



*Rennie Bros.*  
**TREE SURGEONS**

**PO Box 31 Jannali NSW 2226**

**ABN: 13 339 667 157**

**0414 663 354**

**[info@renniebros.com.au](mailto:info@renniebros.com.au)**

**[www.renniebros.com.au](http://www.renniebros.com.au)**

## **Arborist Report**

# **Arboricultural Impact Assessment**

*Prepared for*  
**Macquarie Health Corporation**

*For the property*  
**369 381 President Avenue Kirrawee, NSW**

*Prepared by*

**Craig Kenworthy RH**

**AQF 5 (Diploma of Arboriculture)**

**RH- Registered Horticulturist with Australian Institute of Horticulture**

**AA – Arboriculture Australia – Registered Consulting Arborist, Tier**

**1**

30/11/20 (V2)

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Version 1	10/4/2018
Version 2	30/11/20 current

## 1.0 Introduction

- a) This report was commissioned by the Macquarie Health Corporation for the proposed additions and alterations to President Private Hospital at 369 – 381 President Avenue, Kirrawee.
- b) Our firm has been engaged to review (22/5/20) amended architectural plans and to address proposed impacts to trees upon the site and adjacent sites to the new plans.
- c) This report will address:
  - Species identification
  - Dimensions and condition
  - ULE and STARS ratings<sup>1</sup>
  - Recommendations and tree protection
- d) Subject site resides in the LGA of Sutherland Shire Council, which is the consenting authority.

## 2.0 Standards

- a) Rennie Bros Tree Surgeons provide an ethical unbiased approach to all assignments.
- b) All tree work recommended in this report are to be in accordance with the appropriate authorities.
- c) Standards used during this assessment and referred to throughout is Australian Standard AS4970-2009 *Protection of Trees on Development Sites*
- d) All tree work recommended in this report is to be conducted in accordance with:
  - Australian Standards – AS4373; ‘Pruning of Amenity Trees’.
  - *Work Health and Safety Act 2011* (WHS Act) and *Work Health and Safety Regulation 2011* (WHS Regulation).
  - All tree works recommended in this report must be carried out under the supervision of a minimum AQF 3 Arborist.

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<sup>1</sup> See Appendices

### 3.0 Disclaimer

- a) The inspection undertaken by our qualified staff relies on visual attributes of tree vigour and structure, which can be assessed from a ground based inspection. Hidden defects, which are not readily visible, may not be detected. We therefore cannot wholly guarantee the condition and safety of the trees inspected beyond what can be reasonably assessed from the procedure used.
- b) Any protection or preservation methods recommended are not a guarantee of tree survival or safety but are designed to improve vigour and reduce risk. Timely inspections and reports are necessary to monitor the trees' condition. No responsibility is accepted for damage or injury caused by the trees and no responsibility is accepted if the recommendations in this report are not followed.
- c) This report is to be utilised in its entirety only. Any written or verbal submission, report or presentation that includes statements taken from the findings, discussions, conclusions or recommendations made in this report, may only be used where the whole of the original report (or a copy) is referenced in, and directly attached to that submission, report or presentation.

### 4.0 Methodology

- a) A secondary site inspection was undertaken on Friday 22/5/2020, by Consulting Arborist Craig Kenworthy (AQF Level 5 Consulting Arborist), using the method of Visual Tree Assessment<sup>2</sup> (VTA); industry standard arboricultural assessment methodology.
- b) The tree assessment was undertaken using criteria based upon International Society of Arboriculture (ISA) guidelines.
  - Species were identified using known attributes (e.g. capsules and buds)
  - Tree height was estimated
  - DBH was measured using diameter tape
  - Crown spread measurement was measured with tape measure
  - A visual inspection of the condition and structure of the tree was done from the ground. No aerial inspection was undertaken.

- c) Documentation provided:

#### Survey

Drawn by: Dunlop Thorpe and Co Pty Ltd

Drawing Name: Survey Plan

Date: 1/8/16

#### Architectural Plans

Drawn by: Image Design Studios

Drawing No.: A 102, 103, 104, 105 and A026 dated 21/4/20

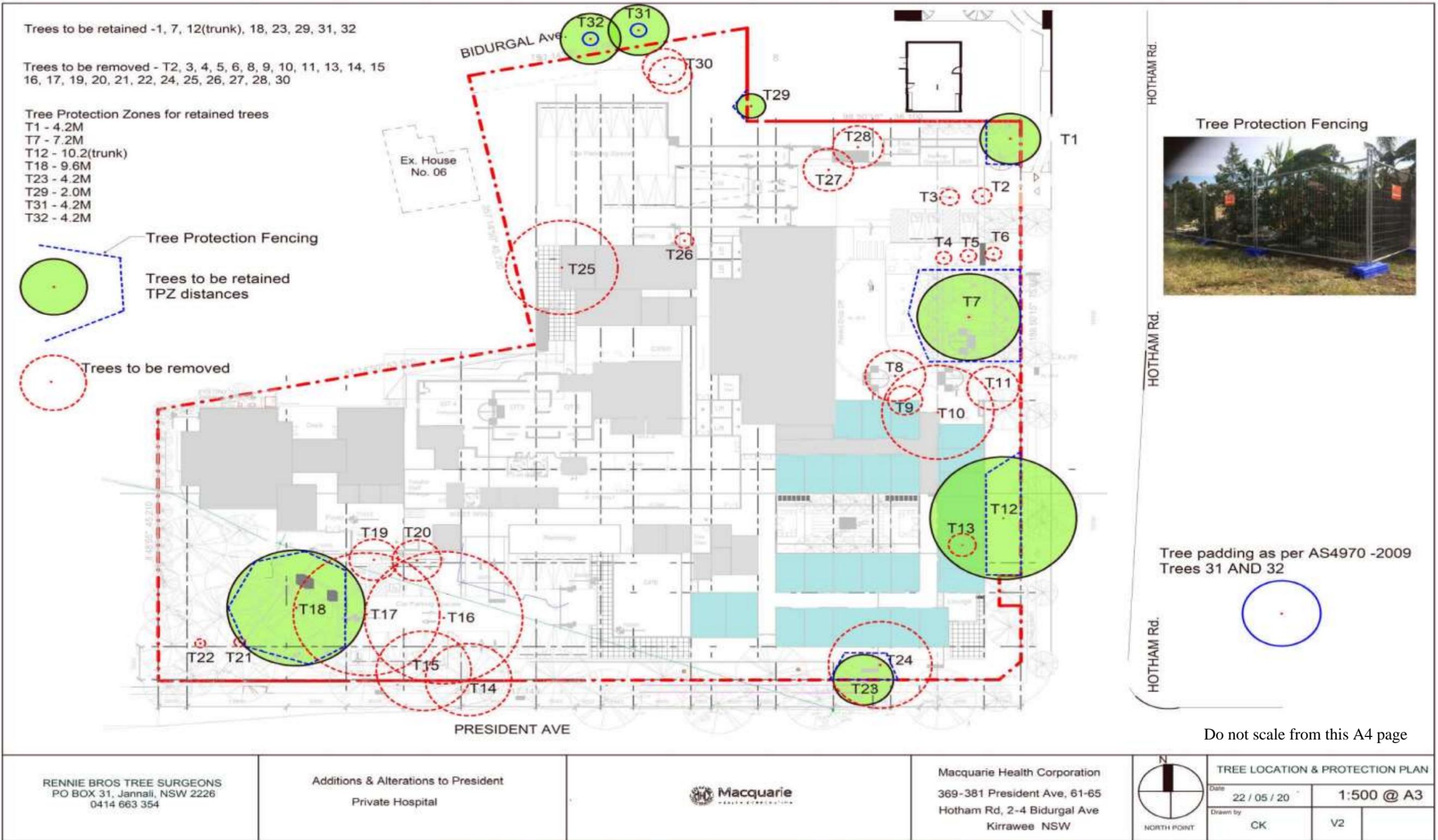
Name of Drawings: Basement plans – 1, 2, 3 and 4, Ground floor, first floor and site set out

