URBAN FORESTRY AUSTRALIA

TREE MANAGEMENT CONSULTING ARBORICULTURISTS

ARBORICULTURAL IMPACT ASSESSMENT

for

Gartner Trovato Architects
Suite 13 / 10 Park Street
MONA VALE NSW 2103

SITE ADDRESS

1772 PITTWATER ROAD
BAYVIEW NSW 2104

NOVEMBER 2019

Prepared by
Chantalle Hughes
Consulting arboriculturist and horticulturist.

INSTITUTE OF AUSTRALIAN CONSULTING ARBORICULTURISTS
IACA
MANAGING URBAN TREES™

URBAN FORESTRY AUSTRALIA PTY LTD
Consulting Arboriculturists
www.urbanforestryaustralia.com.au

PO Box 533
Wyong, NSW 2259
Email:cat@urbanforestryaustralia.com.au

MANAGING OUR URBAN FOREST
Telephone: (02) 4351 8640
Mobile: 0414 997 417

CONTENTS

1 INTRODUCTION

1.1 This Arboricultural Impact Assessment (AIA) prepared by Chantalle Hughes of Urban Forestry Australia (UFA), was commissioned by Sean Gartner of Gartner Trovato Architects, on behalf of the owners of the subject site. 'The site' is identified as Lot 51 DP 740538 and known as 1772 Pittwater Road, Bayview, New South Wales.

1.2 This AIA is to accompany a development application to Northern Beaches Council for a new two storey residential dwelling and associated landscaping.

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.

1.7 This report is not intended to be a comprehensive tree *risk* assessment; 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

2.1 In preparation for this report, ground level, *visual tree assessments*[1] of five (5) trees was undertaken by Chantalle Hughes on 18th November 2019. Inspection details of these trees are provided in Appendix F—*Schedule of Assessed Trees.*

2.2 This AIA takes account of prescribed trees pursuant to Pittwater 21 Development Control Plan DCP 2014 – Section B4.22 Preservation of Trees or Bushland Vegetation.

2.3 Tree heights and canopy spreads were visually estimated or measured using a Nikon ForestryPro Laser measurer. Unless otherwise noted in Appendix D, all trunk diameters were measured at approximately 1.4 metres above ground level ("the DBH"), using a Yamiyo diameter tape.

2.4 Field observations were written down, and photographs of the site and trees were taken using an iPhone 8.

2.5 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.

2.6 Plans and documents referenced for the preparation of this report include:

- Detail and Levels Survey Plan, Drawing no. 18660detail, dated 15/07/2019, prepared by C.M.S. Surveyors Pty Ltd;
- Architectural Plans, Project no. 1925, Drawing no. DA.03- DA.05, dated 14/11/2019, prepared by Gartner Trovato Architects.
- AS4970-2009 *Protection of trees on development sites*, Standards Australia.
- Section B4.22 Preservation of Trees or Bushland Vegetation of Pittwater 21 Development Control Plan 2014.

2.7 No hydraulic service or landscape plans have been reviewed in preparation of this report.

2.8 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 Plan.

[1] 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

3.1 Assessed Trees

3.1.1 Five (5) trees/tree groups (prescribed and non-prescribed) were assessed or identified and are included in this report. Details of these are included in the Schedule of Assessed Trees—Appendix F.

3.1.2 Tree numbers—of the five (5) assessed trees, the following is noted:

- Two (2) tree groups are non-prescribed and exempt from protection controls under B4.22 of the P21 DCP—Group 3 and 5;
- Two (2) trees are prescribed and are located on Council managed land adjoining the subject site —Trees 1 and 2;
- One (1) prescribed tree is located within the subject site—Tree 4.

3.1.3 The prescribed trees and their respective *Retention Value* (RV) are identified in Table 1, below. Note: Refer to Appendix B for the methodology used to assess the Retention Value of a tree.

Table 1—Tree Identification and Retention Value, where L = Low, M = Medium, H = High. R = proposed removal.

Tree No.	*Genus & species* **Common Name**	RV	Tree No.	*Genus & species* **Common Name**	RV
1	*Corymbia maculata* **Spotted Gum**	M	4	*Syzygium australe* **Brush Cherry**	L
2	*Corymbia citriodora* **Lemon Scented Gum**	M			

3.1.4 Species assemblage—of the 3 prescribed trees, the following is noted:

- Two (2) are locally indigenous species—Tree 1 & 4;
- One (1) is an introduced Australian native species—Tree 2.

3.1.5 No assessed tree species is considered threatened or endangered under Australian and State Government legislation (i.e. NSW *Biodiversity Conservation Act* 2016, and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*).

3.1.1 Tree 1 has been identified as a Spotted Gum, a key component species of the Endangered Ecological Community (EEC) - Pittwater and Wagstaffe Spotted Gum Forest (PWSGF). This community holds threatened conservation status under Schedule 2 of the Biodiversity Conservation Act 2016, however this isolated, planted, semi-mature street tree would not, in my opinion, constitute an example of this EEC.

3.2 Proposed Removal of Prescribed Trees for Site Development

3.2.1 Two (2) prescribed trees are proposed to be removed:

- Tree 1—Spotted Gum of Medium RV. This street tree is located within the footprint of the proposed new driveway location and would require removal.
- Tree 4— Brush Cherry–of Low RV. This early mature tree is located within the footprint of the proposed terracing around the raised spa and wet bar, it would require removal.

3.3 Proposed Tree Retention

3.3.1 One (1) street tree directly adjoining the subject site is proposed to be retained. Potential impacts on this tree are discussed in the following paragraphs.

