



CREATIVE **PLANNING** SOLUTIONS

ARBORICULTURAL IMPACT ASSESSMENT

Albury-Wodonga Regional Hospital - Stage 1 Works

201 Borella Road, East Albury NSW 2640

Project No: H150

Date: 5 March 2025

Revision: B

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1 EXECUTIVE SUMMARY

This Arboricultural Impact Assessment (AIA) has been prepared to assist informing an environmental assessment in the form of a Review of Environmental Factors (REF) for Stage 1 of the Albury-Wodonga Regional Hospital Redevelopment including a proposed carparking area, Northeast Building (NEB) and associated works at 201 Borella Road, East Albury (the site).

The report relates to seventy-seven (77) trees located on the subject site and provides an evaluation of the likely impact to existing trees as a result of the proposed construction works.

A summary of those trees identified has been provided in **Table 1** below along with a description of their location, retention values and nominated retention/removal status under the proposal.

Table 1 – Tree assessment summary

Tree No.	Genus & species Common Name	Location	Retention Value	Retain / Remove
1	<i>Ulmus procera</i> English Elm	Subject site – Northwest Carpark	Medium	Retain & protect
2	<i>Acacia sp.</i> Wattle	Subject site – Northwest Carpark	Low	Retain & protect
3	<i>Corymbia maculata</i> Spotted Gum	Subject site – Northwest Carpark	Medium	Retain & protect
4	<i>Corymbia maculata</i> Spotted Gum	Subject site – Northwest Carpark	High	Retain & protect
5	<i>Melaleuca styphelioides</i> Prickly-leaved Paperbark	Subject site – Northwest Carpark	Low	Retain & protect
6	<i>Melaleuca styphelioides</i> Prickly-leaved Paperbark	Subject site – Northwest Carpark	High	Retain & protect
7	<i>Melaleuca styphelioides</i> Prickly-leaved Paperbark	Subject site – Northwest Carpark	Medium	Retain & protect
8	<i>Ulmus parvifolia</i> Chinse Elm	Subject site – Northwest Carpark	Low	Retain & protect
9	<i>Eucalyptus sideroxylon</i> Mugga Ironbark	Subject site – Northwest Carpark	Medium	Remove
10	<i>Eucalyptus sideroxylon</i> Mugga Ironbark	Subject site – Northwest Carpark	Medium	Remove
11	<i>Ulmus parvifolia</i> Chinse Elm	Subject site – Northwest Carpark	Low	Remove
12	<i>Eucalyptus melliodora</i> Yellow Box	Subject site – Northwest Carpark	Medium	Remove
13	<i>Eucalyptus melliodora</i> Yellow Box	Subject site – Northwest Carpark	Medium	Remove
14	<i>Ulmus parvifolia</i> Chinse Elm	Subject site – Northwest Carpark	Medium	Retain & protect
15	<i>Ulmus parvifolia</i> Chinse Elm	Subject site – Northwest Carpark	Medium	Remove
16	<i>Eucalyptus melliodora</i> Yellow Box	Subject site – Northwest Carpark	Medium	Remove
17	<i>Eucalyptus sp.</i> Eucalyptus	Subject site – Northwest Carpark	Low	Remove
18	<i>Eucalyptus sideroxylon</i> Mugga Ironbark	Subject site – Northwest Carpark	Medium	Remove
19	<i>Eucalyptus sideroxylon</i> Mugga Ironbark	Subject site – Northwest Carpark	Low	Remove
20	<i>Eucalyptus melliodora</i> Yellow Box	Subject site – Northwest Carpark	Low	Remove

Tree No.	Genus & species Common Name	Location	Retention Value	Retain / Remove
21	<i>Ulmus parvifolia</i> Chinse Elm	Subject site – Northwest Carpark	Low	Retain & protect
22	<i>Eucalyptus melliodora</i> Yellow Box	Subject site – Northwest Carpark	Medium	Retain & protect
23	<i>Eucalyptus melliodora</i> Yellow Box	Subject site – Northwest Carpark	Medium	Retain & protect
24	<i>Ulmus parvifolia</i> Chinse Elm	Subject site – Northwest Carpark	Low	Remove
25	<i>Ulmus parvifolia</i> Chinse Elm	Subject site – Northwest Carpark	Low	Remove
26	<i>Ulmus parvifolia</i> Chinse Elm	Subject site – Northwest Carpark	Low	Retain & protect
27	<i>Ulmus parvifolia</i> Chinse Elm	Subject site – Northwest Carpark	Low	Retain & protect
28	<i>Eucalyptus melliodora</i> Yellow Box	Subject site – Northwest Carpark	Medium	Retain & protect
29	<i>Eucalyptus sideroxylon</i> Mugga Ironbark	Subject site – Northwest Carpark	Medium	Retain & protect
30	<i>Ulmus parvifolia</i> Chinse Elm	Subject site – Northwest Carpark	Medium	Retain & protect
31	<i>Eucalyptus melliodora</i> Yellow Box	Subject site – Northwest Carpark	Medium	Retain & protect
63	<i>Grevillea robusta</i> Silky Oak	Subject site – Northwest Carpark	Low	Retain & protect
64	<i>Eucalyptus sideroxylon</i> Mugga Ironbark	Subject site – Northwest Carpark	Medium	Retain & protect
65	<i>Grevillea robusta</i> Silky Oak	Subject site – Northwest Carpark	Low	Remove
66	<i>Grevillea robusta</i> Silky Oak	Subject site – Northwest Carpark	Low	Remove
67	<i>Grevillea robusta</i> Silky Oak	Subject site – Northwest Carpark	Low	Remove
68	<i>Callistemon</i> cv. Bottlebrush cultivar	Subject site – Northwest Carpark	Low	Remove
69	<i>Eucalyptus melliodora</i> Yellow Box	Subject site – Northwest Carpark	Medium	Remove
70	<i>Ulmus parvifolia</i> Chinse Elm	Subject site – Northwest Carpark	Medium	Remove
71	<i>Ulmus parvifolia</i> Chinse Elm	Subject site – Northwest Carpark	Medium	Remove
72	<i>Eucalyptus melliodora</i> Yellow Box	Subject site – Northwest Carpark	Medium	Remove
73	<i>Ulmus parvifolia</i> Chinse Elm	Subject site – Northwest Carpark	Low	Remove
74	<i>Ulmus parvifolia</i> Chinse Elm	Subject site – Northwest Carpark	Low	Remove
75	<i>Melaleuca styphelioides</i> Prickly-leaved Paperbark	Subject site – Northwest Carpark	Medium	Remove
76	<i>Melaleuca styphelioides</i> Prickly-leaved Paperbark	Subject site – Northwest Carpark	Medium	Remove
77	<i>Melaleuca styphelioides</i> Prickly-leaved Paperbark	Subject site – Northwest Carpark	Low	Retain & protect
78	<i>Melaleuca styphelioides</i> Prickly-leaved Paperbark	Subject site – Northwest Carpark	Low	Remove
79	<i>Melaleuca styphelioides</i> Prickly-leaved Paperbark	Subject site – Northwest Carpark	Low	Remove
80	<i>Melaleuca styphelioides</i> Prickly-leaved Paperbark	Subject site – Northwest Carpark	Low	Remove

Tree No.	Genus & species Common Name	Location	Retention Value	Retain / Remove
81	Melaleuca styphelioides Prickly-leaved Paperbark	Subject site – Northwest Carpark	Medium	Retain & protect
82	Melaleuca styphelioides Prickly-leaved Paperbark	Subject site – Northwest Carpark	Medium	Retain & protect
207	Cupressus sp. Cypress	Subject site – Northeast Building	Medium	Remove
208	Cupressus sp. Cypress	Subject site – Northeast Building	Medium	Remove
209	Camellia sasanqua Camellia	Subject site – Northeast Building	Low	Remove
210	Unknown species -	Subject site – Northeast Building	Low	Remove
211	Malus floribunda Japanese Crab Apple	Subject site – Northeast Building	Medium	Remove
212	Cupressus sempervirens 'Swanes Gold' Swanes Golden Cypress	Subject site – Northeast Building	Low	Remove
213	Cupressus sempervirens 'Swanes Gold' Swanes Golden Cypress	Subject site – Northeast Building	Low	Remove
214	Cupressus sp. Cypress	Subject site – Northeast Building	Low	Remove
215	Malus floribunda Japanese Crab Apple	Subject site – Northeast Building	Low	Remove
216	Malus floribunda Japanese Crab Apple	Subject site – Northeast Building	Low	Remove
217	Malus floribunda Japanese Crab Apple	Subject site – Northeast Building	Low	Remove
218	Malus floribunda Japanese Crab Apple	Subject site – Northeast Building	Low	Remove
219	Malus floribunda Japanese Crab Apple	Subject site – Northeast Building	Low	Remove
220	Malus floribunda Japanese Crab Apple	Subject site – Northeast Building	Low	Remove
221	Malus floribunda Japanese Crab Apple	Subject site – Northeast Building	Low	Remove
222	Leptospermum cv. Tea Tree Cultivar	Subject site – Northeast Building	Low	Remove
223	Pittosporum sp. Pittosporum	Subject site – Northeast Building	Low	Remove
224	Malus floribunda Japanese Crab Apple	Subject site – Northeast Building	Medium	Remove
225	Leptospermum cv. Tea Tree Cultivar	Subject site – Northeast Building	Low	Remove
226	Hymenosporum flavum Native Frangipani	Subject site – Northeast Building	Low	Remove
227	Leptospermum cv. Tea Tree Cultivar	Subject site – Northeast Building	Low	Remove
228	Leptospermum cv. Tea Tree Cultivar	Subject site – Northeast Building	Low	Remove
229	Washingtonia robusta Mexican Fan Palm	Subject site – Northeast Building	High	Remove
432	Cupressus sempervirens Mediterranean Cypress	Subject site – Northeast Building	Low	Remove
433	Cupressus sempervirens Mediterranean Cypress	Subject site – Northeast Building	Low	Remove
434	Cupressus sempervirens Mediterranean Cypress	Subject site – Northeast Building	Low	Remove

Based on the plans supplied and should the proposed works proceed in their current form, it is recommended that fifty-four (54) trees (**Trees 9-13, 15-20, 24-25, 65-76, 78-80, 207-229 & 432-434**) be removed, and twenty-three (23) trees be retained and protected (**Trees 1-8, 14, 21-23, 26-31, 63-64, 77 & 81-82**).

Specific recommendations as per **Section 7** will need to be adopted to ensure root sensitive construction techniques and methodology are employed which mitigate any potential negative impacts to retained trees.

2 INTRODUCTION

2.1 Background

This Arboricultural Impact Assessment (AIA) was commissioned by NSW Health Infrastructure on the 20th of February 2025 to evaluate the potential impacts that proposed development works will have on existing trees located on the subject site at Albury-Wodonga Regional Hospital - 201 Borella Road, East Albury (refer to **Figure 1**).

Accordingly, the purpose of this report is to assess the potential impact of the proposed development on the subject trees, as well as provide recommendations for further amendments to the design or construction methodology where necessary to minimise any adverse impact. The report also provides recommended tree protection measures to ensure the long-term preservation of the trees to be retained where appropriate.

