



**TREE MANAGEMENT CONSULTING ARBORICULTURISTS**

**PRELIMINARY ARBORICULTURAL  
ASSESSMENT  
(Planning Proposal)**

for

TCON Constructions Pty Ltd

**SITE ADDRESS**

400–404 CABRAMATTA ROAD WEST  
CABRAMATTA

**AUGUST 2015**

Prepared by Catriona Mackenzie

*Accredited member of*

**INSTITUTE OF AUSTRALIAN**



**CONSULTING ARBORICULTURISTS** ®

## EXECUTIVE SUMMARY

This Preliminary Arboricultural Assessment is an inventory of the existing tree assets on the site. The primary aim of this assessment was to present an analysis of the projected tree retention and removal relating to the planning proposal put forward for this site.

A total of seventy-five (75) trees were assessed and accorded retention values based on their current health and condition (i.e. their *Useful Life Expectancy*) and their significance in the landscape (Appendix E).

Twenty-eight (28) trees were identified as being of high retention value.

Twenty-five (25) trees are attributed with a medium retention value.

Twenty (20) trees were identified as being of low retention value.

Two (2) trees were identified as having no retention value (due to irreversible decline), and would inevitably be removed regardless of any future development of the site.

A tree location plan and schedule of all assessed trees, which included their landscape significance and tree retention values, was provided to the project team members to assist with the planning proposal. During discussions, tree retention was considered in the context of the permissible development of the site and the need to try and retain perimeter trees to assist in retaining some of the existing landscape trees facing the public domain.

A total of thirty-nine (39) trees are likely to be removed to facilitate the proposal.

It is expected that a replacement landscape will eventually provide a complimentary tree planting commensurate with and sympathetic to, the indigenous species assemblage current on the site.

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# 1 INTRODUCTION

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- 1.1 This Preliminary Arboricultural Assessment (PAA) was commissioned by Orhan Kaba of Designiche, on behalf of the owners of the subject site. “The site” is identified as Lots 6 and 7 in D.P. 1709126, Lot 3 in D.P. 30217, Lots 1 and 2 in D.P. 503339 and Lot 1 in D.P. 29449, collectively known as 400–404 Cabramatta Road West, Cabramatta, New South Wales.
- 1.2 This report is to accompany a planning proposal to Fairfield City Council for a multi-unit residential/mixed-use development of the site.
- 1.3 The purpose of this PAA is to assess the *vigour* and *condition* of the surveyed trees, in, or in close proximity to the projected building envelope, and identify the probable removal and retention of trees associated with the projected building envelope.
- 1.4 This PAA gives recommendations for tree retention or removal, and provides guidelines for planning and designing built elements in proximity to existing trees to be retained.
- 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 PAA is not intended as an assessment of any impacts on trees by any proposed future development of the site, other than the current planning proposal.
- 1.7 This report is not intended to be a comprehensive tree *hazard* or *risk* assessment, nor is it intended as a development or construction impact assessment or tree protection specification; however the report may make recommendations, where appropriate, for further assessment, treatment or testing of trees where potential structural problems have been identified, or where below ground investigation may be required.

## 2 METHODOLOGY

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- 2.1 In preparation for this PAA, ground level, *visual tree assessments*<sup>1</sup> of seventy-five (75) trees were undertaken by Catriona Mackenzie (AQF5 arboriculturist) and Mark Jamieson (AQF4 horticulturist) on 11<sup>th</sup> August, 2015. Inspection details of these trees are provided in Appendix E – *Schedule of Assessed Trees*.
- 2.2 Tree heights were measured where possible with a Nikon Forestry Pro laser rangefinder, and canopy spreads were visually estimated or measured with a Leica Distometer laser measurer. Unless otherwise noted in Appendix E, all trunk diameters were measured at 1.4 metres above ground level (DBH) using a Yamiyo diameter tape.
- 2.3 Field observations were written down at the time of site visit and tree inspections, and photographs of the site and trees taken using a Canon EOS1000D digital SLR and/or iphone 5 cameras.
- 2.4 No *aerial inspections*, *root mapping* or woody tissue testing were undertaken as part of this tree assessment. Information contained in this tree report covers only the trees that were examined 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:
- Detail Survey, Ref. No. 2437CD, dated 24/03/2015, prepared by Chami & Associates.
  - Preliminary Urban Design Report 400-404 Cabramatta Rd West, Cabramatta, prepared by Aleksandar Design Group
  - Plans MP01–04 (Concept Issue), June 2015, prepared by Aleksandar Design Group,
  - Fairfield Local Environment Plan 2013 (LEP) Schedules and Maps, Clauses 5.9, 5.9AA.
  - Fairfield Citywide Development Control Plan (DCP), Chapter 3 *Environmental Management and Constraints*.
  - AS4970-2009 *Protection of trees on development sites*, Standards Australia.
- 2.6 The subject trees are shown on a marked up copy of the site survey. This plan is attached as Appendix F—Tree Location Plan.

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<sup>1</sup> Visual Tree Assessment (VTA) is a procedure of defect analysis developed by Mattheck and Breloer (1994) that uses the growth response and form of trees to detect defects.

### 3 OBSERVATIONS AND DISCUSSION

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#### 3.1 Assessed Trees—Species Recorded

3.1.1 Seventy-five (75) trees were assessed and included in this report. Details of these are included in the Schedule of Assessed Trees – Appendix E.

3.1.2 The main, indigenous canopy tree species found on the site are consistent with Cumberland Plain Woodlands. Of the 75 assessed trees, the following thirty-four (34) are considered indigenous (or are known to be associated with CPW vegetation communities):

- Sixteen (16) *Eucalyptus tereticornis* (Forest Red Gum),
- Nine (9) *Corymbia maculata* (Spotted Gum),
- Three (3) *Eucalyptus sideroxylon* (Mugga Ironbark),
- One (1) *Eucalyptus moluccana* (Grey Box)
- One (1) *Eucalyptus amplifolia* (Cabbage Gum),
- One (1) *Corymbia gummiifera* (Red Bloodwood)
- One (1) *Acacia decurrens* (Black Wattle)
- One (1) *Melaleuca linariifolia* (Snow-in–summer),
- One (1) *Angophora costata* (Smooth-barked Apple),

