Tree Management Strategies

Arboricultural Impact Assessment

1112-1116 Barrenjoey Road,
Palm Beach
20-12-21

Leigh Brennan
Tree Management Strategies

E leigh@treems.com.au
0447 356 059
leigh@treemanagementstrategies.com.au

Dip Horticulture
Dip Arboriculture
Cert IV Business Management

ABN 504 8330 4596

Arboriculture Australia Member
2018 Registered Consulting Arborist

Contents

Summary

Tree Management Strategies have been commissioned by Palmdev Pty Ltd to provide an Arboricultural Impact Assessment (AIA) at 1112-1116 Barrenjoey Road, Palm Beach (Figure 1) as part of a proposed Development Application (DA). The assessment takes into consideration a total of 24 trees on the subject site and neighboring properties.

This report aims to:

- Assess the Health, Condition and Retention Value of twenty-four trees on the subject site.
- Calculate the impact the proposed development will have on all trees assessed.
- Suggest sensitive construction methods to retain high to medium value trees on the subject site.
- Recommend the retention or removal of trees on the subject site.

The Health, Condition, Retention values and photographs of twenty-four trees are recorded in the Tree Data Schedule (Appendix 1) and shown in the Tree Impact Plan (Appendix 2).
The developmental Impacts are explored in Developmental Impact and Observations (Section 2) of this report.

Conclusion

The site is highly disturbed with a mixture of native, exotic and weed species that provide a minor contribution or have a negative impact on the visual character and amenity of the local area.
Tree 1 has a minor incursion to its TPZ of 2.5 %. No negative impact is expected by this minor impact.
Trees 13, 14, 15, 16, 17, 18 and 19 are suitable for removal without consent under the Northern Beaches Councils Exempt Tree Species list and have total incursions to their TPZ's that requires their removal.
Tree 7 within the subject site is given a low retention value and has a total incursion to its TPZ's by the proposed boundary retaining wall alignment that requires its removal.
Tree 9, 10, 11 and 20 within the subject site are given a low retention value and have a total incursion to their TPZ's by the proposed basement alignment that requires their removal.
Trees 2, 3, 4, 5, 6, 8, 12, 21, 22, 23 and 24 are unaffected by the development.
Tree 12 is unaffected by the proposed development, however, will require a Tree Protection Plan following the developments approval. The conditions of consent should ensure a Tree Protection Plan is prepared. The Tree Protection Plan should outline the protection measures required to safeguard Tree 12 throughout construction.

Recommendation

1. Remove Tree 7, 9, 10, 11, 13, 14, 15, 16, 17, 18, 19 and 20. Tree removal work to be undertaken in accordance with *AS 4373 Pruning of Amenity Trees*, using a qualified Arborist (minimum Australian Qualification Framework (AQF3) Level Arborist).

2. Retain Tree 1, 2, 3, 4, 5, 6, 8, 12, 21, 22, 23 and 24.

3. A Tree Protection Plan should be conditioned following the development approval that outlines the protection measures required to safeguard Tree 12.

1. Introduction

Tree Management Strategies have been commissioned by Palmdev Pty Ltd to provide an Arboricultural Impact Assessment (AIA) at 1112-1118 Barrenjoey Road, Palm Beach (Figure 1) as part of a proposed Development Application (DA). The assessment takes into consideration a total of 24 trees on the subject site and neighboring properties.

The proposed development consists of the demolition of existing dwellings and construction of a shop top housing development consisting of seven apartments and two ground floor retail shops.

Northern Beaches Council are the consenting authority for the development.

1.1 Aim

This report aims to:

- Assess the Health, Condition and Retention Value of twenty-four trees on the subject site.
- Calculate the impact the proposed development will have on all trees assessed.
- Suggest sensitive construction methods to retain high to medium value trees on the subject site.
- Recommend the retention or removal of trees on the subject site.

Figure 1: Subject Site

Figure 1: Locality map of the subject site, highlighted in red.

2. Developmental Impacts/Observations

2.1 General observations

A site inspection was conducted on the 1st of July 2021, to assess the health and condition of twenty-four trees potentially affected by the proposed development. The trees are plotted onto the Tree Impact Plan (Appendix 2).

The subject trees are a mixture of native and exotic species of varying age, health and vitality. The majority of trees are given a low retention value due their position in the landscape, species or poor health and vitality.

The area to the southeast of the site is overgrown with the majority of species being noxious weeds including privet and Rhizomatous bamboo, refer to (Figure 2).

Figure 2: Weed Species

Figure 2: Southeast view of the subject site and weed species highlighted in red.

2.2 Developmental Impacts

The Health, Condition, Retention Value, General data and photographs of twenty-four trees is displayed in the Tree Data Schedule (Appendix 1).

All tree retention values are in accordance with IACA Significance of a Tree, Assessment Rating System (STARS) © (IACA 2010) ©.

The tree impacts detailed below are based on the plans referenced in (Section 3) of this document.

The below ground incursions impacting the Tree Preservation Zones (TPZ) of the subject trees assessed are shown on the Tree Impact Plan (Appendix 2).

