

# REPORT:

## ARBORICULTURAL ASSESSMENT TREE RISK ASSESSMENT & TREE PROTECTION PLAN

**Baaka Cultural Centre**  
**42 Reid Street**  
**Wilcannia NSW *(the site)***

Prepared 17 February 2022  
for  
Department of Regional NSW  
Reference 24043  
Revision.02

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## 1.0 INTRODUCTION & RECOMMENDATIONS

Urban Tree Management© has prepared this report for the Public Works Advisory | Department of Regional NSW, Level 1, 346 Panorama Avenue, Bathurst NSW 2795. This report is a Tree Risk Assessment Level 2 (TRAQ) (ISA) for 1 tree, Tree 1 *Jacaranda mimosifolia* – Jacaranda (*the tree*) located adjacent the front boundary within the Baaka Cultural Centre, 42 Reid Street, Wilcannia NSW (*the site*). The report considers the tree for its stability, viability, and risk, subject to the restoration and reuse of *the site*. This report includes a Tree Protection Plan per AS4970(2009) for the management of the tree during all stages of development works at *the site* including remedial works to prolong its retention.

It is proposed to retain Tree 1 as it is of historical significance as a planting commemorating returned military services personnel. The tree is extensively structurally deteriorated but is suitable to be managed for retention by the application of the remedial works detailed in this report to remedy or mitigate risk, where considered appropriate, subject to ongoing monitoring and ongoing maintenance of the works prescribed and risk mitigation devices applied.

The tree was deteriorated, with structural branches shed from its split and hollow trunk. Minimal original foliage remained and some recent epicormic shoots had arisen close to the trunk forming most of the live crown. This Tree Risk Assessment and Tree Protection Plan provide a management strategy for the tree to be incorporated into the restoration and re-use of *the site*. The remediation and protection detailed are provided to prolong the retention of the tree. The tree will require ongoing annual pruning to maintain tree height and crown spread. The structural branches will require bracing to assist to control the risk of failure of the split trunk and will require assessment annually and adjustment as required or replacement per manufacturers' specifications.

The tree was in a Low use area as *the site* was vacant but located in a position adjacent the road reserve which was a Low - Medium use area due to pedestrian traffic. The site and road reserve are expected to become a Medium - High use area when *the site* is repurposed and again occupied.

Danny Draper (*the author*) as an independent Consulting Arboriculturist attended 42 Reid Street, Wilcannia NSW (*the site*) on Tuesday 8 February 2022 and conducted a Visual Tree Assessment (Mattheck & Breloer 1994) (Appendix A – Tree Assessment) and a Tree Risk Assessment (Dunster *et al*, 2017) of the tree and its growing environment from the ground to determine hazards and risk to the targets identified within the site and adjoining road reserve. The tree is shown in the Tree Location Plan (Appendix B).

The works recommended are prioritized 1-3:

Priority 1 - Immediate remedial action, unacceptable consequences/extreme safety risk, *Removal, Pruning, Isolation*

Priority 2 - Action within 6 months, *Removal, Pruning, further investigative or scientific testing works required*

Priority 3 - Currently no action required within the next 12 months

This report assessed 1 tree in a Low to Low-Medium-use area with the status expected to change Medium-High-use when the site is re-occupied and the road reserve busier.

Due to the tree having a split at the union of the first order structural branches (FOSB) extending down the trunk, the 2 remaining FOSB will require branch bracing with a proprietary system to support the tree and its crown and trunk. The tree will require Deadwooding and Remedial (restorative) Pruning to reduce the Superior first order structural branch (FOSB) to West, 2<sup>nd</sup> order branch to North, (500 x 350 mm diameter) and 2<sup>nd</sup> order branch to West (300 mm diameter) to 2.5 m above branch union, while protecting epicormic shoots to be retained. The epicormic shoots on the 2 remaining FOSB will require ongoing remedial works as pruning annually, to maintain the crown height at 5 m and the radial crown spread at 5 m (crown projection) to ensure the fragile trunk is not overloaded, reducing the centre of mass of the tree as the crown grows. With the application of the tree protection works and ongoing remedial and risk assessment works detailed in this report, including ongoing maintenance, the tree could be retained for up to 10 years or more.

The structural branches are to be braced to protect the trunk from collapsing (Figure 1.0). If after Deadwooding and during branch bracing installation the tree is found to be too brittle to sustain the branch bracing system, the structural integrity and stability of the tree will require this Tree Risk Assessment to be updated, to determine the tree's viability and suitability for retention, or consideration of alternative remedial works for its retention, or removal and replacement with an advanced specimen.

The Tree Bracing System is to be monitored annually and adjusted as required and replaced at a duration as specified by the manufacturer. The Tree Bracing system is to be installed per the manufacturers specifications (Cobra Tree Bracing System, <https://youtu.be/vCqVi5J1Y8M?t=20>). It is recommended that the Cobra Tree Bracing System - 4T Complete Kit (4 Tonne capacity), be applied to utilise its flexible supports and shock-absorbing mechanisms which allow low-resistance oscillation in the trunk and branches for the tree to develop beneficial adaptive growth in response to the loading stimulus. We suggest the Cobra Tree Bracing System – 4T, be professionally installed by an experienced Arborist with minimum qualification AQF Level 3 in Arboriculture.

The tree was previously supported by irrigation which assisted its vigour but likely reduced its resilience (Photograph 10.0) and is expected to have contributed to its decline once the water supply to the tree was stopped. To continue the resilience currently exhibited by epicormic growth, the tree should only be watered occasionally during prolonged hot weather and not supported by regular irrigation. The root system is expected to have died back corresponding to the crown dieback and is now likely to be concentrated within approximately 3 m of the trunk. The tree has the propensity to continue to grow once the dead wood is removed. This will require root protection from soil compaction as a Root Protection Zone for a 3 m radius from the center of trunk. Protection works are described further in the Tree Protection Plan (Appendix C).

Works are recommended for trees in *High-use* for *Priority 1* or *Priority 2* situations only. Recommendations are presented in tabular form, **Table 1.0 *Priority 1* Trees to be removed or pruned** and **Table 2.0 *Priority 2* Trees and requiring further investigative or remedial works**. Trees identified as *Priority 3* *Currently no action required within the next 12 months* do not require any works and are not included in the Recommendations.

The tree is to be pruned and remedial works undertaken per the Tree Protection Plan prepared per AS4970(2009) *Protection of trees on development sites*.

**Table 1.0 Priority 1** Trees to be removed or pruned as indicated.

Tree No	Priority for Removal – unacceptable consequences/extreme safety risk 1 = Yes	Priority for Pruning <u>Deadwooding</u> throughout crown. <u>Reduction Pruning</u> over target in <u>Lower</u> / <u>Mid</u> / <u>Upper</u> crown, to <b>N, S, E, W</b> . <u>Selective Pruning</u> over target in <u>Lower</u> / <u>Mid</u> / <u>Upper</u> crown, to <b>N, S, E, W</b> .
N/A	N/A	N/A

**Table 2.0 Priority 2** Tree/s requiring Removal, Pruning, remedial or Further investigative or scientific testing works.

Tree No	1 Aerial inspection 2 Aerial inspection & Resistograph test	1 Resistograph test of Trunk from ground 2 Aerial inspection & Resistograph test of Trunk	1 Root crown excavation 2 Root crown excavation & Resistograph test	1 Ongoing monitoring required	Removal <u>Deadwooding</u> throughout crown. <u>Reduction Pruning</u> over target in <u>Lower</u> / <u>Mid</u> / <u>Upper</u> crown, to <b>N, S, E, W</b> . <u>Selective Pruning</u> over target in <u>Lower</u> / <u>Mid</u> / <u>Upper</u> crown, to <b>N, S, E, W</b> . <u>Remedial (restorative) pruning</u>
1	N/A	N/A	N/A	1. The Tree Bracing System is to be monitored annually and adjusted as required and replaced at a duration specified by the manufacturer.  2. The epicormic shoots on the 2 remaining FOSB will require ongoing remedial works as pruning annually, to maintain the crown height at 5 m and the radial crown spread at 5 m (crown projection) to ensure the fragile trunk is not overloaded, reducing the centre of mass of the tree as its crown grows.  3. Paramount to the retention of Tree 1, is that a Tree Risk Assessment (TRAQ) of Tree 1 should be conducted annually to manage its suitability for retention to determine its physical condition, risk, and remedial works that may be required or removal and replacement.	1. Remove deadwood.  2. Crown reduce Superior first order structural branch (FOSB) to <u>West</u> , 2 <sup>nd</sup> order branch to <u>North</u> , (500 x 350 mm diameter) and 2 <sup>nd</sup> order branch to <u>West</u> (300 mm diameter), to 2.5 m above branch union. Protect epicormic shoots to be retained.  3. Cable brace the Inferior FOSB to <u>East</u> to the Superior FOSB to <u>West</u> , 2 <sup>nd</sup> order branch to <u>North</u> , (500 x 350 mm diameter) and 2 <sup>nd</sup> order branch to <u>West</u> (300 mm diameter), to support the trunk from splitting further.



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## 2.0 METHODOLOGY & LIMITATIONS

**Note: Individual methodologies applied as applicable.**

- 2.1 This has been prepared for trees in High-use areas. An assessment of each tree was undertaken as a TRAQ Level 2: Basic Assessment (Dunster et al, 2017, pp. 20-23).

The Public Works Advisory acts as the Tree Risk Manager for *the site* (Dunster et al, 2017, p. 4) as the tree owner, property manager and controlling authority (on behalf of the Department of Regional NSW).

UTMA acts as the Tree Risk Assessor (Dunster et al, 2017, p. 4) for the purposes of this report to determine the agreed tree/s to be assessed located in High-use areas, and then conduct a Level 2 Limited Assessment (Dunster et al, 2017, pp. 20-23) of these tree/s per the Tree Risk Assessment Qualification (TRAQ) system of Tree Risk Assessment applied.

- 2.2 The method of assessment of tree/s applied is adapted from the principles of Visual Tree Assessment (VTA) (Mattheck and Breloer, 1994) where each tree is assessed for anomalies that vary from expected average growth characteristics for the taxa when structurally sound, and a qualitative tree risk assessment using the Level 2: Basic Assessment of the Tree Risk Assessment Qualification (TRAQ) developed by the International Society of Arboriculture (ISA). The tree/s examined will be recorded on the UTMA Site Assessment Record – Tree Risk Assessment TRAQ. **This assessment and report are valid for 12 months from the date of inspection/assessment being the period that the likelihood of failure is estimated.**

- 2.3 A Visual Tree Assessment is limited to observations made from the ground and trees as natural and dynamic living structures inherently have component parts that may be subject to failure and collapse in full or part despite appearing free from hazards and growth anomalies. This is due primarily to interactions with the environment (biotic and abiotic) such as predation from insects, birds and decay and ongoing multi-directional loading forces (primarily compression, tension, torsion, and shear) encountered from wind loading and rain. As their mass and shape changes over time, these often become foreseeable only by thorough investigative examination from the ground (TRAQ Level 2) or of the crown by an aerial inspection and/or testing of the structural branches and trunk with a Resistograph, or root crown excavation examination and Resistograph testing. The latter 2 are examples of TRAQ Level 3. Advanced Assessment (Dunster et al, 2017, pp. 23-33) and the assessor will make recommendations for such testing where it is considered necessary.

