

ARBORICULTURAL IMPACT ASSESSMENT



Date: 27th August 2024

Site: 107 Iris Street, Beacon Hill 2100 (Lot 18 DP 19022)

Client: Maree Hayes

Commissioned By: Maree Hayes

Author: Antony Osborn

AQF5 Level Arborist

Sydney Arborist

1 Executive Summary

- 1.1 The report was commissioned by Maree Hayes to assess the impacts of the proposed building development on one (1) tree covered by Northern Beaches Council's Tree Preservation Order at 107 Iris Street, Beacon Hill 2100.
- 1.2 The proposed development is a subdivision. The stages of development will be demolition, site preparation and building of new homes.
- 1.3 Recommendations have been made for the retention of the tree (a combination of tree health, encroachment values, landscape significance and retention values were considered when making the determination).
- 1.4 The proposed building footprint of Lot 1 is located on a natural sandstone rock formation (see Appendix for photo of the rock formation and proximity to tree). Where there is the solid sandstone rock formation root growth will not be present. Therefore this is seen as a suitable location to build in regards to the tree.
- 1.5 The client has specified the driveway will only run to the end of Lot 1 which is outside the TPZ.
- 1.6 A Project Arborist AQF5 or higher will be required to supervise the initial works and monitor works within the TPZ (Tree Protection Zone).
- 1.7 The TPZ (Tree Protection Zone) and the SRZ (Structural Root Zone) have been included in the report to give a better understanding of the impacts and encroachments of the proposed building works (see Appendix 2 for calculations and the Sub division concept plans).
- 1.8 Recommendations and suggestions are made in accordance with AS 4970-2009 Protection of Trees on Development Sites.

Contents

1	Executive Summary.....	2
2	Introduction	4
3	Method.....	5
4	Observations	6
5	Discussion.....	7
6	Conclusion and Recommendations.....	8
7	Limitations on the use of this report	9
8	Assumptions.....	9
9	Bibliography	10
	Appendix 1	11
	Appendix 2	12
	Appendix 3 Tree Protection	13
	Appendix 4	18
	Appendix 5 IACA S.T.A.R.S© Tree Retention Matrix.....	20
	Glossary of Terms.....	22

2 Introduction

- 2.1 The purpose of this report is to gauge the health and vigour of the tree affected by the proposed subdivision/building works and to assess the impacts of the proposed development on the future health of the tree. The significance of the tree will be evaluated along with impacts of the proposed development. Tree retention and tree protection will be discussed.
- 2.2 This AIA (Arboricultural Impact Assessment) is a supporting document that will be presented to Northern Beaches Council as part of the DA. Northern Beaches Council are the determining authority that will make the final decision on the trees.
- 2.3 The property is located in the LGA (Local Government Area) of Northern Beaches Council.
- 2.4 The report was written by Antony Osborn, AQF5 level Arborist.
- 2.5 The following documentation was provided prior to writing this report:
- Site survey plan.
 - Proposed subdivision plan
- 2.6 This report can be used in conjunction with MaOS subdivision plans which has the tree location, SRZ and TPZ.

3 Method

- 3.1 On Thursday, 19th January 2023 a site inspection was carried out at 107 Iris Street, Beacon Hill 2100, for the purpose of gathering information to produce this report. During the inspection all trees were assessed from ground level. The application of VTA (Visual Tree Assessment), *methodology produced by Mattheck & Breloer 1994*, was used in this process.
- 3.2 The trees health & vigour and future potential were assessed. The impact of building works and the trees capabilities to tolerate disturbances along with species and suitability was taken into consideration.
- 3.3 Tree retention values have been allocated to the trees using the IACA S.T.A.R.S © (tree retention matrix (IACA, 2010 *IACA Significance of a Tree, Assessment Rating System (STARS)*, Institute of Australian Consulting Arboriculturists, Australia, www.iaca.org.au) (see Appendix 1 for further information and matrix). They were rated: a High, Medium, Low and Removal.
- 3.4 Trees are identified from ground level only by a visual assessment of foliage, other characteristics and the tree as a whole.
- 3.5 Photographs were taken using an iPhone.
- 3.6 Height measurements were estimated.
- 3.7 Canopy spread was measured to the four cardinal points (N, S, E, and W).
- 3.8 Diameter at breast height (DBH) was measured at 1.4 meters above ground level as a multi stem calculation. The diameter at buttress (DAB) was measured just above the root buttress.
- 3.9 The TPZ (Tree Protection Zone) and the SRZ (Structural Root Zone) have been included in the report to give a better understanding of the impacts and encroachments of the proposed building works (see Appendix 2 for calculations and see Glossary of Terms for definitions).
- 3.10 No invasive testing, root mapping, soil analysis, tomograph testing or resistograph drilling was undertaken.
- 3.11 Refer to the appropriate appendix for further information:
- Appendix 1 – Tree Schedule
 - Appendix 2 – Incursion Calculations
 - Appendix 3 – Tree protection (excerpt from AS 4970-2009 Protection of Trees on Development Sites)
 - Appendix 4 – Photographs
 - Appendix 5 – IACA S.T.A.R.S© Tree Retention Matrix
 - Glossary of Terms

