Let's Talk About Trees
Managing the Urban Forest

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IACA
Member of
INSTITUTE OF AUSTRALIAN CONSULTING ARBORISTS

Arboricultural Assessment for:

38 – 42 Mainsail Drive,
ST LEONARDS,
VICTORIA 3223

Tree Health and Hazard Risk Assessment

This report has been commissioned by:

Barwon Water

In reference to:
Tree Management, Health and Retention Value, in view of Planning for development of the site.

Date: March 2015

CLIENT DETAILS

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Version 1.3 (Final)

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1.0 Key Objectives

This report has been commissioned by Barwon Water, for the undertaking of a visual tree assessment and determining the protective measures, health and retention value of trees located on a parcel of land known as 38 – 42 Mainsail Drive, St Leonards, Victoria 3223

It is to determine the health of trees on site, determine retention value and give protective measures in order that they can be managed in the safest manner.

2.0 Methodology

The inspection for this report was performed on site, on the 16th of March 2015, by Matthew Branagh level 5 Consulting Arborist from Let's Talk About Trees.

A ground-based Visual Tree Assessment was performed on the trees, in line with modern Arboricultural Practices and Principles, many years of education, practical experience, AS 4970 – 2009 – Protection of Trees on Development Sites and AS 4373 – 2007 – Pruning of Amenity Trees.

All photographs were taken at the time of the inspection, and shall be used within this report for referencing or identification purposes.

3.0 Observations / Discussions

3.1 General Observations

The allotment contains no remnant native vegetation.

All specimens are native and two specimens, be they very poor specimens, are planted specimens of *Melaleuca lanceolata – Moonah* which is an indigenous species to the St Leonards area.

The reserve is located on the Bellarine Peninsula within the suburb of St Leonards. The current use of the reserve is a water supply tank.

All trees are located around the perimeter fence, and are approximately 35 – 40 years of age. The species are typical of the species used throughout the 1970's for wind break and boundary planting throughout Victoria on public assets.

All trees with the exception of 15 trees are located within the reserve. These 15 trees are located around the reserve on nature strips.

75 trees were identified by the scope of this report.

No trees on the reserve were identified as specimens with significance.

No specimens have any outstanding attributes, and most are in a heavy state of decline.

The detail of all trees is outlined in the following table.

Trees can be further referenced in the pictures within the appendix. The pictures show the general state of the trees on the reserve and support the comments of each tree within the field data collection table.

FIELD INSPECTION DATA

No.	Identification	Est. Age Yrs	ULE	Health	Structure	Significance	Hazard	TPZ (m)	Comment
1	*Eucalyptus leucoxylon – Yellow Gum*	M	M	F	P	M	L	2	A mature tree with a bifurcated structure. Sound at inspection.
2	*Melaleuca armillaris – Honey Myrtle*	M	M	G	P	L	L	4	Multi stemmed at ground level, with poor form and condition. Past failed branch wounds and pruning wounds evident. **POOR SPECIMEN WITH LOW RETENTION VALUE**
3	*Agonis flexuosa – Willow Myrtle*	SM	S	P P	P	L	M	N/A	Failed tree with a single main stem remaining, effectively a dead stump. **NOT A SOUND TREE FOR RETENTION**
4	*Melaleuca armillaris – Honey Myrtle*	M	S	P	P	L	H	5	Trifurcated at ground level, tree has failed structurally. **RECOMMENDED REMOVAL**
5	*Eucalyptus lehmannii – Busy Yate*	M	S	P	P	L	M	2	Tree was multi stemmed. One branch is remaining growing from the stump. The tree is made up of one limb on a failing stump which over hangs the boundary fence. **RECOMMENDED REMOVAL**
6	*Agonis flexuosa – Willow Myrtle*	SM	M	P	P	L	L	3	Multi stemmed poor specimen lopped in the past at 1.5m above ground level. Upper canopy is completely epicormic. **RETAINABLE WITH MAINTENANCE - MEDIUM TERM RETENTION**
7	*Eucalyptus lehmannii – Busy Yate*	M	M	P	P	L	M	4	50% failing tree. Remaining limbs over hang the boundary fence. Failing tree will not recover from past failings and will always carry a failure risk. **RECOMMENDED REMOVAL**
8	*Agonis flexuosa – Willow Myrtle*	SM	S	P	P	L	L	3	Poor specimen stunted in growth, thinning in canopy. Dying tree with little retention value. **NO LONG TERM RETENTION VALUE**
9	*Eucalyptus platypus - Moort*	M	M	F	F	L	L	3	Upright multi stemmed tree – dead limbs from lower trunk. Past branch failing evident. Tree has a poor structure however safe at time of inspection. **RETAINABLE WITH MAINTENANCE - MEDIUM TERM RETENTION**
10	*Melaleuca armillaris – Honey Myrtle*	M	S	P	P	L	H	N/A	Failed tree Requires removal. **REMOVAL REQUIRED**

