Tree Management Strategies

Arboricultural Impact Assessment

16 MACPHERSON STREET,
WARRIEWOOD
4-5-23

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Contents

Summary

Tree Management Strategies have been commissioned by Warrimac Pty Ltd to provide an Arboricultural Impact Assessment for four groups of trees and thirty-nine individual trees as part of a proposed development at 16 Macpherson Street, Warriewood, refer to (Figure 1).

In February 2022 a Tree assessment of four groups of trees and thirty-nine individual trees was undertaken at 16 Macpherson Street, Warriewood. The data recorded is shown in the Tree Data Schedule (Appendix 1) and on the Tree Impact Plan (Appendix 2).

The Tree Impact Plan (Appendix 2) highlights the Tree Preservation Zone (TPZ) incursions of all trees and groups assessed within the subject site and neighbouring properties.

The developmental Impacts are explored in Developmental Impact and Observations (Section 2) of this report.

Conclusion

The proposed bulk earthworks plan requires the removal of 38 individual trees.

The proposed bulk earthworks plan requires the removal of Group 1, 2, 3 and 4 trees.

Tree 39 is unaffected by the development.

Recommendations

Remove 38 individual trees and Group 1, 2, 3 and 4 trees. 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).

Retain Tree 39.

1. Introduction

Tree Management Strategies have been commissioned by Warrimac Pty Ltd to provide an Arboricultural Impact Assessment for four groups of trees and thirty-nine individual trees as part of a proposed development at 16 Macpherson Street, Warriewood, refer to (Figure 1).

Northern Beaches Council is the consenting authority for tree removals.

Figure 1: Subject Site Highlighted in Red

1.1 Project

The proposed development involves the demolition of existing structures, the raising of ground level to meet Flood Planning Level (FPL) and the construction of twenty-eight townhouses.

1.2 Aim

This report aims to:

- Assess the Health, Condition and Retention value of four group of trees and 39 individual trees on the subject site and neighbouring properties.
- Calculate the impact the proposed development will have on all trees assessed.
- Recommend the retention or removal of trees on the subject site.

2. Observations

2.1 General

In February 2022 a Tree assessment of four groups of trees and thirty-nine individual trees was undertaken at 16 Macpherson Street, Warriewood. The data recorded is shown in the Tree Data Schedule (Appendix 1) and on the Tree Impact Plan (Appendix 2).

Northern Beaches Council gives permission to remove trees under 5 metres in height. Trees that fall under this regulation were not assessed as part of this report and may be removed without permission. A collection of palms trees classified as exempt species under the Northern Beaches Council were also not assessed and may be removed without permission. All other accessible trees were tagged and numbered.

Due to the large quantity of tree species in four areas of the site, the decision to (Group) together these areas was made, refer to the Tree Impact Plan (Appendix 2). The remaining 39 trees were individually assessed, their Health, Condition, Retention Value and General data are displayed in the Tree Data Schedule (Appendix 1) and shown on the Tree Impact Plan (Appendix 2). (Figure 2) gives and indicative photo of trees within the site.

Figure 2: Site Depiction

2.2 Grouped Trees

Group 1

The Group 1 tree species shown in (Table 1) and (Figure 3) are a mixture of native species of varying health and condition. The trees within Group 1 are given a medium retention value due to their health, condition, longevity and position in the landscape, refer to the Tree Impact Plan (Appendix 2). The Group 1 trees are located within the subject property's boundary. All trees within Group 1 are recommended for removal due to the impact of bulk earth works and creek rehabilitation works.

Table 1: Group 1 Trees

Scientific Name	Common Name
Allocasuarina littoralis	Black She-Oak
Eucalyptus botriodes	Bangalay

Figure 3: Group 1 Trees Highlighted in Green

Group 2

The Group 2 tree species shown in (Table 2) and (Figure 4) are *Eucalyptus botriodes* of varying health and condition. The trees within Group 2 are given a medium retention value due to their health, condition, longevity and position in the landscape, refer to the Tree Impact Plan (Appendix 2). All trees within Group 2 are recommended for removal due the impact of bulk earth works and road upgrade works in Brands Lane.