- 2.4 The *Level 2: Basic Assessment* of the Tree Risk Assessment Qualification (TRAQ) developed by the ISA considers the following process:

- Locate and identify the tree or trees to be assessed.
- Determine the targets and target zone for tree or branches of concern.
- Review site history, conditions, and species failure profile.
- Assess potential loads on the tree and its parts.
- Assess general tree health.
- Inspect the tree visually using binoculars, mallet, probes, or shovel, as desired by the arborist or as specified in the scope of work.
- Record observations of site conditions, defects and outward signs of possible internal defects and response growth.
- If necessary, recommend an advanced assessment.
- Analyse data to determine the likelihood and consequences of failure to evaluate the degree of risk.
- Develop mitigation options and estimate residual risk for each option.
- Develop and submit the report/documentation, including, when appropriate, advice on reinspection intervals.

- 2.5 Any dimensions recorded as averages, or by approximation are noted accordingly.
- 2.6 In this report Pruning as *Deadwooding* refers to *Large Deadwood*.
- 2.7 Photographs are provided of trees or tree parts categorised as “*Priority for Removal – unacceptable consequences/extreme safety risk*” rating of *Likelihood of failure, Imminent* in a *High-use area* or a *Moderate-use area*, and where possible the particular hazard/s posing a risk which may require mitigation.
- 2.8 The meanings for terminology used in this report are taken from the following sources:  
IACA Dictionary for Managing Trees in Urban Environments (Draper and Richards, 2009), and  
Tree Risk Assessment Manual, 2<sup>nd</sup> edition (Dunster *et al* 2017, pp. 179-186).
- 2.9 Trees in *High-use* areas included by this Tree Risk Assessment are shown in Appendix B – Tree Location Plan. Additional trees in *Moderate-use* and *Low-use* areas agreed to be assessed by the Tree Risk Manager and Tree Risk Assessor will be added to the plan as required.
- 2.10 This Tree Risk Assessment Report will be prepared within a reasonable timeframe after the conclusion of the Tree Risk Assessment. Where a situation arises resulting in an unexpected delay the client will be advised of progress and of a time frame to complete the report.

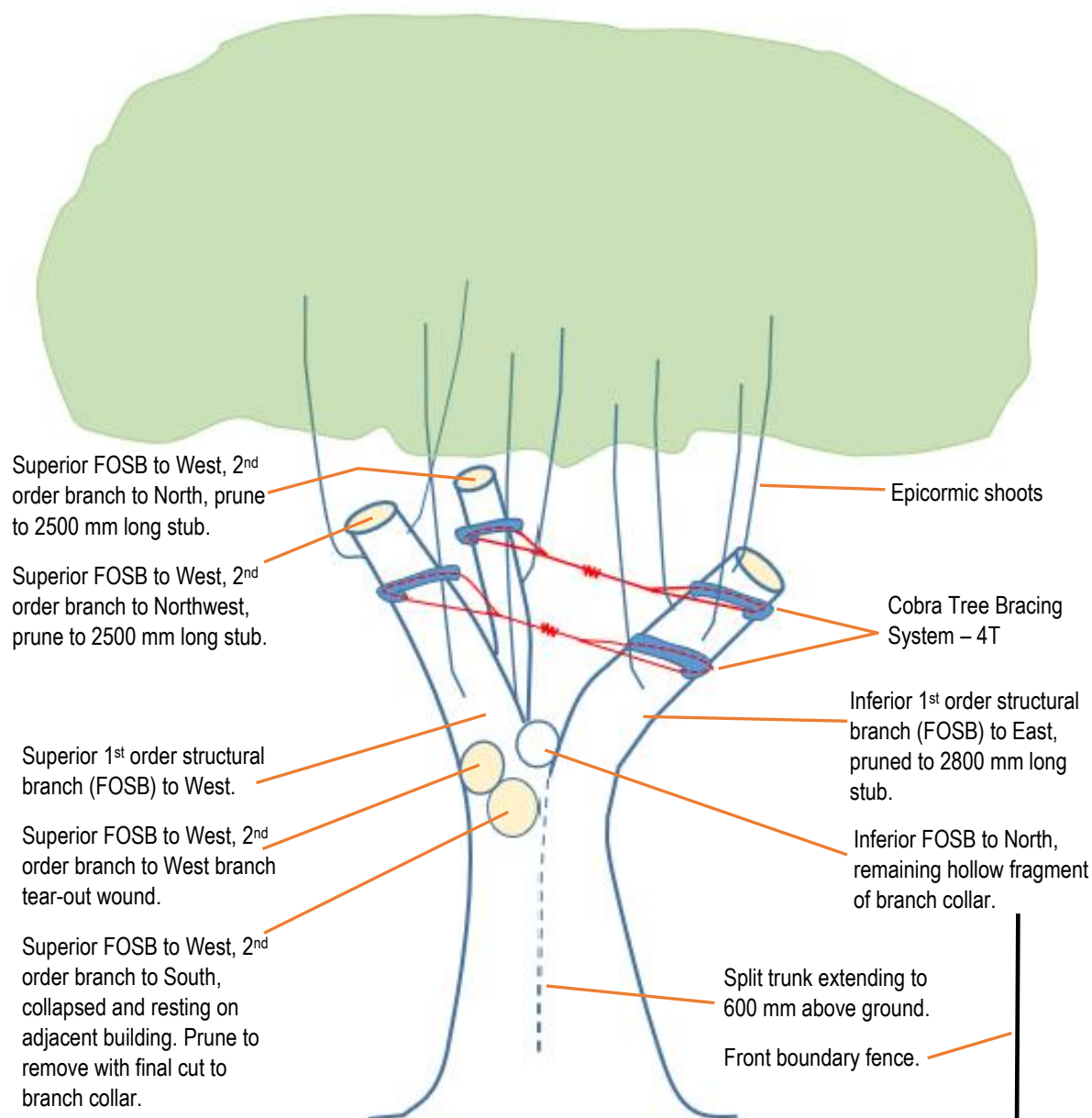
### 3.0 PRUNING STANDARDS

- 3.1 Any pruning recommended in this report is to be to the Australian Standard® AS4373 Pruning of amenity trees and conducted in accordance with the Guide to Managing Risks of Tree Trimming and Removal Work, (Safe Work Australia, 2016).
- 3.2 All pruning or removal works are to be in accordance with the appropriate Tree Management Policy where applicable, or statutory planning laws, policies, or instrument for the management of trees or vegetation.
- 3.3 Tree maintenance work is specialised and in order to be undertaken safely to ensure the works carried out are not detrimental to the survival of a tree being retained, and to assist in the safe removal of any tree, should be undertaken by a qualified Arboriculturist with appropriate competencies recognised within the Australian Qualification Framework, with a minimum of 5 years of continual experience within the industry of operational amenity arboriculture, and covered by appropriate and current types of insurance to undertake such works.

## TREE RISK ASSESSMENT – of trees in high-use areas

Tree No.	Genus & species / Common Name	Condition G = Good F = Fair P = Poor M = Moribund D = Dead	Age Y = Young M = Mature O = Overmature	Ht. Approx. Metres	Defects CH = Cavity / Hollow CB = Cracks/Bulge/Buckling FR = Fungal Fruiting bodies SL = Severe Lean (>45°) PL = Progressive Lean <45° DB = Detached branch BI = Bark Inclusion BD = Bird damage B = Borer L = Lopped RD = Root Damage/Heaving / Soil cracks DW = Large deadwood OT = Other (comment?)	Tree	Conditions of concern	Part size, mm	Fall distance, metres	Target number	Target protection	Likelihood										Consequences	Risk rating of part (from Matrix 2)	Priority					
												Failure				Impact				Failure & Impact (from Matrix 1)									
												Improbable	Possible	Probable	Imminent	Very low	Low	Medium	High	Unlikely	Somewhat likely				Likely	Very likely	Negligible	Minor	Significant
1	Jacaranda mimosifolia Jacaranda	P	O	8	CH – Termite mud and decayed wood evident in trunk and  CB - Trunk split extends to 600 mm above ground, through the trunk north/south.  DB – On first order structural branch (FOSB) to West. The 2 <sup>nd</sup> order branch to South, (280 x 300 mm diameter), was split from the stem at the union remaining attached on the underside, approx. 6 m long, resting on the wall of the adjacent building, mostly dead, save of one epicormic shoot (40 mm diameter), 600 mm from the union.  L - The Inferior FOSB to East (400 mm diameter at base) was lopped to the property boundary forming a 2800 mm long stub. Epicormic shoots had arisen near the end and along the stem.  DW – Most of the remaining crown contains deadwood.	Split trunk, epicormic shoots and deadwood.	Collapse of trunk, deadwood and epicormic shoots onto future occupants and visitors to the site and pedestrians within the road reserve beneath the crown projection of the tree and immediately beyond crown projection.	800	14	2	Boundary fence and walls and rooves of adjacent buildings to be refurbished.		1						1		1						1	M	Priority 2 – <ul style="list-style-type: none"><li>Remove deadwood</li><li>Crown reduce Superior FOSB to <u>West</u>, 2<sup>nd</sup> order branch to <u>North</u> (500 350 mm diameter) and 2<sup>nd</sup> order branch to <u>West</u> (300 mm diameter), to 2.5 m above crotch, protect epicormic shoots on this branch.</li><li>Cable brace the Inferior FOSB to East to the Superior FOSB to <u>West</u>, 2<sup>nd</sup> order branch to <u>North</u> (500 350 mm diameter) and 2<sup>nd</sup> order branch to <u>West</u> (300 mm diameter) to support the trunk from splitting further.</li></ul>



