

Arboricultural Impact Assessment Report

Prepared for
Binet Homes

Site
13 Therry Street
Avalon Beach

Date
8 August 2016



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1 Introduction

- 1.1 The following arboricultural impact assessment report is prepared for Binet Homes and is an evaluation of twenty trees within or on the adjoining properties to 13 Therry Street, Avalon Beach.
- 1.2 The aim of the report is to determine the tree's landscape significance, condition and vigour, assess the impacts of the proposal upon adjoining trees and make recommendations for tree retention or removal taking into consideration Northern Beaches (Pittwater) Tree Management Controls and AS4970-2009, Protection of Trees on Development Sites.
- 1.3 The property is a vacant block of land zoned for residential development the proposal entails the construction of a single dwelling.

2 Methodology

- 2.1 The trees were inspected from ground level to determine the crown condition, class, major defects, signs of stress, epicormic growth and dieback (refer Appendix A & B)
- 2.2 A Significance of a Tree Assessment Rating System (STARS) was determined. A STARS rating establishes the contribution a tree has to the overall landscape, amenity qualities or importance due to species, size, historical/cultural planting or significance to the site (refer Appendix C).
- 2.3 Useful Life Expectancy (ULE) was determined. A ULE rating provides an estimate of a tree's expected remaining life span and takes into account the age, life span of the species and considers the current condition, vigour and major defects (refer Appendix D).
- 2.4 No root exploration, internal probing or aerial inspection was performed.
- 2.5 Tree height was measured with a Nikon Forestry Pro. Canopy spread and age were estimated, where access was unencumbered Diameter at Breast Height (DBH) was measured, while DBH and DRB of trees on adjoining properties were estimated.
- 2.6 The comments and recommendations in this report are based on findings from a site inspection on 15 April 2016.
- 2.7 A list of literature used in the preparation of this report is provided in the bibliography section.
- 2.8 Plans sighted in preparation of the report include Sheet Nos 2 & 3 Job No 1013 dated June 2016 by Binet Homes. Stormwater Management Plan Sheets 1 & 2 revision E dated 8/8/16. Landscape Drawing No's LPDA 17 - 033 / 1 Revision B by Conzept Landscape Architects dated August 2016. A detail and levels plan by Hammond Smeallie & Co Pty Ltd Draft 13807 dated 4/4/16 Revision A.

3 Observations

3.1 The Site

- 3.1.1 The site is a vacant block of land containing a mixture of locally occurring and exotic trees. The property is identified as Lot 4 DP 22726, 13 Therry Street, Avalon Beach. The site is a relatively flat parcel of land located on the southern side of Therry Street and bordered by residential properties to the south, east and west.

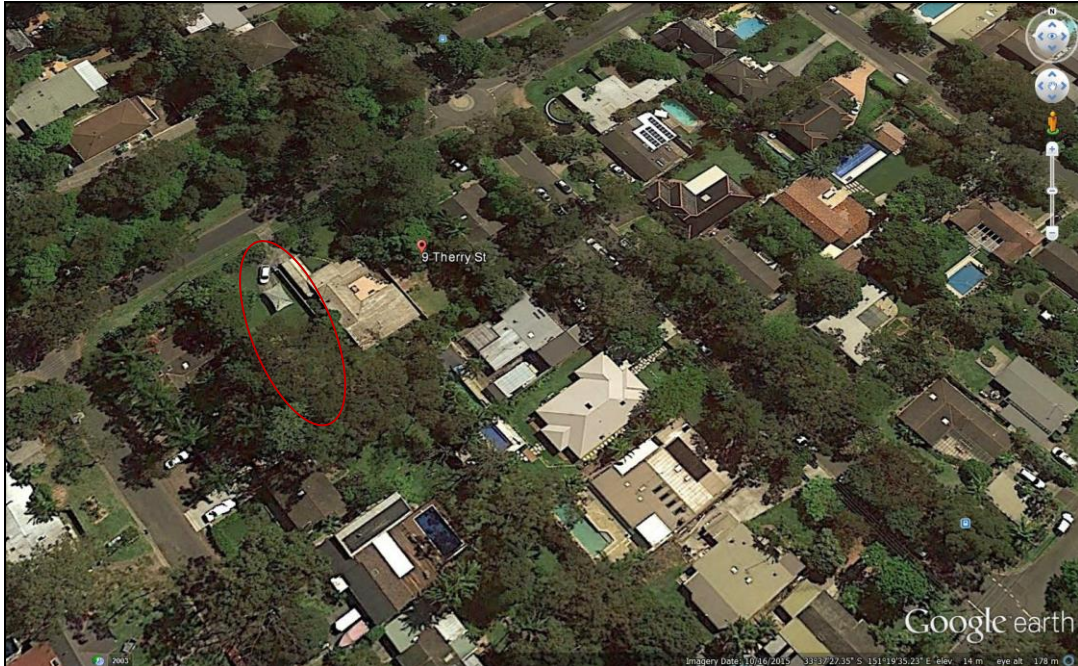


Figure 1. Location 13 Therry St, Avalon Beach (Source Google Earth Image dated Oct 2015)

3.2 The Trees

- 3.2.1 Twenty (20) trees were assessed in preparing the report. Details of the trees, their dimensions, condition, Useful Life Expectancy (ULE) and landscape significance (STARS) are attached in Appendix A.

