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Tree Protection Plan (TPP) St Louis Estate

JUNE 2026



Paperbark Technologies Pty Ltd - Arboricultural Consultants

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1. Introduction

- 1.1. Paperbark Technologies has prepared this Tree Protection Plan (TPP) for Place Laboratory Pty Ltd to facilitate construction works while ensuring the ongoing health and viability of the retained trees. It outlines the measures required to protect existing trees during the construction works, in compliance with local council requirements and relevant Australian Standards. The purpose of this plan is to prevent damage to 2 trees designated for retention and to ensure their ongoing health, stability, and amenity value throughout the construction process.
- 1.2. The TPP addresses relevant requirements and conditions for tree protection and has been prepared in accordance with Australian Standard AS 4970:2025 (Protection of Trees on Development Sites) and AS 4373:2007 (Pruning of Amenity Trees). By implementing these guidelines, Place Laboratory Pty Ltd will meet regulatory obligations and contribute to sustainable development practices that preserve valuable trees.

2. Project and Site Overview

- 2.1. **Project:** St Louis Estate Retirement Village
- 2.2. **Client:** Place Laboratory Pty Ltd
- 2.3. **Site Address:** 18 Albert Street, Claremont
- 2.4. **Scope:** Preparation of a Tree Protection Plan (TPP) for two (2) trees located within the St Louis Estate Retirement Village development area. The proposed development comprises the demolition of existing buildings and construction of three new residential buildings, including associated pedestrian pathways, paved areas, landscaped courtyards, visitor parking, vehicle accessways, retaining structures, drainage infrastructure and underground services. Two mature trees have been identified for retention as part of the proposed development. The proposed works encroach into the Notional Root Zones (NRZ) of both retained trees. Portions of the proposed pathways and associated civil works are also located within the Structural Root Zone (SRZ) of the retained trees. These works require careful design and construction methodology to minimise impacts to the retained trees and ensure their ongoing health and structural integrity.
- 2.5. The retained trees are numbered as shown on the Tree Protection Plan drawings (Appendix A). Tree species, dimensions, health, structural condition, and calculated Notional Root Zones (NRZ) and Structural Root Zones (SRZ) are summarised in Appendix B.
- 2.6. No prior Preliminary Tree Survey or Arboricultural Impact Assessment exists for this site. Tree survey data was collected by Paperbark Technologies on 22nd June 2026 as part of this Tree Protection Plan preparation.

- 2.7. Both retained trees hold significant heritage value to the St Louis Estate and are commemorated by plaques located beneath each tree. The presence of these plaques reinforces the importance of protecting the trees and their immediate surrounds throughout the construction period.

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3. TPP Quick Rules (Site Must Comply)

These requirements apply to all personnel, contractors and subcontractors on site

- 3.1. No entry, storage, parking, excavation, trenching or washout within any Tree Protection Zone (TPZ) unless approved in writing by the Project Arborist.
- 3.2. Tree Protection delineation and signage must be installed before any works commence and maintained for the duration of works.
- 3.3. No excavation or root disturbance is permitted within the Structural Root Zone (SRZ) unless specifically assessed and approved in writing by the Project Arborist.
- 3.4. Roots greater than 30mm diameter must not be cut unless authorised by the Project Arborist.
- 3.5. Any tree damage or TPZ breach must be reported immediately. Stop work and notify the Project Arborist.
- 3.6. Monthly inspections and a post construction report on the trees are required

4. Trees to be retained

- 4.1. All retained trees listed in Appendix B are to be protected for the duration of works. Tree numbers correspond with the Tree Protection Plan drawings in Appendix A.

5. Tree Protection Zones (NRZ / SRZ / TPZ)

- 5.1. The Notional Root Zone (NRZ) is the principal means of determining a protection radius for retained trees. In accordance with AS 4970:2025, NRZ radius (m) is calculated as:
$$NRZ = DSH \times 12.$$
- 5.2. The Structural Root Zone (SRZ) is the zone required for tree stability. The SRZ is calculated in accordance with AS 4970:2025. No excavation or root disturbance is permitted within the SRZ unless assessed and approved in writing by the Project Arborist.
- 5.3. The Tree Protection Zone (TPZ) is a delineated exclusion area established on site. The TPZ will generally be set at the NRZ radius unless otherwise approved by the Project Arborist and/or the relevant authority.

6. Individual Tree Protection Recommendations

Tree No.	Recommendations	Observations
1	- No roots greater than 30 mm in diameter are to be severed without prior approval from the Project Arborist. - No excavation or root disturbance is permitted within the SRZ or NRZ unless assessed and approved in writing by the Project Arborist.	- The proposed development includes construction of a new residential building immediately east of the retained tree, together with new pedestrian pathways, landscaping and associated services. Portions of the proposed works encroach within the tree's Notional Root Zone (NRZ), with sections of the proposed pathway also located within the Structural Root Zone (SRZ). - Excavation within these areas is to be undertaken using non-destructive methods under arboricultural supervision. Hand excavation or low-pressure vacuum excavation (hydro-vac) is to be used where significant roots are encountered, and any root pruning is to be carried out in accordance with AS 4373:2007. - Surface roots located on the southern and eastern sides of the tree, length of approximately 1m from the base. - Heritage plaque present at base — protect from damage.
2	- No roots greater than 30 mm in diameter are to be severed without prior approval from the Project Arborist. - No excavation or root disturbance is permitted within the SRZ or NRZ unless assessed and approved in writing by the Project Arborist. - Remove hanging branch held within the canopy prior to works commencing.	- The proposed development includes construction of a new residential building to the west of the retained tree, together with pedestrian pathways, landscaping, drainage infrastructure and associated services. The proposed works encroach within both the Notional Root Zone (NRZ) and portions of the Structural Root Zone (SRZ) of the retained tree. - Careful construction methodology is required to minimise root disturbance and ensure the ongoing health and structural integrity of the retained tree. - All excavation within the NRZ is to be undertaken under arboricultural supervision using hand excavation or low-pressure vacuum excavation (hydro-vac) where significant structural roots may be encountered.