Version: 53

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2. Mattheck, C. Breloer, H. The Body Language of Trees – A handbook for failure analysis. The Stationary Office, London, 1994

## 5.0 Tree Location and protection plan



## 6.0 Table 1- Tree data and Assessment

Tree No.	Species	DBH (m)	Height (m)	Vigour	Age	Crown Class	Crown Spread (m)	ULE	STARS	SRZ (m)	TPZ (m)	Recommendation
1	<i>Callistemon viminalis</i>	.350	8.0m	Good	Mature	Dominant	2.5 x 2.5	2d	Low	2.13	4.2	<b>Retain</b> – Tree Protection measures
<b>Assessment</b> <ul style="list-style-type: none"> <li>Tree 1 is located on the property of 61 Hotham Rd Kirrawee, along the front boundary fence line.</li> <li>This tree is not within the footprint of the proposed development.</li> </ul>												
Tree No.	Species	DBH (m)	Height (m)	Vigour	Age	Crown Class	Crown Spread (m)	ULE	STARS	SRZ (m)	TPZ (m)	Recommendation
2	<i>Ligustrum lucidum</i> Broad leafed Privet	.400	7.5	Poor	Mature	Dominant	2.5 x 2.5	4a	Low	na	na	Weed species - <b>Remove</b>
<b>Assessment</b> <ul style="list-style-type: none"> <li>Tree 2 is located on the property of 61 Hotham Rd Kirrawee, along the southern front boundary fence line.</li> <li>A tree that has a majority of delaminating bark upon it, with dead outer canopy</li> <li>This tree/ shrub species is upon the NSW Weeds list - <a href="http://weeds.dpi.nsw.gov.au/">http://weeds.dpi.nsw.gov.au/</a></li> <li>This tree/ shrub species is upon Sutherland Councils exempt Species List - <a href="http://www.sutherlandshire.nsw.gov.au/Outdoors/Environment/Plants-and-Bushland/Weeds">http://www.sutherlandshire.nsw.gov.au/Outdoors/Environment/Plants-and-Bushland/Weeds</a></li> </ul>												

Tree No.	Species	DBH (m)	Height (m)	Vigour	Age	Crown Class	Crown Spread (m)	ULE	STARS	SRZ (m)	TPZ (m)	Recommendation
3	<i>Leptospermum petersonii</i> , lemon-scented tea tree	.188mm (combined stem diameters)	7	Fair	Mature	Dominant	2.0 X 2.0	3c	Low	1.68	2.4	fair condition, suppressed - <b>Remove</b>
<b>Assessment</b> <ul style="list-style-type: none"> <li>Tree 3 is located on the property of 61 Hotham Rd Kirrawee, along the southern front boundary fence line.</li> <li>This tree is within the proposed footprint of proposed development</li> <li>Compensatory planting shall be considered for removal of Tree 3</li> </ul>												
4, 5, 6	<i>Jacaranda mimosifolia</i>	.300	4-6 m		Young	Dead/ in decline	na	4a	low	na	na	2 X Dead, 1 x in decline, poor vigour - <b>Remove</b>
<b>Assessment</b> <ul style="list-style-type: none"> <li>Trees 4, 5 and 6 are located within the grounds of President Private Hospital, fronting Hotham Road, next to concrete driveway.</li> <li>Tree 4, single trunked, fair to poor condition, poor vigour and in decline.</li> <li>Trees 5 and 6 are dead, void of foliage and broken branches.</li> </ul>												
7	<i>Araucaria columnaris</i> Cook Pine	.600	18	G	Mature	Dominant	3.5 X 3.5	2c	Med	2.67	7.2m	Within site, Proposed for <b>retention</b>
<b>Assessment</b> <ul style="list-style-type: none"> <li>Tree 7 is located at the front of the old building fronting Hotham Road, within the grounds of President Private Hospital.</li> <li>This tree is an assumed planted species, single trunked within a circular concrete pathway leading to the old dwelling.</li> <li>This tree is in good condition, proposed for retention with driveway works outside the 7.2m TPZ. Soft landscaping is proposed within the TPZ forming gardens only.</li> </ul>												

Tree No.	Species	DBH (m)	Height (m)	Vigour	Age	Crown Class	Crown Spread (m)	ULE	STARS	SRZ (m)	TPZ (m)	Recommendation
8	<i>Callistemon viminalis</i>	.354mm (combined stem diameters)	7	Good	Mature	Suppressed	2.5 X 2.5	3c	Low	2.13	4.2	<b>Removal</b> due to building proposal footprint
<b>Assessment</b> <ul style="list-style-type: none"> <li>Tree 8 is located within the grounds of President Private Hospital. Approximately 2.5metres from old building and 2m from a drain outlet. Tree growing over top of old dwelling.</li> <li>Multi trunked tree, of typical form and habit, but would need to be removed as tree 8 conflicts with the building development.</li> <li>Compensatory planting shall be considered for removal of Tree 8, elsewhere within the proposal.</li> </ul>												
9	<i>Corymbia maculata</i> Spotted gum	.200	7m	Fair	young	Suppressed	2 X 2	4a	Low	1.68	2.4	Poor vigour and lacking canopy, suppressed by other trees - <b>Remove</b>
<b>Assessment</b> <ul style="list-style-type: none"> <li>Tree 9 is located within the grounds of President Private Hospital. Approximately 2.5metres from tree 8. This tree has very little leaf canopy, is suppressed and etiolated due to poor light. Growing amongst canopy of tree 8 and under tree 10.</li> <li>Kino exudes from base, suffering from mower and whipper snipper damage</li> <li>Tree 9 has the majority of dead wood with several first order roots exposed and damaged.</li> <li>Compensatory planting shall be considered for removal of Tree 9, elsewhere within the proposal.</li> </ul>												
10	<i>Corymbia maculata</i> Spotted gum	.650	18	G	Mature	Dominant	8.5 X 8.5	2c	High	2.76	7.8	Tree of good condition, but would need to be removed as it conflicts with the proposed development footprint - <b>Remove</b>
<b>Assessment</b> <ul style="list-style-type: none"> <li>Tree 10 is located within the grounds of President Private Hospital, fronting Hotham Road Kirrawee.</li> <li>This street tree is a single trunked tree, with good basal flare, 3.0 metres only from existing buildings x 2, and 3.0 metres from existing drains.</li> <li>Many dead branch stubs, sealing wounds and tree having many galls within canopy. Psyllid infestation evidenced.</li> <li>Compensatory re planting x 3 trees upon the site at maturity bag size</li> </ul>												

