



TREE MANAGEMENT CONSULTING ARBORICULTURISTS

ARBORICULTURAL IMPACT ASSESSMENT

for

Zhiva Living

SITE ADDRESS

**3 QUARRY ROAD and 4 VINEY ROAD
DURAL**

MARCH 2019

Prepared by
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**INSTITUTE OF AUSTRALIAN
CONSULTING ARBORICULTURISTS**



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1 INTRODUCTION

- 1.1 This Arboricultural Impact Assessment (AIA) prepared by Urban Forestry Australia (UFA) was commissioned by Christo Winters, on behalf of the owners of the subject site. “The site” is identified as Lot 2A in DP 158064 and Lot 1 in DP 230172, and known as 3 Quarry Road and 4 Vineys Road, Dural, New South Wales
- 1.2 This AIA is to accompany an amended development application to Hornsby Shire Council for a proposed residential aged-care facility, including basement car parking and ancillary building on the site.
- 1.3 The purpose of this report is to assess the *vigour* and *condition* of the surveyed trees, and identify the potential impacts the proposed development may have on those trees to be retained in proximity to the works.
- 1.4 This report gives recommendations for tree retention or removal, and provides guidelines for tree protection and maintenance.
- 1.5 Care has been taken to obtain all information from reliable sources. All data has been verified as far as possible; however, I can neither guarantee nor be responsible for the accuracy of information provided by others.
- 1.6 This AIA is not intended as an assessment of any impacts on trees by any proposed future development of the site, other than the current development application.

2 METHODOLOGY

- 2.1** The site was inspected on 9 January 2019 and sixty-three (63) trees or groups of trees were assessed by Mr Guy Paroissien of Landscape Matrix Pty Ltd. As Mr Paroissien is unable to complete the impact assessment component of the AIA due to other commitments, I have been commissioned to prepare this report using Mr Paroissien's tree data and commentary, which he provided to me.
- 2.2** I have discussed the site and tree data with Mr Paroissien during preparation of this report and include his tree inspection details at Appendix d, and Appendix f—*Schedule of Assessed Trees*.
- 2.3** This AIA takes account of prescribed trees pursuant to Part 1B.6 *Tree Vegetation and Preservation Order* of the Hornsby Development Control Plan 2013 (HDCP), and non-prescribed (exempt) trees as specified in Table 1B.6(a) of the HDCP.
- 2.4** Information contained in this tree report covers only the trees that are included in Mr Paroissien's supplied tree data at Appendix D and reflects the condition of those trees at the time of inspection.
- 2.5** Plans and documents referenced for the preparation of this report include:
- Details and Levels Survey Sheets 1 – 7, Ref No. 17431, dated 18 January 2017, prepared by Higgins Surveyors.
 - Architectural Plans, Revision X, dated 1 March 2019, by Marchese partners.
 - Landscape Master Plan L-01 (Rev D), Landscape Plans L-02 – L-07 (Rev C), dated 23 February 2019, by Site Design + Studios.
 - Civil Engineering Plans DAC04.01 – 03, Revision 9, dated 1 March 2019, by Northrop.
 - Tree Data Summary, photographs and preliminary comments, dated January 2019 by Guy Paroissien.
 - AS4970-2009 *Protection of trees on development sites*, Standards Australia.
 - Schedule 5 Environmental Heritage of the Hornsby Local Environment Plan.
 - Part 1B.6 Tree and Vegetation Preservation (Revised 22.02.2018) of the Hornsby Development Control Plan 2013.
- 2.5** The subject trees are shown on a marked-up excerpt of the survey plan. This marked-up plan is attached as Appendix G—Tree Location Plans.

3 OBSERVATIONS AND DISCUSSION

3.1 Assessed Trees

3.1.1 The Retention Value (RV) of assessed trees adopts the following guide:

- 1 - High (Priority for retention);
- 2 - Moderate (Consider for retention);
- 3 - Low or short ULE (Not warranting specific design consideration), and
- 4 – Remove (very short ULE, structurally unsound, weed species etc.).

3.1.2 Twelve (12) trees are identified as RV1 (High). Details of these are included in the Schedule of Assessed Trees—Appendix F.

- Tree 1 – *Eucalyptus punctata* (Grey Gum)
- Tree 2 – *Syncarpia glomulifera* (Turpentine)
- Tree 3 – *Syncarpia glomulifera* (Turpentine)
- Tree 10 – *Eucalyptus saligna* (Sydney Blue Gum)
- Tree 11 – *Angophora costata* (Smooth Barked Apple, Sydney Red Gum)
- Tree 12 – *Syncarpia glomulifera* (Turpentine)
- Tree 13 – *Syncarpia glomulifera* (Turpentine)
- Tree 15 – *Syncarpia glomulifera* (Turpentine)
- Tree 21 – *Eucalyptus tereticornis* (Forest Red Gum)
- Tree 36 – *Angophora costata* (Smooth Barked Apple, Sydney Red Gum)
- Tree 37 – *Corymbia gummifera* (Red Bloodwood)
- Tree 47 – *Liquidambar styraciflua* (Liquidambar)

3.1.3 Thirty-one (31) trees are identified as RV2 (Moderate). Details of these are included in the Schedule of Assessed Trees—Appendix F. In his supplied notes, Mr Paroissien (Appendix D) notes:

In addition..., a total of 31 trees were identified as retention value 2 trees (consider for retention). However, included in these 31 trees are 14 specimens of Pinus radiata (Monterey Pine, Radiata Pine) located within 3 Quarry Road.

Whilst these Pine trees are nominally identified as retention value 2 trees I do not recommend retention of these Pine trees due to potential concerns regarding their stability. While the trees do not exhibit visual evidence of instability it is apparent they are isolated, remaining trees that were part of larger plantation planting with the majority of the trees removed in the recent past. The extent of the previous Pine plantation on the site is identified on Google Maps and, to a lesser degree, the site survey.

As such the trees are now subject to significantly greater wind loads than their root systems have adapted to rendering them at greater risk of failure. This is evidenced by a recently fallen Pine tree in the row of Pine trees parallel to the Quarry Road boundary of the site.

- 3.1.4 No species of assessed tree is subject to threatened conservation status under Australian and/or State Government legislation (i.e. NSW *Biodiversity Conservation Act 2016*, and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*).

3.2 Proposed Removal of Prescribed Trees

3.2.1 Thirty-seven (37) living trees/tree groups are proposed to be removed:

Table 1—*Prescribed trees proposed to be removed to facilitate site development*

NOTE: RV = Retention Value

Tree No.	Common Name	RV	Reason
5	Atlantic Cedar	2	Within the proposed internal access road from Vineys Road.
6	Jacaranda	2	Within the proposed RAC building footprint.
7	Smooth-barked Apple	2	Too close to the edge of the proposed emergency access road to reliably retain.
8	Leyland Cypress x 27	2	Too close to the edge of the proposed emergency access road to reliably retain.
9	Stringybark	3	Too close to the edge of the proposed emergency access road to reliably retain.
10	Sydney Blue Gum	1	See para.3.2.2
11	Smooth-barked Apple	1	Well within footprint of proposed RAC building.
12	Turpentine	1	Well within footprint of proposed RAC building.
13	Turpentine	1	Too close to footprint of proposed RAC building to reliably retain.
18	Lilly Pilly cultivar x 5	3	Too close to footprint of proposed RAC building to reliably retain.
20	Chinese Elm	2	Well within footprint of proposed building F.
21	Forest Red Gum	1	See para.3.2.3
25	Blackbutt	2	Too close/within proposed emergency access road.
39	Radiata Pine	2	Well within proposed emergency access road.
40	Radiata Pine	3	Well within proposed emergency access road.
41	Radiata Pine	2	Too close to proposed emergency access road and well within proposed pedestrian path.
42	Photinia	3	Too close to proposed emergency access road to reliably retain.
43	Jacaranda	3	Well within footprint of proposed building A.
44	Jacaranda	3	Well within proposed emergency access road.
45	Crape Myrtle	2	Well within proposed emergency access road.
46	Jacaranda	3	Affected by proximity of proposed front wall.
47	Liquidambar	1	See para.3.2.4
49 - 63	Radiata Pines	2	All located well within proposed entry and internal access roads and basement footprint.
Note: Tree 22 is a dead tree.			

3.2.2 Tree 10—Sydney Blue Gum

The estimated Tree Protection Zone (TPZ) encroachment from excavation alone is approximately 15.7%. Coupled with further building footprint encroachments, paved areas and hard landscaping in the TPZ, I arrive at a total around of 144.51m² or 39.5% of the TPZ area.

This is a significant figure and retention cannot be supported from an arboricultural perspective; tree decline is very likely, with substantially increased risk of tree part failures, and property damage and personal injury likely to follow as, or if, the tree dies. Substantial pruning of the tree would also be required which only adds to the adverse impacts.

3.2.3 Tree 21—Forest Red Gum

The estimated TPZ encroachment from excavation alone is approximately 18.3%. Coupled with further building footprint encroachments into the Structural Root Zone (SRZ) and TPZ, paved areas, hard landscaping, and soil level changes for the drainage swale, I arrive at a total more than 90% of the TPZ affected. The tree would also require substantial pruning for construction and building.

3.2.4 Tree 47—Liquidambar

The estimated TPZ encroachment is approximately 25%. Coupled with footpath encroachments possibly into Structural Root Zone, and into the TPZ (e.g. pedestrian access and public road crossing), the encroachments are likely to be greater. There would be a substantial encroachment for a mature tree, which is not really supportable from an arboricultural perspective.

3.3 **Proposed Tree Retention**

3.3.1 The following nine (9) off-site (street or neighbour's) trees will be retained—Trees 1, 2, 3, 4, 14, 15, 16, 19 and 48

3.3.2 The following sixteen (16) on-site trees are proposed to be retained—Trees 17, 23, 24 and 26 – 38.

3.4 Potential Impacts on Trees Proposed for Retention

- 3.4.1 Under Australian Standard 4970-2009 *Protection of trees on development sites* (AS4970), it is advised that the Tree Protection Zone (TPZ) should not be less than 2m nor greater than 15m (except where crown protection is required). Variations to the TPZ are covered under separate clauses at 3.3 of the Standard.
- 3.4.2 Under AS4970, encroachments less than 10% of the *Tree Protection Zone* (TPZ) are considered to be minor. No specifications are provided in AS4970 for potential impacts of 10% or greater. This 10% is interpreted as the threshold figure, and the trigger where arboricultural investigations into TPZ encroachments beyond this figure need to be considered.
- 3.4.3 In determining the percentage of TPZ encroachments for trees to be retained, I generally include a disturbance zone of at least 1m beyond the built footprint. Where tree crowns are likely to be affected by buildings, I generally add at least 2m disturbance zone beyond the crown projection to account for construction scaffolding and access. Although construction techniques can usually work around these dimensions, I adopt them generally as a conservative 'buffer'.
- 3.4.4 The potential extent of root zone impacts to protected trees to be retained can be generally rated using the *Impact Level Rating* ("ILR") Table 2, below.

Table 2: Guideline to the rating of impacts on trees to be retained.

Based on discussions with executive members of the Institute of Australian Consulting Arboriculturists.

IMPACT LEVEL RATING	
0	0 – 0.9% of root zone impacted – no impact of significance
L	1 to 10% of root zone impacted – low (minor) level of impact
L - M	>10 to 15% of root zone impacted – low (minor) to moderate level of impact
M	>15 to 20% of root zone impacted – moderate level of impact
M – H	>20 to 25% of root zone impacted – moderate to high level of impact
H	>25 to 35% of root zone impacted – high level of impact
S	>35% of root zone impacted – significant level of impact

3.4.5 Trees 4, 27 – 34, and 48

These trees are not impacted by the proposal. There are no foreseeable TPZ encroachments occurring with this proposal. There are no specific protection requirements for these trees, noting standard tree protection fencing can be placed to provide entire TPZ enclosure.

3.4.6 Disturbance within the *Structural Root Zone* (SRZ), and extent of encroachments into the TPZ's of protected site trees to be retained are summarised in Table 3, below.

Table 3: *Estimated encroachments into the SRZ and TPZ of trees proposed for retention.*

Note 1: These figures are based on the *notional* SRZ and TPZ's offsets of the trees as calculated under AS4970 and do not necessarily reflect the actual root zones of the trees. Existing at or below ground structures, site topography and soil hydrology will influence the presence, spread and direction of tree root growth.

Tree No.	Tree	RV	Tree located on site	SRZ affected	TPZ area (m ²)	TPZ encroach't (approx. m ²)	TPZ encroach't (approx. %)	ILR
1	Grey Gum	1	✗	✗	304.0	16.7	5.5	L
2	Turpentine	1	✗	✗	366.2	54.8	14.96	L-M
3	Turpentine	1	✗	✗	707.0	105.7	14.95	L-M
14	Turpentine	2	✗	possible	185.2	negligible	<10	L
15	Turpentine	1	✗	✗	707.0	54.0	7.6	L
16	Turpentine	3	✗	possible	203.0	negligible	<10	L
17	Leyland Cypress	2	✗	possible	40.7	negligible	<10	L
19	Blackwood	3	✗	possible	122.3	31.0	25	H
23	Blackbutt	3	✓	possible	33.0	6.0	18	M
24	Blackbutt	3	✓	✓	354.1	162.0	45.7	S
26	Blackbutt	2	✓	✗	43.5	negligible	<10	L
35	Blackbutt	3	✓	✗	334.4	15.5	4.5	L
37	Red Bloodwood	1	✓	✗	179.5	18.5	10.4	L-M
38	Blackbutt	3	✓	✓	179.5	35.0	19.5	M

3.4.7 Further impact assessment comments are provided for RV1 or adjoining trees in the following paragraphs.

3.4.8 **Tree 1**—Grey Gum

Structural Root Zone impacts:

- Landscape planting within SRZ; will require specification for tubestock size plantings within a 3.4m radius to reduce risk of tree root damage at planting stage.

Tree Protection Zone impacts:

- Acceptable low impact <10%.

Pruning impacts:

- Pruning of the tree is unlikely, however, if required it may only be small material confined to the area closest to the proposed roadway

3.4.6 **Tree 2**—Turpentine

Structural Root Zone impacts:

- Landscape planting within SRZ; will require specification for tubestock size plantings within a 3.4m radius to reduce risk of tree root damage at planting stage.

Tree Protection Zone impacts:

- A low to moderate level of TPZ encroachment is estimated for the tree; it is unlikely to experience irreversible decline or loss of vigour. See Figure 1, following page.

Pruning impacts:

- Pruning of the tree is unlikely, however, if required it may only be small material confined to the area closest to the proposed driveway.

3.4.9 **Tree 3**—Turpentine

Structural Root Zone impacts:

- At approximately 6.5m from the tree, the proposed driveway crossover is well clear of the tree's SRZ.

Tree Protection Zone impacts:

- A low to moderate level of TPZ encroachment is estimated for the tree; it is unlikely to experience irreversible decline or loss of vigour. See Figure 1, following page.

Pruning impacts:

- Pruning of the tree is unlikely, however, if required it may only be small material confined to the area closest to the proposed driveway.

3.4.10 **Tree 14**—Turpentine

Structural Root Zone impacts:

- Landscape planting within SRZ; will require specification for tubestock size plantings within a 2.8m radius to reduce risk of tree root damage at planting stage.
- Proposed fencing may impact structural roots. Extreme care will be required to ensure post footings do not sever or cause damage to roots crucial to tree stability. We will include a recommendation for hand digging within the SRZ to ensure post holes will be located to avoid root damage.

Tree Protection Zone impacts:

- Acceptable low impact <10%, provided there are no level changes within TPZ.

Pruning impacts:

- Pruning of the tree is unlikely.

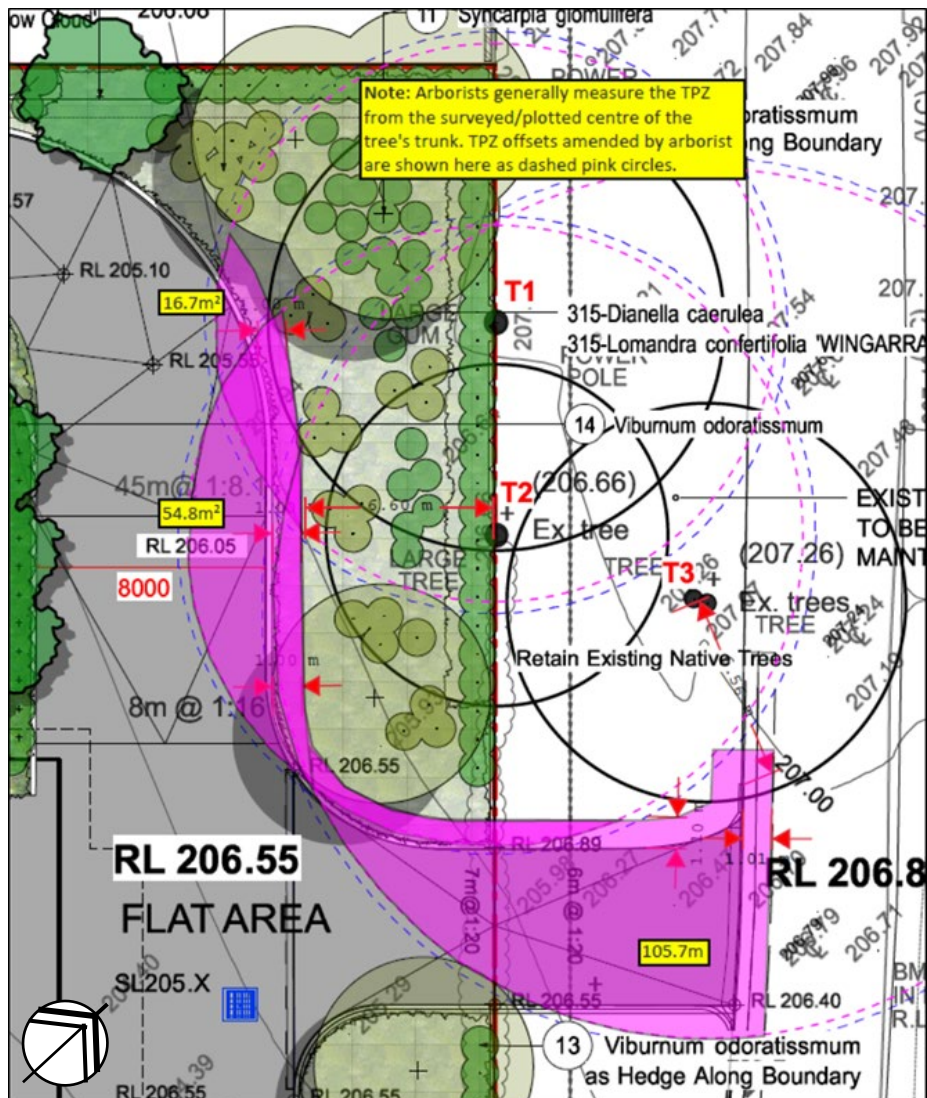


Figure 1

Illustrates the methodology used to determine the calculated TPZ encroachments. In this instance, the TPZ (dashed circles) of Trees 1, 2 and 3 are shown. The pink shaded areas depict the TPZ encroachments from the proposed internal road and crossover footprint (with approximately 1m or so 'disturbance zone' added).