		• pruning is to be carried out only where approved in writing by the Project Arborist and in accordance with AS 4373:2007. • Due to previous limb failure history and fair health, this tree has a heightened need for monitoring. • Heritage plaque present at base — protect from damage.
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7. Tree Protection Zones (TPZ) Fencing, Signage & Ground protection

- 7.1. A Tree Protection Zone (TPZ) will be established around each retained tree. The TPZ is the area around a tree's trunk (both above and below ground) that must be isolated from construction impacts to protect the tree's root system and canopy. The radius of the NRZ for each tree is calculated as approximately 12 times the tree's trunk diameter at 1.4 m above ground (DSH). The TPZ is generally set at this NRZ radius. Specific NRZ radii for the subject trees are provided in Appendix B. Where a calculated NRZ radius is less than 2 m, a minimum 2 m radius will be applied as per standard guidelines.
- 7.2. Tree protection delineation shall be installed at the perimeter of each TPZ prior to any adjacent tree removal or ground disturbance. Given the constraints of the project, the delineation is to consist of high-visibility flagging and star pickets. These areas are to stay established and not be moved for convenience unless authorised by the Project Arborist.
- 7.3. Signs reading "Tree Protection Zone – No Entry" must be attached to the zones at regular intervals to clearly delineate the protected area. The signage should warn that unauthorised entry or damage to the protected trees is prohibited. Delineation flagging is to remain in place for the full duration of the project and should only be removed or relocated with approval from the Project Arborist or council. If multiple adjacent trees have overlapping TPZs, a single continuous delineated zone may be used to encompass all such trees collectively.
- 7.4. Inside the TPZ, the ground surface should be left undisturbed. No stripping of topsoil, grading, or soil compaction is to occur without authorisation.
- 7.5. Do not attach temporary power lines, stays, guys and the like to the trees. Do not drive nails into the trunks or branches.
- 7.6. Tree Watering Requirements - Retained trees may experience water stress during construction due to soil disturbance, altered drainage patterns, root pruning, compaction, and changes to site access. To support tree health and reduce the risk of decline, the following watering requirements apply for the duration of works and for the establishment period following completion.

- 7.7. Watering is to be undertaken during dry periods (particularly summer and extended dry weather) and where visible stress symptoms are observed.
- 7.8. Water should be applied slowly to encourage deep soil infiltration within the root zone, avoiding runoff.
- 7.9. Supplementary watering of retained trees is required where works are in proximity to the trees, to minimise stress on the trees while work is occurring. It is recommended to water deeply a minimum of once per week for a total of 600 litres per tree from the centre of the TPZ radius out to the canopy dripline. It is recommended that wetting agent be used occasionally to assist in getting the water through to sandy layer to the tree's root system. Ensure that the soil moisture is checked regularly to ensure watering is efficient or needs to be modified accordingly.
- 7.10. Where access within the TPZ is unavoidable and has been approved in writing by the Project Arborist, the following ground protection measures are to be implemented prior to machinery or personnel entering the protected area:
 - A geotextile membrane is to be laid over the undisturbed ground surface within the access area, followed by a minimum 75–100 mm layer of wood-chip mulch.
 - Load-spreading boards, track mats, or steel plates are to be placed over the mulch layer to distribute loads and prevent soil compaction.
 - Turning, pivoting, or 'squirrelling' of machinery within the TPZ is strictly prohibited, as these movements cause shearing of surface roots and soil compaction.

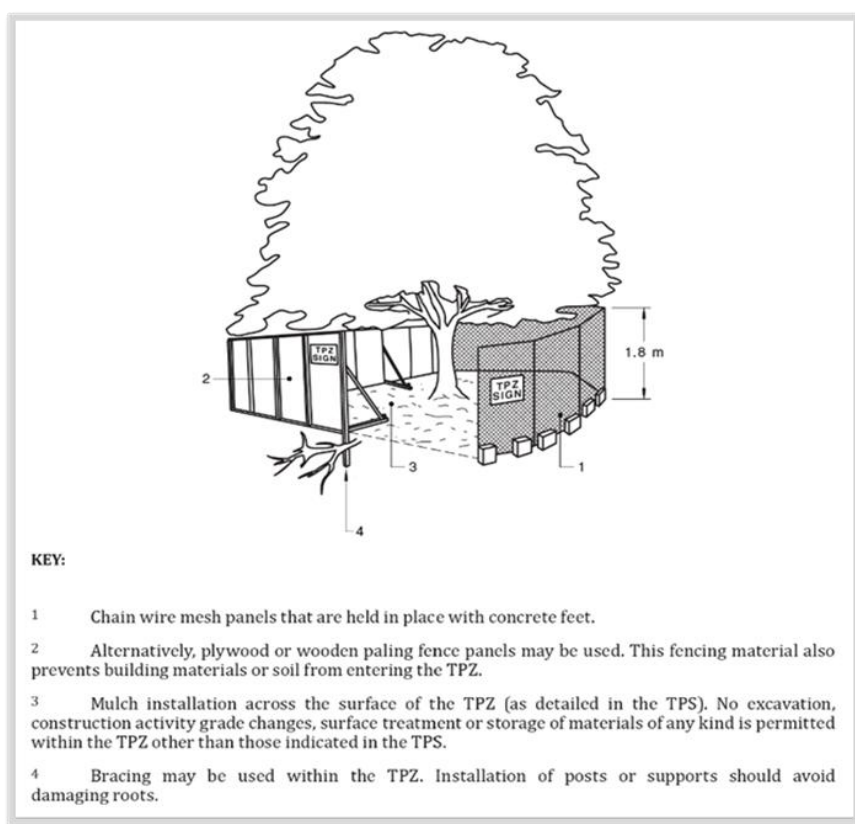


Figure 1 Displays the correct Tree Protection Fencing

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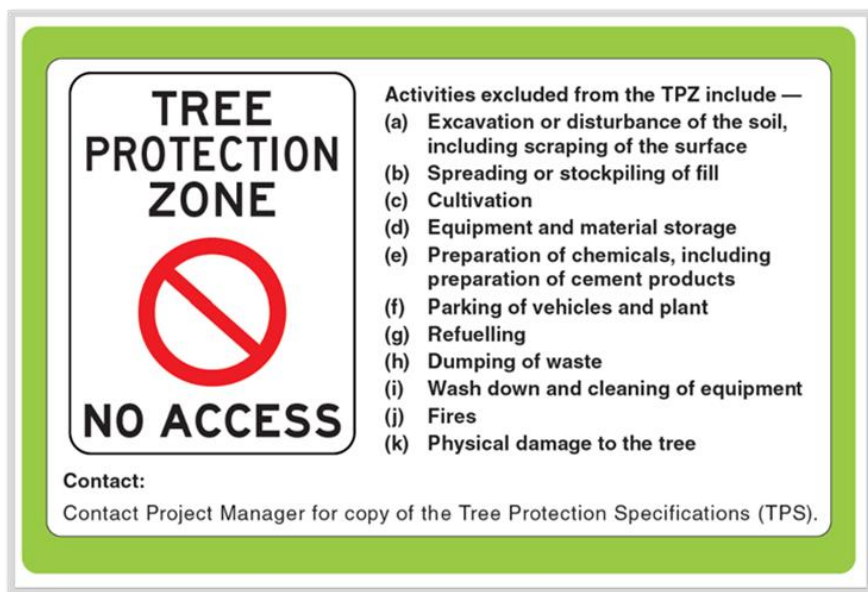