Tree No.	Species	DBH (m)	Height (m)	Vigour	Age	Crown Class	Crown Spread (m)	ULE	STARS	SRZ (m)	TPZ (m)	Recommendation
11	<i>Angophora costata</i>	.270mm (combined stem diameters)	6	Poor	Mature	Suppressed	1.5 X 1.5	4a	Low	2.0	3.6	Tree with poor form - <b>Remove</b>
<b>Assessment</b> <ul style="list-style-type: none"> <li>Tree 11 is located within the grounds of President Private Hospital, fronting Hotham Road Kirrawee.</li> <li>Main leader has died and removed in the past with two secondary leaders, low vigour.</li> <li>Although this tree is outside the footprint of the proposed development, it is still very close and its current condition does not warrant retention.</li> <li>Compensatory re planting upon the site at maturity bag size.</li> </ul>												
12	<i>Eucalyptus pilularis</i> Blackbutt	.850	15	Fair - Good	Mature	Dominant	9 X 9	1b	High	3.1	10.2	Trees health and viability will not be sustained. <b>remove canopy only</b>
<b>Assessment</b> <ul style="list-style-type: none"> <li>Tree 12 is located within the grounds of President Private Hospital, fronting Hotham Road Kirrawee. Upon the embankment 6 metres north of the large retaining wall, driveway entrance to Hospital carpark.</li> <li>Tree 12 is approximately 6.4 metres from the existing building but proposed basement cut shall be approximately 3m from the western side of the trunk</li> <li>Canopy extends solely to the west and north and therefore shall be unsustainable with proposed levels of carpark and building</li> <li>Tree has a major cavity, east side, and possible fauna hollow. Several recent and past pruning activities evidenced.</li> <li>Trees trunk retained only for fauna habitation.</li> </ul>												
13	<i>Ulmus rubra</i> Slippery Elm	Multitrunked	7	Poor	Mature	Dying	2.5 x 2.5	4e	Low	na	na	Diseased and decayed Tree - <b>Remove</b>
<b>Assessment</b> <ul style="list-style-type: none"> <li>This tree is growing within a small garden bed at the entrance to the hospital fronting Hotham Road.</li> <li>This tree has severe decay, crossing, rubbing limbs and brer attack.</li> <li>Many occlusions and tree showing poor form of aged habit</li> <li>Compensatory planting upon the site and in conjunction with the landscape Plan</li> </ul>												

Tree No.	Species	DBH (m)	Height (m)	Vigour	Age	Crown Class	Crown Spread (m)	ULE	STARS	SRZ (m)	TPZ (m)	Recommendation
14	<i>Melaleuca quinquenervia</i> Broad leafed paperbark	.525mm (combined stem diameters)	6.5	Poor	Mature	Dominant	1.5 x 1.5	4a	Low	2.47	6.0	Located on boundary fence line south – <b>remove</b> as tree is located within entrance and exit/ Ambulance Bay
<b>Assessment</b> <ul style="list-style-type: none"> <li>Tree 14 appears to be located within the site as per Survey Plan.</li> <li>Tree in poor condition, two main trunks with very little foliage within upper canopy.</li> </ul>												
15	<i>Melaleuca quinquenervia</i> Broad leafed paperbark	.541mm (combined stem diameters)	8.5	Fair to Good	Mature	Dominant	3.0 X 3.0	4a	Low	2.57	6.6	Tree to be <b>removed</b> . Close to south boundary of carpark - Remove
<b>Assessment</b> <ul style="list-style-type: none"> <li>Tree 15 is located within the grounds of President Private Hospital, fronting President Ave Kirrawee. Tree 15 is growing within a small unformed garden bed, within the locality of a carpark, south side.</li> <li>Tree has two (2) main trunk leaders, dying/ dead foliage.</li> <li>This tree is getting hit from reversing cars, slight lifting of asphalt.</li> <li>Compensatory planting upon the site and in conjunction with the landscape Plan</li> <li>Unsustainable with proposed works</li> </ul>												

Tree No.	Species	DBH (m)	Height (m)	Vigour	Age	Crown Class	Crown Spread (m)	ULE	STARS	SRZ (m)	TPZ (m)	Recommendation
16	<i>Melaleuca quinquenervia</i> Broad leafed paperbark	.922mm (combined stem diameters)	13	Fair - Good	Mature	Dominant	3.5 X 3.5	3C	Med	3.22	11.0	Tree to be <b>removed</b> . Within middle of carpark - Remove
<b>Assessment</b> <ul style="list-style-type: none"> <li>• Tree 16 is located within the grounds of President Private Hospital, fronting President Ave Kirrawee. Tree 16 is growing within the middle of an unformed/ edged carpark.</li> <li>• Tree 16 is typical of its form and age, with possible hidden occlusion typical of Paperbarks.</li> <li>• Many wounds from vehicles hitting with roots lifting of asphalt within carpark.</li> <li>• Epicormic sprouting of aged, secondary limbs.</li> <li>• Tree has pillars and chains surrounding to prevent vehicles hitting, but all small pillars have been hit and nonfunctioning for their purpose.</li> <li>• Compensatory re planting upon the site at maturity bag size.</li> </ul>												
17	<i>Melaleuca quinquenervia</i> Broad leafed paperbark	.850	15	Fair - Good	Mature	Dominant	4 x 4	4f	Low	3.1	10.2	Tree to be <b>removed</b> . Within middle of carpark - Remove
<b>Assessment</b> <ul style="list-style-type: none"> <li>• Tree 17 is located within the grounds of President Private Hospital, fronting President Ave Kirrawee. Tree 17 is growing within the middle of an unformed/ edged carpark, some 6-7 metres west of Tree 16</li> <li>• Tree 17 has many roots that are uplifting and deforming the asphalt above them. Uplifted asphalt/root zone has been sprayed by hospital for WH &amp;S reasons</li> <li>• Tree 17 is single trunked to four (4) metres with secondary limbs vertical</li> <li>• Tree 17 is typical of its form and age, with possible hidden occlusions typical of Paperbarks.</li> <li>• Tree has pillars and chains surrounding to prevent vehicles hitting, but all small pillars have been hit and nonfunctioning for their purpose</li> <li>• The author recommends removal and the compensatory re planting upon the site at maturity bag size.</li> </ul>												