No.	Identification	Est. Age Yrs	ULE	Health	Structure	Significance	Hazard	TPZ	Comment
11	*Eucalyptus lehmannii – Busy Yate*	M	S	P	P	L	M	2.5	Tree has many past branch pruning stubs, Bifurcated poor form and a very low retention value. **LOW RETENTION VALUE**
12	*Eucalyptus spathulata – Narrow Leaved Peppermint*	SM	M	F	P	L	L	2.9	Tall upright tree with poor stem taper. Tree has no lateral limbs to 7m high. Resulting in poor structure. Poor specimen of the species with a low retention value. **LOW RETENTION VALUE**
13	*Agonis flexuosa – Willow Myrtle*	SM	S	P	P	L	L	N/A	Tree has had the upper canopy removed, little evident regrowth. Poor specimen. **REMOVAL RECOMMENDED**
14	*Melaleuca armillaris – Honey Myrtle*	M	S	P	P	L	M	3.6	Poor specimen stunted in growth. Open spreading canopy with a high failure potential. Could be managed with maintenance however would have a short retention value. **SHORT TERM RETENTION WITH MAINTENANCE**
15	*Eucalyptus platypus - Moort*	M	M	F	F	L	M	4.1	Multi stemmed at 1.2m above the ground. Many past pruning wounds evident in the lower canopy, is a poor quality tree with an open spreading crown. High failure risk potential due to structure however sound at inspection. **LOW RETENTION VALUE**
16	*Melaleuca armillaris – Honey Myrtle*	M	S	P	P	L	M	3.7	Previously lopped to 1.2m Now a poor specimen with a high failure risk potential. **LOW RETENTION VALUE**
17	*Eucalyptus lehmannii – Busy Yate*	M	P	P	P	L	L	2	50% failed canopy at 1m above ground level. Unsound tree with a high future failure risk. **RECOMMENDED REMOVAL**
18	*Eucalyptus lehmannii – Busy Yate*	M	M	F	P	L	M	4.2	Poor specimen multi stemmed with many past pruning wounds and past failed stems. The tree is outside the main fenced area and growing in the open public space. **LOW RETENTION VALUE**
19	*Eucalyptus leucoxylon – Yellow Gum*	SM	M	F	P	L	M	5.2	Sound at inspection. Upright trifurcated structure tree has poor form. One limb grows very low and extends over the footpath to the adjacent roadway of Harbour drive. The tree is outside the main property fence in the public space. **LOW RETENTION VALUE**
20	*Agonis flexuosa – Willow Myrtle*	SM	S	P	P	L	L	2	Previously pruned at 1.2m above the ground, the upper canopy of this tree is epicormic, has poor form and structure and little to no retention value. **RECOMMENDED REMOVAL**
21	*Eucalyptus platypus - Moort*	M	M	G	P	L	L	2	This tree in the past has been removed 0.5m above the ground to a stump. It has regenerated with 10 leaders. It has a poor form and structure and shows a lot of deadwood throughout its epicormic canopy. It has little to no retention value. **RECCOMMENDED REMOVAL**

No.	Identification	Est. Age Yrs	ULE	Health	Structure	Significance	Hazard	TPZ	Comment
22	*Eucalyptus lehmannii – Busy Yate*	M	S	P	P	L	H	N/A	A failed pruned stump with pone small limb remaining. This tree has no retention value. **RECCOMMENDED REMOVAL**
23	*Melaleuca armillaris – Honey Myrtle*	M	S	P	P	L	M	3.1	This tree has a bifurcated stunted low growing form with a crack in the lower canopy. The tree has a low retention value. **RECOMMENDED REMOVAL**
24	*Agonis flexuosa – Willow Myrtle*	SM	S	P	P	L	L	N/A	This tree in the past has been removed 0.5m above the ground to a stump. It has regenerated with multiple leaders. It has a poor form and structure and shows a lot of deadwood throughout its epicormic canopy. It has little to no retention value. **RECCOMMENDED REMOVAL**
25	*Eucalyptus platypus - Moort*	M	M	F	P	L	M	4.9	Multi stemmed specimen sound at inspection. Tree has a low retention value. **SHOULD BE CONSIDERED FOR REMOVAL**
26	*Melaleuca armillaris – Honey Myrtle*	M	S	P	P	L	L	N/A	Failed tree reshooting from a stump. Tree has no retention value. **RECCOMMEDED REMOVAL**
27	*Eucalyptus leucoxylon – Yellow Gum*	SM	L	G	F	M	L	4.4	Sound tree in fair condition. One of the few trees in this report which is sound at inspection with a retention value.
28	*Agonis flexuosa – Willow Myrtle*	SM	S	P	P	P	L	2	Multi stemmed specimen sound at inspection. Tree has a low retention value. **SHOULD BE CONSIDERED FOR REMOVAL**
29	*Eucalyptus lehmannii – Busy Yate*	M	M	F	P	L	M	3.7	This tree is outside the main fenced area. It has been previously pruned at 0.5m above the ground. It is now multi stemmed and in fair condition with high limb failure potential. Tree should be considered for removal post site development. **SHOULD BE CONSIDERED FOR REMOVAL**
30	*Eucalyptus lehmannii – Busy Yate*	M	M	F	P	L	M	2.9	Tree shows past limb removal wounds at 0.5m above the ground level. It has a heavily biased canopy lean toward the rear yard of a neighbouring allotment. **NOT RECOMMENDED FOR RETENTION**
31	*Eucalyptus lehmannii – Busy Yate*	M	M	F	P	L	M	3.5	Past large pruning wound 0.5m above ground level. Resultant canopy now epicormic. This tree carries a high failure risk potential. **NOT RECOMMENDED FOR RETENTION POST DEVELOPMENT**