Not to scale. Excerpt of Area B Landscape Plan L-04 D, marked up by C. Mackenzie.

3.4.11 **Tree 15**—Turpentine

Structural Root Zone impacts:

- Proposed fencing may impact structural roots. Extreme care will be required to ensure post footings do not sever or cause damage to roots crucial to tree stability. We will include a recommendation for hand digging within the SRZ to ensure post holes will be located to avoid root damage.

Tree Protection Zone impacts:

- A low (minor) level of TPZ encroachment is estimated for the tree.

Pruning impacts:

- Pruning of the tree is unlikely.

3.4.12 **Tree 16**—Turpentine

Structural Root Zone impacts:

- Landscape planting within SRZ; will require specification for tubestock size plantings within a 3.0m radius to reduce risk of tree root damage at planting stage.
- Proposed fencing may impact structural roots. We will include a recommendation for hand digging within the SRZ to ensure post holes will be located to avoid root damage.

Tree Protection Zone impacts:

- Acceptable low (minor) encroachment <10%.

Pruning impacts:

- Pruning of the tree is unlikely.

3.4.13 **Tree 17**—Leyland Cypress

Structural Root Zone impacts:

- Landscape planting within SRZ; will require specification for tubestock size plantings within a 3.0m radius to reduce risk of tree root damage at planting stage.
- Proposed fencing may impact structural roots. We will include a recommendation for hand digging within the SRZ to ensure post holes will be located to avoid root damage.

Tree Protection Zone impacts:

- Acceptable low (minor) encroachment <10%.

Pruning impacts:

- Pruning of the tree is unlikely.

3.4.14 **Tree 19**—Blackwood

Structural Root Zone impacts:

- A proposed low boundary wall encroaches into the tree's SRZ offset and may encounter tree roots crucial to stability. Another, smaller wall is located just outside the SRZ to the west of the tree.
- Proposed fencing may impact structural roots. We will include a recommendation for hand digging within the SRZ to ensure post holes will be located to avoid root damage.

Tree Protection Zone impacts:

- The encroachment is high (25%), however the tree is in poor health and low vigour, and exhibiting typical dieback associated with it nearing the end of its life cycle. The tree is likely to be dead within 1 – 5 years, regardless of any site development.

Pruning impacts:

- Pruning of the tree is unlikely.

3.4.15 **Tree 23**—Blackbutt

Structural Root Zone impacts:

- Path/elevated platform with possible pad footings in root zone. We will include a recommendation for hand digging within the SRZ to ensure post holes will be located to avoid root damage.

Tree Protection Zone impacts:

- Negligible TZ encroachment resulting from elevated walkway.

Pruning impacts:

- Pruning of the tree is unlikely.

3.4.16 **Tree 24**—Blackbutt

Structural Root Zone impacts:

- Potential root disturbance for construction of grass pave access road. Grass type pavements still require some excavation and/or fill materials and edging installation into ground.

Tree Protection Zone impacts:

- Tree of low vigour, may not tolerate significant (>45%) level of encroachment and ground disturbance. This tree is of poor vigour with poor branch attachments and epicormic growth signifying a short useful life expectancy.

Pruning impacts:

- Pruning of the tree is unlikely.

3.4.17 **Tree 26**—Blackbutt

Structural Root Zone impacts:

- Civil plan DAC04.03, Rev 9 indicates the construction swale will not extend beyond the proposed access bridge to the west of the tree.

Tree Protection Zone impacts:

- Likely confined to planting material only; <10% and acceptable.

Pruning impacts:

- Pruning of the tree is unlikely.

3.4.18 **Tree 35**—Red Bloodwood

Structural Root Zone impacts:

- Nil

Tree Protection Zone impacts:

- Proposed path traverses root zone, with estimated 4.5% (low/minor) encroachment.

Pruning impacts:

- Pruning of the tree is unlikely.

3.4.19 **Tree 37**—Red Bloodwood

Structural Root Zone impacts:

- Nil

Tree Protection Zone impacts:

- Proposed path traverses root zone, with estimated 10.5% (low to moderate) encroachment.

Pruning impacts:

- Pruning of the tree is unlikely.

3.4.20 **Tree 38**—Blackbutt

Structural Root Zone impacts:

- Proposed path just outside the notional SRZ offset.

Tree Protection Zone impacts:

- Path intersects root zone with moderate encroachment however, tree is of poor habit and form due to previous cutting to ground level. May be future safety issue with failing epicormic growth.

Pruning impacts:

- Pruning of the tree is unlikely.

4 CONCLUSIONS

- A total of sixty-three (63) trees are included in this Arboricultural Impact Assessment. Of these:
 - No assessed tree on the site or on adjoining properties was identified as an endangered species.
 - No assessed tree on the site or on adjoining properties was identified as, or associated with, a heritage item.
- Encroachments into the TPZ of trees to be retained are summarised:
 - Nil TPZ encroachments are identified for Trees 4, 26 – 30.
 - Low (minor) TPZ encroachments are identified for Trees 1, 14, 15, 16, 17, 26 and 35.
 - Low to moderate TPZ encroachment levels for Trees 2, 3, 37.
 - Moderate TPZ encroachment levels for Trees 23 and 38.
 - High TPZ encroachment for Tree 19.
 - Significant TPZ encroachment for Tree 24.
- A High level of TPZ encroachment is identified for adjoining Tree 19 (Blackwood), however it is clear this tree is senescent and declining. It is likely to die soon regardless of any site development.
- A Significant level of TPZ encroachment is identified for Tree 24 (Blackbutt). As the tree has a short Useful Life Expectancy and RV of 3, it is not likely to survive this degree of disturbance and root loss.
- Some trees have SRZ encroachments, generally associated with proposed boundary fencing and some landscaping, which will require hand digging to avoid unnecessary root disturbance or damage.
- Provided the recommendations of this report are adopted and a site arboriculturist provides appropriate supervision and management of the trees during development, adverse impacts on tree vigour and structural condition of trees will be managed as practically as possible, and it is unlikely any tree decline or additional tree removal will result.

5 RECOMMENDATIONS

5.1 Tree Removal

- 5.1.1 Removal of site trees is subject to authority review of this report, and approval is to be obtained (e.g. by Consent) before any trees are removed.
- 5.1.2 Trees 5, 6, 7, 8, 9, 10, 11, 12, 13, 18, 20, 21, 25, 39, 40, 41, 42, 43, 44, 45, 46, 47, 49 – 63 are proposed to be removed. These trees shall be clearly identified for removal with a number tag and yellow cross on the trunk to avoid
- 5.1.3 Tree removals are to be undertaken in accordance with the NSW WorkCover Code of Practice for the Amenity Tree Industry (1998).

5.2 Project Arboriculturist

- 5.2.1 A Project Arboriculturist (PA) shall be engaged prior to works commencing on the site, including demolition of structures, site clearing and the like.
- 5.2.2 The PA must have a minimum Australian Qualification Framework Level 5 (AQF5) or above in Arboriculture.
- 5.2.3 Duties of the PA shall include, but not be limited to:
 - Liaising with the Project Manager/Head Contractor/Site Manager to confirm the tree protection fencing locations, construction access, and other specific tree protection requirements prior to site works commencing.
 - Inspection of Tree Protection Devices and supervision of works as recommended in this report or as specified in any Conditions of Consent associated with an approved development application.
 - Provision of Compliance Certification as and when required.

5.3 Tree Protection

- 5.3.1 The Tree Protection is to be in accordance with the following:
 - Tree Protection Devices (TPD) may include mulching, tree guards and other devices other than fencing.

- The TPD must be in place prior to any site works commencing, including clearing, demolition or grading.
- The most appropriate fencing for tree protection is 1.8m chainlink with 50mm metal pole supports. During installation, care must be taken to avoid damage to significant roots. The practicality of providing this fencing on this site must be addressed by the arboriculturist.
- Locate large primary roots by careful removal of soil within the fencing area. **Do not drive any posts or pickets into tree roots.** Replace soil back over tree roots.
- It is recommended that the arboriculturist provide written certification that the TPD is/are installed and will satisfy tree protection requirements.
- Nothing should occur inside the tree protection fenced areas, so therefore all access to personnel and machinery, storage of fuel, chemicals, cement or site sheds is prohibited.
- Signage should explain exclusion from the area defined by TPD and carry a contact name for access or advice (see Appendix E – Tree Protection Devices).
- The TPD cannot be removed, altered, or relocated without the project arborists' prior assessment and approval.

5.4 Arboricultural advice

5.4.1 Tree and Root Pruning

- Any pruning required is to be assessed and approved by the PA, prior to undertaking any of this type of work
- Pruning shall not be undertaken by unqualified site personnel at any time.
- Pruning of branches must be undertaken by a minimum AQF Level 3 arborist in accordance with the Australian Standard AS4373-2007 *Pruning of amenity trees*,
- Unless otherwise approved by the Conditions of Development Consent, or by separate application and approval by the consent authority, pruning is to be limited to cutting of limbs less than 80mm diameters, and no more than 10% total live material removed.

5.4.2 Stockpiling and location of site sheds

- The project arboriculturist must be consulted prior to placing any items within a tree's TPZ.
- Where stockpiling must be located within the TPZ offset of trees to be retained, the existing/undisturbed natural ground must first be covered with thick, coarse mulch to a minimum 75-100mm thickness.
- Large, or bulky materials (non-contaminating) can be stacked on wooden pallets or boards placed over the mulch.
- Tarpaulins (or similar) placed on boards or pallets on top of mulch shall be used to prevent loose or potentially contaminating materials from moving into the soil profile within the TPZ of trees or within 10m upslope of trees.
- Where site sheds must be located within the TPZ offset of a tree/s, the shed must be fully elevated on all sides with a minimum 300mm between existing ground and the floor/floor bearers. Isolated pad footings must be carefully dug by hand and not damage or sever any roots greater than 20mm diameters.
- Any conflict between footing locations and larger roots (i.e. 20mm Ø plus) must be brought to the attention of the project arboriculturist who is to provide practical alternatives that do not include unnecessary tree root removal.

5.4.3 Fill Material

- Placement of fill material within the TPZ of trees to be retained should be avoided where possible. Where placement of fill cannot be avoided, the material should be a coarse, gap graded material such as 20 — 50mm crushed basalt or equivalent to provide some aeration to the root zone. Note that roadbase or crushed sandstone or other material containing a high percentage of fines is unacceptable for this purpose.
- The fill material should be consolidated with a non-vibrating roller to minimise compaction of the underlying soil.
- Permeable geotextile may be used beneath the sub-base to prevent migration of the stone into the sub-grade. No fill material shall be placed in direct contact with the trunk.

5.4.4 Pavements

- Pavements should be avoided within the TPZ of trees to be retained where possible.
- Proposed paved areas within the TPZ of trees to be retained is to be placed above grade to minimise excavations within the root zone, avoiding root severance and damage.

5.4.5 Fencing and walls within the SRZ and TPZ of retained trees.

- Where fencing and/or masonry walls are to be constructed along site boundaries, they must provide for the presence of any living woody tree roots greater than 50mm diameter.
- Hand digging must occur within the SRZ of trees to be retained.
- For masonry walls/fences it may be acceptable to delete continuous concrete strip footings and replace with suspended in-fill panels (e.g. steel or timber pickets, lattice etc) fixed to pillars.

5.4.6 Landscaping within tree root zones.

- The level of introduced planting media into any proposed landscaped areas within the TPZ is not to be greater than 75mm depth, and be of a coarse, sandy material to avoid development of soil layers that may impede water infiltration.
- Appropriate container size of proposed plants within the SRZ of trees should be determined prior to purchase of plants. Otherwise, any proposed landscaping within the SRZ must consist of tubestock only. This is required to ensure that damage to tree roots is avoided.
- Mattocks and similar digging instruments must not be used within the TPZ of the trees. Planting holes should be dug carefully by hand with a garden trowel, or similar small tool.
- Where possible, do not plant canopy trees beneath, or within 6 - 8m of overhead lines.

5.4.7 Other

- No washing or rinsing of tools or other equipment, preparation of any mortars, cement mixing, or brick cutting is to occur within 8m upslope of any palms or trees to be retained.
- Regular monitoring of the trees during development works for unforeseen changes or decline will help maintain the trees in a healthy state.

Report prepared by Catriona Mackenzie

March, 2019



Catriona Mackenzie

Consulting arboriculturist, horticulturist and landscape designer.

Tree Risk Assessment Qualified 2014 (TRAQ)

Certificate of Horticulture *Honours*

Diploma of Horticulture (Arboriculture) *Distinction*

Associate Diploma of Applied Science (Landscape) *Distinction*

Member of the International Society of Arboriculture (ISA)

Founding Member of the Institute of Australian Consulting Arboriculturists (IACA) ACM0052003



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APPENDIX A

CURRICULUM VITAE



BRIEF CURRICULUM VITAE, GUY PAROISSIEN

Guy is the founding Director of Landscape Matrix Pty Ltd. Guy has tertiary qualifications in Horticulture (including arboriculture) and a Tree Care Certificate from the United Pest Controllers Association. He graduated with a Graduate Diploma in Environmental Management from Charles Sturt University (Mitchell Campus) in 1996 and in 2004 graduated with a Master in Applied Science - Environmental Management and Restoration from Charles Sturt University (Riverina Campus). In 2011 Guy graduated with a Diploma of Horticulture (Arboriculture) from Ryde College of TAFE at distinction grade.

Guy has 30 years' experience in tree assessment, landscape management and environmental assessment/planning with a thorough understanding of the requirements in respect to tree assessment and arborist's reports. He has also had experience in preparing and giving evidence to the Land and Environment Court of NSW on numerous development proposals on behalf of both applicants and respondent Councils.

Guy also has extensive experience in Open Space management and the preparation of Plans of Management for Community Land. He has held senior management positions in Park and Open Management in Local Government and has been responsible for the preparation of around 22 Plans of Management for a wide range of natural area, sport, recreation and other community facilities.

Recent projects in which Guy has provided arborist advice include:

- Maroochy Shire Council – preparation of a Tree Management Policy for Street Trees in Maroochy local government area;
- Scottish Hospital Site – assessment and recommendations regarding 114 trees on this heritage listed site in Paddington;
- The Passionist Monastery site in Killeaton Street St Ives – a significant site in St Ives – assessment of 136 trees in relation to proposed multiple apartment development;
- Arboricultural assessment for Redfern Waterloo Authority of the former Eveleigh Railway Workshop lands at Redfern, a landmark site in the Eveleigh/Redfern locality;
- Assessment of trees on a range of development sites (in excess of 900 projects since the Company began trading) for various proposals ranging from subdivisions and single residential projects up to staged developments for multiple apartments. These projects ranged from a small number of trees up to sites with in excess of 350 trees.

Educational Background

2009-2010 Diploma of Horticulture (Arboriculture) Ryde College of TAFE - with distinction.

2002- 2003 Master of Applied Science – Environmental Management and Restoration - Charles Sturt University Mitchell and Riverina Campus.

1991-1995 Graduate Diploma of Environmental Management - Charles Sturt University Mitchell Campus

1985 Urban Bushland Management - Ryde College of TAFE

1984 Tree Care Certificate - United Pest Controllers Association

1979-1981 Horticulture Certificate - Ryde College of TAFE

1974 Higher School Certificate - Normanhurst Boys High

Industry Training Courses

2007 OHS General Induction for Construction Work in NSW (White Card)

2004 Planning for Bushfire Prone Areas Course - UTS Sydney

2001 Mediation Training (Certified Mediator)

1999 Diploma of Frontline Management

1999 Project Learning - Effective staff supervision/mentoring program

1998 Balancing Workplace Demands

1997 Maximising Performance for Managers

1992 Asset Management - AAS27

1989 RAIPR Conference - Risk Management and Community Facilities - Sydney

1989 16th Summer School of Park Management - Canberra

1987 The Effective Manager (3 days, Australian Institute of Management) - Sydney

Guy has also participated in many conferences, seminars and training courses, including topics such as Arboriculture, Bushland Management, Street Tree Management, various computer software packages, etc.

Professional Memberships

- Australian Institute of Horticulture.
- International Society of Arboriculture
- Arboriculture Australia

BRIEF CURRICULUM VITAE, CATRIONA MACKENZIE

Academic Qualifications:

2014 ISA Tree Risk Assessment Qualification (TRAQ)

2003 – 2004 Diploma of Horticulture (Arboriculture) AQF5 Ryde TAFE. *Distinction*

1998 – 2000 Associate Diploma of Applied Science (Landscape Design) at Ryde TAFE. *Distinction*

1983 – 1985 Certificate of Horticulture, Ryde School of Horticulture, Ryde TAFE. *Honours*

Current Professional Memberships:

Member of the Australian Institute of Horticulture

Member of the International Society of Arboriculture

Founding (2003), Accredited Member & past President (2013–2016) of the Institute of Australian Consulting Arboriculturists.

Introduction:

Catriona Mackenzie has been involved in the horticultural, landscape design and arboricultural industry since 1981. Catriona has always maintained a 'hands-on' approach to her landscape and arboricultural projects from the initial stages of design through to managing the landscape and the protection of significant trees and vegetation. Her experience with managing long term landscapes comes from her own landscape design and management business, which she operated for 10 years from 1989 to 2000. Her experience in the arboricultural field encompasses a wide range of tree related work including employment in Local Government (i.e. former Warringah and Pittwater Councils), established arboricultural contracting/consulting firms, and as principal consultant for an established arboricultural consulting business (Urban Forestry Australia).