Figure 2 Displays Tree Protection Zone signage

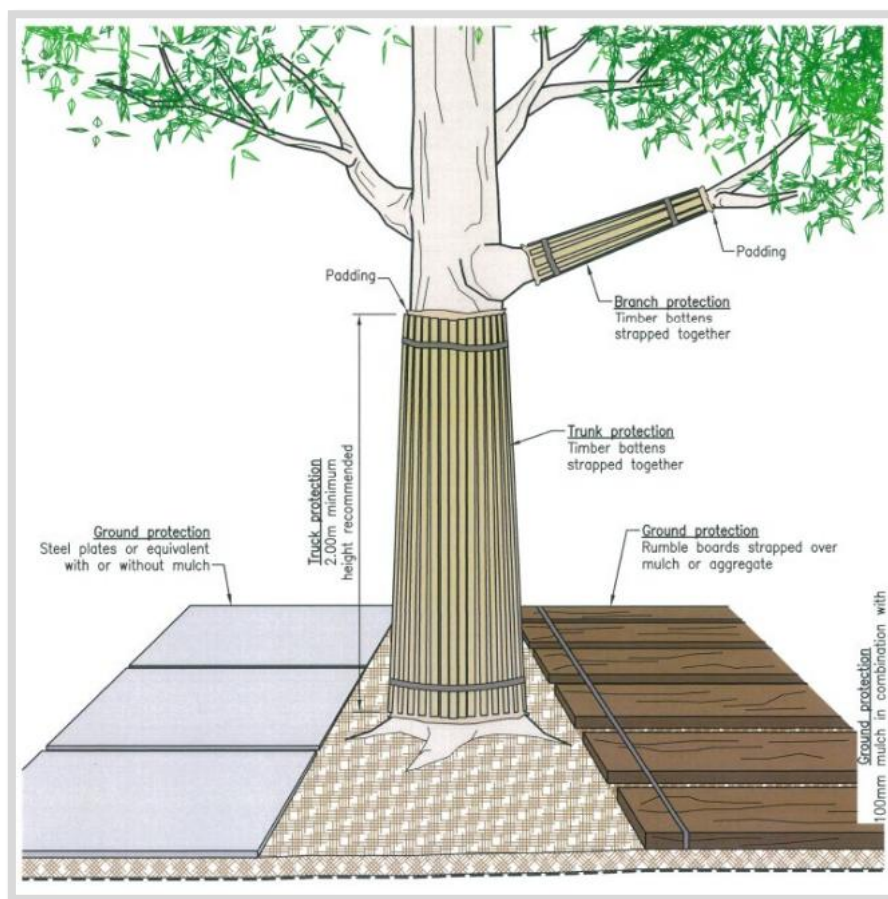
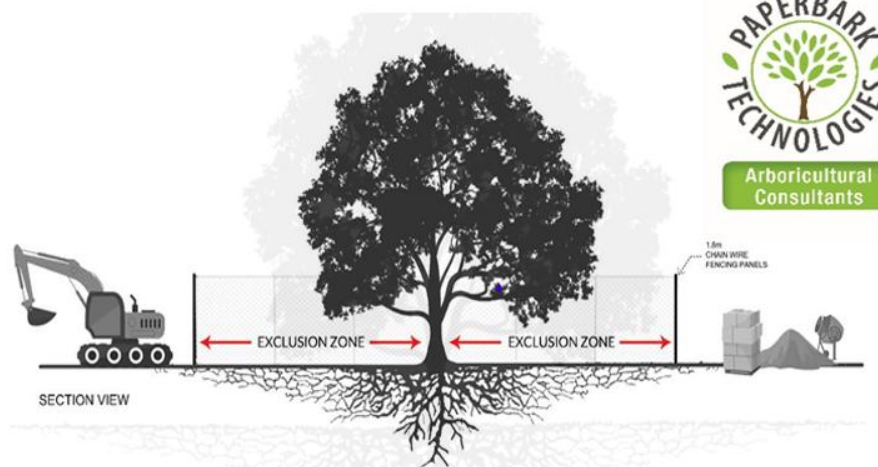


Figure 3 Displays an example of trunk and branch protection when working within proximity to trees where a TPZ cannot be established.

8. Prohibited Activities Within TPZ

Unless approved in writing by the Project Arborist, the following activities are strictly prohibited within any TPZ:

- 8.1. No construction activities, storage, or other disturbances are allowed inside the delineated TPZ of any protected tree. The following activities are strictly prohibited within tree protection zones:
- 8.2. Excavation or Trenching: No machine excavation, grading or trenching is to occur inside the TPZ without approval. If underground services must pass near a tree, they should be rerouted outside the TPZ. Where intrusion is unavoidable, use trenchless boring at least 1 m depth, or hand-digging/hydro-vac methods, with arborist supervision.
- 8.3. Material Storage: No stockpiling of soil, rubble, building materials, debris, or waste is permitted within the TPZ area. Construction materials and chemicals (cement, paint, fuels) must be stored away from protected root zones to prevent contamination or compaction.
- 8.4. Vehicles and Equipment: No vehicular traffic, parking of cars, or operation of heavy machinery is allowed inside TPZs (except on existing hard surfaces like paved driveways that might transect a TPZ). Equipment must not be leaned against or chained to trees.
- 8.5. Grade Changes: Do not alter soil grade within the TPZ without arborist approval. No filling, cutting, trenching or surface levelling should occur. Even minor grade changes can damage roots; thus, the natural ground level should be preserved.
- 8.6. Chemical Use and Wash-Out: Do not dispose of wastewater or rinse out concrete, paint, or chemicals within the TPZ. Refueling equipment and mixing materials like cement must be done well outside any TPZ to avoid toxic spills or soil contamination.
- 8.7. Attaching Objects to Trees: Do not nail, screw, or attach any signs, boards, wires, or hoardings to the protected trees. Also, do not use trunks as anchor points for cables, lights, or fencing.
- 8.8. Open Flames and Heat: No welding, cutting with torches, or open flames near the tree trunk or under the tree canopy.
- 8.9. Physical Damage: Avoid any actions that could wound the tree. This includes no scraping of bark, no use of trunks as winch or crane tie-offs and preventing any accidental knocks by machinery.
- 8.10. If any work must unavoidably encroach within a TPZ (such as controlled access for construction within a small portion of a TPZ), this must first be discussed with and approved by the Project Arborist. Minor encroachments (generally less than 10% of the TPZ area) may be tolerated with appropriate precautions, but encroachment beyond 10% is typically not permitted without a revised arborist assessment and council approval. In all cases, the integrity of the Structural Root Zone (SRZ) must be maintained; no machine excavation is allowed within the SRZ, as this is the critical area immediately around the base of the tree required for anchoring and stability. Within the SRZ a combination of hand digging and vacuum excavation is to be used.