4 Discussion

4.1 Tree Protection, Ecological and Heritage Significance

- 4.1.1 A Preservation of Trees and Bushland for Northern Beaches Council (Pittwater) applies and is made under Section B4.22 of Pittwater 21 DCP 2014. Section B4.22 generally protects all trees over 3 metres in height or when a trunk girth exceeds 0.5m or for multi trunked trees, has a combined girth of > 0.5m or branch canopy exceeding 5.0m.
- 4.1.2 Some exemptions apply including but not limited to the following, *Acer negundo* (Box Elder), *Nerium oleander* (Oleander) *Cinnamomum camphora* (Camphor laurel), Palms **other than** *Livistona australis* (Cabbage Tree Palms) and *Cupressus species* (Cypress Pines),

- 4.1.3 The property is contained within an area containing biodiversity under Northern Beaches (Pittwater's) LEP 2014 BIO Map 16.
- 4.1.4 Thirty-five vegetation communities are listed for Pittwater, nine of these are Endangered Ecological Communities (EECs). The assessment to determine if the vegetation within the property falls within one of the 9 listed Endangered Ecological Communities is beyond the expertise of the author.
- 4.1.5 Applying the above Trees 4 and 19 are exempt under the provisions of Council's Tree Management Controls.

4.2 Tree Retention Value and Landscape Significance

- 4.2.1 It is possible to determine a tree's significance and retention value based upon several factors including size, condition and maturity coupled with the methodologies STARS and ULE.
- 4.2.2 Generally trees identified as having a medium to long ULE and of high landscape value are given a high priority for retention in the design process.

Trees 1, 2, 5, 6, & 8 meet this criteria

- 4.2.3 Trees identified with a medium landscape value together with a medium ULE are considered less critical and should be marked for retention where possible.

Trees 7, 9 & 18 meet this criteria

- 4.2.4 While trees assessed with a short ULE and a medium to low STARS value are of low condition and vigour, their removal should not be seen as a constraint to the proposal. Nevertheless, Council approval must be sought prior to tree removal.

Trees 3, 4, 10a, 10b, 11, 12, 13, 14, 15, 16, 17 & 19 meet this criteria

4.3 AS4970-2009 Protection of trees on development sites

- 4.3.1 Australian Standard 4970-2009, Protection of trees on development sites, was established to provide appropriate guidelines to ensure the long term viability and stability of trees to be retained on development sites.
- 4.3.2 Tree Protection Zones (TPZ) are based on the diameter of the tree measured at 1.4 metres above ground level x 12 (refer Table 1 for calculated TPZ's). The TPZ is measured from the centre of the tree's trunk to the proposed edge of excavation/development works. The recommended setback is declared a TPZ where construction, trenching, soil level changes and use of machinery should be excluded.

4.3.3 Under AS4970-2009 a minor encroachment of 10% of the area is allowable, provided this is compensated for elsewhere and contiguous to the TPZ. Should more than a 10% encroachment occur then the Project Arborist must demonstrate the tree/palm can be protected and remain in a viable state.

4.3.4 Under Clause 3.3.4 of AS4970 when determining the impacts of an encroachment into the TPZ, some consideration may be given to the following;

- The potential loss of root mass resulting from the encroachment determined by root mapping (number, size and percentage)
- Species tolerance to root disturbance
- Age and vigour of the trees
- The presence of existing or past structures or obstacles which may affect root growth
- or tree sensitive design construction such as pier and beam, suspended slab systems or discontinuous footings which may minimise the impact upon a tree's root system.

4.3.5 The following table provides the appropriate development setbacks to retain those trees assessed with a medium to high landscape significance.

Tree No	DBH (cm)	DRB (cm)	TPZ radius (m)	10% Reduced minor encroachment limited to one side of tree ONLY radius (m)	SRZ radius (m)
1	70	81	8.4	5.8	3.1
2	49	59	5.9	4.1	2.7
5	70	78	8.4	5.8	3.0
6	50	58	6.0	4.2	2.7
7	34	35	4.1	2.9	2.2
8	55	60	6.6	4.6	2.7
9	13	18	1.7	Nil to apply	1.7
17	24	31	2.9	2.1	2.1
18	18	21	2.2	Nil to apply	1.8

Table 1. Calculated Tree Protection and Structural Root Zones

4.3.6 Tree sensitive construction should be adopted if a major encroachment into the TPZ be contemplated. A major encroachment is considered between 15 - 35% of the root zone impacted.