Table 2: Tree Species

Scientific Name	**Common Name**
Eucalyptus botriodes	Banagaly

Figure 4: Group 2 Highlighted in Green

Group 3

The Group 3 tree species shown in (Table 3) and (Figure 5) are *Eucalyptus botriodes* of varying health and condition. The trees within Group 2 are given a medium retention value due to their health, condition, longevity and position in the landscape, refer to the Tree Impact Plan (Appendix 2). Group 3 Trees are located outside the property boundary in Brands Lane. All trees within Group 3 are recommended for removal due the impact of bulk earth works and road upgrade works in Brands Lane.

Table 3: Tree Species

Scientific Name	**Common Name**
Eucalyptus botriodes	Bangalay

Figure 5: Group 5 Highlighted in Green

Group 4

The Group 4 tree species shown in (Table 4) and (Figure 6) are a mixture of native species of varying health and condition. The trees within Group 4 are given a low retention value due to their health, condition, longevity and position in the landscape, refer to the Tree Impact Plan (Appendix 2). Group 4 trees are located outside the property boundary on the council verge of Macpherson Street. All trees within Group 4 are recommended for removal due the impact of bulk earth works and road upgrade works in Macpherson Street.

Table 4: Tree Species

Scientific Name	**Common Name**
Callistemon viminalis	Bottle Brush
Lophostemon confertus	Brush Box
Waterhousia floribunda	Large Leaved Lilly Pilly

Figure 6: Group 4 Trees Highlighted in Green

3. Developmental Impacts

The Health, Condition, Retention Value, General data of thirty-nine trees is displayed in the Tree Data Schedule (Appendix 1).

The Tree Impact Plan (Appendix 2) highlights the retention value and Tree Preservation Zone (TPZ) incursions of all trees assessed within the subject site and neighbouring properties.

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 4) of this report.

The incursion percentages affecting the theoretical Tree Preservation Zones (TPZ) of the subject trees assessed are shown in the Tree Data Schedule (Appendix 1) and on the Tree Impact Plan (Appendix 2).

As per the Tree Impact Plan (Appendix 2), 33 trees given a low retention value have total encroachment to their Tree Preservation Zone's (TPZ) by the proposed bulk earthworks plan which requires their removal.

As per the Tree Impact Plan (Appendix 2), 5 trees given a medium retention value have total encroachment to their Tree Preservation Zone's (TPZ) by the proposed bulk earthworks plan which requires their removal.

As per the Tree Impact Plan (Appendix 2), Group 1, 2, 3 and 4 trees have total encroachments to their Tree Preservation Zone's (TPZ) by the proposed earthworks plan which requires their removal.

Tree 39 is unaffected by the development.

4. Referenced Documents

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

Plan Title	Drawing Number	Consultant	Revision
Tree Impact Plan	War.TLP.01.1	Tree management strategies	
Civil	048-22C-DA-0051	Craig & Rhodes	

5. Conclusions & Recommendations

Conclusion

The proposed works requires the removal of 38 individual trees.

The proposed works requires the removal of Group 1, 2, 3 and 4 trees.

Tree 39 is unaffected by the development.

Recommendations

Remove 38 individual trees and Group 1, 2, 3 and 4 trees. 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).

Retain Tree 39.

6. 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.

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The Stationery Office, London.