2.2 Objectives

This report has been prepared to assess the level of impact development works are likely to cause to existing trees and make a determination as to whether trees will be adversely affected. The report will provide guidance as to those trees requiring removal, retention or protection in accordance with the provisions of *AS4970-2009 Protection of trees on development sites*. Where necessary, it will also provide recommendations for design modifications and any replacement planting. As such, the objectives of this report are as follows:

- Assess the current site and growing conditions of trees;
- Assess the current health, condition, lifespan & significance of the trees within the site;
- Identify relative retention values of trees within the site;
- Calculate anticipated encroachment levels resulting from proposed works;
- Determine the likely impact as a result of the calculated encroachments;
- Assess potential for retention and protection of trees where possible;
- Advise any design modifications necessary to retain important trees;
- Recommend tree and root sensitive design and construction methodologies to mitigate impacts to trees to be retained;
- Inform of any tree removal necessary due to unsustainable impacts;
- Provide guidance and recommendations for any replacement planting necessary.

No aerial inspection, root mapping or internal diagnostic testing have been carried out as part of this report. Additionally, no cation exchange capacity testing or plant tissue analysis has been undertaken.

2.3 Legislation & Regulating Documents

This Arboricultural Impact Assessment has considered the following regulatory documents:

- *State Environmental Planning Policy (Biodiversity and Conservation) 2021*
- *Albury Local Environmental Plan (LEP) 2010*
- *Albury Development Control Plan (DCP) 2010*
- *Murray Regional Strategic Weed Management Plan 2023-2027*

2.4 Documentation Received

The following documents were received and have been relied upon for this Assessment:

Table 2 – Documentation received and reviewed as part of the Arboricultural Impact Assessment

Document Description	Author	Revision No. / Date
Temporary Carpark Civil Works Plan	Enstruct	T2 / 31 January 2025
Site Plan	Hassell	B / 17 January 2025
Survey of Masterplan	Walpole Surveying	6 / 10 December 2024

Note: care has been taken to obtain all information from reliable sources; however, the author makes no representations, guarantees or warranties as to the accuracy of information provided by others. No other information has been reviewed, should this become available impacts may be subject to change.

2.5 The Site

The site is known as Albury-Wodonga Regional Hospital, is located at 201 Borella Road, East Albury and is legally described as Lot 14 in DP1175382. The site located to the south of Borella Road and is bounded by East Street to the east, and Keene Street, to the west. The site currently contains an operational public hospital with a wide range of medical services (refer to **Figure 1** below).



Figure 1 – Aerial image indicating subject site and location of proposed Northeast Building (circled orange) and Northwest carparking area (circled red)

Source: Nearmap

2.6 Proposed Construction Works

Stage 1 of the proposed Albury Wodonga Regional Hospital Redevelopment involves construction of a two-storey building, car parking area and associated works (refer to **Figure 2** below). Specifically, those works considered likely to impact the existing trees on the subject site include the new building and driveway/carparking area footprints, pathways and site grading works.

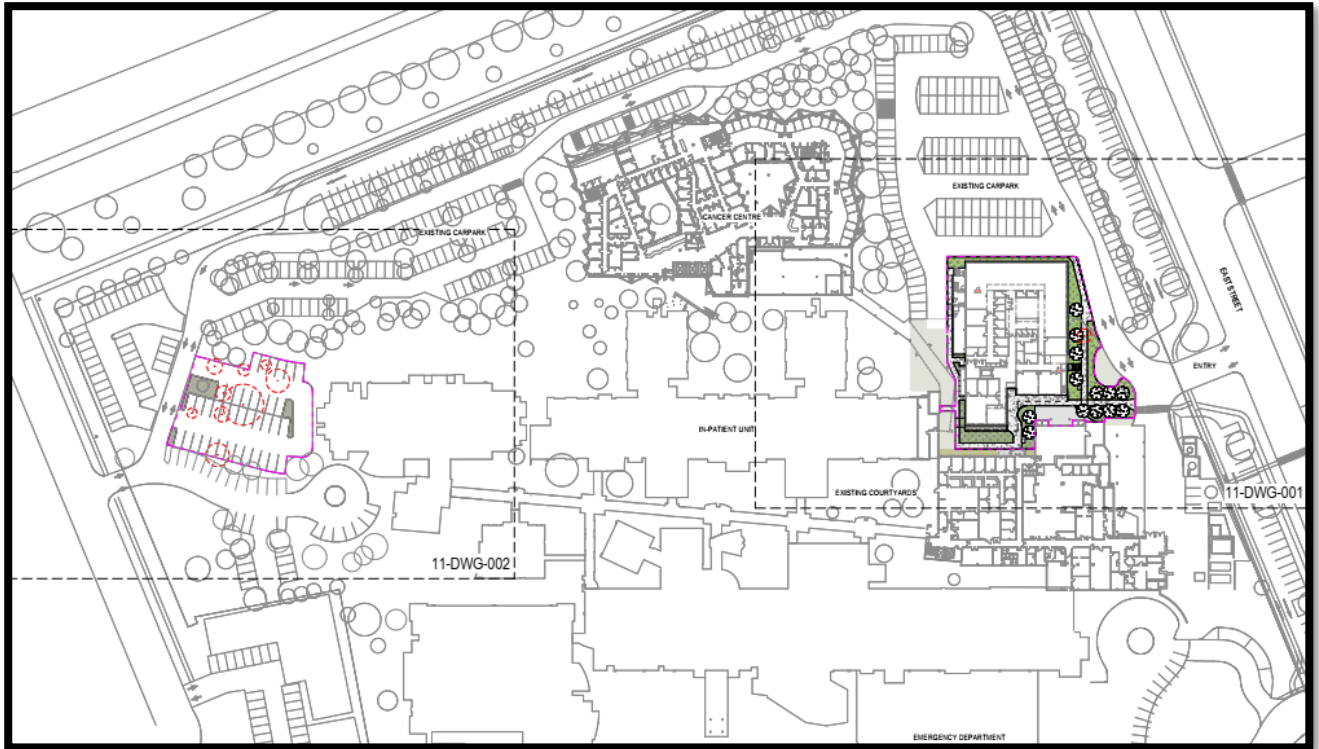


Figure 2 – Site Plan extract showing the proposed layout of the development

Source: Hassell – 17 January 2025

2.7 Limitations

Trees are living organisms whose health and condition can change rapidly. The conclusions and recommendations in this report are valid for one (1) year only from the date of the report, unless otherwise stated. Any changes to the site as it stands at present, for example building extensions, excavation works, importing of soils, extreme weather events etc. will invalidate this report. Any reproduction of this report must be in full colour using the report in its entirety.

3 METHOD

3.1 Method

3.1.1 Site Inspection

Site inspections were carried out by Toby Piper and Greg Tesoriero (AQF5 Consulting Arborists) with the subject trees and the general growing environment evaluated on the 26th and 27th of February 2025. The weather at the time of each inspection was sunny and dry with good visibility.

Trees were inspected from ground level utilising an adaptation of the Visual Tree Assessment (VTA) methods described by Mattheck and Breloer (Mattheck & Breloer, 1994) with the following information recorded and provided in tabulated form at **Appendix 1**:

- Tree Species (Botanical & Common Name);
- Approximate height;
- Approximate canopy spread;
- Trunk Diameter (measured at 1.4 metres from ground level);
- Trunk Diameter at base (above root crown);
- Age class;
- Health & vigour; using foliage size, colour, extension growth, presence of disease or pest infestation, canopy density, presence of deadwood, dieback and epicormic growth as indicators;
- Condition; using visible evidence of structural defects, instability, evidence of previous pruning and physical damage as indicators;
- Suitability of the tree to the site and its existing location;
- Useful Life Expectancy (ULE).

3.1.2 Tree Location and Identification

Where provided, the location of assessed trees has been informed by the Survey of Masterplan prepared by Walpole Surveying dated 10 December 2024. Where trees were not formally surveyed, their locations have been obtained onsite using a Trimble TDC600 GNSS Receiver delivering sub-metre accuracy.

3.1.3 Useful Life Expectancy (ULE)

The remaining Useful Life Expectancy of a tree is an estimate of the sustainability of the tree in the landscape, calculated based on an estimate of the average age of the species in an urban area, less its estimated current age. The life expectancy of each tree has been further modified where necessary in consideration of its current health, vigour, condition and suitability to the site. The estimated ULE of each tree is shown in **Appendix 1**.

The following ranges have been allocated to each tree:

- Long ULE: Trees that appear to be retainable with an acceptable level of risk for > 40 years.
- Medium ULE: Trees that appear to be retainable with an acceptable level of risk for 15 to 40 years.
- Short ULE: Trees that appear to be retainable with an acceptable level of risk for 5–15 years.
- Remove: Trees with a high level of risk that would need removing within the next 5 years.
- Small, Young or Regularly Pruned.

3.1.4 Landscape Significance

The landscape significance of a tree is an essential criterion to establish the importance that a particular tree may have on a site. Several factors contribute towards the assessment of a tree's significance including but not limited to condition and vigour, form, visual prominence, heritage status, indigeneity, legislative protection, cultural sentiment and future growth potential.

For the purposes of this report the Australian Institute of Consulting Arborists (IACA) Significance of a Tree, Assessment Rating System (STARS)® has been utilised. The system uses a scale of High, Medium and Low significance in the landscape. Once the landscape significance of an individual tree has been defined, the retention value can be determined.

Appendix 3 provides a full outline of assessment criteria for each significance rating as per IACA STARS (2010).

3.1.5 Retention Value

Retention values have been determined for each tree on site to establish a hierarchy for tree retention. Retention values are based on estimated life spans and their associated landscape significance rating in accordance with the Tree Retention Value Priority Matrix. This matrix established the following retention values and can be found at **Appendix 3** with attributed retention values found within **Appendix 1**:

- Priority for Retention (High)
- Consider for Retention (Medium)
- Consider for Removal (Low)
- Priority for Removal

3.1.6 AS4970-2009 Protection of Trees on Development Sites

The Australian Standard, AS4970-2009-'*Protection of trees on development sites*', has been used as a guide to provide recommendations for the assessed trees. The Standard provides guidance on the principles for protecting trees on land subject to development as well as principles for determining viability of tree retention. Terminology and recommended methods are consistent with AS4970-2009.

3.1.7 Tree Protection Zones

The assessed trees have been allocated Tree Protection Zones (TPZ). The Australian Standard, AS4970-2009-'*Protection of trees on development sites*', has been used as a guide in the allocation of TPZs for the assessed trees. The TPZ is calculated based on trunk (stem) diameter at breast height (DBH), measured at 1.4 metres above ground level. The radius of the TPZ is calculated by multiplying the trees DBH by 12. The method provides a TPZ that addresses health and growing requirements of a tree as well as the trees stability. TPZ distances are measured as a radius from the centre of the trunk at (or near) ground level. The maximum TPZ should be no more than 15m radius and the minimum TPZ should be no less than 2m radius.

An extract of the AS4970-2009 for calculating TPZ has been provided at **Appendix 4** for reference.