4.4 Proposed development impacts

4.4.1 Tree 1 is a locally occurring remnant specimen allocated a high retention value. The tree falls within the footprint of the proposed dwelling and is nominated for removal within the plans.

4.4.2 Tree 2 is a locally occurring remnant specimen assessed with a high retention value. Tree 2 is located slightly off centre of the property and given the building setbacks it will prove problematic to design a residential dwelling without requiring tree removal.

- 4.4.3 Tree 3 is in irreversible decline and is recommended for removal regardless of the proposed development.
- 4.4.4 Tree 5 - located on the adjoining property is allocated a high retention value. On-site above ground detention tanks are proposed setback at approximately 5.2m. The proposal accounts for a minor and acceptable encroachment of < 5% of the TPZ.
- 4.4.5 Tree 6 - located on the adjoining property. With an estimated TPZ of 6.0m the proposal is setback approximately 3.5m, the proposal accounts for a major encroachment of approximately 15% under Clause 3.3.3 of AS4970.
- 4.4.6 Tree 7 has a TPZ calculated of 4.1m. The proposed swimming pool is offset approximately 2.5m to the north, while the above ground on-site detention tanks and associated trenching is offset 2.0m to the south. The proposal is a major encroachment under Clause 3.3.3 of AS4970, while trenching for the stormwater lines fall within the 2.2m SRZ. The specimen cannot be maintained in a stable state under the proposal.
- 4.4.7 Tree 8 is located on the adjoining property with an estimated TPZ of 6.6m. The proposed stormwater lines and on-site detention tanks are setback approximately 3.2m. The proposal is a major encroachment of approximately 19% of the TPZ. It will be compulsory to employ horizontal directional boring or trenchless methods when installing the stormwater lines or redesign the stormwater layout to exclude all trenching within the TPZ of Trees 5, 6, 7 & 8.
- Several companies specialise in horizontal directional boring including Underground Envirotech Australia and Codmah Pty Ltd.
- 4.4.8 Trees 9, 10A & 10B fall within the footprint of the inground swimming pool and are shown to be removed.
- 4.4.9 Trees 11 – 15 and are located near the boundary close to the centre of the property. It will prove problematic to design a residential dwelling without the removal of the closely aligned group of trees. The group are young planted specimens and their removal should not be seen as a constraint to the proposal. The specimens can be reliably removed and replaced as part of the landscape works.
- 4.4.10 Tree 16 is within the footprint of the garage and shown to be removed as part of the development application.
- 4.4.11 Tree 18 is offset approximately 1.2m to the proposed driveway. The plans indicate a component of the driveway is to be of tree sensitive methods cantilevered over the SRZ. The component of non-sensitive construction accounts for a minor and acceptable 9.7% encroachment under Clause 3.3.2 of AS4970.

5 Conclusions/Recommendations

- 5.1 Twenty (20) trees were assessed as part of this development application, including three (3) trees on the neighbouring properties. The property is a vacant parcel of land zoned for residential development.
- 5.2 Two (2) specimens identified as Trees 4 & 19 which include a row of 5 x *Nerium oleander* are exempt under the terms of Northern Beaches (Pittwater) Tree Management Controls.
- 5.3 The plans show thirteen (13) trees protected under the terms of Council's Tree Management Controls are proposed for removal. Of these two trees are allocated a high retention value, one (1) tree is less critical for retention and nine (9) trees allocated a low retention value.

High Retention	Consider for Removal	Low Retention
1 & 2	9	3, 10A, 10B, 11, 12, 13, 14, 15, 16 & 17

Table 2. Trees listed within plans to be removed

- 5.4 The design in particular the Stormwater Management Plan shows the proposal is a major encroachment of the TPZ upon neighbouring trees. It will be necessary to amend the design to bring the proposal to a minor and acceptable encroachment of < 10%. Or look into the feasibility of employing horizontal directional boring methods in a sandy soil profile.

High Retention	Consider for Removal	Low Retention
6 & 8	7	-

Table 3. Trees listed for retention with a major encroachment of the TPZ.

- 5.5 Under the current proposal two (2) trees can be retained and protected as part of the proposal. This includes one (1) tree allocated a high retention value and one (1) tree less critical for retention.

High Retention	Consider for Removal	Low Retention
5	18	-

Table 4. Trees to be retained and protected

- 5.6 All trees to be retained shall be protected in accordance with the General Tree Management and Protection Specification as provided within Section 6 of the report.

6 Tree Management Plan

Prior to demolition works, a Site Arborist shall be appointed to supervise all tree protection procedures detailed in this specification. The Site Arborist shall have a minimum level 5 AQF qualification in Arboriculture.

