Apex
Tree & Garden Experts

ABN. 80 076 296 903

ARBORICULTURAL IMPACT ASSESSMENT REPORT

Prepared for: **AZEEMA SOHAIL**

Site Address: **46 FERGUSON STREET, FORESTVILLE, NSW**

Report Date: **27 APRIL 2022**

Google Street View June 2021

Prepared by: **SCOTT GATENBY**
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INTRODUCTION

We confirm that we have inspected the above site on 1 April 2022 and now report as follows:

This report has been commissioned by Azeema Sohail of 46 Ferguson Street, Forestville in relation to the proposed redevelopment of the site.

The Proposal

It is proposed to demolish the existing clad & tile roofed residence and construct a new brick dwelling with a tile roof.

The footprint of the new house is proposed to be largely over that of the existing house with the driveway being retained in its present location, though slightly extended over what is now an eroded lawn area.

Relevant Trees

There are only three significant trees that have the potential to be affected by the proposed development. These are the three **Jacaranda mimosifolia** (Jacaranda) located on the footpath along the Ferguson Street frontage. The Jacarandas are part of a row of trees along Ferguson Street and a significant part of the local streetscape. Please see Photographs #1 and #2 below.

Photograph #1

Photograph #2

The relevant data, including dimensions and specifications, for each tree is recorded in the Tree Survey below and the tree numbers and their locations have been noted on an extract of the proposed site plan at Appendix A.

The trees have been inspected by ground-based observations using Visual Tree Assessment techniques (VTA). VTA undertaken by tree professionals is a recognised systematic method of identifying tree characteristics and hazard potential.

TREE SURVEY

Refer to Appendix E for the 'Key to Abbreviations used in Tree Survey Tables'.

(~) = approximately

Tree No.	Genus Species (Common Name)	Height (~ m)	Canopy Spread (~ m)	Dbh (~ mm)	Vigour	Form	ULE	Signif Rating	Worthy of Retention Y/N	TPZ (~ m)	SRZ (~ m)	Comments
1	**Jacaranda mimosifolia** (Jacaranda)	8	9	450 400 (Comb. 600)	G	F-G	L	2	Y	7.2	3.0	• Twin trunk forms just below ground level • ~ 3.5m from trunk to right-hand edge of existing drive
2	**Jacaranda mimosifolia** (Jacaranda)	8	10	500	G	G	L	2	Y	6.0	2.5	• Excellent single-trunked specimen
3	**Jacaranda mimosifolia** (Jacaranda)	8	8	350 300 250 (Comb. 520)	G	F	L	2	Y	6.2	2.6	• Triple-trunked from ground level • Poorly pruned on southern side for power lines clearance

DISCUSSION & RECOMMENDATIONS

Tree #3, the Jacaranda closest to the corner of Ferguson and Keldie Streets, has been poorly pruned for power line clearance in the past and has numerous upright water shoots as part of the canopy. I would recommend that the tree be formatively pruned to thin these water shoots for the long term health, safety and appearance of the tree.

Trees #1, #2 and #3, the three Jacarandas, will need to be protected for the duration of the development as they have the potential to be damaged by construction activities. Tree protection can easily be achieved by installing a continuous tree protection fence that is approximately 17.5 metres long and 5 metres wide around the trees from near the right-hand edge of the existing driveway to at least 3 metres past Tree #3. This would equate to 7 standard Temporary Fencing Panels long and 2 wide installed, as noted below, i.e. not on movable feet. The fence would be just inside the dripline of the trees and would allow pedestrian access along the street side of the footpath of approximately 600mm width. This recommended Tree Protection Zone (TPZ) is marked on the Site Plan at Appendix A (not to scale).

This tree protection area is required to encompass all three trees because their root systems are interwoven and will then be protected by this TPZ. Apart from this TPZ, the entire remainder of the site can be used for construction activities and as long as this TPZ is maintained for the duration of the development, the trees are unlikely to be affected.

If the tree protection fencing is properly installed, as per the recommendations in this report, and not moved during the construction works, no trunk protection of the trees will be required, as the trees will be within the fenced TPZ. All services must be routed outside the TPZ.

The trees must be protected as per Australian Standard AS-4970 Protection of Trees on Development Sites, the 'General Guidelines for the Protection of Trees on Construction Sites' at Appendix B and the Tree Protection Measures at Appendix C. Of particular note are the following tree protection requirements:

- The tree protection fence must be erected before any machinery is brought onto the site and before any demolition commences.