3.1.3 The remaining thirty-six (36) assessed trees are considered to be exotic or introduced native Australian species:

- Ten (10) *Brachychiton acerifolius* (Illawarra Flame Tree),
- Three (3) *Grevillea robusta* (Silky Oak),
- Five (5) *Melaleuca quinquenervia* (Broad-leaved Paperbark)
- Three (3) *Corymbia citriodora* (Lemon-scented Gum)
- Two (2) *Eucalyptus microcorys* (Tallowwood),
- Two (2) *Allocasuarina littoralis* (Black She-oak)
- Two (2) *Quercus robur* (English Oak),
- Two (2) *Jacaranda mimosifolia* (Jacaranda),
- One (1) *Castanospermum australe* (Blackbean),
- One (1) *Eucalyptus elata* (River Peppermint),
- One (1) *Hymenosporum flavum* (Native Frangipani),
- One (1) *Lophostemon confertus* (Brush Box),
- One (1) *Lagerstroemia indica* (Crape Myrtle),
- One (1) *Nyssa sylvatica* (Tupelo)
- One (1) *Populus deltoides* (Cottonwood),

3.1.4 Five (5) trees found on the site are considered to be undesirable due to their weed status or detrimental species traits (in this site context), such as proliferate propagules or ability to out-compete nearby vegetation:

- Two (2) *Ligustrum lucidum* (Large-leaved Privet),
- One (1) *Ficus decora* (Rubber Plant),
- One (1) *Cinnamomum camphora* (Camphor Laurel),
- One (1) *Lagunaria patersonia* (Norfolk Island Hibiscus)

### 3.2 Assessed Trees—Retention Values

3.2.1 Based on the Useful Life Expectancy and Landscape significance of the trees, the following Retention Values are accorded.

- High Retention Value trees x 28.
  - 1, 2, 3, 4, 6, 7, 66, 67, 71—Spotted Gums.
  - 9, 21, 28, 33, 36, 40, 49—Forest Red Gums.
  - 52, 62, 65—Lemon-scented Gums.
  - 61, 63, 64—Mugga Ironbarks.
  - 69, 75—Tallowwoods.
  - 26, 35, 51, 54—Blackbean, Illawarra Flame Tree, Grey Box, Silky Oak.
- Medium Retention Value trees x 25
  - 13, 23, 24, 25, 30, 38, 45, 46, 70—Forest Red Gums.
  - 29, 34, 41, 48, 53, 58—Flame Trees.
  - 19, 50—Jacarandas.
  - 27, 59—Black She-oaks.
  - 42, 43—English Oaks.
  - 14, 31, 39, 56—Red Bloodwood, Native Frangipani, Cabbage Gum, Cottonwood.
- Low Retention Value trees x 20
  - 11, 12, 72—Broad-leaved Paperbarks.
  - 22, 32, 37—Flame Trees.
  - 15, 17—Large-leaved Privets.
  - 16, 44—Silky Oaks.
  - 5, 8, 18, 20, 47, 55, 57, 68, 73, 74—River Peppermint, Norfolk Island Hibiscus, Rubber Tree, Camphor Laurel, Black Wattle, Brush Box, Crape Myrtle, Tupelos, Snow-in-summer, Smooth-barked Apple.
- Nil (remove) Retention Value trees x 2
  - 10, 60—Broad-leaved Paperbarks.

3.2.2 The site is not zoned E2 Environmental Conservation, or E3 Environmental Management.

3.2.3 No trees are identified as, or contributing to, listed Heritage Items, or occurring within Riparian Zones or Biodiversity Areas (LEP Maps–017 area).

- 3.2.4 No species of assessed tree is listed as threatened under the Threatened Species Conservation Act 1995 (TSC Act) or Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act).

### **3.3 Assessed Trees—Consideration of Conservation Issues**

- 3.3.1 It is acknowledged that the site contains tree species associated with Cumberland Plain Woodland, a critically endangered ecological community under the TSC and EPBC Acts. Under Section 3.2 of Chapter 3 of the DCP, it is generally only those sites zoned E2, E3 or affected by Riparian Lands and Waterways or Biodiversity, that might require preparation of a 7 Part Test<sup>2</sup>. It would appear therefore, this site would be exempt from that 7 part test requirements. Despite the DCP allowing for arboriculturists to prepare a 7 part test, it is my opinion this is not appropriate unless the assessing arboriculturist has environmental consulting qualifications.
- 3.3.2 It is my advice that if it is deemed necessary, any potential impacts on threatened species, endangered ecological communities or populations on this site, must be assessed by an appropriately qualified consulting ecologist.

### **3.4 Projected Tree Removal**

- 3.4.1 Of the 75 assessed trees, it is expected that thirty-nine (39) would be removed to accommodate the projected development footprint. Refer to Appendix E for trees likely to be removed under the planning proposal.
- 3.4.2 Trees removed would include the majority of trees concentrated in the site interior, as these pose considerable constraints on future site development. As the trees are relatively mature, they have correspondingly great *Tree Protection Zone* (TPZ) offsets. The retention of trees near site perimeters presents the greatest opportunities for successful retention.

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<sup>2</sup> A '7 Part Test' is a statutory mechanism which allows Council to assess whether a proposed development or activity is likely to have a 'significant effect' on threatened species, populations or ecological communities, or their habitats. It describes and assesses the ecological impact of the proposal on a threatened species or its habitat.

### 3.5 Potential Impacts on Trees Proposed for Retention

- 3.5.1 Under the Australian Standard 4970-2009 *Protection of trees on development sites* (AS4970), encroachments less than 10% of the *Tree Protection Zone* (TPZ) are considered to be minor. There are no specifications provided in AS4970 for potential impacts of 10% or greater. The 10% figure is taken to be a threshold and trigger where arboricultural investigations into TPZ encroachments beyond this figure need to be considered.
- 3.5.2 Provision for the TPZ offsets of trees to be retained will be required at detailed design stage. Tree impact encroachments will need to be quantified and, if necessary, changes to footprints for paths, ancillary structures, services and building offsets to trees may be required. Refer to Appendix E for those TPZ offsets.
- 3.5.3 It is possible a number of trees mainly concentrated to the site perimeters could be successfully retained subject to advanced impact assessment and possible 'massaging' of the design to consider high retention values trees in locations where retention would not relate to major 'sterilisation' of the site for future development.
- 3.5.4 Trees potentially retained are as follows (not including weeds or undesirable species):
- 16, 19, 22, 23, 24, 25, 26, 38, 39, 40, 41, 42, 43, 48, 49, 50, 51, 52, 53, 54, 61, 62, 64, 65, 68, 69, 70, 71, 72, 73, 74 and 75 (Total = 32 trees)

## 4 PRELIMINARY GUIDELINES FOR PLANNING AND DESIGN

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### 4.1 Minimising Impacts on Trees to be Retained

4.1.1 Generally, potential impacts from site development can be summarised as follows;

- Incursions (i.e. excavation or filling over existing ground, grading and removing of topsoils) into the root zones of trees resulting in loss of fine feeder roots, or severing of structural woody roots.
- Structural branch loss through close proximity of structures to trees.
- Significant changes to surrounding soil levels which can affect soil hydrology and tree root health.