Tree No.	Species	DBH (m)	Height (m)	Vigour	Age	Crown Class	Crown Spread (m)	ULE	STARS	SRZ (m)	TPZ (m)	Recommendation
18	<i>Corymbia maculata</i> Spotted Gum	.800	7	Fair to Good	Mature	Dominant	7.0 x 7.0	1b	High	3.0	9.6	<b>Retain - Protect</b>
<b>Assessment</b> <ul style="list-style-type: none"> <li>Tree 18 is located within the grounds of President Private Hospital, fronting President Ave Kirrawee. Tree 18 is growing approximately 2.0metres from the existing Café.</li> <li>This tree is growing within a small patch of grass and somewhat away from driving cars</li> <li>Tree has basal exudes of Kino. Root flare is evidenced</li> <li>Proposed works around Tree 18 included suspended, piered stairs and a suspended ramp for access into buildings</li> <li>The author recommends retention of Tree 18</li> </ul>												
19 / 20	<i>Corymbia maculata</i> Spotted Gum	.250 &.300	8.5m & 5m	Poor	Young	Dominant	3.0 x 3.0	4a	Low	1.90	3.4	Located north in carpark – <b>Remove both</b>
<b>Assessment</b> <ul style="list-style-type: none"> <li>Tree 19/20 are both located within the grounds of President Private Hospital, fronting President Ave Kirrawee. Tree 19/20 are growing within a small longitudinal unformed garden bed, north of the carpark.</li> <li>Tree 19 is tall and evidenced of borer attack at base and Tree 20 is in decline, void of leaf within outer canopy. Tree has two (2) main trunk leaders, dying/ dead foliage.</li> <li>Tree 19 has good to fair foliage coverage</li> <li>The author recommends removal of both trees as proposed building, ramp will render both trees unsustainable.</li> </ul>												
21	<i>Michelia figo</i> Port Wine Magnolia	Multistemmed	4.5	Good	Mature	Dominant	2.0 X 2.0	3c	Low	na	na	Tree to be removed. Congested trunk formation, <b>Remove</b>
<b>Assessment</b> <ul style="list-style-type: none"> <li>Tree 21 is located within the grounds of President Private Hospital, fronting President Ave Kirrawee. Tree 21 is Multitrunked, in bud.</li> <li>Tree 21 is growing hard up against concrete ramp and impeding ramp to building. Aged specimen.</li> <li>The author recommends removal and the compensatory re planting upon the site at maturity bag size.</li> </ul>												

Tree No.	Species	DBH (m)	Height (m)	Vigour	Age	Crown Class	Crown Spread (m)	ULE	STARS	SRZ (m)	TPZ (m)	Recommendation
22	<i>Sapium sebiferum</i> Chinese Tallow Tree	na	3	Poor	Young	Dominant	2.5 X 1.5	4a	Low	na	na	Tree to be <b>removed</b> . Void of leaf and delaminating bark Remove
<b>Assessment</b> <ul style="list-style-type: none"> <li>Tree 22 is located within the grounds of President Private Hospital, fronting President Ave Kirrawee. Tree 22 is growing close to the existing building/ small house.</li> <li>Tree 22 is void of majority of leaf, dead and dying tree. Compensatory re planting upon the site.</li> </ul>												
23	<i>Corymbia maculata</i> Spotted Gum	.350	14	Good	Semi mature	Dominant	2.5 X 0	2a	Low	2.13	4.2	Tree to be <b>retained</b> . Basement cut is approximately 5.0 metres north outside TPZ of 4.2m
<b>Assessment</b> <ul style="list-style-type: none"> <li>Tree 23 is located along President Ave, close to boundary line, closer to street lights at corner. Canopy has been disfigured by Service provider pruning for overhead wires</li> <li>Tree 23 appears to be growing within Councils grassed street verge but with the basement calculated at approximately 4.8 – 5.0 metres north, tree protection measures need to be implemented and maintained.</li> <li></li> </ul>												
24	<i>Leptospermum petersonii</i> Tea tree	.600	4.5	Poor	mature	Suppressed	2.5 X 2.5	3a	Low	2.67	7.2	Tree to be <b>removed</b> , unsustainable due to basement cut
<b>Assessment</b> <ul style="list-style-type: none"> <li>Tree 24 is located within the top of grassed verge close to carpark. Planted species with epicormic shoots, crossing and rubbing limbs and lacking vigour and low significance.</li> <li>Tree 24 has been pruned poorly in the past and is recommended to be removed.</li> </ul>												

Tree No.	Species	DBH (m)	Height (m)	Vigour	Age	Crown Class	Crown Spread (m)	ULE	STARS	SRZ (m)	TPZ (m)	Recommendation
25	<i>Quercus robur</i> English Oak	.650	14	fair	Mature	Dominant	7 X 7	2b	Med	2.9	7.8	Tree to be <b>removed</b> .
<b>Assessment</b> <ul style="list-style-type: none"> <li>Tree 25 is located within the grounds of President Private Hospital, rear north west open space. This tree is an aged tree with several decayed pockets noticeable from the ground, decay extent unknown.</li> <li>Tree 25 is in fair condition, with past pruning wounds present exhibiting epicormic shoots throughout. Stagheaded with fallen dead limbs evidenced.</li> <li>Proposed carpark conflicts with this tree, being a total loss</li> </ul>												
26	<i>Ligustrum lucidum</i> Broadleaf Privet	multistem med	4	na	mature	Dominant	na	remove	Low	na	na	Tree to be <b>removed</b>
<b>Assessment</b> <ul style="list-style-type: none"> <li>Tree 26 is located within the grounds of President Private Hospital, close to rear open space and carpark</li> <li>Tree 26 is an exempt Spp and shall be removed. Currently in seed.</li> </ul>												
27/28	<i>Archontophoenix cunninghamiana</i> Bangalow Palm	.150(2)	5.5 -7	good	mature	Dominant	2.5 X 2.5	2a	Low	2.00	3.5	Tree to be <b>removed</b> , Low significance
<b>Assessment</b> <ul style="list-style-type: none"> <li>Trees 27/28 are located at the rear of No 61 Hotham Rd (red brick building), owned by Hospital, in locations that are unsustainable for retention, due to proposal.</li> </ul>												
29	<i>Ligustrum lucidum</i> Broadleaf Privet	Multistem med <100mm	5	fair	Semi mature	Dominant	1.5 x 1.5	3a	Low	1.5	2.0	Tree to be <b>retained</b> .
<b>Assessment</b> <ul style="list-style-type: none"> <li>Tree 29 is located within No 59 Hotham Rd. Tree is up against rear fence and although it is an exempt tree spp, this tree is the neighbour's rear yard and shall be retained.</li> </ul>												