3.1.8 Structural Root Zone

The assessed trees have been allocated Structural Root Zones (SRZ). The Australian Standard, AS4970-2009 - '*Protection of trees on development sites*', has been used as a guide in the allocation of SRZ's for the assessed trees. The SRZ is a radial area extending outwards from the centre of the trunk and is calculated as follows:

$$\text{SRZ (Radius)} = (D \times 50)^{0.42} \times 0.64$$

4 OBSERVATIONS

4.1 General

site area subject to this assessment was observed as highly disturbed with no understorey present. Species observed varied including exotic, Australian native and locally indigenous species. Health, vigour and condition was also highly varied across the trees forming part of the assessment. Root zones of assessed trees were generally observed as modified groundcover within deep soil areas.

No heritage listed trees were identified on site, nor were any species observed that are listed as vulnerable, endangered or critically endangered. Similarly, no endangered or critically endangered ecological communities were observed.

4.2 Tree Preservation Order

Part 5 – *Vegetation Protection* of the Albury DCP 2010 guides the management and preservation of trees, vegetation, and native vegetation across the Albury Local Government Area. The provisions included within the DCP generally protect any tree or vegetation that corresponds with the following criteria.

- a. A tree 3 metres or more in height and with a trunk circumference of 300mm or more at 1.3 metres above ground level;
- b. Native vegetation in specified areas or identified on the Extant Vegetation DCP Map;
- c. Located within 100 metres of the Murray River or within 40 metres of the Murray River on R5 – Large Lot Residential zone or urban release areas; or
- d. Listed on the Significant Tree Register.

4.3 The Trees

A total of seventy-seven (77) trees observed within and adjacent to the proposed NEB and carparking area have been included in this assessment.

Where provided, the location of assessed trees has been informed by the Survey of Masterplan prepared by Walpole Surveying dated 10 December 2024. Where trees were not formally surveyed, their locations have been obtained onsite using a Trimble TDC600 GNSS Receiver delivering sub-metre accuracy.

All tree data recorded on site has been tabulated and is contained at **Appendix 1**. Each tree has been provided with an identification number for reference purposes and is denoted on the attached Tree Location Plan at **Appendix 2**.

5 DISCUSSION

5.1 Impact Assessment

The impact assessment is to calculate the incursions to the root zones and canopies as a result of the proposed construction works and evaluate the likely impact of the proposed works on the subject trees. A summary of the impacts anticipated is contained within the Tree Schedule at **Appendix 1**. Additionally, plans demonstrating the level of incursion and conflict to TPZ's and SRZ's can be found at **Appendix 2**. As part of the assessment the following criteria have been considered:

- Existing Relative Levels (R.L.);
- Proposed Relative Levels;
- Tree Protection Zones (TPZ);
- Structural Root Zones (SRZ);
- Footprint of the proposed development;
- Incursions to the TPZ & SRZ;
- Incursions to the tree canopy from vehicles and equipment;
- Pruning necessary for clearance;
- Remediation works for soil contaminants;
- Species tolerance to disturbance; and
- Assessment of the likely impact of the works on existing trees.

5.2 Trees Recommended for Removal

Should the proposed works proceed in their current form, it is recommended that fifty-four (54) trees be removed including **Trees 9-13, 15-20, 24-25, 65-76, 78-80, 207-229 & 432-434**. Removals have been recommended based upon;

- Trees being located within the proposed Northeast Building footprint or associated paving (**Trees 209, 210, 211, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227 & 229**); or
- Trees being located within the proposed northwest carparking area or grading extents (**Trees 9, 11, 12, 13, 16, 17, 18, 20, 25, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75 & 80**); or
- Trees subject to unsustainable and 'major' encroachment, as per AS4970:2009 *Protection of trees on development sites*, from the proposed building, carparking area footprints, grading extents or paving (**Trees 10, 15, 19, 24, 76, 78, 79, 207, 208, 214, 228, 432 & 433**); or
- Trees proposed for removal to assist demolition and construction access and implement new landscape scheme (**Trees 212, 213 & 434**).

Refer to **Appendix 2** for a plan indicating the location of trees that will require removal (dashed red).

Table 3 – Trees recommended for removal

Tree No.	Genus & Species	Retention Value	Works within TPZ / Reason for Removal
9	<i>Eucalyptus sideroxylon</i> Mugga Ironbark	Medium	Full encroachment. Within proposed driveway/carpark footprint.
10	<i>Eucalyptus sideroxylon</i> Mugga Ironbark	Medium	'Major' 28% TPZ & 14% SRZ incursion from proposed carpark and grading extents. Significant loss of structural and fine feeder roots with decline to health, condition, longevity and viability likely.

Tree No.	Genus & Species	Retention Value	Works within TPZ / Reason for Removal
11	<i>Ulmus parvifolia</i> Chinse Elm	Low	Full encroachment. Within proposed driveway/carpark footprint.
12	<i>Eucalyptus melliodora</i> Yellow Box	Medium	
13	<i>Eucalyptus melliodora</i> Yellow Box	Medium	Full encroachment. Within proposed driveway/carpark footprint.
15	<i>Ulmus parvifolia</i> Chinse Elm	Medium	'Major' 15% TPZ & 27% SRZ incursion from proposed carpark and grading extents. Significant loss of structural and fine feeder roots with decline to health, condition, longevity and viability likely.
16	<i>Eucalyptus melliodora</i> Yellow Box	Medium	Full encroachment. Within proposed grading extents.
17	<i>Eucalyptus</i> sp. Eucalyptus	Low	Full encroachment. Within proposed driveway/carpark footprint.
18	<i>Eucalyptus sideroxylon</i> Mugga Ironbark	Medium	
19	<i>Eucalyptus sideroxylon</i> Mugga Ironbark	Low	'Major' 31% TPZ & 10% SRZ incursion from proposed carpark and grading extents. Significant loss of structural and fine feeder roots with decline to health, condition, longevity and viability likely.
20	<i>Eucalyptus melliodora</i> Yellow Box	Low	Full encroachment. Within proposed driveway/carpark footprint.
24	<i>Ulmus parvifolia</i> Chinse Elm	Low	'Major' 29% TPZ & 23% SRZ incursion from proposed carpark and grading extents. Significant loss of structural and fine feeder roots with decline to health, condition, longevity and viability likely.
25	<i>Ulmus parvifolia</i> Chinse Elm	Low	Full encroachment. Within proposed grading extents.
65	<i>Grevillea robusta</i> Silky Oak	Low	Full encroachment. Within proposed driveway/carpark footprint.
66	<i>Grevillea robusta</i> Silky Oak	Low	
67	<i>Grevillea robusta</i> Silky Oak	Low	
68	<i>Callistemon</i> cv. Bottlebrush cultivar	Low	
69	<i>Eucalyptus melliodora</i> Yellow Box	Medium	
70	<i>Ulmus parvifolia</i> Chinse Elm	Medium	
71	<i>Ulmus parvifolia</i> Chinse Elm	Medium	

Tree No.	Genus & Species	Retention Value	Works within TPZ / Reason for Removal
72	<i>Eucalyptus melliodora</i> Yellow Box	Medium	Full encroachment. Within proposed driveway/carpark footprint.
73	<i>Ulmus parvifolia</i> Chinse Elm	Low	
74	<i>Ulmus parvifolia</i> Chinse Elm	Low	
75	<i>Melaleuca styphelioides</i> Prickly-leaved Paperbark	Medium	
76	<i>Melaleuca styphelioides</i> Prickly-leaved Paperbark	Medium	'Major' 29% TPZ & 15% SRZ incursion from proposed carpark and grading extents. Significant loss of structural and fine feeder roots with decline to health, condition, longevity and viability likely.
78	<i>Melaleuca styphelioides</i> Prickly-leaved Paperbark	Low	'Major' 29% TPZ & 23% SRZ incursion from proposed carpark and grading extents. Significant loss of structural and fine feeder roots with decline to health, condition, longevity and viability likely.
79	<i>Melaleuca styphelioides</i> Prickly-leaved Paperbark	Low	'Major' 29% TPZ & 23% SRZ incursion from proposed carpark and grading extents. Significant loss of structural and fine feeder roots with decline to health, condition, longevity and viability likely.
80	<i>Melaleuca styphelioides</i> Prickly-leaved Paperbark	Low	Full encroachment. Within proposed grading extents.
207	<i>Cupressus sp.</i> Cypress	Medium	'Major' 53% TPZ and 48% SRZ incursion from proposed development paving. Significant loss of structural and fine feeder roots with decline to health, condition, longevity and viability likely.
208	<i>Cupressus sp.</i> Cypress	Medium	'Major' 43% TPZ and 37% SRZ incursion from proposed building footprint and development paving. Significant loss of structural and fine feeder roots with decline to health, condition, longevity and viability likely.
209	<i>Camellia sasanqua</i> Camellia	Low	Full encroachment. Within proposed development paving.
210	<i>Unknown species</i> -	Low	Full encroachment. Within proposed building footprint.
211	<i>Malus floribunda</i> Japanese Crab Apple	Medium	Full encroachment. Within proposed development paving.
212	<i>Cupressus sempervirens</i> 'Swanes Gold' Swanes Golden Cypress	Low	No works proposed within TPZ. Removal proposed to assist demolition and construction and implement new landscape scheme.
213	<i>Cupressus sempervirens</i> 'Swanes Gold' Swanes Golden Cypress	Low	
214	<i>Cupressus sp.</i> Cypress	Low	'Major' 16% TPZ and 15% SRZ incursion from proposed development paving. Moderate loss of structural and fine feeder roots with decline to health, condition, longevity and viability likely.

Tree No.	Genus & Species	Retention Value	Works within TPZ / Reason for Removal
215	Malus floribunda Japanese Crab Apple	Low	Full encroachment. Within proposed development paving.
216	Malus floribunda Japanese Crab Apple	Low	
217	Malus floribunda Japanese Crab Apple	Low	
218	Malus floribunda Japanese Crab Apple	Low	Full encroachment. Within proposed building footprint.
219	Malus floribunda Japanese Crab Apple	Low	
220	Malus floribunda Japanese Crab Apple	Low	
221	Malus floribunda Japanese Crab Apple	Low	
222	Leptospermum cv. Tea Tree Cultivar	Low	
223	Pittosporum sp. Pittosporum	Low	
224	Malus floribunda Japanese Crab Apple	Medium	
225	Leptospermum cv. Tea Tree Cultivar	Low	
226	Hymenosporum flavum Native Frangipani	Low	
227	Leptospermum cv. Tea Tree Cultivar	Low	
228	Leptospermum cv. Tea Tree Cultivar	Low	'Major' 47% TPZ and 47% SRZ incursion from proposed building footprint. Significant loss of structural and fine feeder roots with decline to health, condition, longevity and viability likely.
229	Washingtonia robusta Mexican Fan Palm	High	Full encroachment. Within proposed development paving.
432	Cupressus sempervirens Mediterranean Cypress	Low	'Major' 51% TPZ and 45% SRZ incursion from proposed development paving. Significant loss of structural and fine feeder roots with decline to health, condition, longevity and viability likely.
433	Cupressus sempervirens Mediterranean Cypress	Low	'Major' 21% TPZ and 14% SRZ incursion from proposed development paving. Moderate loss of structural and fine feeder roots with decline to health, condition, longevity and viability likely.
434	Cupressus sempervirens Mediterranean Cypress	Low	No works proposed within TPZ. Removal proposed to assist demolition and construction and implement new landscape scheme.