Ms. Mackenzie has also worked as a part time teacher at Ryde TAFE, teaching arboricultural and landscape subjects, i.e. Laws and Regulations, Site Grading, Landscape Graphics, and some relief teaching in Protection of Trees on Construction Sites.

Ms. Mackenzie routinely attends the Arboriculture conferences held in Australia each year and attends the TREENET symposiums held in Adelaide each September. She has attended various seminars and workshops over the past years relating to the arboricultural and landscape professions. Ms. Mackenzie continues to contribute time and effort to the profession and practice of arboriculture and landscape design, and is a current, accredited member and former President of the Institute of Australian Consulting Arboriculturists.

Professional Experience 1981 – 2019

Works include:

Arboricultural, horticultural and landscape heritage assessments.

Landscape plans, specifications and documentation for development applications.

Landscape amenity assessments and sustainability plans.

Development Assessments.

Protection and preservation of trees on construction sites.

Risk and Hazard Assessments.

Tree Valuations.

Plans of Management for city parks.

Consultancy to private, commercial, religious and educational organizations, state and local government bodies.

Tree auditing, and tree management programs.

Expert Witness

Class 1 Proceedings

Class 2 Proceedings

Class 3 Proceedings

Class 4 Proceedings

District Court

Local Court

New South Wales Coroner's Court

APPENDIX B

TERMS AND DEFINITIONS



TERMS AND DEFINITIONS

The following relates to terms or abbreviations that may have been used in this report and provides the reader with a detailed explanation of those terms.

Aerial inspection Where the subject tree is climbed by a professional tree worker or arborist specifically to inspect and assess the upper stem and crown of the tree for signs or symptoms of defects, disease, etc.

Age classes

Y	<i>Young</i> refers to a well-established but juvenile tree
SM	<i>Semi-mature</i> refers to a tree at growth stages between immaturity and full size
EM	<i>Early-mature</i> refers to a tree that is more or less full sized and vigourously growing.
M	<i>Mature</i> refers to a full sized tree with some capacity for further growth
LM	<i>Late Mature</i> refers to a full sized tree with little capacity for growth, not yet about to enter decline
OM	<i>Over-mature</i> refers to a tree about to enter decline or already declining.

Buttress A flange of adaptive wood occurring at a junction of a trunk and root or trunk and branch in response to loading.

Condition refers to the tree's form and growth habit, as modified by its environment (aspect, suppression by other trees, soils) and the state of the scaffold (i.e. trunk and major branches), including structural defects such as cavities, crooked trunks or weak trunk/branch junctions. These are not directly connected with health and it is possible for a tree to be healthy but in poor condition.

Crown All the parts of a tree arising above the trunk where it terminates by its division forming branches, e.g. the branches, leaves, flowers and fruit: or the total amount of foliage supported by branches.

Crown raise pruning Pruning technique where lower limbs are removed, thereby lifting the overall crown above the ground.

Deadwood refers to any whole limb that no longer contains living tissues (e.g. live leaves and/or bark). Some dead wood is common in a number of tree species.

Diameter at Breast Height (DBH) refers to the tree trunk diameter at breast height, i.e. measured at 1.4 m above ground level.

Dieback Death of growth tips/shoots and partial limbs, generally from tip to base. Dieback is often an indicator of stress and tree health.

Form refers to the crown shape of the tree as influenced by the availability or restriction of space and light, or other contributing factors within its environment. Crown form may be determined by tree shape, species and habit and described as Dominant, Codominant, Intermediate, Emergent, Forest and Suppressed, as well as Forest Form or Open Grown. May also be described qualitatively as Good Form or Poor Form.

Growth crack / split Longitudinal crack/split that may develop as a rupture in the bark from normal growth. Longitudinal crack/split that may develop in the trunk of some fast growing palms.

Habit The shape of a tree when its growth is unencumbered by constraints for space and light, e.g. idealized by an isolated field grown specimen with consideration of the species and the type of environment in which it evolved e.g. rainforest, open forest, etc.

Habitat A habitat is an ecological or environmental area that is inhabited by a particular species of animal, plant or other type of organism. It is the natural environment in which an organism lives, or the physical environment that

surrounds (influences and is utilised by) a species population. In restoration ecology of native plant communities or habitats, some invasive species create monotypic stands that replace and/or prevent other species, especially indigenous ones, from growing there.

Health (syn. vigour) refers to the tree's vigour as exhibited by the crown density, leaf colour, presence of epicormic shoots, ability to withstand disease invasion, and the degree of dieback.

Inclusion - the pattern of development at branch or stem junctions where bark is turned inward rather than pushed out. This fault is located at the point where the stems/branches meet. This is normally a genetic fault and potentially a weak point of attachment as the bark obstructs healthy tissue from joining together to strengthen the joint.

Indigenous Native to an area, and not introduced.

Impact Level Rating (ILR) refers to the estimated percentage of the Tree Protection Zone (TPZ) affected by development impacts. These figures may vary due to the specific conditions and constraints on a particular site, tree species tolerance to impacts, age, vigour, condition of the tree, etc.

IMPACT LEVEL RATING	
0	0 – 0.9% of root zone impacted – no impact of significance
L	1 to 10% of root zone impacted – low (minor) level of impact
L - M	>10 to 15% of root zone impacted – low (minor) to moderate level of impact
M	>15 to 20% of root zone impacted – moderate level of impact
M – H	>20 to 25% of root zone impacted – moderate to high level of impact
H	>25 to 35% of root zone impacted – high level of impact
S	>35% of root zone impacted – significant level of impact

Note: This is a general guide only. These figures may vary due to the specific conditions and constraints on a particular site, tree species tolerance to impacts, age, vigour, condition of the tree, etc.

Lopping Cutting between branch unions (not to branch collars), or at internodes on a tree, with the final cut leaving a stub. Lopping may result in dieback of the stub and can create infection courts for disease or pest attack.

Root Mapping The exploratory process of recording the location of roots usually in reference to a datum point where depth, root diameter, root orientation and distance from trunk to existing or proposed structures are measured. It may be slightly invasive (disturbs or displaces soil to locate but not damage roots, e.g. hand excavation, or use of air or water knife), or non-invasive (does not disturb soil, e.g. ground penetrating radar).

Scaffold branch/root A primary structural branch of the crown or primary structural root of the tree.

Structural Root Zone (SRZ) Refers to the radial distance in metres, measured from the centre of the tree stem, which defines the critical area required to maintain stability of the tree. Only thorough investigation into the location of structural roots within this area can identify whether any minor incursions into this protection zone are feasible. Note: The SRZ is calculated on the diameter measured immediately above the root/stem buttress (DAB). Where this measurement is not taken in the field, it is calculated by adding 12.5% to the stem diameter at breast height (DBH). Note: The SRZ may not be symmetrical in shape/area where there is existing obstruction or confinement to lateral root growth, e.g. structures such as walls, rocky outcrops, etc).

Snub-nosed rib Adaptive wood formed over a crack, included bark or enclosed bark and may be a round edged (snub-nosed) rib where a broad convex swelling is formed over the crack by the addition of new growth increments, and the cracking is slowed or prevented from developing further (Or, may be a sharp-edged rib as an elongated protuberance where a crack continues to develop).

Suppressed In crown class, trees which have been overtopped, whose crown development is restricted from above.

Sweep A curve in the trunk, generally near the ground. This usually occurs when a tree is partially wind thrown when young, but then stabilises itself and straightens due to reaction wood. Stem sweep can also be a naturally developed feature of some tree species. e.g. *Araucaria columnaris* (Cook Pine), that has no relationship to a defect or partial windthrow.

Tree Protection Zone (TPZ). Refers to the radial distance in metres, measured from the centre of the tree stem which defines the *tree protection zone* for a tree to be retained. This is generally the minimum distance from the center of the tree trunk where protective fencing or barriers are to be installed to create an exclusion zone. The **TPZ** surrounding a tree aids the tree's ability to cope with disturbances associated with construction works. Tree protection involves minimising root damage that is caused by activities such as construction. Tree protection also reduces the chance of a tree's decline in health or death and the possibly damage to structural stability of the tree from root damage.

To limit damage to the tree, protection within a specified distance of the tree's trunk must be maintained throughout the proposed development works. No excavation, stockpiling of building materials or the use of machinery is permitted within the TPZ. Note: In many circumstances the tree root zone does not occupy a symmetrically radial area from the trunk, but may be an irregular area due to the presence of obstructions to root spread or inhospitable growing conditions.

Tree Risk Assessment is the systematic process to identify, analyze, and evaluate tree risk. A tree risk rating of Low, Moderate, High or Extreme is derived by categorising or quantifying both the *likelihood* (probability) of tree or tree part(s) failure and impact on a target(s) and the severity of consequences of the impact on the target(s).

USEFUL LIFE EXPECTANCY (ULE) In a planning context, the time a tree can expect to be usefully retained is the most important long-term consideration. ULE i.e. a system designed to classify trees into a number of categories so that information regarding tree retention can be concisely communicated in a non-technical manner. ULE categories are easily verifiable by experienced personnel without great disparity. A tree's ULE category is the life expectancy of the tree modified first by its age, health, condition, safety and location (to give the life expectancy); then by economics (i.e. cost of maintenance - retaining trees at an excessive management cost is not normally acceptable); and finally, effects on better trees, and sustained amenity (i.e. establishing a range of age classes in a local population). ULE assessments are not static but may be modified as dictated by changes in tree health and environment. Trees with a short ULE may at present be making a contribution to the landscape, but their value to the local amenity will decrease rapidly towards the end of this period, prior to them being removed for safety or aesthetic reasons. For details of ULE categories see Appendix C, modified from Barrell 2001.

Vigour (syn. health) refers to the tree's health as exhibited by the crown density, leaf colour, presence of epicormic shoots, ability to withstand disease invasion, and the degree of dieback.

Woody roots usually used in reference to the first order roots i.e. structural (anchor) roots and woody lateral roots within the Structural Root Zone. Damage, disturbance to, or severing of these roots can compromise the stability of the tree.

APPENDIX C

TREE RETENTION VALUE ASSESSMENT



APPENDIX C—TREE RETENTION VALUE ASSESSMENT

Part 1 of 3—Useful Life Expectancy (ULE)

In a planning context, the time a tree can expect to be usefully retained is the most important long-term consideration. ULE i.e. a system designed to classify trees into a number of categories so that information regarding tree retention can be concisely communicated in a non-technical manner. ULE categories are easily verifiable by experienced personnel without great disparity. A tree's ULE category is the life expectancy of the tree modified first by its age, health, condition, safety and location (to give the life expectancy); then by economics (i.e. cost of maintenance - retaining trees at an excessive management cost is not normally acceptable); and finally, effects on better trees, and sustained amenity (i.e. establishing a range of age classes in a local population). ULE assessments are not static but may be modified as dictated by changes in tree health and environment. Trees with a short ULE may at present be making a contribution to the landscape, but their value to the local amenity will decrease rapidly towards the end of this period, prior to them being removed for safety or aesthetic reasons.

ULE categories (modified from Barrell 2001) The five categories and their sub-groups are as follows:

- 1. Long ULE** - tree appeared retainable at the time of assessment for over 40 years with an acceptable degree of risk, assuming reasonable maintenance:
 - A. structurally sound trees located in positions that can accommodate future growth
 - B. trees which could be made suitable for long term retention by remedial care
 - C. trees of special significance which would warrant extraordinary efforts to secure their long term retention
- 2. Medium ULE** - tree appeared to be retainable at the time of assessment for 15 to 40 years with an acceptable degree of risk, assuming reasonable maintenance:
 - A. trees which may only live from 15 to 40 years
 - B. trees which may live for more than 40 years but would be removed for safety or nuisance reasons
 - C. trees which may live for more than 15 years but would be removed to prevent interference with more suitable individuals or to provide space for new planting
 - D. trees which could be made suitable for retention in the medium term by remedial care
- 3. Short ULE** - tree appeared to be retainable at the time of assessment for 5 to 15 years with an acceptable degree of risk, assuming reasonable maintenance:
 - A. trees which may only live from 5 to 15 years
 - B. trees which may live for more than 15 years but would be removed for safety or nuisance reasons
 - C. trees which may live for more than 15 years but would be removed to prevent interference with more suitable individuals or to provide space for new planting
 - D. trees which require substantial remediation and are only suitable for retention in the short term
- 4. Removal** - trees which should be removed within the next 5 years.
 - A. dead, dying, suppressed or declining trees because of disease or inhospitable conditions.
 - B. dangerous trees through instability or recent loss of adjacent trees
 - C. dangerous trees because of structural defects including cavities, decay, included bark, wounds or poor form.
 - D. damaged trees that are clearly not safe to retain.
 - E. trees which may live for more than 5 years but would be removed to prevent interference with more suitable individuals or to provide space for new planting.
 - F. trees which are damaging or may cause damage to existing structures within the next 5 years.
 - G. trees that will become dangerous after removal of other trees for the reasons given in (a) to (f).
 - H. trees in categories (a) to (g) that have a high wildlife habitat value and, with appropriate treatment, could be retained subject to regular review.
- 5. Small, young or regularly pruned** - Trees that can be reliably moved or replaced.
 - A. small trees less than 5m in height.
 - B. young trees less than 15 years old but over 5m in height.
 - C. formal hedges and trees intended for regular pruning to artificially control growth

Part 2 of 3—IACA Significance of a Tree, Assessment Rating System (STARS)©

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.

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.



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 <i>in situ</i> - 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 a form typical or atypical for the species
The tree is a planted locally indigenous or a common species with its taxa commonly planted in the 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 and/or below ground influences, reducing its ability to reach dimensions typical for the taxa <i>in situ</i> .
3. LOW SIGNIFICANCE IN LANDSCAPE
The tree is in fair-poor condition and good or low vigour
The tree has a form atypical for 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 <i>in situ</i> - 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.

The assessment criteria are for individual trees only, however, can be applied to a monocultural stand in its entirety e.g. hedge. In the development of this document IACA acknowledges the contribution and original concept of the Tree Significance & Retention Value Matrix, developed by Footprint Green Pty Ltd and Andrew Morton in June 2001.

Part 3 of 3—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

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APPENDIX D

TREE DATA AND PHOTOGRAPHS BY GUY PAROISSIEN



3 QUARRY ROAD AND 4 VINEYS ROAD DURAL - PRELIMINARY TREE INFO/COMMENTS

Site inspected 9/1/2019. A total of 63 individual or groups of trees have been assessed. Most of the trees were assessed individually with the groups of trees comprising 2 x rows of Leyland Cypress and one group of 5 semi mature Lilly Pilly.

A summary of these trees, their dimensions, condition, Useful Life Expectancy (ULE) and landscape significance is attached in Appendix B.

The tree numbers in Appendix B correspond with the tree numbers marked on the attached Survey Plans prepared by Higgins Surveyors dated 18/1/2017 and identified as Reference Number 17431, Issue A, Sheets 2, 3 and 4.

Retention values

Retention values for all of the trees have been identified based on a combination of the tree's landscape value and life expectancy (e.g. those trees of high landscape significance and medium to long life expectancy are identified as priorities for retention, where possible).

The following retention values have been identified for each of the assessed trees:

- 1 - High (Priority for retention);
- 2 - Moderate (Consider for retention);
- 3 - Low or short ULE (Not warranting specific design consideration); and
- 4 - Remove (very short ULE, structurally unsound, weed species etc.).

Retention value 1 trees

The following 12 trees were identified as retention value 1 trees (priorities for retention if possible)

Table 1: Trees identified as priorities for retention/protection.

TREE NO.	SCIENTIFIC AND COMMON NAME	TPZ	SRZ	COMMENTS
1	<i>Eucalypts punctata</i> (Grey Gum)	9.8 metres	3.4 metres	The tree's past canopy development has been suppressed. There is evidence of decay in the basal trunk at the site of past failure of a codominant leader on the NE side - exposed heartwood appears sound but further investigation and/or testing recommended to confirm structural integrity. The tree displays fair branch attachment with past failure of a codominant leader at ground level on the NE side and evidence of poor attachment at some branch junctions. At the time of inspection the tree was of fair vigour and exhibited low levels of dieback.
2	<i>Syncarpia glomulifera</i> (Turpentine)	10.8 metres	3.4 metres	The tree's past canopy development has been suppressed. The tree displays fair branch attachment with multiple leaders from 3 metres with some evidence of poor attachment at the junction - the junction is a weak point in the tree's structure with increased risk of failure but is not considered at risk of failure in the short

Preliminary tree info – 3 Quarry Road and 4 Vineys Road Dural – issue A – 11/1/2019

				term. At the time of inspection the tree was of fair vigour and exhibited low levels of dieback.
3	<i>Syncarpia glomulifera</i> (Turpentine)	15* metres	3.7 metres	The tree's past canopy development has been suppressed. The tree displays fair branch attachment with some evidence of poor attachment at junctions - not considered at risk of failure in the short term. Exposed roots with evidence of past mechanical injury.
10	<i>Eucalyptus saligna</i> (Sydney Blue Gum)	10.8 metres	3.4 metres	Past tissue loss and exposed heartwood at 11.6 metres on west side - cause unknown - monitor. The tree displays fair to poor branch attachment with evidence of multiple past branch failures from the low to mid/upper crown (including some storm damage) - further failures are predictable - limited access or exclusion zone around tree is recommended if tree is retained.
11	<i>Angophora costata</i> (Smooth Barked Apple, Sydney Red Gum)	8.6 metres	3 metres	Slight canopy bias to a NW x SE axis.
12	<i>Syncarpia glomulifera</i> (Turpentine)	10.6 metres	3.3 metres	The tree displays fair branch attachment with codominant leaders from 1.4 metres with evidence of poor attachment at the junction - not considered at risk of failure in the short term. At the time of inspection the tree exhibited low levels of dieback. Wire strands embedded in the trunk at 1.4 metres on the SE side.
13	<i>Syncarpia glomulifera</i> (Turpentine)	7.4 metres	2.8 metres	The tree displays fair branch attachment with codominant leaders from 2 metres - not considered at risk of failure in the short term. At the time of inspection the tree was of fair vigour and exhibited low to moderate levels of dieback.
15	<i>Syncarpia glomulifera</i> (Turpentine)	15* metres	4.2 metres	The tree displays fair branch attachment with multiple leaders with some evidence of poor attachment at junctions and some poorly attached regrowth following severe past reduction pruning of lower branches. At the time of inspection the tree exhibited low levels of dieback.
21	<i>Eucalyptus tereticornis</i> (Forest Red Gum)	13.7 metres	3.7 metres	The tree displays fair branch attachment with evidence of multiple past branch failures (e.g. at 3.5 metres on north) and some evidence of poor attachment at junctions - further failures likely - restricted access or exclusion zone recommended if retained.
36	<i>Angophora costata</i> (Smooth Barked Apple, Sydney Red Gum)	7.6 metres	2.9 metres	At the time of inspection the tree was of fair vigour and exhibited low to moderate levels of dieback.
37	<i>Corymbia gummifera</i> (Red Bloodwood)	7.6 metres	2.8 metres	Fruit not detected to confirm species identification.
47	<i>Liquidambar styraciflua</i> (Liquidambar)	6.7 metres	2.9 metres	The tree displays fair branch attachment with codominant leaders from 4 metres with evidence of poor attachment at the junction (included bark) - the junction is a weak point in the tree's structure with increased risk of failure.