Tree No.	Species	DBH (m)	Height (m)	Vigour	Age	Crown Class	Crown Spread (m)	ULE	STARS	SRZ (m)	TPZ (m)	Recommendation
30 (x2)	<i>Archontophoenix cunninghamiana</i> Bungalow Palm	.150	5.5	good	mature	Suppressed	2.5 X 2.5	3a	Low	1.85	3.0	Palms to be <b>removed</b> , unsustainable due to proposed footprint
<b>Assessment</b> <ul style="list-style-type: none"> <li>Tree 30 (2) are located within No 2 Bidurgal St, front yard. Planted species in good condition. Being of low significance these palms are recommended to be removed.</li> </ul>												
31	<i>Callistemon viminalis</i> Weeping bottlebrush	.350	4	fair	mature	Dominant	2.5 X 1.5	2a	Low	2.13	4.2	Tree to be <b>retained</b> , Councils asset.
<b>Assessment</b> <ul style="list-style-type: none"> <li>Tree 31 is Councils street verge, asset. Tree has been regularly pruned due to overhead wires and has lost all apical dominance.</li> <li>Tree 31 shall be retained and protected before and during the build process.</li> </ul>												
32	<i>Callistemon viminalis</i> Weeping bottlebrush	.350	4	fair	mature	Dominant	2.5 X 1.5	2a	Low	2.13	4.2	Tree to be <b>retained</b> , Councils asset.
<b>Assessment</b> <ul style="list-style-type: none"> <li>Tree 32 is Councils street verge, asset. Tree has been regularly pruned due to overhead wires and has lost all apical dominance. Close to tree 31</li> <li>Tree 32 shall be retained and protected before and during the build process.</li> </ul>												

## 7.0 Tree Impact Assessment

- 1) The proposed development will see the demolition of two (2) existing dwellings, both within Hotham Street, two dwellings within Bidurgal and site structures and the construction of a new alterations and additions to 369 – 381 President Avenue Kirrawee.
- 2) Summary of trees; Thirty Two (32) trees were assessed.

**Tree 1 – *Callistemon viminalis* – RETAIN** – This tree is growing within the front yard of 61 Hotham Rd Kirrawee. Tree Protection measures shall be recommended

**Tree 2 – *Ligustrum lucidum* – EXEMPT/ REMOVE** - This tree is growing within 61 Hotham Rd Kirrawee, South Boundary front fence. This tree/ shrub species is upon the NSW Weeds list - <http://weeds.dpi.nsw.gov.au/>

This tree/ shrub species is upon Sutherland Councils exempt Species List - <http://www.sutherlandshire.nsw.gov.au/Outdoors/Environment/Plants-and-Bushland/Weeds>

**Tree 3 – *Leptospermum petersonii* – REMOVE** - This tree is growing within 61 Hotham Rd and growing within the footprint of proposed development.

**Tree 4, 5 & 6 – *Jacaranda mimosifolia* (X3) – REMOVE** – These three trees are dying, in decline or suppressed and not worthy of retention

**Tree 7 – *Araucaria columnaris* – RETAIN** –

- Amended driveways are outside of TPZ. Soft landscaping surrounding tree only.
- Proposed entry and exit south of tree is close, but outside of 7.2m TPZ
- The existing aged building is approximately 8.0 metres currently west from tree 7. The proposed edge of the return driveway is shown as 11.5 metres west of tree 7 and minimizes impacts to T7.
- The proposed wheelchair parking, north of T7 is approximately 5.0 metres outside of tree 7 TPZ
- The items shown within the TPZ of T7 are softscaping only, reflecting seating and planting and forms part of the landscape submission.
- The TPZ of 7.2m for Tree 7 is calculated upon the front boundary line, east.

**Tree 8 – *Callistemon viminalis* – REMOVE** – Growing within proposed development

**Tree 9 – *Corymbia maculata* – REMOVE** – Suppressed tree, growing within proposed development footprint

**Tree 10 – *Corymbia maculata* – REMOVE** – Tree conflicts with development footprint with compensatory plantings recommended for this removal.

**Tree 11 – *Angophora costata* – REMOVE** - Poor condition, low vigour.

**Tree 12 – *Eucalyptus pilularis* – RETAIN TRUNK**– This tree is growing upon an embankment with the proposed basement several metres west of this tree. The canopy of this tree extends predominately north to north west with the proposal conflicting with this tree. Recommendations for canopy removal only and retention of the trunk as this possesses a potential fauna habitat.

**Tree 13 – *Ulmus rubra* – REMOVE** – Poor condition, decay, compensatory planting for this removal recommended.

**Tree 14 – *Melaleuca quinquenervia* – REMOVE** - This tree is growing within the Councils grassed verge upon President Ave, with proposed carpark works, entry/ exit of site conflicting with tree.

**Tree 15 – *Melaleuca quinquenervia* – REMOVE** - This tree is growing within existing carpark, dying, close to boundary.

**Tree 16 – *Melaleuca quinquenervia* – REMOVE** - This tree is growing within existing carpark, middle of asphalt, Tree too large for location and dangerous for clients/ patients.

**Tree 17 – *Melaleuca quinquenervia* – REMOVE** - This tree is growing within existing carpark, middle of asphalt, Tree too large for location and dangerous for clients/ patients with roots lifting asphalt.

**Tree 18 – *Corymbia maculata* – RETAIN** – Growing within grassed section next to Café, at the carpark. Proposed works have demonstrated elevated stairs and ramp with isolated piers within the TPZ of this

tree. Hand excavations and root mapping may alleviate potential issues if structural elements of the proposal conflict with major structural roots of this tree. Tree Protection measures recommended.

**Tree 19/20 – *Corymbia maculata* - REMOVE** – Both trees are dying, insect borer damage and in path of vehicle parking.

**Tree 21 – *Michelia figo* – REMOVE** – Aged and growing within proposed parking allotment

**Tree 22 – *Sapium sebiferum* – REMOVE** – Dead/ dying small tree

**Tree 23 – *Corymbia maculata* - RETAIN** – Basement carpark is approximately 5.0 metres north of tree and TPZ is 4.2. Tree protection measures implemented.

