



**STANDFAST TREE SERVICES**  
ESTABLISHED 1979

ABN 73 099 603 817  
info@standfasttreeservices.com.au  
www.standfasttreeservices.com.au  
PO BOX 1266 MONA VALE 1660  
PHONE 99977899

07/05/2025

Paul Barton

Associate

Marker

Re Arboricultural Impact Assessment (AIA) for the proposed development at 34 Prince Alfred Parade, Newport

## Contents

Introduction .....	2
Findings.....	3
Table 1, Tree species.....	3
Table 2, Tree data in approximate metres .....	5
Tree locations.....	6
<i>Strelitzia nicolai</i> .....	7
TPZs and SRZs ( <i>Livistona australis</i> ).....	8
Table 3, Radii of SRZs & TPZs in approximate metres.....	9
Demolition Plan.....	10
Table 4, retain / remove .....	11
Tree Protection Plan .....	12
Conclusions .....	13
Bibliography.....	14
Trunk protection & Tree protection fence diagrams.....	15
Glossary .....	16
Tree Protection Measures.....	19

## Introduction

This AIA has been commissioned by Marker to assess the existing trees at 34 Prince Alfred Parade and the likely impacts that the proposed development will have on them.

The AIA will look at all the trees protected by Northern Beaches Council DCP including those in adjoining properties that are within 5m of planned construction work

- Trees 5m high or higher
- Trees that are not on the Exempt Tree Species List
- Trees that are not located within 2m of an existing approved dwelling

The property is not within the RFS 10/50 clearing entitlement and it is not listed as a heritage site.

The following plans have been provided by Marker to assist with the preparation of the AIA

- DA SET including
- Demolition Legend
- Legend: Site Plan
- Boundary, Detail & Level Survey, Mitch Ayres Surveying Pty Ltd, 15/05/2024

Three site visits were undertaken on 11/11/2024, 28/11/2024 and 29/11/2024 when the trees were assessed by VTA from ground level<sup>1</sup> and identification tags were fixed to them.

---

<sup>1</sup> VTA:

Visual Tree Assessment – a systematic inspection usually conducted from ground level looking for defects in a tree. Further investigation would be carried out by aerial inspection or with specialised equipment to test the extent of a defect and the implications for the tree. A VTA is the accepted starting point and often the end point for assessing trees for defects. (Breloer, 1994)

## Findings

In total twenty-eight palm trees were assessed in the front and rear gardens at 34 Prince Alfred Parade as well as one palm tree in the adjoining property at 38 Prince Alfred Parade.

Of the twenty-nine palm trees twenty-two are *Livistona australis* commonly known as cabbage palms and seven are *Archontophoenix cunninghamiana* or bangalow palms.

The trees that are not palms that were assessed are

- a hedge of three camellias within the Prince Alfred Parade road reserve, fig 4
- a mature *Syzygium paniculatum* or lillypilly at the front north east corner of the block
- two *Dicksonia* spp or tree ferns in the front garden of 38 Prince Alfred Parade
- an informal photinia hedge (two trees) on the rear south east boundary with 36 Prince Alfred Parade, fig 4

Table 1, Tree species

#	number	position	exempt species	tag numbers
<i>Livistona australis</i>	21	34 Prince Alfred Pde	no	T2 & T14 T16 – T25 T27 – T35
<i>Livistona australis</i>	1	38 Prince Alfred Pde	no	T26
<i>Archontophoenix cunninghamiana</i>	7	34 Prince Alfred Pde	yes	T3 – T6 T12 & T13 T15
<i>Syzygium paniculatum</i>	1	34 Prince Alfred Pde	no	T1
<i>Dicksonia</i> spp	2	38 Prince Alfred Pde	no	T10 & T11
<i>Camellia</i> spp	3	34 Prince Alfred Pde	No, 5m to 6m high	T7 – T9
<i>Photinia</i> spp	2	34 Prince Alfred Pde	No, 5m to 6m high	T36





Figure 1. Front garden at 34 Prince Alfred Parade (left), rear garden towards Pittwater (right)



Figure 2. T16 a cabbage palm has some decay (left), rear garden from Pittwater (right)