No.	Identification	Est. Age Yrs	ULE	Health	Structure	Significance	Hazard	TPZ	Comment
32	*Eucalyptus leucoxylon – Yellow Gum*	SM	M	F	P	L	M	5.2	Past large upper canopy failings evident in this tree. Tree has an open spreading crown and a trifurcated upper canopy structure with included bark. The tree is outside the main fenced compound in the public open space. **TREE HAS LOW RETENTION VALUE**
33	*Melaleuca armillaris – Honey Myrtle*	M	M	G	P	L	M	2	Tree is located outside the main fenced area, It is multi stemmed from its lower canopy and shows past stem failings from its upper canopy. Sound at inspection but does not have a high long term retention value. **LOW LONG TERM RETENTION VALUE**
34	*Eucalyptus leucoxylon – Yellow Gum*	M	M	G	F	L	L	3.1	Tree is located outside the main fenced area. It has a low spreading crown and shows signs of insect borer in its lower trunk. Tree is sound at the time of inspection however, has a low long term retention value has. **LOW LONG TERM RETENTION VALUE**
35	*Melaleuca armillaris – Honey Myrtle*	M	S	P	P	L	L	N/A	Failed at ground level. Trees canopy is 100% shooting epicormic from ground level. **NO RETENTION VALUE RECOMMENDED REMOVAL**
36	*Eucalyptus platypus - Moort*	M	L	G	F	L	L	4.1	Bifurcated tree, both leaders have a biased lean into the property. Tree was sound at inspection and has a medium failure potential. **SHORT TERM RETENTION VALUE**
37	*Eucalyptus lehmannii – Busy Yate*	M	M	G	F	L	L	2	Multi stemmed from lower trunk. Tree has deadwood throughout the canopy. **LOW LONG TERM RETENTION VALUE**
38	*Eucalyptus spp.*	D	D	D	D	D	D	2	Dead Tree **TREE REQUIRES REMOVAL**
39	*Agonis flexuosa – Willow Myrtle*	SM	M	S	P	L	L	N/A	Removed at ground level in the past. Weak structural form with a canopy that predominantly epicormic and thinning. **LOW RETENTION VALUE**
40	*Melaleuca armillaris – Honey Myrtle*	M	M	F	F	L	L	4.9	Multi stemmed at ground level. The tree has poor form with a thinning canopy. It is a declining specimen, which was sound at inspection. **LOW RETENTION VALUE**
41	*Agonis flexuosa – Willow Myrtle*	SM	M	S	P	L	L	N/A	Removed at ground level in the past. Weak structural form with a canopy that predominantly epicormic and thinning. **LOW RETENTION VALUE**
42	*Melaleuca armillaris – Honey Myrtle*	M	L	G	F	L	L	2	Tree with mature crown in good condition. Tree sound at inspection with good health. **GOOD RETENTION VALUE**

No.	Identification	Est. Age Yrs	ULE	Health	Structure	Significance	Hazard	TPZ	Comment
43	*Melaleuca lanceolata - Moonah*	SM	M	F	P	M	L	2	Multi stemmed from 0.5m above the ground. An indigenous native with past pruning wounds at about 1m high in its canopy. Tree is partly epicormic. Tree has retention value as a screening shrub. **RETENTION VALUE IN THIS TREE**
44	*Corymbia citriodora – Lemon Scented Gum*	SM	L	G	F	M	L	2	Tall upright specimen with sparse thing canopy, tree has poor form but a sound structure. **MEDIUM RETENTION VALUE**
45	*Eucalyptus leucoxylon – Yellow Gum*	SM	L	G	F	L	L	6.4	Tree in the past has been reduced to a stump of 0.5m, now has X 5 epicormic leaders. At inspection the tree was sound in health and showed no signs of declining health. **MEDUM RETENTION VALUE**
46	*Agonis flexuosa – Willow Myrtle*	SM	M	G	P	L	L	2	Stunted tree with poor form in sound health. **LOW RETENTION VALUE**
47	*Dead Stump*	D	D	D	D	D	D	N/A	**REMOVAL REQUIRED**
48	*Eucalyptus lehmannii – Busy Yate*	M	S	P	P	L	M	N/A	Regenerated stump, low retention value. **RECOMMENDED REMOVAL**
49	*Melaleuca armillaris – Honey Myrtle*	M	M	F	P	L	M	N/A	Multi stemmed tree from ground level. Deadwood throughout the trees canopy. The tree has a large dead scaffold which requires removal. **LOW RETENTION VALUE**
50	*Eucalyptus leucoxylon – Yellow Gum*	SM	M	P	P	L	M	4.1	Tree coppiced to a 1m high stump in the past. Is now epicormic in canopy which is mature in size. It has an open spreading crown with evident past limb failings. **LOW RETENTION VALUE**
51	*Eucalyptus viminallis – Manna Gum*	M	S	P	P	M	L	3.8	Failed upper crown in this tree, *Phellinus* fungi fruits are evident on main stem. Dead and part failed upper canopy. **LOW RETENTION VALUE**
52	*Eucalyptus lehmannii – Busy Yate*	M	M	F	P	L	M	2	A mature tree which hangs 70% over the boundary fence and into the adjoining street. Tree has deadwood in its canopy. **LOW RETENTION VALUE**
53	*Eucalyptus leucoxylon – Yellow Gum*	SM	M	G	G	M	L	2	Upper canopy has deadwood. The main stem shows *Phellinus* fungi fruiting bracts indicating decay in the main structure of the tree. The tree is sound at inspection and shows good condition. This sound condition is long term expected to decline as the fungi continues to inoculate the tree. **MEDIUM RETENTION VALUE**