NO ACCESS OR WORKS SHALL BE PERMITTED WITHIN THE SPECIFIED TPZS WITHOUT PRIOR APPROVAL OF AND, UNDER THE SUPERVISION OF THE NOMINATED AQF LEVEL 5 ARBORIST.

9. Approved Works within Root zones (If unavoidable)

Where works are unavoidable within the NRZ, the following requirements apply:

- 9.1. All excavation must be undertaken using hand excavation or low-pressure vacuum excavation (hydro-vac).
- 9.2. A Project Arborist must be present to supervise excavation within or adjacent to the TPZ/SRZ.
- 9.3. Roots >30 mm diameter must not be cut without approval. Root pruning must be undertaken with sharp, clean tools.
- 9.4. Exposed roots must be protected from drying and covered/backfilled as soon as practicable.

10. Pruning and Root Management

- 10.1. All pruning of the protected trees, if required for clearance or safety, must be performed by a qualified arborist (minimum AQF Level 3 for tree work, under supervision of an AQF Level 5 consulting arborist). Pruning shall conform to Australian Standard AS 4373:2007 Pruning of Amenity Trees to ensure best practices are followed. No live branches or limbs are to be removed unless necessary. If pruning is needed (for example, to provide clearance for construction), cut only the minimum necessary and use correct pruning techniques (making clean cuts to avoid tearing bark, with climbing arborist utilising spikeless climbing techniques to avoid damage to the living tissue of trees retained).
- 10.2. Roots must not be indiscriminately cut or damaged. No roots greater than 30 mm in diameter are to be severed without prior approval from the Project Arborist. If roots are encountered during any approved excavation near a TPZ (for instance, when digging

footings just outside the TPZ boundary), they should be exposed carefully (preferably by hand digging or using a compressed air soil excavation tool) and assessed by the arborist. Any necessary root pruning shall be conducted by an arborist using sharp, sterilised tools to promote quick recovery. Exposed roots should be covered with soil or kept moist (wrapped in damp hessian, for example) if they cannot be backfilled immediately. Where feasible, alternatives to root cutting – such as redirecting trenches or boring under roots – should be implemented to preserve the tree’s root system. The Project Arborist will determine if any special root protection measures (like bridging over roots or installing root barriers) are required on a case-by-case basis.

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11. Monitoring and Compliance

- 11.1. The qualified Project Arborist (AQF Level 5) must oversee the implementation of this Tree Protection Plan. The arborist will conduct a pre-construction site briefing with the site manager and all contractors to review the tree protection measures and requirements. Key responsibilities and checkpoints include:
- 11.2. **Pre-Start Inspection:** The Project Arborist shall inspect the installed tree protection delineation and signage before any machinery mobilisation or ground-breaking on site. They will verify that TPZs are correctly established as per this plan and make any necessary adjustments.
- 11.3. **Ongoing Supervision:** The arborist will be on call during excavation or construction activities near TPZs. For any works that have potential to impact protected trees (such as trenches near a TPZ or crane operations that could affect tree canopies), the arborist should be present to monitor and advise. Regular site inspections (e.g., monthly or at key milestones) should be undertaken to ensure continued compliance.
- 11.4. **Communication:** The site supervisor is responsible for informing all site personnel about the tree protection zones and enforcing compliance. A copy of this TPP must be kept on site. If any incident occurs (e.g., TPZ delineation is breached or a tree is inadvertently struck or root exposed), the site supervisor must immediately inform the Project Arborist and pause work in the vicinity until corrective actions are taken.
- 11.5. **Record Keeping:** The Project Arborist will document site visits, non-compliance issues, and any remedial actions or tree care performed. If required by Council, the arborist will provide interim reports or a final compliance letter certifying that tree protection measures were maintained and effective throughout the project.
- 11.6. **Post-Construction Assessment:** Upon completion of construction (and before landscaping phase), the Project Arborist will reassess the condition of the retained trees. Only after this assessment and with the arborist’s approval should the protective delineation be removed. Any observed damages or stress to the trees will be noted, and recommendations will be made for any necessary post-construction care (such as deep watering, soil treatment, pest management, or pruning of any damaged limbs). A final

report may be submitted to council if required, verifying that the trees have been protected in accordance with this plan.

Complete	Task	Comment
✓	Appointment of Project Arborist	A suitably qualified and experienced consulting arborist (minimum AQF Level 5) is to be engaged as the Project Arborist for the duration of the works. The Project Arborist will be responsible for overseeing the implementation of tree protection measures and providing arboricultural advice throughout all relevant stages of the project.
✓	Preliminary Arboricultural Review	The Arboricultural Report is to be provided to the project design and construction teams. Where tree retention is a priority, design refinement or construction methodology adjustments may be required to support the long-term health and structural stability of retained trees. The Project Arborist is to review and provide input into design documentation and construction planning, including services alignments, trenching, irrigation, and associated works that may affect tree root zones.
✓	Tree Protection Plan Implementation	Based on the agreed Tree Protection Plan, the Project Arborist is to confirm the location and extent of Tree Protection Zones and associated protection measures. All tree protection delineation, signage, and controls are to be installed prior to the commencement of any site works and maintained for the duration of construction unless otherwise approved in writing by the Project Arborist.
	Site Inductions	All site personnel, including contractors and subcontractors, are to be informed of tree protection requirements during site induction. Responsibilities relating to Tree Protection Zones, access restrictions, and approved work practices are to be clearly communicated to ensure compliance with the Tree Protection Plan throughout the project.

Supervision of Critical Works/Hold Points sign - off

The Project Arborist is to attend site during key construction activities occurring within or adjacent to Tree Protection Zones, including but not limited to investigative trenching, footing excavation, and services installation undertaken by hand or low-pressure vacuum excavation methods. The Arborist is to assess impacts, provide direction regarding root management, and authorise continuation of works where appropriate.

Date	Arborist	Signature	Comments

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Ongoing Monitoring sign - off.

The Project Arborist is to undertake periodic inspections of retained trees throughout the construction phase to monitor tree condition and confirm ongoing compliance with the Tree Protection Plan. Site visits are to be documented, with recommendations provided where additional protective or remedial measures are required.