Table 2, Tree data<sup>2</sup> in approximate metres

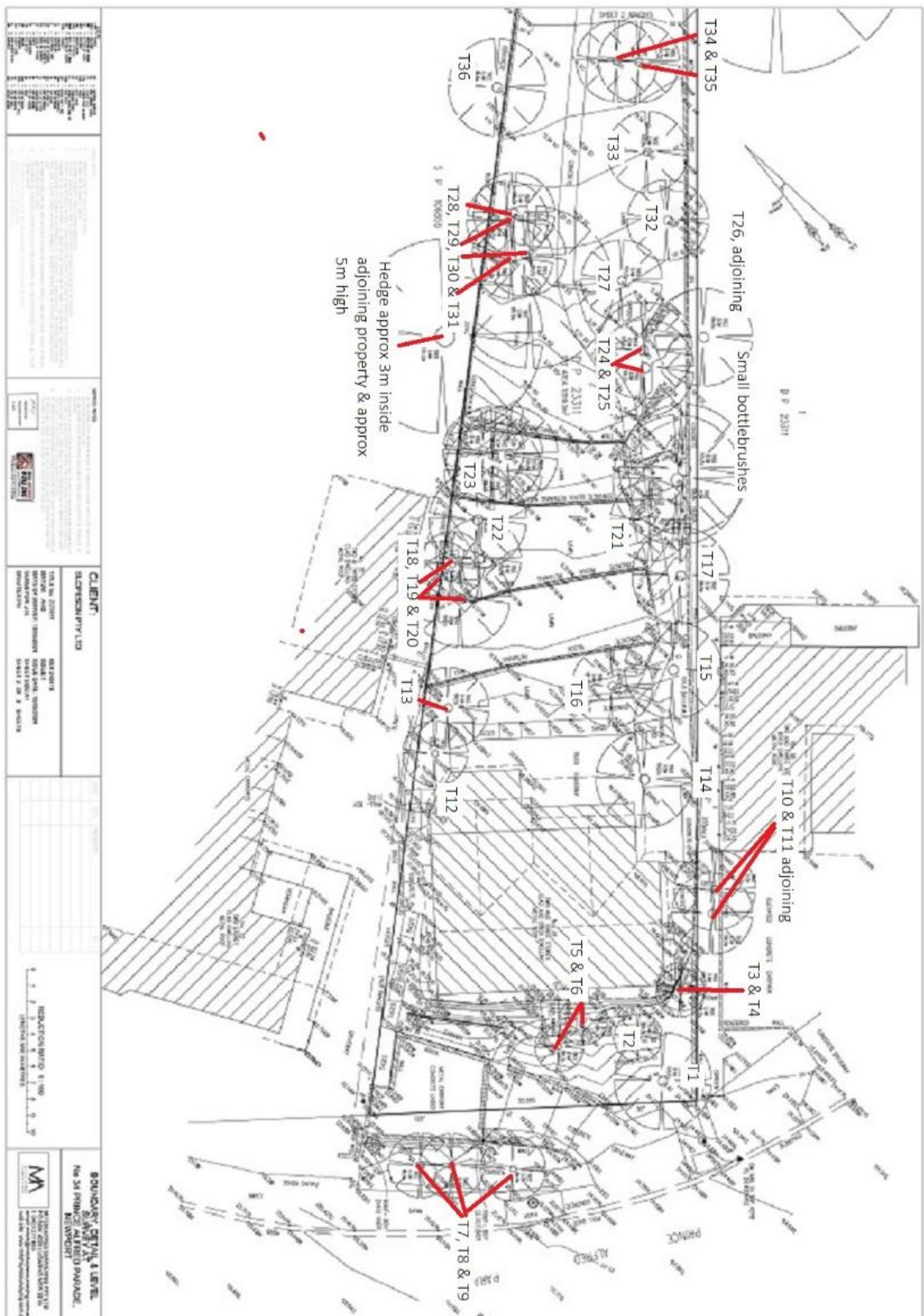
#	dbh	spread	height	age	h / cond	comments
T1	0.7	12	14	M	G/G	Lillypilly, front boundary
T2	0.35	5	12	M	G/G	Livistona
T3	0.3	4	13	M	G/G	Bangalow
T4	0.25	4	11	M	G/G	Bangalow
T5	0.3	4	12	M	G/G	Bangalow
T6	0.3	4	12	M	G/G	Bangalow
T7	0.2	2	5	M	G/G	Camellia hedge, road reserve
T8	0.2	2	5	M	G/G	Camellia hedge, road reserve
T9	0.2	2	5	M	G/G	Camellia hedge, road reserve
T10	0.3	4	7	M	G/G	Tree fern, <i>Dicksonia</i> spp
T11	0.3	4	7	M	G/G	Tree fern, <i>Dicksonia</i> spp
T12	0.3	5	13	M	G/G	Bangalow palm
T13	0.2	5	13	M	G/G	Bangalow palm
T14	0.3	5	13	M	G/G	Livistona
T15	0.35	5	18	M	G/G	Bangalow palm
T16	0.35	5	15	M	G/P	Livistona, trunk decay
T17	0.3	5	16	M	G/G	Livistona
T18	0.35	5	13	M	G/G	Livistona
T19	0.4	5	18	M	G/G	Livistona in fenceline
T20	0.4	5	13	M	G/G	Livistona
T21	0.35	5	15	M	G/G	Livistona
T22	0.4	5	16	M	G/G	Livistona
T23	0.45	5	16	M	G/G	Last palm before a drop in grade, Livistona
T24	0.35	5	13	M	G/G	Livistona
T25	0.35	5	13	M	G/G	Livistona
T26	0.35	5	12	M	G/G	Adjoining property, Livistona
T27	0.3	5	15	M	G/G	Livistona
T28	0.4	5	18	M	G/G	Livistona
T29	0.4	5	16	M	G/G	Livistona
T30	0.4	5	18	M	G/G	Livistona
T31	0.4	5	16	M	G/G	Livistona
T32	0.35	5	13	M	G/G	Livistona
T33	0.35	5	12	M	G/G	Livistona
T34	0.35	5	12	M	G/G	T34 and T35 are in contact
T35	0.4	5	14	M	G/G	at ground level, clumped, Livistonas
T36				M	G/G	Photinias x2