Tree 1 located in the neighbouring site is given a medium retention value. The current boundary retaining wall and shop location creates a root barrier and unhospitable growing environment for tree roots, for this reason the TPZ of Tree 1 is shown as modified and is deemed unaffected by the developments footprint, refer to the Tree Impact Plan (Appendix 2). The proposed stormwater line impacts the theoretical TPZ of Tree 1 by a minor 2.5 %. The quantity of roots growing under the concrete footpath is also considered to be reduced. No negative impact is expected by this minor impact.

Trees 13, 14, 15, 16, 17, 18 and 19 are suitable for removal without consent under the Northern Beaches Councils Exempt Tree Species list and have total incursions to their TPZ's that requires their removal, refer to the Tree Impact Plan (Appendix 2).

Tree 7 within the subject site is given a low retention value and has a total incursion to its TPZ's by the proposed boundary retaining wall alignment that requires its removal, refer to the Tree Impact Plan (Appendix 2).

Tree 9, 10, 11 and 20 within the subject site are given a low retention value and have a total incursion to their TPZ's by the proposed basement alignment that requires their removal, refer to the Tree Impact Plan (Appendix 2).

Trees 2, 3, 4, 5, 6, 8, 12, 21, 22, 23 and 24 are unaffected by the development.

Tree 12 is unaffected by the proposed development, however, will require a Tree Protection Plan following the developments approval. The conditions of consent should ensure a Tree Protection Plan is prepared. The Tree Protection Plan should outline the protection measures required to safeguard Tree 12 throughout construction.

3. Referenced Documents

Plans that were used in the calculation and mapping of tree impacts for this report include:

Plan Title	Drawing Number	Consultant	Revision	Job/Project Number
Architectural Plans	DA000-DA500	Koichi Takada Architects	16-12-21	
Survey	1 of 5	BW Surveyors	7-6-21	2101343
Site Drainage Plan	Sheet 1	Taylor Consulting	10-12-21	
Tree Impact Plan		IEMA	14-9-78	

4. Conclusions & Recommendations

4.1 Conclusion

The site is highly disturbed with a mixture of native, exotic and weed species that provide a minor contribution or have a negative impact on the visual character and amenity of the local area.

Tree 1 has a minor incursion to its TPZ of 2.5 %. No negative impact is expected by this minor impact.

Trees 13, 14, 15, 16, 17, 18 and 19 are suitable for removal without consent under the Northern Beaches Councils Exempt Tree Species list and have total incursions to their TPZ's that requires their removal.

Tree 7 within the subject site is given a low retention value and has a total incursion to its TPZ's by the proposed boundary retaining wall alignment that requires its removal.

Tree 9, 10, 11 and 20 within the subject site are given a low retention value and have a total incursion to their TPZ's by the proposed basement alignment that requires their removal.

Trees 2, 3, 4, 5, 6, 8, 12, 21, 22, 23 and 24 are unaffected by the development.

Tree 12 is unaffected by the proposed development, however, will require a Tree Protection Plan following the developments approval. The conditions of consent should ensure a Tree Protection Plan is prepared. The Tree Protection Plan should outline the protection measures required to safeguard Tree 12 throughout construction.

4.2 Recommendations

1. Remove Tree 7, 9, 10, 11, 13, 14, 15, 16, 17, 18, 19 and 20. Tree removal work to be undertaken in accordance with *AS 4373 Pruning of Amenity Trees*, using a qualified Arborist (minimum Australian Qualification Framework (AQF3) Level Arborist).

2. Retain Tree 1, 2, 3, 4, 5, 6, 8, 12, 21, 22, 23 and 24.

3. A Tree Protection Plan should be conditioned following the developments approval that outlines the protection measures required to safeguard Tree 12.

5. References

Shigo, A., 1986, A New Tree Biology and Dictionary: facts, photos, and philosophies on trees and their problems and proper care, Snohomish, WA

Council of Standards Australia (August 2009)
The Australian Standard for the Protection of Trees on Development Sites (AS 4970 – 2009).

Harris, R., Clark, J., Matheny, N., 2003, Integrated Management of Landscape Trees, Shrubs, and Vines, fourth edition, Prentice Hall, Australia

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

Lonsdale, D. (1999). *Principles of Tree Hazard Assessment and Management*. Forestry Commission, London.

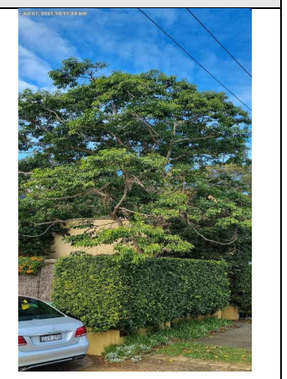
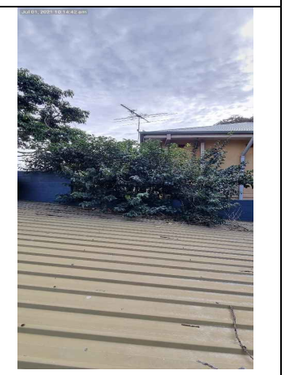
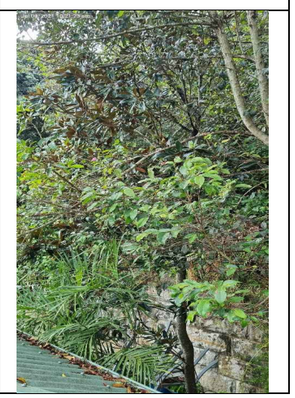
Mattheck, C and Breloer, H (1994) *The Body Language of Trees*. Research for Amenity Trees No.4, The Stationery Office, London.