No.	Identification	Est. Age Yrs	ULE	Health	Structure	Significance	Hazard	TPZ	Comment
54	*Melaleuca armillaris – Honey Myrtle*	M	S	P	P	L	M	N/A	Regenerated stump forming a multi stemmed tree with poor structure. **LOW RETENTION VALUE**
55	*Melaleuca armillaris – Honey Myrtle*	M	S	P	P	L	M	N/A	Regenerated stump with poor weak growth. **LOW RETENTION VALUE**
56	*Dead Stump*	D	D	D	D	D	D	N/A	Dead Tree **REMOVAL RECOMMENDED**
57	*Eucalyptus lehmannii – Busy Yate*	M	M	F	P	L	L	3.7	Lower canopy pruned from tree. Many dead branch stubs at the base. Poor specimen. **LOW RETENTION VALUE**
58	*Eucalyptus leucoxylon – Yellow Gum*	SM	M	F	P	L	L	2.2	Bifurcated poor form with a stunted canopy. **LOW RETENTION VALUE**
59	*Dead Stump*	D	D	D	D	D	D	N/A	DEAD STUN Removed at ground level in the past. Weak structural form with a canopy that predominantly epicormic and thinning. **LOW RETENTION VALUE**
60	*Regen. Stump*	M	D	D	D	D	D	N/A	DEAD STUMP **RECOMMENDED REMOVAL**
61	*Eucalyptus leucoxylon – Yellow Gum*	SM	M	F	F	M	L	4.1	DEAD STUMP **RECOMMENDED REMOVAL**
62	*Melaleuca armillaris – Honey Myrtle*	M	M	F	F	L	L	2	Poor specimen stunted in growth. Leaning in habit. **LOW RETENTION VALUE**
63	*Eucalyptus platypus - Moort*	M	M	F	P	L	L	2.9	Removed and lopped to lower trunk in the past. Poor branch attachment, this tree is a medium future failure risk. **REMOVAL RECOMMENDED**
64	*Eucalyptus lehmannii – Busy Yate*	M	M	P	F	L	L	3.6	Tree is bifurcated and in poor health. Dead lower canopy stubs from past branch removals. **LOW RETENTION VALUE**
65	*Melaleuca armillaris – Honey Myrtle*	M	S	P	P	L	M	9.3	Failed tree leaning over site shed. **RECOMMENDED REMOVAL**
66	*Melaleuca lanceolata - Moonah*	Y	M	F	P	M	L	2	Young multi stemmed specimen, not in good structural condition. Multi stemmed from ground level. Not a good specimen of a planted indigenous native. **LOW RETENTION VALUE**
67	*Agonis flexuosa – Willow Myrtle*	SM	S	P	P	L	L	2	Specimen in poor health with poor structure, many dead branch stubs at the base of the tree. **REMOVAL RECOMENDED**
68	*Eucalyptus lehmannii – Busy Yate*	M	M	F	P	L	M	4.2	Many dead branch stubs at the base of this tree, two leaders form the canopy, both are over weighted branches with a high failure risk. **LOW RETENTION VALUE**

3.2 Discussion

Of the 76 trees none hold a high significance to the site or the local area. Management of the trees should follow the comments made in the comments box of the table, and high consideration should be given to the removal of many of the trees pre development of the site. Many trees are in poor condition as a result of past pruning of the trees. It should be noted that these trees were never intended to have a useful life as an amenity tree. They were planted as a break of trees to screen around the land use assets. In the past the trees have been pruned to allow maintenance around their bases and heavily pruned, in many cases lopped to encourage the trees to thicken in canopy and provide an aesthetic barrier between the site and the surrounding suburb.

Over the past decade management in this way has not been undertaken. As a result the trees have developed with long leaders which are poorly attached to the parent stump. As these develop they become over weighted and form a poor tree structure. The result is an increased number of tree deaths and limb failings. This is very evident when looking at the plantation today.

Further impact and decline is caused by the drought conditions of the past decade where rainfall has been at a minimum. It can now be reasonably expected that the recent return to around normal rain fall in the area will cause the trees to return to a typical growth pattern. This will cause an increase in foliage mass and an increase in limb weight. This in turn will add further weight stresses to limbs which have poor attachments and it can be expected that without management the failure rates and tree deaths within the plantation will continue to increase.

For this reason the useful life expectancy of trees which appear sound in health has been diminished. In many instances limb failure and early tree death is inevitable and cannot be reversed.

4.0 Conclusion

It is my opinion that two viable options for the plantation trees exist.

Option 1

He trees be retained in their current location and extensive pruning of their canopies be undertaken in order to return the epicormic scaffolds to a 'hedged' managed state.

This is a return to the past maintenance practices of the sight in the 80's and 90's. In this manner the tree failures can be reduced as the over weighted limbs are managed and as a result less limb failure risk will be associated to the site.
In undertaking this management, dead trees should be removed as should all trees which are stunted and performing poorly.

The area beneath the trees should be mulched to a depth of a minimum 10cm, and the much laid from the boundary fence into the reserve for a distance which covers the entire root zone of the trees. This root zone is based on the tree protection zone detailed in the table within this report for each tree.

The plantation should then be in fill planted using a suitable species for the area.

If this option is undertaken a further report may wish to be commissioned detailing the management of the trees intensity of pruning and suitable replacement species.

Option 2

Option 2 is to remove the trees of the allotment, retaining and undertaking pruning management of a selected few trees should some of the sounder trees be desired for retention.

As stated earlier no trees on the site have a high retention value, and removal is based on eliminating the risks associated to the failing site assets.

As they stand the trees have a short useful life expectancy as a group. Some trees with the removed competition of the rest of the trees, and improved growing conditions through mulching and pruning management could have their useful life expectancies extended to 20 years.