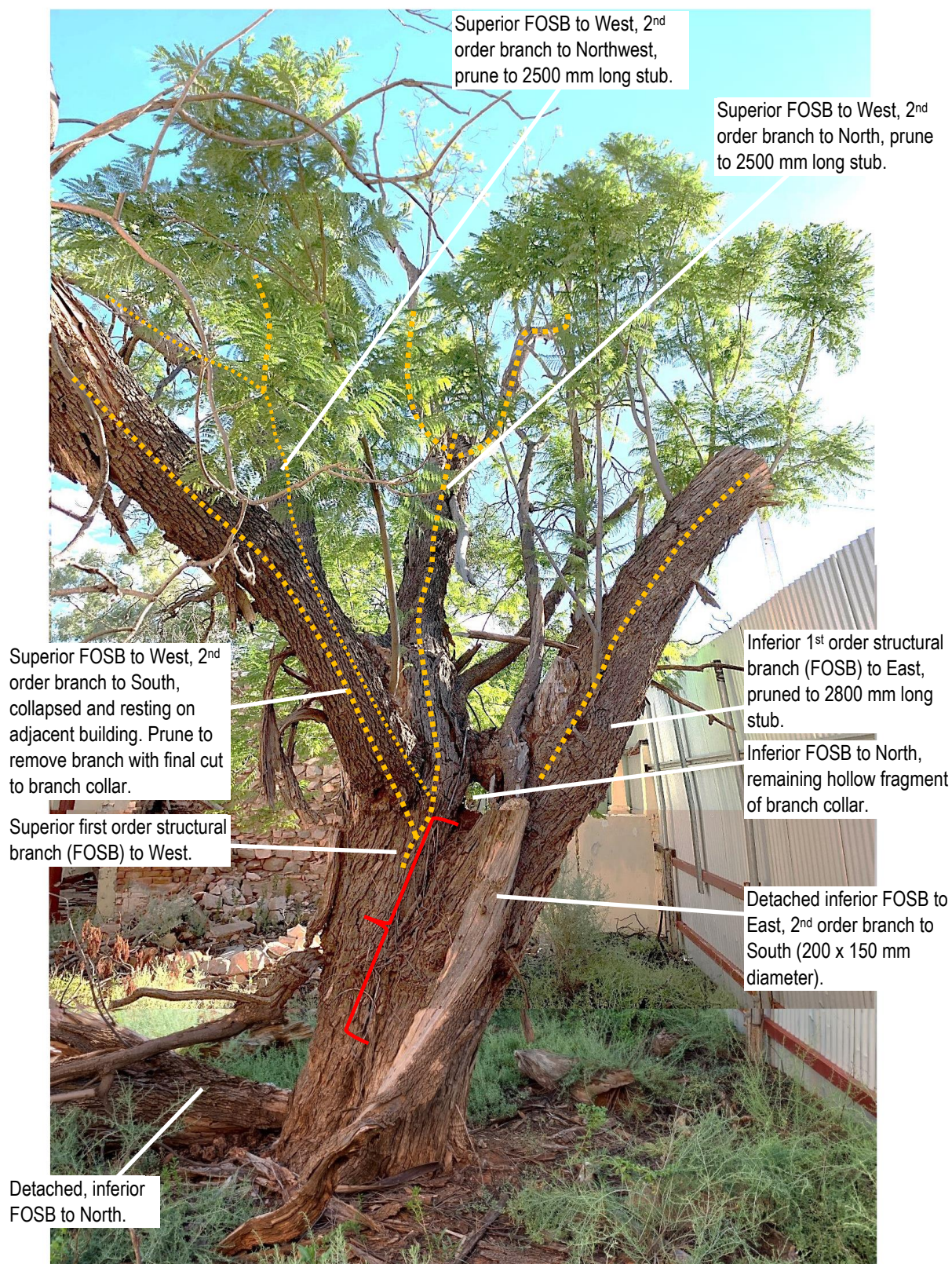


**Figure 1.0** View to North of Tree 1 *Jacaranda mimosifolia* – Jacaranda, showing structural branches, remedial pruning works and indicative location of bracing cables to protect the trunk from splitting.



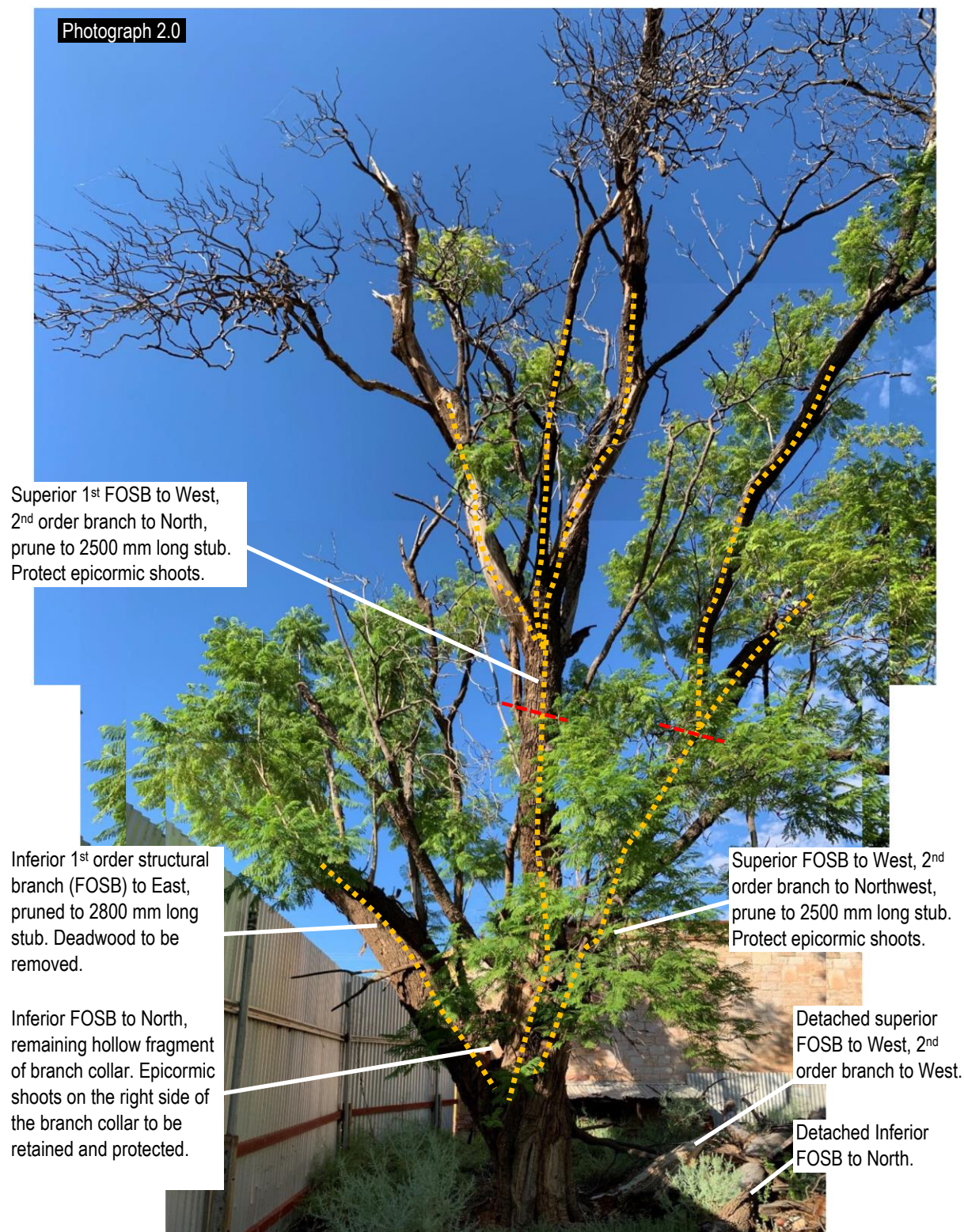
## PHOTOGRAPHIC RECORD OF EACH TREE

Photographs taken by D Draper 8/2/2022.



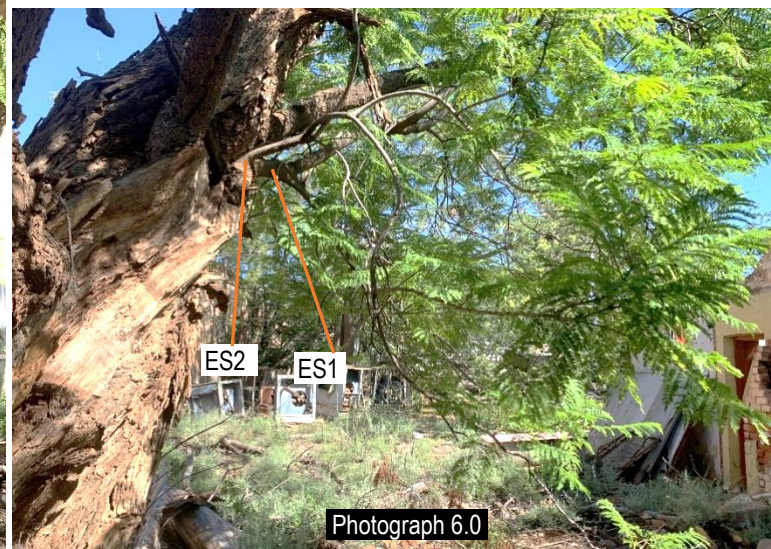
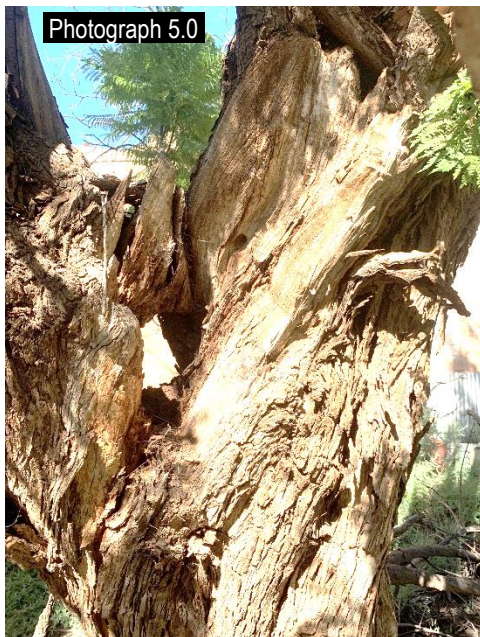
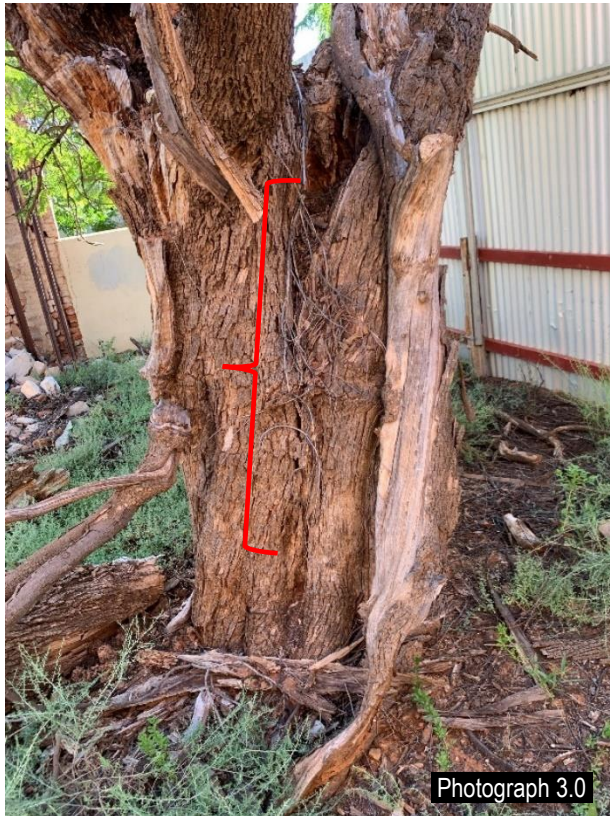
**Photograph 1.0** View to North of Tree 1 *Jacaranda mimosifolia* – Jacaranda, showing structural branches. The red brace shows extent of split in the trunk. Orange dotted lines showing approximate centre of structural branches.