6. Appendices

Appendix 1: Tree Data Schedule

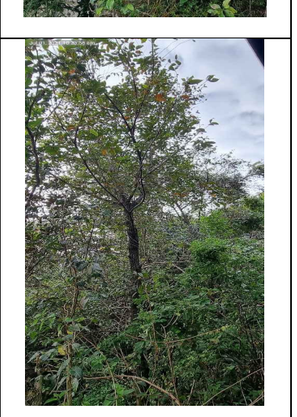
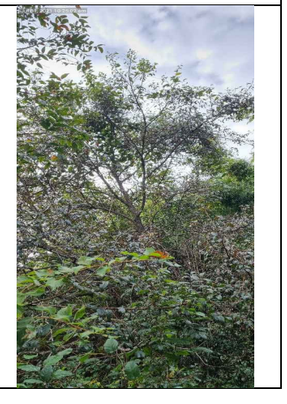
Tree Management Strategies

APPENDIX 1 – TREE DATA SCHEDULE

No	Genus-species	Common Name	DAB metres (radius) Above Buttress	DBH metres (radius) Breast Ht	SRZ (radius) Metres	TPZ (radius) Metres	Height Metres	Age Young, Semi-Mature, Mature Over Mature	Canopy Spread (Metres) (radius)	Health Good Fair Fair/Poor Poor Failed	Condition Good Fair Fair/Poor Poor Failed	Useful Life Expectancy High Medium Low	Landscape significance High Medium Low	Retention value High Medium Low	Notes	Photo
1	Melicope elleryana	Pink Flowered Doughwood	0.50	0.40	2.5	4.80	14.00	Mature	5.00	Fair	Fair/Poor	Medium	Medium	Medium	Neighbouring Tree	
2	Ficus pumila	Climbing Fig	0.20	0.15	1.7	1.80	6.00	Mature	2.00	Fair/Poor	Fair/Poor	Low	Low	Low	Neighbouring Climbing Vine	
3	Magnolia ‘Little Gem’	Little Gem Magnolia	0.12	0.09	1.5	1.5	5.00	Young	1.00	Fair/Poor	Fair/Poor	Medium	Low	Low	Neighbouring Tree	

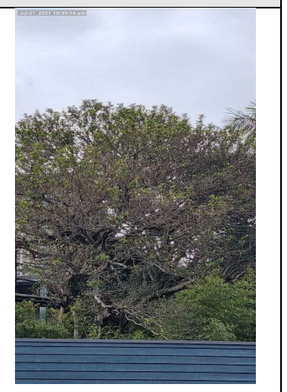
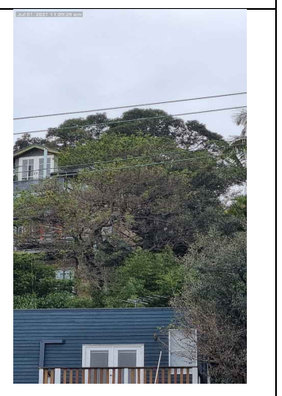
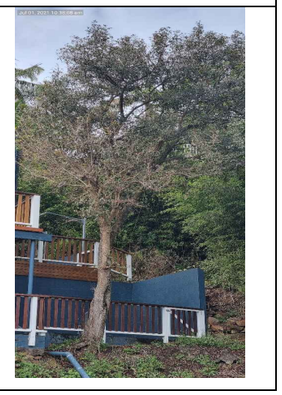
Tree Management Strategies

APPENDIX 1 – TREE DATA SCHEDULE

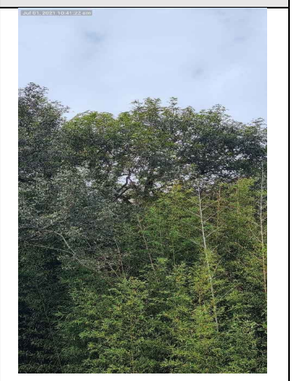
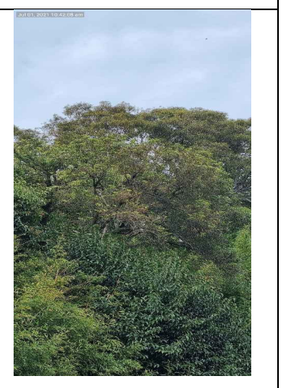
No	Genus-species	Common Name	DAB metres (radius) Above Buttress	DBH metres (radius) Breast Ht	SRZ (radius) Metres	TPZ (radius) Metres	Height Metres	Age Young, Semi-Mature, Mature Over Mature	Canopy Spread (Metres) (radius)	Health Good Fair Fair/Poor Poor Failed	Condition Good Fair Fair/Poor Poor Failed	Useful Life Expectancy High Medium Low	Landscape significance High Medium Low	Retention value High Medium Low	Notes	Photo
4	Glochidion ferdinandii	Cheese Tree	0.12	0.09	1.4	1.5	5.00	Semi Mature	1.00	Poor	Poor	Low	Low	Low	Neighbouring Tree	
5	Glochidion ferdinandii	Cheese Tree	0.12	0.10	1.4	1.5	7.00	Semi Mature	1.00	Fair/Poor	Fair/Poor	Low	Low	Low	Neighbouring Tree	
6	Glochidion ferdinandii	Cheese Tree	0.22	0.18	1.8	2.2	7.00	Semi Mature	2.00	Fair/Poor	Fair/Poor	Medium	Low	Low	Neighbouring Tree	