The trees located outside the main reserve on the public space are in much better condition than those within the reserve.

Some of these trees require management for sound retention, others are young and recently planted; the table reflects these tree values.

5.0 Recommendation

The recommendation of this report are as follows;

The future land use and development of the site should be determined.

The tree assets should be considered in the future site use and where required removed and managed in order to achieve the desired outcomes.

In development it is possible to impact trees and retain them post development. This is certainly the more common approach when developing on sites which have a tree occupancy pre development. However in this instance the trees were established as a purpose asset, and that was an ornamental use.

The early use of the trees as ornamental specimens has meant that they were managed in a way which has not resulted in sound assets at maturity. This has resulted in a poor selection when looked at from a retention of arboricultural assets perspective.

The two suggested options I believe are sound; either return the trees to their previous use as a pruned and managed vegetation screen, or remove them and begin the new land use with new plantings appropriate for the decided land use.

This in turn will develop into a value added resource for the allotment.

In retention, if final design drawings are completed and trees over hang the building envelopes they may require trimming. This will be determined post design and impact assessment.

All trees should be managed to meet the requirements of AS 4970 – 2009 Protection of Trees on Development Sites, and AS 4373—2007 Pruning of Amenity Trees. This should be done using this report, AS 4970 – 2009 Protection of Trees on Development Sites AS 4373—2007 Pruning of Amenity Trees.

All works carried out on the trees should be undertaken by a qualified arborist as per the guideline of Australian Standard AS4970 – 2009 Protection of Trees on Construction Sites.

Further tree management reports may be required in retention of specimens on this allotment. This may also be desired for tree selection in replacement plantings.