*Maximum TPZ under AS4970-2009 Protection of trees on development sites.

TPZs and SRZs are radial offsets measured from centre of trunk

Preliminary tree info – 3 Quarry Road and 4 Vineys Road Dural – issue A – 11/1/2019

Retention value 2 trees

In addition to the above trees, a total of 31 trees were identified as retention value 2 trees (consider for retention). However, included in these 31 trees are 14 specimens of *Pinus radiata* (Monterey Pine, Radiata Pine) located within 3 Quarry Road.

Whilst these Pine trees are nominally identified as retention value 2 trees I do not recommend retention of these Pine trees due to potential concerns regarding their stability. While the trees do not exhibit visual evidence of instability it is apparent they are isolated, remaining trees that were part of larger plantation planting with the majority of the trees removed in the recent past. The extent of the previous Pine plantation on the site is identified on Google Maps and, to a lesser degree, the site survey.

As such the trees are now subject to significantly greater wind loads than their root systems have adapted to rendering them at greater risk of failure. This is evidenced by a recently fallen Pine tree in the row of Pine trees parallel to the Quarry Road boundary of the site.

Photographs illustrating the site and trees assessed are attached in Appendix A.

Tree data sheets attached as Appendix B

Survey plans with tree numbers (sheets 2, 3 and 4) attached as Appendix C.



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10th January 2019

Preliminary tree info – 3 Quarry Road and 4 Vineys Road Dural – issue A – 11/1/2019

APPENDIX B - TREE DATA SUMMARY - 3 QUARRY ROAD AND 4 VINEYS ROAD DURAL

Tree No.	Genus, Species (Common Name)	Height (m)	Canopy (m)	DBH (cm)	DBH for TPE	DGL for SAG	Foliage Condition	Age Class	Trunk	Trunk Lean	Green Balance	Pest Pruning	Stability	Branch Attachment	Health	Vigour	Dead Wood	Pest or disease	ULB	Landscape Significance	Retention Value*	Comments
1	Eucalyptus punctata (Grey Gum)	23	14 x 18	790 x 850	820	1040	Good foliage condition	Mature	Single trunk	Upright trunk	Majority of canopy to the west	No evidence of significant pest pruning	Appears stable	Fair branch attachment	Good health	Fair vigour	5 to 10%	Evidence of decay in basal trunk at site of past branch failure	2 Medium (15 to 40 years)	High landscape significance	1	The tree's past canopy development has been suppressed. There is evidence of decay in the basal trunk at the site of past failure of a codominant leader on the NE side - exposed heartwood appears around but further investigation and/or testing recommended to confirm structural integrity. The tree displays fair branch attachment with past failure of a codominant leader at ground level on the NE side and evidence of poor attachment at some branch junctions. At the time of inspection the tree was of fair vigour and exhibited low levels of dieback.
2	Syncaesia glomulifera (Turpentine)	16	12	680 x 920	900	1060	Good foliage condition	Mature	Single trunk	Upright trunk	Majority of canopy to the east	Lower branches pruned for OH wires on north	Appears stable	Fair branch attachment	Good health	Fair vigour	5 to 10%	No visual evidence of significant pest or disease	1 Long (> 40 years)	High landscape significance	1	The tree's past canopy development has been suppressed. The tree displays fair branch attachment with multiple leaders from 3 metres with some evidence of poor attachment at the junction - the junction is a weak point in the tree's structure with increased risk of failure but is not considered at risk of failure in the short term. At the time of inspection the tree was of fair vigour and exhibited low levels of dieback.
3	Syncaesia glomulifera (Turpentine)	17	9 x 14	220, 220, 620, 640	1275	1340	Good foliage condition	Mature	Multi trunked	Upright trunk	Majority of canopy to the north	Lower limbs pruned in past to 4 metres	Appears stable	Fair branch attachment	Good health	Good vigour	5%	No visual evidence of significant pest or disease	1 Long (> 40 years)	High landscape significance	1	The tree's past canopy development has been suppressed. The tree displays fair branch attachment with some evidence of poor attachment at junctions - not considered at risk of failure in the short term. Exposed roots with evidence of past mechanical injury.
4	Jacaranda mimosaefolia (Jacaranda)	7	8	160, 160, 200	390	370	Good foliage condition	Mature	Multi trunked	Upright trunk	Balanced canopy area	Lower limbs pruned in past to 1.8 metres	Appears stable	Sound branch attachment	Good health	Good vigour	<5%	No visual evidence of significant pest or disease	1 Long (> 40 years)	Moderate landscape significance	2	Some poorly attached regrowth following past reduction pruning - not considered at risk of failure in the short term.
5	Cedrus atlantica Glauca (Atlantic Cedar)	13	12	530	530	620	Fair foliage condition	Mature	Single trunk	Upright trunk	Balanced canopy area	Lower limbs pruned in past to 2 metres	Appears stable	Sound branch attachment	Moderate health	Fair vigour	5 to 10%	No visual evidence of significant pest or disease	2 Medium (15 to 40 years)	Moderate to high landscape significance	2	At the time of inspection the tree was of moderate health and fair vigour and exhibited significantly reduced foliage density and low to moderate levels of dieback. Evidence of past branch failure in the lower crown (wind damage).
6	Jacaranda mimosaefolia (Jacaranda)	7.5	8	260, 400	425	490	Good foliage condition	Mature	Twist forked	Upright trunk	Balanced canopy area	Lower limbs pruned in past to 1.8 metres	Appears stable	Sound branch attachment	Good health	Fair vigour	5%	No visual evidence of significant pest or disease	1 Long (> 40 years)	Moderate landscape significance	2	At the time of inspection the tree was of fair vigour and exhibited low levels of dieback. Large diameter exposed root with evidence of past mechanical damage (mower damage).
7	Angophora costata (Smooth Barked Apple, Sydney Red Gum)	6	5	Up to ca. 230 (just 400 above DGL)	400	400	Good foliage condition	Semi Mature	Multi trunked	Upright trunk	Balanced canopy area	No evidence of significant pest pruning	Appears stable	Fair branch attachment	Good health	Good vigour	<5%	No visual evidence of significant pest or disease	2 Medium (15 to 40 years)	Moderate landscape significance	2	The tree displays fair branch attachment with multiple regrowth following past failure of the main leader at 4 metres (limited view from front boundary).
8	X Cupressocypariss leylandii (Leyland Cypress) - row of 27 specimens	Up to 9	Up to 4	Up to 320	320	400	Good foliage condition	Semi Mature	Single trunk	Upright trunk	Balanced canopy area	No evidence of significant pest pruning	Appears stable	Sound branch attachment	Good health	Good vigour	<5%	Lesions present on some specimens indicative of Cypress Canker.	2 Medium (15 to 40 years)	Moderate landscape significance	2	Lesions present on some specimens indicative of Cypress Canker. Moderate landscape significance as a group - low individually.
9	Eucalyptus spp. (Stringybark)	6	9	800 at 1 metre	800	920	Good foliage condition	Mature	Single trunk	Upright trunk	Majority of canopy to the north	Main leaders reduction pruned in past	Appears stable	Fair branch attachment	Good health	Fair vigour	5 to 10%	Evidence of decay in wound in leader on south side	3 Short (5 to 15 years)	Moderate landscape significance	3	The tree displays fair branch attachment with multiple regrowth following severe past reduction pruning. Evidence of decay in wound in leader on south side. At the time of inspection the tree was of fair vigour and exhibited low levels of dieback and moderate levels of epicormic growth.

URBAN FORESTRY AUSTRALIA - TREE MANAGEMENT & CONSULTING ARBORICULTURISTS

Tree No.	Genus, Species (Common Name)	Height (m)	Canopy (m)	DBH (cm)	DBH for 192	DBH for 242	Foliage Condition	Age Class	Trunk	Trunk Lean	Overhanging	Pest Pruning	Stability	Branch Attachment	Health	Vigour	Dead Wood	Pest or disease	ULB	Landscape Significance	Retention Value*	Comments
10	<i>Eucalyptus nalgine</i> (Sydney Blue Gum)	26	22	900	900	1050	Good foliage condition	Mature	Single trunk	Upright trunk	Balanced canopy area	No evidence of significant past pruning	Appears stable	Fair to poor branch attachment	Good health	Good vigour	<5%	No visual evidence of significant pest or disease	1 Long (> 40 years)	High landscape significance	1	Past tissue loss and exposed heartwood at 11.6 metres on west side - cause unknown - monitor. The tree displays fair to poor branch attachment with evidence of multiple past branch failures from the low to mid/upper crown (including some storm damage) - further failures are predictable - limited access or exclusion zone around tree is recommended if tree is retained.
11	<i>Angophora costata</i> (Smooth Barked Apple, Sydney Red Gum)	26	17	720	720	800	Good foliage condition	Mature	Single trunk	Upright trunk	Majority of canopy on a NW x SE axis	No evidence of significant past pruning	Appears stable	Fair branch attachment	Good health	Good vigour	5%	No visual evidence of significant pest or disease	1 Long (> 40 years)	High landscape significance	1	Slight canopy bias to a NW x SE axis.
12	<i>Syncaephe glomulifera</i> (Turnedpine)	16	14	750 x 900	630	950	Good foliage condition	Mature	Single trunk	Upright trunk	Balanced canopy area	No evidence of significant past pruning	Appears stable	Fair branch attachment	Good health	Good vigour	5%	No visual evidence of significant pest or disease	1 Long (> 40 years)	High landscape significance	1	The tree displays fair branch attachment with codominant leaders from 1.4 metres with evidence of poor attachment at the junction - not considered at risk of failure in the short term. At the time of inspection the tree exhibited low levels of dieback. Wire strands embedded in the trunk at 1.4 metres on the SE side.
13	<i>Syncaephe glomulifera</i> (Turnedpine)	19	9	620	620	690	Good foliage condition	Mature	Single trunk	Upright trunk	Balanced canopy area	No evidence of significant past pruning	Appears stable	Fair branch attachment	Good health	Fair vigour	5 to 10%	No visual evidence of significant pest or disease	1 Long (> 40 years)	High landscape significance	1	The tree displays fair branch attachment with codominant leaders from 2 metres - not considered at risk of failure in the short term. At the time of inspection the tree was of fair vigour and exhibited low to moderate levels of dieback.
14	<i>Syncaephe glomulifera</i> (Turnedpine)	20	8	640	640	700	Good foliage condition	Mature	Single trunk	Upright trunk	Majority of canopy to the west	No evidence of significant past pruning	Appears stable	Fair branch attachment	Good health	Good vigour	<5%	No visual evidence of significant pest or disease	1 Long (> 40 years)	Moderate to high landscape significance	2	The tree's past canopy development has been suppressed. The tree displays fair branch attachment with codominant leaders from 6 metres - not considered at risk of failure.
15	<i>Syncaephe glomulifera</i> (Turnedpine)	20	18	ca. 330, 800, 900	1525	1800	Good foliage condition	Mature	Multi trunked	Upright trunk	Majority of canopy to the west	Lower limbs pruned in past to 5 metres	Appears stable	Fair branch attachment	Good health	Good vigour	5%	No visual evidence of significant pest or disease	1 Long (> 40 years)	High landscape significance	1	The tree displays fair branch attachment with multiple leaders with some evidence of poor attachment at junctions and some poorly attached regrowth following severe past reduction pruning of lower branches. At the time of inspection the tree exhibited low levels of dieback.
16	<i>Syncaephe glomulifera</i> (Turnedpine)	18	9	ca. 670	670	790	Fair foliage condition	Mature	Single trunk	Upright trunk	Majority of canopy to the NW	Lower limbs pruned in past to 3 metres	Appears stable	Sound branch attachment	Moderate health	Fair vigour	10 to 15%	No visual evidence of significant pest or disease	3 Short (5 to 15 years)	Moderate to high landscape significance	3	At the time of inspection the tree was of moderate health and fair vigour and exhibited significantly reduced foliage density and moderate to high levels of dieback.
17	<i>Xcupressocypar leylandii</i> (Leyland Cypress) x 7 specimens	Up to 9	Up to 3	Up to ca. 300	300	340	Good foliage condition	Semi Mature	Single trunk	Upright trunk	Balanced canopy area	No evidence of significant past pruning	Appears stable	Sound branch attachment	Good health	Good vigour	<5%	No visual evidence of significant pest or disease	1 Long (> 40 years)	Moderate landscape significance	2	Moderate landscape significance as a group - low individually.
18	<i>Acrota smithii</i> cv (Lilly Pilly cypress) x 5 specimens	Up to 5 metres	Up to 5 metres	Up to 120 (up to 220 above root base)	220	220	Good foliage condition	Semi Mature	Multi trunked	Upright trunk	Balanced canopy area	No evidence of significant past pruning	Appears stable	Fair branch attachment	Good health	Good vigour	<5%	No visual evidence of significant pest or disease	1 Long (> 40 years)	Low to moderate landscape significance	3	
19	<i>Acacia melanocylon</i> (Blackwood)	12	10	520	520	620	Fair foliage condition	Mature	Single trunk	Distinct trunk lean to west for 2 metres then upright	Balanced canopy area	No evidence of significant past pruning	Appears stable	Sound branch attachment	Poor health	Poor vigour	25%	No visual evidence of significant pest or disease	3 Short (5 to 15 years)	Moderate landscape significance	3	At the time of inspection the tree was of poor health and poor vigour and exhibited very high levels of dieback. Short lived species nearing end of natural life cycle.
20	<i>Ulmus parvifolia</i> (Chinese Elm)	5	10	ca. 300	300	350	Good foliage condition	Semi Mature	Single trunk	Upright trunk	Balanced canopy area	No evidence of significant past pruning	Appears stable	Sound branch attachment	Good health	Good vigour	5%	No visual evidence of significant pest or disease	1 Long (> 40 years)	Moderate landscape significance	2	Multiple leaders form 1.4 metres - junction appears sound.
21	<i>Eucalyptus benicoma</i> (Forest Red Gum)	26	19	1140	1140	1280	Good foliage condition	Mature	Single trunk	Slight trunk lean to the north	Balanced canopy area	No evidence of significant past pruning	Appears stable	Fair branch attachment	Good health	Good vigour	5%	No visual evidence of significant pest or disease	1 Long (> 40 years)	High landscape significance	1	The tree displays fair branch attachment with evidence of multiple past branch failures (e.g. at 3.5 metres on north) and some evidence of poor attachment at junctions - further failures likely - restricted access or exclusion zone recommended if retained.
22	<i>Eucalyptus pilulata</i> (Blackbutt)	18	8	610	N/A	N/A	Dead										100%			4	The tree is dead.	