7. 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)	TPZ incursion %	Health Good Fair Fair/Poor Poor Dead	Condition Good Fair Fair/Poor Poor Failed	Useful Life Expectancy High Medium Low	Landscape significance High Medium Low	Retention value High Medium Low	Retain/ Remove	Notes
1	*Ficus Hillii*	Hills Fig	0.95	0.80	3.24	9.60	14.00	Mature	8.00	100%	Fair/Poor	Fair/Poor	Medium	Low	Low	Remove	
2	*Ficus Hillii*	Hills Fig	0.60	0.50	2.67	6.00	12.00	Mature	10.00	100%	Fair/Poor	Fair/Poor	Medium	Low	Low	Remove	
3	*Callistemon viminalis*	Bottle Brush	0.25	0.20	1.85	2.40	5.00	Mature	3.00	100%	Fair	Fair/Poor	Medium	Low	Low	Remove	
4	*Melia azederach*	White Cedar	0.30	0.40	2.00	4.80	6.00	Over Mature	4.00	100%	Poor	Poor	Low	Low	Low	Remove	Tree in decline. Being strangled by English Ivy
5	*Harpulia pendula*	Tulipwood	0.30	0.25	2.00	3.00	8.00	Semi Mature	3.00	100%	Fair	Poor	Medium	Low	Low	Remove	
6	*Fraxinus graffithii*	Flowering Ash	0.20	0.17	1.68	2.04	6.00	Semi Mature	3.00	100%	Fair/Poor	Fair/Poor	Medium	Low	Low	Remove	
7	*Fraxinus graffithii*	Flowering Ash	0.40	0.30	2.25	3.60	8.00	Mature	3.00	100%	Fair/Poor	Fair/Poor	Medium	Low	Low	Remove	
8	*Eucalyptus botriodes*	Bangalay	0.75	0.63	2.93	7.56	14.00	Mature	8.00	100%	Fair/Poor	Fair/Poor	Medium	Low	Low	Remove	Tree showing signs of decline
9	*Eucalyptus botriodes*	Bangalay	0.50	0.44	2.47	5.28	12.00	Mature	6.00	100%	Fair/Poor	Fair/Poor	Medium	Low	Low	Remove	Tree showing signs of decline
Tree 10 and 11	*Ficus Hillii*	Hills Fig	0.80	0.70	3.01	8.40	12.00	Mature	8.00	100%	Fair	Fair/Poor	Medium	Low	Low	Remove	
12	*Populus deltoides*	Cottonwood	1.50	1.30	3.92	15	18.00	Mature	14.00	100%	Fair/Poor	Fair/Poor	Medium	Medium	Medium	Remove	
13	*Eucalyptus botriodes*	Bangalay	0.76	0.64	295	7.68	15.00	Mature	8.00	100%	Fair/Poor	Fair/Poor	Medium	Low	Low	Remove	Tree showing signs of decline.
14	*Eucalyptus botriodes*	Bangalay	.62	0.49	2.7	5.88	15.00	Mature	6.00	100%	Fair/Poor	Fair/Poor	Medium	Low	Low	Remove	
15	*Ficus benjamina*	Bangalay	0.78	0.65	2.98	7.80	16.00	Mature	10.00	100%	Fair	Fair/Poor	Medium	Low	Low	Remove	
16	*Eucalyptus botriodes*	Bangalay	0.48	0.35	2.43	4.20	16.00	Mature	5.00	100%	Fair/Poor	Fair/Poor	Medium	Low	Low	Remove	
17	*Eucalyptus botriodes*	Bangalay	1.00	0.88	3.31	10.56	16.00	Mature	10.00	100%	Fair	Fair/Poor	Medium	Low	Low	Remove	
18	*Eucalyptus botriodes*	Bangalay	0.80	0.64	3.01	7.68	18.00	Mature	12.00	100%	Fair	Fair/Poor	Medium	Medium	Medium	Remove	
19	*Eucalyptus botriodes*	Bangalay	0.65	0.56	2.76	6.72	16.00	Mature	8.00	100%	Fair	Fair/Poor	Medium	Medium	Medium	Remove	
20	*Liquidambar styraciflua*	Liquidambar	0.30	0.24	2.00	2.88	10.00	Semi Mature	3.00	100%	Fair	Fair/Poor	Medium	Low	Low	Remove	
21	*Eucalyptus botriodes*	Bangalay	0.45	0.39	2.37	4.68	15.00	Mature	6.00	100%	Fair	Fair/Poor	Medium	Medium	Medium	Remove	
22	*Melaleuca saligna*	Willow Bottle Brush	0.45	0.30	2.37	3.60	15.00	Mature	6.00	100%	Fair/Poor	Fair/Poor	Medium	Low	Low	Remove	
23	*Melaleuca saligna*	Willow Bottle Brush	0.30	0.20	2.00	2.40	14.00	Mature	4.00	100%	Fair/Poor	Fair/Poor	Medium	Low	Low	Remove	
24	*Jacaranda mimosifolia*	Jacaranda	0.25	0.18	1.85	2.16	12.00	Semi Mature	4.00	100%	Fair/Poor	Fair/Poor		Low	Low	Remove	