Tree Management Strategies

APPENDIX 1 – TREE DATA SCHEDULE

No	Genus-species	Common Name	DAB metres (radius) Above Buttress	DBH metres (radius) Breast Ht	SRZ (radius) Metres	TPZ (radius) Metres	Height Metres	Age Young, Semi-Mature, Mature Over Mature	Canopy Spread (Metres) (radius)	Health Good Fair Fair/Poor Poor Failed	Condition Good Fair Fair/Poor Poor Failed	Useful Life Expectancy High Medium Low	Landscape significance High Medium Low	Retention value High Medium Low	Notes	Photo
7	Glochidion ferdinandii	Cheese Tree	0.20	0.15	1.7	1.80	6.00	Semi Mature	2.00	**Poor**	Poor	Low	Low	Low		
8	Glochidion ferdinandii	Cheese Tree	0.25	0.20	1.8	2.40	8.00	Mature	3.00	Fair/Poor	Fair/Poor	Medium	Low	Low	Neighbouring Tree	
9	Glochidion ferdinandii	Cheese Tree	0.25	0.20	1.8	2.40	8.00	Mature	2.00	Fair/Poor	Poor	Low	Low	Low		

APPENDIX 1 – TREE DATA SCHEDULE

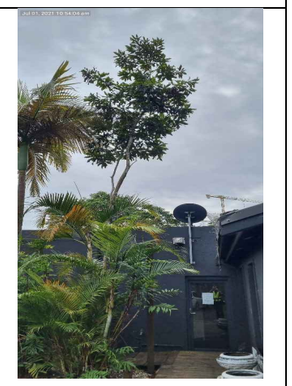
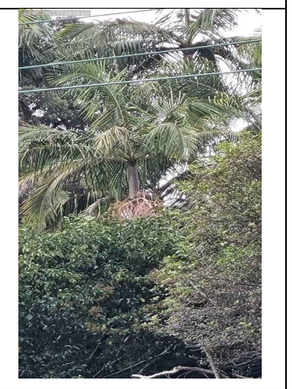
No	Genus-species	Common Name	DAB metres (radius) Above Buttress	DBH metres (radius) Breast Ht	SRZ (radius) Metres	TPZ (radius) Metres	Height Metres	Age Young, Semi-Mature, Mature Over Mature	Canopy Spread (Metres) (radius)	Health Good Fair Fair/Poor Poor Failed	Condition Good Fair Fair/Poor Poor Failed	Useful Life Expectancy High Medium Low	Landscape significance High Medium Low	Retention value High Medium Low	Notes	Photo
10	Glochidion ferdinandii	Cheese Tree	0.20	0.18	1.6	2.1	7.00	Mature	2.00	Fair/Poor	Poor	Medium	Low	Low		
11	Glochidion ferdinandii	Cheese Tree	0.25	0.20	1.8	2.40	8.00	Mature	3.00	Fair/Poor	Fair/Poor	Poor	Low	Low		
12	Cupaniopsis anacardiodes	Tuckaroo	0.38	0.30	2.20	3.60	9.00	Mature	4.00	Fair	Fair/Poor	Medium	Medium	Medium		

APPENDIX 1 – TREE DATA SCHEDULE

No	Genus-species	Common Name	DAB metres (radius) Above Buttress	DBH metres (radius) Breast Ht	SRZ (radius) Metres	TPZ (radius) Metres	Height Metres	Age Young, Semi-Mature, Mature Over Mature	Canopy Spread (Metres) (radius)	Health Good Fair Fair/Poor Poor Failed	Condition Good Fair Fair/Poor Poor Failed	Useful Life Expectancy High Medium Low	Landscape significance High Medium Low	Retention value High Medium Low	Notes	Photo
Tree 13, 14 and 15	Archontopheonix cunninghamiana	Bangalow Palm				1.5	10.00	Mature	2.00	Fair/Poor	Fair/Poor	Medium	Low	Low	Tree 13 to 15 are grouped together. Exempt Species	
16	Washingtonia robusta	Mexican fan palm				1.5	14.00	Mature	2.00	Fair/Poor	Fair/Poor	Medium	Medium	Medium	Exempt Species	
17	Washingtonia robusta	Mexican fan palm				1.5	14.00	Mature	2.00	Fair/Poor	Fair/Poor	Medium	Medium	Medium	Exempt Species	

