Design &amp; impact summary: Retain &amp; protect. As above T15. Proposed road footprint located outside of the TPZ having negligible encroachment. Given negligible to low level impact tree to be protected in accordance with Section 2.3 General tree protection requirements specific to no access within the SRZ. Mitigating impacts should consist of tree protection fencing installed 1m off the proposed road construction footprint acting as a development exclusion zone.</i>												
17 NT	<i>Eucalyptus microcorys</i> Tallowwood	9 x 9	500	2.6 6	ESM	Good	Fair	3	2B/E	3	3	Multi stems at 1 – 2m with part minor stem inclusion development. Located at edge of embankment with reaction wood at base, location to infrastructure likely to become problematic in the future
<i>Design &amp; impact summary: Retain &amp; protect. Proposed road footprint located outside of the TPZ having negligible encroachment. Given negligible to low level impact tree to be protected in accordance with Section 2.3 General tree protection requirements specific to no access within the SRZ. Mitigating impacts should consist of tree protection fencing installed 1m off the proposed road construction footprint acting as a development exclusion zone.</i>												
18 NT	<i>Eucalyptus microcorys</i> Tallowwood	11 x 10	250, 300	2.6 6.6	ESM	Fair / Good	Fair	4/3	4/2B/ 2E	3	3	Environmentally stressed with decline in canopy, twin stems at 1m with minor stem inclusion development, exposed surface roots evident
<i>Design &amp; impact summary: Retain &amp; protect. Proposed road footprint located outside of the TPZ having negligible encroachment. Given negligible to low level impact tree to be protected in accordance with Section 2.3 General tree protection requirements specific to no access within the SRZ. Mitigating impacts should consist of tree protection fencing installed 1m off the proposed road construction footprint acting as a development exclusion zone.</i>												



**APPENDIX- E01: Tree Location Plan Sheet 1 of 2**



Ref No: 2322

1 Packard Ave, CASTLE HILL NSW – arborist – 13.4.2022