---

<sup>2</sup> Glossary



## Tree locations



### *Strelitzia nicolai*

*Strelitzia nicolai* form clumps of banana-like trees with individuals up to 12m tall. They are commonly known as giant bird of paradise and there is a grouping of them along the southwest boundary in the rear garden at 34 Prince Alfred Parade. They are monocots,<sup>3</sup> do not have woody trunks and would not generally be assessed by an AIA.

Some individual strelitzias have been represented with circles symbolising trees on the survey but they have not been considered in this report and will be removed during the development.



Figure 3

---

<sup>3</sup> Monocot - 'The single embryonic seed leaf of some angiosperms that gives rise to palm trees and many other plants, e.g. grasses.' (Richards, 2009) *Strelitzia nicolai* are not usually protected by council but most palm species will need consent for removal.

## TPZs and SRZs (*Livistona australis*)

Palm trees with adventitious root masses are more resilient to the impacts from development than trees (dicots) and mature specimens can be reliably transplanted with a small rootball<sup>4</sup> - a process that would impart more stress on a tree than most of the impacts from construction work.

AS 4970 - 2009 Protection of trees on development sites recommends a TPZ<sup>5</sup> for palm trees that *'should not be less than 1m outside the crown projection.'* On this basis the radii for cabbage palms for spreads of approximately 5m (Table 4) would be 3.5m

The radii of the SRZs<sup>5 & 6</sup> of the palm trees with DABs<sup>4</sup> of approximately 0.45m would be 2.4m.

For transplanting palms over 5m high Broschat and Meerow (2000) recommend a rootball that extends by a little more than 0.2m compared to the calculation for TPZs at 3.5m and SRZs at 2.4m.

---

<sup>4</sup> *'Broschat and Meerow (2000) recommend that the rootball should extend 20cm (8in) for single stem palms less than 5m (16ft tall). The ball should be incrementally larger for taller or multistem specimens.'* (Richard W. Harris. James R. Clark, 2004)