Tree No.	Genus, Species (Common Name)	Height (m)	Canopy (m)	DBH (cm)	DBH for 192	DBH for 392	Foliage Condition	Age Class	Trunk	Trunk Lean	Green foliage	Pest Pruning	Stability	Branch Attachment	Health	Vigour	Dead Wood	Pest or disease	ULR	Landscape Significance	Retention Value*	Comments
23	<i>Eucalyptus pfulerita</i> (Blackbutt)	10	4	270	270	310	Good foliage condition	Semi Mature	Single trunk	Upright trunk	Balanced canopy area	No evidence of significant pest pruning	Appears stable	Sound branch attachment	Good health	Good vigour	<5%	No visual evidence of significant pest or disease	1 Long (> 40 years)	Low to moderate landscape significance	3	Numerous semi mature Blackbutt and Sydney Red Gum seedlings in immediate vicinity.
24	<i>Eucalyptus pfulerita</i> (Blackbutt)	18	9	580, 600	655	960	Fair foliage condition	Mature	Twin trunked	Upright trunk	Balanced canopy area	No evidence of significant pest pruning	Appears stable	Fair to poor branch attachment	Moderate health	Poor vigour	15 to 20%	No visual evidence of significant pest or disease	3 Short (5 to 15 years)	Moderate to high landscape significance	3	The tree displays fair to poor branch attachment with codominant leaders form 0.8 metres with evidence of poor attachment at the junction (included bark) - the junction is a weak point in the tree's structure with increased risk of failure. At the time of inspection the tree was of moderate health and poor vigour and exhibited very high levels of dieback and epicormic growth in the upper crown.
25	<i>Eucalyptus pfulerita</i> (Blackbutt)	12	7	ca. 260	260	330	Good foliage condition	Semi Mature	Single trunk	Upright trunk	Balanced canopy area	No evidence of significant pest pruning	Appears stable	Sound branch attachment	Good health	Good vigour	<5%	No visual evidence of significant pest or disease	1 Long (> 40 years)	Moderate landscape significance	2	
26	<i>Eucalyptus pfulerita</i> (Blackbutt)	14	6	310	310	340	Good foliage condition	Semi Mature	Single trunk	Upright trunk	Majority of canopy to the north	No evidence of significant pest pruning	Appears stable	Sound branch attachment	Good health	Good vigour	<5%	No visual evidence of significant pest or disease	1 Long (> 40 years)	Moderate landscape significance	2	
27	<i>Eucalyptus pfulerita</i> (Blackbutt)	14	6	300	300	360	Good foliage condition	Semi Mature	Single trunk	Upright trunk	Balanced canopy area	No evidence of significant pest pruning	Appears stable	Sound branch attachment	Good health	Good vigour	<5%	No visual evidence of significant pest or disease	1 Long (> 40 years)	Moderate landscape significance	2	
28	<i>Eucalyptus seligne</i> (Sydney Blue Gum)	18	9	420	420	580	Good foliage condition	Semi Mature	Single trunk	Upright trunk	Balanced canopy area	No evidence of significant pest pruning	Appears stable	Sound branch attachment	Good health	Good vigour	<5%	No visual evidence of significant pest or disease	1 Long (> 40 years)	Moderate to high landscape significance	2	
29	<i>Eucalyptus pfulerita</i> (Blackbutt)	10	4	230	230	260	Good foliage condition	Semi Mature	Single trunk	Upright trunk	Balanced canopy area	No evidence of significant pest pruning	Appears stable	Sound branch attachment	Good health	Good vigour	<5%	No visual evidence of significant pest or disease	1 Long (> 40 years)	Moderate landscape significance	2	
30	<i>Eucalyptus pfulerita</i> (Blackbutt)	12	6	100, 270	277.5	320	Good foliage condition	Semi Mature	Twin trunked	Upright trunk	Balanced canopy area	No evidence of significant pest pruning	Appears stable	Fair to poor branch attachment	Good health	Good vigour	<5%	No visual evidence of significant pest or disease	1 Long (> 40 years)	Moderate landscape significance	2	The tree displays fair to poor branch attachment with codominant leaders form 0.4 metres with evidence of poor attachment at the junction (included bark) - removal of the smaller leader is recommended.
31	<i>Angophora costata</i> (Smooth Barked Apple, Sydney Red Gum)	18	6 x 8	480	480	510	Fair foliage condition	Mature	Single trunk	Upright trunk	Majority of canopy to the north	No evidence of significant pest pruning	Appears stable	Fair branch attachment	Moderate health	Poor vigour	20 to 25%	No visual evidence of significant pest or disease	3 Short (5 to 15 years)	Moderate to high landscape significance	3	The tree's past canopy development has been suppressed. At the time of inspection the tree was of moderate health and poor vigour and exhibited high levels of dieback and epicormic growth.
32	<i>Angophora costata</i> (Smooth Barked Apple, Sydney Red Gum)	11	6	290	290	340g	Good foliage condition	Semi Mature	Single trunk	Upright trunk	Majority of canopy to the west	No evidence of significant pest pruning	Appears stable	Sound branch attachment	Good health	Good vigour	<5%	No visual evidence of significant pest or disease	1 Long (> 40 years)	Moderate landscape significance	2	
33	<i>Angophora costata</i> (Smooth Barked Apple, Sydney Red Gum)	19	8	560	560	670	Good foliage condition	Mature	Single trunk	Upright trunk	Majority of canopy to the west	No evidence of significant pest pruning	Appears stable	Fair branch attachment	Good health	Fair vigour	5%	No visual evidence of significant pest or disease	1 Long (> 40 years)	Moderate to high landscape significance	2	The tree's past canopy development has been suppressed. At the time of inspection the tree was of fair vigour with a dead leader at 3 metres.
34	<i>Angophora costata</i> (Smooth Barked Apple, Sydney Red Gum)	8	2	280	280	290	Fair foliage condition	Semi Mature	Single trunk	Upright trunk	Balanced canopy area	No evidence of significant pest pruning	Appears stable	Sound branch attachment	Good health	Good vigour	<5%	No visual evidence of significant pest or disease	1 Long (> 40 years)	Low landscape significance	3	Upper crown development being suppressed by adjacent tree.
35	<i>Eucalyptus pfulerita</i> (Blackbutt)	27	17	850	850	1040	Fair foliage condition	Mature	Single trunk	Upright trunk	Balanced canopy area	No evidence of significant pest pruning	Appears stable	Fair branch attachment	Moderate health	Poor vigour	15 to 20%	No visual evidence of significant pest or disease	3 Short (5 to 15 years)	High landscape significance	3	At the time of inspection the tree was of moderate health and poor vigour and exhibited reduced foliage size and density, high levels of dieback and high levels of epicormic growth.
36	<i>Angophora costata</i> (Smooth Barked Apple, Sydney Red Gum)	22	14	630	630	710	Good foliage condition	Mature	Single trunk	Upright trunk	Balanced canopy area	No evidence of significant pest pruning	Appears stable	Fair branch attachment	Good health	Fair vigour	10%	No visual evidence of significant pest or disease	2 Medium (15 to 40 years)	High landscape significance	1	At the time of inspection the tree was of fair vigour and exhibited low to moderate levels of dieback.
37	<i>Corymbia gummifera</i> (Red Bloodwood)	18	10	630	630	690	Good foliage condition	Mature	Single trunk	Upright trunk	Balanced canopy area	No evidence of significant pest pruning	Appears stable	Fair branch attachment	Good health	Good vigour	5%	No visual evidence of significant pest or disease	1 Long (> 40 years)	High landscape significance	1	Fruit not detected to confirm species identification.

Tree No.	Genus, Species (Common Name)	Height (m)	Canopy (m)	DBH for 130, 130, 230, 250	DBH for 192	DBH for 342	Foliage Condition	Age Class	Trunk	Trunk Lean	Canopy Balance	Pest Pruning	Stability	Branch Attachment	Health	Vigour	Dead Wood	Pest or disease	ULS	Landscape Significance	Retention Value*	Comments
36	<i>Eucalyptus pfulensis</i> (Blackbutt)	22	7	130, 130, 230, 250	555	600	Poor foliage condition	Semi Mature	Multi trunked	Upright trunk	Balanced canopy area	Appears tree previously removed to ground level	Appears stable	Fair branch attachment	Poor health	Poor vigour	55%	No visual evidence of significant pest or disease	3 Short (5 to 15 years)	Moderate landscape significance	3	It appears the tree previously removed to ground level and the current tree comprises multiple epicormic shoots (access difficult to confirm).
32	<i>Pinus radiata</i> (Monterey Pine, Radiata Pine)	13	6	520	520	540	Good foliage condition	Semi Mature	Single trunk	Upright trunk	All canopy to the west	Lower limbs pruned in past to 1.5 metres	Appears stable	Sound branch attachment	Good health	Good vigour	5%	No visual evidence of significant pest or disease	1 Long (> 40 years)	Moderate landscape significance	2	The tree's past canopy development has been significantly suppressed.
40	<i>Pinus radiata</i> (Monterey Pine, Radiata Pine)	12	8	470	470	460	Fair foliage condition	Semi Mature	Single trunk	Upright trunk	Balanced canopy area	No evidence of significant pest pruning	Appears stable	Sound branch attachment	Poor health	Poor vigour	60%	No visual evidence of significant pest or disease	3 Short (5 to 15 years)	Low landscape significance	3	At the time of inspection the tree was of poor health and poor vigour and exhibited very high levels of dieback.
41	<i>Pinus radiata</i> (Monterey Pine, Radiata Pine)	13	6	420	420	460	Good foliage condition	Semi Mature	Single trunk	Upright trunk	Balanced canopy area	Lower limbs pruned in past to 2 metres	Appears stable	Sound branch attachment	Good health	Good vigour	5%	No visual evidence of significant pest or disease	1 Long (> 40 years)	Moderate landscape significance	2	
42	<i>Photinia x fraseri</i> ('Robusta') (Photinia)	5	8	Up to 130 (400 above roof line)	430	430	Good foliage condition	Mature	Multi trunked	Upright trunk	Majority of canopy to the west	Lower limbs pruned in past to 1 metre	Appears stable	Fair branch attachment	Good health	Fair vigour	5%	No visual evidence of significant pest or disease	2 Medium (15 to 40 years)	Low to moderate landscape significance	3	The tree's past canopy development has been suppressed. The tree displays fair branch attachment with multiple leaders from near ground level - not considered at risk of failure. At the time of inspection the tree was of fair vigour and exhibited low levels of dieback.
43	<i>Jacaranda mimosifolia</i> (Jacaranda)	6	7	410	410	460	Fair foliage condition	Mature	Single trunk	Upright trunk	Balanced canopy area	Lower limbs pruned in past to 2 metres	Appears stable	Fair to poor branch attachment	Moderate health	Fair vigour	10 to 15%	No visual evidence of significant pest or disease	2 Medium (15 to 40 years)	Low to moderate landscape significance	3	The tree displays fair to poor branch attachment with evidence of past failures. At the time of inspection the tree was of moderate health and fair vigour and exhibited reduced foliage density and moderate levels of dieback.
44	<i>Jacaranda mimosifolia</i> (Jacaranda)	6	6 x 6	Up to 260 (400 x 600 above roof line)	500	500	Fair foliage condition	Mature	Multi trunked	Upright trunk	Balanced canopy area	Lower limbs pruned in past to 1.8 metres	Appears stable	Sound branch attachment	Moderate health	Fair vigour	10%	No visual evidence of significant pest or disease	2 Medium (15 to 40 years)	Low to moderate landscape significance	3	At the time of inspection the tree was of moderate health and fair vigour and exhibited reduced foliage density and moderate levels of dieback.
45	<i>Legnecrownsia indica</i> (Copee Myrtle)	5	9	Up to 120 (460 above roof line)	460	460	Good foliage condition	Mature	Multi trunked	Upright trunk	Balanced canopy area	Lower limbs pruned in past to 1.7 metres	Appears stable	Fair branch attachment	Good health	Fair vigour	5 to 10%	No visual evidence of significant pest or disease	2 Medium (15 to 40 years)	Moderate landscape significance	2	At the time of inspection the tree was of fair vigour and exhibited low to moderate levels of dieback. The tree displays fair branch attachment with multiple leaders from near ground level - not considered at risk of failure.
46	<i>Jacaranda mimosifolia</i> (Jacaranda)	5.5	5	210, 240	340	400	Good foliage condition	Mature	Twins trunked	Upright trunk	Majority of canopy to the north	Lower limbs pruned in past to 1.5 metres	Appears stable	Sound branch attachment	Good health	Fair vigour	5%	No visual evidence of significant pest or disease	1 Long (> 40 years)	Low to moderate landscape significance	3	The tree's past canopy development has been suppressed. At the time of inspection the tree was of fair vigour and exhibited low levels of dieback.
47	<i>Liquidambar styraciflua</i> (Liquidambar)	10	10	560	560	720	Good foliage condition	Mature	Single trunk	Upright trunk	Balanced canopy area	Lower limbs pruned in past to 3 metres	Appears stable	Fair branch attachment	Good health	Good vigour	+5%	No visual evidence of significant pest or disease	2 Medium (15 to 40 years)	High landscape significance	1	The tree displays fair branch attachment with codominant leaders from 4 metres with evidence of poor attachment at the junction (included bark) - the junction is a weak point in the tree's structure with increased risk of failure.
48	<i>Alnus jontelensis</i> (Evergreen Alder)	5	5	260	260	320	Good foliage condition	Semi Mature	Single trunk	Upright trunk	Balanced canopy area	Lower limbs pruned in past to 2.5 metres	Appears stable	Sound branch attachment	Good health	Good vigour	+5%	Minor decay in pruning wounds	2 Medium (15 to 40 years)	Environmental pest species	4	Environmental pest/vulnerance species. Minor decay in pruning wounds. Past tissue loss on south side of lower/basal trunk - cause unknown.
49	<i>Pinus radiata</i> (Monterey Pine, Radiata Pine)	12	8	410	410	460	Good foliage condition	Semi Mature	Single trunk	Upright trunk	Majority of canopy to the SW	Lower limbs pruned in past to 2 metres	Appears stable	Sound branch attachment	Good health	Fair vigour	5%	No visual evidence of significant pest or disease	1 Long (> 40 years)	Moderate landscape significance	2	The tree's past canopy development has been suppressed.
50	<i>Pinus radiata</i> (Monterey Pine, Radiata Pine)	14	10	460	460	520	Good foliage condition	Semi Mature	Single trunk	Upright trunk	Majority of canopy to the west	Lower limbs pruned in past to 2 metres	Appears stable	Poor branch attachment	Good health	Good vigour	5%	No visual evidence of significant pest or disease	2 Medium (15 to 40 years)	Moderate landscape significance	2	The tree's past canopy development has been suppressed. The tree displays poor branch attachment with codominant leaders from 3 metres with evidence of poor attachment at the junction - the junction is a weak point in the tree's structure with increased risk of failure.
51	<i>Pinus radiata</i> (Monterey Pine, Radiata Pine)	14	9	540	540	610	Good foliage condition	Semi Mature	Single trunk	Upright trunk	Majority of canopy to the south	Lower limbs pruned in past to 2 metres	Appears stable	Poor branch attachment	Good health	Good vigour	+5%	No visual evidence of significant pest or disease	2 Medium (15 to 40 years)	Moderate landscape significance	2	The tree's past canopy development has been suppressed. The tree displays poor branch attachment with codominant leaders from 3 metres with evidence of poor attachment at the junction - the junction is a weak point in the tree's structure with increased risk of failure.

URBAN FORESTRY AUSTRALIA - TREE MANAGEMENT & CONSULTING ARBORICULTURISTS

Tree No.	Genus, Species (Common Name)	Height (m)	Canopy (m)	DBH (cm)	DBH for 10% (cm)	DBH for 5% (cm)	Foliage Condition	Age Class	Trunk	Trunk Lean	Crown Balance	Past Pruning	Stability	Branch Attachment	Health	Vigour	Dead Wood	Pest or Disease	ULE	Landscape Significance	Retention Value*	Comments
52	<i>Pinus radiata</i> (Monteney Pine, Radiata Pine)	15	6	440	440	460	Good foliage condition	Semi Mature	Single trunk	Upright trunk	Majority of canopy to the south	Lower limbs pruned in past to 2 metres	Appears stable	Sound branch attachment	Good health	Good vigour	<5%	No visual evidence of significant pest or disease	1 Long (> 40 years)	Moderate landscape significance	2	The tree's past canopy development has been suppressed.
53	<i>Pinus radiata</i> (Monteney Pine, Radiata Pine)	19	8	540	540	570	Good foliage condition	Semi Mature	Single trunk	Upright trunk	Balanced canopy area	Lower limbs pruned in past to 2.5 metres	Appears stable	Poor branch attachment	Good health	Good vigour	<5%	No visual evidence of significant pest or disease	2 Medium (15 to 40 years)	Moderate to high landscape significance	2	The tree displays poor branch attachment with codominant leaders from 2.5 metres with evidence of poor attachment at the junction - the junction is a weak point in the tree's structure with increased risk of failure. Recent mechanical damage to lower trunk (base on north side).
54	<i>Pinus radiata</i> (Monteney Pine, Radiata Pine)	16	7	410	410	440	Good foliage condition	Mature	Single trunk	Upright trunk	Majority of canopy to the south	Lower limbs pruned in past to 2.2 metres	Appears stable	Sound branch attachment	Good health	Good vigour	<5%	No visual evidence of significant pest or disease	1 Long (> 40 years)	Moderate landscape significance	2	The tree's past canopy development has been suppressed. Evidence of past damage to main trunk at 1.6 metres - cause unknown.
55	<i>Pinus radiata</i> (Monteney Pine, Radiata Pine)	16	8	510	510	560	Good foliage condition	Semi Mature	Single trunk	Upright trunk	Majority of canopy to the south	Lower limbs pruned in past to 2 metres	Appears stable	Sound branch attachment	Good health	Good vigour	<5%	No visual evidence of significant pest or disease	1 Long (> 40 years)	Moderate landscape significance	2	The tree's past canopy development has been suppressed.
56	<i>Pinus radiata</i> (Monteney Pine, Radiata Pine)	17	6	520	520	560	Good foliage condition	Semi Mature	Single trunk	Upright trunk	Majority of canopy to the south	Lower limbs pruned in past to 3 metres	Appears stable	Sound branch attachment	Good health	Good vigour	<5%	No visual evidence of significant pest or disease	1 Long (> 40 years)	Moderate landscape significance	2	The tree's past canopy development has been suppressed.
57	<i>Pinus radiata</i> (Monteney Pine, Radiata Pine)	17	7	390	390	390	Good foliage condition	Semi Mature	Single trunk	Upright trunk	Balanced canopy area	Lower limbs pruned in past to 1.7 metres	Appears stable	Poor branch attachment	Good health	Fair vigour	10 to 15%	No visual evidence of significant pest or disease	2 Medium (15 to 40 years)	Moderate landscape significance	2	The tree displays poor branch attachment with codominant leaders from 2 metres with evidence of poor attachment at the junction - the junction is a weak point in the tree's structure with increased risk of failure.
58	<i>Pinus radiata</i> (Monteney Pine, Radiata Pine)	14	5	410	410	440	Fair foliage condition	Semi Mature	Single trunk	Upright trunk	Majority of canopy to the south	Lower limbs pruned in past to 1.7 metres	Appears stable	Sound branch attachment	Moderate health	Fair vigour	15 to 20%	No visual evidence of significant pest or disease	2 Medium (15 to 40 years)	Low to moderate landscape significance	3	The tree's past canopy development has been suppressed. At the time of inspection the tree was of moderate health and fair vigour and exhibited reduced foliage density and moderate to high levels of dieback.
59	<i>Pinus radiata</i> (Monteney Pine, Radiata Pine)	16	5	310	310	340	Fair foliage condition	Semi Mature	Single trunk	Upright trunk	Balanced canopy area	Lower limbs pruned in past to 1.7 metres	Appears stable	Sound branch attachment	Moderate health	Fair vigour	15 to 20%	No visual evidence of significant pest or disease	2 Medium (15 to 40 years)	Moderate landscape significance	2	At the time of inspection the tree was of moderate health and fair vigour and exhibited reduced foliage density and moderate to high levels of dieback.
60	<i>Pinus radiata</i> (Monteney Pine, Radiata Pine)	15	6	450	450	480	Fair foliage condition	Semi Mature	Single trunk	Upright trunk	Balanced canopy area	Lower limbs pruned in past to 1.7 metres	Appears stable	Fair to poor branch attachment	Moderate health	Fair vigour	25 to 30%	No visual evidence of significant pest or disease	2 Medium (15 to 40 years)	Low to moderate landscape significance	3	The tree displays poor branch attachment with codominant leaders from 1.6 metres with evidence of poor attachment at the junction - the junction is a weak point in the tree's structure with increased risk of failure. At the time of inspection the tree was of moderate health and fair vigour and exhibited reduced foliage density and moderate to high levels of dieback.
61	<i>Pinus radiata</i> (Monteney Pine, Radiata Pine)	15	3	360	360	390	Good foliage condition	Semi Mature	Single trunk	Upright trunk	Balanced canopy area	Lower limbs pruned in past to 1.4 metres	Appears stable	Sound branch attachment	Good health	Fair vigour	15%	No visual evidence of significant pest or disease	2 Medium (15 to 40 years)	Moderate landscape significance	2	At the time of inspection the tree was of fair vigour and exhibited low to moderate to high levels of dieback.
62	<i>Pinus radiata</i> (Monteney Pine, Radiata Pine)	14	3	330	330	360	Poor foliage condition	Semi Mature	Single trunk	Upright trunk	Balanced canopy area	Lower limbs pruned in past to 1.6 metres	Appears stable	Sound branch attachment	Poor health	Poor vigour	65%	No visual evidence of significant pest or disease	3 Short (5 to 15 years)	Low to moderate landscape significance	3	At the time of inspection the tree was of poor health and poor vigour and exhibited very high levels of dieback.
63	<i>Pinus radiata</i> (Monteney Pine, Radiata Pine)	17	8	520	520	560	Good foliage condition	Semi Mature	Single trunk	Upright trunk	Balanced canopy area	Lower limbs pruned in past to 1.7 metres	Appears stable	Fair to poor branch attachment	Good health	Good vigour	5 to 10%	No visual evidence of significant pest or disease	2 Medium (15 to 40 years)	Moderate landscape significance	2	The tree exhibits fair to poor branch attachment with multiple leaders from 3 metres following past failure (or removal) of the main leader at this point - there is some evidence of poor attachment at the junction - the junction is a weak point in the tree's structure with increased risk of failure. There is evidence of recent past mechanical damage (base loss) on the west side of the trunk to 3.5 metres.