4 Observations

- 4.1 The site is located at 107 Iris Street, Beacon Hill 2100 (Lot 18 DP 19022) and is located in the LGA (Local Government Area) of Northern Beaches Council.
- 4.2 The site slopes and faces north.
- 4.3 Map and tree locations (yellow circle):



- 4.4 See Appendix 1 for Tree schedule (data collected during site inspection).

The Trees

- 4.5 There was one (1) tree covered by Council's Tree preservation order that was assessed during the site inspection. The tree is located in the middle of the property (see Appendix 4 for photograph).
- 4.6 The tree is a mature *Quercus robur* (English Oak). The tree was exhibiting good health and good vigour at the time of inspection (see Appendix 4, figures 1 and 2).
- 4.7 The subject species is not listed under the Threatened Species Conservation Act (1995).
- 4.8 The site is not located in a heritage conservation area. There are no heritage items on these trees.

5 Discussion

- 5.1 The tree was identified as a mature *Quercus robur* (English Oak). At the time inspection the tree was displaying signs good health and vigour. The tree had good form and no obvious signs of defects. The tree has been classified as high landscape significance with a high retention value (see Appendix 4, Figure 1 photograph).
- 5.2 There is an encroachment to the TPZ by the proposed development (see Appendix 2 for encroachment value). However this encroachment is located on an exposed natural sandstone rock formation (see Appendix 4, Figure 3 for photograph of the rock formation).
- 5.3 The proposed building footprint of Lot 1 is located on the natural sandstone rock formation (see Appendix for photo of the rock formation and proximity to tree). Where there is the solid sandstone rock formation root growth will not be present. Therefore this is seen as a suitable location to build in regards to the tree.
- 5.4 The client has specified the driveway will only run to the end of Lot 1 which is outside the TPZ.
- 5.5 There should be no impacts to the canopy of the tree from Lot 1. The proposed building is 4 meters high at the closest point to the tree (see Appendix 4, Figure 4 for photograph with measurements, supplied by client). The photo shows a height clearance of approx. 6.8 meters at 8 meters from the tree.

6 Conclusion and Recommendations

- 6.1 It is recommended that the tree *Quercus robur* (English Oak) is to be retained. Therefore tree protection measures will be necessary.
- 6.2 A project arborist, with AQF5 accreditation or higher, should be assigned to monitor the work throughout the entire development process in order to ensure tree protection measures are adhered to. There should be a predetermined number of site inspections (see Appendix 3 Monitoring construction work, for more information).
- 6.3 As Lot 1 is to be built on the natural sandstone rock formation, no investigation is required where the sandstone rock is visible.
- 6.4 Where the building footprint meets the small retaining wall a Project Arborist should be on site to supervise the initial site preparation and building works (see MaOS concept plans for the location of small retaining wall).
- 6.5 Tree protection measures need to be put in place to protect the tree during the construction stage. These measures include tree protection fencing and restricted activities within the TPZ (see Appendix 3). Tree protection fencing should be erected where possible to protect the SRZ as it won't be feasible to fence the entire TPZ. This will be left to the discretion of the Project Arborist.

Antony Osborn



Sydney Arborist

(AQF5 Diploma of Arboriculture)

7 Limitations on the use of this report

This report is to be utilised in its entirety only. Any written or verbal submission, report or presentation that includes statements taken from the findings, discussions, conclusions or recommendations made in this report, may only be used where the whole of the original report (or a copy) is referenced in & directly attached to that submission, report or presentation.

8 Assumptions

Care has been taken to obtain information from reliable sources. All data has been verified insofar as possible, however, Sydney Arborist or Antony Osborn can neither guarantee nor be responsible for the accuracy of information provided by others.