<sup>5</sup> Glossary

<sup>6</sup> Treetec *'DBH, TPZ and SRZ Calculator'*



Table 3, Radii of SRZs<sup>7</sup> & TPZs in approximate metres

#	dbh	spread	tpz	dab	srz	Tree protection
T1	0.7	12	8.4	0.8	3.0	Trunk protection
T2	0.35	5	3.5	0.45	2.4	Trunk protection
T3	0.3	4	3.0	0.4	2.3	Trunk protection
T4	0.25	3	2.5	0.35	2.1	Trunk protection
T5	0.3	4	3.0	0.4	2.3	Trunk protection
T6	0.3	4	3.0	0.4	2.3	Trunk protection
T10	0.3	4	3.6	0.4	2.3	Trunk protection
T11	0.3	4	3.6	0.4	2.3	Trunk protection
T12	0.3	5	3.5	0.4	2.3	Trunk protection
T13	0.2	4	3.0	0.3	2.0	Trunk protection
T19	0.4	5	3.5	0.5	2.5	Trunk protection
T22	0.4	5	3.5	0.5	2.5	Trunk protection
T23	0.45	5	3.5	0.55	2.6	Trunk protection
T26	0.35	5	3.5	0.45	2.4	Protected by boundary fence
T28	0.4	5	3.5	0.5	2.5	Trunk protection
T29	0.4	5	3.5	0.5	2.5	Trunk protection
T30	0.4	5	3.5	0.5	2.5	Trunk protection
T31	0.4	5	3.5	0.5	2.5	Trunk protection
T32	0.35	5	3.5	0.45	2.4	Trunk protection
T33	0.35	5	3.5	0.45	2.4	Trunk protection
T34	0.35	5	3.5	0.45	2.4	Trunk protection
T35	0.4	5	3.5	0.5	2.5	Trunk protection
T36	0.35		4.2	0.45	2.4	Tree protection fence

---

<sup>7</sup> TPZ calculation for palm trees is 1m outside the crown projection

## Demolition Plan

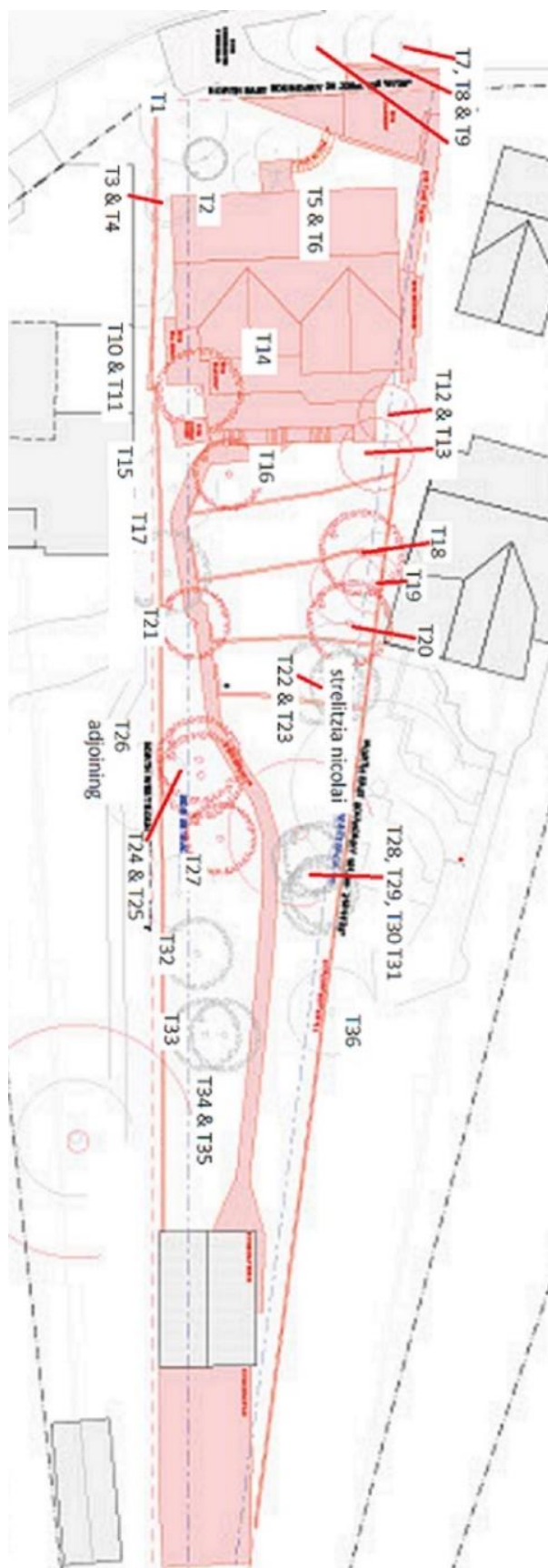


Table 4, retain / remove

#	retain	remove	comments
T1 – T6	retain		6x trees in the front gardens
T7 – T9		remove	3x camellias on road reserve will block builders access, plant replacements
T10 – T13	retain		4x trees in front gardens and at the rear southeast corner of the existing house
T14 – T18		remove	3x cabbage palms, 1x bangalow palm & T16 a cabbage palm with trunk decay
T19	retain		A cabbage palm incorporated into the boundary fence in a clump of 3x palm trees
T20 & T21		remove	2x cabbage palms
T22 & T23	retain		2x cabbage palms
T24 & T25		remove	2x cabbage palms
T26	retain		1x cabbage palm in adjoining property
T27		remove	1x cabbage palm
T28 – T35	retain		8x cabbage palms
T36	retain		2x photinias (hedge) adjoining property

There will be nine cabbage palms within the footprint of the development and it is proposed that they would be removed.