**Photograph 2.0** View to South of Tree 1 *Jacaranda mimosifolia* – Jacaranda, showing structural branches. Red dotted lines show approximate locations of final cuts at 2500 mm above the branch union of the Superior FOSB to West, 2<sup>nd</sup> order branch to North, and Superior FOSB to West, 2<sup>nd</sup> order branch to Northwest, while protecting epicormic shoots. Orange dotted line showing approximate centre of structural branches.





**Photograph 3.0** View to North with red brace showing split in trunk extending to 600 mm above ground.

**Photograph 4.0** View to South with red brace showing split in trunk extending to 400 mm above ground.

**Photograph 5.0** View to South of Inferior FOSB to North, showing a circular fragment of the branch collar (centre) and remaining torn branch section (right) extending from 1650-2300 mm, supporting 2 epicormic shoots 70 mm and 40 mm diameter, approx. 2 m long at the end of the branch. Epicormic shoots on the right side of the branch collar to be retained and protected.

**Photograph 6.0** View to West of Inferior FOSB to North, showing a fragment of the branch remaining, extending from 1650-2300 mm, supporting 2 small live branches 70 mm (ES1) and 40 mm (ES2) diameter, approx. 2 m long exhibiting vigorous and typical foliage. Epicormic shoots to be retained and protected.

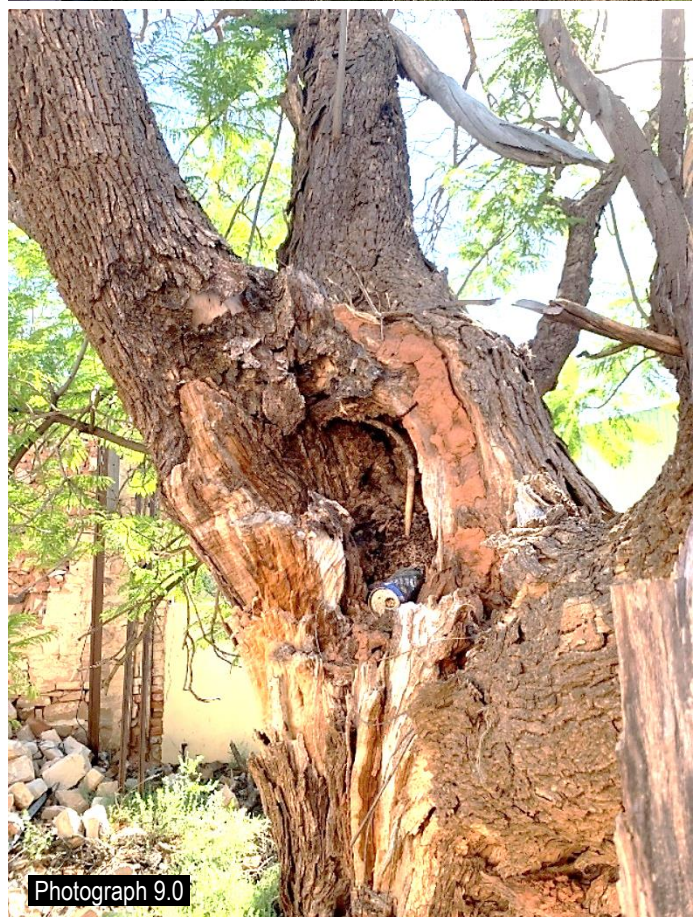




**Photograph 7.0** View to West of Superior FOSB to West, 2<sup>nd</sup> order branch to South, collapsed and resting on adjacent building. Prune to remove branch with final cut to branch collar.

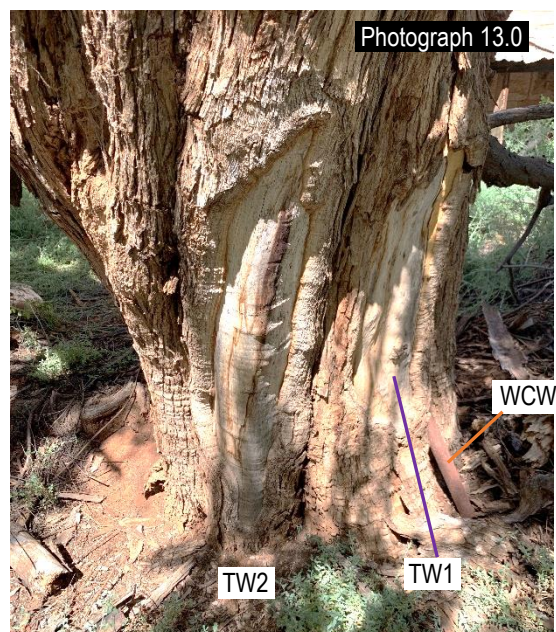
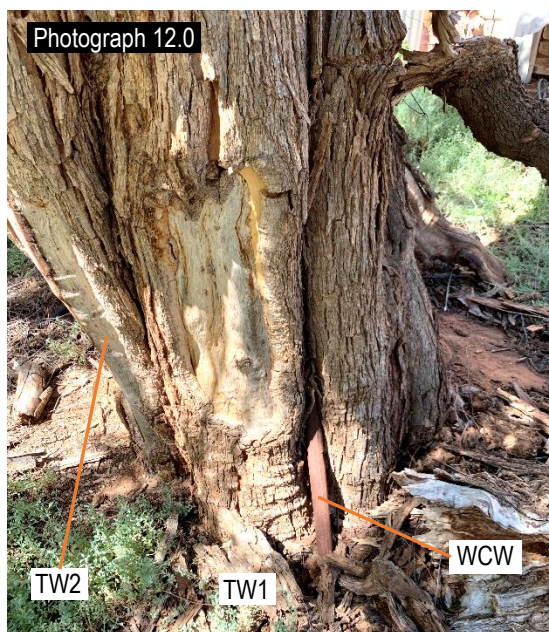


**Photograph 8.0** View to Southeast of Superior FOSB to West, 2<sup>nd</sup> order branch to South, collapsed and resting on adjacent building. Prune to remove branch with final cut to branch collar.



**Photograph 9.0** View to North of Superior FOSB to West, 2<sup>nd</sup> order branch to West, branch tear-out wound (centre) showing termite mud and decayed heart wood and trunk hollow.





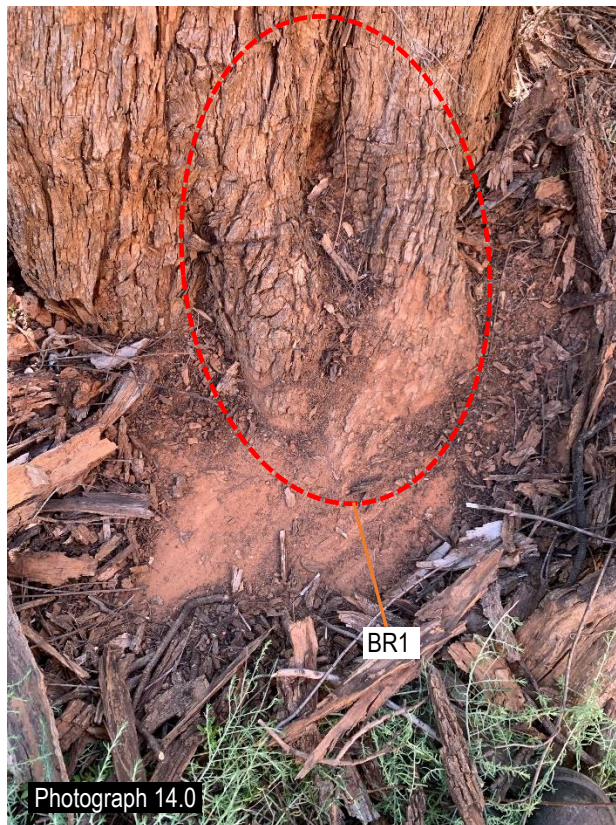
**Photograph 10.0** View to West of 1 structural root to East, 100 mm diameter at trunk, extending 1400 mm where it appeared to descend. Also showing black PVC irrigation pipe (PVC) that was likely once used to support the tree but contributed to its decline once the water supply to the tree was stopped.

**Photograph 11.0** View to South of trunk wounds 1 (TW1) (right) to Northwest and 2 (TW2) (left) to North.

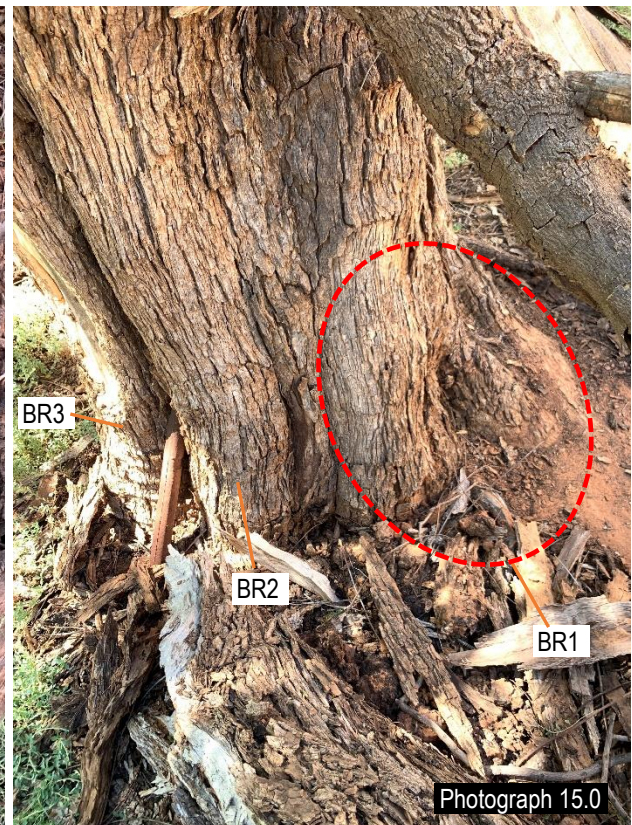
**Photograph 12.0** View to South of Trunk Wound 1 (TW1) (centre). Trunk Wound 1 (TW1) on a buttress to Northwest extending from 350-900 mm and was 160 mm at widest at centre. Dieback as cambial dysfunction evident as dry peeling bark continued distally past the wound apex adjoining the right wound margin. Likely associated with dieback of roots and crown. To the immediate right side of the buttress was a cylindrical piece of cast iron 40 mm diameter and 400 mm long (a window counterweight - WCW) imbedded in the ground 90 mm from the trunk and leaning into the trunk where a crevice in the trunk (the inter-buttress zone) with the buttress to West had grown around its top.