5.3 Recommended for Retention & Protection

Should the proposed works proceed in their current form, it is recommended that twenty-three (23) trees (**Trees 1-8, 14, 21-23, 26-31, 63-64, 77 & 81-82**) be retained and protected. Impacts from the proposed works are likely to be sustainable with minimal decline to health and condition subject to the implementation of tree protection measures as per **Section 7**.

Refer to **Appendix 2** for a plan indicating the location of trees that are to be retained and protected (shaded green).

Table 4 – Trees recommended for retention & protection

Tree No.	Genus & Species	Retention Value	Works within the Tree Protection Zone (TPZ)
1	<i>Ulmus procera</i> English Elm	Medium	No works proposed within TPZ. Retain and protect as per Section 7 .
2	<i>Acacia sp.</i> Wattle	Low	
3	<i>Corymbia maculata</i> Spotted Gum	Medium	
4	<i>Corymbia maculata</i> Spotted Gum	High	
5	<i>Melaleuca styphelioides</i> Prickly-leaved Paperbark	Low	
6	<i>Melaleuca styphelioides</i> Prickly-leaved Paperbark	High	
7	<i>Melaleuca styphelioides</i> Prickly-leaved Paperbark	Medium	
8	<i>Ulmus parvifolia</i> Chinse Elm	Low	
14	<i>Ulmus parvifolia</i> Chinse Elm	Medium	
21	<i>Ulmus parvifolia</i> Chinse Elm	Low	
22	<i>Eucalyptus melliodora</i> Yellow Box	Medium	
23	<i>Eucalyptus melliodora</i> Yellow Box	Medium	'Minor' <1% TPZ encroachment from proposed grading extents. Minimal, sustainable impact to health and condition likely. Retain and protect as per Section 7 .
26	<i>Ulmus parvifolia</i> Chinse Elm	Low	No works proposed within TPZ. Retain and protect as per Section 7 .
27	<i>Ulmus parvifolia</i> Chinse Elm	Low	
28	<i>Eucalyptus melliodora</i> Yellow Box	Medium	
29	<i>Eucalyptus sideroxylon</i> Mugga Ironbark	Medium	

Tree No.	Genus & Species	Retention Value	Works within the Tree Protection Zone (TPZ)
30	<i>Ulmus parvifolia</i> Chinse Elm	Medium	No works proposed within TPZ. Retain and protect as per Section 7 .
31	<i>Eucalyptus melliodora</i> Yellow Box	Medium	
63	<i>Grevillea robusta</i> Silky Oak	Low	
64	<i>Eucalyptus sideroxylon</i> Mugga Ironbark	Medium	
77	<i>Melaleuca styphelioides</i> Prickly-leaved Paperbark	Low	
81	<i>Melaleuca styphelioides</i> Prickly-leaved Paperbark	Medium	'Minor' 5% TPZ encroachment from proposed carparking area and grading extents. Minimal, sustainable impact to health and condition likely. Retain and protect as per Section 7 .
82	<i>Melaleuca styphelioides</i> Prickly-leaved Paperbark	Medium	'Minor' 9% TPZ encroachment from proposed carparking area and grading extents. Minimal, sustainable impact to health and condition likely. Retain and protect as per Section 7 .

5.4 Ancillary Construction Related Impacts

Vehicles, machinery and equipment requiring access to the site have potential to result in inadvertent impacts to those trees being retained including compaction of the root zone, soil disturbance, physical damage to roots, trunk damage etc. and as such will require management.

Furthermore, storage and stockpiling of material may result in similar impacts and will require management. In this regard, protection for those trees to be retained is to be carried out in accordance with **Appendix 5**.

6 CONCLUSION

6.1 Proposed Development Impact

Based on the plans and information supplied, the proposal would result in the following impacts to existing trees on site:

Removal of fifty-four (54) trees, including:

- Twenty-one (21) site trees (**Trees 9, 11, 12, 13, 16, 17, 18, 20, 25, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75 & 80**) due to falling directly within the footprint of the proposed driveways, carparking areas or site grading works; and
- Seventeen (17) site trees (**Trees 209, 210, 211, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227 & 229**) due to being located within the proposed Northeast Building footprint or associated paving; and
- Thirteen (13) site trees (**Trees 10, 15, 19, 24, 76, 78, 79, 207, 208, 214, 228, 432 & 433**) due to 'Major' and unsustainable incursions to their respective Tree Protection Zones (15-53%) and Structural Root Zones (10-48%) as a result of the proposed building, carparking area, paved areas or site grading works.
- Three (3) site trees (**Trees 212, 213 & 434**) to assist demolition and construction access and implement new landscape scheme.

Retention and protection of twenty-three (23) trees, including:

- Three (3) trees (**Trees 23, 81 & 82**) subject to 'minor' <10% TPZ incursion due to proposed carparking area footprint and grading extents; and
- Twenty (20) trees (**Trees 1, 2, 3, 4, 5, 6, 7, 8, 14, 21, 22, 26, 27, 28, 29, 30, 31, 63, 64 & 77**) that are unlikely to be impacted due to no works being proposed within their respective TPZs.

Impacts are unlikely to result in decline to health and viability pending implementation of tree protection measures and Project Arborist supervision. Any significant departures from the protection measures may result in a reduced Useful Life Expectancy and/or tree removal.

Specific recommendations as per **Section 7** will need to be adopted to ensure potential negative impacts to trees nominated for retention are mitigated.

7 RECOMMENDATIONS

7.1 Tree Removal

Remove **Trees 9, 10, 11, 12, 13, 15, 16, 17, 18, 19, 20, 24, 25, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 78, 79, 80, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 432, 433 & 434** (54 trees) to facilitate the proposed development works.

Development consent and relevant approvals must be obtained prior to the removal or pruning of any tree protected under Part 5 – *Vegetation Protection* of the Albury DCP 2010.

All tree removal work is to be carried out by an experienced Arborist with minimum AQF Level 3 qualifications in accordance with AS4373-2007 - *Pruning of Amenity Trees*, Safe Work Australia Guide for Managing Risks of Tree Trimming and Removal Work (2016) and other applicable legislation.

7.2 Tree Retention & Protection

Retain and protect **Trees 1, 2, 3, 4, 5, 6, 7, 8, 14, 21, 22, 23, 26, 27, 28, 29, 30, 31, 63, 64, 77, 81 & 82** (23 trees) in accordance with the Tree Location Plan & Tree Protection Specifications held at **Appendices 2 & 5**, AS497-2009 *Protection of trees on development sites* and the specific recommendations below:

7.2.1 Project Arborist Engagement

A Project Arborist experienced in tree protection on construction sites should be engaged prior to the commencement of any works on site. The Project Arborist shall monitor and report regularly to the Principal Certifying Authority (PCA) and the Applicant on the condition and protection of the retained trees during the works. The Project Arborist is to supervise and monitor any excavation, machine trenching or compacted fill placement within the TPZ of retained trees throughout construction.

7.2.2 Specific Tree Protection Measures

Tree Protection Fencing must be installed as shown on the Tree Location & Protection Plan Specification held at **Appendix 2** and in accordance with Section 4.3 of AS4970-2009 and **Appendix 6**. Tree protection must not be removed or altered without prior approval of the Project Arborist.

8 REFERENCES

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APPENDIX 1: TREE ASSESSMENT SCHEDULE

Tree No.	Genus & species	Common Name	Height (m)	Crown Spread (m)	DBH (mm)	DGL (mm)	TPZ Radius (m)	SRZ Radius (m)	Age Class	Health / Vitality	Structure/ Condition	SULE Rating	Landscape Significance	Retention Value	Development Impact	Retain / Remove	Comments
1	<i>Ulmus procera</i>	English Elm	6	6	250, 200, 150	400	4.24	2.25	M	Fair	Fair	Medium 15-40 years	Medium	Medium	No works proposed within TPZ	Retain	Triple trunked specimen from ground level. Suckering from base with two stems pruned at ground level. Substantial foliage damage from
2	<i>Acacia sp.</i>	Wattle	7	4	200	250	2.40	1.85	SM	Average	Average	Medium 15-40 years	Low	Low	No works proposed within TPZ	Retain	Failed central leader at 1.5m with skewed secondary leader forming crown.
3	<i>Corymbia maculata</i>	Spotted Gum	9	3	150	200	2.00	1.68	SM	Average	Fair	Medium 15-40 years	Medium	Medium	No works proposed within TPZ	Retain	Under-developed crown and branch architecture.
4	<i>Corymbia maculata</i>	Spotted Gum	9	6	250	350	3.00	2.13	M	Good	Good	Long 40 years +	Medium	High	No works proposed within TPZ	Retain	Good crown development.
5	<i>Melaleuca styphelioides</i>	Prickly-leaved Paperbark	5	2	50	100	2.00	1.50	SM	Average	Fair	Medium 15-40 years	Low	Low	No works proposed within TPZ	Retain	Poor crown density, skewed leader at 2m
6	<i>Melaleuca styphelioides</i>	Prickly-leaved Paperbark	5	5	200, 200, 150	350	3.84	2.13	M	Good	Average	Long 40 years +	Medium	High	No works proposed within TPZ	Retain	Trifurcated union at 1.5m, attachment appears stable.
7	<i>Melaleuca styphelioides</i>	Prickly-leaved Paperbark	5	5	200, 150	300	3.00	2.00	M	Good	Average	Medium 15-40 years	Medium	Medium	No works proposed within TPZ	Retain	Surface roots evident, planted within 1m of drainage pit.
8	<i>Ulmus parvifolia</i>	Chinese Elm	5	5	150	150	2.00	1.50	SM	Average	Average	Medium 15-40 years	Low	Low	No works proposed within TPZ	Retain	Recent pruning of lower branches. Compacted roof zone from parking adjacent.
9	<i>Eucalyptus sideroxylon</i>	Mugga Ironbark	6	4	200	250	2.40	1.85	SM	Good	Good	Long 40 years +	Low	Medium	Within proposed driveway/carpark	Remove	Nil
10	<i>Eucalyptus sideroxylon</i>	Mugga Ironbark	6	4	200	250	2.40	1.85	SM	Good	Average	Long 40 years +	Low	Medium	Major 28% TPZ and 14% SRZ incursion from proposed grading and carpark extents	Remove	Included crossing branch at 2m.
11	<i>Ulmus parvifolia</i>	Chinese Elm	5	2	100	100	2.00	1.50	SM	Fair	Poor	Short 5-15 years	Low	Low	Within proposed driveway/carpark	Remove	Nil.
12	<i>Eucalyptus melliodora</i>	Yellow Box	6	3	200	250	2.40	1.85	SM	Average	Average	Long 40 years +	Low	Medium	Within proposed driveway/carpark	Remove	Nil.
13	<i>Eucalyptus melliodora</i>	Yellow Box	5	3	150	200	2.00	1.68	SM	Good	Average	Long 40 years +	Low	Medium	Within proposed driveway/carpark	Remove	Nil.
14	<i>Ulmus parvifolia</i>	Chinese Elm	5	4	150	200	2.00	1.68	SM	Good	Average	Long 40 years +	Low	Medium	No works proposed within TPZ	Retain	Nil.
15	<i>Ulmus parvifolia</i>	Chinese Elm	5	4	150	200	2.00	1.68	SM	Good	Average	Long 40 years +	Low	Medium	Major 15% TPZ and 27% SRZ incursion from proposed driveway and grading extents	Remove	Nil.
16	<i>Eucalyptus melliodora</i>	Yellow Box	6	5	250	300	3.00	2.00	SM	Good	Average	Long 40 years +	Low	Medium	Within proposed grading extents	Remove	Nil.
17	<i>Eucalyptus sp.</i>	Eucalyptus	5	2	100	100	2.00	1.50	SM	Poor	Fair	Short 5-15 years	Low	Low	Within proposed driveway/carpark	Remove	Nil.
18	<i>Eucalyptus sideroxylon</i>	Mugga Ironbark	5	3	150	200	2.00	1.68	SM	Average	Average	Long 40 years +	Low	Medium	Within proposed driveway/carpark	Remove	Nil.
19	<i>Eucalyptus sideroxylon</i>	Mugga Ironbark	5	3	150	200	2.00	1.68	SM	Average	Fair	Medium 15-40 years	Low	Low	Major 31% TPZ and 10% SRZ incursion from proposed carpark and grading extents	Remove	Nil.
20	<i>Eucalyptus melliodora</i>	Yellow Box	4	2	100	150	2.00	1.50	SM	Poor	Poor	Short 5-15 years	Low	Low	Within proposed driveway/carpark	Remove	Nil.