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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)	TPZ incursion %	Health Good Fair Fair/Poor Poor Dead	Condition Good Fair Fair/Poor Poor Failed	Useful Life Expectancy High Medium Low	Landscape significance High Medium Low	Retention value High Medium Low	Retain/ Remove	Notes
Tree 25 and 28	*Syzygium paniculatum*	Magenta Lily	0.23	0.18	1.79	2.16	8.00	Semi Mature	2.00	100%	Fair	Fair/Poor	Medium	Low	Low	Remove	
29	*Erythrina x sykesii*	Coral Tree	0.56	0.47	2.59	5.64	12.00	Mature	6.00	100%	Fair/Poor	Poor	Medium	Low	Low	Remove	
30	*Ficus benjamina*	Weeping Fig	0.65	0.55	2.76	6.60	15.00	Mature	10.00	100%	Fair	Fair/Poor	Medium	Low	Low	Remove	
31	*Ficus benjamina*	Weeping Fig	0.65	0.55	2.76	6.60	16.00	Mature	10.00	100%	Fair	Fair/Poor	Medium	Low	Low	Remove	
32	*Erythrina x sykesii*	Coral Tree	0.80	0.70	3.01	8.40	12.00	Mature	8.00	100%	Fair/Poor	Fair/Poor	Medium	Low	Low	Remove	
33	*Ficus benjamina*	Weeping Fig	0.50	0.40	2.47	4.80	15.00	Mature	5.00	100%	Fair	Fair	Medium	Low	Low	Remove	
34	*Ficus benjamina*	Weeping Fig	0.60	0.50	2.67	6.00	15.00	Mature	12.00	100%	Fair	Fair/Poor	Medium	Low	Low	Remove	
35	*Erythrina x sykesii*	Coral Tree	0.40	0.30	2.25	3.60	6.00	Mature	4.00	100%	Poor	Poor	Medium	Low	Low	Remove	
36	*Ficus benjamina*	Weeping Fig	0.52	0.46	2.51	5.52	16.00	Mature	6.00	100%	Fair	Fair	Medium	Low	Low	Remove	
37	*Corymbia eximia*	Yellow Bloodwood	0.45	0.38	2.37	4.56	17.00	Mature	8.00	100%	Fair	Fair	Medium	Medium	Medium	Remove	
38	*Ficus benjamina*	Weeping Fig	0.95	0.80	3.24	9.60	10.00	Mature	6.00	100%	Fair	Fair/Poor	Medium	Low	Low	Remove	
39	*Eucalyptus botriodes*	Bangalay	0.45	0.39	2.37	4.68	12.00	Mature	6.00	100%	Fair/Poor	Fair/Poor	Medium	Medium	Medium	Retain	Street Tree

Appendix 2: Tree Impact Plan

Tree Impact Plan - Appendix 2

Group 4

ROAD No. 1

ROAD No. 3

ROAD No. 2

BRANDS LANE

2.1m WIDE CONCRETE SHARED PATH TO NORTHERN BEACHES COUNCIL STANDARD.

ACCESS

Two way Traffic

BULKY GOODS COLLECTION AREA FOR LOTS 1-7

COMMUNITY TITLE ACCESSWAY

STEEP ENTRY ROAD TO RAISE SITE TO FFL APPROX. 7%

SHARED PATH

T01 T02 T03 T04 T05 T06 T07 T08 T09 T10 T11 T12 T13 T14 T15 T16 T17 T18 T19 T20 T21 T22 T23 T24 T25 T26 T27 T28 T29 T30 T31 T32 T33 T34 T35 T36 T37 T38 T39

CUT FILL DEPTH LEGEND		
LOWER VALUE (m)	UPPER VALUE (m)	COLOUR
-1.75	-99	
-1.50	-1.75	
-1.25	-1.50	
-1.00	-1.25	
-0.75	-1.00	
-0.50	-0.75	
-0.25	-0.50	
0	-0.25	
0	0.25	
0.25	0.50	
0.50	0.75	
0.75	1.00	
1.00	1.25	
1.255	1.5	
1.50	1.75	
1.75	99	