Figure 4

## Tree Protection Plan

Trees to be protected with a tree protection fence (TPF), diagram page 15

- T36 in the adjoining property on the rear southwest boundary, if a site fence is installed along the boundary the site fence would qualify as a TPF, fig 4 above

Trees to be protected with trunk protection,<sup>8</sup> diagram page 15

- T1 – T6
- T10 – T13
- T19
- T22 & T23
- T28 – T35

Appoint a project arborist to

- Certify the tree protection prior to the commencement of construction work and to clearly mark the trees that are to be removed
- Supervise demolition / digging or other work involving an excavator or other machinery close to the SRZs of the retained trees
- Attend site once a month and assess any new impacts that would affect the retained trees and provide work methods that would decrease likely harms, ie the application of ground mats to prevent soil compaction, page 15
- Certification that trees remain in good health and condition at the end of building work

If pruning of any of the retained trees is necessary during development then

- The reduction of live canopy would not be greater than 10%
- It would be carried out by an AQF level 3 arborist
- Pruning work would comply with AS 4373 – 2007 Pruning of amenity trees

The builder is to ensure

- Tree protection measures (TPMs), page 19 are complied with
- Hand digging only with no machinery within the SRZs of the retained trees
- The project arborist is called to site whenever tree-related problems arise

---

<sup>8</sup> T26 in an adjoining property is protected by the boundary fence



## Conclusions

The trees at the front of the property T1 – T6 and T10 – T13 are separated from the construction zone by the terrain which drops steeply and that will help isolate them from the development and its impacts.

The block is approximately 20m wide at Prince Alfred Parade tapering to approximately 6m wide at Pittwater. It is approximately 15m wide in the middle where construction will take place near the retained *Livistona australis* palm trees in the rear garden.

Because space is limited TPFs will not be installed and trunk protection will act as protection from physical damage from equipment and machinery.

The cabbage palms close to the proposed work are significantly more resilient to disruption than woody trees and this is an important factor beneficial to their long term health.

Site visits from the project arborist whether programmed or at the request of the builder will be important to ensure that the site supervisors and operators of excavators and other machinery are aware that they cannot work within or enter the SRZs where only hand digging is allowed.

All the retained trees are expected to survive the impacts from the construction if the tree protection plan and tree protection measures are adhered to.

Yours faithfully,



Nigel Dean

AQF level 5 arborist

QTRA

Member Arb Australia and ISA

Standfast Tree Services Pty Ltd

## Bibliography

Australia, S. (2007). AS 4373 -2007 Pruning of amenity trees.

Australia, S. (2009). AS 4970-2009 Protection of trees on development sites.

Breloer, C. M. (1994). Field Guide for visual tree assessment (VTA). *Arboriculture Journal*, 18, 1-23.