DBH = approximate diameter at breast height (DBH) estimated from nearest property boundary or fence where trees were located on adjoining properties

* Retention Values: 1 - High (Priority for retention); 2 - Moderate (Consider for retention); 3 - Low or short ULE (Not warranting specific design consideration) and 4 - Remove (very short ULE, structurally unsound, weed species etc.)



Photograph 1: Illustrating the site as viewed from Vineys Road.



Photograph 2: Illustrating tree numbers 1, 2 and 3.



Photograph 3: Illustrating past failure of a leader – tree no. 1.



Photograph 4: Illustrating multiple leaders from 3 metres – tree No. 2.



Photograph 5: Illustrating tree 10 – location and context.



Photograph 6: Illustrating past branch failures – tree 10.



Photograph 7: Illustrating location and context tree Nos. 11 to 16.



Photograph 8: Illustrating location and context of tree 21



Photograph 9: Illustrating location and context of trees 10 and 21.



Photograph 10: Illustrating location and context of trees 22 to 38.



Photograph 11: Illustrating location of dwelling at 3 Quarry Road and context of trees 42 to 48.



Photograph 12: Illustrating location and context of pine trees 49 to 63.

APPENDIX E

TREE PROTECTION DEVICES



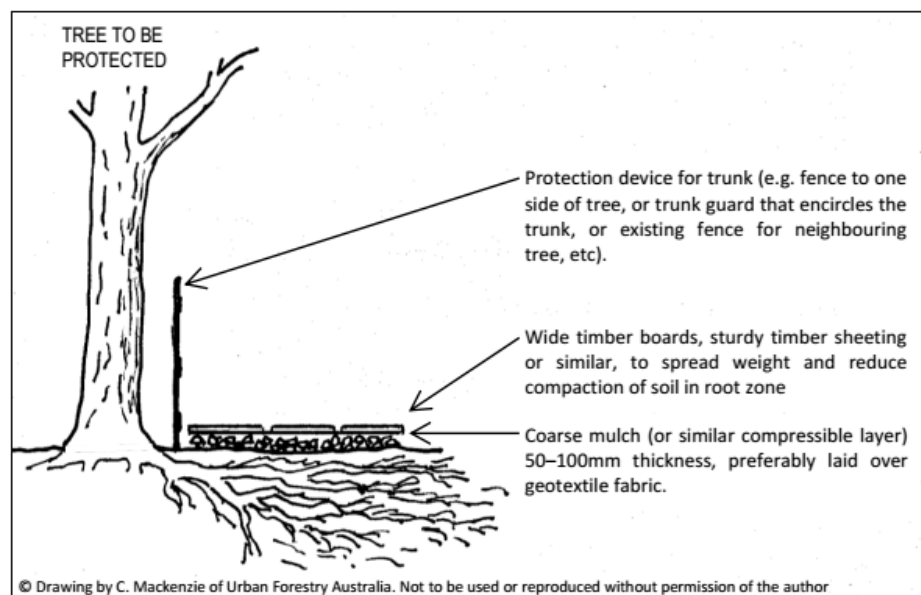


Figure 1
A method of reducing risk of root damage and soil compaction within the tree's Structural Root Zone.

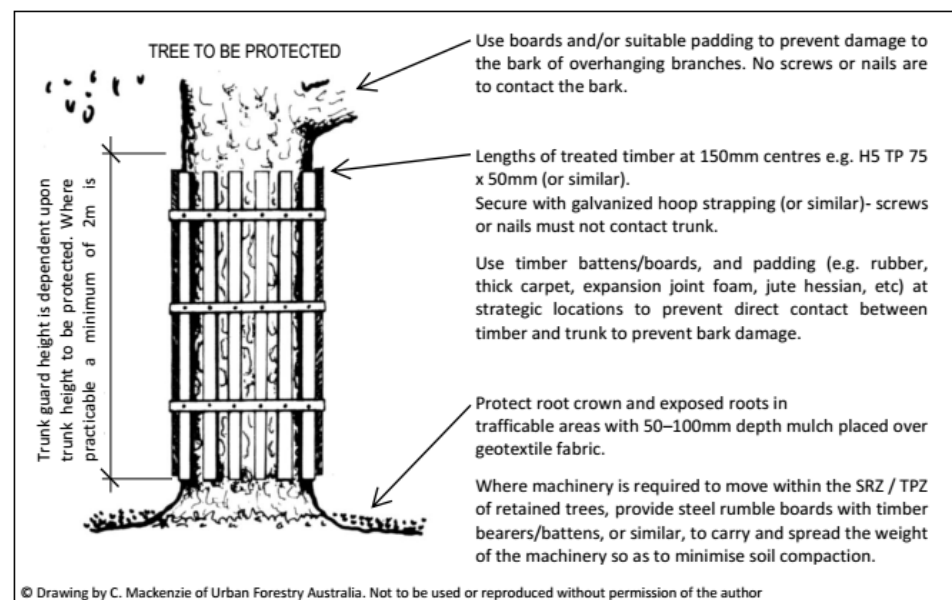


Figure 2
Example of tree trunk and tree branch protection.

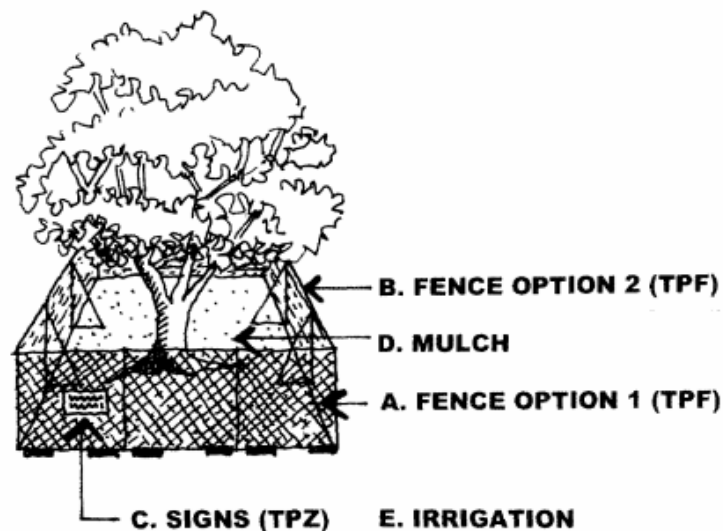


Figure 3

TREE PROTECTIVE FENCING (TPF)

A. Fence Option 1 (TPF)

1.8 metre high chain wire mesh panels with shade cloth attached if required, to be held in place with concrete blocks.

B. Fence Option 2 (TPF)

1.8 metre high plywood or wooden panel/paling fence (prevents soil or building contaminants from coming under fence when panels are laid flush to ground).

C. Signs (TPZ)

Tree Protection Zone Signs

D. Mulch

50mm to 100mm thick layer of organic mulch, or aggregate, installed across surface area of TPZ.

E. Irrigation

Irrigation to arborist's advice.

© Drawing by Selena Hannan. Used with permission.

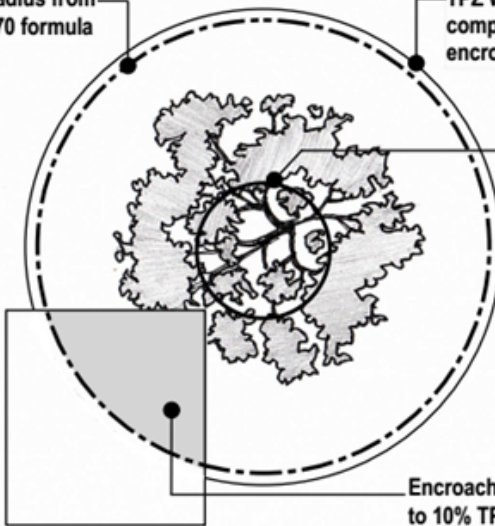
TREE PROTECTION ZONE SIGNAGE



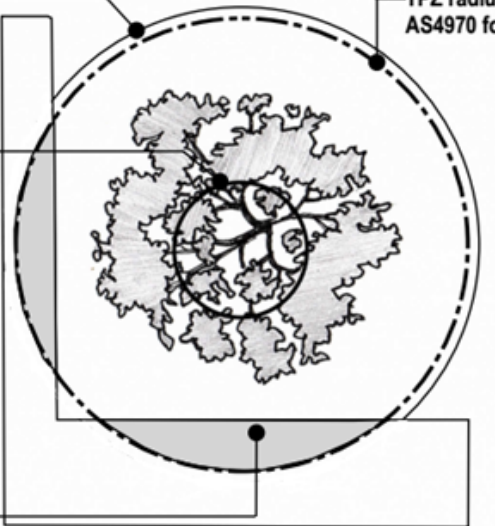
Contact:

Size: Approximate dimensions 225 x 300mm.
Material: Polypropylene or colourbond steel.

TPZ radius from AS4970 formula



TPZ with 10% compensation for encroachment



NOTE: This example is based on a tree with a DBH of 1.0m, and a DAB of 1.1m.

TPZ = Tree Protection Zone
referred to as the radius in metres and calculated using the following formula:

$$TPZ = 12 \times DBH$$

where: *DBH* = Diameter at Breast Height (i.e. measured at 1.4m above ground level).

SRZ = Structural Root Zone
Referred to as the radius in metres and calculated using the following formula:

$$RSRZ = (D \times 50)^{0.42} \times 0.64$$

where: *RSRZ* = Radius of Structural Root Zone
D = Stem Diameter (measured directly above the buttress i.e the DAB).

These examples illustrate a tree with a DBH of 1.0m and DAB of 1.1m. A minor encroachment is less than 10% of the total TPZ area and is outside the SRZ. Any loss of TPZ is to be compensated elsewhere and contiguous with the TPZ, as indicated in the examples.
NOTE: Trees that do not have a symmetrical crown require the TPZ to be altered to protect the crown projection by at least 1m outside the crown's perimeter. This must be identified and addressed by the Project Arboriculturist prior to installing tree protection devices, including fencing.

Examples of Minor Encroachment into Tree Protection Zone (TPZ)

(c) Catriona Mackenzie.

Include the Project Arboriculturist's details in the 'Contact' panel.

APPENDIX F

SCHEDULE OF ASSESSED TREES



TREE DATA SUMMARY—3 Quarry Road and 4 Vineys Road Dural—9 JANUARY 2019

NOTE: All trees assessed and their data provided by Guy Paroissien of Landscape Matrix Pty Ltd.

Tree No.	Genus, Species (Common Name)	Height (m)	Canopy (m)	DBH (mm)	DBH for TPZ	DGL for SRZ	Foliage Condition	Age Class	Trunk	Trunk Lean	Crown balance	Past Pruning	Stability	Branch Attachment	Health	Vigour	Dead Wood	Pest or disease	ULE	Landscape Significance	Retention Value*
1	<i>Eucalypts punctata</i> (Grey Gum)	23	14 x 18	790 x 850	820	1040	Good foliage condition	Mature	Single trunk	Upright trunk	Majority of canopy to the west	No evidence of significant past pruning	Appears stable	Fair branch attachment	Good health	Fair vigour	5 to 10%	Evidence of decay in basal trunk at site of past branch failure	2 Medium (15 to 40 years)	High landscape significance	1
2	<i>Syncarpia glomulifera</i> (Turpentine)	16	12	880 x 920	900	1080	Good foliage condition	Mature	Single trunk	Upright trunk	Majority of canopy to the east	Lower branches pruned for OH wires on north	Appears stable	Fair branch attachment	Good health	Fair vigour	5 to 10%	No visual evidence of significant pest or disease	1 Long (> 40 years)	High landscape significance	1
3	<i>Syncarpia glomulifera</i> (Turpentine)	17	9 x 14	220, 220, 620, 640	1275	1340	Good foliage condition	Mature	Multi trunked	Upright trunk	Majority of canopy to the north	Lower limbs pruned in past to 4 metres	Appears stable	Fair branch attachment	Good health	Good vigour	5%	No visual evidence of significant pest or disease	1 Long (> 40 years)	High landscape significance	1
4	<i>Jacaranda mimosifolia</i> (Jacaranda)	7	8	160, 160, 200	390	370	Good foliage condition	Mature	Multi trunked	Upright trunk	Balanced canopy area	Lower limbs pruned in past to 1.8 metres	Appears stable	Sound branch attachment	Good health	Good vigour	<5%	No visual evidence of significant pest or disease	1 Long (> 40 years)	Moderate landscape significance	2
5	<i>Cedrus atlantica Glauca</i> (Atlantic Cedar)	13	12	530	530	620	Fair foliage condition	Mature	Single trunk	Upright trunk	Balanced canopy area	Lower limbs pruned in past to 2 metres	Appears stable	Sound branch attachment	Moderate health	Fair vigour	5 to 10%	No visual evidence of significant pest or disease	2 Medium (15 to 40 years)	Moderate to high landscape significance	2
6	<i>Jacaranda mimosifolia</i> (Jacaranda)	7.5	8	260, 400	495	490	Good foliage condition	Mature	Twin trunked	Upright trunk	Balanced canopy area	Lower limbs pruned in past to 1.6 metres	Appears stable	Sound branch attachment	Good health	Fair vigour	5%	No visual evidence of significant pest or disease	1 Long (> 40 years)	Moderate landscape significance	2
7	<i>Angophora costata</i> (Smooth Barked Apple, Sydney Red Gum)	8	5	Up to ca. 230 (est 400 above DGL)	400	400	Good foliage condition	Semi Mature	Multi trunked	Upright trunk	Balanced canopy area	No evidence of significant past pruning	Appears stable	Fair branch attachment	Good health	Good vigour	<5%	No visual evidence of significant pest or disease	2 Medium (15 to 40 years)	Moderate landscape significance	2
8	<i>XCupressocyparis leylandii</i> (Leyland Cypress) - row of 27 specimens	Up to 9	Up to 4	Up to 320	320	420	Good foliage condition	Semi Mature	Single trunk	Upright trunk	Balanced canopy area	No evidence of significant past pruning	Appears stable	Sound branch attachment	Good health	Good vigour	<5%	Lesions present on some specimens indicative of Cypress Canker.	2 Medium (15 to 40 years)	Moderate landscape significance	2
9	<i>Eucalyptus spp.</i> (Stringybark)	8	9	800 at 1 metre	800	920	Good foliage condition	Mature	Single trunk	Upright trunk	Majority of canopy to the north	Main leaders reduction pruned in past	Appears stable	Fair branch attachment	Good health	Fair vigour	5 to 10%	Evidence of decay in wound in leader on south side	3 Short (5 to 15 years)	Moderate landscape significance	3

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Tree No.	Genus, Species (Common Name)	Height (m)	Canopy (m)	DBH (mm)	DBH for TPZ	DGL for SRZ	Foliage Condition	Age Class	Trunk	Trunk Lean	Crown balance	Past Pruning	Stability	Branch Attachment	Health	Vigour	Dead Wood	Pest or disease	ULE	Landscape Significance	Retention Value*
10	<i>Eucalyptus saligna</i> (Sydney Blue Gum)	26	22	900	900	1050	Good foliage condition	Mature	Single trunk	Upright trunk	Balanced canopy area	No evidence of significant past pruning	Appears stable	Fair to poor branch attachment	Good health	Good vigour	<5%	No visual evidence of significant pest or disease	1 Long (> 40 years)	High landscape significance	1
11	<i>Angophora costata</i> (Smooth Barked Apple, Sydney Red Gum)	26	17	720	720	800	Good foliage condition	Mature	Single trunk	Upright trunk	Majority of canopy on a NW x SE axis	No evidence of significant past pruning	Appears stable	Fair branch attachment	Good health	Good vigour	5%	No visual evidence of significant pest or disease	1 Long (> 40 years)	High landscape significance	1
12	<i>Syncarpia glomulifera</i> (Turpentine)	16	14	760 x 900	880	960	Good foliage condition	Mature	Single trunk	Upright trunk	Balanced canopy area	No evidence of significant past pruning	Appears stable	Fair branch attachment	Good health	Good vigour	5%	No visual evidence of significant pest or disease	1 Long (> 40 years)	High landscape significance	1
13	<i>Syncarpia glomulifera</i> (Turpentine)	19	9	620	620	690	Good foliage condition	Mature	Single trunk	Upright trunk	Balanced canopy area	No evidence of significant past pruning	Appears stable	Fair branch attachment	Good health	Fair vigour	5 to 10%	No visual evidence of significant pest or disease	1 Long (> 40 years)	High landscape significance	1
14	<i>Syncarpia glomulifera</i> (Turpentine)	20	8	640	640	700	Good foliage condition	Mature	Single trunk	Upright trunk	Majority of canopy to the west	No evidence of significant past pruning	Appears stable	Fair branch attachment	Good health	Good vigour	<5%	No visual evidence of significant pest or disease	1 Long (> 40 years)	Moderate to high landscape significance	2
15	<i>Syncarpia glomulifera</i> (Turpentine)	20	18	ca. 330, 800, 900	1525	1800	Good foliage condition	Mature	Multi trunked	Upright trunk	Majority of canopy to the east	Lower limbs pruned in past to 5 metres	Appears stable	Fair branch attachment	Good health	Good vigour	5%	No visual evidence of significant pest or disease	1 Long (> 40 years)	High landscape significance	1
16	<i>Syncarpia glomulifera</i> (Turpentine)	18	9	ca. 670	670	790	Fair foliage condition	Mature	Single trunk	Upright trunk	Majority of canopy to the NW	Lower limbs pruned in past to 3 metres	Appears stable	Sound branch attachment	Moderate health	Fair vigour	10 to 15%	No visual evidence of significant pest or disease	3 Short (5 to 15 years)	Moderate to high landscape significance	3
17	<i>Xcupressocyparis leylandii</i> (Leyland Cypress) x 7 specimens	Up to 9	Up to 3	Up to ca. 300	300	340	Good foliage condition	Semi Mature	Single trunk	Upright trunk	Balanced canopy area	No evidence of significant past pruning	Appears stable	Sound branch attachment	Good health	Good vigour	<5%	No visual evidence of significant pest or disease	1 Long (> 40 years)	Moderate landscape significance	2
18	<i>Acmena smithii</i> cv (Lilly Pilly cultivar) x 5 specimens	Up to 5 metres	Up to 5 metres	Up to 120 (up to 220 above root flare)	220	220	Good foliage condition	Semi Mature	Multi trunked	Upright trunk	Balanced canopy area	No evidence of significant past pruning	Appears stable	Fair branch attachment	Good health	Good vigour	<5%	No visual evidence of significant pest or disease	1 Long (> 40 years)	Low to moderate landscape significance	3
19	<i>Acacia melanoxylon</i> (Blackwood)	12	10	520	520	620	Fair foliage condition	Mature	Single trunk	Distinct trunk lean to east for 2 metres then upright	Balanced canopy area	No evidence of significant past pruning	Appears stable	Sound branch attachment	Poor health	Poor vigour	25%	No visual evidence of significant pest or disease	3 Short (5 to 15 years)	Moderate landscape significance	3