3.4 Potential Impacts on Trees Proposed for Retention

3.4.1 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. 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.

3.4.2 Disturbance within the *Structural Root Zone* (SRZ), and extent of encroachments into the TPZ's of prescribed trees to be retained are summarised in Table 2, below.

Table 2: *Estimated encroachments into the SRZ and TPZ of trees proposed for retention.* Note 1: These figures are based on the 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	Tree located on site	SRZ affected	TPZ area (m^2)	TPZ encroachment (approx. m^2)	TPZ encroachment (approx. %)
2	Lemon Scented Gum	×	×	28	0	0

3.4.3 **Tree 2**—Lemon Scented Gum – Street tree.

Structural Root Zone impacts:

- All proposed works are located outside the tree's SRZ.

Tree Protection Zone impacts:

- The existing driveway and boundary wall fall within the TPZ of this tree, no proposed amendments to the existing structures/ground levels are proposed within the TPZ of this specimen.
- Pruning impacts:
  - No pruning is required to accommodate works.

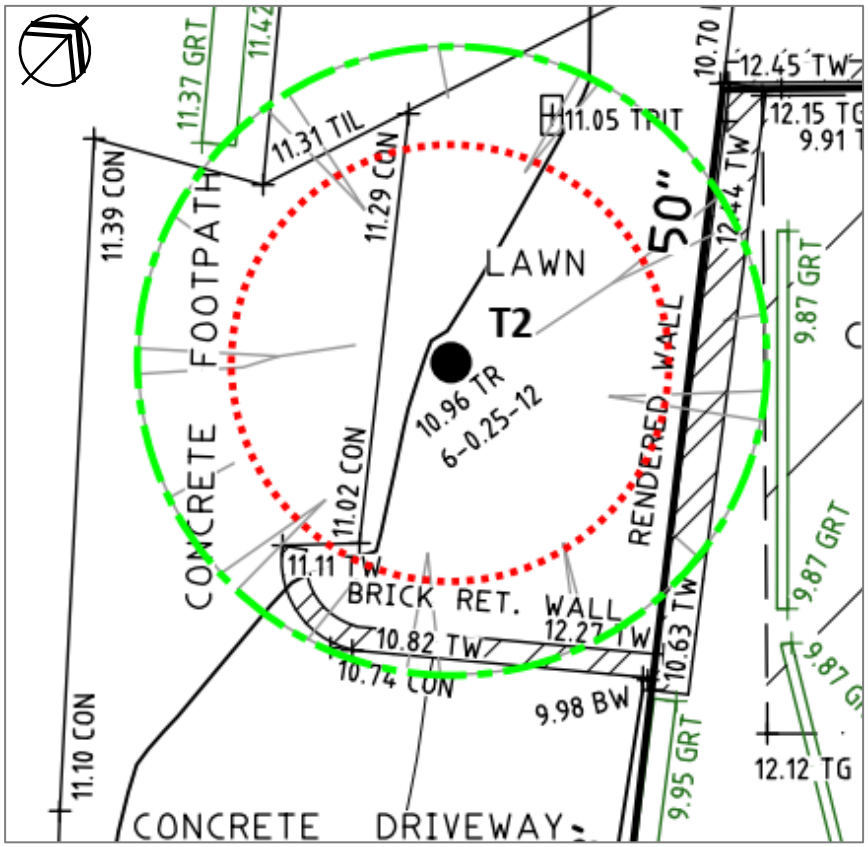


Figure 1 – Tree 2 Existing site features - Red dotted circle represents SRZ. Green hashed circle represents TPZ. Not to scale.
Excerpt of Survey Plan, dwg no. 18660detail, dated 05/07/2019. Marked up by C Hughes.

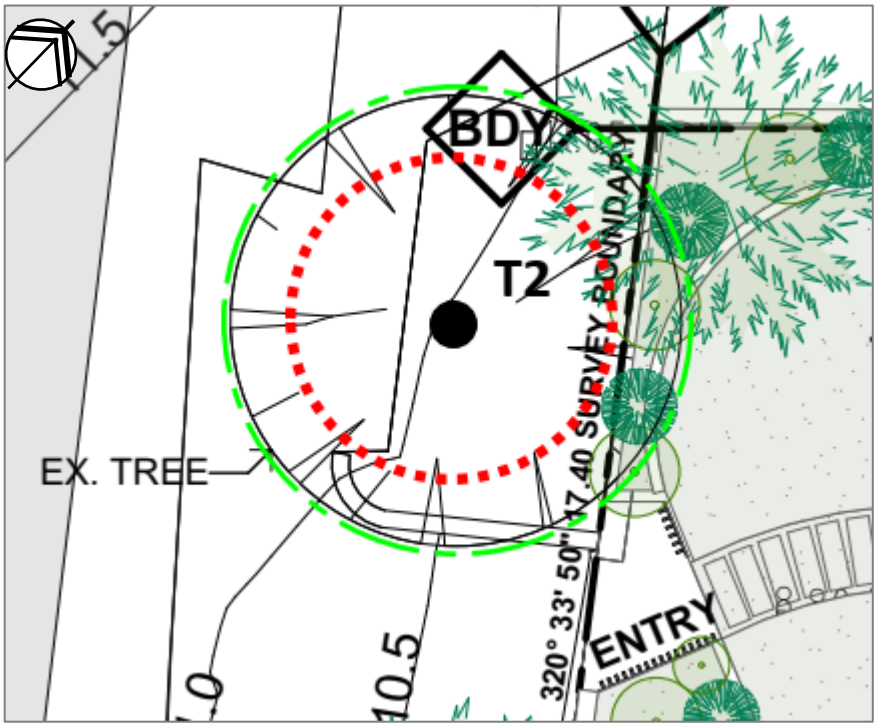


Figure 2 – Tree 2 Proposed site features - Red dashed circle represents SRZ. Green hashed circle represents TPZ. Not to scale.
Excerpt of Site Analysis & Site Plan, dwg no. DA-03, dated 14/11/2019. Marked up by C Hughes.