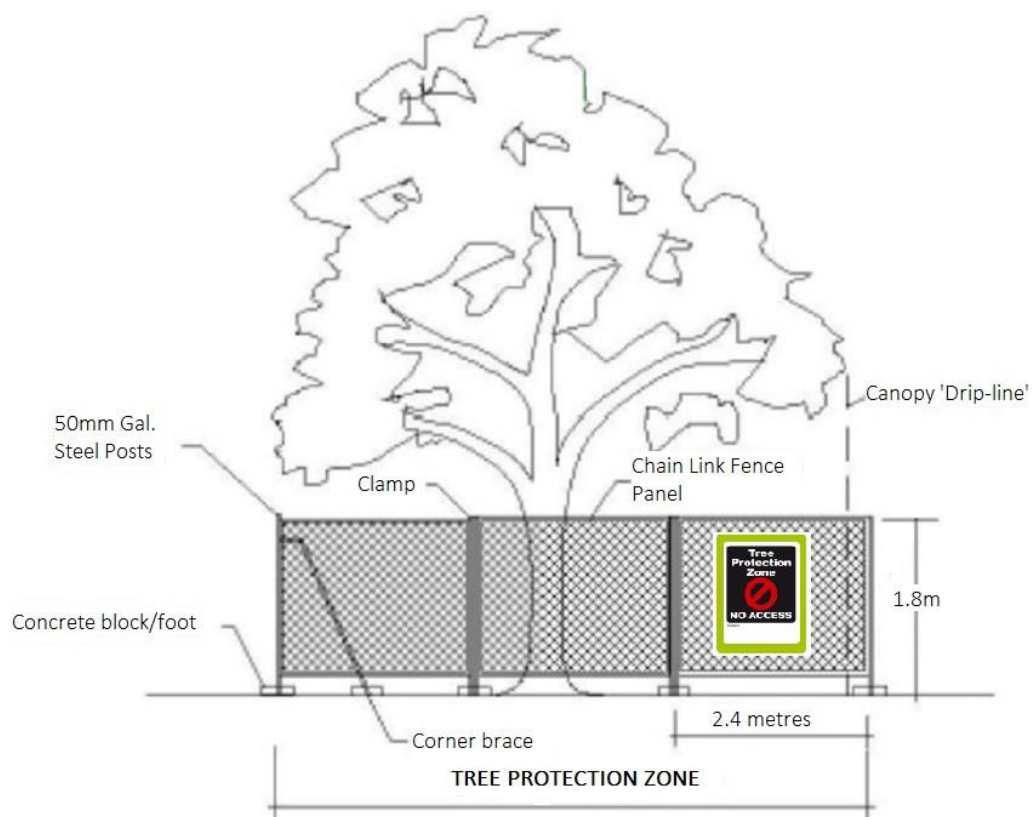
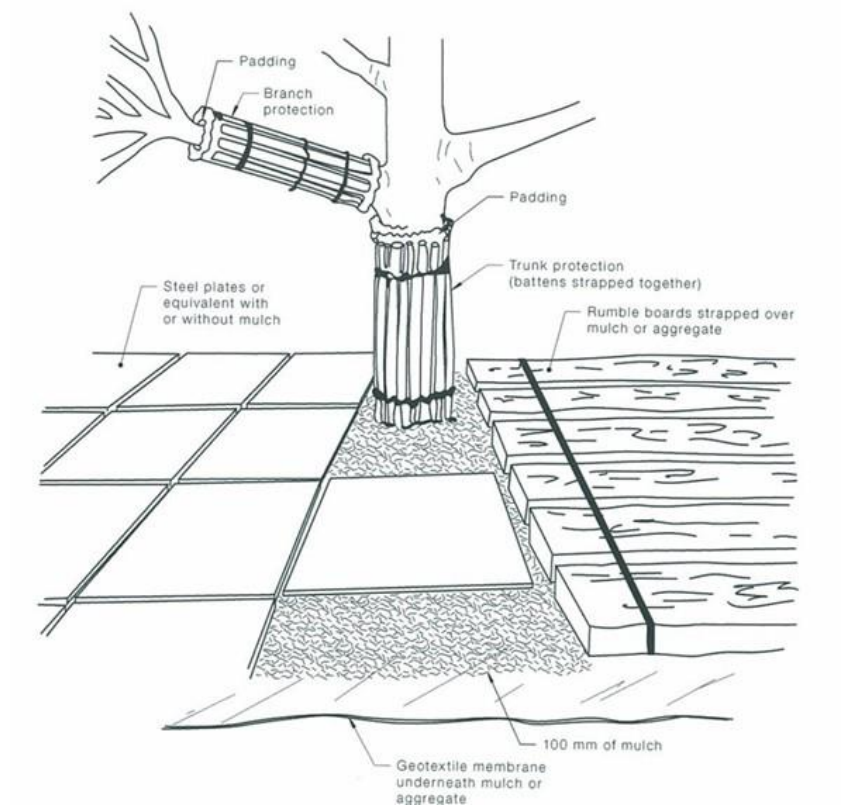
C. Mattheck, K. B. (2015). *The Body Language of trees*. Karlsruhe Institute of Technology.

Harris, C. a. (2004). *Arboriculture, Integrated Management of Landscape Trees, Shrubs, and Vines* (4th ed.). Upper Saddle River: Pearson Education, Inc.

Richards, D. B. (2009). *Dictionary for Managing Trees in Urban Environments*. CSIRO.

Shigo, A. L. (2008). *A New Tree Biology and Dictionary*.

## Trunk protection & Tree protection fence diagrams



## Glossary

### Age Classes:

Juvenile refers to a well-established but young tree (J). Semi-mature refers to a tree at growth stages between juvenile and full size (SM). Mature refers to a full-sized tree with some capacity for further growth (M).