Legend

TPZ - Tree Protection Zone

Trees Impacted

Indicates Trees not effected by proposed works

Retention Value

High

Medium

Low

N

0 10 20 30 40 M

Tree Management Strategies

DATE: 19/4/2023	DWG: War.TIP01	REVISION: 02	SCALE @ A2 1:250	DRAWN: Mark Hill

ADDRESS: 16 Macpherson Street Warriewood

PLAN TITLE: Tree Impact Plan - Figure 1

Tree Management Strategies
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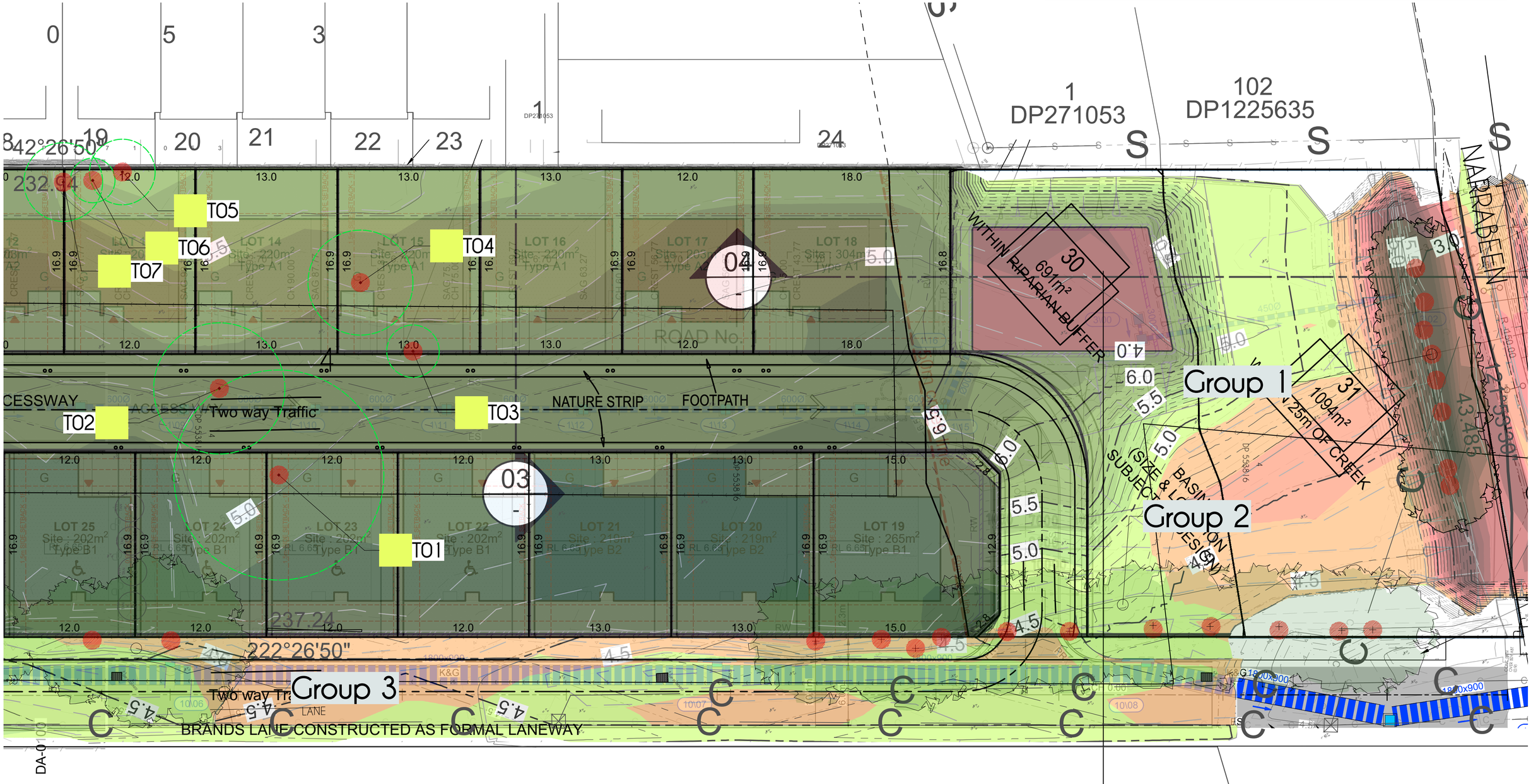
Sydney & Regional NSW

Tree Impact Plan - Appendix 2



Legend

- TPZ - Tree Protection Zone
- Trees Impacted
- Indicates Trees not effected by proposed works

Retention Value

- High
- Medium
- Low

0 10 20 30 40 M

Tree Management Strategies

DATE: 13/02/2023	DWG: Rev.TIP01	REVISION: 01	SCALE @ A2	1:150	DRAWN Mark Hill

ADDRESS
16 Macpherson Street
Warriewood

PLAN TITLE
Tree Impact Plan - Figure 1

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Sydney & Regional NSW

Appendix 3: Method

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 photographed.