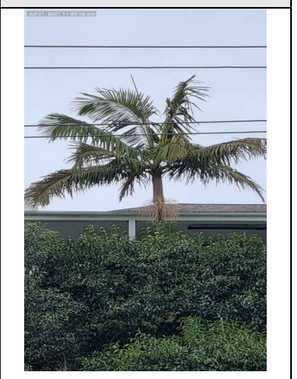
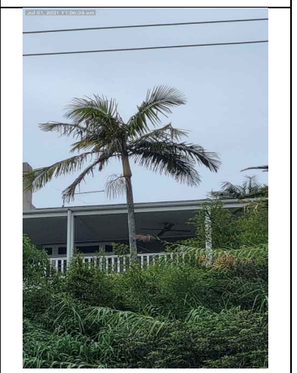
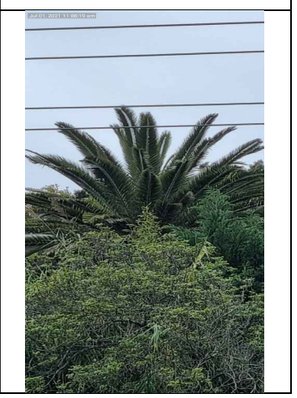
Tree Management Strategies

APPENDIX 1 – TREE DATA SCHEDULE

No	Genus-species	Common Name	DAB metres (radius) Above Buttress	DBH metres (radius) Breast Ht	SRZ (radius) Metres	TPZ (radius) Metres	Height Metres	Age Young, Semi-Mature, Mature Over Mature	Canopy Spread (Metres) (radius)	Health Good Fair Fair/Poor Poor Failed	Condition Good Fair Fair/Poor Poor Failed	Useful Life Expectancy High Medium Low	Landscape significance High Medium Low	Retention value High Medium Low	Notes	Photo
Tree 18 and 19	Archontopheonix cunninghamiana	Bangalow Palm				1.5	6.00	Semi Mature	1.00	Fair/Poor	Fair/Poor	Medium	Low	Low	Exempt Species	
20	Xanthostemon chrysanthus	Golden penda Tree			1.5	1.5	8.00	Semi Mature	1.00	Poor	Poor	Low	Low	Low		
21	Archontopheonix cunninghamiana	Bangalow Palm				1.5	6.00	Semi Mature	1.00	Fair	Fair	Medium	Low	Low	Exempt Species	

Tree Management Strategies

APPENDIX 1 – TREE DATA SCHEDULE

No	Genus-species	Common Name	DAB metres (radius) Above Buttress	DBH metres (radius) Breast Ht	SRZ (radius) Metres	TPZ (radius) Metres	Height Metres	Age Young, Semi-Mature, Mature Over Mature	Canopy Spread (Metres) (radius)	Health Good Fair Fair/Poor Poor Failed	Condition Good Fair Fair/Poor Poor Failed	Useful Life Expectancy High Medium Low	Landscape significance High Medium Low	Retention value High Medium Low	Notes	Photo
22	Archontopheonix cunninghamiana	Bangalow Palm				1.5	8.00	Mature	2.00	Fair	Fair	Medium	Low	Low	Neighbouring Tree	
23	Archontopheonix cunninghamiana	Bangalow Palm				1.5	10.00	Young	2.00	Fair	Fair	Medium	Low	Low	Neighbouring Tree	
24	Phoenix cunninghamiana	Date Palm				1.5	8.00	Mature	3.00	Fair	Fair	Medium	Low	Low	Neighbouring Tree	

Appendix 2: Tree Impact Plan

Lot 1
DP12979

Lot 10
DP14538

Lot 9
DP14538

Lot 2
DP12979

Lot 8
DP14538

Lot 7
DP14538

Lot 71
DP620515

Retaining wall to boundary line

Lot 3
DP12979

Lot 12
DP14538

Lot 4
DP12979

Lot 21
DP571298

Lot 5
DP12979

Lot 72
DP620515

Lot 7B
DP13374

Lot 103
DP1256016

Lot 102
DP1256016

Lot 2
DP1004105

Lot 101
DP1256016

Lot 8B
DP13374

LEGEND

- Site Boundary

Retention Value

- Low - 20 Trees
- Medium - 4 Trees
- Exempt Species
- TPZ - Tree Protection Zone

Proposed Development Incursions

- Proposed Basement Disturbance
- Overall Development Footprint
- Total Impact
- Stormwater Pit Incursion = 2.5%
- Stormwater Impact

0 2 4 6 8 m
Scale: 1:300

Sheet Size : A3

INTEGRATED ENVIRONMENTAL MANAGEMENT AUSTRALIA
www.iema.com.au

Removal Schedule	Tree No.s
Building Footprint:	7, 9, 10, 11, 13, 14, 15, 16, 17, 18, 19, 20

GDA 1994 MGA Zone 56
2/12/2021

Tree Management Strategies

1112-1116 Barrenjoey Road, Palm Beach

Tree Impact Plan
Design 3

APPENDIX 2

I:\01 Clients_GIS\TMS - Tree Management Services\TMS00-010_1112_1116 Barrenjoey Rd, PalmBeach\TMS00_010_PalmBeach_TreeImpactPlan_04.mxd

Appendix 3: Method

3.1 Site Assessment

From the ground, the following information was recorded and displayed in the Tree Data Schedule (Appendix 1).