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Tree No.	Genus, Species (Common Name)	Height (m)	Canopy (m)	DBH (mm)	DBH for TPZ	DGL for SRZ	Foliage Condition	Age Class	Trunk	Trunk Lean	Crown balance	Past Pruning	Stability	Branch Attachment	Health	Vigour	Dead Wood	Pest or disease	ULE	Landscape Significance	Retention Value*
20	<i>Ulmus parvifolia</i> (Chinese Elm)	5	10	ca. 300	300	350	Good foliage condition	Semi Mature	Single trunk	Upright trunk	Balanced canopy area	No evidence of significant past pruning	Appears stable	Sound branch attachment	Good health	Good vigour	5%	No visual evidence of significant pest or disease	1 Long (> 40 years)	Moderate landscape significance	2
21	<i>Eucalyptus tereticornis</i> (Forest Red Gum)	26	19	1140	1140	1280	Good foliage condition	Mature	Single trunk	Slight trunk lean to the north	Balanced canopy area	No evidence of significant past pruning	Appears stable	Fair branch attachment	Good health	Good vigour	5%	No visual evidence of significant pest or disease	1 Long (> 40 years)	High landscape significance	1
22	<i>Eucalyptus pilularis</i> (Blackbutt)	18	8	490, 610	N/A	N/A	Dead										100%				4
23	<i>Eucalyptus pilularis</i> (Blackbutt)	10	4	270	270	310	Good foliage condition	Semi Mature	Single trunk	Upright trunk	Balanced canopy area	No evidence of significant past pruning	Appears stable	Sound branch attachment	Good health	Good vigour	<5%	No visual evidence of significant pest or disease	1 Long (> 40 years)	Low to moderate landscape significance	3
24	<i>Eucalyptus pilularis</i> (Blackbutt)	18	9	580, 600	885	960	Fair foliage condition	Mature	Twin trunked	Upright trunk	Balanced canopy area	No evidence of significant past pruning	Appears stable	Fair to poor branch attachment	Moderate health	Poor vigour	15 to 20%	No visual evidence of significant pest or disease	3 Short (5 to 15 years)	Moderate to high landscape significance	3
25	<i>Eucalyptus pilularis</i> (Blackbutt)	12	7	ca. 280	280	330	Good foliage condition	Semi Mature	Single trunk	Upright trunk	Balanced canopy area	No evidence of significant past pruning	Appears stable	Sound branch attachment	Good health	Good vigour	<5%	No visual evidence of significant pest or disease	1 Long (> 40 years)	Moderate landscape significance	2
26	<i>Eucalyptus pilularis</i> (Blackbutt)	14	6	310	310	340	Good foliage condition	Semi Mature	Single trunk	Upright trunk	Majority of canopy to the north	No evidence of significant past pruning	Appears stable	Sound branch attachment	Good health	Good vigour	<5%	No visual evidence of significant pest or disease	1 Long (> 40 years)	Moderate landscape significance	2
27	<i>Eucalyptus pilularis</i> (Blackbutt)	14	6	300	300	350	Good foliage condition	Semi Mature	Single trunk	Upright trunk	Balanced canopy area	No evidence of significant past pruning	Appears stable	Sound branch attachment	Good health	Good vigour	<5%	No visual evidence of significant pest or disease	1 Long (> 40 years)	Moderate landscape significance	2
28	<i>Eucalyptus saligna</i> (Sydney Blue Gum)	18	9	420	420	580	Good foliage condition	Semi Mature	Single trunk	Upright trunk	Balanced canopy area	No evidence of significant past pruning	Appears stable	Sound branch attachment	Good health	Good vigour	<5%	No visual evidence of significant pest or disease	1 Long (> 40 years)	Moderate to high landscape significance	2
29	<i>Eucalyptus pilularis</i> (Blackbutt)	10	4	230	230	260	Good foliage condition	Semi Mature	Single trunk	Upright trunk	Balanced canopy area	No evidence of significant past pruning	Appears stable	Sound branch attachment	Good health	Good vigour	<5%	No visual evidence of significant pest or disease	1 Long (> 40 years)	Moderate landscape significance	2
30	<i>Eucalyptus pilularis</i> (Blackbutt)	12	6	100, 270	277.5	320	Good foliage condition	Semi Mature	Twin trunked	Upright trunk	Balanced canopy area	No evidence of significant past pruning	Appears stable	Fair to poor branch attachment	Good health	Good vigour	<5%	No visual evidence of significant pest or disease	1 Long (> 40 years)	Moderate landscape significance	2

URBAN FORESTRY AUSTRALIA - TREE MANAGEMENT & CONSULTING ARBORICULTURISTS

Tree No.	Genus, Species (Common Name)	Height (m)	Canopy (m)	DBH (mm)	DBH for TPZ	DGL for SRZ	Foliage Condition	Age Class	Trunk	Trunk Lean	Crown balance	Past Pruning	Stability	Branch Attachment	Health	Vigour	Dead Wood	Pest or disease	ULE	Landscape Significance	Retention Value*
31	<i>Angophora costata</i> (Smooth Barked Apple, Sydney Red Gum)	18	6 x 8	480	480	510	Fair foliage condition	Mature	Single trunk	Upright trunk	Majority of canopy to the north	No evidence of significant past pruning	Appears stable	Fair branch attachment	Moderate health	Poor vigour	20 to 25%	No visual evidence of significant pest or disease	3 Short (5 to 15 years)	Moderate to high landscape significance	3
32	<i>Angophora costata</i> (Smooth Barked Apple, Sydney Red Gum)	11	6	290	290	340g	Good foliage condition	Semi Mature	Single trunk	Upright trunk	Majority of canopy to the west	No evidence of significant past pruning	Appears stable	Sound branch attachment	Good health	Good vigour	<5%	No visual evidence of significant pest or disease	1 Long (> 40 years)	Moderate landscape significance	2
33	<i>Angophora costata</i> (Smooth Barked Apple, Sydney Red Gum)	19	8	560	560	670	Good foliage condition	Mature	Single trunk	Upright trunk	Majority of canopy to the west	No evidence of significant past pruning	Appears stable	Fair branch attachment	Good health	Fair vigour	5%	No visual evidence of significant pest or disease	1 Long (> 40 years)	Moderate to high landscape significance	2
34	<i>Angophora costata</i> (Smooth Barked Apple, Sydney Red Gum)	8	2	280	280	290	Fair foliage condition	Semi Mature	Single trunk	Upright trunk	Balanced canopy area	No evidence of significant past pruning	Appears stable	Sound branch attachment	Good health	Good vigour	<5%	No visual evidence of significant pest or disease	1 Long (> 40 years)	Low landscape significance	3
35	<i>Eucalyptus pilularis</i> (Blackbutt)	27	17	860	860	1040	Fair foliage condition	Mature	Single trunk	Upright trunk	Balanced canopy area	No evidence of significant past pruning	Appears stable	Fair branch attachment	Moderate health	Poor vigour	15 to 20%	No visual evidence of significant pest or disease	3 Short (5 to 15 years)	High landscape significance	3
36	<i>Angophora costata</i> (Smooth Barked Apple, Sydney Red Gum)	22	14	630	630	710	Good foliage condition	Mature	Single trunk	Upright trunk	Balanced canopy area	No evidence of significant past pruning	Appears stable	Fair branch attachment	Good health	Fair vigour	10%	No visual evidence of significant pest or disease	2 Medium (15 to 40 years)	High landscape significance	1
37	<i>Corymbia gummifera</i> (Red Bloodwood)	18	10	630	630	690	Good foliage condition	Mature	Single trunk	Upright trunk	Balanced canopy area	No evidence of significant past pruning	Appears stable	Fair branch attachment	Good health	Good vigour	5%	No visual evidence of significant pest or disease	1 Long (> 40 years)	High landscape significance	1
38	<i>Eucalyptus pilularis</i> (Blackbutt)	22	7	ca. 130, 130, 230, 250	555	600	Poor foliage condition	Semi Mature	Multi trunked	Upright trunk	Balanced canopy area	Appears tree previously removed to ground level	Appears stable	Fair branch attachment	Poor health	Poor vigour	55%	No visual evidence of significant pest or disease	3 Short (5 to 15 years)	Moderate landscape significance	3
39	<i>Pinus radiata</i> (Monterey Pine, Radiata Pine)	13	6	520	520	540	Good foliage condition	Semi Mature	Single trunk	Upright trunk	All canopy to the west	Lower limbs pruned in past to 1.5 metres	Appears stable	Sound branch attachment	Good health	Good vigour	5%	No visual evidence of significant pest or disease	1 Long (> 40 years)	Moderate landscape significance	2
40	<i>Pinus radiata</i> (Monterey Pine, Radiata Pine)	12	8	470	470	480	Fair foliage condition	Semi Mature	Single trunk	Upright trunk	Balanced canopy area	No evidence of significant past pruning	Appears stable	Sound branch attachment	Poor health	Poor vigour	60%	No visual evidence of significant pest or disease	3 Short (5 to 15 years)	Low landscape significance	3

URBAN FORESTRY AUSTRALIA - TREE MANAGEMENT & CONSULTING ARBORICULTURISTS

Tree No.	Genus, Species (Common Name)	Height (m)	Canopy (m)	DBH (mm)	DBH for TPZ	DGL for SRZ	Foliage Condition	Age Class	Trunk	Trunk Lean	Crown balance	Past Pruning	Stability	Branch Attachment	Health	Vigour	Dead Wood	Pest or disease	ULE	Landscape Significance	Retention Value*
42	<i>Photinia x fraseri</i> 'Robusta' (Photinia)	5	8	Up to 130 (430 above root flare)	430	430	Good foliage condition	Mature	Multi trunked	Upright trunk	Majority of canopy to the east	Lower limbs pruned in past to 1 metre	Appears stable	Fair branch attachment	Good health	Fair vigour	5%	No visual evidence of significant pest or disease	2 Medium (15 to 40 years)	Low to moderate landscape significance	3
43	<i>Jacaranda mimosifolia</i> (Jacaranda)	6	7	410	410	480	Fair foliage condition	Mature	Single trunk	Upright trunk	Balanced canopy area	Lower limbs pruned in past to 2 metres	Appears stable	Fair to poor branch attachment	Moderate health	Fair vigour	10 to 15%	No visual evidence of significant pest or disease	2 Medium (15 to 40 years)	Low to moderate landscape significance	3
44	<i>Jacaranda mimosifolia</i> (Jacaranda)	6	6 x 8	Up to 260 (400 x 600 above root flare)	500	500	Fair foliage condition	Mature	Multi trunked	Upright trunk	Balanced canopy area	Lower limbs pruned in past to 1.8 metres	Appears stable	Sound branch attachment	Moderate health	Fair vigour	10%	No visual evidence of significant pest or disease	2 Medium (15 to 40 years)	Low to moderate landscape significance	3
45	<i>Lagerstroemia indica</i> (Crape Myrtle)	5	9	Up to 120 (460 above root flare)	460	460	Good foliage condition	Mature	Multi trunked	Upright trunk	Balanced canopy area	Lower limbs pruned in past to 1.7 metres	Appears stable	Fair branch attachment	Good health	Fair vigour	5 to 10%	No visual evidence of significant pest or disease	2 Medium (15 to 40 years)	Moderate landscape significance	2
46	<i>Jacaranda mimosifolia</i> (Jacaranda)	5.5	5	210, 240	340	400	Good foliage condition	Mature	Twin trunked	Upright trunk	Majority of canopy to the north	Lower limbs pruned in past to 1.5 metres	Appears stable	Sound branch attachment	Good health	Fair vigour	5%	No visual evidence of significant pest or disease	1 Long (> 40 years)	Low to moderate landscape significance	3
47	<i>Liquidambar styraciflua</i> (Liquidambar)	10	10	560	560	720	Good foliage condition	Mature	Single trunk	Upright trunk	Balanced canopy area	Lower limbs pruned in past to 3 metres	Appears stable	Fair branch attachment	Good health	Good vigour	<5%	No visual evidence of significant pest or disease	2 Medium (15 to 40 years)	High landscape significance	1
48	<i>Alnus jorullensis</i> (Evergreen Alder)	5	5	260	260	320	Good foliage condition	Semi Mature	Single trunk	Upright trunk	Balanced canopy area	Lower limbs pruned in past to 2.5 metres	Appears stable	Sound branch attachment	Good health	Good vigour	<5%	Minor decay in pruning wounds	2 Medium (15 to 40 years)	Environmental pest species	4
49	<i>Pinus radiata</i> (Monterey Pine, Radiata Pine)	12	8	410	410	450	Good foliage condition	Semi Mature	Single trunk	Upright trunk	Majority of canopy to the SW	Lower limbs pruned in past to 2 metres	Appears stable	Sound branch attachment	Good health	Fair vigour	5%	No visual evidence of significant pest or disease	1 Long (> 40 years)	Moderate landscape significance	2
50	<i>Pinus radiata</i> (Monterey Pine, Radiata Pine)	14	10	460	460	520	Good foliage condition	Semi Mature	Single trunk	Upright trunk	Majority of canopy to the west	Lower limbs pruned in past to 2 metres	Appears stable	Poor branch attachment	Good health	Good vigour	5%	No visual evidence of significant pest or disease	2 Medium (15 to 40 years)	Moderate landscape significance	2
51	<i>Pinus radiata</i> (Monterey Pine, Radiata Pine)	14	9	540	540	610	Good foliage condition	Semi Mature	Single trunk	Upright trunk	Majority of canopy to the south	Lower limbs pruned in past to 2 metres.	Appears stable	Poor branch attachment	Good health	Good vigour	<5%	No visual evidence of significant pest or disease	2 Medium (15 to 40 years)	Moderate landscape significance	2

URBAN FORESTRY AUSTRALIA - TREE MANAGEMENT & CONSULTING ARBORICULTURISTS

	Genus, Species (Common Name)	Height (m)	Canopy (m)	DBH (mm)	DBH for TPZ	DGL for SRZ	Foliage Condition	Age Class	Trunk	Trunk Lean	Crown balance	Past Pruning	Stability	Branch Attachment	Health	Vigour	Dead Wood	Pest or disease	ULE	Landscape Significance	Retention Value*
52	<i>Pinus radiata</i> (Monterey Pine, Radiata Pine)	15	6	440	440	490	Good foliage condition	Semi Mature	Single trunk	Upright trunk	Majority of canopy to the south	Lower limbs pruned in past to 2 metres	Appears stable	Sound branch attachment	Good health	Good vigour	<5%	No visual evidence of significant pest or disease	1 Long (> 40 years)	Moderate landscape significance	2
53	<i>Pinus radiata</i> (Monterey Pine, Radiata Pine)	19	8	540	540	570	Good foliage condition	Semi Mature	Single trunk	Upright trunk	Balanced canopy area	Lower limbs pruned in past to 2.5 metres	Appears stable	Poor branch attachment	Good health	Good vigour	<5%	No visual evidence of significant pest or disease	2 Medium (15 to 40 years)	Moderate to high landscape significance	2
54	<i>Pinus radiata</i> (Monterey Pine, Radiata Pine)	16	7	410	410	440	Good foliage condition	Mature	Single trunk	Upright trunk	Majority of canopy to the south	Lower limbs pruned in past to 2.2 metres	Appears stable	Sound branch attachment	Good health	Good vigour	<5%	No visual evidence of significant pest or disease	1 Long (> 40 years)	Moderate landscape significance	2
55	<i>Pinus radiata</i> (Monterey Pine, Radiata Pine)	16	8	510	510	560	Good foliage condition	Semi Mature	Single trunk	Upright trunk	Majority of canopy to the south	Lower limbs pruned in past to 2 metres	Appears stable	Sound branch attachment	Good health	Good vigour	<5%	No visual evidence of significant pest or disease	1 Long (> 40 years)	Moderate landscape significance	2
56	<i>Pinus radiata</i> (Monterey Pine, Radiata Pine)	17	5	520	520	580	Good foliage condition	Semi Mature	Single trunk	Upright trunk	Majority of canopy to the south	Lower limbs pruned in past to 3 metres	Appears stable	Sound branch attachment	Good health	Good vigour	<5%	No visual evidence of significant pest or disease	1 Long (> 40 years)	Moderate landscape significance	2
57	<i>Pinus radiata</i> (Monterey Pine, Radiata Pine)	17	7	380	380	380	Good foliage condition	Semi Mature	Single trunk	Upright trunk	Balanced canopy area	Lower limbs pruned in past to 1.7 metres	Appears stable	Poor branch attachment	Good health	Fair vigour	10 to 15%	No visual evidence of significant pest or disease	2 Medium (15 to 40 years)	Moderate landscape significance	2
58	<i>Pinus radiata</i> (Monterey Pine, Radiata Pine)	14	5	410	410	440	Fair foliage condition	Semi Mature	Single trunk	Upright trunk	Majority of canopy to the south	Lower limbs pruned in past to 1.7 metres	Appears stable	Sound branch attachment	Moderate health	Fair vigour	15 to 20%	No visual evidence of significant pest or disease	2 Medium (15 to 40 years)	Low to moderate landscape significance	3
59	<i>Pinus radiata</i> (Monterey Pine, Radiata Pine)	16	5	310	310	340	Fair foliage condition	Semi Mature	Single trunk	Upright trunk	Balanced canopy area	Lower limbs pruned in past to 1.7 metres	Appears stable	Sound branch attachment	Moderate health	Fair vigour	15 to 20%	No visual evidence of significant pest or disease	2 Medium (15 to 40 years)	Moderate landscape significance	2
60	<i>Pinus radiata</i> (Monterey Pine, Radiata Pine)	15	6	460	460	480	Fair foliage condition	Semi Mature	Single trunk	Upright trunk	Balanced canopy area	Lower limbs pruned in past to 1.7 metres	Appears stable	Fair to poor branch attachment	Moderate health	Fair vigour	25 to 30%	No visual evidence of significant pest or disease	2 Medium (15 to 40 years)	Low to moderate landscape significance	3
61	<i>Pinus radiata</i> (Monterey Pine, Radiata Pine)	15	3	360	360	390	Good foliage condition	Semi Mature	Single trunk	Upright trunk	Balanced canopy area	Lower limbs pruned in past to 1.4 metres	Appears stable	Sound branch attachment	Good health	Fair vigour	15%	No visual evidence of significant pest or disease	2 Medium (15 to 40 years)	Moderate landscape significance	2