Unless stated otherwise:

Information contained in this report covers only the tree/trees that were examined and reflects the condition of trees at the time of inspection.

The inspection was limited to visual examination of the subject trees without dissection, excavation, probing or coring. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the subject trees may not arise in the future.

9 Bibliography

- [Google Maps](#)
- NSW Government Office of Environment & Heritage, Threatened Species Conservation Act (1995) Online Threatened Species Search
<http://www.environment.nsw.gov.au/threatenedSpeciesApp>
- NSW Government Office of Environment & Heritage, State Heritage Inventory
<http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=2060110>
- Barrell, J. (1996), Useful Life Expectancy of Trees (ULE.) Barrell Tree Care. UK
- Arboriculture Integrated Management of Landscape Trees, Shrubs and Vines Fourth edition.
Richard W. Harris, James R. Clark and Nelda P. Matheny.
- The Body language of Trees, C. Mattheck
- Field Guide for Visual Tree Assessment, C Mattheck
- Northern Beaches Council Tree Preservation Order & Local Environment Plan 2012
- Northern Beaches Council Development Control Plan
- Warringah Local Environmental Plan 2011 (pub. 14-2-2014)
- AS4970-2009 Protection of Trees on Development Sites SAI Global Sydney Australia

Appendix 1

Tree Schedule:

						Canopy spread														
Tree No	Scientific Name (Common name)	Health	Vigour	Age	Height (m)	N (m)	S (m)	E (m)	W (m)	DBH (cm)	DAB (cm)	TPZ Radius (m)	SRZ Radius (m)	Hazard Rating	ULE (Years)	Landscape Significance	Retention Value	Comments	Retain/ Remove	
1	Quercus robur English Oak	G	G	M	14	11	8	8	12	111.9	129.9	13.4	3.7	3	Long 40 years +	High	High	Good health and vigour, good form, No signs of defects, minimal deadwood.	Retain	

*Canopy: measured as (N) North, (S) South, (E) East, (W) West (4 Cardinal Points).

*See Appendix 5 for Hazard Rating calculations.

Appendix 2

Encroachment Calculations:

Tree No	SRZ (m)	SRZ Encroachment	Area of TPZ (m2)	TPZ Encroachment %	TPZ Encroachment Rating
1	3.7	No	566.5	30	Major

* A minor incursion/encroachment is <10% of the area of the TPZ (Tree Protection Zone). This is classified as an acceptable encroachment by the Australian Standards and should not require detailed root investigation.

* A major incursion/encroachment is >10% of the area of the TPZ. This is classified as an unacceptable encroachment by the Australian Standards unless a qualified Arborist can prove that the tree is viable to withstand this encroachment. Root investigation is usually required.

Appendix 3 Tree Protection

Excerpt from AS 4970-2009 Protection of Trees on Development Sites

SECTION 4 TREE PROTECTION MEASURES

4.1 GENERAL

Tree protection measures include a range of activities and structures. Structures are used to identify and isolate the TPZ (refer to Section 3). These measures are identified in the arboricultural impact assessment and tree protection plan.

The TPZ is a restricted area usually delineated by protective fencing (or use of an existing structure such as an existing fence or wall). It is installed prior to site establishment and retained intact until completion of the works.

Some works and activities within the TPZ may be authorized by the determining authority. These must be supervised by the project arborist. Any additional encroachment that becomes necessary as the site works progress must be reviewed by the project arborist and be acceptable to the determining authority before being carried out.

Approved tree removal and pruning should be carried out before the installation of tree protection measures.

4.2 ACTIVITIES RESTRICTED WITHIN THE TPZ

Activities generally excluded from the TPZ include but are not limited to—

- (a) machine excavation including trenching;
- (b) excavation for silt fencing;
- (c) cultivation;
- (d) storage;
- (e) preparation of chemicals, including preparation of cement products;
- (f) parking of vehicles and plant;
- (g) refuelling;
- (h) dumping of waste;
- (i) wash down and cleaning of equipment;
- (j) placement of fill;
- (k) lighting of fires;
- (l) soil level changes;
- (m) temporary or permanent installation of utilities and signs, and
- (n) physical damage to the tree.

4.3 PROTECTIVE FENCING

Fencing should be erected before any machinery or materials are brought onto the site and before the commencement of works including demolition. Once erected, protective fencing must not be removed or altered without approval by the project arborist. The TPZ should be secured to restrict access.