- Tree genus and species.
- Approximate height spread if deemed applicable.
- Trunk diameter at breast height and above the buttress.
- Age class: young, semi mature, mature, over mature.
- Health.
- Condition.

Observations were recorded and trees photographed.

3.2 Research

The following legislation, documents or websites were reviewed:

- Northern Beaches Local Environmental Plan (LEP) 2011.
- Northern Beaches Development Control Plan (DCP) 2011.

3.3 Tree Data Schedule Method

The Health and Condition of twenty-four trees are shown in the Tree Data Schedule (Appendix 1) with the methods explained below:

Tree Health

Overall Health (Vigour/Vitality)	Tree vigour is exhibited by crown density, crown cover, leaf colour, leaf size, leaf texture, presence of epicormic growth, ability to withstand predation by pest and disease, resistance and degree of dieback.
Good (Excellent)	Good tree vigour exhibited by no decline in overall health and vigour, height and shape. The specimen is observed to be of excellent condition displaying characteristics that is known for that particular species (what would be the expected condition for that particular species of that age in that location), 0% dieback, full crown density, leaf health, no pest or disease present.
Fair	Fair tree vigour exhibited by moderate decline in overall health and vigour, height and shape. The specimen is observed to be of moderate condition by not displaying characteristics adequately that is known for that particular species (what would be expected for that particular species of that age in that location), less than 10% dieback, 90% of crown foliage density, more than 90% leaf health, acceptable level of pest or disease is evident for the assessing arborist (where it is considered the tree's overall health or condition will not be affected or lead to irreversible decline from pest or disease).
Fair/Poor	Fair to poor tree vigour exhibited by considerable decline in overall health and vigour, height and shape. The specimen is observed to be of less than acceptable condition by not displaying characteristics adequately that is known for that particular species (what would be expected for that particular species of that age in that location), 10-20% dieback, considerable foliage deficiencies, 70-90% foliage density, 70-90% leaf health, pest or disease infestation at acceptable thresholds for the assessing arborist (where it is considered the tree's overall health or condition will not be affected or lead to irreversible decline from pest or disease).
Poor	Poor vigour exhibited by substantial decline in overall health and vigour, height and shape. The specimen is observed to be of poor condition by not displaying characteristics adequately that is known for that particular species (what would be expected for that particular species of that age in that location), 20-30% dieback, considerable foliage deficiencies, 50-70% leaf health, pest or disease infestation at unacceptable infestation level that exceeds thresholds for the assessing arborist (where

	it is considered the tree's overall health or condition will be affected or lead to irreversible decline from pest or disease).
Very Poor	Very poor vigour exhibited by irreversible decline in overall health and vigour, height and shape. The specimen is observed to be of less than acceptable condition by not displaying characteristics adequately that is known for that particular species (what would be expected for that particular species of that age in that location), 15-50% dieback; severe foliage deficiencies; 30-50% density; 30-50% leaf health; pest or disease infestation at severe infestation level that exceeds thresholds for the assessing arborist (where it is considered the tree's overall health or condition will be affected or lead to irreversible decline from pest or disease).
Dead	Dead tree vigour exhibited by complete decline in overall health and vigour, height and shape. The specimen is observed to be dead by not displaying any characteristics adequately that is known for that particular species (what would be expected for that particular species of that age in that location), tree holds less than 15% foliage; branching is dead throughout canopy, pest or disease infestation at severe infestation level that exceeds thresholds for the assessing arborist (where it is considered the tree's overall health or condition will be affected or lead to irreversible decline from pest or disease).

Tree Condition

Overall Condition (Structure/Stability)	The tree condition as identified by the arborist in regard to defects in structure and stability.
Good (Exceptional specimen)	No damage or decay observed to the root plate, visible basal and /or root flare, stable in ground, well tapered branches with sound open unions. All characteristics within thresholds for the assessing arborist.
Fair (Standard tree – no observable major defects to suggest that there is an increased likelihood of tree or part of tree failure)	Minor damage or decay observed to root plate, trunk or primary branches or branch unions (1st or 2nd branch order or scaffolding branch), well-formed branch unions, minor branch end weight or over-extensions within thresholds for the assessing arborist.
Fair/Poor	Moderate damage or decay observed to root plate, trunk or primary branches or branch unions (1st or 2nd branch order or scaffolding branch); minimal basal/root flare; acute branch; past branch failure(s); moderate branch end-weight or over-extension approaching thresholds for the assessing arborist.
Poor	Major damage or decay observed to root plate, trunk or primary branches or branch unions (1st or 2nd branch order or scaffolding branch) no observable basal and /or root flare; acute branch unions starting to include bark; major branch end-weight or over-extension at or exceeds thresholds for the assessing arborist.
Very Poor	Excessive damage or decay observed to root plate, trunk, primary branch or branch unions (1st or 2nd branch order or scaffolding branch), excessive decay or hollows compromising the structural integrity, unstable in ground, excessive branch end-weight, included-bark unions, exceeding thresholds for assessing arborist. Failure probable.
Failed	Failure of root plate or trunk or primary branch or branch unions (1st or 2nd branch order or scaffolding branch) or active split between branch unions or severe damage to primary tree structure.