URBAN FORESTRY AUSTRALIA - TREE MANAGEMENT & CONSULTING ARBORICULTURISTS

Tree No.	Genus, Species (Common Name)	Height (m)	Canopy (m)	DBH (mm)	DBH for TPZ	DGL for SRZ	Foliage Condition	Age Class	Trunk	Trunk Lean	Crown balance	Past Pruning	Stability	Branch Attachment	Health	Vigour	Dead Wood	Pest or disease	ULE	Landscape Significance	Retention Value*
62	<i>Pinus radiata</i> (Monterey Pine, Radiata Pine)	14	3	330	330	360	Poor foliage condition	Semi Mature	Single trunk	Upright trunk	Balanced canopy area	Lower limbs pruned in past to 1.6 metres	Appears stable	Sound branch attachment	Poor health	Poor vigour	65%	No visual evidence of significant pest or disease	3 Short (5 to 15 years)	Low to moderate landscape significance	3
63	<i>Pinus radiata</i> (Monterey Pine, Radiata Pine)	17	8	520	520	590	Good foliage condition	Semi Mature	Single trunk	Upright trunk	Balanced canopy area	Lower limbs pruned in past to 1.7 metres	Appears stable	Fair to poor branch attachment	Good health	Good vigour	5 to 10%	No visual evidence of significant pest or disease	2 Medium (15 to 40 years)	Moderate landscape significance	2

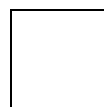
Tree No.	Comments	TPZ	SRZ	TPZ area	Area Affected	% Affected	Minimum offset for 10% encroachment
1	The tree's past canopy development has been suppressed. There is evidence of decay in the basal trunk at the site of past failure of a codominant leader on the NE side - exposed heartwood appears sound but further investigation and/or testing recommended to confirm structural integrity. The tree displays fair branch attachment with past failure of a codominant leader at ground level on the NE side and evidence of poor attachment at some branch junctions. At the time of inspection, the tree was of fair vigour and exhibited low levels of dieback.	9.8	3.4	304.0		0.00	6.9
2	The tree's past canopy development has been suppressed. The tree displays fair branch attachment with multiple leaders form 3 metres with some evidence of poor attachment at the junction - the junction is a weak point in the tree's structure with increased risk of failure but is not considered at risk of failure in the short term. At the time of inspection, the tree was of fair vigour and exhibited low levels of dieback.	10.8	3.4	366.2		0.00	7.6
3	The tree's past canopy development has been suppressed. The tree displays fair branch attachment with some evidence of poor attachment at junctions - not considered at risk of failure in the short term. Exposed roots with evidence of past mechanical injury.	15.0	3.7	707.0		0.00	10.7
4	Some poorly attached regrowth following past reduction pruning - not considered at risk of failure in the short term.	4.7	2.2	68.8		0.00	3.3
5	At the time of inspection, the tree was of moderate health and fair vigour and exhibited significantly reduced foliage density and low to moderate levels of dieback. Evidence of past branch failures in the lower crown (wind damage).	6.4	2.7	127.0		0.00	4.5
6	At the time of inspection the tree was of fair vigour and exhibited low levels of dieback. Large diameter exposed root with evidence of past mechanical damage (mower damage).	5.9	2.5	110.8		0.00	4.2
7	The tree displays fair branch attachment with multiple regrowth following past failure of the main leader at 4 metres (limited view from front boundary).	4.8	2.3	72.3		0.00	3.4
8	Lesions present on some specimens indicative of Cypress Canker. Moderate landscape significance as a group - low individually).	3.8	2.3	46.3		0.00	2.7
9	The tree displays fair branch attachment with multiple regrowth following severe past reduction pruning. Evidence of decay in wound in leader on south side. At the time of inspection the tree was of fair vigour and exhibited low levels of dieback and moderate levels of epicormic growth.	9.6	3.2	289.4		0.00	6.7
10	Past tissue loss and exposed heartwood at 11.6 metres on west side - cause unknown - monitor. The tree displays fair to poor branch attachment with evidence of multiple past branch failures from the low to mid/upper crown (including some storm damage) - further failures are predictable - limited access or exclusion zone around tree is recommended if tree is retained.	10.8	3.4	366.2		0.00	7.6
11	Slight canopy bias to a NW x SE axis.	8.6	3.0	234.4		0.00	6.0
12	The tree displays fair branch attachment with codominant leaders from 1.4 metres with evidence of poor attachment at the junction - not considered at risk of failure in the short term. At the time of inspection the tree exhibited low levels of dieback. Wire strands embedded in the trunk at 1.4 metres on the SE side.	10.6	3.3	350.2		0.00	7.4
13	The tree displays fair branch attachment with codominant leaders form 2 metres - not considered at risk of failure in the short term. At the time of inspection the tree was of fair vigour and exhibited low to moderate levels of dieback.	7.4	2.8	173.8		0.00	5.2
14	The tree's past canopy development has been suppressed. The tree displays fair branch attachment with codominant leaders form 6 metres - not considered at risk of failure.	7.7	2.8	185.2		0.00	5.4
15	The tree displays fair branch attachment with multiple leaders with some evidence of poor attachment at junctions and some poorly attached regrowth following severe past reduction pruning of lower branches. At the time of inspection the tree exhibited low levels of dieback.	15.0	4.2	707.0		0.00	12.8
16	At the time of inspection the tree was of moderate health and fair vigour and exhibited significantly reduced foliage density and moderate to high levels of dieback.	8.0	3.0	203.0		0.00	5.6
17	Moderate landscape significance as a group - low individually).	3.6	2.1	40.7		0.00	2.5
18		2.6	1.8	21.9		0.00	1.8
19	At the time of inspection the tree was of poor health and poor vigour and exhibited very high levels of dieback. Short lived species nearing end of natural life cycle.	6.2	2.7	122.3		0.00	4.4

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20	Multiple leaders form 1.4 metres - junction appears sound.	3.6	2.1	40.7		0.00	2.5
21	The tree displays fair branch attachment with evidence of multiple past branch failures (e.g. at 3.5 metres on north) and some evidence of poor attachment at junctions - further failures likely - restricted access or exclusion zone recommended if retained.	13.7	3.7	587.6		0.00	9.6
22	The tree is dead.	-	-	-	-	-	-
23	Numerous semi mature Blackbutt and Sydney Red Gum saplings in immediate vicinity.	3.2	2.0	33.0		0.00	2.3
24	The tree displays fair to poor branch attachment with codominant leaders form 0.8 metres with evidence of poor attachment at the junction (included bark) - the junction is a weak point in the tree's structure with increased risk of failure. At the time of inspection the tree was of moderate health and poor vigour and exhibited very high levels of dieback and epicormic growth in the upper crown.	10.6	3.3	354.1		0.00	7.4
25		3.4	2.1	35.4		0.00	2.4
26		3.7	2.1	43.5		0.00	2.6
27		3.6	2.1	40.7		0.00	2.5
28		5.0	2.6	79.8		0.00	3.5
29		2.8	1.9	23.9		0.00	1.9
30	The tree displays fair to poor branch attachment with codominant leaders form 0.4 metres with evidence of poor attachment at the junction (included bark) - removal of the smaller leader is recommended.	3.3	2.1	34.8		0.00	2.3
31	The tree's past canopy development has been suppressed. At the time of inspection the tree was of moderate health and poor vigour and exhibited high levels of dieback and epicormic growth.	5.8	2.5	104.2		0.00	4.0
32		3.5		38.0		0.00	2.4
33	The tree's past canopy development has been suppressed. At the time of inspection the tree was of fair vigour with a dead leader at 3 metres.	6.7	2.8	141.8		0.00	4.7
34	Upper crown development being suppressed by adjacent tree.	3.4	2.0	35.4		0.00	2.4
35	At the time of inspection the tree was of moderate health and poor vigour and exhibited reduced foliage size and density, high levels of dieback and high levels of epicormic growth.	10.3	3.4	334.4		0.00	7.2
36	At the time of inspection the tree was of fair vigour and exhibited low to moderate levels of dieback.	7.6	2.9	179.5		0.00	5.3
37	Fruit not detected to confirm species identification.	7.6	2.8	179.5		0.00	5.3
38	It appears the tree previously removed to ground level and the current 'tree' comprises multiple epicormic shoots (access difficult to confirm).	6.7	2.7	139.3		0.00	4.7
39	The tree's past canopy development has been significantly suppressed.	6.2	2.6	122.3		0.00	4.4
40	At the time of inspection the tree was of poor health and poor vigour and exhibited very high levels of dieback.	5.6	2.4	99.9		0.00	3.9
41		5.0	2.4	79.8		0.00	3.5
42	The tree's past canopy development has been suppressed. The tree displays fair branch attachment with multiple leaders from near ground level - not considered at risk of failure. At the time of inspection the tree was of fair vigour and exhibited low levels of dieback.	5.2	2.3	83.6		0.00	3.6
43	The tree displays fair to poor branch attachment with evidence of past failures. At the time of inspection the tree was of moderate health and fair vigour and exhibited reduced foliage density and moderate levels of dieback.	4.9	2.4	76.0		0.00	3.4
44	At the time of inspection the tree was of moderate health and fair vigour and exhibited reduced foliage density and moderate levels of dieback.	6.0	2.5	113.0		0.00	4.2
45	At the time of inspection the tree was of fair vigour and exhibited low to moderate levels of dieback. The tree displays fair branch attachment with multiple leaders from near ground level - not considered at risk of failure.	5.5	2.4	95.7		0.00	3.9
46	The tree's past canopy development has been suppressed. At the time of inspection the tree was of fair vigour and exhibited low levels of dieback.	4.1	2.3	52.3		0.00	2.9
47	The tree displays fair branch attachment with codominant leaders form 4 metres with evidence of poor attachment at the junction (included bark) - the junction is a weak point in the tree's structure with increased risk of failure.	6.7	2.9	141.8		0.00	4.7
48	Environmental pest/nuisance species. Minor decay in pruning wounds. Past tissue loss on south side of lower/basal trunk - cause unknown.	3.1	2.1	30.6		0.00	2.2
49	The tree's past canopy development has been suppressed.	4.9	2.4	76.0		0.00	3.4
50	The tree's past canopy development has been suppressed. The tree displays poor branch attachment with codominant leaders form 3 metres with evidence of poor attachment at the junction - the junction is a weak point in the tree's structure with increased risk of failure.	5.5	2.5	95.7		0.00	3.9
51	The tree's past canopy development has been suppressed. The tree displays poor branch attachment with codominant leaders form 3 metres with evidence of poor attachment at the junction - the junction is a weak point in the tree's structure with increased risk of failure.	6.5	2.7	131.8		0.00	4.5
52	The tree's past canopy development has been suppressed.	5.3	2.5	87.5		0.00	3.7

53	The tree displays poor branch attachment with codominant leaders form 2.5 metres with evidence of poor attachment at the junction - the junction is a weak point in the tree's structure with increased risk of failure. Recent mechanical damage to lower trunk tissue on north side.	6.5	2.6	131.8		0.00	4.5
54	The tree's past canopy development has been suppressed. Evidence of past damage to main trunk at 1.6 metres - cause unknown.	4.9	2.3	76.0		0.00	3.4
55	The tree's past canopy development has been suppressed.	6.1	2.6	117.6		0.00	4.3
56	The tree's past canopy development has been suppressed.	6.2	2.6	122.3		0.00	4.4
57	The tree displays poor branch attachment with codominant leaders form 2 metres with evidence of poor attachment at the junction - the junction is a weak point in the tree's structure with increased risk of failure.	4.6	2.2	65.3		0.00	3.2
58	The tree's past canopy development has been suppressed. At the time of inspection the tree was of moderate health and fair vigour and exhibited reduced foliage density and moderate to high levels of dieback.	4.9	2.3	76.0		0.00	3.4
59	At the time of inspection the tree was of moderate health and fair vigour and exhibited reduced foliage density and moderate to high levels of dieback.	3.7	2.1	43.5		0.00	2.6
60	The tree displays poor branch attachment with codominant leaders form 1.6 metres with evidence of poor attachment at the junction - the junction is a weak point in the tree's structure with increased risk of failure> At the time of inspection the tree was of moderate health and fair vigour and exhibited reduced foliage density and moderate to high levels of dieback.	5.5	2.4	95.7		0.00	3.9
61	At the time of inspection the tree was of fair vigour and exhibited low to moderate to high levels of dieback.	4.3	2.2	58.6		0.00	3.0
62	At the time of inspection the tree was of poor health and poor vigour and exhibited very high levels of dieback.	4.0	2.2	49.2		0.00	2.8
63	The tree exhibits fair to poor branch attachment with multiple leaders form 3 metres following past failure (or removal) of the main leader at this point - there is some evidence of poor attachment at the junction - the junction is a weak point in the tree's structure with increased risk of failure. There is evidence of recent past mechanical damage (tissue loss) on the west side of the trunk to 3.5 metres.	6.2	2.7	122.3		0.00	4.4

KEY



Prescribed trees to be retained



Prescribed trees proposed to be removed.



Non-prescribed trees exempt from preservation controls under GDCP

DETAILS FOR HEADINGS AND SYMBOLS USED IN TREE SCHEDULE

- H** refers to the approximate height of a tree in metres, from base of stem to top of tree crown.
- Sp** refers to the approximate and/or average diameter spread in metres of branches/canopy (the 'crown') of a tree.
- DBH** refers to the approximate diameter of tree stem at breast height i.e. 1.4 metres above ground (unless otherwise noted) and expressed in millimetres.
- Age** refer to Appendix B -Terms and Definitions for more detail.
- V** refers to the tree's vigour (health) Refer to Appendix B -Terms and Definitions for more detail.
- C** refers to the tree's structural condition. Refer to Appendix B -Terms and Definitions for more detail.
- ULE** refers to the estimated *Useful Life Expectancy* of a tree. Refer to Appendices B and C for details.
- TSR** The *Tree Significance Rating* considers the importance of the tree as a result of its prominence in the landscape and its amenity value, from the point of public benefit. Refer to Appendix C – Significance of a Tree Assessment Rating for more detail.
- RV** Refers to the retention value of a tree, based on the tree's ULE *and* Tree Significance. Refer to Appendix C – Significance of a Tree Assessment Rating for more detail.
- SRZ** Structural Root Zone (SRZ) refers to the critical area required to maintain stability of the tree. Refer to Appendix B -Terms and Definitions for more detail.
- TPZ** Tree Protection Zone (TPZ) refers to the *tree protection zones* for trees to be retained. Refer to Appendix B -Terms and Definitions for more detail.
- TPZ area** the calculated area within the TPZ radius.
- ILR** Impact Level rating. Refer to Appendix B -Terms and Definitions for more detail.

* Denotes those situations where the tree's Diameter at Breast Height (DBH) has been *visually* estimated (usually adjoining trees or those that are hard to access and/or physically measure).

? Used to highlight a tentative condition assessment and subsequent ULE and RV rating due to inspection limitations, e.g. limited visual access to an adjoining tree, very dense vegetation obscuring tree parts or preventing 'in-the-round' visual access, or a tree that requires more detailed assessment, such as an aerial inspection, decay diagnostic tests, pathology tests, etc.

() The numerical figure in parentheses is the calculated DBH for a multiple stemmed tree, using the AS4970 formula, *or*, is the calculated DBH where the measurement cannot be made at the standard 1.4m above ground level, e.g. where the diameter of the stem is measured at ground level (DGL) or above the buttress (DAB). All calculated figures are rounded up to the nearest 25mm to determine the tree's TPZ offsets.

NOTE: According to clause 3.2 of AS4970, the TPZ of palms, other monocots, cycads and tree ferns should not be less than 1m outside the crown projection. The Tree Protection Zone is not based on the palm's trunk diameter. The AS4970 formula for calculating the SRZ of a tree does not apply to palms, other monocots, cycads and tree ferns.

DAB—The trunk/stem diameter measured *above the buttress* (i.e. root and trunk confluence), using a diameter tape

DGL—The trunk/stem diameter measured *at ground level*, using a diameter tape.

AGL—*above* ground level.

GL—*at* ground level.

sp. indet. = species indeterminate (not determined at the time of writing this report).

APPENDIX G

TREE LOCATION PLANS