AS 4687 specifies applicable fencing requirements. Shade cloth or similar should be attached to reduce the transport of dust, other particulate matter and liquids into the protected area.

Fence posts and supports should have a diameter greater than 20 mm and be located clear of roots.

Existing perimeter fencing and other structures may be suitable as part of the protective fencing.

Figure 3 indicates an example of protective fencing.

4.4 SIGNS

Signs identifying the TPZ should be placed around the edge of the TPZ and be visible from within the development site (refer Figure 3). The lettering on the sign should comply with AS 1319. Appendix C provides an example of a suitable TPZ sign.



LEGEND:

- 1 Chain wire mesh panels with shade cloth (if required) attached, held in place with concrete feet.
- 2 Alternative plywood or wooden paling fence panels. This fencing material also prevents building materials or soil entering the TPZ.
- 3 Mulch installation across surface of TPZ (at the discretion of the project arborist). No excavation, construction activity, grade changes, surface treatment or storage of materials of any kind is permitted within the TPZ.
- 4 Bracing is permissible within the TPZ. Installation of supports should avoid damaging roots.

FIGURE 3 PROTECTIVE FENCING

4.5 OTHER TREE PROTECTION MEASURES

4.5.1 General

When tree protection fencing cannot be installed or requires temporary removal, other tree protection measures should be used, including those set out below.

4.5.2 Trunk and branch protection

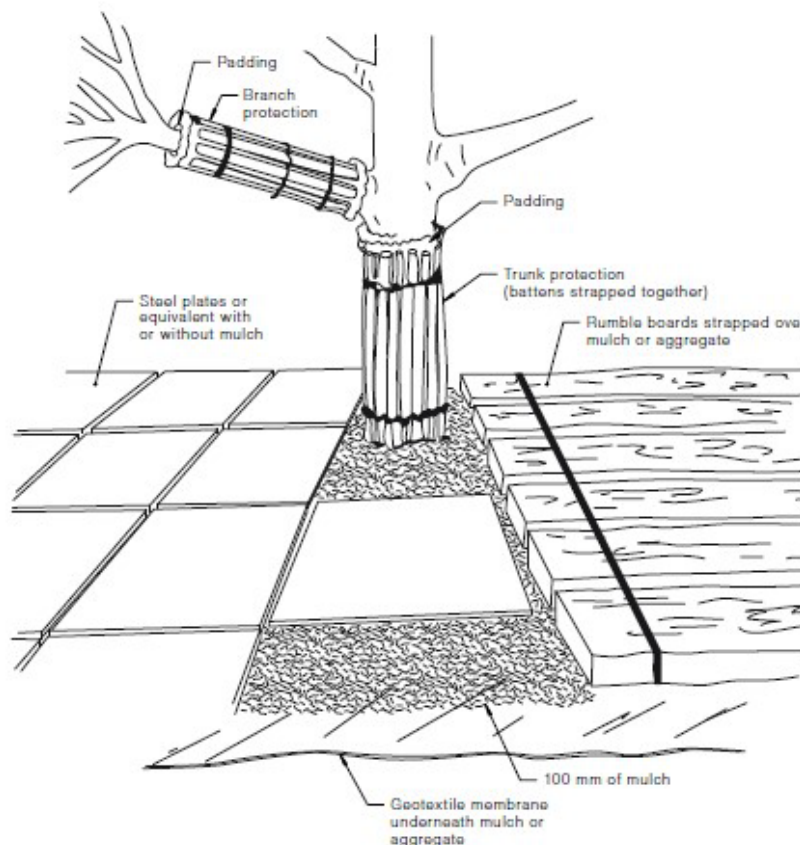
Where necessary, install protection to the trunk and branches of trees as shown in Figure 4. The materials and positioning of protection are to be specified by the project arborist. A minimum height of 2 m is recommended.

Do not attach temporary powerlines, stays, guys and the like to the tree. Do not drive nails into the trunks or branches.

4.5.3 Ground protection

If temporary access for machinery is required within the TPZ ground protection measures will be required. The purpose of ground protection is to prevent root damage and soil compaction within the TPZ. Measures may include a permeable membrane such as geotextile fabric beneath a layer of mulch or crushed rock below rumble boards as per Figure 4.

These measures may be applied to root zones beyond the TPZ.