4 CONCLUSIONS

- A total of five (5) trees/tree groups are included in this Arboricultural Impact Assessment. Of these:
  - Two (2) tree groups within the subject site have been identified as exempt from protection under the P21 DCP 2014 and would be removed— Group 3 and Group 5.
  - Two (2) prescribed trees are proposed for removal, one street tree (Tree 1) ascribed a Medium Retention Value and one subject site tree ascribed a Low Retention Value (Tree 4).

- Whilst Tree 1 is a Spotted Gum, a key species of Pittwater and Wagstaffe Spotted Gum Forest Endangered Ecological Community; this tree is a planted, early mature, isolated street tree.

- Provided the recommendations of this report are adopted, adverse impacts on the vigour and structural condition of trees to be retained are unlikely.

5 RECOMMENDATIONS

5.1 Tree Removal

5.1.1 Removal of two (2) trees - Tree 1 and 4 are subject to authority review of this report, and approval is to be obtained (e.g. by Consent) before any tree is removed.

5.1.2 Tree removals are to be undertaken in accordance with the NSW WorkCover Code of Practice

5.1.3 for the Amenity Tree Industry (1998) and the Guide to Managing Risks of Tree Trimming and Removal Work 2016 by Safe Work Australia.

5.2 Minimising Impacts on Trees to be Retained

5.2.1 STREET TREE - TREE 2 LEMON SCENTED GUM

- Protect Tree 2 by placing temporary fencing a minimum 2.5m radial distance from stem to join existing boundary fencing to the north, west and south of the tree. See Appendix D—Tree Protection Plan (TPP).
- No pruning is approved. Any required pruning will require a separate application to Council.

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/Council.
- 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.
- 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 C – Tree Protection Devices).
- The TPD cannot be removed, altered, or relocated.

Report prepared by Chantalle Hughes

November, 2019

Chantalle Brackenridge Hughes
Consulting arboriculturist and horticulturist.
Tree Surgery Certificate
Advanced Certificate Urban Horticulture
Diploma of Horticulture (Arboriculture) *Credit*
ISA Tree Risk Assessment Qualification (TRAQ) 2016
Accredited Member of Institute of Australian Consulting Arboriculturists (IACA)
Affiliate Member of Local Government Tree Resources Association (LGTRA)
Member of the International Society of Arboriculture (ISA)

6 BIBLIOGRAPHY

Australian Standard 4970-2009 *Protection of trees on development sites.*

Barrell, J (1995) *Pre-development Tree Assessment* from *Trees and Building Sites*, Eds. Watson & Neely, International Society of Arboriculture, Illinois.

Mattheck, C. & Breloer, H.(1999) *The Body Language of Trees.* Research for Amenity Trees No.4, The Stationary Office, London.

APPENDIX A

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.

Age classes

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

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.

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.

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).

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

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 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