<u>Date</u>	<u>Arborist</u>	<u>Signature</u>	<u>Comments</u>

12. Conclusion

- 12.1. This Tree Protection Plan (TPP) has been prepared to provide clear, practical guidance for the protection of retained trees during construction works associated with upgrading of St Louis Estate Claremont.
- 12.2. The proposed redevelopment has been designed to retain both significant trees on site. The proposed works include construction of new residential buildings, pedestrian pathways, landscaping, visitor parking, underground services and associated civil infrastructure in close proximity to both retained trees.
- 12.3. The proposed works encroach within the Notional Root Zones (NRZ) of both retained trees, with sections of the proposed pedestrian pathways and associated civil infrastructure also located within the Structural Root Zones (SRZ). While these encroachments present an increased risk to the retained trees, successful retention is considered achievable provided appropriate tree protection measures and arboricultural supervision are implemented throughout the construction period.
- 12.4. Where works occur near or within protection areas, all activities must continue to be undertaken in accordance with AS 4970:2025 – Protection of Trees on Development Sites. Any unavoidable excavation within the TPZ or SRZ is to be carried out using hand excavation or low-pressure vacuum excavation under direct supervision of the Project Arborist. Arborist oversight at nominated hold points remains critical to ensure that root disturbance is minimised, significant roots are managed appropriately, and tree stability and health are not compromised.

- 12.5. Strict adherence to this Tree Protection Plan is essential to ensure the long-term retention, health, and structural stability of the retained trees. The two (2) trees protected under this plan contribute significantly to the environmental, heritage, landscape, and amenity value of the site and are considered to have high to very high retention value. Their protection during construction is therefore a key requirement of the project.
- 12.6. Any non-compliance, damage to trees, or breaches of TPZs must be reported immediately to the Project Arborist, and works in the affected area are to cease until appropriate corrective actions are implemented. Ongoing arboricultural monitoring during construction, combined with post-construction assessment, will ensure compliance with this Tree Protection Plan and support the successful delivery of the development while safeguarding the retained tree assets.

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Diploma of Arboriculture, Quantified Tree Risk Assessors Lic 5714 & 9332 TRAQ Qualified

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Limitation of liability

Trees can be managed, but they cannot be controlled. To live or work near a tree involves a degree of risk.

This report only covers identifiable defects present at the time of inspection. Paperbark Technologies accepts no responsibility and cannot be held liable for any structural defect or unforeseen event/situation or adverse weather conditions that may occur after the time of inspection.

Paperbark Technologies cannot guarantee that the tree/s contained within this report will be structurally sound under all circumstances and is not able to detect every condition that may possibly lead to the structural failure of a tree. Paperbark Technologies cannot guarantee that the recommendations made will categorically result in the tree being made safe.

Unless specifically mentioned this report will only be concerned with above ground inspections, as such all observations have been visually assessed from ground level. Trees are living organisms and as such cannot be classified as safe under any circumstances. Trees fail in ways that the arboriculture industry does not fully understand.

The recommendations are made on the basis of what can be reasonably identified at the time of inspection therefore Paperbark Technologies accepts no liability for any recommendations made.

All care has been taken to obtain information from reliable sources, however Paperbark Technologies can neither guarantee nor be responsible for the accuracy of information provided by others. In the event that reinspection of the tree/s is recommended it is the client's responsibility to make arrangements with Paperbark Technologies.

➤ Appendix A: Tree Protection map with NRZ & SRZ overlay and design.

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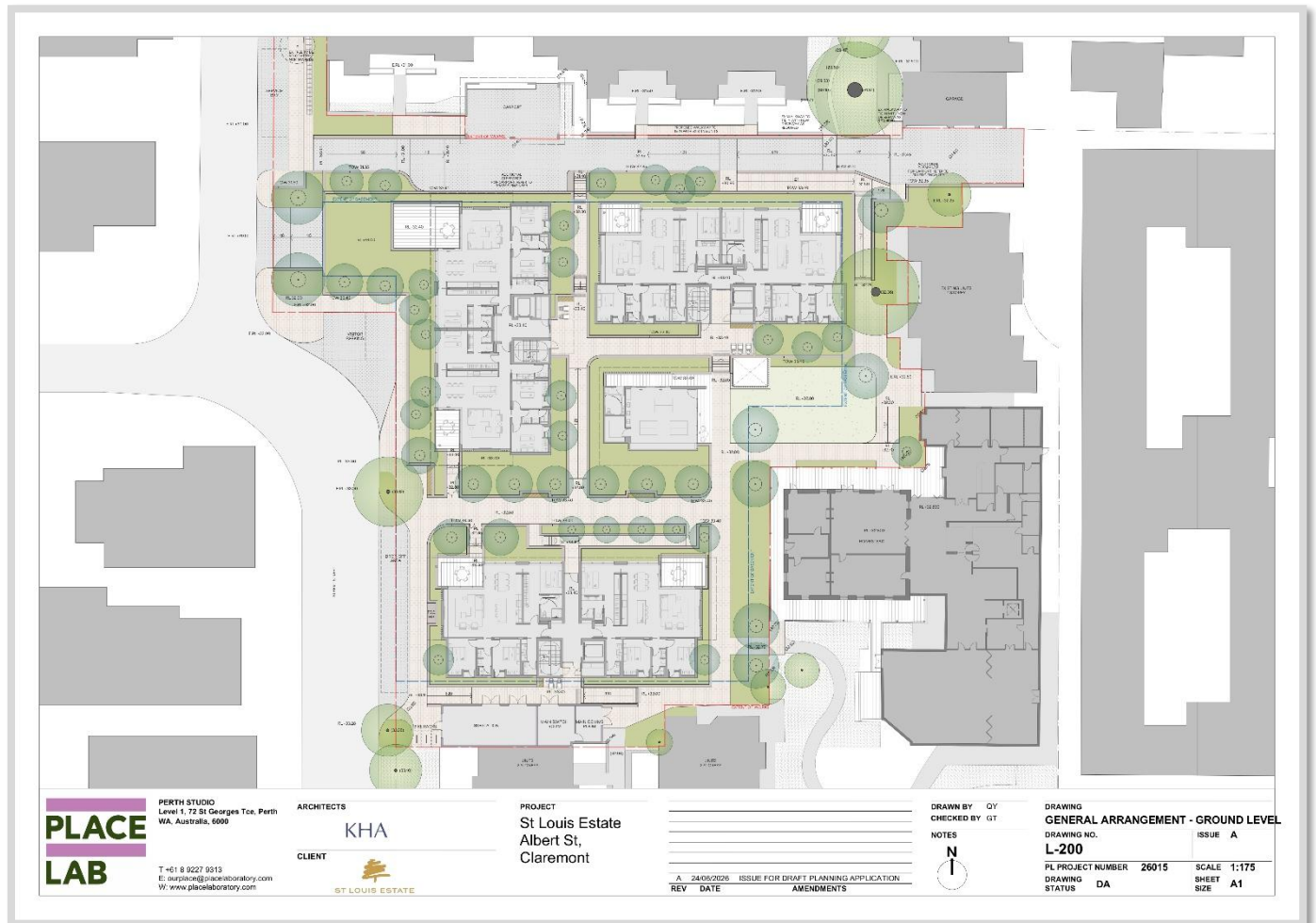
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Plan submitted by Place Laboratory Pty Ltd