Over-mature: *'Tree aged greater than 80% of life expectancy, in situ, or senescent with or without reduced vigour, and declining gradually or rapidly but irreversibly to death.'* (OM).

(Richards, 2009).

### Health:

*'The ability to resist strain. Health does not necessarily mean rapid growth. Vigour is the capacity to resist strain. Health is a dynamic condition that combines the intrinsic genetic program with available conditions. Health is a condition that must be viewed in degrees because you can have poor health or excellent health. An organism that has poor health does not survive long.'* (Shigo, 2008) Classes are Excellent (E) Good (G) Poor (P), Declining (D).

### Condition:

The state of the scaffold (trunk and major branches) is assessed. Defects such as cavities, included branches and trunk unions and the fruiting body of a fungus would be indicative of compromised condition. Classes are Excellent (E) Good (G) Poor (P).

*Note: Trees may be found to be in VG health but in VP condition and vice versa*

### DBH:

Diameter at Breast Height refers to the tree trunk diameter measured at breast height or 1.4 metres above ground level.

### DAB:

Diameter Above the Buttress refers to the tree trunk diameter measured above the root buttress and is used to calculate the radius of the SRZ.

### Defect:

Tree defects are injuries, growth patterns, decay, or other conditions that reduce a tree's structural strength. While a defect identifies the point at which a tree may fail or why it may fail it does not mean the tree will fail. Defects should be tested until their full extent is established.



*Hazard:*

Something that has the potential to cause harm or loss; this does not mean that it will cause harm or is likely to cause harm.

*Note: all trees are hazardous.*

*Risk:*

The likelihood of a particular harm or loss occurring (Likelihood x Consequence). Often risk associated with trees is small enough to be ignored or small enough that no reasonable practicable solution exists to reduce risk. Consequence refers to the target that would be affected by tree or branch failure.

*TPZ:*

Tree Protection Zone The radius of the TPZ is calculated for each tree by multiplying the DBH x 12. To establish the TPZ this radius is measured from the centre of the stem at ground level and it is an area that is to be isolated from construction disturbance. Any encroachment into the TPZ of more than 10% is a major encroachment. (Australia, AS 4970-2009 Protection of trees on development sites, 2009)

*SRZ:*

Structural Root Zone The radius of the SRZ is calculated using the following formula:

$r(SRZ) = (D \times 50)^{0.42} \times 0.64$  where D is the DAB measured in metres. It is the area around a tree that is required for tree stability and is usually applied on construction sites after there has been a major encroachment of the TPZ. (Australia, AS 4970-2009 Protection of trees on development sites, 2009)

*t/R < 0.30:*

t = width of sound wood, R = radius of the trunk. Regarded as the threshold for action when the ratio of the width of sound wood to the radius of the trunk is less than 0.3 for a cavity or decay in the stem of a tree. (Harris, 2004)

*Canker:*

*'A wound created by repeated localised killing of the vascular cambium and bark by wood decay fungi and bacteria usually marked by concentric disfiguration. The wound may appear as a depression as each successive growth increment develops around the lesion forming a wound margin.'* (Richards, 2009). Wood becomes brittle and the canker may become a potential failure point.

*Crown maintenance:*

*'Pruning according to the growth habit of the tree. It includes deadwooding, crown thinning, selective pruning and formative pruning....it does not reduce the volume of the crown and retains the structure and size of the tree.'* AS 4373-2007, Pruning amenity trees.

*Crown modification:*

*'Pruning that changes the form and habit of the tree. It includes reduction pruning, crown lifting, pollarding and remedial (restorative) pruning.'* (Australia, 2007).

*Wound:*

*'Damage inflicted upon a tree through injury to its living cells, from biotic or abiotic causes, e.g. where vascular cambium has been damaged by branch breakage, impact or insect attack. Some wounds decay and cause structural deterioration or defects'* (Richards, 2009)

*Project arborist:*

*'The person responsible for carrying out the tree assessment, report preparation, consultation with designers, specifying tree protection measures, monitoring and certification. The project arborist will be suitably experienced and competent in arboriculture, having acquired through training, (minimum AQF level 5, Diploma of Horticulture (Arboriculture) and/or equivalent experience, the knowledge and skills enabling that person to perform tasks required by this standard.'* (Australia, AS 4970-2009 Protection of trees on development sites, 2009)