Tree No.	Genus & species	Common Name	Height (m)	Crown Spread (m)	DBH (mm)	DGL (mm)	TPZ Radius (m)	SRZ Radius (m)	Age Class	Health / Vitality	Structure/ Condition	SULE Rating	Landscape Significance	Retention Value	Development Impact	Retain / Remove	Comments
21	<i>Ulmus parvifolia</i>	Chinese Elm	5	3	100	150	2.00	1.50	SM	Average	Average	Medium 15-40 years	Low	Low	No works proposed within TPZ	Retain	Nil.
22	<i>Eucalyptus melliodora</i>	Yellow Box	9	5	250	300	3.00	2.00	SM	Good	Average	Long 40 years +	Low	Medium	No works proposed within TPZ	Retain	Nil.
23	<i>Eucalyptus melliodora</i>	Yellow Box	10	5	300	350	3.60	2.13	SM	Good	Good	Long 40 years +	Low	Medium	Minor 0.2% TPZ incursion from proposed grading extents	Retain	Nil.
24	<i>Ulmus parvifolia</i>	Chinese Elm	3	2	100	150	2.00	1.50	SM	Poor	Poor	Very Short < 5 years	Low	Low	Major 29% TPZ and 23% SRZ incursion from proposed driveway and grading extents	Remove	Dead central leader, epicormic regrowth from base.
25	<i>Ulmus parvifolia</i>	Chinese Elm	5	4	150	150	2.00	1.50	SM	Average	Fair	Medium 15-40 years	Low	Low	Within proposed grading extents	Remove	Reduced foliage size and colour.
26	<i>Ulmus parvifolia</i>	Chinese Elm	4	3	100	150	2.00	1.50	SM	Fair	Average	Medium 15-40 years	Low	Low	No works proposed within TPZ	Retain	Reduced foliage size and colour.
27	<i>Ulmus parvifolia</i>	Chinese Elm	5	4	150	150	2.00	1.50	SM	Fair	Average	Medium 15-40 years	Low	Low	No works proposed within TPZ	Retain	Reduced foliage size and colour.
28	<i>Eucalyptus melliodora</i>	Yellow Box	6	5	250	300	3.00	2.00	SM	Average	Fair	Long 40 years +	Low	Medium	No works proposed within TPZ	Retain	Secondary leader at 1.5m, crossing branches at 2m.
29	<i>Eucalyptus sideroxylon</i>	Mugga Ironbark	5	4	200	250	2.40	1.85	SM	Good	Average	Long 40 years +	Low	Medium	No works proposed within TPZ	Retain	Nil.
30	<i>Ulmus parvifolia</i>	Chinese Elm	4	4	150	200	2.00	1.68	SM	Average	Average	Long 40 years +	Low	Medium	No works proposed within TPZ	Retain	Reduced crown density and poor foliage colour.
31	<i>Eucalyptus melliodora</i>	Yellow Box	7	4	250, 200	350	3.84	2.13	SM	Good	Fair	Long 40 years +	Low	Medium	No works proposed within TPZ	Retain	Twin trunked from ground level.
63	<i>Grevillea robusta</i>	Silky Oak	7	4	200, 150	350	3.00	2.13	SM	Average	Fair	Medium 15-40 years	Low	Low	No works proposed within TPZ	Retain	Failed central leader with two secondary leaders from 1m.
64	<i>Eucalyptus sideroxylon</i>	Mugga Ironbark	7	4	200	250	2.40	1.85	SM	Average	Average	Long 40 years +	Low	Medium	No works proposed within TPZ	Retain	Bow in trunk at 2m, structurally sound.
65	<i>Grevillea robusta</i>	Silky Oak	8	6	300	350	3.60	2.13	M	Average	Average	Medium 15-40 years	Low	Low	Within proposed driveway/carpark	Remove	Girdling roots at base
66	<i>Grevillea robusta</i>	Silky Oak	8	4	200, 250	100	3.84	1.50	M	Average	Average	Medium 15-40 years	Low	Low	Within proposed driveway/carpark	Remove	Bifurcated from 0.5m
67	<i>Grevillea robusta</i>	Silky Oak	8	3	200	250	2.40	1.85	SM	Average	Fair	Medium 15-40 years	Low	Low	Within proposed driveway/carpark	Remove	Crown suppressed by adjoining trees
68	<i>Callistemon cv.</i>	Bottlebrush Cultivar	4	3	50, 50, 50, 50	150	2.00	1.50	SM	Fair	Fair	Short 5-15 years	Low	Low	Within proposed driveway/carpark	Remove	Lean to north, moderate level of crown dieback and deadwood.
69	<i>Eucalyptus melliodora</i>	Yellow Box	6	3	150	200	2.00	1.68	SM	Good	Average	Long 40 years +	Low	Medium	Within proposed driveway/carpark	Remove	Bifurcated stems at 2m, union appears stable.
70	<i>Ulmus parvifolia</i>	Chinese Elm	6	6	200, 150	300	3.00	2.00	SM	Average	Fair	Long 40 years +	Low	Medium	Within proposed driveway/carpark	Remove	Co-dominant stems from 300mm.
71	<i>Ulmus parvifolia</i>	Chinese Elm	5	5	150, 150	300	2.55	2.00	SM	Average	Fair	Long 40 years +	Low	Medium	Within proposed driveway/carpark	Remove	Co-dominant stems from 300mm.
72	<i>Eucalyptus melliodora</i>	Yellow Box	7	4	200	250	2.40	1.85	SM	Average	Fair	Long 40 years +	Low	Medium	Within proposed driveway/carpark	Remove	Crown shy to east die to adjoining dominant tree. Trifurcated stems from 3m.

Tree No.	Genus & species	Common Name	Height (m)	Crown Spread (m)	DBH (mm)	DGL (mm)	TPZ Radius (m)	SRZ Radius (m)	Age Class	Health / Vitality	Structure/ Condition	SULE Rating	Landscape Significance	Retention Value	Development Impact	Retain / Remove	Comments
73	<i>Ulmus parvifolia</i>	Chinese Elm	4	4	100, 100, 100	200	2.08	1.68	SM	Average	Poor	Medium 15-40 years	Low	Low	Within proposed driveway/carpark	Remove	Included co-dominant stems from 300mm with poor crown form and development.
74	<i>Ulmus parvifolia</i>	Chinese Elm	5	5	150	200	2.00	1.68	SM	Average	Average	Medium 15-40 years	Low	Low	Within proposed driveway/carpark	Remove	
75	<i>Melaleuca styphelioides</i>	Prickly-leaved Paperbark	6	5	300	350	3.60	2.13	M	Average	Average	Long 40 years +	Low	Medium	Within proposed driveway/carpark	Remove	Co-dominant stems from 1.5m, union appears stable.
76	<i>Melaleuca styphelioides</i>	Prickly-leaved Paperbark	6	4	150, 150, 150, 150	350	3.60	2.13	M	Average	Fair	Long 40 years +	Low	Medium	Major 29% TPZ and 15% SRZ incursion from proposed carpark	Remove	4 stems from ground level.
77	<i>Melaleuca styphelioides</i>	Prickly-leaved Paperbark	5	3	150	200	2.00	1.68	SM	Poor	Fair	Short 5-15 years	Low	Low	No works proposed within TPZ	Retain	Epicormic growth at base, minor crown dieback and deadwood, suppressed by adjacent tree.
78	<i>Melaleuca styphelioides</i>	Prickly-leaved Paperbark	5	3	150, 150	300	2.55	2.00	M	Average	Fair	Medium 15-40 years	Low	Low	Major 34% TPZ and 30% SRZ incursion from proposed carpark and grading extents	Remove	Included co-dominant stems from ground level, suppressed crown.
79	<i>Melaleuca styphelioides</i>	Prickly-leaved Paperbark	4	2	100, 50, 50, 50	250	2.00	1.85	S	Poor	Poor	Very Short < 5 years	Low	Low	Major 33% TPZ and 28% SRZ incursion from proposed carpark and grading extents	Remove	90% dead with only epicormic regrowth from base remaining.
80	<i>Melaleuca styphelioides</i>	Prickly-leaved Paperbark	4	3	100, 100, 50, 50	300	2.00	2.00	SM	Poor	Poor	Short 5-15 years	Low	Low	Within proposed grading extents	Remove	Dieback of two secondary leaders, epicormic regrowth evident throughout canopy.
81	<i>Melaleuca styphelioides</i>	Prickly-leaved Paperbark	6	5	350	400	4.20	2.25	M	Average	Average	Long 40 years +	Low	Medium	Minor 5% TPZ incursion from proposed carpark and grading extents	Retain	Nil
82	<i>Melaleuca styphelioides</i>	Prickly-leaved Paperbark	6	5	300	350	3.60	2.13	M	Average	Average	Long 40 years +	Low	Medium	Minor 9% TPZ incursion from proposed carpark and grading extents	Retain	Multiple stems from 3m.
207	<i>Cupressus sp.</i>	Cypress	4	2	150	200	2.00	1.68	M	Good	Good	Long 40 years +	Low	Medium	Major 53% TPZ and 48% SRZ incursion from proposed development paving	Remove	Nil.
208	<i>Cupressus sp.</i>	Cypress	5	2	150	200	2.00	1.68	M	Good	Good	Long 40 years +	Low	Medium	Major 43% TPZ and 37% SRZ incursion from proposed building footprint and development paving	Remove	Nil.
209	<i>Camellia sasanqua</i>	Camellia	4	1	50, 50	100	2.00	1.50	SM	Poor	Poor	Short 5-15 years	Low	Low	Within proposed development paving	Remove	Crown dieback and lean to south.
210	<i>Unknown species</i>	-	7	4	150	200	2.00	1.68	M	Fair	Fair	Medium 15-40 years	Low	Low	Within proposed building footprint	Remove	Outer crown dieback with lean to south.
211	<i>Malus floribunda</i>	Japanese Crab Apple	4	5	200, 150	250	3.00	1.85	M	Good	Average	Long 40 years +	Low	Medium	Within proposed development paving	Remove	Co-dominant stems from 1.5m.
212	<i>Cupressus sempervirens 'Swanes Gold'</i>	Swanes Golden Cypress	7	1	150	200	2.00	1.68	M	Average	Average	Medium 15-40 years	Low	Low	No works proposed within TPZ	Remove	Planted hard on building edge.
213	<i>Cupressus sempervirens 'Swanes Gold'</i>	Swanes Golden Cypress	7	1	150	200	2.00	1.68	M	Average	Average	Medium 15-40 years	Low	Low	No works proposed within TPZ	Remove	Planted hard on building edge.
214	<i>Cupressus sp.</i>	Cypress	5	2	150	200	2.00	1.68	M	Average	Average	Medium 15-40 years	Low	Low	Major 16% TPZ and 15% SRZ incursion from proposed development paving	Remove	Planted hard on building edge.
215	<i>Malus floribunda</i>	Japanese Crab Apple	4	5	100, 100, 100, 100	300	2.40	2.00	M	Good	Average	Medium 15-40 years	Low	Low	Within proposed development paving	Remove	Multi-stem habit from 500mm.
216	<i>Malus floribunda</i>	Japanese Crab Apple	4	4	100, 100, 100, 100	250	2.40	1.85	M	Good	Average	Medium 15-40 years	Low	Low	Within proposed development paving	Remove	Multi-stem habit from 500mm.
217	<i>Malus floribunda</i>	Japanese Crab Apple	4	4	150, 100, 100	250	2.47	1.85	M	Good	Average	Medium 15-40 years	Low	Low	Within proposed development paving	Remove	Multi-stem habit from 500mm.