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➤ Appendix B: Tree data summary table

Tree No.	Species	Tree Age	Height (m)	Canopy spread (m)	Health	Structure	NRZ (m)	SRZ (m)	Comments & Protection requirements
1	<i>Araucaria heterophylla</i>	Mature	29.4	11	Good	Good	12.6	3.66	- No roots greater than 30 mm in diameter are to be severed without prior approval from the Project Arborist. - Surface roots located on the southern and eastern sides of the tree, length of approximately 1m from the base. - Heritage plaque present at base — protect from damage. - All excavation within the NRZ is to be undertaken using hand excavation or low-pressure vacuum excavation (hydro-vac) under arboricultural supervision.
2	<i>Corymbia citriodora</i>	Mature	18.9	16	Fair	Fair	8.76	3.12	- No roots greater than 30 mm in diameter are to be severed without prior approval from the Project Arborist. - Remove hanging branch prior to works commencing. - Tree exhibits previous limb failure history — heightened monitoring required throughout construction. - Heritage plaque present at base — protect from damage. - All excavation within the NRZ is to be undertaken using hand excavation or low-pressure vacuum excavation (hydro-vac) under arboricultural supervision.

➤ Appendix C: Tree survey & photos

Norfolk Island Pine Tree ID #1

Tree Details

Latin Name:	Araucaria heterophylla
Latitude:	-31.983480885589
Longitude:	115.77483675452
Tree Height (Estimated) [m]:	29.4
Canopy Spread [m]:	11
DSH [cm]:	105
Health:	Good
Structure:	Good
Problems:	Surface roots
Notes:	
Priority:	None
Tree Work:	No Works
Observation Comments:	Surface roots located on the southern and eastern sides of the tree, length of approximately 1m from the base.
Notional Root Zone (NRZ) [m]:	12.6
Structural Root Zone (SRZ) [m]:	3.66
Useful Life Expectancy:	40+ years
Retention Value:	Very high

Photos Street View Map View



22/06/2026

Lemon Scented Gum Tree ID #2

Tree Details

Latin Name: Corymbia citriodora

Latitude: -31.983689621368

Longitude: 115.77485016557

Tree Height
(Estimated) [m]: 18.9

Canopy Spread [m]: 16

DSH [cm]: 73

Health: Fair

Structure: Fair

Problems: Hanging branch,
Deadwood minor <50,
Previous limb failure,
Multi Crown leaders

Notes:

Priority: Moderate

Tree Work: Remove hanger

Observation
Comments:

Notional Root Zone
(NRZ) [m]: 8.76

Structural Root Zone
(SRZ) [m]: 3.12

Useful Life
Expectancy: 20-40 years

Retention Value: High

Photos Street View Map View



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Tree Photos

Tree 1 – *Araucaria heterophylla*



Figures 4-6 Displays images of the surface roots and plaque located at the base of tree 1.

Tree 2 – *Corymbia citriodora*

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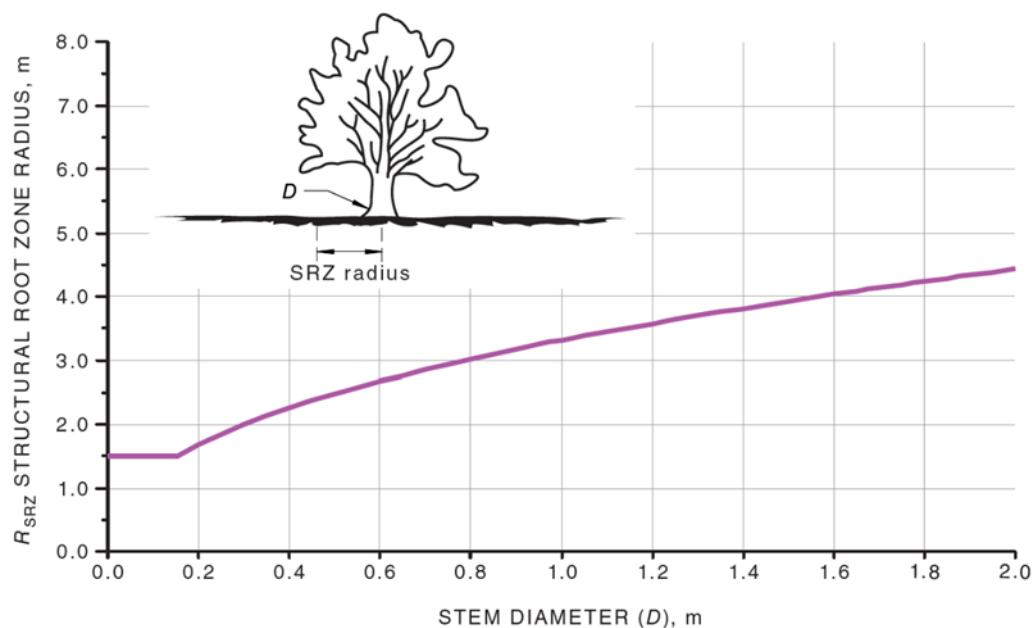


Figures 7 & 8 Display images of the base of the tree 2 and the associated plaque.

13. Glossary

- **Structural Root Zone (SRZ)** The area required for tree stability. The SRZ radius is calculated by the diameter at root flare using the following formula $(D \times 50)^{0.42} \times 0.64$.