- The protective fence must be secured to restrict access to the TPZ and must remain intact and in place until the end of the project.

- The protective fence must not be moved or altered without the approval of the project arborist.

- The protective fence should be constructed of steel chain mesh, or 2.5m Temporary Fence Panels to 1.8 metres high and supported by and attached to 2.4m Steel fence Posts, driven into the ground.

- Mulch must be installed across the entire TPZ area within the protective fence to a depth of 150 mm. The grass should be sprayed with Round-Up, mixed as per packet instructions, prior to spreading the mulch and any weed growth will need to be controlled during construction so that the TPZ does not become overgrown.

- All construction activities are excluded from the TPZ.
- No cement wash or building chemicals are to be dumped around the base of the trees.
- No cut and fill or soil build-up to occur around the base of the trees.

The trees are Council-owned and will benefit your development through privacy, screening, greenery and amenity for decades to come. The tree protection measures can be as simple or complex as you wish but by installing the recommended tree protection fencing and leaving it in place until landscaping will be the simplest and best option.

We are grateful for the opportunity to assess your trees. Our professional business thrives on recommendations and would be pleased if you could assist us in this way. If you have any further questions, please do not hesitate to contact our office.

Yours faithfully,

SCOTT GATENBY
Managing Director

WAIVER/LIMITATIONS

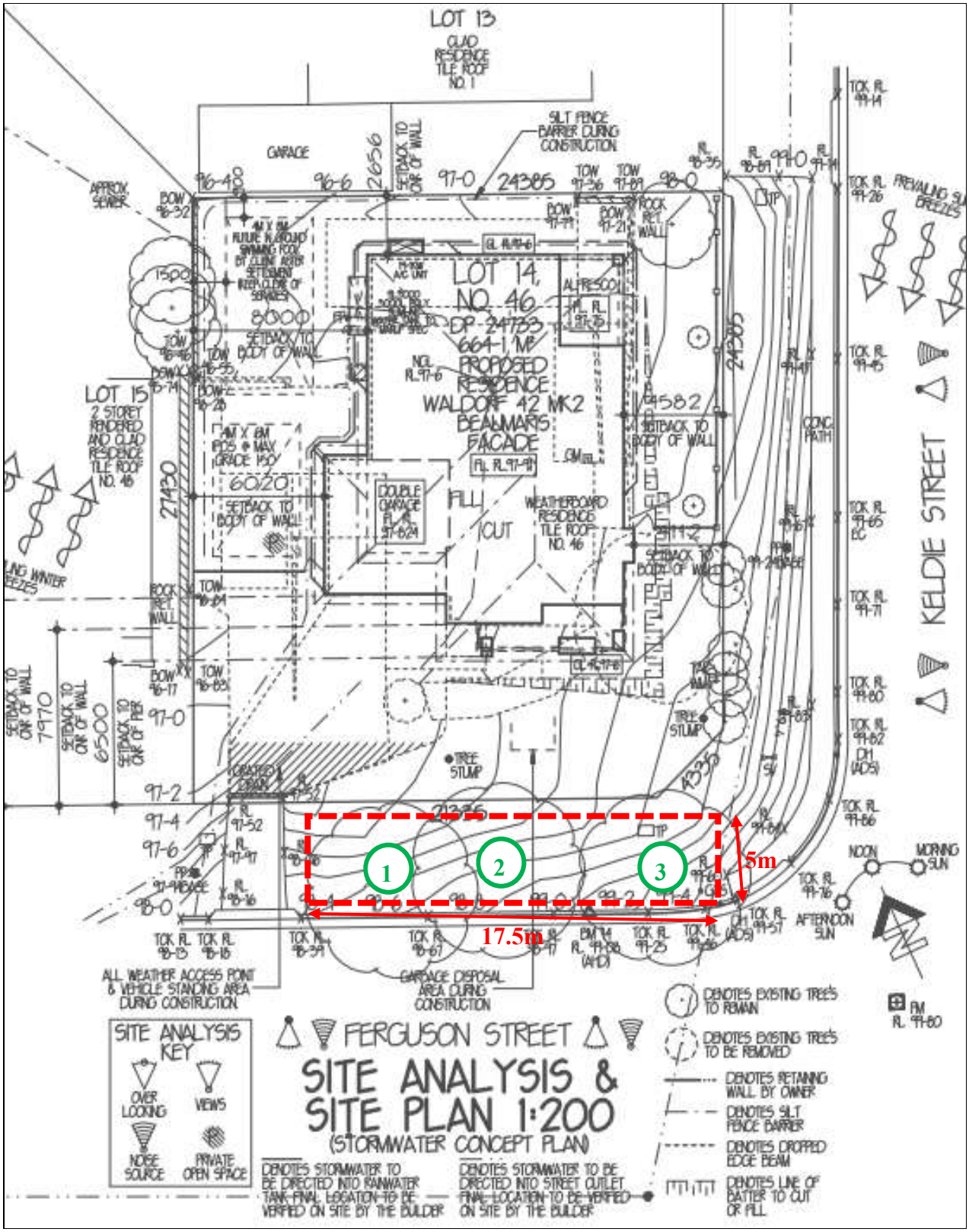
The findings of this report are based upon and limited to visual examination of the subject tree from ground level without any climbing, internal testing or exploratory excavation. Whilst the author provides comments on likely future hazards, this report does not claim to be exhaustive in its assessment of any potential hazards, or of any factors contributing to such hazards. If further practical investigation is required for any reason, including in response to any perceived or unresolved issue, then additional investigations or inspections can be undertaken if requested.