**Photograph 13.0** View to South of Trunk Wound 2 (TW2) (centre), extending from 50-1000 mm, and 180 mm at widest at 200 mm. Wound margins appear well-developed and vigorous.





**Photograph 14.0** View to North of a Buttress Root 1 (BR1) to Southwest, (centre with red dotted oval) 350 mm wide extending 400 mm.



**Photograph 15.0** View to Northeast of a Buttress Roots 2 (BR2) to West and 3 (BR3) to Northwest, (centre). Buttress Root 2 (BR2) to West, 500 mm wide, extending 190 mm with a vertical crease in the centre. Buttress Root 3 (BR3) to Northwest, 300 mm wide, extending 250 mm. Buttress Root 1 (BR1) to Southwest shown with a red dotted oval.

## REFERENCES

1. Arbormaster, Cobra Tree Bracing System - 4T Complete Kit, viewed 20/02/2022, <https://arbormaster.com.au/collections/cobra-tree-bracing-system/products/arbormaster-system-4-tonne-complete-kit>
2. Youtube, Cobra Tree Bracing System, <https://youtu.be/vCqVi5J1Y8M?t=20>
3. Draper BD and Richards PA 2009, *Dictionary for Managing Trees in Urban Environments*, Institute of Australian Consulting Arboriculturists (IACA), CSIRO Publishing, Collingwood, Victoria, Australia.
4. Dunster JA, Smiley ET, Matheny N, and Lilly S 2017, 2<sup>nd</sup> edition, *Tree Risk Assessment Manual*, International Society of Arboriculture, Champaign, IL. USA.
5. Mattheck C & Breloer H 1994, *The Body Language of Trees: A handbook for Failure Analysis*. TSO (The Stationery Office), London, UK.
6. NSW Government, NSW Planning Portal, Central Darling Local Environmental Plan 2012, Heritage Map – Sheet HER\_006A, viewed 23/02/2022, [https://eplanningdlprod.blob.core.windows.net/pdfmaps/1700\\_COM\\_HER\\_006A\\_010\\_20121217.pdf](https://eplanningdlprod.blob.core.windows.net/pdfmaps/1700_COM_HER_006A_010_20121217.pdf)
7. Safe Work Australia, Guide to Managing Risks of Tree Trimming and Removal Work, published 1/8/2016, viewed & July 2021, <https://www.safeworkaustralia.gov.au/system/files/documents/1702/guide-to-managing-risks-tree-trimming-removal-01082016.pdf>
8. Standards Australia 2009, Australian Standard 4970 *Protection of trees on Development Sites*, Standards Australia, Sydney NSW, Australia.
9. Standards Australia 2007, Australian Standard 4373 *Pruning of amenity trees*, Standards Australia, Sydney NSW, Australia.

## DISCLAIMER

The author and Urban Tree Management take no responsibility for actions taken and their consequences, contrary to those expert and professional instructions given as recommendations pertaining to safety by way of exercising our responsibility to our client and the public as our duty of care commitment, to mitigate or prevent hazards from arising or risks from being eliminated or mitigated or managed to reduce harm or damage, from a failure moment in full or part, from a structurally deficient or unsound tree or a tree likely to be rendered thus by its retention and subsequent deterioration from modification/s to its growing environment either existing or proposed, either above or below ground, contrary to our advice.

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## APPENDIX A – Tree Assessment

Tree ID number	Botanical Name Common name	Age Y: Young M: Mature O: Overmature (senescent)	Height (m)	Spread (m)	DBH (mm)	DARB (mm)	TPZ (m. rad) AS 4970 (2009)	SRZ (m. rad) AS 4970 (2009)	SRIV Age, Vigour, Condition / Index Rating www.iaca.org.au / Estimated Life Expectancy 1 = Long 2 = Medium 3 = Short	STARS Significance scale www.iaca.org.au 1 = High 2 = Medium 3 = Low / Retention Value 1 = High 2 = Medium 3 = Low 4 = Remove	Comments and Recommendations
1	<i>Jacaranda mimosifolia</i> Jacaranda	O	8 approx.	9 approx. N/S	800	900	9.6	3.2	OGVP – 4 / 2	1 / 2	<p>Trunk extends to 1400 mm. Crown deliquescent comprised of 3 first order structural branches (FOSB), 1 superior to West and 2 inferior, 1 each to East and North. Trunk split extends to 600 mm above ground, through the trunk north/south. Tree position measured from center of trunk. 2400 mm from front boundary with Reid Street with a concrete foot path parallel and to the property. Open to the west. No restriction. 3930 mm to wall of building to South. 6100 mm from building walls to North.</p> <p><b><u>The Superior FOSB to West</u></b></p> <p>The Superior FOSB to West, (650 x 750 mm diameter at base), was comprised of 4 x 2<sup>nd</sup> order branches, 1 each to North, South, Southwest, and West.</p> <p>The 2<sup>nd</sup> branch to <u>North</u>, (500 x 350 mm diameter), up to 12 m long, acutely divergent and ascending. Dieback to 4 m extending to the FOSB with strips of cambial dieback and epicormic shoots from 5 m with 2 x small 4<sup>th</sup> order branches with foliage, expressing tip dieback indicative of decline.</p> <p>The 2<sup>nd</sup> order branch to <u>South</u>, (280 x 300 mm diameter), was split from the stem at the union remaining attached on the underside, approx. 6 m long, resting on the wall of the adjacent building, mostly dead, save of one epicormic shoot (40 mm diameter), 600 mm from the union. This branch is to be removed by pruning.</p> <p>The 2<sup>nd</sup> order branch to <u>Southwest</u>, (320 mm diameter) detached, 6200 mm long, extending to 4<sup>th</sup> order branches approx. 110 mm diameter. Termite activity was evident as mud packed in the hollow trunk and branch. Decay activity was evident as white rot weakening the branch on its upper tension side, contributing to its structural failure and collapse.</p> <p>The 2<sup>nd</sup> order branch to <u>West</u>, (300 mm diameter), acutely divergent and ascending, up to 12 m long. Major dieback with epicormic shoots extending to 7 m approx.</p> <p><b><u>The inferior FOSB to East</u></b></p> <p>The Inferior FOSB to <u>East</u> (400 mm diameter at base) was lopped to the property boundary forming a 2800 mm long stub. Epicormic shoots had arisen near the end and along the stem. The largest 60 mm diameter and all supported typical vigorous growth. This branch had 3 mature basal epicormic shoots on its upper side, 1 each to North (200 mm diameter), 1 to West at centre, (100 mm diameter) and 1 to South (200 x 150 mm diameter). The mature basal epicormic shoot to West was dead. The mature basal epicormic shoot to North had been cut back to the property boundary with Reid Street leaving a stub approx. 2300 mm long with recent epicormic shoots (20-30 mm diameter) towards is outer end. The mature basal epicormic shoot to South was detached by a branch-tear out forming a wound and the branch was evident, leaning against the trunk. The branch tear out wound extended down the Inferior FOSB to East. The branch was approx. 9 m long, bifurcated at 3850 mm with one 3<sup>rd</sup> order branch lopped to a stub at 3900 mm with a branch tear wound.</p> <p><b><u>The inferior FOSB to North</u></b></p> <p>The Inferior FOSB to <u>North</u> (diameter 300 x 400 mm diameter) detached, up to 6 m long, piled up with the Superior FOSB 2<sup>nd</sup> order branch to West. The branch tear-out wood retained the hollow ring as a fragment of the branch collar. The wound extended to the hollow center of the trunk with detritus as humus present. A fragment of the branch remained on the right side extending from 1650-2300 mm, supporting 2 small live branches 70 mm and 40 mm diameter and approx. 2 m long at the end of the branch (basal epicormic shoots of the branch). An adjacent mature basal epicormic shoot (120 mm diameter, extended to 3000 mm approx.) to Northeast was dead and cut to the property boundary with Reid Street.</p> <p><b><u>Structural Roots, Trunk Wounds and Buttresses.</u></b></p> <p>1 <u>Structural Root</u> to <u>East</u>, 100 mm diameter at trunk, extending 1400 mm where it appeared to descend.</p> <p>2 <u>Trunk Wounds</u> on the north side. The wounds appear Trunk Wound 1 (TW1) on a buttress to <u>Northwest</u> (discussed below) and Trunk Wound 2 (TW2) on to <u>North</u>, 50-1000, 180 mm at widest at 200 mm. TW1 wound margins appear well-developed and vigorous.</p> <p><b><u>Buttress Roots</u></b></p> <p>A buttress root to <u>Southwest</u>, 350 mm wide extending 400 mm.</p> <p>A buttress to <u>West</u>, 500 mm wide, extending 190 mm with a vertical crease in the centre.</p> <p>A buttress to <u>Northwest</u>, 300 mm wide, extending 250 mm. The trunk at this location had a wound extending from 350-900 mm and was 160 mm at widest at centre. Wound margins were 40 mm wide and 20 mm deep. Wound apex and base irregular, base tending to rounded. Dieback as cambial dysfunction evident as dry peeling bark continued distally past the wound apex adjoining the right wound margin. Likely associated with dieback of roots and crown. The wound face showed negligible weathering or discolouration of exposed sapwood, indicative of a recent wounding event. To the immediate right side of the buttress was a cylindrical piece of cast iron 40 mm diameter and 400 mm long (a window counterweight) imbedded in the ground 90 mm from the trunk and leaning into the trunk where a crevice in the trunk (the inter-buttress zone) with the buttress to West had grown around its top.</p>