**Tree 24 – *Leptospermum petersonii* – REMOVE** – Total loss from basement carpark, south of site

**Tree 25 – *Quercus robur* – REMOVE** – Conflicts with proposal, total loss due to basement carpark

**Tree 26 – *Ligustrum lucidum* – REMOVE** – Exempt Spp remove, total loss

**Tree 27 / 28 – *Archontophoenix cunninghamiana* – REMOVE** – Conflicts with proposal, total loss

**Tree 29 – *Ligustrum lucidum* – RETAIN** – Neighbours tree against fence

**Tree 30 (2) – *Archontophoenix cunninghamiana* – REMOVE** – Conflicts with proposal, total loss

**Tree 31 – *Callistemon viminalis* – RETAIN** – Councils asset

**Tree 32 – *Callistemon viminalis* – RETAIN** – Councils asset

## 8.0 Recommendations for tree protection

1. An AQF 5 Project Arborist shall be engaged prior to and throughout construction. Trees 1, 7, 12 (trunk) 18, 23, 29, 31 and 32 are recommended for retention and protection.
2. A site meeting prior to commencement of works is recommended between the project AQF 5 Arborist and Builder to discuss the necessary Tree Protection Plan for Trees 1, 7, 12 (trunk), 18, 23, 29, 31 and 32.
3. The project AQF 5 Arborist must certify in writing that tree protection measures have been installed for Trees 1, 7, 12 (trunk), 18, 23, 29, 31 and 32.
4. The project AQF 5 Arborist shall attend the site regularly to view and report on the upkeep and placement of tree protection measures throughout the build process, for the ongoing viability of trees to be retained.
5. Tree Protection Zone (TPZ) is the area surrounding the tree required to maintain tree vigour.
6. Formative / Target pruning is recommended for Tree 12, by a minimum AQF Level 3 climbing Arborist to retain the fauna habitat for this tree.
7. Tree protection is to form part of all site worker's induction.
8. During demolition;
  - a. Machinery such as an excavator will be required during demolition of the existing dwelling. Machines such as excavators cannot be used within the TPZ of Trees 1, 7, 12 (trunk), 18, 23, 29, 31 and 32. This is to protect the trees roots from damage caused by compaction to the soil. It is recommended that the operator keeps the tracks of the excavator outside of the TPZ and carefully works backwards with the bucket within the TPZ. In some circumstances, machinery can be used within the TPZ, however ground protection is required and needs to be certified by the Project Arborist. Where vehicular access is required, the TPZ is to be first laid with geotextile, then a 100mm mulch layer, further root protection (steel plates or rumble boards, as per AS4970-2009) should be provide a temporary pathway over the mulch. The temporary vehicular access-way should be constructed as to be capable of supporting vehicles used during demolition.

- b. During demolition and construction, it is important to irrigate the area within the dripline of the tree at least twice a week. To help improve the conditions for the tree, apply Seasol to the soil within the dripline at the rate prescribed by the label. Seasol will promote root growth and help minimise any impact caused by the development.
  - c. Soil levels within the TPZ of Trees 1, 12, 14 and 18 must remain at the existing levels.
  - d. Fencing is required prior to the commencement of works. Due to site restraints, fencing to enclose the TPZ is not always practical. Fencing shall be 1.8m high chain mesh material temporary fencing. The purpose of the fencing is to protect the trees roots, trunk and branches, and minimize the impact on the trees during construction. The building contractor shall ensure that the trunk protection/ fencing remains secure throughout the development work period.
  - e. Place a sign on the fencing stating; 'Tree Protection Zone- Do not enter' so contractors are aware.
  - f. Add mulch to the area within TPZ of Tree 1, 7, 12 (trunk), 18, 23, 29, 31 and 32 to a depth of 100mm and not covering the root flare. Mulch will help to limit evaporation. Mulch will break down and improve the organic matter in the soil and increase microbial activity. Mulch will also reduce compaction and provide further protection for tree roots when work within the TPZ is required.
  - g. The building contractor shall ensure that during site works, the following activities shall not take place within the TPZ's of all trees to be retained and protected;
    - i. Preparation of chemicals, including cement products
    - ii. Refuelling
    - iii. Dumping of waste and skip bins
    - iv. Wash down and cleaning of equipment
    - v. Physical damage to any part of a tree
9. Excavation for piers must be done under the supervision of Project Arborist. If roots greater than 30mmØ are located when digging, then the location of the piers must be changed. Any pruning of roots must be approved by the Project Arborist and done only under the supervision of the Project Arborist. To protect roots from damage, any roots cut should be done so cleanly using hand tools, then covered in hessian and kept moist to prevent them from drying out.
10. If excavation for any service is required through the TPZ of any tree to be retained, then it must be under-bored at a depth of more than 600mm via directional drilling. If any roots less than 30mmØ need to be cut then it should be done so cleanly using hand tools, then covered in hessian and kept moist to prevent them from drying out.
11. Added fill soil used for sub base must be an approved permeable material and must not exceed 100mm in depth.
12. When constructing a new boundary fence, post holes within the TPZ's are to be hand dug (or other non-destructive techniques, e.g. air spade) and no roots greater than 30mm are to be severed. All excavation is to be under the supervision of the AQF level 5 project arborist.
13. The Project Arborist shall assess the trees on completion and certify that the completed works have been carried out to the tree protection specifications; practical completion assumes that all construction and landscaping is finished. All remaining tree protection measures can be removed.

## 9.0 Photographs

Photo 1 below, looking north at Tree 1, *Callistemon viminalis* to be RETAINED/ PROTECTED.



Photo 2, below, looking south to Tree 2 and Tree 3 to be REMOVED.



Photo 3, below looking at Trees 4, 5, 6 to be REMOVED. Tree 7 shall be RETAINED/ PROTECTED



Photo 4, below looking south at trees 8, 9, 10, 11, to be REMOVED and 12 for RETENTION, with the canopy removed and the trunk retained for fauna habitation.



Photo 5, below looking at entrance to carpark, with tree 13, to be REMOVED



Photo 6, below, looking south with trees 12 to be RETAINED / PROTECTED (trunk only) and Tree 13 to REMOVED



Photo 7, below looking south west into carpark showing Tree 14, 15, 16 and 17 to be REMOVED, whilst Tree 18 shall be RETAINED / PROTECTED (survey showing T14 is within the site)



Photo 8, below, looking north at Tree 19 and Tree 20, both in decline and suffering borer damage/ vehicle damage, both TO BE REMOVED



Photo 9 below looking at tree 21 to be REMOVED, to make way for carpark



Photo 10, below, west at Tree 22, *Sapium sebiferum* delaminating and in decline to be REMOVED



Photo 11, below, looking east Tree 23 and 24 with tree 23 to be retained and tree 24 to be removed.



Photo 12, below, looking west to tree 25 to be removed. Aged mature tree with proposal conflicting with tree 25.



Photo 13, below, looking north to trees 27/28 on site to be removed and tree 29 (neighbours tree) to be retained



Photo 14, below, looking west to trees 30, 32 and 32, with 30 being removed and trees 31 and 32 being retained and protected



## Appendix A - Glossary

### Age

Is the estimate of the tree age based upon the expected life span of the species. Divided into three stages.

Young- Trees less than 20% of life expectancy.

Mature- Trees aged between 20% to 80% life expectancy.

Over-mature- Trees aged over 80% of life expectancy (potential symptoms of senescence)

AQF Australian Qualification Framework

### Crown Class

Are the different crown habits as influenced by surrounding structures. They are:

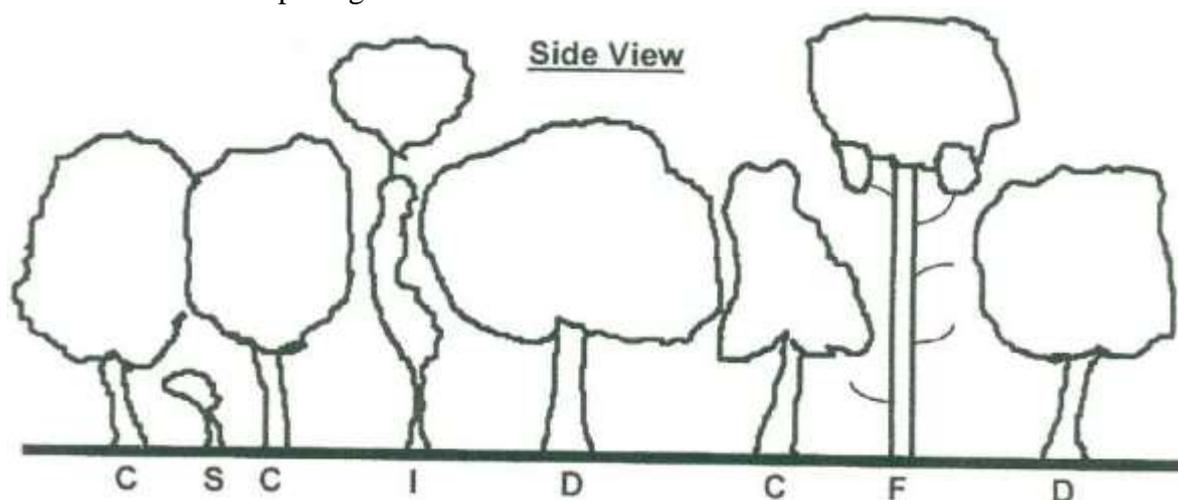
Dominant- Crown is receiving uninterrupted light from above and sides, also known as emergent.