6.1 Pre-determined Arborist Supervision – Witness Points

The following pre-determined Site Arborist stages are witness points and will require the attendance of the Site Arborist who will document the works and provide their signature stating an inspection has taken place and all works are completed in accordance this Tree Protection Plan and AS4970-2009 Protection of Trees on Development Sites.

Witness Point	Action	Check Box
Tree Removal	Prior to tree felling, the Site Arborist will inspect that proposed tree removal complies with Council's Notice of Determination.	Inspected, documented & certified by Site Arborist
Tree Protection Zones	The Site Arborist shall inspect the Tree Protection Fencing and any necessary Ground Protection complies with the nominated Tree Protection Zones and Appendix G.	Inspected, documented & certified by Site Arborist
Machinery Access	An access route for machinery shall be determined prior to demolition and construction works. Any temporary ground protection within the Tree Protection Zones shall be undertaken as per Appendix G.	Inspected, documented & certified by Site Arborist
Demolition Works	The Site Arborist shall be in attendance during the removal any existing structures within the TPZ those trees to be retained.	Inspected, documented & certified by Site Arborist
Earth Works	The Site Arborist to monitor any earthworks within the TPZ's. Note these works must be undertaken with small hand held machinery.	Inspected, documented & certified by Site Arborist
Practical Completion	The Site Arborist to inspect and assess the tree/palm condition and provide certification of tree protection at all the above mentioned Supervision Stages.	Inspected, documented & certified by Site Arborist

Table 5. Witness Points for Site Arborist Inspections

6.2 Agreement

The Site Arborist and the Site Foreman shall agree upon and designate storage, dumping and wash areas prior to demolition works.

Contractors and site workers shall be informed of these Tree Protection Specifications and the significance of the trees to be retained.

The Site Forman is responsible for all tree protection procedures on the site as per this document and whenever the arborist is not on site.

It is the responsibility of the Site Forman to provide **a minimum 3 days notice** to the Site Arborist for the pre-determined witness points.

Any breaches to the Tree Protection Plan shall be reported immediately.

6.3 List of Trees to be retained and protected

Pre-determined Witness Point. The Site Arborist shall inspect, document and certify Tree Fencing or Ground Protection & TPZ comply with Appendix G.

6.4 Tree Protection Fencing and Signage

Tree Protection must be achieved with a 1.8 metre high chain link erected at the TPZ distances nominated in Table No 1.

Tree Protection Fencing and shade cloth shall be erected prior to commencement of works and be maintained in a good condition during the construction processes.

Signage indicating the area is a Tree Protection Zone (TPZ) shall be displayed on the fence line at 5m intervals and as per Appendix F of the report.

Signage shall be a minimum of 500 x 500mm and shall state No Access – Tree Protection Zone and include the contact details of the Site Foreman and Site Arborist (refer Appendix G)

6.5 Mulch

Mulch shall be spread within the TPZ's of the retained trees or as instructed by the Site Arborist. The mulch shall consist of mixed leaf and fine woodchip mulch as certified to AS4454:2012 Composts, Soil Conditioners and Mulches. Mulch shall be spread to a depth of 75mm and maintained at this depth for the duration of works.

Pre-determined witness point. The Site Arborist shall inspect, document and certify Tree Protection Zones and Fencing is in accordance with this Tree Management Plan and AS4970-2009.

6.6 Ground Protection

If works occur within the TPZ of the retained trees the Site Arborist shall determine if appropriate ground protection is required and the ground surface within the TPZ shall be protected with a geotextile overlaying the existing mulch. Thick recycled railway ballast shall be placed over the geotextile (Refer Appendix G).

6.7 Restricted Activities

The area within the Tree Protection Zone shall exclude the following works:

- Parking of vehicles or plant
- Installation of temporary site offices or amenities.
- Wash down areas
- Excavation by large machinery
- Preparation of chemicals including paint, cement or mortar.
- Vehicular movement
- Pedestrian access
- Excavation, trenching or tunnelling.
- No excavation or trenching unless under the supervision of the Site Arborist.

6.8 Works within the TPZ

Pre-determined Witness Points. The Site Arborist shall be in attendance during any works within the nominated TPZ.

Any proposed works within the TPZ shall be undertaken by hand or with an air knife.

6.9 Completion of Works within Tree Protection Zone

At completion of works within the TPZ the fencing shall be restored as specified in point 6.4.

6.10 Soft and Hard Landscaping

Installation of soft or hard landscaping including paving, turf or plant material within the TPZ shall be undertaken by hand.

Planting holes are to be hand dug with a shovel or garden trowel.

6.11 Tree Damage

Any damage to a protected tree shall be reported to the Site Arborist immediately.

6.12 Post Construction

The Site Arborist shall make a final inspection to assess tree condition

Any questions relating to this arborist report should be directed to Glenyss Laws.

Yours Sincerely



Glenyss Laws

Dip Arboriculture

Assoc Dip Landscape

Member I.A.C.A Member No 28

A.I.H, I.S.A & S.M.A.