4.1.2 Where tree retention is desired, the *Tree Protection Zone* (TPZ) of an individual tree is estimated at 12 times the stem diameter, or the outer extent of the *canopy dripline* (whichever is the greater). It is prudent to add, where possible, an additional 1–2 m to this TPZ setback to ensure construction scaffolding can be accommodated without excessive removal of foliage and branches from the tree. Where trees have high crowns this additional setback may be reduced following further arboricultural assessment of impacts on individual trees near proposed development.

4.1.3 To facilitate adequate protection of tree root zones and tree crowns, separate appraisal of each development area (e.g. proposed construction and future site access points and construction areas in proximity to trees to be retained) should be carried out. A suitably qualified arboriculturist (i.e. a minimum Australian Qualification Framework Level 5 [Diploma] in arboriculture) must be advised prior to any development proposed to occur within the TPZ offset of those trees, to enable assessment and protection recommendations. Refer to Appendix E for the TPZ offset for each tree.

4.1.4 Without any specific root zone investigation the entire TPZ is to be kept entirely free of any development works, e.g. changes to existing ground levels, use of machinery, stockpiling, etc.

4.1.5 On no account are any works approved within the *Structural Root Zone* (SRZ) of a tree without prior root investigation and the approval of the site arboriculturist or Council.

4.1.6 Wherever possible all major utilities and service corridors are to be located away from trees, and preferably outside the TPZ of trees to be retained.

## 5 CONCLUSIONS

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- Seventy-five (75) trees in the site were assessed to provide base arboricultural data to assist in the planning and design footprint.
- The site is not zoned E2 or E3, and is not mapped as a Riparian Land and Waterway or Biodiversity area.
- No heritage items were identified on or directly adjoining the site.
- No tree species has identified conservation status under the TSC and EPBC Acts.
- Thirty-nine (39) trees would likely be removed based on the current building footprint.
- Thirty-two trees (32) could be retained if considered during the detailed design process.
- Four (4) trees are weeds or undesirable species and would be removed.
- Liaising with an arboriculturist during development design and review will improve the retention success of trees to be retained.

Report prepared by Catriona Mackenzie

August, 2015



Accredited member of  
INSTITUTE OF AUSTRALIAN  
I A C A  
CONSULTING ARBORICULTURISTS



### **Catriona Mackenzie**

Consulting arboriculturist, horticulturist and landscape designer.

Tree Risk Assessment Qualified (TRAQ) 2014

Certificate of Horticulture *Honours*

Diploma of Horticulture (Arboriculture) *Distinction*

Associate Diploma of Applied Science (Landscape) *Distinction*

Member of the Australian Institute of Horticulture

Member of the International Society of Arboriculture Australian Chapter

Founding Member of the Institute of Australian Consulting Arboriculturists

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## **APPENDIX A**

### **TERMS AND DEFINITIONS**



## TERMS AND DEFINITIONS

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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.

**Aerial roots** Above ground, adventitious roots generally formed on stems and/or branches. Depending on plant species these roots perform a specific function, e.g. support, access to oxygen, vegetative propagation, as a parasite, etc.

### Age classes

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

**Bracket fungus** The rigid fruiting body of some fungus species, especially those associated with live trees or the decay of wood. The structure is often bracket shaped, usually protruding from the roots, trunk or branches of the host tree when the fungus matures. The fruiting body may be ephemeral or persist for many years, and may be solitary or gregarious.

**Branch failure** The structural collapse of a branch that is physically weakened by wounding or from the actions of pests diseases, or overcome by loading forces in excess of its load-bearing capacity.

**Co-dominant** refers to stems or branches equal in size and relative importance.

**Compression fork** A fork formed where two stems or branches with an acute branch crotch grow pressing against each other with included bark. Eventually the bark becomes enclosed bark where the stems flatten at their interface under increasing compression from each successive growth increment, forming a weak graft as a welded fork, which remains susceptible to tensile stress.

**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.

**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. at 1.4m 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.

**Epicormic** Shoots which arise from adventitious or latent buds. These shoots often have a weak point of attachment. They are often a response to stress in the tree. Epicormic growth/shoots are generally a survival mechanism, often indicating the presence of a current, or past stress event such as fire, excessive pruning, drought, etc.

**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.

**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.

**Necrosis** Dead areas of tissue that may be localised, or spread over large areas of leaves, branches, bark or roots.

**Risk** is the combination of the likelihood of an event and the severity of the potential consequences.

**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). (Based on averages calculated from DBH and DAB measurements taken from 20 mature Brush Box and Camphor Laurel). 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).

**Sucker** Epicormic shoots growing from latent buds in older wood. Such shoots are vigorous and usually upright, arising from below the graft union on the understock, or at or below ground from the trunk or roots.

**Suppressed** In crown class, trees which have been overtopped and 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.

**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 B, 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.

**APPENDIX B**  
**ULE CATEGORIES**



**Useful Life Expectancy (ULE) CATEGORIES** (after Barrell 1996, updated 01/04/01)

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 40 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
- 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.

## **APPENDIX C**

### **SIGNIFICANCE OF A TREE ASSESSMENT RATING**



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

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

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

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

### Tree Significance - Assessment Criteria



#### 1. High Significance in landscape

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

#### 2. Medium Significance in landscape

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

#### 3. Low Significance in landscape

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

##### Environmental Pest / Noxious Weed Species

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

##### Hazardous/Irreversible Decline

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

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

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

**Table 1 - 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<br>>40 years     |                           |                           |                           |                                           |                                  |
|                           | 2. Medium<br>15-40 Years |                           |                           |                           |                                           |                                  |
|                           | 3. Short<br><1-15 Years  |                           |                           |                           |                                           |                                  |
|                           | Dead                     |                           |                           |                           |                                           |                                  |