Codominant- Crown is receiving light from above and one side of the crown.

Intermediate- Crown is receiving light from above but not the sides of the crown.

Suppressed- Crown has been shadowed by the surrounding elements and receives no light from above or sides.

Forest - Characterised by an erect, straight stem (usually excurrent) with little stem taper and virtually no branching over the majority of the stem except for the top of the tree which has a small concentrated branch structure composing the crown.



**Illustrated Crown classes**

Source: Hazard Tree Assessment Program, Recreation and Park Department, City of San Francisco, California, cited in Matheny, N. & Clark, J. R., 1998.

### Crown Aspect

In relation to the root crown, this refers to the aspect the majority of the crown is located. Symmetrical where the centre of the crown resides over the root crown or the cardinal direction the centre of the crown resides, being North, South, East or West.

### Crown Spread

A two-dimension linear measurement (n metres) of the crown plan. The first figure being the north-south span, the second being the east-west measurement.

DBH Diameter at Breast Height (approx. 1.4 metres above ground level)

### Origin

Refers to the natural occurrence of the tree species as referenced in Forest Trees of Australia.

This may be summarised by one of the three terms:

Endemic- natural occurrence to the area the species is located (and possibly other areas).

Exotic- naturally occurs in another country but not in Australia.

Native- does not naturally occur within the area the species is located but is found elsewhere in Australia.

Remnant- natural occurrence within area, and part of the natural planting

SRZ Structural Root Zone; disturbance within this area may affect stability of the tree  $((D \times 50)^{0.42} \times 0.64)$  expressed as a radius measured from the centre of trunk – source AS4970-2009 Section 3, pp. 11-14)

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

TPZ Tree Protection Zone; tree may cope with minimal disturbance in this area, depends on underlying soil, existing structures, etc. (DBH x 12 expressed as a radius measured from the centre of trunk – source AS4970-2009 Section 3, pp. 11-14)

ULE Useful Life Expectancy (after Jeremy Barrel, 2009)

Vigour can be categorised as:

G- Good

F- Fair

P- Poor

### (VTA) Visual tree assessment

A procedure of defect analysis developed by Mattheck and Breloer (1994) that uses the growth response and form of trees to detect defects.

## **Appendix B : IACA Significance of a Tree Assessment Rating System (STARS)**

### **Criteria for Assessment of Landscape Significance**

#### **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.**

### Tree Retention Values- Assessment Methodology

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



	<p><b>Priority for Retention (High)</b> - 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.</p>
	<p><b>Consider for Retention (Medium)</b> - 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.</p>
	<p><b>Consider for Removal (Low)</b> - These trees are not considered important for retention, nor require special works or design modification to be implemented for their retention.</p>
	<p><b>Priority for Removal</b> - These trees are considered hazardous, or in irreversible decline, or weeds and should be removed irrespective of development.</p>

**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](http://www.icomos.org/australia)

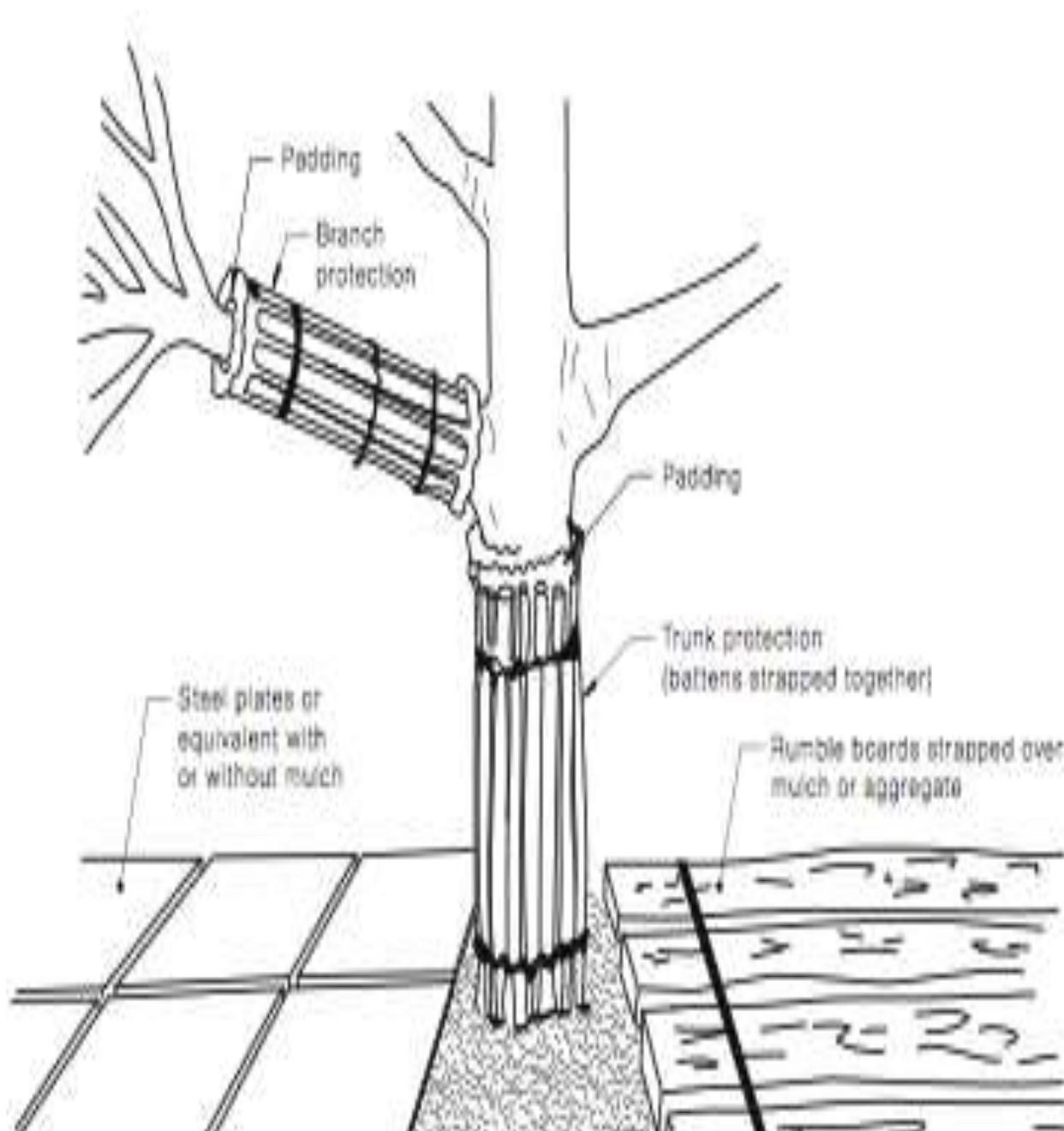
Draper BD and Richards PA 2009, *Dictionary for Managing Trees in Urban Environments*, Institute of Australian Consulting Arboriculturists (IACA), CSIRO Publishing, Collingwood, Victoria, Australia.