Qualified and Practicing Arborist/Horticulturist.

Since 1996

Assumptions

Care has been taken to obtain all information from reliable sources. All data has been verified as far as possible. However, Glenyss Laws – Consulting Arborist 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 that was examined and reflects the condition of the tree at the time of inspection: and
- The inspection was limited to visual examination of the subject tree without dissection, excavation, probing or coring. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the subject tree may not arise in the future.
- Tree removal is subject to Council Approval, the opinions expressed within this report may not necessarily reflect those of Council.

Accredited member of

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BIBLIOGRAPHY/REFERENCES

Barrell (1995). 'Pre-development Tree Assessments', in Trees and Building Sites, Proceedings of an International Conference held in the Interest of Development a Scientific Basis for Managing Trees in Proximity to Buildings. International Society of Arboriculture, Illinois, USA pp132-142.

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

Standards Australia (2007), AS4970-2009 Protection of trees on development sites.

APPENDIX A

Tree Survey Notes

Tree No	Tree Species	Age Class	DBH (mm)	DRB (mm)	Tree Height (M)	Crown Width (M)	Crown Condition	Crown Class	STARS	ULE	Root Zone/ Defects/ Services	Comments
1	<i>Eucalyptus punctata</i> (Grey Gum)	M	700	810	26	14	3	C	1	1B	Gr/-/-	Holds medium volumes of deadwood between 50 – 150mm in diameter which requires general maintenance pruning.
2	<i>Eucalyptus punctata</i> (Grey Gum)	M	490	590	26	12	3	C	1	2B	Gr/-/-	
3	<i>Eucalyptus punctata</i> (Grey Gum)	O	300	370	12	6	1	D	2	4A	Gr/-/-	In advanced decline, holds high volumes of deadwood between 50 – 200mm in diameter. Canopy density < 20%
4	<i>Cupressus species</i>	M	610	760	15	8	4	D	3	1B	Gr/-/-	Exempt under the provisions of Northern Beaches (Pittwater's) Tree Management Controls.
5	<i>Eucalyptus species</i>	M	Est 700	Est 780	28	16	4	C	1	1B	Gr/-/-	Tree on adjoining property
6	<i>Casuarina species</i> (She Oak)	M	Est 500	Est 580	17	10	4	C	1	1B	Gr/-/-	Tree on adjoining property
7	<i>Melaleuca quinquenervia</i> (Paperbark)	M	290 & 170	350	8	6	4	C	2	2B	Gr/-/-	
8	<i>Grevillea robusta</i> (Silky Oak)	M	Est 550	600	28	15	4	C	1	2A	Gr/-/-	Tree on adjoining property
9	<i>Melaleuca armillaris</i> (Bracelet Honey Myrtle)	M	130	180	8	6	3	C	2	2B	Gr/-/-	
10A	<i>Callistemon viminalis</i> (Bottle Brush)	M	60	110	8	4	3	C	3	3A	Gr/-/-	
10B	<i>Callistemon viminalis</i> (Bottle Brush)	M	110 & 100	180	8	4	3	C	3	3A	Gr/-/-	

Tree No	Tree Species	Age Class	DBH (mm)	DRB (mm)	Tree Height (M)	Crown Width (M)	Crown Condition	Crown Class	STARS	ULE	Root Zone/ Defects/ Services	Comments
11	<i>Glochidion ferdinandi</i> (Cheese Tree)	Y	50 & 110	-	7	3	4	C	3	5B	Ga/-/-	
12	<i>Leptospermum petersonii</i> (Lemon-scented Tea Tree)	O	50 & 50	-	5	3	3	C	3	5B	Ga/-/-	
13	<i>Backhousia citriodora</i> (Lemon Myrtle)	Y	90 & 50	180	6	3	4	C	3	5B	Ga/-/-	
14	<i>Glochidion ferdinandi</i> (Cheese Tree)	Y	60 & 110	-	6	2	4	C	3	5B	Ga/-/-	
15	<i>Melaleuca armillaris</i> (Bracelet Honey Myrtle)	Y	50, 60 & 70	-	5	4	4	C	3	5B	Ga, Gr/-/-	
16	<i>Acmena species</i>	O	Multi	-	8	6	3	C	3	4A	Ga/L,D/-	Specimen has been cut to ground level and since regenerated with growth arising from decaying stubs.
17	<i>Syzygium cultivar</i> (Lilly Pilly)	S	160 & 170	310	4	4	4	S	2	5A	Ga, Gr/-/-	
18	<i>Syzygium cultivar</i> (Lilly Pilly)	S	180	210	8	5	4	C	2	2B	Ga, Gr/-/-	
19	5 x <i>Nerium oleander</i> (Oleander)	M	-	-	< 4m	2 - 4	4	C	3	5A	Gr/-/-	Exempt under Northern Beaches (Pittwater's Tree Management Controls.