TREE RETENTION VALUE ASSESSMENT

APPENDIX B—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)©

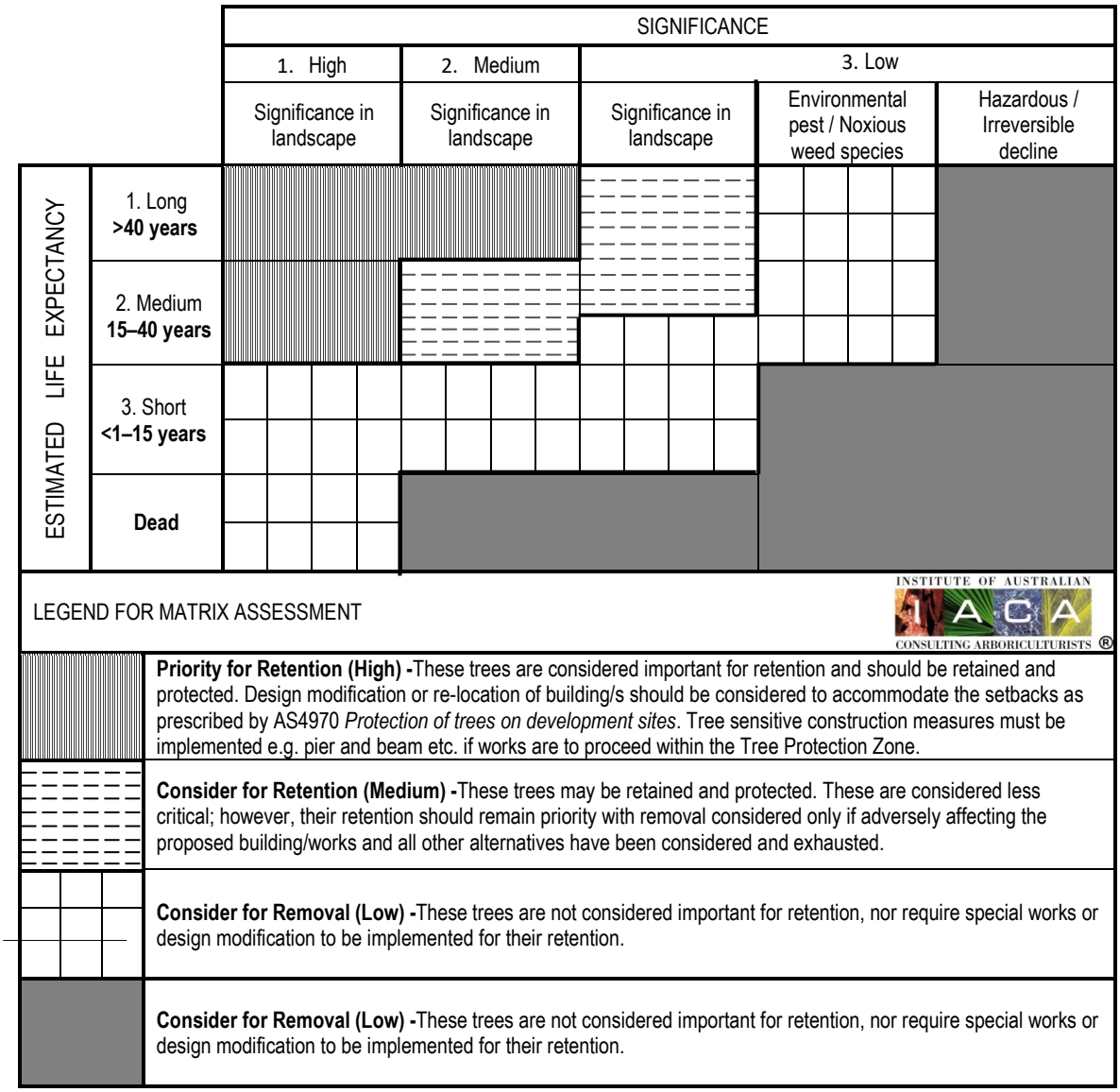
The landscape significance of a tree is an essential criterion to establish the importance that a particular tree may have on a site. However, rating the significance of a tree becomes subjective and difficult to ascertain in a consistent and repetitive fashion due to assessor bias. It is therefore necessary 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 *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 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 *in situ*.
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 *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.
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



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

REFERENCES

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

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

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

APPENDIX C

TREE PROTECTION DEVICES

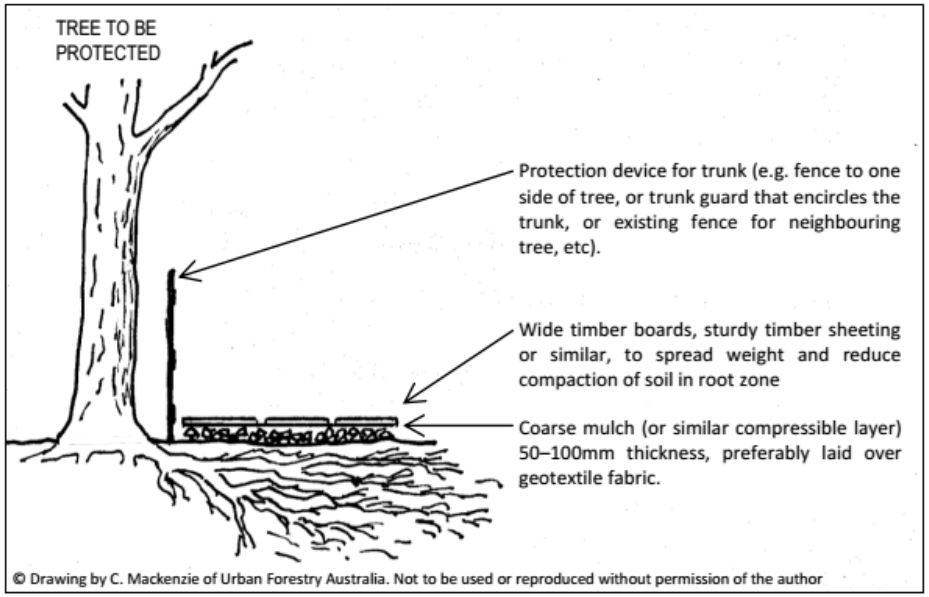


Figure 1
A method of reducing risk of root damage and soil compaction within the tree's Structural Root Zone.

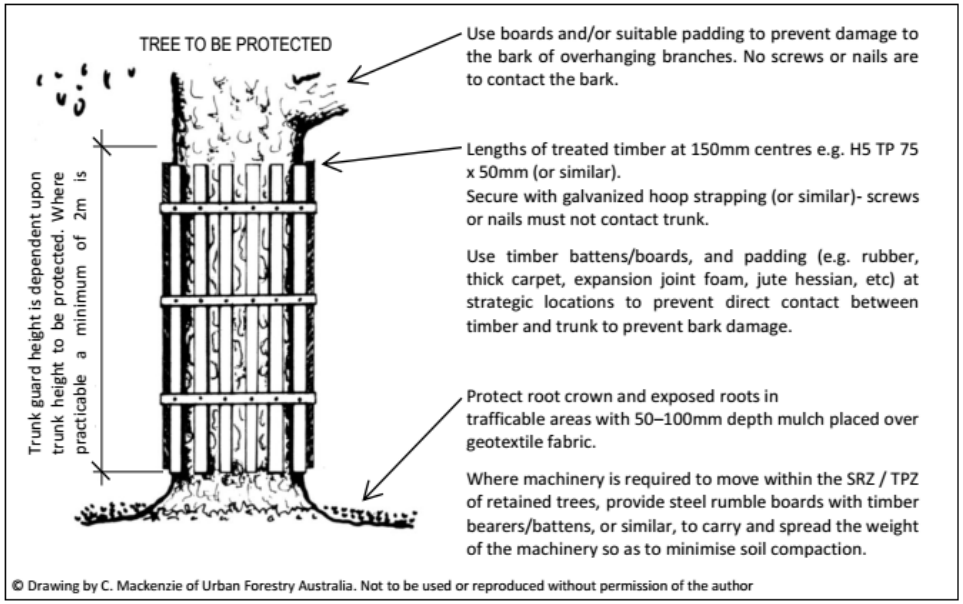


Figure 2
Example of tree trunk and tree branch protection.