Research

The following legislation, documents or websites were reviewed:

- The Australian Standard for the Protection of Trees on Development Sites (AS 4970 – 2009).
- Northern Beaches Council Development Control Plan 2000.
- Northern Beaches Council Local Environmental Plan 2011.

Tree Data Schedule Method

The Health and Condition of all 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.

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:

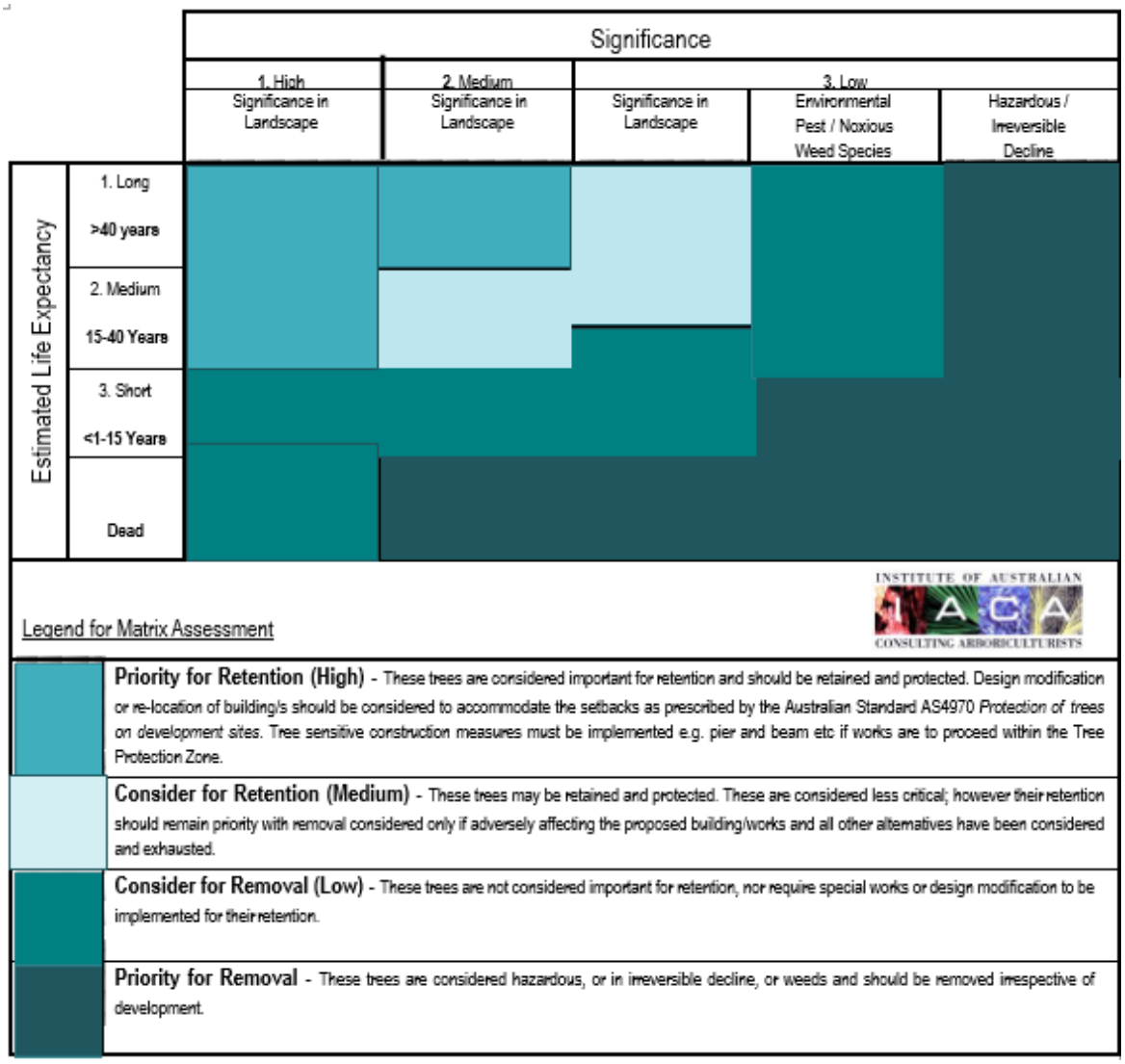
a) Long (greater than 40 years)