Trees in **Green** assessed with a high landscape value coupled with a medium to long ULE are allocated a high priority for retention.

Trees in **Blue** are assessed as less critical for retention, their retention should be a priority with removal considered if all design options have been exhausted & adversely affecting the proposal.

Trees in **Pink** are of low retention value, nor require special works or design modifications to be implemented.

Tree in **Orange** are considered hazardous, in irreversible decline or environmental weed species and recommended for removal irrespective of development.

APPENDIX B

Notes on tree inventory schedule.

Tree No:	Relates to number on site diagram.		
Species:	Coded to tree species schedule		
Age Class:	Y	Young- recently planted	
	S	Semi mature- <20% of life expectancy	
	M	Mature- 20-80% of life expectancy	
	O	Over mature- >80% of life expectancy	
Height:	In metres		
Crown Diameter:	In metres		
Crown Class:	D	Dominant	Crown extends above general canopy; not restricted by other trees.
	C	Co-dominant	Crown forms the bulk of the general Canopy but crowded by other trees.
	I	Intermediate	Crown extends into dominant/ codominant canopy but quite crowded on all sides.
	S	Suppressed	Crown development restricted from Overgrowing trees.
Crown Condition:	Overall vigour and vitality		
	0	Dead	
	1	Severe decline (<20% canopy density; major dead wood)	
	2	Declining (20-60% canopy density; twig and branch dieback)	
	3	Average/ low vigour (60-90% canopy density; twig dieback)	
	4	Good (90-100% canopy density; little or no dieback or other problems)	
	5	Excellent (100% canopy density; no deadwood or other problems)	
Root Zone:	C	Compaction	
	D	Damaged/wounded roots	
	E	Exposed roots	
	Ga	Tree in garden bed	
	Gi	Girdled roots	
	Gr	Grass	
	K	Kerb close to tree	
	L+	Raised soil level	
	L-	Lowered soil level	
	M	Mulched	
	Pa	Paving/concrete/bitumen	
	Pr	Roots pruned	
	O	Other	
Defects:	B	Borers	
	C	Cavity	
	D	Decay	
	F	Previous failures	
	I	Inclusions	
	L	Lopped	
	M	Mistletoe/parasites	
	S	Splits/Cracks	
	T	Termites	
	O	Other	

Services adjacent structures:	Bs	Bus stop
	Bu	Building within 3 metres
	Hvo	High voltage open wire construction
	Hvb	High voltage bundled (ABC)
	Lvo	Low voltage open wire construction
	Lvb	Low voltage bundled (ABC)
	Na	No services above
	Nb	No services below
	Si	Signage
	Sl	Street light
	T	Transmission lines
	U	Underground services
	O	Other

STARS: Significance of a Tree Assessment Rating System (copyright Institute of Australian Consulting Arborists 2010)

ULE: Useful Life Expectancy after Barrell 2001

APPENDIX C

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 6.0 Tree Retention Value - Priority Matrix.

		Significance				
		1. High	2. Medium	3. Low		
		Significance in Landscape	Significance in Landscape	Significance in Landscape	Environmental Pest / Noxious Weed Species	Hazardous / Irreversible Decline
Estimated Life Expectancy	1. Long >40 years					
	2. Medium 15-40 Years					
	3. Short <1-15 Years					
	Dead					

Legend for Matrix Assessment

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	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.

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 D
ULE RATING (UPDATED 1/4/01) BARRELL

1.Long ULE: Trees that appear to be retainable at the time of assessment for more than 40 years with an acceptable level of risk.	2.Medium ULE: Trees that appear to be retainable at the time of assessment for more than 15-40 years with an acceptable level of risk.	3.Short ULE: Trees that appear to be retainable at the time of assessment for more than 5-15 years with an acceptable level of risk.	4.Remove: Trees that should be removed within the next 5 years.	5.Small, young or regularly pruned: Trees that can be reliably moved or replaced.
(A) Structurally sound trees located in positions that can accommodate future growth	(A) Trees that may only live between 15 and 40 more years.	(A) Trees that may only live between 5 and 15 more years.	(A) Dead, dying, suppressed or declining trees because of disease or inhospitable conditions.	(A) Small trees less than 5 Metres in height.
(B) Trees that could be made suitable for retention in the long term by remedial tree care.	(B) Trees that could live for more than 40 years but may be removed for safety or nuisance reasons.	(B) Trees that could live for more than 15 years but may be removed for safety or nuisance reasons.	(B) Dangerous trees because of instability or recent loss of adjacent trees.	(B) Young trees less than 15 years old but over 5 metres in height.
(C) Trees of special significance for historical, commemorative or rarity reasons that would warrant extraordinary efforts to secure their long term retention.	(C) Trees that could live for more than 40 years but may be removed to prevent interference with more suitable individuals or to provide space for new planting.	(C) Trees that could live for more than 15 years but may be removed to prevent interference with more suitable individuals or to provide space for new planting.	(C) Dangerous trees because of structural defects including cavities, decay, included bark, wounds or poor form.	(C) Formal hedges and trees intended for regular pruning to artificially control growth.
	(D) Trees that could be made suitable for retention in the medium term by remedial tree care.	(D) Trees that require substantial remedial tree care and are only suitable for retention in the short term.	(D) Damaged trees that are clearly not safe to retain.	
			(E) Trees that could live for more than 5 years but may be removed to prevent interference with more suitable individuals or to provide space for new planting.	
			(F) Trees that are damaging or may cause damage to existing structures within 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.	