3.4 Tree Retention Value Method

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.

Tree Significance - Assessment Criteria

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 a council's 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 to 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.

Low Significance in landscape

- The tree is in fair to 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 and or 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 mono-cultural stand in entirety.

Useful Life Expectancy (ULE)

Useful life expectancy (ULE) is a measure of a trees remaining lifespan regarding its health, condition and locality ULE categories were measured as:

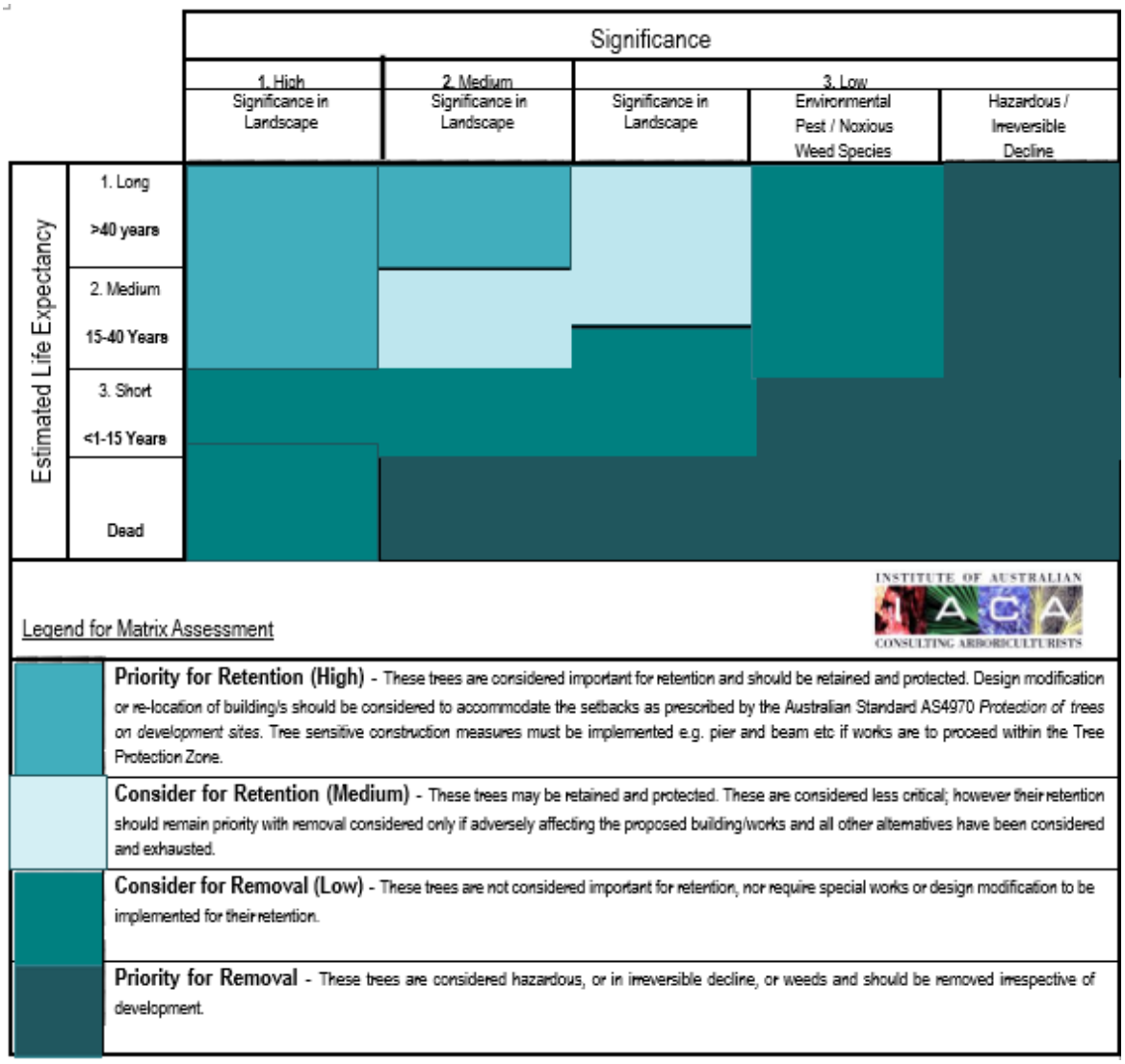
a) Long (greater than 40 years)

b) Medium (between 15 and 40 years)

c) Short (between 1 and 15 years)

d) Dead

Tree Retention Value - Priority Matrix



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 Arboriculturist (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

3.5 Tree Protection Zone and Structural Root Zone Method

Following the VTA, The Tree Preservation Zones and Structural Root zones were calculated and added to the Tree Data Schedule (Appendix 1) and the Tree Impact Plan (Appendix 2) with the methods explained below:

The Structural Root Zone (SRZ) is the area around the base of a tree required for its stability. The woody root growth and soil cohesion in this area are necessary to hold the tree upright; therefore, there are no variations to its size. The SRZ is normally circular with the trunk at its centre and is expressed by its radius in metres (AS – 4970). Due to the potential of causing instability of a tree, it is highly recommended that no roots within its SRZ are pruned or removed. SRZ, which is the area required for tree stability, was calculated as follows: SRZ radius = (D x 50) 0.42 x 0.64.