## Appendix B – Tree Location Plan, 1 of 2.

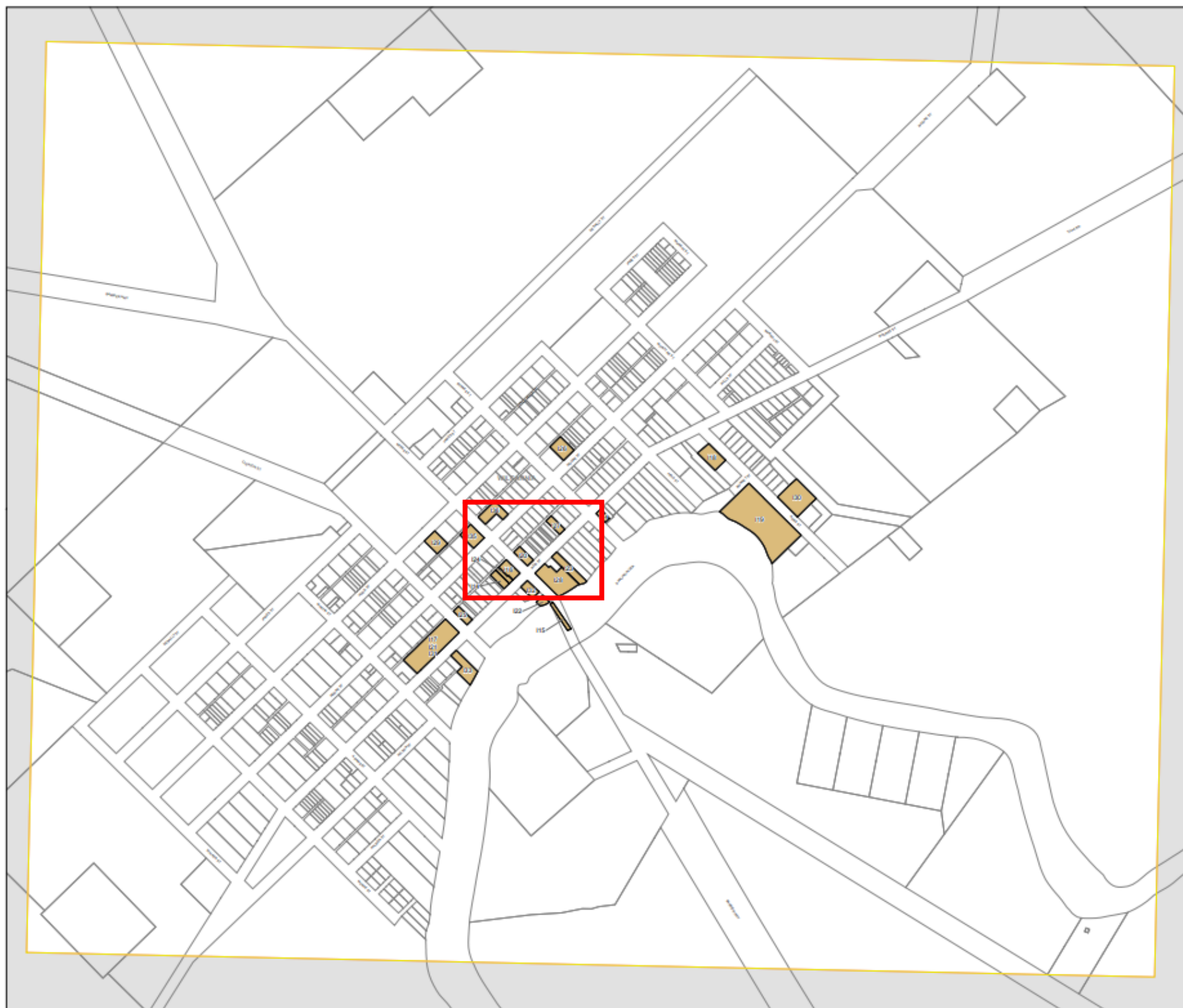
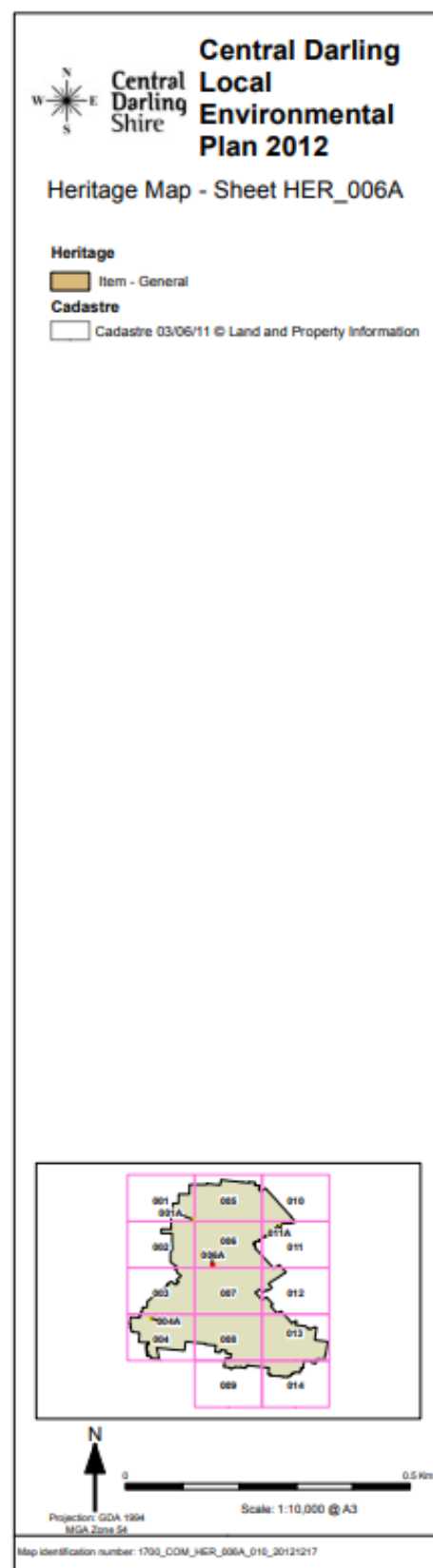
Baaka Cultural Centre, 42 Reid Street, Wilcannia NSW. Ref. 24043, Revision.01, 17/02/2022.

Prepared by Urban Tree Management Australia P/L, 65 Excelsior Street, Merrylands NSW 2160, tel. 02 9760 1389.

From NSW Government, NSW Planning Portal, Central Darling Local Environmental Plan 2012, Heritage Map – Sheet HER\_006A



Heritage Map – Highlighted red section showing location of subject tree (see Inset Plan) - Appendix B – Tree Location Plan, 2 of 2.



Appendix B – Tree Location Plan, 2 of 2.  
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From NSW Government, NSW Planning Portal, Central Darling Local Environmental Plan 2012, Heritage Map – Sheet HER\_006A



Legend

TN 10.

Tree/s or stands of trees numbered in orange and bold or surrounded by an unbroken line are recommended for retention.

TN 11.

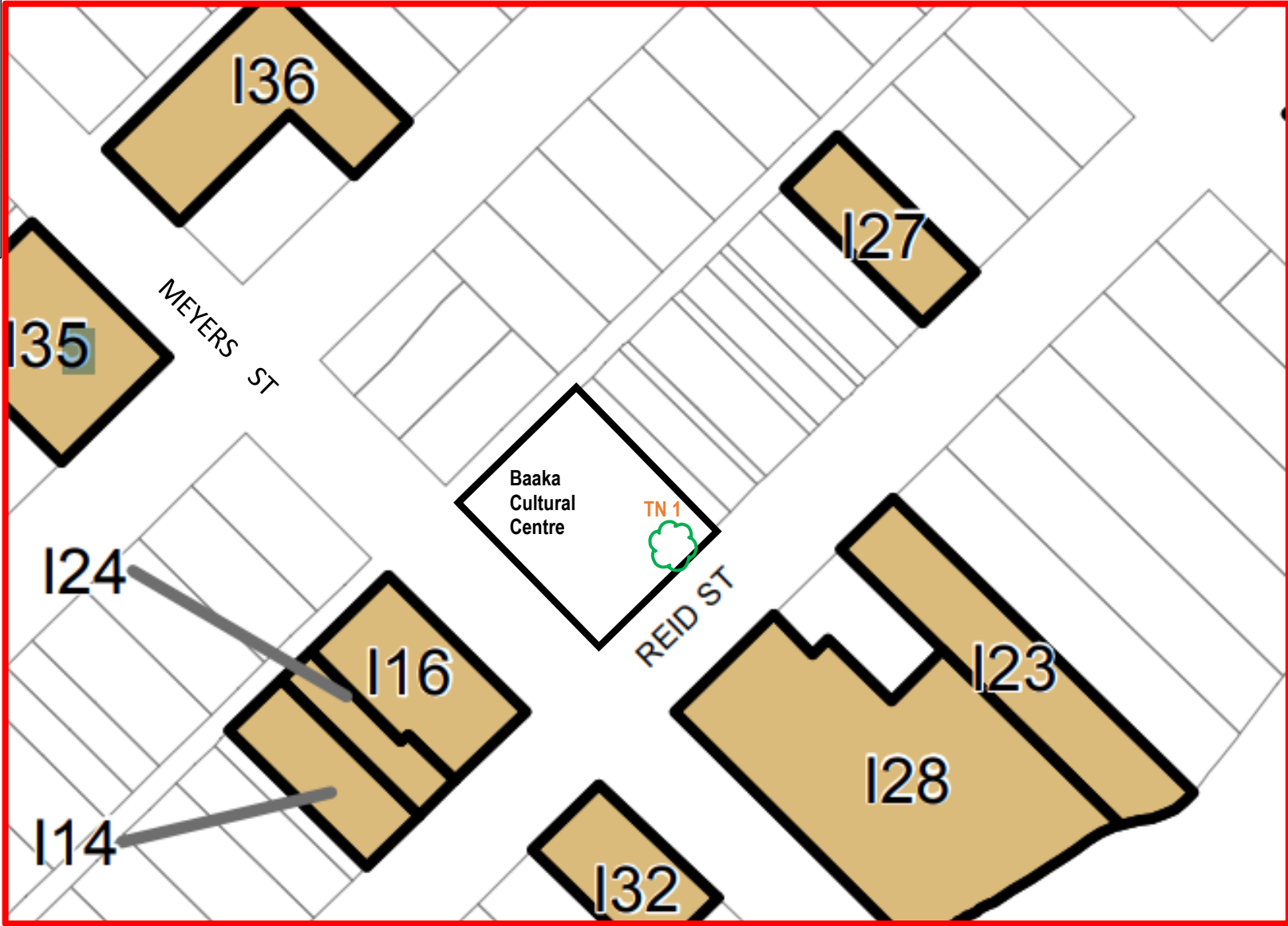
Tree/s or stands of trees numbered in blue and not bold or surrounded by a broken line are recommended for removal.

Note: trees indicated, unnumbered are either shrubs, or trees of species, or dimensions, or condition class not protected by the Tree Preservation Order or trees not affected by the proposed works or were already removed.



Heritage Map – Highlighted red section showing location of subject tree (see Inset Plan)

Inset Plan - Heritage Map – black outlined area showing location of subject tree within Baaka Cultural Centre





## APPENDIX C – TREE PROTECTION PLAN 1 of 4 - Tree Protection Zones - Standard Procedure



The Protective fencing where required may delineate the **TPZ** and should be located as determined by the project arborist in accordance with AS4970 *Protection of trees on development sites*, Section 4, 4.3. "Fencing should be erected before any machinery or materials are brought onto the site and before the commencement of works including demolition. Once erected, protective fencing must not be removed or altered without approval by the project arborist. The TPZ must be secured to restrict access. AS4687 Temporary fencing and hoardings specifies applicable fencing requirements. Shade cloth or similar should be attached to reduce the transport of dust, other particulate matter and liquids into the protected area. Fence posts and supports should have a diameter greater than 20 mm and be located clear of roots. Existing perimeter fencing and other structures may be suitable as part of the protective fencing."