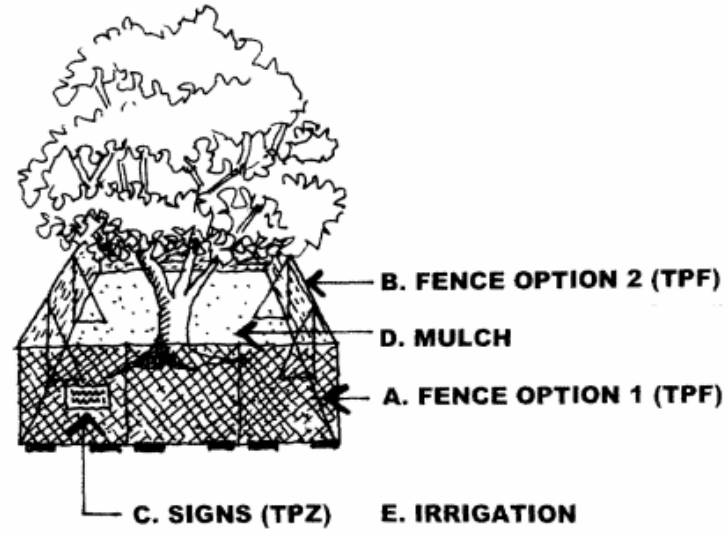
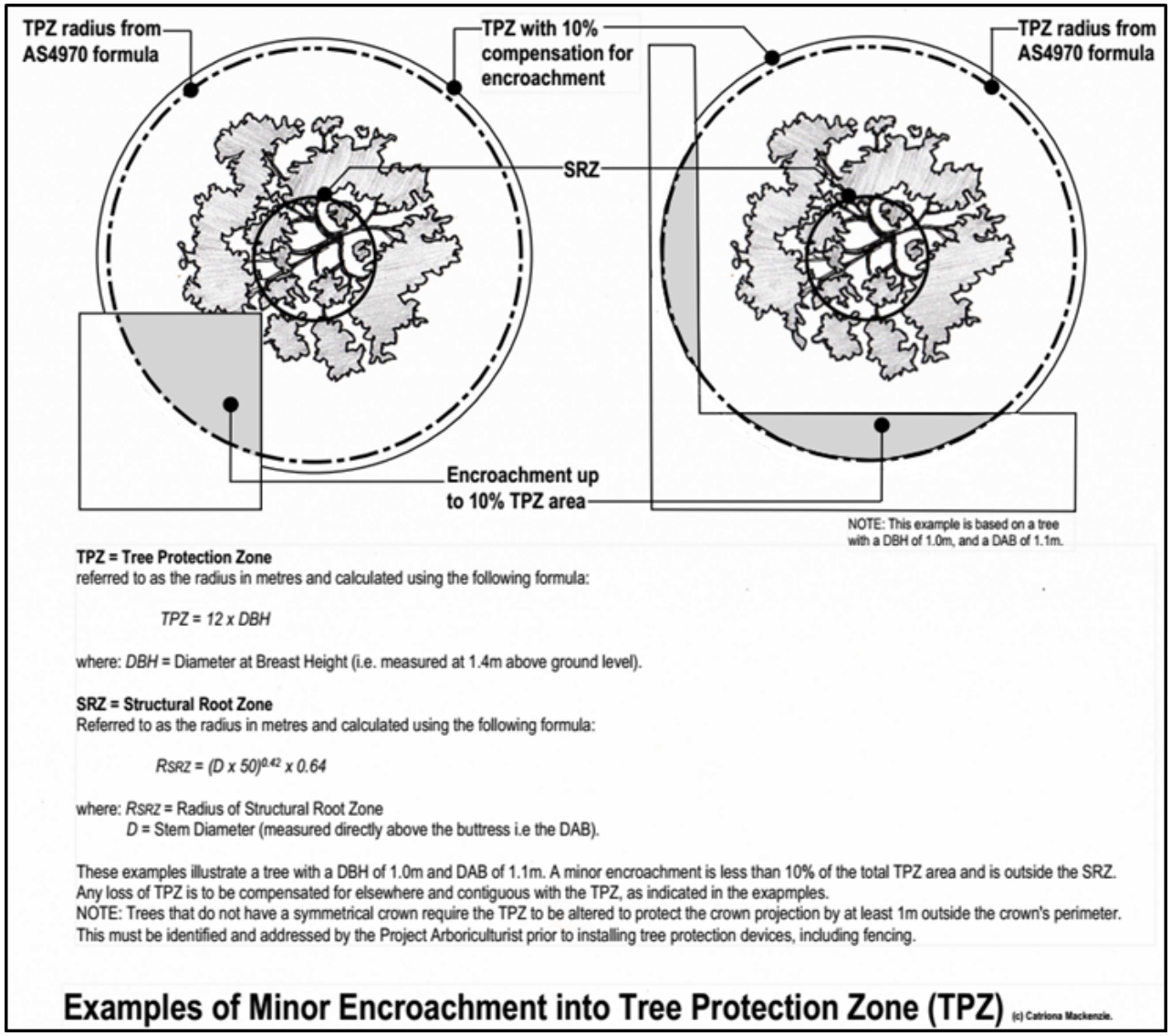