6.0 Appendices

6.1 Photographs

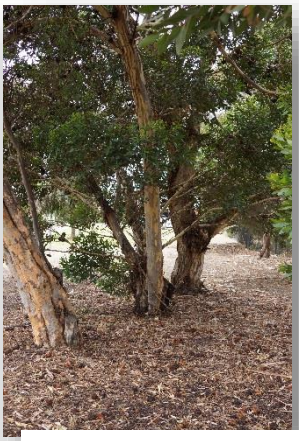
Site Overview

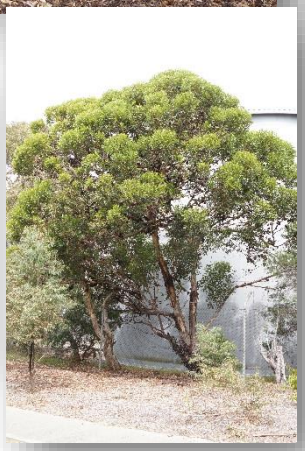




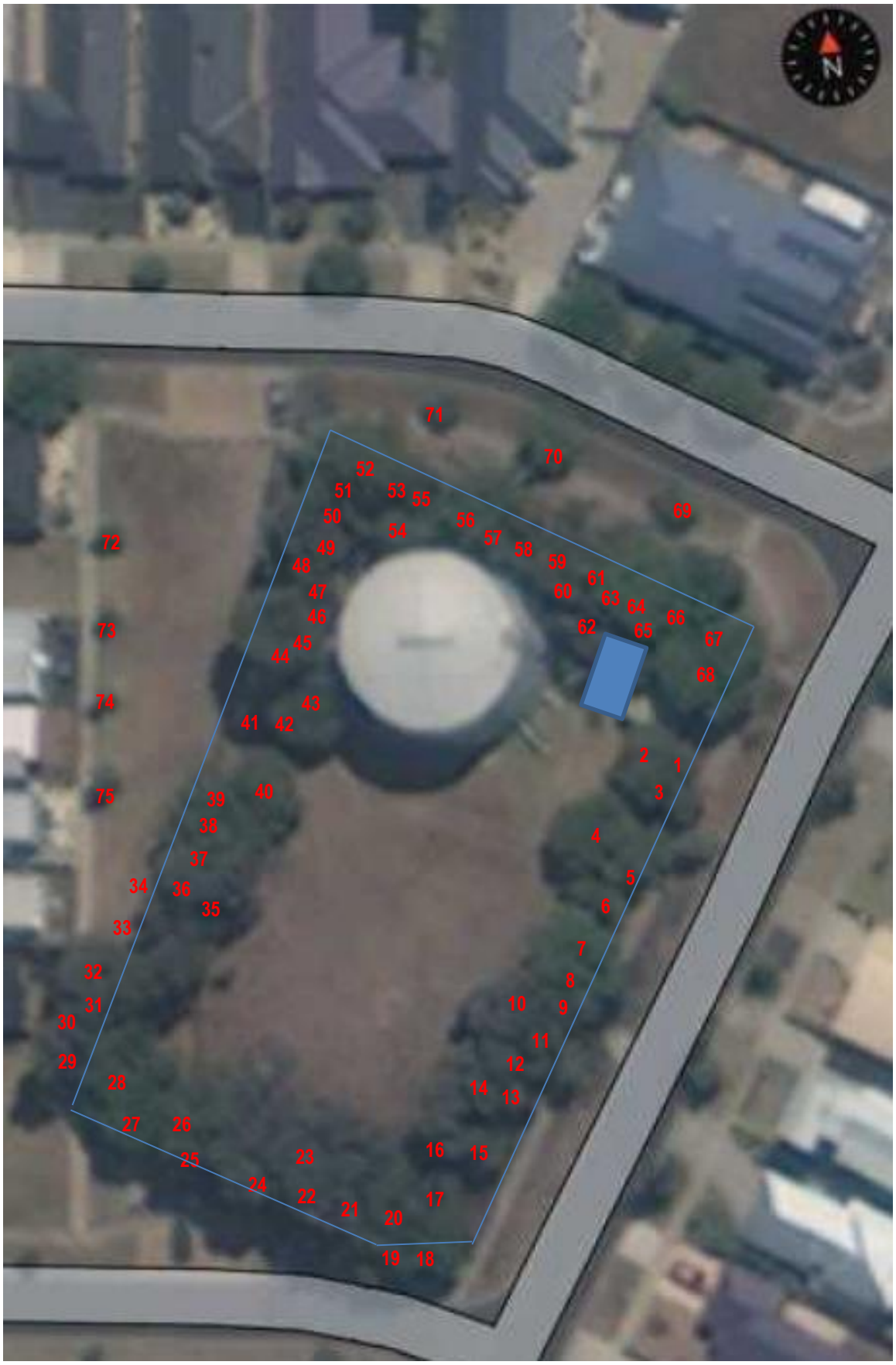




6.2 Site Detail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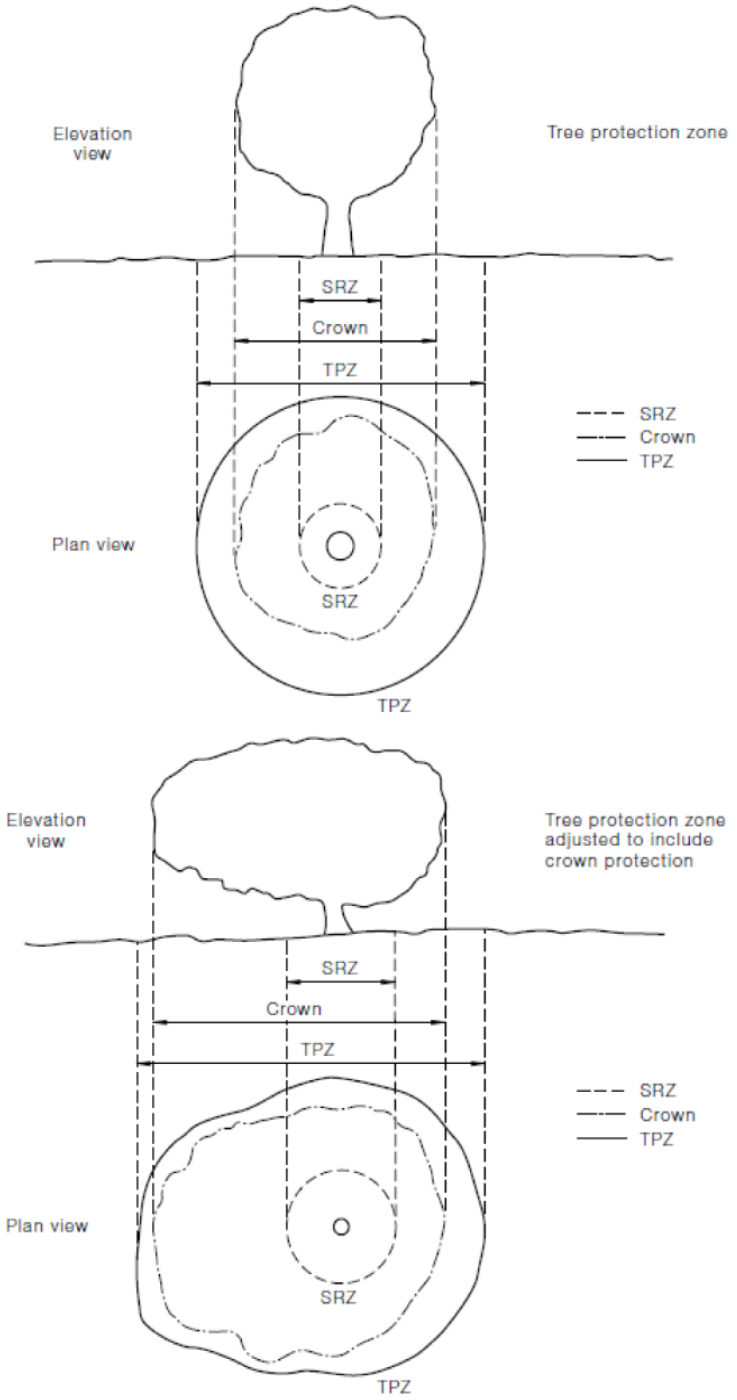
6.3 Structural Root Zone & Tree Protection Zone.



NOTE: Refer to Clause 3.2 for calculation of TPZ.