This report reflects the health and structure of the tree at the time of inspection. Apex Tree & Garden Experts cannot guarantee that a tree will be healthy and safe under all circumstances or for a specified period of time. There is no guarantee that problems or defects with the assessed tree, will not arise in the future. Liability will not be accepted for damage to person or property as a result of failure of the assessed tree.

This report has been prepared for the exclusive use of the client. Apex Tree & Garden Experts does not accept any responsibility for its use by any other party. This report must be read in its entirety. No part of this report may be referred to, verbally or in writing, unless taken in full context of the whole report.

APPENDIX A.

SITE PLAN SHOWING TREE NUMBERS, APPROXIMATE TREE LOCATIONS & RECOMMENDED TREE PROTECTION ZONE



APPENDIX B:

General Guidelines for the Protection of Trees on Construction Sites

(Blended from AS4970-2009 Section 4)

- The Australian Standard AS4970 Protection of Trees on Development Sites allows for a Tree Protection Zone (TPZ) calculated as 12 x the diameter of the trunk at breast height. There can be mitigating factors which would allow development closer than this which must be determined by a Level 5 Consulting Arborist.

- The area around the base of the tree should be fenced off to at least the original drip line as a Tree Protection Zone (TPZ) or as specified by a suitably qualified arborist. The fence should not be able to be easily moved and should represent a significant barrier to prevent construction works being carried out within the fenced area.

- Signage should be attached to the tree protection fencing denoting that this is a Tree Protection Zone which must not be encroached upon. The sign should contain the name and contact number of the Site Arborist and the relevant council authority to be contacted should damage to the trees occur. The signage is to remain in place for the duration of the construction period.

- Site personnel must be made aware of tree requirements and protection measures.

- The location of stockpiles, construction work areas and vehicle parking should be designed to be remote from trees and must not occur within the TPZ.

- The TPZ must not be used for pedestrian or vehicular activity, as soil compaction and trunk damage can often result.

- Building and excavation materials must not be stored within the fenced TPZ as this can exclude water and oxygen and compact the soil.

- Cement washes, fuel and other chemicals must not be washed into the root area of trees. Waste must not be dumped in the TPZ and fires must not be lit within the TPZ.

- Underground services should be designed to use common trenches as far away from tree roots as possible. No trenches should be dug within the Tree Protection Zone (TPZ) of the tree including the excavation for silt fencing.

- It is strongly recommended the TPZ within the dripline of any tree affected by construction have the soil decompacted via pressure injection. This process allows the trees to more extensively use the smaller remaining root area. By decompacting, aerating and improving the nutrient status of the soil around the tree, many of the negative effects of building activities can be countered.

- Regular supervision of tree protection measures should be carried out on at least a monthly basis.

- The area underneath the tree within the TPZ must be mulched with quality leaf/brush mulch to a depth of approximately 100 mm - 150 mm before any works begin.

- We recommend that these trees be lightly fertilized with complete plant fertilizer.