Legend for Matrix Assessment



|  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>Priority for Retention (High)</b> - These trees are considered important for retention and should be retained and protected. Design modification or re-location of building/s should be considered to accommodate the setbacks as prescribed by the Australian Standard AS4970 <i>Protection of trees on development sites</i> . Tree sensitive construction measures must be implemented e.g. pier and beam etc if works are to proceed within the Tree Protection Zone. |
|  | <b>Consider for Retention (Medium)</b> - These trees may be retained and protected. These are considered less critical; however their retention should remain priority with removal considered only if adversely affecting the proposed building/works and all other alternatives have been considered and exhausted.                                                                                                                                                        |
|  | <b>Consider for Removal (Low)</b> - These trees are not considered important for retention, nor require special works or design modification to be implemented for their retention.                                                                                                                                                                                                                                                                                          |
|  | <b>Priority for Removal</b> - These trees are considered hazardous, or in irreversible decline, or weeds and should be removed irrespective of development.                                                                                                                                                                                                                                                                                                                  |

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

#### REFERENCES

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

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

Footprint Green Pty Ltd 2001, *Footprint Green Tree Significance & Retention Value Matrix*, Avalon, NSW Australia, [www.footprintgreen.com.au](http://www.footprintgreen.com.au)

## **APPENDIX D**

### **SITE PHOTOGRAPHS—PERIMETER TREES**





**Plate 1**  
Looking west from within the site at high Retention Value (RV) perimeter tree 69 (Tallowwood).  
C. Mackenzie



**Plate 2**  
Looking southeast from within the site at medium and high RV trees 21–28 (Forest Red Gums). Low RV Camphor Laurel (Tree 20) is at left, foreground.  
C. Mackenzie



**Plate 3**  
Looking south from Cumberland Road reserve near intersection with Cabramatta Rd. West, at high RV perimeter Tree 75 (Tallowwood).  
C. Mackenzie



**Plate 4**  
Looking south along Cumberland Road at high RV perimeter tree 71 (Spotted Gum).  
C. Mackenzie



**Plate 5**  
Looking south/southeast from within the site at high RV perimeter trees-left to right, 49 (Forest Red Gum), 51 (Grey Box) and 52 (Lemon-scented Gum).  
C. Mackenzie



**Plate 6**  
Looking southeast from within the site at medium RV perimeter trees 42 and 43 (English Oaks). Note when these are in full leaf they will function as a dense screen between the site and adjoining properties.

## **APPENDIX E**

### **SCHEDULE OF ASSESSED TREES**



## SCHEDULE OF ASSESSED TREES

400–404 Cabramatta Road West, Cabramatta. 14 August, 2015.

| Tree No. | Genus and species<br>Common Name                                | Ht (m) | Sp (m) | DBH (mm) | Age | V   | C   | Observations/Comments                                                                                                                                        | ULE | TSR | RV | SRZ† (m) | TPZ† (m) | TPZ (area) |
|----------|-----------------------------------------------------------------|--------|--------|----------|-----|-----|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-----|----|----------|----------|------------|
| 1        | <i>Corymbia maculata</i><br><b>Spotted Gum</b>                  | 20     | 9      | 525      | EM  | G   | G   | Dense <b>crown</b> . Low volume of medium Ø <b>deadwood</b> . Minor pruning in the past.                                                                     | 1A  | H   | H  | 2.7      | 6.4      | 129        |
| 2        | <i>Corymbia maculata</i><br><b>Spotted Gum</b>                  | 13     | 7      | 325      | EM  | G   | F–G | Mechanical damage to lower stem N side. Mistletoe in crown. Low volume of medium Ø deadwood.                                                                 | 1A  | M   | H  | 2.2      | 3.9      | 48         |
| 3        | <i>Corymbia maculata</i><br><b>Spotted Gum</b>                  | 22     | 11     | 600      | EM  | F–G | F–G | Some minor <b>dieback</b> upper crown interior. Mistletoe in crown.                                                                                          | 2A  | H   | H  | 2.9      | 7.2      | 163        |
| 4        | <i>Corymbia maculata</i><br><b>Spotted Gum</b>                  | 17.5   | 9      | 500      | EM  | G   | G   | Some bark cracking/discolouration. Deadwood to 90mm Ø.                                                                                                       | 1A  | H   | H  | 2.7      | 6        | 113        |
| 5        | <i>Eucalyptus elata</i><br><b>River Peppermint</b>              | 8      | 7      | *400 GL  | SM  | G   | P   | Basal <b>suckers</b> . Open, <b>suppressed</b> crown- sprawling habit.                                                                                       | 4   | L   | L  | 2.3      | 4.8      | 72         |
| 6        | <i>Corymbia maculata</i><br><b>Spotted Gum</b>                  | 20     | 12     | 625      | EM  | G   | G   | Mistletoes in crown. Very minor tip dieback.                                                                                                                 | 1A  | H   | H  | 2.9      | 7.6      | 180        |
| 7        | <i>Corymbia maculata</i><br><b>Spotted Gum</b>                  | 21     | 12     | 550      | EM  | G   | G   | Some bark <b>necrosis</b> to lower NNE <b>scaffold</b> noted. Low volume of small to medium Ø deadwood.                                                      | 1A  | H   | H  | 2.8      | 6.6      | 137        |
| 8        | <i>Lagunaria patersonia</i><br><b>Norfolk Island Hibiscus</b>   | 9.5    | 5      | 300      | SM  | F–G | F–G | Badly ' <b>lopped</b> '. Overall tip dieback, although not severe. Undesirable species due to 'fibreglass-like' irritant filaments produced in seed capsule. | 2B  | L   | L  | 2.2      | 3.6      | 41         |
| 9        | <i>Eucalyptus tereticornis</i><br><b>Forest Red Gum</b>         | 21     | 13     | 725      | M   | F–G | F   | Scattered dieback. Mistletoes. <b>Included</b> primary stems.                                                                                                | 2D  | H   | H  | 3.1      | 8.8      | 241        |
| 10       | <i>Melaleuca quinquenervia</i><br><b>Broad-leaved Paperbark</b> | 11     | 4      | 475 AB   | SM  | V–P | P   | Almost dead. Significant crown decline. Deadwood >200mm Ø.                                                                                                   | 4   | L   | L  | 2.5      | 5.4      | 92         |
| 11       | <i>Melaleuca quinquenervia</i><br><b>Broad-leaved Paperbark</b> | 14     | 5      | 600 AB   | SM  | P   | F   | Significant dieback. Suppressed on 2 sides.                                                                                                                  | 3D  | M   | L  | 2.9      | 7.2      | 163        |
| 12       | <i>Melaleuca quinquenervia</i><br><b>Broad-leaved Paperbark</b> | 11     | 6      | 450 AB   | SM  | P   | F   | Suppressed to E. Notable, significant decline.                                                                                                               | 3D  | M   | L  | 2.4      | 5.1      | 84         |
| 13       | <i>Eucalyptus tereticornis</i><br><b>Forest Red Gum</b>         | 23     | 12     | 625      | M   | F   | F   | Small to medium Ø branch failures. Upper crown dieback and deadwood >100mm Ø.                                                                                | 2D  | H   | M  | 2.9      | 7.6      | 180        |