FIGURE 2 INDICATIVE TREE PROTECTION ZONE

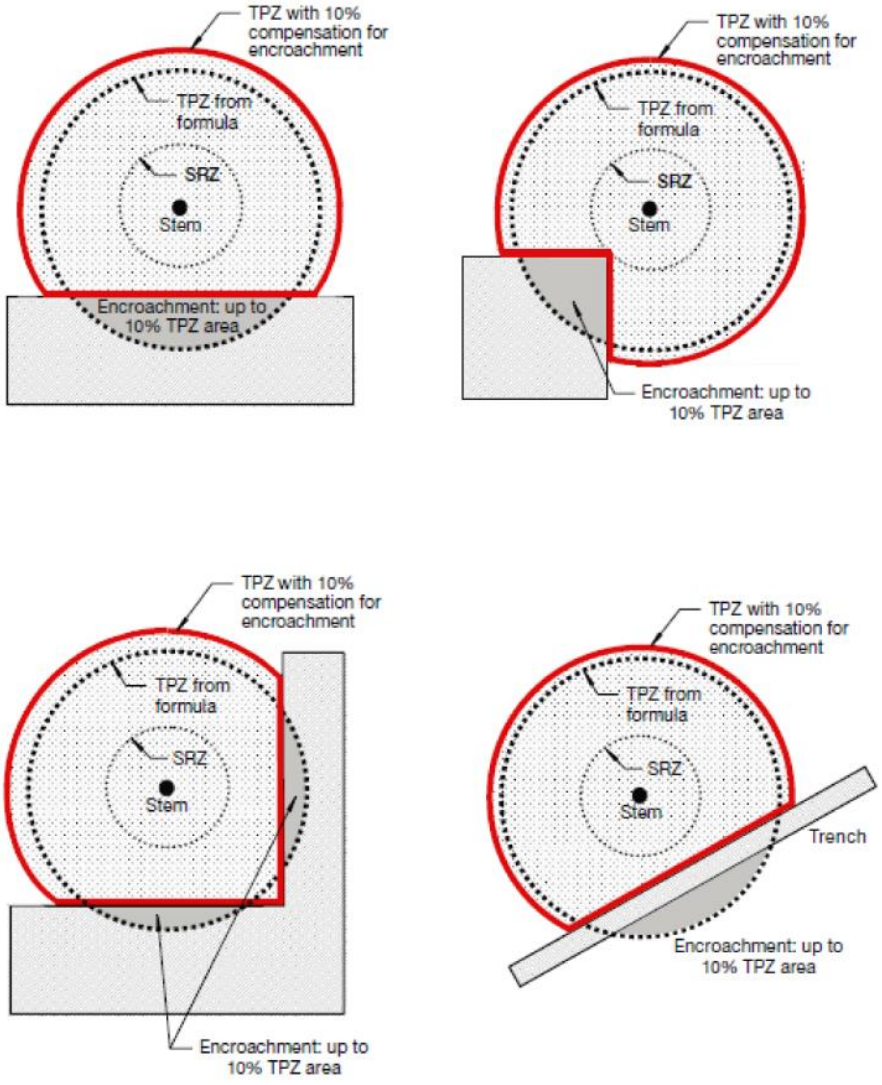
6.4 Tree Protection Zone Encroachment Examples

APPENDIX D

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.



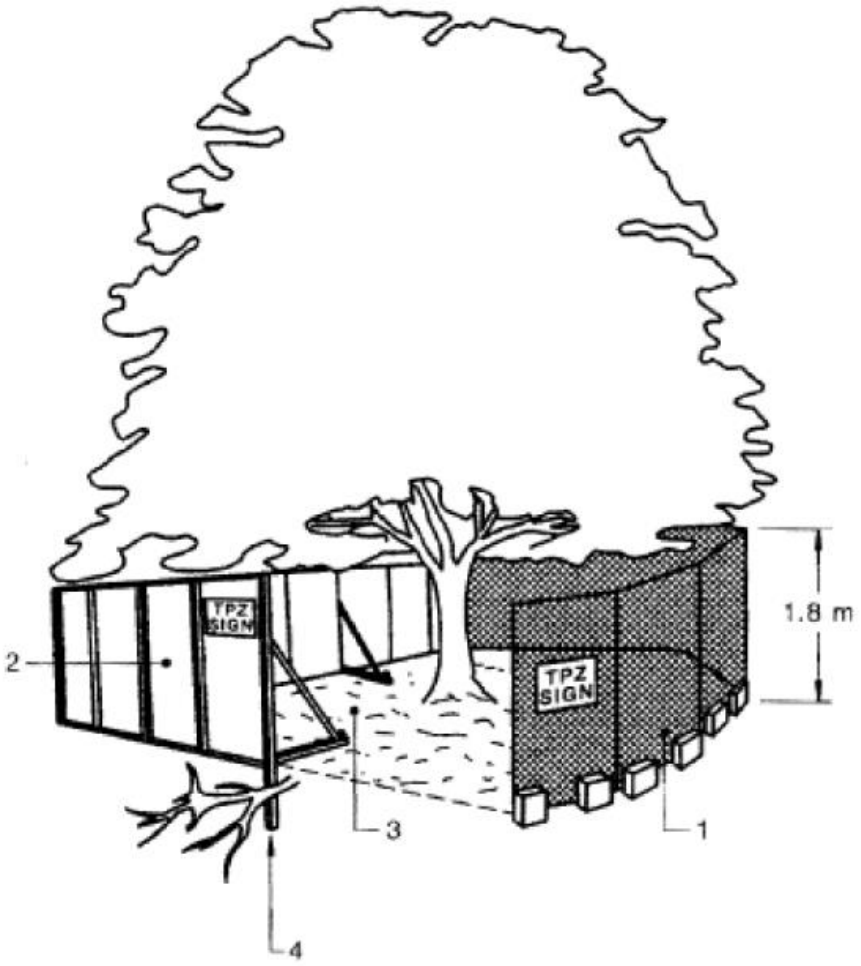
NOTE: Less than 10% TPZ area and outside SRZ. Any loss of TPZ compensated for elsewhere.