- The site arborist is to supervise and treat any exposed tree root/s during excavation. Roots over approximately 40 mm should be cleanly cut prior to excavation machinery digging up any roots. Do not allow excavation vehicles or equipment to rip at or remove roots along the face of the excavation adjacent to trees. In the event the vehicles 'grab' at roots during works, the machinery operator must stop work immediately and allow the roots to be cut before continuing.

- Hand excavation is required when excavation is to be done within the Critical Root Zone.

- Original soil levels should be maintained, and cuts and fills should not be allowed near trees except under supervision by a suitably qualified site arborist. This includes activities during the installation of new landscaping.

- If the tree/s are to be pruned the removal of foliage should be limited to approximately 20% of full canopy, as the tree needs its foliage to produce food for itself. Over thinning will stress the tree and render it less able to grow into its new environment.

- The tree should be trimmed according to the Australian Standard AS4373-2007. No topping of trees should ever take place.

- Any pruning work should include the removal of major deadwood and rubbing branches from the tree as a matter of course.

- During the construction period the tree should be watered during dry spells e.g. 2-3 weeks without adequate rainfall. The root zone should be thoroughly watered and then left to drain. If it is seen to be a problem in allocating time for site staff to water trees, an automatically timed dripline watering system should be installed.

- In the event of any tree becoming damaged for any reason during the construction period a consulting arborist shall be engaged to inspect and provide advice on any remedial action to minimise any adverse impact. Such remedial action shall be implemented as soon as practicable and certified by the site arborist.

APPENDIX C.

TREE PROTECTION MEASURES – PRE-CONSTRUCTION

1. General

All tree protection works shall be carried out before excavation, grading and site works commence. Tree protection works shall be inspected and approved by an AQF Level 5 Arborist (Project Arborist) prior to construction works commencing.

Storage of materials, mixing of materials, vehicle parking, disposal of liquids, machinery repairs and refuelling, site office and sheds, and the lighting of fires, stockpiling of soil, rubble or any debris shall not be carried out within the TPZ of trees to be retained.

No backfilling shall occur within the TPZ of trees to be retained.

Please also refer to the 'General Guidelines for the Protection of Trees on Construction Sites' at Appendix B.

2. Project Arborist

Prior to all site works commencing, a Project Arborist is to be appointed with the responsibility of implementing all Tree Protection Measures in this report as well as compliance with AS4970-2009 Protection of Trees on Development Sites.

The supervising Project Arborist must inspect the tree protection measures and maintain a record throughout the construction process. As a minimum, an inspection must be undertaken at each hold point listed below:

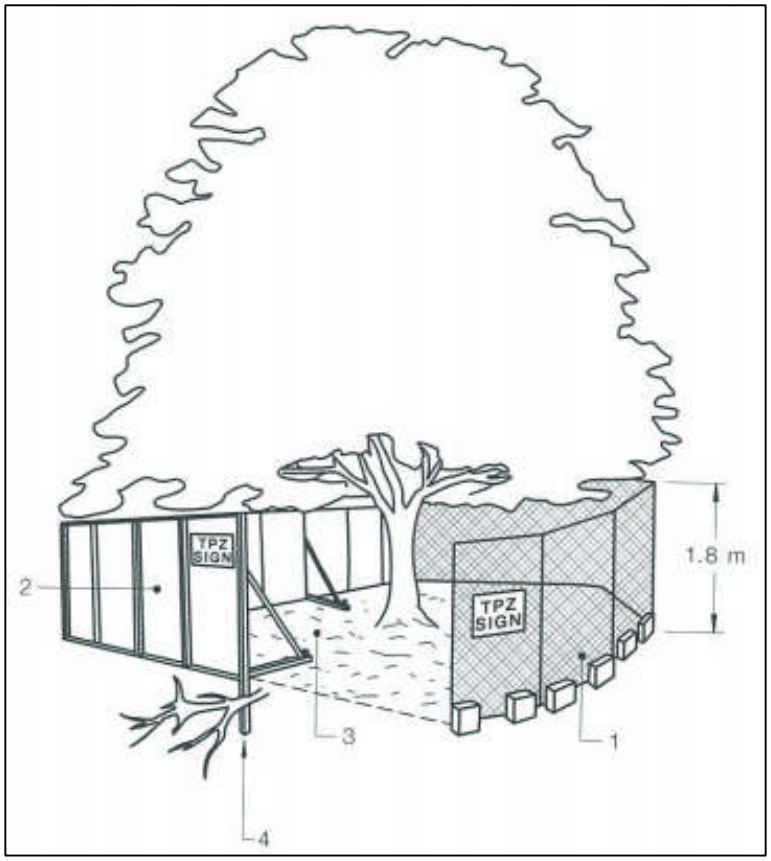
Hold Point	Task	Responsibility	Certification	Timing of Inspection
1	Establishment of tree protection	Principal Contractor	Project Arborist	Prior to the issue of the Construction Certificate
2	Supervise all excavation works within the TPZ	Principal Contractor	Project Arborist	As required prior to the works proceeding adjacent to the tree(s)
3	Periodic inspection of tree(s)	Principal Contractor	Project Arborist	As required (usually following any works within or near to the TPZ) and/or monthly
4	Final Inspection of trees	Principal Contractor	Project Arborist	Prior to the issue of the Occupation Certificate