NOTES:

- 1 For trunk and branch protection use boards and padding that will prevent damage to bark. Boards are to be strapped to trees, not nailed or screwed.
- 2 Rumble boards should be of a suitable thickness to prevent soil compaction and root damage.

FIGURE 4 EXAMPLES OF TRUNK, BRANCH AND GROUND PROTECTION

APPENDIX C
TREE PROTECTION ZONE SIGN EXAMPLE
(Informative)

A TPZ sign provides clear and readily accessible information to indicate that a TPZ has been established. Figure C1 provides an example of a suitable sign.



FIGURE C1 TREE PROTECTION ZONE SIGN

Monitoring Construction Work:

The Project Arborist will monitor the impacts of general construction works on retained trees. Monitoring should be done regularly. Monitoring is to be recorded for inclusion in certification at practical completion. Critical stages typically include installation of services, footings and slabs, scaffolding, works within the TPZ and at completion of building works.

Level changes are not allowed within the SRZ/TPZ of retained tree assets unless detailed within this report. The Project Arborist must supervise any works within TPZ's. The Project Arborist should specify any remedial works above and below ground. Monitoring is to be recorded for inclusion in certification at practical completion.

Installation of underground services should be installed outside the Tree Protection Zone (TPZ). If this is not possible and underground services need to pass through the TPZ then they should be installed using directional drilling at minimum depth of 600mm or with manually excavated trenches. This is to be supervised by the Project Arborist.

Root mapping:

Care should be taken not to cause damage when exposing roots. Methods such as; pneumatic, hydraulic, hand digging and ground penetrating radar are acceptable.

A map of the root system should be compiled and photographic evidence taken. Under no circumstances are roots to be cut, damaged, bruised, or frayed during this process.

If roots are exposed when root mapping is carried out they should be kept moist. This may include hessian material over roots and keeping it moist.

Root pruning:

Root pruning should be supervised by the Project Arborist. Roots identified to be pruned by the Project Arborist should be pruned back with a final cut of undamaged wood.

Pruning cuts should be undertaken with sharp tool. For example; secateurs, pruners, handsaws and chainsaws are suitable. Roots should never be cut or damaged with machinery such as excavators or backhoes.

Appendix 4



Figure 1: The tree *Quercus robur* (English Oak) displaying signs of good health & vigour, good form and high landscape significance.



Figure 2 The tree showing good branch structure.



Figure 3 Showing the location of the natural sandstone rock which would not accommodate root growth.



Figure 4 Showing the height of the canopy approx. 6.8 meters. The client has specified that the closest point of the dwelling is to be 4 meters high.

Appendix 5 IACA S.T.A.R.S© Tree Retention Matrix

Significance of a Tree, Assessment Rating System* (IACA 2010) – S.T.A.R.S. ©

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

High Significance in landscape

- The tree is in *Good condition* and *Good vigor*;
- 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.

Medium Significance in landscape

- The tree is in *Fair-Good condition* and *Good or Low vigor*;
- 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*.

Low Significance in landscape

- The tree is in *fair-poor condition* and *good or low vigor*;
- 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.

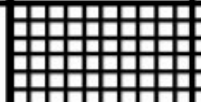
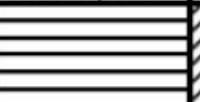
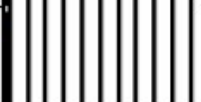
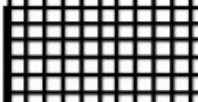
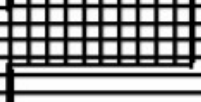
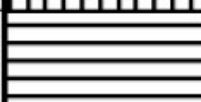
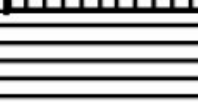
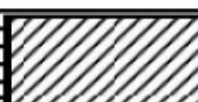
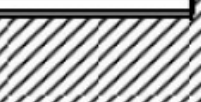
The tree is to have a minimum of three (3) criteria in a category to be classified in that group.

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

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



Table 1.0 Tree Retention Value - Priority Matrix.

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

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

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

REFERENCES Australia ICOMOS Inc. 1999, *The Burra Charter – The Australian ICOMOS Charter for Places of Cultural Significance*, International Council of Monuments and Sites, www.icomos.org/australia Draper BD and Richards PA 2009, *Dictionary for Managing Trees in Urban Environments*, Institute of Australian Consulting Arboriculturists (IACA), CSIRO Publishing, Collingwood, Victoria, Australia. Footprint Green Pty Ltd 2001, *Footprint Green Tree Significance & Retention Value Matrix*, Avalon, NSW Australia, www.footprintgreen.com.au

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

Glossary of Terms

Age class - (SM) Semi Mature, (M) Mature, (OM) Over Mature.