AS4970 Section 4, Tree protection measures, Figure 3 Protective fencing shows examples of such fencing.

### 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. The fencing material also prevents building materials or soil entering the TPZ.
- 3 Mulch installation across surface of TPZ (at the discretion of the project arborist). No excavation, construction activity, grade changes, surface treatment or storage of materials of any kind is permitted within the TPZ.
- 4 Bracing is permissible within the TPZ. Installation of supports should avoid damaging roots. "

### AS4970 Section 4, Tree protection measures, 4.2 Activities restricted within the TPZ

"Activities generally excluded from the TPZ included but are not limited to-

- (a) Machine excavation including trenching;
- (b) Excavation for silt fencing;
- (c) cultivation;
- (d) storage;
- (e) preparation of chemicals, including preparation of cement products;
- (f) parking of vehicles and plant;
- (g) refuelling;
- (h) dumping of waste;
- (i) wash down and cleaning of equipment;
- (j) placement of fill;
- (k) lighting of fires;
- (l) soil level changes;
- (m) temporary or permanent installation of utilities and signs, and
- (n) physical damage to the tree."

**Tree Protection signage** is to be attached to each **Tree Protection Zone** and displayed from within the development site in accordance with AS4970 2009 *Protection of trees on development sites*, Section 4.4 and example Figure C1 (as shown) and lettering to comply with AS1319.

Where a tree is to be retained and a **Tree Protection Zone** cannot be adequately established due to restricted access e.g. tree located along side an access way, the trunk and branches in the lower crown will be protected by wrapping 2 layers of hessian or carpet underfelt around the trunk and branches for a minimum of 2 m or as lower branches permit, then wire or rope secures 75x50x2000 mm hardwood battens together around the trunk (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 (AS4970 2009 *Protection of trees on development sites*, Figure 4 Examples of Trunk, Branch and ground protection).

**Trunk/Branch and root protection** If a tree is growing down slope from an excavation, a silt fence located along the contours of the site in the area immediately above the **Tree Protection Zone** fencing may need to be installed and regularly maintained to prevent burial and asphyxiation of the roots of the tree. To allow for the maintenance of both fences, the silt fence must be constructed separately to the tree protection fence and the 2 fences must be constructed independently of each other and standalone. To reduce competition with the tree the area within the **Tree Protection Zone** is to be kept free of weeds. These are best removed by the application of foliar herbicide with Glyphosate as the active constituent. This is the preferred method rather than removal by cultivation of the soil within the dripline, to minimise root disturbance to the tree. The removal of woody weeds such as Privet should use the cut and paint method of herbicide application. Weeds to be controlled within the **Tree Protection Zone**, for the duration of the project.

The area of the Tree Protection Zone to be mulched to a depth of 100 mm with organic material being 75% leaf litter and 25% wood, and this being composted material preferably from the same genus and species of tree as that to where the mulch is to be applied, i.e. species specific mulch. The depth of mulch and type as indicated, to be maintained for the duration of the project. Where deep excavation will expose the soil profile to drying out the root plate is to be protected by pegging jute matting across the ground surface 2 m back from the edge of the profile and 2 m down the face of the profile and is to be in one continuous sheet or layers up to 5 mm thick and overlapped 300 mm and pegged. Pegs are to be a minimum length of 200 mm and spaced at 500 mm increments in a grid pattern. Once installed mulch is to be placed on top of the jute matting previously described.

No services either temporary or permanent are to be located within the **Tree Protection Zone**. If services are to be located within the **Tree Protection Zone**, special details will need to be provided by the Project Arborist for the protection of the tree regarding the location of the service/s.

A tree will not be fertilised during its protection within the **Tree Protection Zone**, as this may hasten its decline if it were to decline. If a tree is to be fertilised this should be in consultation with the Project Arborist as per AS4970 (2009).

In the event of prolonged dry periods, or where a tree has been transplanted, or where excavation nearby, especially up slope, leads to drying out of a soil profile, or modification to ground water flow, or flows across an existing ground surface to the tree and its growing environment; deep root watering thoroughly at least twice a week is to be undertaken to irrigate the tree. The need for such watering is determined readily by observing the dryness of the soil surface within the dripline of the tree by scraping back some mulch. Mulch is to be reinstated afterwards. In the event of disrupted ground or surface water flows to the tree due to excavation, filling or construction, a reticulated irrigation system may be required to be installed within the **Tree Protection Zone**. If an irrigation system is to be installed, consideration must be given to volume, frequency, and drainage of water delivered, and this should be in consultation with the Project Arborist as per AS4970 (2009).

**Scaffolding** "Where scaffolding is required it should be erected outside the TPZ. Where it is essential for scaffolding to be erected within the TPZ, branch removal should be minimized. This can be achieved by designing scaffolding to avoid branches or tying back branches. Where pruning is unavoidable it must be specified by the project arborist in accordance with AS4373. Ground below the scaffolding should be protected by boarding (e.g. scaffolding board or plywood sheeting) as shown in Figure 5. Where access is required, a board walk or other surface material should be installed to minimise soil compaction. Boarding should be placed over a layer of mulch and impervious sheeting to prevent soil contamination. The boarding should be left in place until the scaffolding is removed." (Standards Australia 2009, p. 18).

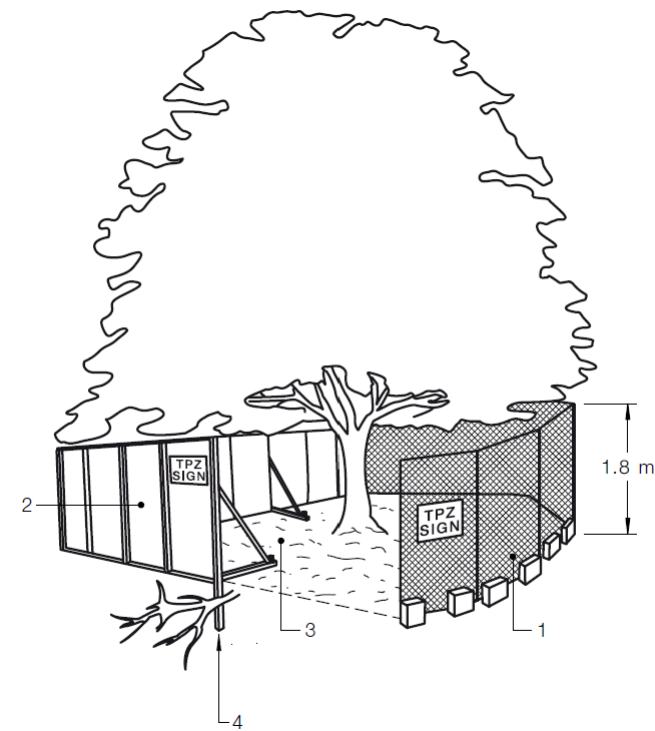


FIGURE 3 PROTECTIVE FENCING



FIGURE C1 TREE PROTECTION ZONE SIGN

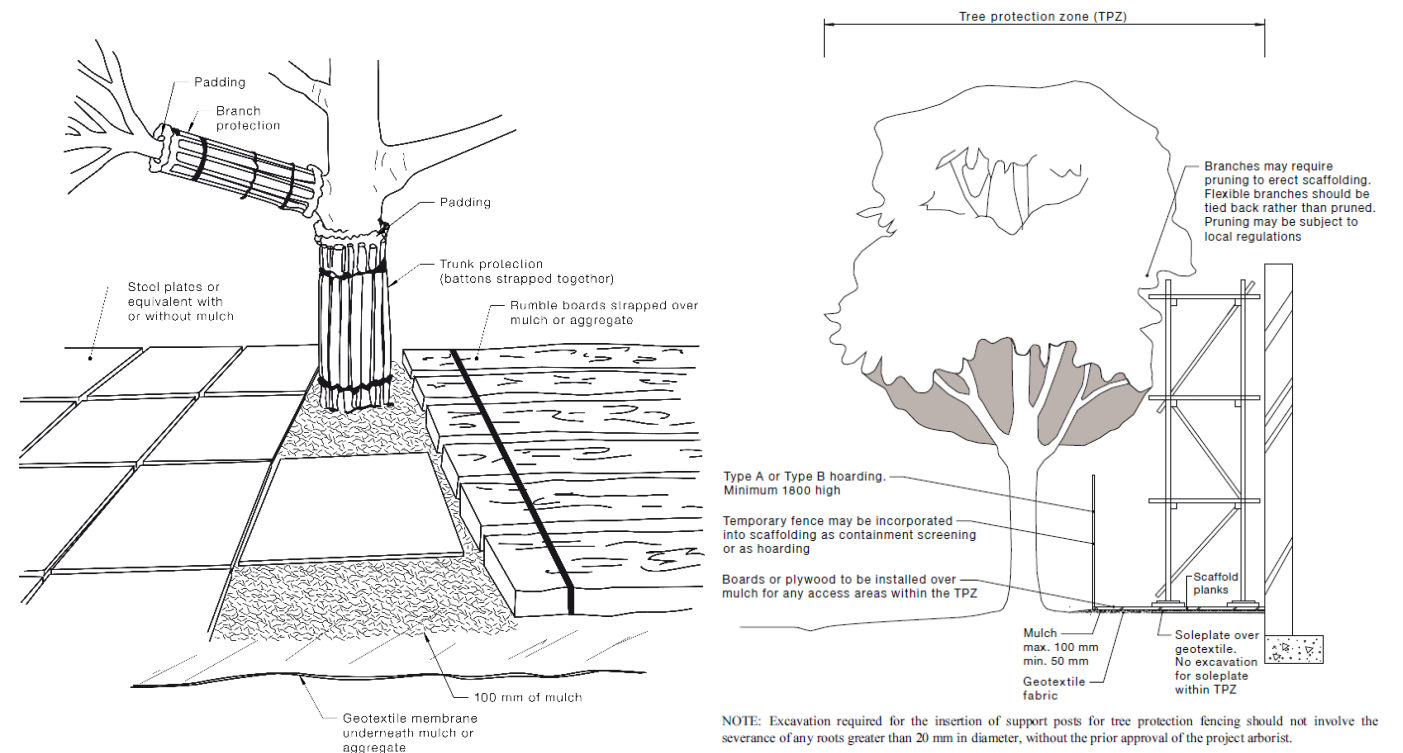


FIGURE 4 EXAMPLES OF TRUNK, BRANCH AND GROUND PROTECTION

FIGURE 5 INDICATIVE SCAFFOLDING WITHIN A TPZ

## APPENDIX C – Tree Protection Plan, 2 of 4

**Baaka Cultural Centre, 42 Reid Street, Wilcannia NSW. Ref. 24043, Revision.01, 17/02/2022.**

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URBAN TREE  
MANAGEMENT

### Tree Protection Works - Specific

#### Prior to Demolition

**TPZ Fencing or works Tree 1** Remove all rubbish and waste building material from within the tree Protection Zone and Structural Root Zone.