Figure 3
TREE PROTECTIVE FENCING (TPF)
A. Fence Option 1 (TPF)
1.8 metre high chain wire mesh panels with shade cloth attached if required, to be held in place with concrete blocks.
B. Fence Option 2 (TPF)
1.8 metre high plywood or wooden panel/paling fence (prevents soil or building contaminants from 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 = 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:

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

where: R_{SRZ} = Radius of Structural Root Zone
D = Stem Diameter (measured directly above the buttress i.e the DAB).

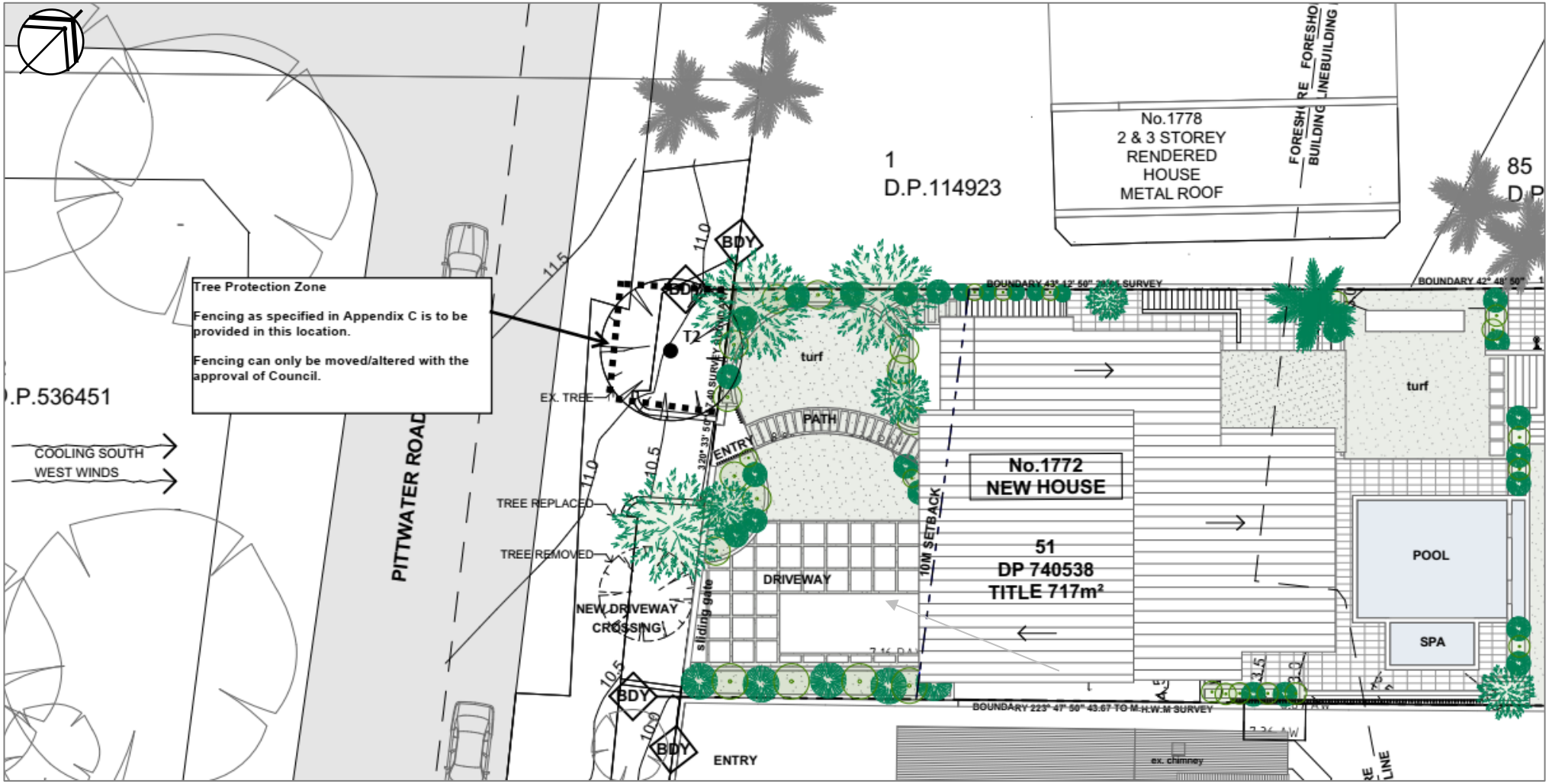
These examples illustrate a tree with a DBH of 1.0m and DAB of 1.1m. A minor encroachment is less than 10% of the total TPZ area and is outside the SRZ. Any loss of TPZ is to be compensated for elsewhere and contiguous with the TPZ, as indicated in the exapmples.
NOTE: Trees that do not have a symmetrical 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 D

TREE PROTECTION PLAN



Marked up excerpt of Plan DA-03.
NOT TO SCALE

APPENDIX E

PHOTOGRAPHS

Plate 1 Tree 1 – Requires removal for proposal, tree is chlorotic and has die-back in crown.

Plate 2 Tree 2 – Arrow notes kino exudation from base of stem.