Tree No.	Genus & species	Common Name	Height (m)	Crown Spread (m)	DBH (mm)	DGL (mm)	TPZ Radius (m)	SRZ Radius (m)	Age Class	Health / Vitality	Structure/ Condition	SULE Rating	Landscape Significance	Retention Value	Development Impact	Retain / Remove	Comments
218	<i>Malus floribunda</i>	Japanese Crab Apple	4	5	150, 150, 100	300	2.81	2.00	M	Good	Average	Medium 15-40 years	Low	Low	Within proposed building footprint	Remove	Multi-stem habit from 500mm.
219	<i>Malus floribunda</i>	Japanese Crab Apple	4	5	150, 150	250	2.55	1.85	M	Good	Average	Medium 15-40 years	Low	Low	Within proposed building footprint	Remove	Multi-stem habit from 500mm.
220	<i>Malus floribunda</i>	Japanese Crab Apple	3	4	150, 150	250	2.55	1.85	M	Average	Average	Medium 15-40 years	Low	Low	Within proposed building footprint	Remove	Multi-stem habit from 500mm.
221	<i>Malus floribunda</i>	Japanese Crab Apple	3	2	50, 50	100	2.00	1.50	SM	Fair	Fair	Short 5-15 years	Low	Low	Within proposed building footprint	Remove	Poor and restricted crown development.
222	<i>Leptospermum cv.</i>	Tea Tree Cultivar	4	4	50, 50, 50, 50	250	2.00	1.85	SM	Good	Average	Medium 15-40 years	Low	Low	Within proposed building footprint	Remove	Multi-stem habit from ground level.
223	<i>Pittosporum sp.</i>	Pittosporum	5	3	100, 100, 50, 50	300	2.00	2.00	M	Good	Poor	Medium 15-40 years	Low	Low	Within proposed building footprint	Remove	Lopped at ground level with epicormic regrowth from stump.
224	<i>Malus floribunda</i>	Japanese Crab Apple	4	4	200	250	2.40	1.85	M	Good	Average	Long 40 years +	Low	Medium	Within proposed building footprint	Remove	Multi-stem habit from 1m.
225	<i>Leptospermum cv.</i>	Tea Tree Cultivar	3	3	50, 50, 50, 50	150	2.00	1.50	SM	Good	Average	Medium 15-40 years	Low	Low	Within proposed building footprint	Remove	Multi-stem habit from 500mm.
226	<i>Hymenosporum flavum</i>	Native Frangipani	5	2	100	150	2.00	1.50	SM	Fair	Fair	Medium 15-40 years	Low	Low	Within proposed building footprint	Remove	Reduced crown density and poor crown development.
227	<i>Leptospermum cv.</i>	Tea Tree Cultivar	4	3	150	200	2.00	1.68	SM	Good	Average	Medium 15-40 years	Low	Low	Within proposed building footprint	Remove	Nil.
228	<i>Leptospermum cv.</i>	Tea Tree Cultivar	4	3	100, 100, 50, 50	250	2.00	1.85	SM	Average	Fair	Medium 15-40 years	Low	Low	Major 47% TPZ and 47% SRZ incursion from proposed building footprint	Remove	Multi-stem habit from 500mm.
229	<i>Washingtonia robusta</i>	Mexican Fan Palm	9	4	450	600	3.00	N/A	M	Average	Average	Long 40 years +	Medium	High	Within proposed development paving	Remove	Nil.
432	<i>Cupressus sempervirens</i>	Mediterranean Cypress	7	1	100	150	2.00	1.50	SM	Average	Average	Medium 15-40 years	Low	Low	Major 51% TPZ and 45% SRZ incursion from proposed development paving	Remove	Nil
433	<i>Cupressus sempervirens</i>	Mediterranean Cypress	7	1	100	150	2.00	1.50	SM	Average	Average	Medium 15-40 years	Low	Low	Major 21% TPZ and 14% SRZ incursion from proposed development paving	Remove	Nil
434	<i>Cupressus sempervirens</i>	Mediterranean Cypress	7	1	100	150	2.00	1.50	SM	Average	Average	Medium 15-40 years	Low	Low	No works proposed within TPZ	Remove	Nil

Tree Inspection Data Notes & Terminology

Tree No. (Tree Number)
The tree number associated to each tree located on or adjacent to the subject site. Relates to the Tree Location Plan held at Appendix 2.

Botanical Name and Common Name
The botanical and common name of each tree is identified and recorded. Occasionally the exact species name is unknown; sp. is recorded to indicate this.

Height, Crown Width and DBH
- The trees height and crown spread is recorded in metres (m);
- The tree DBH is recorded in millimetres (mm). DBH is an abbreviation of Diameter (of the trunk) measured at Breast Height (or 1.4m from the base of the trunk). If more than one trunk is present the DBH is calculated in accordance with AS4970-2009 Protection of Trees on Development Sites

Age Class
The age class of each tree is estimated as either:
J – Juvenile refers to a well established but young tree
SM – Semi Mature, a tree that has not grown to mature size
M – Mature, a tree that has reached mature size and will slowly increase in size over time
OM – Over Mature, a tree that has been mature for a long period and is beginning to display signs of decline, e.g. large dead branches
S – Senescent, an over mature tree that is now in decline

Health & Condition
The trees health and vigour is recorded as a measurement of:
Good - the tree does not appear to appear stressed with no excessive dieback, insect infestation, decay, deadwood or epicormic shoots
Average - the tree appears stressed and has some crown dieback, and /or a few epicormic shoots, and/or some deadwood in the crown and some new growth at branch tips. These trees may benefit from remediation of the growing environment to reduce stress and return it to good health
Fair - the tree may have areas of crown dieback, and/or epicormic shoots, and/or areas of decay, and/or reduced new growth at branch tips. These trees have been stressed for a short period of time, remediation of the growing environment may improve trees health
Poor - the tree may have large areas of crown dieback, and/or many epicormic shoots, and/or reduced new growth at branch tips. These trees have been stressed for a long period of time, remediation of the growing environment would not return the tree to good health.

SRZ (Structural Root Zone)
The SRZ is a radial area extending outwards from the centre of the trunk. This area contains the majority of the structural woody roots. This area is responsible primarily for stability. Root damage or root loss within this zone greatly increases the opportunity for decay fungi to ingress into the heartwood, causing internal decay in addition to destabilising the trees structural integrity. The SRZ is calculated as follows [This calculation is taken from the Australian Standard 4970 – 2009 Protection of Trees on Development Sites]; (D x 50)/0.42 x 0.64

TPZ (Tree Protection Zone)
The TPZ is a radial area measured by multiplying the DBH by twelve (12) or a circular area the size of the trees drip line, whichever is greater. This area contains the majority of the structural and feeder roots responsible for stability, gaseous exchange and water and nutrient uptake. Excavation, back filling, compaction or other disturbance should not occur in this area. The TPZ is used to identify the minimum area required for the safe retention of a given tree. This calculation is derived from the Australian Standard 4970-2009 Protection of Trees in Development Sites. An incursion up to 10% within the TPZ is potentially acceptable if no other option is available. A major encroachment (in excess of 10%) is required to be clearly justified by the Project Arborist and compensated for elsewhere. Justification methodology may vary depending on site or individual tree's health, vigour and ability to withstand disturbance and may require root investigation.

Landscape Significance
The landscape significance of a tree or group of trees is determined using a combination of health/vigour/condition, amenity, heritage and ecological values in accordance with IACA Significance of a Tree, Assessment Rating System (STARS)© (IACA 2010)©.
1. High Significance in Landscape
2. Medium Significance in Landscape
3. Low Significance in Landscape

Retention Value (RV)
Determined by [1] tree free of visual defects and viable for retention, [2] viable for retention with minor faults which may reduce SULE, [3] trees which should not restrict development applications containing faults that are likely to become problematic in the short term, [4] trees to be considered for removal due to average condition.
High Retention - These trees are considered important for retention and should be retained and protected. Design modification or re-location of building/s should be considered to accommodate the setbacks as prescribed by the Australian Standard AS4970 Protection of trees on development sites. Tree sensitive construction measures must be implemented e.g. pier and beam etc. if works are to proceed within the Tree Protection Zone.
Medium Retention - These trees may be retained and protected. These are considered less critical; however their retention should remain priority with removal considered only if adversely affecting the proposed building/works and all other alternatives have been considered and exhausted.
Low Retention - These trees are not considered important for retention, nor require special works or design modification to be implemented for their retention.
Priority for Removal - These trees are considered hazardous, or in irreversible decline, or weeds and should be removed irrespective of development.

U.L.E. Categories
Useful Life Expectancy (after Barrell 1996, modified by the author). A trees U.L.E. category is the life expectancy of the tree modified first by its age, health, condition, safety and location. U.L.E. assessments may be modified as dictated by changes in trees health and environment.

Long - Appear retainable at the time of assessment for over 40 years with an acceptable degree of risk assuming reasonable maintenance.
Medium - Appear to be retainable at the time of assessment for 15 to 40 years with an acceptable degree of risk assuming reasonable maintenance.
Short - Trees appear to be retainable at the time of assessment for 5 to 15 years with an acceptable degree of risk assuming reasonable maintenance.
Very Short - Removal - Trees which should be scheduled for removal within the very short term or as specified within this report.
Small, Young or Regularly Pruned – Trees under 5m in height that can be easily moved or replaced, includes screen plantings or hedge lines.