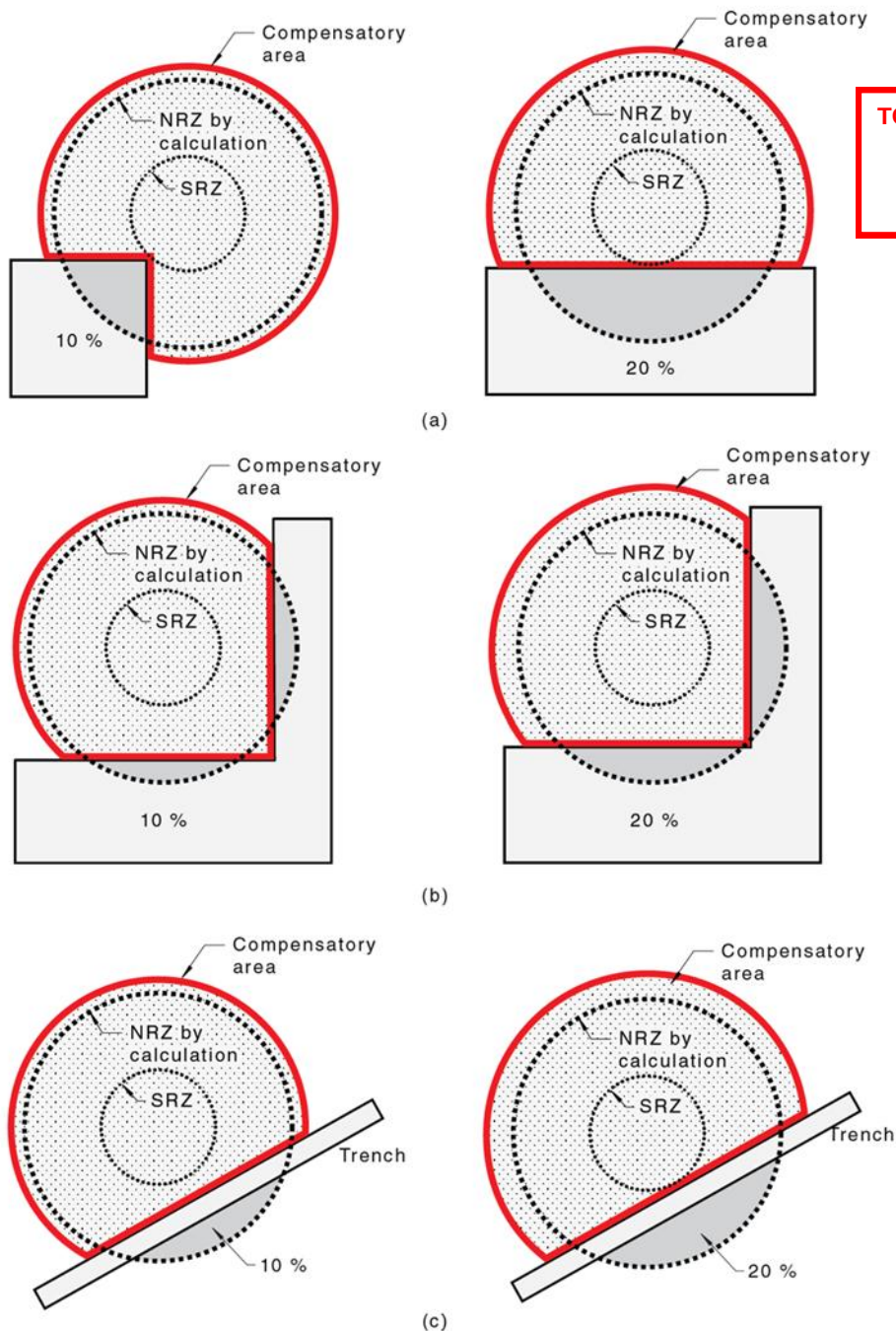
NOTE The SRZ for trees with trunk diameters less than 0.15 m is 1.5 m, as shown in [Figure 2](#).



The curve can be expressed by the following formula:
 $R_{SRZ} = (D \times 50)^{0.42} \times 0.64$

Figure 2 — Structural Root Zone (SRZ) calculation

- **Notional Root Zone (NRZ)** The Notional Root Zone is the principal means of protecting trees on development sites. It is an area isolated from construction disturbance, so that the tree remains viable. The radius of the NRZ is calculated for each tree by multiplying its DSH x 12.
- **Encroachment Classification** When excavation is unavoidable, the extent of encroachment is typically classified as:
 - **Minor:** ≤10% of the NRZ.
 - **Moderate:** 10 – 20% of NRZ.
 - **Major:** >20% of the NRZ.

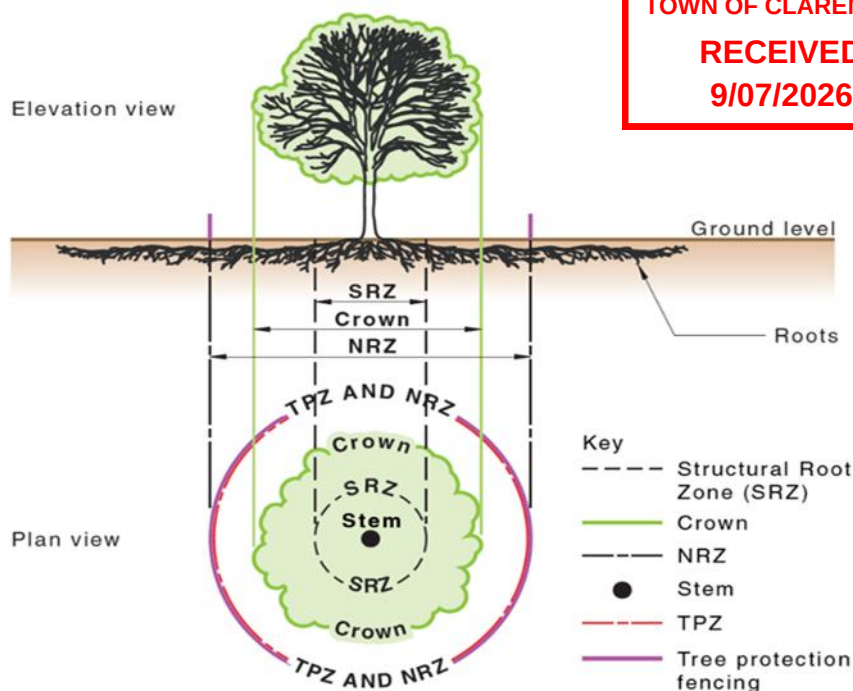


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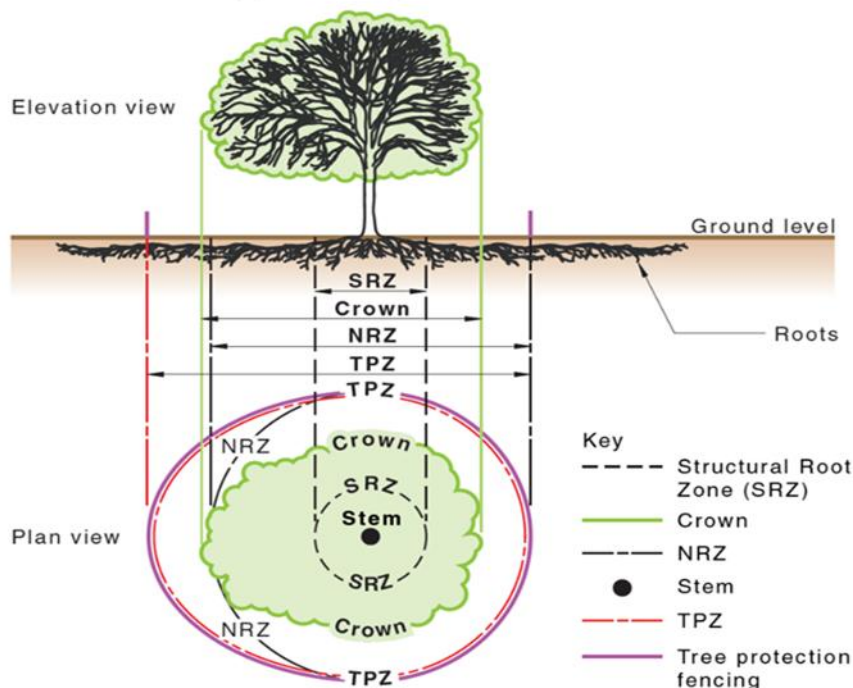
NOTE These examples are not to scale and are for illustrative purposes. The proposed encroachment is considered minor if it is less than or equal to 10 % of the area of the NRZ, has not had recent TPZ encroachments and is outside of the SRZ (see [Clause 3.4](#)). The proposed encroachment is considered moderate if it is greater than 10 % and less than or equal to 20 % of the area of the NRZ and is outside of the SRZ (see [Clause 3.4](#)).