3. Tree Protection Fence

Protective Fencing is to be installed, as per AS-4970 or as noted above to the full extent of the TPZ(s) within the site prior to any materials being brought on site or before any site, civil works or construction works commence. The fence shall enclose a sufficient area so as to prevent damage to the TPZ. This fence must remain unbreeched until all works around the tree have been finalised.

The tree protection fence to comprise either 1800mm high chain wire mesh or 2.4m x 1.8m temporary fence panels fixed to 50mm diameter galvanised steel posts or star pickets, driven into the ground. Panels, if used, should be securely fixed top and bottom to avoid separation. Refer to the diagram below and Appendix C for further tree protection fencing guidelines.

Diagram #1: Tree Protection Fencing
(From: Australian Standard AS-4970-2009)



LEGEND:

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. This 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 must avoid damaging roots

4. Mulch

Install mulch to the extent of all tree protection fencing.

Use a leaf mulch conforming to AS-4454 which is free of deleterious and extraneous matter such as soil, weeds, sticks and stones and consisting of a minimum of 90% recycled content compliant with AS-4454 (1999) and AS-4419 (1998). (All trees marked as to be removed on the proposed development are to be chipped and reused for this purpose.)

Place mulch evenly and to a depth of at least 100mm.

5. Signage

Prior to works commencing, tree protection signage is to be attached to each tree protection zone, displayed in a prominent position. Refer to Appendix C & D for further instruction re signage.

6. Trunk and Branch Protection

If trunk and branch protection is to be installed, the trunk and branches in the lower canopy are to be protected by wrapping 2 layers of hessian or carpet underfelt around the trunk and branches, then metal strapping secures 38 x 50 x 2000mm timber battens together around the trunk or branch (do not nail or screw to the trunk or branches). The number of battens to be used is as required to encircle the trunk and the battens are to extend to the base of the tree, as shown in Appendix D)

All trunk and branch protection is to be to the direction and approval of the Project Arborist.

7. Excavation within Tree Protection Area

No excavation is to be carried out within the TPZ(s) of the retained tree(s) without the permission and supervision of the Project Arborist

TREE PROTECTION MEASURES - DURING CONSTRUCTION

1. Maintenance of Pre-Construction Tree Protection Measures

The Pre-Construction Tree Protection Measures identified above are to be maintained in good and serviceable condition throughout the construction period.

All Tree Protection Measures are to be in accordance *AS4970-2009 Protection of Trees on Development Sites.*

2. Possible Contaminants

Do not store or otherwise place bulk materials and harmful materials under or near trees.

3. Physical Damage

Prevent damage to tree. Do not attach stays, guys and the like to trees. No personnel, plant, machinery or materials are to be allowed within the tree protection fencing.

4. Compaction

No filling or compaction shall occur over tree roots zones within tree protection fenced areas. Where construction occurs close to or the TPZ of trees to be retained it shall be necessary to install protection to avoid compaction of the ground surface. Techniques such as rumble boards or plywood sheets over mulch can be used where vehicle or pedestrian traffic occurs. Load spreading boards should be placed beneath scaffolding feet within the TPZ.

5. Trenching

Should any trenching be required within the TPZ(s) the Project Arborist must assess and investigate alternatives. This trenching work may need to be carried out by hand and under the supervision of the Project Arborist.

6. Irrigation/Watering

A permanent water point (tap) must be installed at the edge of the TPZ(s) so as to allow irrigation to the tree(s).