Development Impact
Brief outline of the impact of the proposed development works or ancillary construction related activities likely to impact the tree.

Retain/Remove
The proposed removal or retention recommendation in light of the proposed development related impacts.

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

<10% - negligible incursion
>10 - <15% - low to moderate level of incursion
>15 - <20% - moderate level of incursion
>20 - <25% - moderate to high level of incursion
>25 - <35% - high level of incursion
>35% - significant incursion within the TPZ

APPENDIX 2 - TREE LOCATION PLAN

NOTE: MUST BE READ IN CONJUNCTION WITH ARBORICULTURAL IMPACT ASSESSMENT



DIMENSIONS :
All dimensions are in millimetres unless otherwise noted. Do not scale from this drawing.

Verify all dimensions on site prior to construction.

CIVIL, STRUCTURAL, HYDRAULIC, ELECTRICAL AND SPECIALIST WATER FEATURE WORKS :
Refer to specialist and consultant's drawings for all information contained within these documents relating to and nominated as specialist and consultant work. Specialist and consultant drawing information contained in the landscape documents are indicative only and not for construction or certification purposes.

Issue	Code	Issue Description	By	Chk	Date
A	CA	FOR APPROVAL	SZ	TP	04.03.25

PRE - Preliminary CA - Council Approval T - Tender CON - Construction

PROJECT

ALBURY BASE HOSPITAL
REDEVELOPMENT -
STAGE 1

DRAWING TITLE

CONTEXT SHEET PLAN

CLIENT



NOTE: MUST BE READ IN CONJUNCTION WITH ARBORICULTURAL IMPACT ASSESSMENT

NOTE: MUST BE READ IN CONJUNCTION WITH ARBORICULTURAL IMPACT ASSESSMENT



CONTEXT MAP

CPS

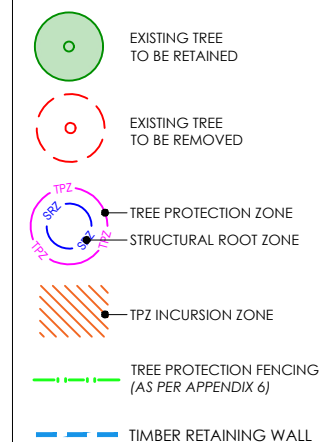
CREATIVE **PLANNING** SOLUTIONS
LEVEL 3
397 RILEY STREET
SURREY HILLS NSW 2010
PO BOX 1074 BROADWAY NSW 2007
TEL: + (61) 2 8039 7461
INFO@CPSPLANNING.COM.AU
CPSPLANNING.COM.AU

DIMENSIONS :
All dimensions are in millimetres unless otherwise noted. Do not scale from this drawing.

Verify all dimensions on site prior to construction.

CIVIL, STRUCTURAL, HYDRAULIC, ELECTRICAL AND SPECIALIST WATER FEATURE WORKS :
Refer to specialist and consultant's drawings for all information contained within these documents relating to and nominated as specialist and consultant work. Specialist and consultant drawing information contained in the landscape documents are indicative only and not for construction or certification purposes.

LEGEND



Issue	Code	Issue Description	By	Chk	Date
A	CA	FOR APPROVAL	SZ	TP	04.03.25

REF: Drawings: CA - Council Approval T - Tender CON - Construction

PRE - Preliminary CA - Council Approval T - Tender CON - Construction

PROJECT

**ALBURY BASE HOSPITAL
REDEVELOPMENT -
STAGE 1 - NORTH-WEST
CARPARK**

DRAWING TITLE

TREE LOCATION PLAN

CLIENT



Drawn : SZ
 Designed : -
 Project No. : H150
 Bar Scale



0 1.5 3 4.5 6 7.5 metres
1:300 @ A3

SHEET NUMBER	REVISION
H150 TLP 01	A

NOTE: MUST BE READ IN CONJUNCTION WITH ARBORICULTURAL IMPACT ASSESSMENT

NOTE: MUST BE READ IN CONJUNCTION WITH ARBORICULTURAL IMPACT ASSESSMENT



CPS

DIMENSIONS :
All dimensions are in millimetres unless otherwise noted. Do not scale from this drawing.

Verify all dimensions on site prior to construction.

CIVIL, STRUCTURAL, HYDRAULIC, ELECTRICAL AND SPECIALIST WATER FEATURE WORKS :
Refer to specialist and consultant's drawings for all information contained within these documents relating to and nominated as specialist and consultant work. Specialist and consultant drawing information contained in the landscape documents are indicative only and not for construction or certification purposes.

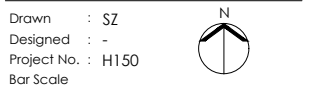
 EXISTING TREE
TO BE REMOVED

PRE - Preliminary CA - Council Approval T - Tender CON - Construction

PROJECT

DRAWING TITLE

CLIENT



SHEET NUMBER	REVISION
H150_TLP_02	A

APPENDIX 3

IACA Significance of a Tree, Assessment Rating System (STARS)© (IACA 2010)©

In the development of this document IACA acknowledges the contribution and original concept of the Footprint Green Tree Significance & Retention Value Matrix, developed by Footprint Green Pty Ltd in June 2001.

The landscape significance of a tree is an essential criterion to establish the importance that a particular tree may have on a site. However, rating the significance of a tree becomes subjective and difficult to ascertain in a consistent and repetitive fashion due to assessor bias. It is therefore necessary to have a rating system utilising structured qualitative criteria to assist in determining the retention value for a tree. To assist this process all definitions for terms used in the *Tree Significance - Assessment Criteria and Tree Retention Value - Priority Matrix*, are taken from the IACA Dictionary for Managing Trees in Urban Environments 2009.

This rating system will assist in the planning processes for proposed works, above and below ground where trees are to be retained on or adjacent a development site. The system uses a scale of *High*, *Medium* and *Low* significance in the landscape. Once the landscape significance of an individual tree has been defined, the retention value can be determined. An example of its use in an Arboricultural report is shown as Appendix A.

Tree Significance - Assessment Criteria



1. High Significance in landscape

- The tree is in good condition and good vigour;
- The tree has a form typical for the species;
- The tree is a remnant or is a planted locally indigenous specimen and/or is rare or uncommon in the local area or of botanical interest or of substantial age;
- The tree is listed as a Heritage Item, Threatened Species or part of an Endangered ecological community or listed on Councils significant Tree Register;
- The tree is visually prominent and visible from a considerable distance when viewed from most directions within the landscape due to its size and scale and makes a positive contribution to the local amenity;
- The tree supports social and cultural sentiments or spiritual associations, reflected by the broader population or community group or has commemorative values;
- The tree's growth is unrestricted by above and below ground influences, supporting its ability to reach dimensions typical for the taxa *in situ* - tree is appropriate to the site conditions.

2. Medium Significance in landscape

- The tree is in fair-good condition and good or low vigour;
- The tree has form typical or atypical of the species;
- The tree is a planted locally indigenous or a common species with its taxa commonly planted in the local area
- The tree is visible from surrounding properties, although not visually prominent as partially obstructed by other vegetation or buildings when viewed from the street,
- The tree provides a fair contribution to the visual character and amenity of the local area,
- The tree's growth is moderately restricted by above or below ground influences, reducing its ability to reach dimensions typical for the taxa *in situ*.

3. Low Significance in landscape

- The tree is in fair-poor condition and good or low vigour;
- The tree has form atypical of the species;
- The tree is not visible or is partly visible from surrounding properties as obstructed by other vegetation or buildings,
- The tree provides a minor contribution or has a negative impact on the visual character and amenity of the local area,
- The tree is a young specimen which may or may not have reached dimension to be protected by local Tree Preservation orders or similar protection mechanisms and can easily be replaced with a suitable specimen,
- The tree's growth is severely restricted by above or below ground influences, unlikely to reach dimensions typical for the taxa *in situ* - tree is inappropriate to the site conditions,
- The tree is listed as exempt under the provisions of the local Council Tree Preservation Order or similar protection mechanisms,
- The tree has a wound or defect that has potential to become structurally unsound.

Environmental Pest / Noxious Weed Species

- The tree is an Environmental Pest Species due to its invasiveness or poisonous/ allergenic properties,
- The tree is a declared noxious weed by legislation.

Hazardous/Irreversible Decline

- The tree is structurally unsound and/or unstable and is considered potentially dangerous,
- The tree is dead, or is in irreversible decline, or has the potential to fail or collapse in full or part in the immediate to short term.

The tree is to have a minimum of three (3) criteria in a category to be classified in that group.

Note: The assessment criteria are for individual trees only, however, can be applied to a monocultural stand in its entirety e.g. hedge.

Table 1.0 Tree Retention Value - Priority Matrix.

		Significance				
		1. High	2. Medium	3. Low		
		Significance in Landscape	Significance in Landscape	Significance in Landscape	Environmental Pest / Noxious Weed Species	Hazardous / Irreversible Decline
Estimated Life Expectancy	1. Long >40 years					
	2. Medium 15-40 Years					
	3. Short <1-15 Years					
	Dead					
Legend for Matrix Assessment 						
		Priority for Retention (High) - These trees are considered important for retention and should be retained and protected. Design modification or re-location of building/s should be considered to accommodate the setbacks as prescribed by the Australian Standard AS4970 <i>Protection of trees on development sites</i> . Tree sensitive construction measures must be implemented e.g. pier and beam etc if works are to proceed within the Tree Protection Zone.				
		Consider for Retention (Medium) - These trees may be retained and protected. These are considered less critical; however their retention should remain priority with removal considered only if adversely affecting the proposed building/works and all other alternatives have been considered and exhausted.				
		Consider for Removal (Low) - These trees are not considered important for retention, nor require special works or design modification to be implemented for their retention.				
		Priority for Removal - These trees are considered hazardous, or in irreversible decline, or weeds and should be removed irrespective of development.				

USE OF THIS DOCUMENT AND REFERENCING

The IACA Significance of a Tree, Assessment Rating System (STARS) is free to use, but only in its entirety and must be cited as follows:

IACA, 2010, *IACA Significance of a Tree, Assessment Rating System (STARS)*, Institute of Australian Consulting Arboriculturists, Australia, www.iaca.org.au

REFERENCES

Australia ICOMOS Inc. 1999, *The Burra Charter – The Australian ICOMOS Charter for Places of Cultural Significance*, International Council of Monuments and Sites, www.icomos.org/australia

Draper BD and Richards PA 2009, *Dictionary for Managing Trees in Urban Environments*, Institute of Australian Consulting Arboriculturists (IACA), CSIRO Publishing, Collingwood, Victoria, Australia.

Footprint Green Pty Ltd 2001, *Footprint Green Tree Significance & Retention Value Matrix*, Avalon, NSW Australia, www.footprintgreen.com.au

IACA 2010, *IACA Significance of a Tree, Assessment Rating System (STARS)*, Institute of Australian Consulting Arboriculturists, www.iaca.org.au

The following example shows the IACA **Significance** of a **Tree, Assessment Rating System** (STARS) used in an Arboricultural report.

Tree Significance

Determined by using the Tree Significance - Assessment Criteria of the *IACA Significance of a Tree, Assessment Rating System* (STARS)© (IACA, 2010), Appendix B.