Figure 1 — Sample minor and moderate encroachments

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(a) No development within NRZ

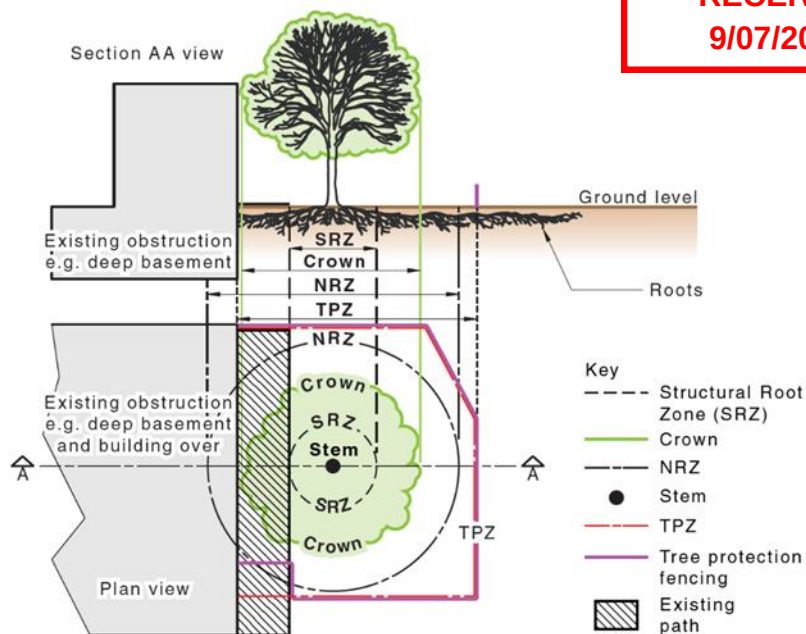


(b) No development within NRZ but with crown protection required

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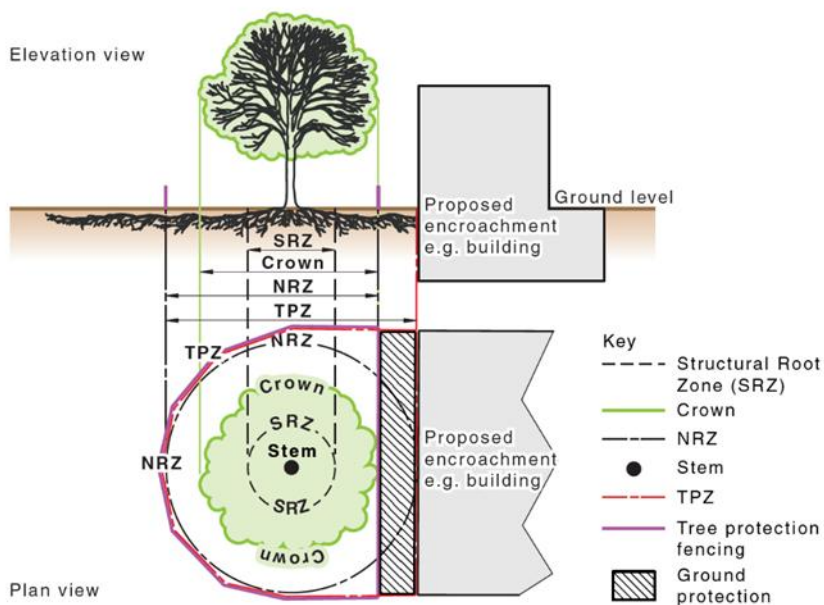
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NOTE The project arborist has determined a suitable location for the tree protection fence. They have included a portion of the path as ground protection.

(c) TPZ compensatory area shown for existing structures



(d) TPZ compensatory area shown for proposed development

Tree health:

➤ Good

The tree is demonstrating good or exceptional growth for the species. The tree should exhibit a full canopy of foliage, and have only minor pest or diseases problems. Foliage colour, size and density should be typical of a healthy specimen of that species.

➤ Fair

The tree is in reasonable condition and growing well for the species. The tree should exhibit an adequate canopy of foliage. There may be some dead wood present in the crown, some grazing by insects or animals may be evident and/or foliage colour, size or density may be atypical for a healthy specimen of that species.

➤ Poor

The tree is not growing to its full capacity; extension growth of the laterals may be minimal. The canopy may be thinning or sparse. Large amounts of dead wood may be evident throughout the crown. Significant pest and disease problems may be evident or symptoms of stress indicating tree decline.

➤ Very poor

The tree appears to be in a state of decline and the canopy may be very thin and sparse. A significant volume of deadwood may be present in the canopy or pest and disease problems may be causing a severe decline in tree health.

Tree structure:

➤ Good

The tree has a well-defined and balanced crown. Branch unions appear to be strong, with no defects evident in the trunk or the branches. Major limbs are well defined. The tree would be considered a good example of the species. Probability of significant failure is highly unlikely.

➤ Fair

The tree has some minor problems in the structure of the crown. The crown may be slightly out of balance, and some branch unions or branches may be exhibiting minor structural faults. If the tree is single trunked, this may be on a slight lean or be exhibiting minor defects. Probability of significant failure is low.

➤ Poor

The tree may have a poorly structured crown. The crown may be unbalanced or exhibit large gaps. Major limbs may not be well defined. Branches may be rubbing or crossing over. Branch unions may be poor or faulty at the point of attachment. The tree may have suffered major root damage. Probability of significant failure is moderate.

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➤ **Very Poor**

The tree has a poorly structured crown. The crown is unbalanced or exhibits large gaps. Major limbs are not well defined. Branch unions may be poor or faulty at the point of attachment. A section of the tree has failed or is in imminent danger of failure. Active failure may be present or failure is probable in the immediate future.

➤ **Has Failed**

A significant section of the tree or the whole tree has failed.