| Tree No. | Genus and species<br>Common Name                               | Ht (m) | Sp (m) | DBH (mm)     | Age | V   | C   | Observations/Comments                                                                                                                                                  | ULE | TSR | RV | SRZ† (m) | TPZ† (m) | TPZ (area) |
|----------|----------------------------------------------------------------|--------|--------|--------------|-----|-----|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-----|----|----------|----------|------------|
| 14       | <i>Corymbiagummifera</i><br><b>Red Bloodwood</b>               | 22     | 11     | 250+<br>650  | M   | F-G | F   | Crown decline in upper parts. Declining sub-stem. Deadwood >100mm Ø.                                                                                                   | 2D  | H   | M  | 2.9      | 7.8      | 191        |
| 15       | <i>Ligustrum lucidum</i><br><b>Large-leaved Privet</b>         |        |        |              | NA  |     |     | Weed species                                                                                                                                                           |     | L   |    |          |          |            |
| 16       | <i>Grevillea robusta</i><br><b>Silky Oak</b>                   | 20     | 8      | 600<br>AB    | M   | F-P | F   | Kinked stem. Thin, sparse crown.                                                                                                                                       | 3B  | M   | L  | 2.9      | 7.2      | 163        |
| 17       | <i>Ligustrum lucidum</i><br><b>Large-leaved Privet</b>         |        |        |              |     |     |     | Weed species                                                                                                                                                           |     | L   | L  |          |          |            |
| 18       | <i>Ficus decora</i><br><b>Rubber Tree</b>                      | 17     | 15     | *1400        | M   | G   | F   | Introduced <i>Ficus</i> species of undesirable species traits. Vigorous growth. Notable <b>aerial roots</b> .                                                          | 3B  | M   | L  | 4        | 15       | 707        |
| 19       | <i>Jacaranda mimosifolia</i><br><b>Jacaranda</b>               | 14     | 16     | 350 +<br>500 | M   | G   | F-G | Heavily suppressed to N. High crown. Minor tip dieback.                                                                                                                | 2D  | M   | M  | 2.9      | 7.2      | 163        |
| 20       | <i>Cinnamomum camphora</i><br><b>Camphor Laurel</b>            | 11     | 11     | *600<br>AB   | EM  | F-G | F?  | Undesirable species. Heavily infested with ivy.                                                                                                                        | 3B? | M   | L  | 2.7      | 7.2      | 163        |
| 21       | <i>Eucalyptus tereticornis</i><br><b>Forest Red Gum</b>        | 23     | 17     | 675          | M   | F   | F-G | Typical growth habit and branch architecture. <b>Co-dominant</b> stems @ 3.5m. Thinning crown with tip and small branch dieback. Medium volume of deadwood to 100mm Ø. | 2D  | H   | H  | 3.1      | 8.1      | 206        |
| 22       | <i>Brachychiton acerifolius</i><br><b>Illawarra Flame Tree</b> | 10     | 5      | 175 +<br>250 | SM  | G   | F-P | Distinct, tightly included <b>compression fork</b> @ 1m.                                                                                                               | 3B  | M   | L  | 2.2      | 3.7      | 43         |
| 23       | <i>Eucalyptus tereticornis</i><br><b>Forest Red Gum</b>        | 25     | 18     | 1050         | M   | F-G | F   | Co-dominant stems @ 1.8m. NE stem w/substantial wounds (old inclusion failures). Low to medium volume deadwood to 150mm Ø.                                             | 2B  | H   | M  | 3.6      | 12.6     | 499        |
| 24       | <i>Eucalyptus tereticornis</i><br><b>Forest Red Gum</b>        | 21     | 14     | 500          | EM  | F   | F-P | Distinct stem kink to S. Poor form. Low volume dieback.                                                                                                                | 2D  | H   | M  | 2.7      | 6        | 113        |
| 25       | <i>Eucalyptus tereticornis</i><br><b>Forest Red Gum</b>        | 19     | 14     | 525          | EM  | G   | F   | Stem <b>sweep</b> to E. Crown bias to E. Low volume deadwood to 60mm Ø.                                                                                                | 2D  | H   | M  | 2.7      | 6.4      | 129        |
| 26       | <i>Castanospermum australe</i><br><b>Blackbean</b>             | 10     | 10     | 300          | SM  | G   | G   | Some small, rubbing, crossing branches. Very minor deadwood. Young suckers/seedlings @ base.                                                                           | 1A  | M   | H  | 2.8      | 6.6      | 137        |
| 27       | <i>Allocasuarina littoralis</i><br><b>Black She-oak</b>        | 14     | 6      | 375          | SM  | F   | F   | Thin crown, w/notable dieback of tips and very small branches. Small Ø deadwood.                                                                                       | 2D  | M   | M  | 2.4      | 4.5      | 64         |
| 28       | <i>Eucalyptus tereticornis</i><br><b>Forest Red Gum</b>        | 32     | 28     | 1800         | M   | F-G | F   | Some very large Ø deadwood and old <b>branch failures</b> . Pruned in the past to W w/resulting dieback. Significant tree.                                             | 2D  | H   | H  | 4.5      | 15       | 707        |