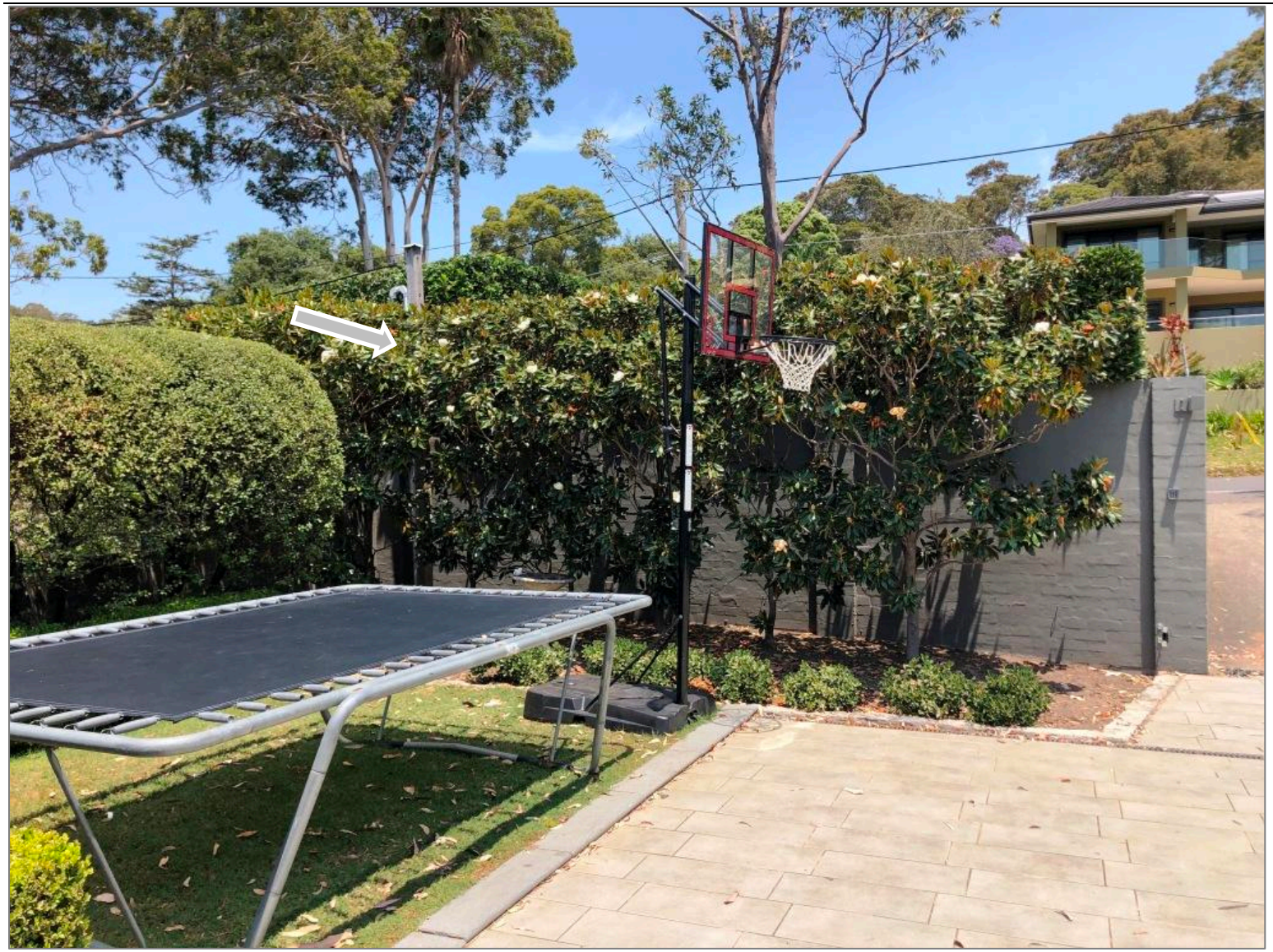


Plate 3
Group 3 – Six (6) non-prescribed Magnolia.

Plate 4
Tree 4 – Lilly Pilly requires removal for proposal.

Plate 5
Group 5 – Non-prescribed conifer hedge.

APPENDIX F

SCHEDULE OF ASSESSED TREES

Schedule of Assessed Trees—1772 Pittwater Road, Bayview. 18 November 2019

Tree No.	*Genus & species* **Common Name**	Ht (m)	Sp (m)	DBH (mm)	Age	V	C	Observations/Comments	ULE	TSR	RV	SRZ (m)	TPZ (m)	TPZ (area)
1	*Corymbia maculata* **Spotted Gum**	11	6	200	SM	G-F	F	Locally native species. Twiggy deadwood and tip die-back noted. Foliage chlorotic. Small wound at base of stem.	2A	M	M	1.8	2.4	18
2	*Corymbia citriodora* **Lemon Scented Gum**	12	7	250	SM	G	G-F	Introduced native species, naturalised. Twiggy deadwood present, high percentage of epicormic growth in canopy – suspect drought stress. Kino exudation from base of stem.	2A	M	M	2.1	3.0	28
G3	*Magnolia grandiflora* cv **Magnolia x 6**	3	4	Up to 100	SM	G	G	Introduced exotic species. Exempt under DCP P21 2014 due to height.	5A	L	L	-	-	-
4	*Syzygium australe* **Brush Cherry**	5	6	100	EM	G	G-F	Locally native species. Foliage chlorotic and scrappy.	5B	M	L	1.6	2	7
G5	*Cupressus x leylandii* **Leyland Cypress - hedge**	4	-	-	M	G	G	Introduced exotic species. Exempt under DCP P21 2014 due to height and species.	5C	L	L	-	-	-

KEY

Prescribed trees to be retained

Prescribed trees proposed to be removed.