Aerial Inspection - Refers to climbing a tree to obtain more accurate information.

AS4970 (2009) Protection of Trees on Development Sites – These are guidelines/ industry standards to minimise negative impacts on trees on building sites.

AS4373 (2007) Pruning of Amenity Trees – These are guidelines/ industry standards to minimise negative impacts on trees.

Classes - (G) Good, (F) Fair, (D) Declining, (P) Poor.

Critical Root Zone (CRZ) - Refers to a radial offset of five (5) times the trunk DBH measured from the centre of the trunk. This zone is often the location of the tree's structural support roots.

Crown lifting – The removal of lower branches.

DBH (Diameter at Breast Height) – This is the diameter of the trunk at breast height (1.4 Metres above ground level).

Dead wood – Refers to any branches that have no living tissue left in them. Some dead wood can be beneficial for the tree.

Decay – Is when healthy wood/tissue breaks down.

Defect – An imperfection or flaw in the trees structure.

Die back – Refers to the dying of the tips or ends of branches. This can mean the tree is stressed and is a factor in assessing tree health.

Electrical service –

- **OHP** Overhead electricity wiring.
- **LVOHP** Low Voltage Overhead Power lines
- **HVOHP** High Voltage Overhead Power lines
- **ABC** Aerial Bundled Cable

Endemic – Restricted to a certain place.

Epicormic growth – Also known as sucker growth, is usually a result of bad pruning/lopping or signs of a stressed tree. They sprout from axillary buds in the bark. They are usually weakly attached.

Form – The visible shape or configuration of a tree.

Health – Refers to the trees ability to grow, modified by aspects of its environment. Signs of good health are; tree vigour, green foliage, crown density and amount of dead wood.

Classes are: Good (G), Fair (F), Declining (D) & Poor (P)

Included bark/Inclusion – Refers to weak branch attachment. This is where bark grows between the join of the branch and stem instead of healthy tissue. Usually a very acute angled branch.

Indigenous – Native to Australia but not to one particular place.

Landscape significance rating – Refers to Species, Landscape Significance, Ecological Significance and Historical Significance.

Classes: Very high, High, Moderate, Low

Lopped – Incorrect pruning method not to AS4373 (2009) Pruning of Amenity Trees.

Point of attachment – Is the part of tree joins another i.e. a branch joins the trunk.

Retention value - The trees contribution to the amenity, landscape quality and visual character of an area that is important from a planning perspective.

Root mapping – Removing/excavating soil from around the roots with hand tools.

SRZ (Structural Root Zone) – Refers to the part of the root zone necessary for the structural integrity of a tree as set out in AS4970-2009 Protection of Trees on Development Sites. The calculation for this measurement is $((D \times 50)^{0.42} \times 0.64)$, D = Diameter at the trunk buttress measured in metres. The SRZ for trees with DAB under 0.15 metres is 1.5 metres.

Taper – Reduce or increase in thickness.

Transverse Crack – A crack that extends crossways against the fibres of a tree part. Usually caused by bending of the trunk or branch.

Tree Protection Zone (TPZ) - Is the combination of root and canopy area required to maintain tree stability, health & vitality as set out in AS4970-2009 Protection of Trees on Development Sites. TPZ calculation is twelve (12) times the trunk DBH (Diameter at breast height) measured as a radial offset from the centre of the tree trunk. The TPZ indicates the location where protective fencing should be installed to create an exclusion zone around a protected tree.

Vigour – Refers to the growth rate of the tree. This includes; new growth, reaction wood, ability to compartmentalise at a rapid rate and the ability to fight off pest & disease infection.

Classes are: Good (G), Fair (F), Declining (D), and Poor (P)

Useful Life Expectancy (ULE) – Is a guide to assessing trees longevity. ULE takes into consideration the trees environment, health, vigour, structural integrity and suitability. Adapted from Barrell 1996, (Updated April 2001).

Classes: (Long) 40 years +, (Medium) 15-40 years, (Short) 5-15 years, (Removal) Less than 5 years.

VTA (Visual Tree Assessment) – This refers to techniques developed to evaluate trees by Mattheck & Breloer “The Body Language of Trees”.