APPENDIX E PHOTOGRAPHS



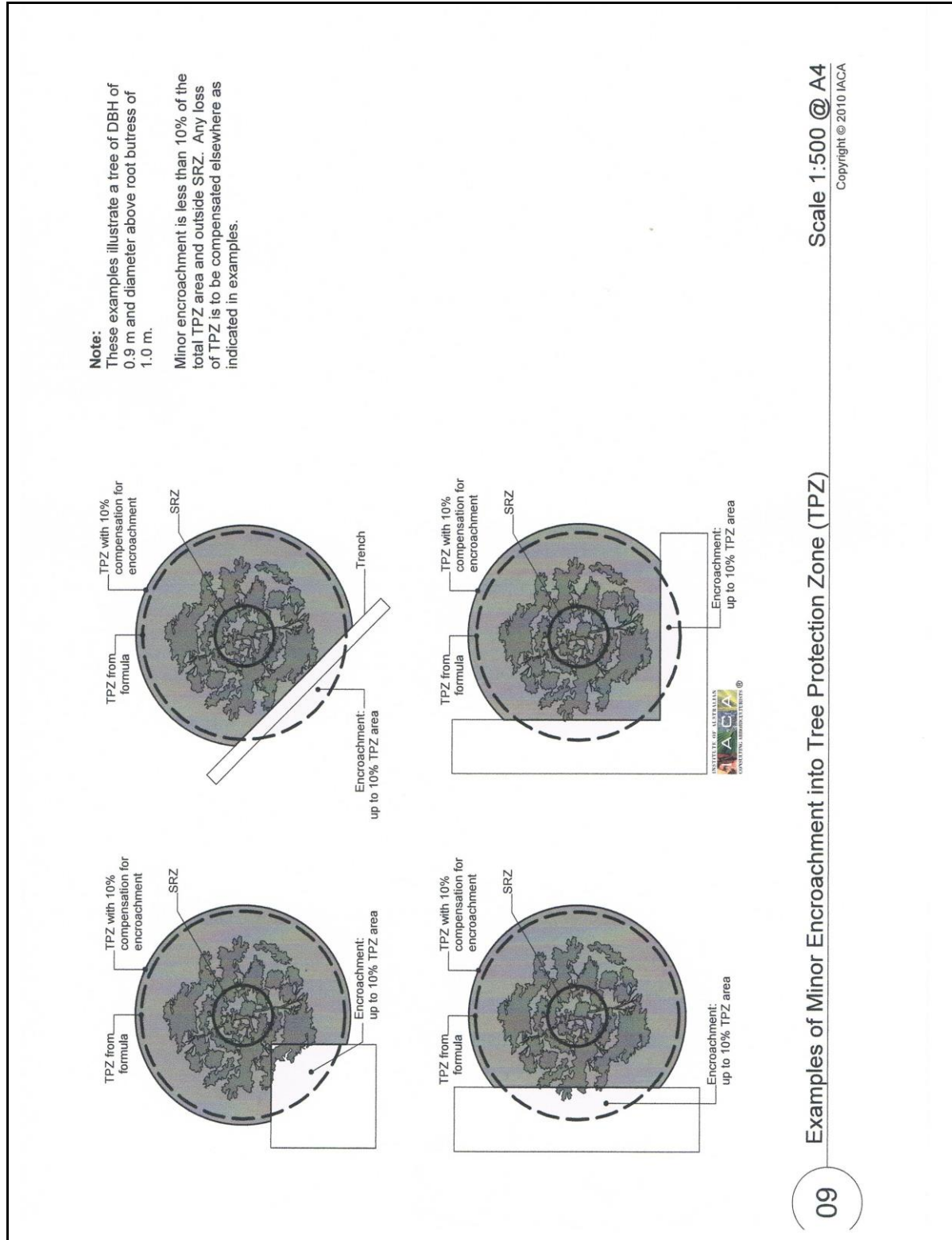
Figure 2. Trees 1, 2 & 5

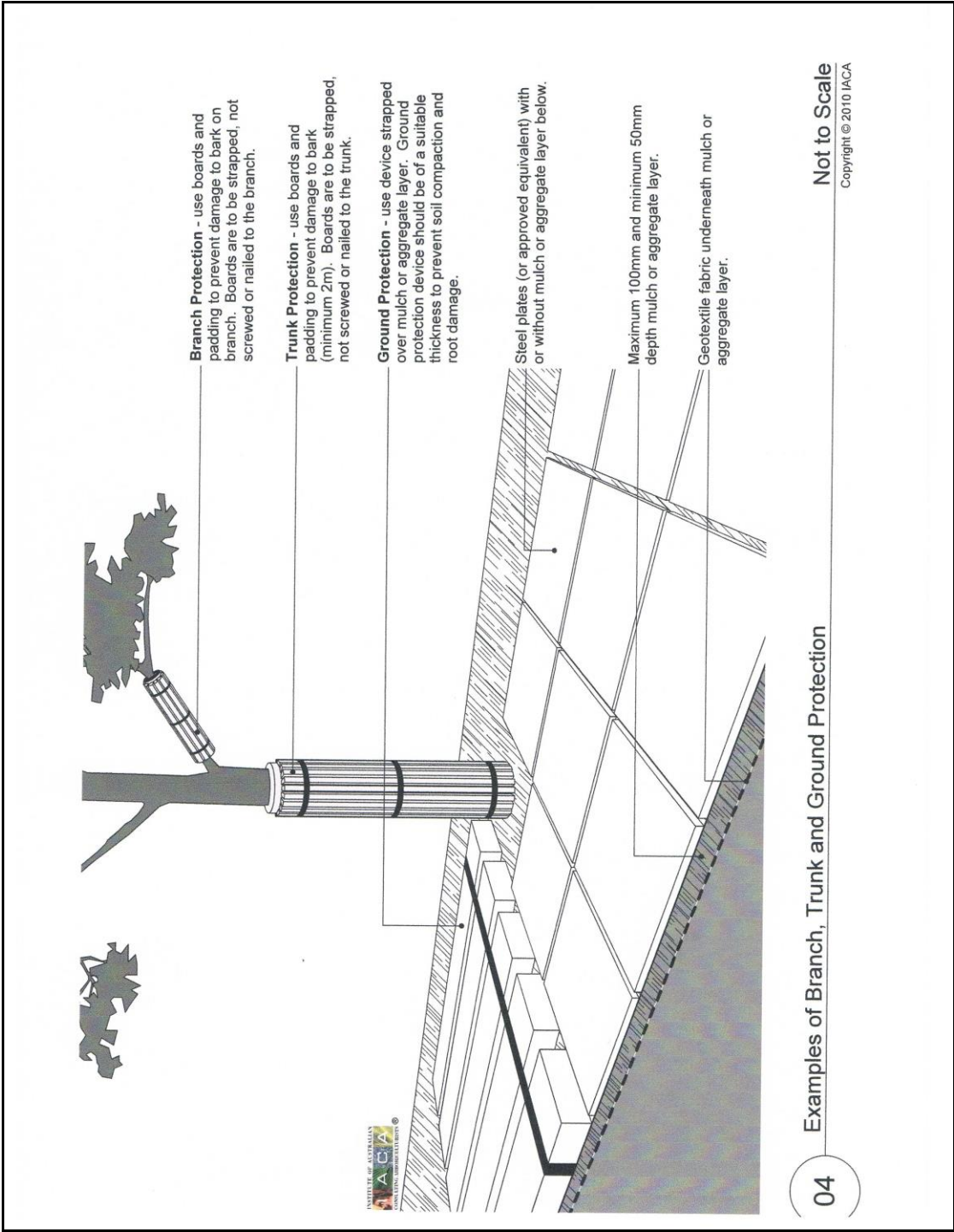


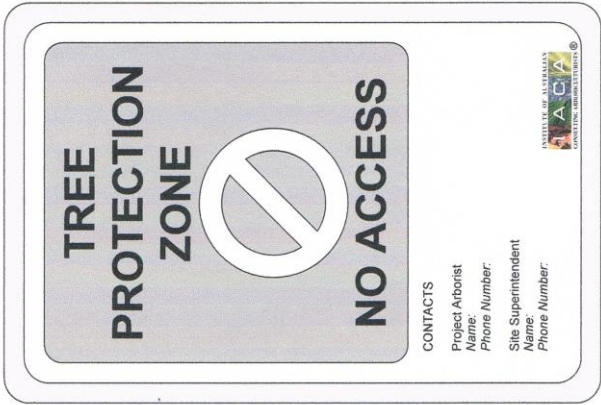
Figure 3. Tree 3 in advanced decline

APPENDIX F

Examples of Minor Encroachment into TPZ (IACA 2010) ©







Scale 1:5 @ A4
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Example of Tree Protection Zone (TPZ) Signage

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APPENDIX H
Survey, Site and Stormwater Plan