Non-prescribed trees exempt from tree preservation controls under MDCP.

L — LOW Retention Value-These trees are not considered important for retention.

M — MEDIUM Retention Value-These trees may be retained and protected.

H — HIGH Retention Value -These trees are considered important for retention and should be retained and protected.

DETAILS FOR HEADINGS AND SYMBOLS USED IN TREE SCHEDULE

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.

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 A -Terms and Definitions for more detail.

V refers to the tree's vigour (health) Refer to Appendix A -Terms and Definitions for more detail.

C refers to the tree's structural condition. Refer to Appendix A -Terms and Definitions for more detail.

ULE refers to the estimated *Useful Life Expectancy* of a tree. Refer to Appendices A and B 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 B – 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 B – Significance of a Tree Assessment Rating for more detail.

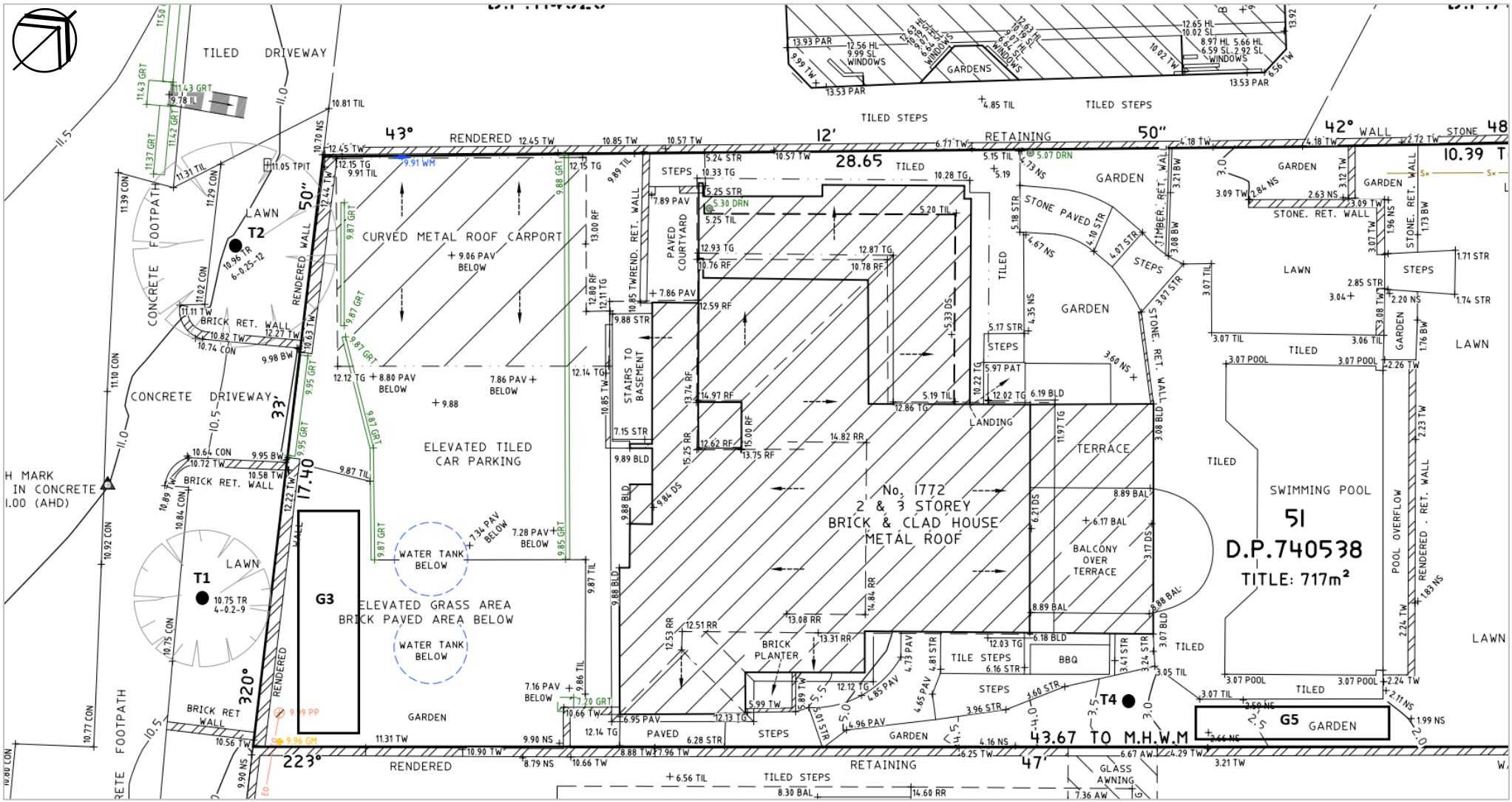
SRZ Structural Root Zone (SRZ) refers to the critical area required to maintain stability of the tree. Refer to Appendix A -Terms and Definitions for more detail.

TPZ Tree Protection Zone (TPZ) refers to the *tree protection zones* for trees to be retained. Refer to Appendix A -Terms and Definitions for more detail.

ILR Impact Level rating. Refer to Appendix A -Terms and Definitions for more detail.

APPENDIX G

TREE LOCATION PLAN



Not to scale (Excerpt of site detail and levels survey by CMS Surveyors, marked up by C. Hughes)