## Appendix C : Useful Life Expectancy (ULE)

After Jeremy Barrell, 2009  
Barrelltreecare.co.uk

	1. Long	2. Medium	3. Short	4. Removal	5. Moved or Replaced
	Trees that appeared to be retainable at the time of assessment for more than 40 years with an acceptable level of risk.	Trees that appeared to be retainable at the time of assessment for 15 – 40 years with an acceptable level of risk.	Trees that appeared to be retainable at the time of assessment for 5 – 15 years with an acceptable level of risk.	Trees that should be removed within the next 5 years.	Trees which can be reliably moved or replaced.
<b>A</b>	Structurally sound trees located in positions that can accommodate future growth.	Trees that may only live between 15 and 40 years.	Trees that may only live between 5 and 15 more years.	Dead, dying, suppressed or declining trees through disease or inhospitable conditions.	Small trees less than 5m in height.
<b>B</b>	Trees that could be made suitable for retention in the long term by remedial tree care.	Trees that may live for more than 40 years but would be removed for safety or nuisance reasons.	Trees that may live for more than 15 years but would be removed for safety or nuisance reasons.	Dangerous trees through instability on recent loss of adjacent trees.	Young trees less than 15 years old but over 5m in heights
<b>C</b>	Trees of special significance for historical, commemorative or rarity reasons that would warrant extraordinary efforts to secure their long term retention.	Trees that may live for more than 40 years but would be removed to prevent interference with more suitable individuals or to provide space for new planting.	Trees that may live for more than 15 years but should be removed to prevent interference with more suitable individuals or to provide space for new planting.	Damaged trees through structural defects including cavities, decay, included bark, wounds or poor form.	Trees that have been pruned to artificially control growth.
<b>D</b>		Trees that could be made suitable for retention in the medium term by remedial tree care.	Trees that require substantial remedial tree care and are only suitable for retention in the short term.	Damaged trees that are clearly not safe to retain.	
<b>E</b>				Trees that may live for more than 5 years but should be removed to prevent interference with more suitable individuals or to provide space for new plantings.	
<b>F</b>				Trees that are damaging or may cause damage to existing structures within 5 years.	
<b>G</b>				Trees that will become dangerous after removal of other trees for reasons given in (A) to (F).	

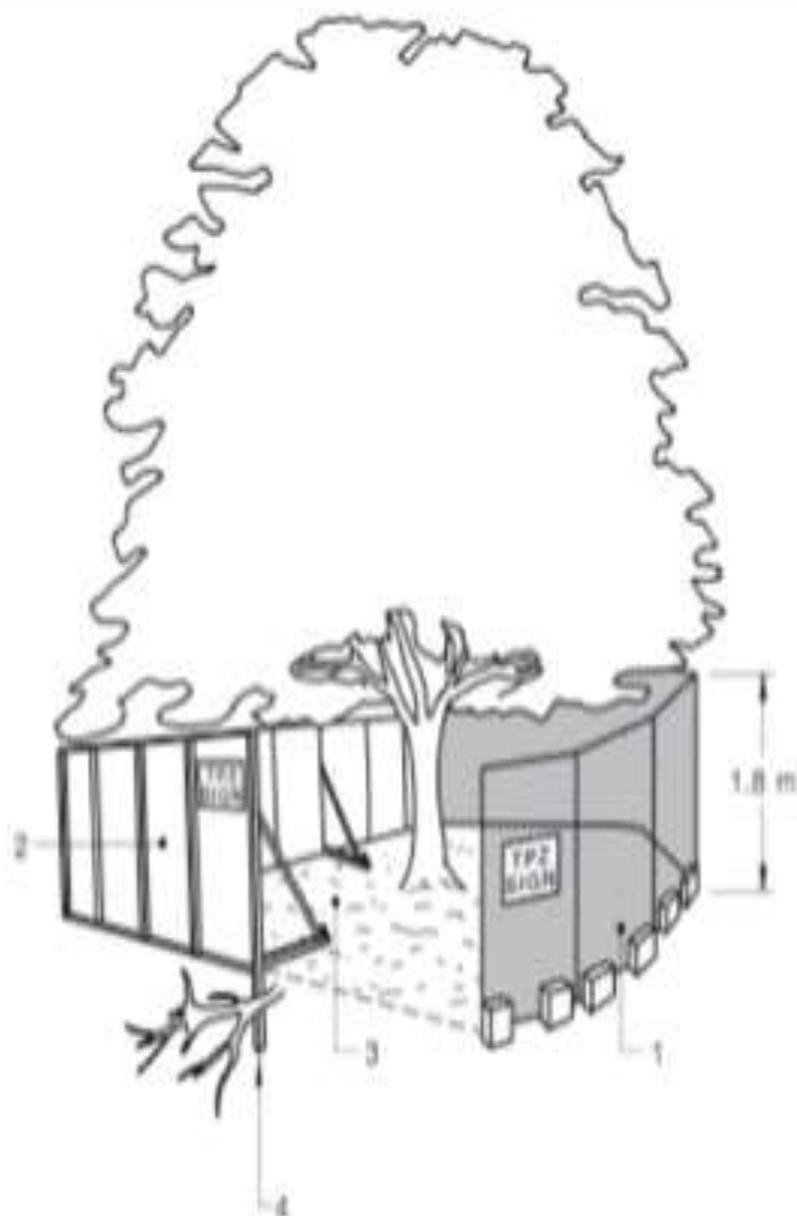
## Appendix D : Root, branch and trunk protection



### NOTES:

1. For trunk and branch protection use boards and padding that will prevent damage to bark. Boards are to be strapped to trees, not nailed or screwed.

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

Regards



Craig Kenworthy RH (MAIH)  
AQF Level 5 Consulting Arborist



Registered Horticulturist (RH) – Australian Institute of Horticulture #2623 (2020)  
Member of Arboriculture Australia – AA (2020)  
Member of International Society of Arboriculture – ISA (2020)  
Assoc Member – IACA -Institute of Australian Consulting Arboriculturists  
AQF Level 5 - Arboriculture  
AQF Level 5 – Landscape Design  
AQF Level 5 – Horticulture