b) Medium (between 15 and 40 years)

c) Short (between 1 and 15 years)

d) Dead

Tree Retention Value - Priority Matrix



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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 3) 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 7) demonstrates some examples of possible encroachment into the TPZ up to 10% of the area.

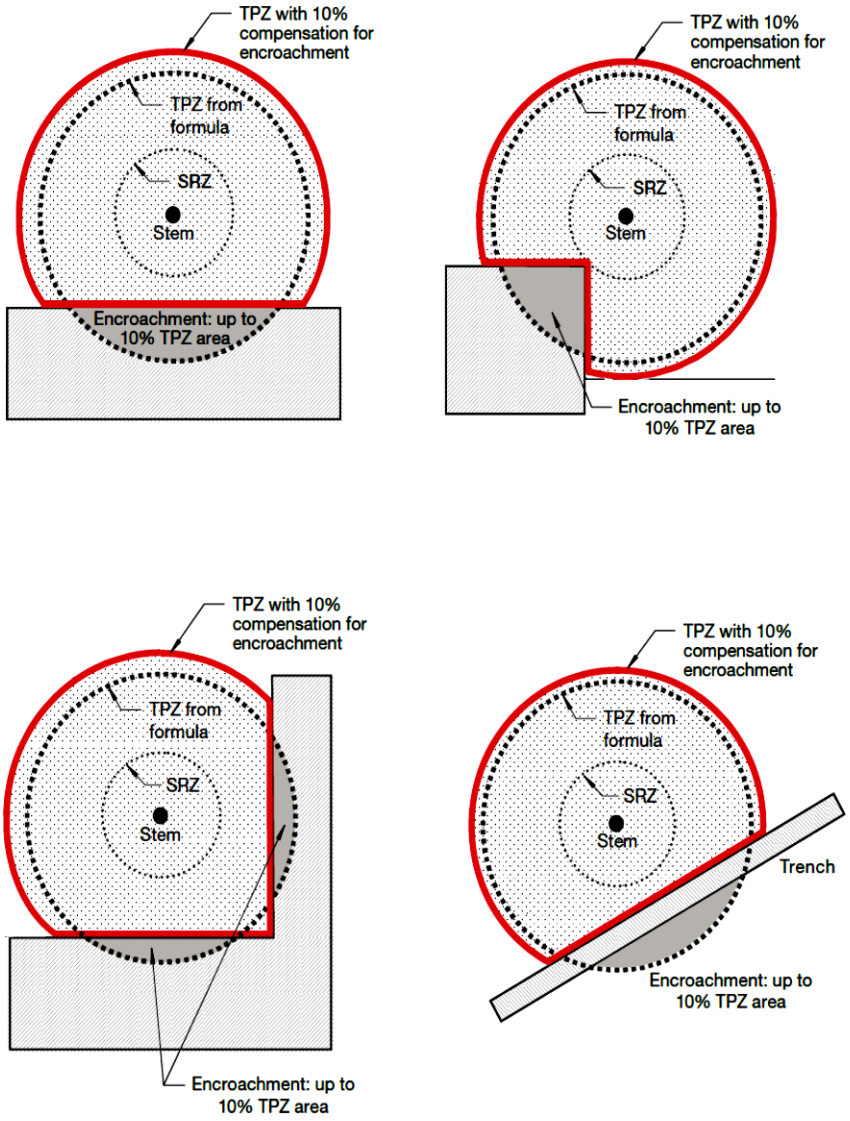
Major encroachment
If the proposed encroachment is greater than 10% of the TPZ or inside the SRZ the project arborist must demonstrate that the tree(s) would remain viable. The area lost to this encroachment should be compensated for elsewhere and contiguous with the TPZ. This may require root investigation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

Figure 7

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.