Trees 14, 16, 17/3, 19 and 20/4 are of high significance with the remaining majority of medium significance and a few of low significance. Tree 14 is significant as a prominent specimen and a food source for indigenous avian fauna. Tree 16 as a non-locally indigenous planting is of good form and prominent *in situ*; Tree 17/3 as a stand of 6 street trees along the Davey Street frontage screening views to and from the site and contiguous with trees in Victoria Park extending the aesthetic influence of the urban canopy to the site. Similarly for Trees 20/4 as street trees in Long Road and Tree 19 as an extant exotic planting as a senescent component of the original landscaping. The trees of low significance are recent plantings as fruit trees – Avocados, and 1 Cootamundra Wattle as a non-locally indigenous tree in irreversible decline and potentially structurally unsound.

Significance Scale

1 – High
2 – Medium
3 – Low

Significance Scale	1	2	3
Tree No. / Stand No.	14, 16, 17/3, 19, 20/4	1/1, 2, 4, 5, 6, 7, 8, 9, 10, 11, 12/2, 15, 18, 21/5	3, 13, 22

Tree Retention Value

Determined by using the Retention Value - Priority Matrix of the *IACA Significance of a Tree, Assessment Rating System* (STARS)© (IACA, 2010), Appendix B.

Retention Value

High – Priority for Retention
Medium – Consider for Retention
Low – Consider for Removal
Remove - Priority for Removal

Retention Value	High Priority for Retention	Medium Consider for Retention	Low Consider for Removal	Remove Priority for Removal
Tree No. / Stand No.	1/1, 5, 17/3*, 19	2, 4, 6, 7, 8, 9, 10, 11, 14, 15, 16, 18, 20/4*, 21/5	3, 12/2, 13,	22

* Trees located within the neighbouring property and should be retained and protected.

APPENDIX 4 - EXTRACT FROM AS4970 2009 PROTECTION OF TREES ON DEVELOPMENT SITES

Section 3, Determining the tree protection zones of the selected trees

3.1 Tree protection zone (TPZ)

"The tree protection zone (TPZ) is the principal means of protecting trees on development sites. The TPZ is a combination of the root area and crown area requiring protection. It is an area isolated from construction disturbance, so that the tree remains viable.

The TPZ incorporates the structural root zone (SRZ) (refer to Clause 3.3.5)."

3.2 Determining the TPZ

The radius of the TPZ is calculated for each tree by multiplying its DBH x 12.

$$\text{TPZ} = \text{DBH} \times 12$$

where

DBH = trunk diameter measured at 1.4 m above ground

Radius is measured from the centre of the stem at ground level.

3.3.5 Structural root zone (SRZ)

"The SRZ is the area required for street stability. A larger area is required to maintain a viable tree. The SRZ only needs to be calculated when a major encroachment into a TPZ is proposed. Root investigation may provide more information on the extent of these roots."

Determining the SRZ

The radius of the TPZ is calculated for each tree by multiplying its DBH x 12.

$$\text{SRZ radius} = (D \times 50)^{0.42} \times 0.64$$

where

D = trunk diameter, in metres, measured above the root buttress.

Note: The SRZ for trees with trunk diameters less than 0.15 m will be 1.5 m (see Figure 1).

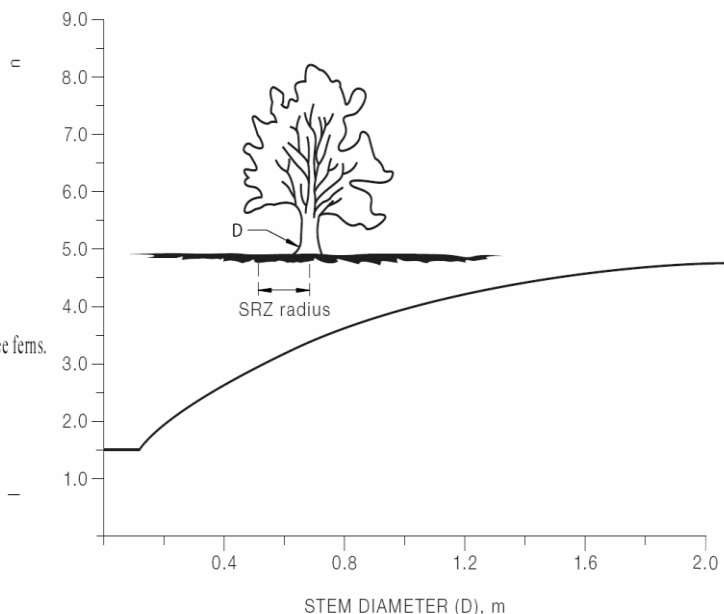
The curve can be expressed by the following formula:

$$R_{\text{SRZ}} = (D \times 50)^{0.42} \times 0.64$$

NOTES:

- 1 R_{SRZ} is the structural root zone radius.
- 2 D is the stem diameter measured immediately above root buttress.
- 3 The SRZ for trees less than 0.15 m diameter is 1.5 m.
- 4 The SRZ formula and graph do not apply to palms, other monocots, cycads and tree ferns.
- 5 This does not apply to trees with an asymmetrical root plate.

FIGURE 1 STRUCTURAL ROOT ZONE



APPENDIX 5 – GENERAL TREE PROTECTION SPECIFICATION

1.0 Project Arborist

A Project Arborist with AQF Level 5 qualifications may be appointed prior to works commencing to ensure trees to be retained are appropriately monitored and protected throughout the proposed works. The Project Arborist shall review all tree protection measures, ensure compliance with requirements set out by the Principal Certifying Authority and provide compliance reports as per the schedule of works and responsibilities below.

Table 5 - Schedule of Works and Responsibilities

HOLD POINT	TASK	RESPONSIBILITY	CERTIFICATION	TIMING OF INSPECTION
1	Review & certification of all tree protection measures	Principal Contractor	Project Arborist (AQF5)	Prior to demolition or site establishment
2	Supervise all excavation works proposed within the TPZ	Principal Contractor	Project Arborist (AQF5)	As required prior to works proceeding within TPZ
3	Inspection of trees by Project Arborist	Principal Contractor	Project Arborist (AQF5)	Quarterly during construction
4	Final Inspection of trees by Project Arborist	Principal Contractor	Project Arborist (AQF5)	Following removal of tree protection measures prior to Occupation Certificate

2.0 Compliance

Compliance Documentation shall be prepared by the Project Arborist following each site inspection. The Compliance Documentation shall include documentary evidence of compliance with the tree protection measures and methods as outlined within this Specification. Upon the completion of the works, a final assessment of the trees shall be undertaken by the Project Arborist and future management strategies recommended.

3.0 Tree Removal

The trees to be removed shall be removed prior to the establishment of the tree protection measures. Tree removal works shall be undertaken in accordance with the *Workcover Code of Practice for the Amenity Tree Industry (1998)*. All tree removal work is to be carried out by an experienced Arborist with minimum AQF Level 3 qualifications in accordance with AS4373-2007 - Pruning of Amenity Trees, Safe Work Australia Guide for Managing Risks of Tree Trimming and Removal Work (2016) and other applicable legislation. Care should be taken to avoid damaging trees to be retained.

4.0 Tree Protection Zone

The Tree Protection Zone (TPZ) is a specified area above and below ground set aside for the protection of a tree. The TPZ should be protected to ensure development activities do not have an adverse effect on the viability and stability of trees to be retained. Activities restricted within the TPZ include:

- Soil cutting or filling, including excavation and trenching
- Soil compaction and modification
- Storage of materials and waste
- Parking of vehicles and plant
- Temporary or permanent installation of sheds, utilities and signs
- Cement or chemical preparation
- Refuelling
- Any other action leading to damage of the tree

5.0 Tree Protection Fencing

TPZ fencing shall be located at the perimeter of the TPZ. Where TPZ areas overlap, TPZ fencing may be combined to form a single larger TPZ area. The exact location of the fencing shall be confirmed through consultation between the Head Contractor/Project Manager and the Project Arborist prior to the commencement of works.

Fencing may be setback to allow for demolition/construction access only where appropriate ground protection is installed and approved by the Project Arborist.

Tree Protection Fencing shall consist of galvanised steel temporary fencing panels supported by concrete feet with panels coupled together. Care should be taken to avoid damaging the tree during the installation of the Tree Protection Fencing. Refer to Typical Tree Protection Details (**Appendix 2**).

6.0 Scaffolding

Scaffolding shall be erected outside of the TPZ. If scaffolding is deemed essential within the TPZ, the ground shall be protected, and branch removal minimised. Ground below scaffolding shall be protected by boarding placed over a layer of mulch to prevent soil compaction. Scaffolding shall be designed to avoid branches or branches tied back. Refer to Typical Tree Protection Details (**Appendix 2**).

7.0 Ground Protection

Where deemed necessary by the Project Arborist, temporary ground protection, such as ground mats or steel road plates placed over a mulch layer with geotextile fabric underneath, shall be utilised to prevent damage to tree roots during construction. Refer to Typical Tree Protection Details (**Appendix 2**).

8.0 Trunk Protection

Trunk protection shall be installed by wrapping padding around the trunk and first order branches to a minimum height of 2m. Timber battens (90 x 45mm) spaced at 150mm centres shall be strapped together and placed over the padding. Timber battens must not be fixed to the trees. Refer to Typical Tree Protection Details (**Appendix 2**).

9.0 Works within the Tree Protection Zones

The Principal Certifying Authority may approve works within Tree Protection Zones. The Project Arborist shall ensure compliance with the prescribed requirements as set out by the Principal Certifying Authority to ensure trees nominated for retention are adequately retained and protected throughout the works.

10.0 Structure & Pavement Demolition

Demolition of existing structures/pavement within the TPZ shall be supervised by the Project Arborist. Machinery is to be excluded from the TPZ unless operating from the existing slabs, pavements or areas of ground protection.

Pavement is to be shattered with a hand-operated pneumatic/electric breaker prior to removal taking place and carefully lifted to minimise damage to the underlying soil profile and tree roots. The underlying soil profile and existing sub-base materials shall remain in-situ.

When removing slab sections within TPZ, machinery shall work backwards out of the TPZ to ensure machinery remains on un-demolished sections of slab at all times. Machinery should not contact the tree's roots, trunk, branches and crown.

Exposed roots shall be irrigated by hand and covered with a 75-100mm layer of mulch as soon as possible after being exposed. The mulch must remain in place until new surfaces are put into place.

11.0 Underground Services

The installation of underground services shall be located outside of the TPZ. Where this is not possible, they shall be installed using in a root-sensitive manner utilising manual hand excavation methods or employ a pneumatic excavation device to ensure roots are maintained and undamaged under supervision of the Project Arborist. Services are to be threaded in between and/or under to preserve existing roots.

13.0 Excavations, Root Protection & Root Pruning

Excavation required within the TPZ shall be undertaken using non-motorised hand tools or a pneumatic excavation device under supervision of the Project Arborist. Excavation must be undertaken in a root sensitive manner to ensure roots are maintained and un-damaged. Should significant roots be identified (>25mmØ) during construction, works are to cease and direction sought from the Project Arborist with regards to root pruning, modification of construction methodology or design alteration.

APPENDIX 6 - TYPICAL TREE PROTECTION DETAILS