| Tree No. | Genus and species<br>Common Name                               | Ht (m) | Sp (m) | DBH (mm) | Age | V   | C   | Observations/Comments                                                                                                             | ULE | TSR | RV | SRZ† (m) | TPZ† (m) | TPZ (area) |
|----------|----------------------------------------------------------------|--------|--------|----------|-----|-----|-----|-----------------------------------------------------------------------------------------------------------------------------------|-----|-----|----|----------|----------|------------|
| 29       | <i>Brachychiton acerifolius</i><br><b>Illawarra Flame Tree</b> | 10     | 5      | 300      | SM  | F–G | F   | Suppressed to SE. Heavy bias to W/NW. Co-dominant stems @ 3m.                                                                     | 3D  | M   | M  | 2.8      | 6.6      | 137        |
| 30       | <i>Eucalyptus tereticornis</i><br><b>Forest Red Gum</b>        | 15     | 12     | 575      | EM  | G   | F–G | Slightly overtopped by T28. Low volume deadwood.                                                                                  | 2A  | M   | M  | 2.9      | 7        | 152        |
| 31       | <i>Hymenosporum flavum</i><br><b>Native Frangipani</b>         | 13     | 5      | 275      | SM  | G   | G   | Minor, small branch dieback.                                                                                                      | 2A  | M   | M  | 2.1      | 3.3      | 35         |
| 32       | <i>Brachychiton acerifolius</i><br><b>Illawarra Flame Tree</b> | 11     | 7      | 525 AB   | M   | F–G | P   | A little pale. Some dieback to SE, but not serious. Co-dominant, included stems near base. SE stem also co-dominant and included. | 4   | M   | L  | 2.6      | 6        | 113        |
| 33       | <i>Eucalyptus tereticornis</i><br><b>Forest Red Gum</b>        | 22     | 13     | 675      | M   | G   | F?  | Lower stem wound – decaying N side. <b>Decay</b> diagnostic testing recommended if tree retained.                                 | 2?  | H   | H? | 3.1      | 8.1      | 206        |
| 34       | <i>Brachychiton acerifolius</i><br><b>Illawarra Flame Tree</b> | 16     | 6      | 2 x 375  | M   | G   | F–G | Lost leading stem in the past. Very minor volume deadwood. Co-dominant, included stems @ 1.1m.                                    | 2A  | H   | M  | 2.6      | 6.4      | 129        |
| 35       | <i>Brachychiton acerifolius</i><br><b>Illawarra Flame Tree</b> | 9      | 7      | 350      | EM  | G   | G   | No special problems observed at time of inspection.                                                                               | 1A  | M   | H  | 2.3      | 4.2      | 55         |
| 36       | <i>Eucalyptus tereticornis</i><br><b>Forest Red Gum</b>        | 25     | 12     | 575      | EM  | G   | G   | Tall, narrow, typical habit and form. Very minor dieback and deadwood.                                                            | 1A  | H   | H  | 2.9      | 7        | 152        |
| 37       | <i>Brachychiton acerifolius</i><br><b>Illawarra Flame Tree</b> | 12     | 7      | 375      | EM  | P   | F   | Very distinct tip dieback overall, especially N side. Branch failures noted.                                                      | 3D  | M   | L  | 2.4      | 4.5      | 64         |
| 38       | <i>Eucalyptus tereticornis</i><br><b>Forest Red Gum</b>        | 26     | 14     | 750      | M   | F   | F   | Thinning. E stem very poor. Medium volume of moderate Ø deadwood.                                                                 | 2D  | H   | M  | 3.1      | 9        | 255        |
| 39       | <i>Eucalyptus amplifolia</i><br><b>Cabbage Gum</b>             | 17     | 10     | 475      | EM  | G   | F   | Suppressed, w/bias to E over neighbour's. Badly 'lopped'. Deadwood to 120mm Ø. Included stems @ 4m.                               | 2B  | H   | M  | 2.6      | 5.8      | 104        |
| 40       | <i>Eucalyptus tereticornis</i><br><b>Forest Red Gum</b>        | 22     | 15     | 700      | EM  | G   | G   | Emergent/dominant tree. Large, low, dead branch to SE, but remainder of tree pretty good.                                         | 2A  | H   | H  | 3.1      | 8.4      | 222        |
| 41       | <i>Brachychiton acerifolius</i><br><b>Illawarra Flame Tree</b> | 17     | 8      | 525      | M   | G   | F   | Distinct stem kink @8m. 'Gap' in crown E side.                                                                                    | 2D  | H   | M  | 2.7      | 6.4      | 129        |
| 42       | <i>Quercus robur</i><br><b>English Oak</b>                     | 14     | 9      | 600      | EM  | G   | F–G | Exotic species. Dieback of some scaffolds to N (suppressed to N). Bifurcated @ 2m.                                                | 2D  | M   | M  | 2.9      | 7.2      | 163        |
| 43       | <i>Quercus robur</i><br><b>English Oak</b>                     | 14     | 15     | 700      | EM  | G   | F–G | Crown asymmetry. 'Lopped' badly. Vines in branches.                                                                               | 2D  | M   | M  | 3.1      | 8.4      | 222        |