*Vigour:*

*'Ability of a tree to sustain its life processes. This is independent of the condition of a tree but may impact upon it. Vigour can appear to alter rapidly with change of seasons (seasonality), e.g. dormant, deciduous or semi-deciduous trees. Vigour can be categorised as normal vigour, high vigour, low vigour and dormant tree vigour.'* (Richards, 2009)

*Epicormic shoots:*

*'Juvenile shoots produced at branches or trunk from epicormic strands in some Eucalypts (Burrows 2002, pp. 111-131) or sprouts produced from dormant or latent buds concealed beneath the bark in some trees. Production can be triggered by fire, pruning, wounding, or root damage but may also be a result of stress or decline.'* (Richards, 2009)

## Tree Protection Measures

### *Tree Protection Fence (TPF)*

The TPZ should be isolated from construction disturbance by a Tree Protection Fence (TPF) around the tree or groups of trees to be retained. Existing structures such as fences or walls can be part of the TPF.

The TPF should be erected before any machinery or materials are brought onto the site and before the commencement of works including demolition.

A TPF complying with AS 4687 would:

- Be constructed of chain wire mesh panels with shade cloth attached (if required) to reduce the transport of dust, other particulate matter and liquids into the protected area.
- Have fence posts and supports with a diameter greater than 20mm.
- Be held in place with concrete feet.
- Be 1.8m high.
- Have signs that are visible from within the development site identifying the TPZ placed around its edge. The lettering on the signs should comply with AS 1319.

### *Trunk and branch protection*

The purpose of trunk and branch protection is to prevent physical damage being done to the tree from plant and machinery and other construction activities.

Trunk and branch protection should consist of boards and padding that will not damage the bark.

Boards should be strapped to trees and not nailed or screwed.

A minimum height of 2m is recommended.

### *Ground protection*

If temporary access for machinery is required within the TPZ ground protection measures will be required.

The purpose of ground protection is to prevent root damage and soil compaction within the TPZ. Ground protection measures may include a permeable membrane such as geotextile fabric beneath a layer of mulch or crushed rock below rumble boards.

### *Root protection during works within the TPZ and SRZ*

Some approved works within the TPZ and SRZ have the potential to damage roots. These activities include:

- Regrading
- Installation of piers
- Landscaping

If the grade is to be raised the material should be coarser or more porous than the underlying material. Depth and compaction should be minimised.

Manual excavation should be carried out under the supervision of the project arborist to identify roots critical to tree stability. Relocation or redesign of works may be required.

Roots pruned within the outer edge of the TPZ and SRZ should:

- Have the final cut made to undamaged wood.
- Be pruned with sharp tools such as secateurs, pruners, handsaws or chainsaws.
- Should not be treated with dressings or paint.
- Should not be 'pruned' with machinery such as a backhoe or an excavator.

When roots within the TPZ and SRZ are exposed by excavation temporary root protection should be installed to prevent them from drying out. This may include jute mesh or hessian sheeting as multiple layers over the exposed roots and the excavated soil profile extending to the full depth of the root zone. Root protection sheeting should be pegged in place and kept moist during the period that the root zone is exposed

Other excavation works in proximity to trees, including landscape works such as paving, irrigation and planting can adversely affect root systems.



### *Installing underground services within the TPZ*

All services should be routed outside the TPZ.

If underground services must be routed within the TPZ they should be installed by directional drilling or in manually excavated trenches.

The directional drilling bore should be at least 600mm deep. The project arborist should assess the likely impacts of boring and bore pits on retained trees.

For manual excavation of trenches the project arborist should advise on roots to be retained and should monitor the works. Manual excavation may include the use of pneumatic and hydraulic tools.

### *Scaffolding*

Scaffolding should be erected outside the TPZ.

Where it is essential for scaffolding to be erected within the TPZ branch removal should be minimised. When pruning is unavoidable it must be specified by the project arborist and comply with AS 4373.

The ground below the scaffolding should be protected with boarding, eg scaffold board or plywood sheeting. Where access is required a board walk or other surface material should be used to minimise soil compaction. Boarding should be placed over a layer of mulch and impervious sheeting to prevent soil contamination. The boarding should be left in place until the scaffolding is removed.

### *Activities restricted within the TPZ*

1. machine excavation including trenching
2. excavation for silt fencing
3. cultivation
4. storage
5. preparation of chemicals, including preparation of cement products
6. parking of vehicles and plant
7. refuelling
8. dumping of waste
9. wash down and cleaning of equipment
10. placement of fill
11. lighting of fires
12. soil level changes
13. temporary or permanent installation of utilities and signs
14. causing physical damage to the tree.