Soil moisture levels are to be adequately maintained such that the tree(s) to be retained and protected will need to be watered during dry spells. A dry spell could be defined as at least 14 days with no significant natural rainfall (i.e. <10mm).

Watering should be deep but infrequent and a good rule of thumb would be to slowly water the area beneath the dripline of the tree for 2 -3 hours every 10 – 14 days. Moisture levels should be checked on a regular basis to ensure that the soil is not dried out or waterlogged.

A temporary irrigation system with a battery-powered timer must be installed so that watering of the tree(s) can occur without input from anyone other than the Project Arborist checking the irrigation and timer. Spray irrigation should be used rather than drip irrigation as the latter does not provide a complete wetting pattern and therefore only small areas of the tree's available root area can be reached by this method.

TREE PROTECTION ZONE REQUIREMENTS.

Tree Protection Zones (TPZs) must be set out before the commencement of construction works.

According to AS 4970-2009 'Protection of Trees on Development Sites', activities excluded from the TPZ include but are not limited to the following:

- Machine excavation, including trenching
- Excavation for silt fencing
- Cultivation
- Storage
- Preparation of chemicals, including preparation of cement products
- Parking of vehicles and plant machinery/equipment
- Refuelling
- Dumping of waste
- Wash down and cleaning of equipment
- Placement of fill
- Lighting of fires
- Soil level changes
- Temporary or permanent installation of utilities and signs
- Physical damage to the tree(s)

Source: Australian Standars AS 4970-2009 Protection of Trees on Development Sites.

SIGNAGE

A 600mm x 450mm prohibition sign , complying with AS1319 stating:

"NO ENTRY - TREE PROTECTION ZONE"

and including contact details of the site foreman is to be attached to the fence to be visible from all sectors of the site, and remain in place until all construction has been completed.

TREE PROTECTION FENCING METHODS:

Tree protection fencing panelsmust be a minimum of 1.8 metres in height and be held in place with locking clamps and star pickets between each panel The star pickets must be driven into the ground to a depth of at least 300mm. (See picture below). This is to help create a sturdy and relatively immovable tree protection fence. Plastic or concrete temporary fence bases (feet) are NOT acceptable. All temporary fencing should also comply with AS 4687-2007 'Temporary Fencing and Hoarding'.

APPENDIX D.

KEY TO ABBREVIATIONS USED IN TREE SURVEY TABLES

Diameter at Breast Height (dbh): Diameter at breast height in millimetres: Tree trunk diameter measured at breast height (1.3metres above ground level)

Canopy Spread (CS): Average canopy diameter in metres

Vigour: (Good/Fair/Poor) The general appearance of the above ground sections of the tree at the time of inspection.

Form: (Good/Fair/Poor) The general shape of the tree, taking into consideration growth patterns which may affect the health, safety or longevity of a tree.

Terms that may be used in relation to Tree age and size:

Sapling - A juvenile tree in the early growing stage

Semi-mature - The tree is still actively growing in size

Mature - The developmental growing stage is complete, and the tree is near full size

Over-mature - The tree will not increase significantly in size and is likely to go into slow decline over ensuing years

Useful Life Expectancy (ULE): A systematic tree assessment procedure.
It gives a length of time that the Arborist gauges a particular tree can be retained with an acceptable level of risk based on the information available at the time of the inspection.

ULE Ratings:

Long - Retainable for 40 years or more with an acceptable level of risk

Medium - Retainable for 16-39 years with an acceptable level of risk

Short - Retainable for 5-15years

Removal - Tree requiring immediate removal due to imminent hazard or absolute unsuitability

Significance Rating Scale: A site specific evaluation of a tree relative to its setting.
This gives a general idea of whether a tree is worthy to retain and maintain or to consider removal and replacement.

1. **Most significant** - Warrants retention and design modifications and TPZ to ensure this.
2. **Significant** - Warrants retention and remedial pruning & treatments and design modifications.
3. **Somewhat significant -** Warrants retention if no design changes are needed; or warrants removal if excessive pruning or treatment is required.
4. **Least significant -** Removal would not result in any loss of site amenity. Can include weed species.
5. **Hazardous** - Must be removed irrespective of any development.

Tree Protection Zone (TPZ) The distance required to be fenced off and remain undisturbed for the duration of the development so the tree and its root zone can be protected.

Structural Root Zone (SRZ) The area considered essential for tree stability: loss of roots in this area are likely to cause the tree to become unstable in the ground.