| Tree No. | Genus and species<br>Common Name                               | Ht (m) | Sp (m) | DBH (mm)   | Age | V   | C   | Observations/Comments                                                                                                                 | ULE | TSR | RV | SRZ† (m) | TPZ† (m) | TPZ (area) |
|----------|----------------------------------------------------------------|--------|--------|------------|-----|-----|-----|---------------------------------------------------------------------------------------------------------------------------------------|-----|-----|----|----------|----------|------------|
| 44       | <i>Grevillea robusta</i><br><b>Silky Oak</b>                   | 22     | 6      | 775        | LM  | P   | F–G | Straight stem, with no anomalies. Substantial dieback and overall crown decline.                                                      | 4   | M   | L  | 3.1      | 9.3      | 272        |
| 45       | <i>Eucalyptus tereticornis</i><br><b>Forest Red Gum</b>        | 22     | 18     | 625        | M   | G   | F–P | Large, old branch failure to SSE. Stem wound and <i>Phellinus</i> <b>bracket fungus</b> . Tip and small branch dieback.               | 3D  | H   | M  | 2.9      | 7.6      | 180        |
| 46       | <i>Eucalyptus tereticornis</i><br><b>Forest Red Gum</b>        | 16     | 7      | 450        | EM  | G   | F–G | Slight suppression to S. No major dieback or deadwood.                                                                                | 2D  | M   | M  | 2.5      | 5.4      | 92         |
| 47       | <i>Acacia decurrens</i><br><b>Black Wattle</b>                 | 8      | 8      | 2 x 150    | M   | G   | F–G | 'Gumming' at co-dominant stems and branch/stem junctions.                                                                             | 3C  | L   | L  | 1.8      | 2.7      | 23         |
| 48       | <i>Brachychiton acerifolius</i><br><b>Illawarra Flame Tree</b> | 11     | 7      | 475        | EM  | F   | G   | Upper crown a little pale, and leaves distorted – otherwise ok.                                                                       | 2D  | M   | M  | 2.6      | 5.8      | 104        |
| 49       | <i>Eucalyptus tereticornis</i><br><b>Forest Red Gum</b>        | 19     | 16     | 575        | EM  | G   | G   | Low volume, moderate Ø deadwood. Minor tip dieback.                                                                                   | 1A  | H   | H  | 2.9      | 7        | 152        |
| 50       | <i>Jacaranda mimosifolia</i><br><b>Jacaranda</b>               | 10     | 14     | *300 + 500 | M   | G   | F?  | In adjoining property. Limited inspection. Substantial stem pruned to E. Extends over site 4 – 5m @ 6 – 8m AGL.                       | 2D? | M?  | M? | 2.7      | 7        | 152        |
| 51       | <i>Eucalyptus moluccana</i><br><b>Grey Box</b>                 | 19     | 20     | *750       | M   | G   | G?  | Straddling boundary. Limited inspection. Base obscured. Low volume deadwood mainly confined to lower crown (i.e. from 'shading out'). | 1A  | H   | H? | 3.1      | 9        | 255        |
| 52       | <i>Corymbia citriodora</i><br><b>Lemon-scented Gum</b>         | 24     | 11     | 600        | EM  | G   | G   | High crown. Surface roots noted 3m NE. No special problems observed at time of inspection.                                            | 1A  | H   | H  | 2.9      | 7.2      | 163        |
| 53       | <i>Brachychiton acerifolius</i><br><b>Illawarra Flame Tree</b> | 12     | 7      | 425        | EM  | F–G | G   | Minor stem kink. Minor dieback to S.                                                                                                  | 2A  | M   | M  | 2.5      | 5.1      | 84         |
| 54       | <i>Grevillea robusta</i><br><b>Silky Oak</b>                   | 22     | 15     | 625        | M   | F   | G   | Slight suppression to N. Scattered tip dieback.                                                                                       | 2D  | H   | H  | 2.9      | 7.6      | 180        |
| 55       | <i>Lophostemon confertus</i><br><b>Brush Box</b>               | 9      | 3      | 275        | SM  | G   | F–P | Heavily suppressed by T55. Ivy up stem and scaffolds.                                                                                 | 3C  | L   | L  | 2.1      | 3.3      | 35         |
| 56       | <i>Populus ?deltoides</i><br><b>Cottonwood</b>                 | 21     | 15     | 675        | M   | G   | G?  | Slight stem lean to S. Mistletoe high in crown. Small branch failures noted.                                                          | 2A  | H   | M  | 3.1      | 8.1      | 206        |
| 57       | <i>Lagerstroemia indica</i><br><b>Crape Myrtle</b>             | 4–5    | 4–5    | *250 GL    | SM  | G   | F?  | Poorly pruned in the past. Basal suckering.                                                                                           | 3B? | L   | L  | 1.9      | 2.7      | 23         |
| 58       | <i>Brachychiton acerifolius</i><br><b>Illawarra Flame Tree</b> | 12     | 9      | 500        | M   | F–G | G   | Some dieback at top of crown.                                                                                                         | 2A  | M   | M  | 2.7      | 6        | 113        |

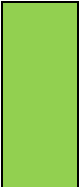
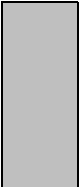
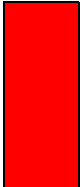
| Tree No. | Genus and species<br>Common Name                                | Ht (m) | Sp (m) | DBH (mm)  | Age | V   | C   | Observations/Comments                                                                                                                            | ULE | TSR | RV | SRZ† (m) | TPZ† (m) | TPZ (area) |
|----------|-----------------------------------------------------------------|--------|--------|-----------|-----|-----|-----|--------------------------------------------------------------------------------------------------------------------------------------------------|-----|-----|----|----------|----------|------------|
| 59       | <i>Allocasuarina littoralis</i><br><b>Black She-oak</b>         | 15     | 5      | 350       | EM  | F   | F   | Tip and small branch dieback.                                                                                                                    | 2D  | M   | M  | 2.3      | 4.2      | 55         |
| 60       | <i>Melaleuca quinquenervia</i><br><b>Broad-leaved Paperbark</b> | 14     | 10     | 375 + 525 | EM  | F-P | F-P | Very thin, struggling. Typical stem/branch inclusions. Whole crown tip and branch dieback.                                                       | 3C  | M   | L  | 2.8      | 7.8      | 191        |
| 61       | <i>Eucalyptus sideroxylon</i><br><b>Mugga Ironbark</b>          | 13     | 12     | 350       | SM  | G   | G   | Slightly overtopped. No special problems observed at time of inspection.                                                                         | 1A  | M   | H  | 2.3      | 4.2      | 55         |
| 62       | <i>Corymbia citriodora</i><br><b>Lemon-scented Gum</b>          | 21     | 13     | 475       | EM  | G   | F-G | Mistletoe @ old branch failure W/SW. No major dieback or deadwood.                                                                               | 2A  | H   | H  | 2.6      | 5.8      | 104        |
| 63       | <i>Eucalyptus sideroxylon</i><br><b>Mugga Ironbark</b>          | 18     | 11     | 475       | EM  | G   | F-G | Suppressed to S. Low volume deadwood to 40mm Ø.                                                                                                  | 2A  | H   | H  | 2.6      | 5.8      | 104        |
| 64       | <i>Eucalyptus sideroxylon</i><br><b>Mugga Ironbark</b>          | 19     | 13     | 625       | M   | G   | F?  | Low dead branch to N. Stem bulges @ 4m. Deadwood to 100mm Ø.                                                                                     | 2D? | H   | H? | 2.9      | 7.6      | 180        |
| 65       | <i>Corymbia citriodora</i><br><b>Lemon-scented Gum</b>          | 21     | 12     | 525       | EM  | G   | G   | Mistletoe in crown. No special problems observed at time of inspection.                                                                          | 1A  | H   | H  | 2.7      | 6.4      | 129        |
| 66       | <i>Corymbia maculata</i><br><b>Spotted Gum</b>                  | 22     | 14     | 650       | EM  | G   | G   | No special problems observed at time of inspection.                                                                                              | 1A  | H   | H  | 2.9      | 7.8      | 191        |
| 67       | <i>Corymbia maculata</i><br><b>Spotted Gum</b>                  | 20     | 10     | 450       | EM  | G   | G   | No special problems observed at time of inspection.                                                                                              | 1A  | H   | H  | 2.5      | 5.4      | 92         |
| 68       | <i>Nyssa sylvatica</i><br><b>Tupelo</b>                         | 6-7    | 4      | 200-250   | SM  | G   | F-G | Group of 4 x small, young trees. Some rubbing/crossing branches and co-dominant leaders. Wall about 1m W.                                        | 2A  | L   | L  | 2.1      | 3.0      | 28         |
| 69       | <i>Eucalyptus microcorys</i><br><b>Tallowwood</b>               | 19     | 24     | 1050      | M   | G   | G?  | Bias to E due to line clearance pruning. No significant deadwood. No notable dieback. Should be subject to <b>aerial inspection</b> if retained. | 2D  | H   | H? | 3.6      | 12.6     | 499        |
| 70       | <i>Eucalyptus tereticornis</i><br><b>Forest Red Gum</b>         | 16     | 11     | *750 AB   | EM  | G   | F?  | Lopped for power lines. Stem obscured by vines.                                                                                                  | 2D  | H   | M? | 3        | 8.4      | 222        |
| 71       | <i>Corymbia maculata</i><br><b>Spotted Gum</b>                  | 17     | 10     | 500       | EM  | G   | G   | Crown is clear/above power lines. Retaining wall about 1m+ W. No other special problems observed at time of inspection.                          | 2A  | H   | H  | 2.7      | 6        | 113        |
| 72       | <i>Melaleuca quinquenervia</i><br><b>Broad-leaved Paperbark</b> | 6-8    | 2-3    | *225-400  | SM  | G   | F-P | Row of 3 x trees lopped to 2 – 4m and mainly consists of regrowth.                                                                               | 2D  | L   | L  | 2.5      | 4.8      | 72         |
| 73       | <i>Melaleuca linariifolia</i><br><b>Snow-in-summer</b>          | 4-6    | 4-5    | *350-400  | SM  | G   | F-P | Heavily lopped.                                                                                                                                  | 2D  | L   | L  | 2.5      | 4.8      | 72         |