**PVC Irrigation Pipe** – The existing PVC irrigation pipe is to be removed from within the TPZ by cutting the exposed pipe section at the at each end and removing that material. Buried sections should remain buried to prevent root disturbance by its extraction.

#### Trunk and Branch protection Tree 1

### Crown

#### Pruning – Tree 1

**Crown Modification as Reduction Pruning** (AS4973 2007, pp. 13 and 15) Crown reduce Superior first order structural branch (FOSB) to West, 2<sup>nd</sup> order branch to North, (500 x 350 mm diameter) and 2<sup>nd</sup> order branch to West (300 mm diameter), to 2.5 m above branch union. Protect epicormic shoots to be retained.

**Crown Maintenance as Deadwooding** (AS4373 2007, p. 13) Remove all deadwood including the collapsed inferior first order structural branch (FOSB) to South. Protect epicormic shoots to be retained.

### Trunk

**Cable Bracing of branches – Tree 1** A Cobra Tree Bracing System - 4T Complete Kit (4 Tonne capacity) is to be applied to utilise its flexible supports and shock-absorbing mechanisms which allow low-resistance oscillation in the trunk and branches and the tree to develop beneficial adaptive growth in response to the loading stimulus. Cable brace the Inferior FOSB to East to the Superior FOSB to West, 2<sup>nd</sup> order branch to North, (500 x 350 mm diameter) and 2<sup>nd</sup> order branch to West (300 mm diameter), to support the trunk from splitting further.

**Note:** 1. The structural branches are to be braced to protect the trunk from collapsing. If after Deadwooding and during the installation of cable bracing of branches the tree is found to be too brittle to sustain the branch bracing system, the structural integrity and stability of the tree will require this Tree Risk Assessment to be updated as soon as possible, to determine the viability and suitability of the trees' retention, or to allow for the consideration of alternative remedial works for its retention, or removal and replacement with an advanced specimen.

2. The Tree Bracing System is to be monitored annually and adjusted as required and replaced at a duration as specified by the manufacturer.

**TPZ Fencing or works Tree 1** The tree Protection Zone area is to be fenced as shown in plan 3 of 3. TPZ fences and works are to be maintained and retained until the completion of all building works. No plant equipment is to enter the TPZ or SRZ. This is to be installed as shown in Appendix C – Tree Protection Plan – Tree Protection Zones - Standard Procedure, Plan 1 of 3. Tree Protection Zone signage is to be applied to the fences per Plan 1 of 4 Figure C1.

**Scaffolding within the Tree Protection Zone - Tree 1** Not required.

**Weeds** – Remove all weeds from within the Tree Protection Zone.

**Mulching Tree 1** Remove weeds prior to mulching. The area of the TPZ is to be mulched with 50 mm diameter River Pebbles to a depth of 100 mm. Weed mat is not to be applied to the ground surface beneath the mulch.

Any plant equipment is to work from outside of the TPZ reaching into the TPZ to minimise damage to overhanging branches and to protect roots.

**Root Protection – Tree 1** No work is to be undertaken within the TPZ. Where access is required within the TPZ, roots are to be protected from soil compaction by the application of ground protection as per AS4970 (2009) section 4, 4.5.3 Ground Protection, where a permeable membrane such as geotextile fabric is to be located at existing ground level beneath a layer of mulch or crushed rock with no fines 100 mm deep and covered with rumble boards or steel plates as per AS4970 (2009) Figure 4, (see Appendix C, Plan 1 of 4). Plant equipment is to work from outside of the TPZ reaching into the TPZ to minimise soil disturbance and compaction, this to include driveways garage floor slabs and pavement.

### During Demolition

**Crown Protection – Tree 1** Plant equipment is to be kept away from the crown of this tree and work is to be conducted from outside of the TPZ reaching into the TPZ to minimise soil disturbance and compaction and branch and trunk damage.

**Root Protection – Tree 1** No work is to be undertaken within the TPZ. Where access is required within the TPZ, roots are to be protected from soil compaction by the application of ground protection as per AS4970 (2009) section 4, 4.5.3 Ground Protection, where a permeable membrane such as geotextile fabric is to be located at existing ground level beneath a layer of mulch or crushed rock with no fines 100 mm deep and covered with rumble boards or steel plates as per AS4970 (2009) Figure 4, (see Appendix C, Plan 1 of 4). Plant equipment is to work from outside of the TPZ reaching into the TPZ to minimise soil disturbance and compaction.

**TPZ Fencing or works Tree 1** Tree Protection Zone fences and works are to remain in place during this part of the project.

### Tree Protection Works - General

**All retained tree/s** Existing levels are to be preserved and no excavation except by hand to protect structural roots is to be undertaken within the Tree Protection Zones. No cutting or filling is to be undertaken within any TPZ unless specified by the Project Arborist.

**Induction for Tree Protection** All workers entering the site involved in construction must be advised of the tree protection measures and specifications outlined within this report during the site induction. This is to be verbally acknowledged and signed off before commencement of work.

**APPENDIX C – Tree Protection Plan, 3 of 4**  
**Baaka Cultural Centre, 42 Reid Street, Wilcannia NSW. Ref. 24043,**  
**Revision.01, 17/02/2022.**

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to remain in place and be maintained until backfilling is completed.

**Root protection when excavating using water knife and vacuum truck** Use water knife with a fan nozzle at low pressure to disrupt soil while simultaneously removing the dislodged soil with a vacuum truck. When structural roots are encountered, reduce the pressure of the water knife to protect bark or stop the water knife and excavate manually above and beside the root using brooms, spades, crow bars (used cautiously near roots) and hand trowels, brooms and brushes to expose the root and displace the soil. Using the water knife at low pressure wash the soil from the root and move to the side to excavate beneath. When passing the root above and below the water knife is to be reduced in pressure or turned to the off position (by releasing the trigger stopping flow) to protect the root from delamination and ringbarking.

**Location of underground utilities within a Tree Protection Zone – All retained tree/s** All underground utilities and stormwater are to be located on the east side of the site away from the trees to be protected on the adjoining property to west. Utility services should not be located within the Tree Protection Zone. Any utility services to be located underground within the TPZ are to be undertaken utilising excavation techniques that prevent or minimise damage to structural roots (roots greater than >40 mm diameter). Such works should be conducted with non-motorised hand tools of with an air knife or water knife and vacuum truck or with directional drilling with minimum depth to top of bore of 600 mm, to prevent soil compaction and root damage and works are to be monitored and certified by the Project Arborist.

**Precautions in respect to temporary work – All retained tree/s** If pedestrian or vehicular access is required within a Tree Protection Zone the roots of these trees are to be protected from soil compaction by the application of ground protection as per AS4970 (2009) Figure 4, (see Appendix C, Plan 1 of 3), where a permeable membrane such as geotextile fabric is to be located at existing ground level beneath a layer of mulch or crushed rock with no fines 100 mm deep and covered with rumble boards or steel plates. Such works are to be monitored and certified by the Project Arborist. Any plant equipment is to work from outside of the TPZ reaching into the TPZ to minimise soil disturbance and compaction. The ground protection works are to remain in place until building works are completed. Maintain tree protection, and waste material is to be kept clear of the trunk and branches.

**Root Pruning** Were required, root pruning is to be conducted in accordance with (AS4373, 2007, p. 18) sec. 9 *Root Pruning* after excavation with tree sensitive techniques, manually with non-motorised hand tools or with water knife and vacuum truck where each exploratory trench or pot hole is to be located within the Structural Root Zone (SRZ) per (AS4970, 2009) of any tree. All root pruning is to comply with AS4373 (2007) Pruning of amenity trees, Sec. 9 *Root Pruning* and is to be approved by the Project Arborist. Cuts are to be made with clean sharp tools with final cuts made to undamaged tissue. Final cuts should be made perpendicular to the length of the root with a final cut to undamaged tissue to remove injured or crushed tissues allowing the tree to develop strong internal boundaries and generate new roots.

**Backfilling within a Tree Protection Zone** Not to be undertaken with in a Tree Protection Zone.

**Landscaping**

**Excavation for tree plantings within the Tree Protection Zones** No landscape planting is to occur within the TPZ of this tree to prevent soil disturbance and risk of root severance or root death from soil compaction.

**TPZ Fences and works Tree 1** Temporary fences to be removed at practical completion of works.

**During Excavation and Construction**

**TPZ Fencing or works - Tree 1** Tree Protection Zone fences and works are to remain in place during this part of the project.

**Root Protection from Soil Profile Desiccation - utility trenches** Where an excavation profile is to be open for 1 day or more the exposed structural roots (roots >400 mm diameter) and those within the soil profile are to be protected drying out. The exposed structural roots are to be wrapped with a triple layer of hessian which is to be fastened to itself with hessian to prevent unravelling. The soil profile to 2 m deep (or to the base of the excavation if less than 2 m) is to be achieved by applying a double layer of hessian fabric to cover the exposed soil profile from grade within the Tree Protection Zone of these trees and fixed into place by metal pegs at the bottom, and the fabric is to overlap the ground at surface by 300 mm and be pegged into place with metal pegs. The soil profile protection is



**APPENDIX C – Tree Protection Plan, 4 of 4**  
(trees numbered per Appendix A - Tree Assessment)  
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From NSW Government, NSW Planning Portal, Central Darling Local  
Environmental Plan 2012, Heritage Map – Sheet HER\_006A



**Legend**

TN 9

Trees numbered in blue and not bold are recommended for removal.

TN 10

Trees numbered in orange and bold are recommended for retention.

Tree Protection Zone per AS4970(2009)

Structural Root Zone per AS4970(2009)

Tree Protection Zone setbacks				
1. UTM Tree No. / UTM Stand No.	2. Tree Protection Zone (TPZ) =  12 x DBH (m)  From center of trunk (COT) in metres AS4970 (2009) Section 3 (see Appendix G)	3. Structural Root Zone  SRZ From center of trunk (COT), trunk diameter above root buttress (DARB) AS4970 (2009) Section 3, 3.3.5 where applicable (m)	4. Distance of fence with TPZ setback  reduced by 10%  of area on one side of tree only, in metres equating to approx. 0.3 radius as per AS4970 (2009) Section 3, 3.3 (mm)	5. Proposed distance of works on the side closest to excavation / building construction in metres From center of trunk (COT), (m)
1	9.6	3.2	6.7	3.0 (North), 3.0 (South), 2.4 (East to property boundary), 3.0 (West).