The Tree Protection Zone (TPZ) is the principle means of protecting trees on development sites. The TPZ is a combination of the root area and crown area that requires protection. It is an area isolated from construction disturbance, so that the tree remains viable (AS – 4970). The radius of the TPZ is calculated for each tree by multiplying its DBH x 12. TPZ = DBH x 12 (DBH = trunk diameter measured at 1.4m above ground level). The radius of the TPZ is measured from COT (Centre of the trunk).

Variations to the Tree Protection Zone (TPZ)

General

It may be possible to encroach into or make variations to the standard TPZ. Encroachment Includes excavation, compacted fill and machine trenching.

Minor encroachment

If the proposed encroachment is less than 10% of the area of the TPZ and is outside the SRZ, detailed root investigations should not be required. The area lost to this encroachment should be compensated for elsewhere and contiguous with the TPZ. Variations must be made by the project arborist considering relevant factors. (Figure 3) demonstrates some examples of possible encroachment into the TPZ up to 10% of the area.

Major encroachment

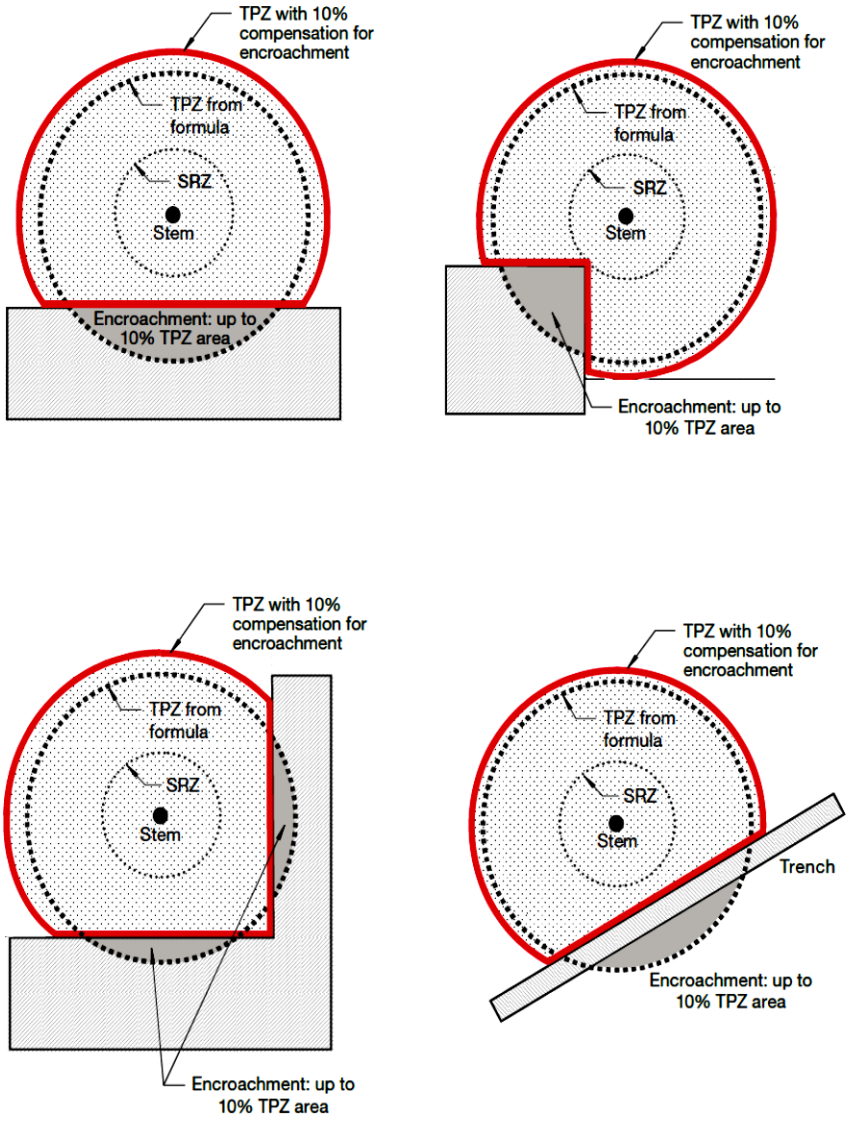
If the proposed encroachment is greater than 10% of the TPZ or inside the SRZ the project arborist must demonstrate that the tree(s) would remain viable. The area lost to this encroachment should be compensated for elsewhere and contiguous with the TPZ. This may require root investigation by non-destructive methods and consideration of relevant factors listed in the Clause.

Figure 3

ENCROACHMENT INTO TREE PROTECTION ZONE

(Informative)

Encroachment into the tree protection zone (TPZ) is sometimes unavoidable. Figure D1 provides examples of TPZ encroachment by area, to assist in reducing the impact of such incursions.



NOTE: Less than 10% TPZ area and outside SRZ. Any loss of TPZ compensated for elsewhere.