| Tree No. | Genus and species<br>Common Name                | Ht (m) | Sp (m) | DBH (mm) | Age | V | C   | Observations/Comments                                                                                             | ULE | TSR | RV | SRZ† (m) | TPZ† (m) | TPZ (area) |
|----------|-------------------------------------------------|--------|--------|----------|-----|---|-----|-------------------------------------------------------------------------------------------------------------------|-----|-----|----|----------|----------|------------|
| 74       | <i>Angophora costata</i><br>Smooth-barked Apple | 8.5    | 7      | 350      | SM  | G | F-P | Lopped – proliferation of <b>epicormic</b> regrowth @ pruning locations.                                          | 3D  | M   | L  | 2.3      | 4.2      | 55         |
| 75       | <i>Eucalyptus microcorys</i><br>Tallowwood      | 25     | 21     | 1450 DAB | M   | G | F?  | Heavily lopped to W. Sweep and crown bias to E. Low volume deadwood up to 100mm Ø. Aerial inspection if retained. | 2D? | H   | H? | 3.9      | 15       | 707        |

## KEY

|                                                                                  |                       |                                                                                   |                                                                             |                                                                                     |                                        |
|----------------------------------------------------------------------------------|-----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------|
|  | Trees to be retained. |  | Non-prescribed exotic, non-indigenous or weed trees proposed to be removed. |  | Prescribed trees likely to be removed. |
|----------------------------------------------------------------------------------|-----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------|

## TREE RETENTION VALUE

|                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                   |                                                                                                                                                                                                                                                                                                                      |                                                                                     |                                                                                                                                                                                     |                                                                                     |                                                                                                                                                                     |
|----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>HIGH (Priority for Retention)</b> —These trees are considered important for retention and should be retained and protected. Design modification or re-location of building/s should be considered to accommodate the setbacks as prescribed by the Australian Standard AS4970 <i>Protection of trees on development sites</i> . Tree sensitive construction measures must be implemented e.g. pier and beam etc if works are to proceed within the Tree Protection Zone. |  | <b>MEDIUM (Consider for Retention)</b> —These trees may be retained and protected. These are considered less critical; however their retention should remain priority with removal considered only if adversely affecting the proposed building/works and all other alternatives have been considered and exhausted. |  | <b>LOW (Consider for Removal)</b> — These trees are not considered important for retention, nor require special works or design modification to be implemented for their retention. |  | <b>REMOVE (Priority for Removal)</b> —These trees are considered hazardous, or in irreversible decline, or weeds and should be removed irrespective of development. |
|----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|

† Notional radial offset of a symmetrical, unrestricted root system – subject to change depending on site conditions affecting tree root growth.

\* Visually estimated.

GL at ground level.

AGL above ground level.

## LEGEND

|             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>H</b>    | refers to the approximate height of a tree in metres, from base of stem to top of tree crown.                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Sp</b>   | refers to the approximate and average spread in metres of branches/canopy (the 'crown') of a tree.                                                                                                                                                                                                                                                                                                                                                             |
| <b>DBH</b>  | 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.                                                                                                                                                                                                                                                                                                          |
| <b>Age</b>  | refer to Appendix A -Terms and Definitions for more detail.                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>V</b>    | refers to the tree's vigour (health). L – Low vigour, N – normal vigour, P = poor vigour. Refer to Appendix A -Terms and Definitions for more detail.                                                                                                                                                                                                                                                                                                          |
| <b>C</b>    | refers to the tree's structural condition. F = fair condition, G = good condition, P = poor condition. Refer to Appendix A -Terms and Definitions for more detail.                                                                                                                                                                                                                                                                                             |
| <b>ULE</b>  | refers to the estimated <i>Useful Life Expectancy</i> of a tree. Refer to Appendices A and B for details. Where further investigation or testing of trees is required, a ULE can't be accorded until investigations have taken place.                                                                                                                                                                                                                          |
| <b>TSR</b>  | The <i>Tree Significance Rating</i> 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 –for more detail.                                                                                                                                                                                                                                         |
| <b>RV</b>   | Refers to the retention value of a tree, based on the tree's ULE and Tree Significance. Refer to Appendix C –for more detail. Note: a RV cannot be accorded to a tree where the ULE is not provided.                                                                                                                                                                                                                                                           |
| <b>SRZ†</b> | Structural Root Zone (SRZ) refers to the critical <u>radial offset in metres</u> from the centre of the tree's stem required to maintain stability of the tree. The SRZ is calculated on the diameter measured immediately above the root buttress or flare (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). Refer to Appendix A -Terms and Definitions for more detail. |
| <b>TPZ†</b> | Tree Protection Zone (TPZ) refers to the <i>tree protection zones</i> for trees to be retained. The measurement given is a <u>radial offset in metres</u> from the centre of the tree's stem. Refer to Appendix A -Terms and Definitions for more detail.                                                                                                                                                                                                      |

## **APPENDIX F**

### **TREE LOCATION PLAN**