FIGURE D1 EXAMPLES OF MINOR ENCROACHMENT INTO TPZ

6.5 Tree Protection Zone (TPZ) Signs

4.4 SIGNS

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



LEGEND:

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

FIGURE 3 PROTECTIVE FENCING

(Extract from AS4970 – 2009 Protection of trees on Development sites)

6.6 Tree Protection Zone (TPZ) Example

APPENDIX C

TREE PROTECTION ZONE SIGN EXAMPLE

(Informative)

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

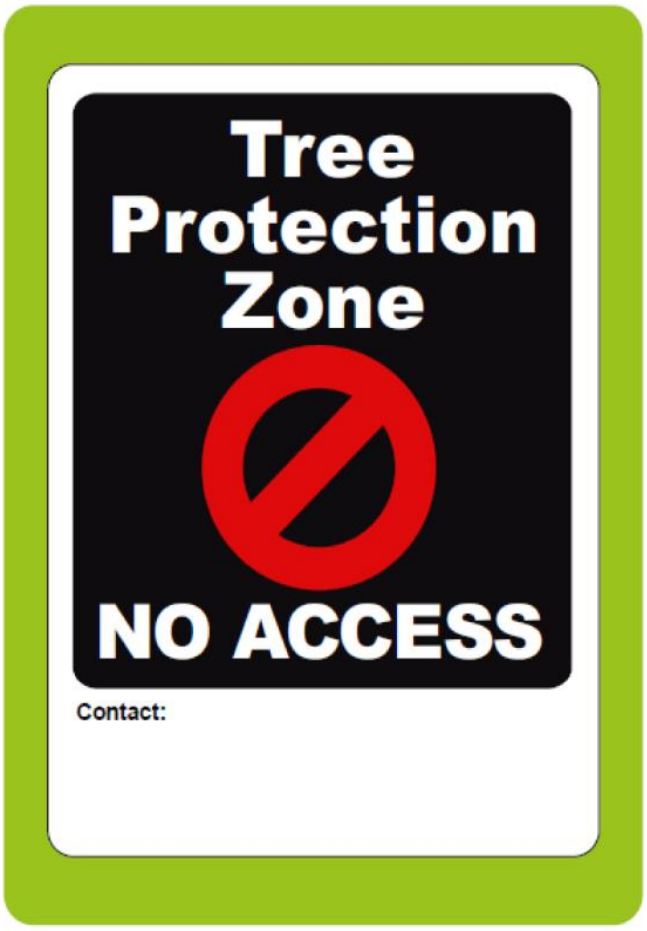


FIGURE C1 TREE PROTECTION ZONE SIGN

(Extract from AS4970 – 2009 Protection of trees on Development sites)

6.7 Indicative Stages in Development

Stage in Development	Tree Management Process	
	Matters for Consideration	**Actions and Certificates**
Planning (Sections 2 and 3)		
Site acquisition	Legal constraints	
Detail surveys	Council plans and policies Planning instruments and controls Heritage Threatened species	Existing trees accurately plotted on survey plan.
Preliminary tree assessment	Hazard/risks Tree retention value	Evaluate trees suitable for retention and mark on plan Provide preliminary arboricultural report and indicative TPZs to guide development layout.
Preliminary development design	Condition of trees Proximity to buildings Location of services Roads Level changes Building operations space Long-term management	Planning selection of trees for retention Design review by proponent Design modifications to minimise impact to trees.
Development submission	Identify trees for retention through comprehensive arboricultural impact assessment of proposed construction. Determine tree protection measures. Landscape design.	Provide arboricultural impact assessment including tree protection plan (drawing) and specification.
Development approval	Development controls Conditions of consent	Review consent conditions relating to trees.
Pre-construction (Sections 4 and 5)		
Initial site preparation	State based OHS requirements for tree work Approved retention/removal Refer to AS 4373 for the requirements on the pruning of amenity trees Specifications for tree protection measures.	Compliance with conditions of consent. Tree removal/tree retention/transplanting Tree pruning Certification of tree removal and pruning. Establish/delineate TPZ Install protective measures Certification of tree protection measures.

Stage in Development	Tree Management Process	
	Matters for Consideration	**Actions and Certificates**
Construction (Sections 4 and 5)		
Site establishment	Temporary infrastructure Demolition, bulk earthworks, hydrology	Locate temporary infrastructure to minimise impact on related trees. Maintain protective measures Certification of tree protection measures.
Construction work	Liaison with site manager, compliance Deviation from approved plan	Maintain or amend protective measures Supervision and monitoring
Implement hard and soft landscape works	Installation of irrigation services Control of compaction work Installation of pavement and retaining walls	Remove selected protective measures as necessary Remedial tree works Supervision and monitoring
Practical completion	Tree vigour and structure	Remove all remaining tree protection measures Certification of tree protection
Post Construction (Section 5)		
Defects liability / maintenance period	Tree vigour and structure	Maintenance and monitoring Final remedial tree works Final certification of tree condition

NOTES:

1. Owing to variations in planning legislation, this Table is a general indication of the process only
2. Certification of tree protection and condition should be carried out by the project Arborist.

Extract from Australian Standard 4970 – 2009 – Protection of Trees on Development Sites.

The above Table shows clearly the process of tree protection on development sites as set out in the Australian Standard. It can also serve as a guide to the set up and management of new and replacement plantings.

This Table should be followed in the management of all trees on development sites.

Depending on the stage of the project you are undertaking, the type of project you are undertaking and specific other requirements of various planning departments, in some instances additional reports may be required.

The above Table serves as an indicative guide to the process of managing and protecting trees.

7.0 References

1. **Victoria's Native Vegetation Management Framework (Draft)** – DSE Victoria
2. Australian Standard® ***AS4970-2009, Protection of trees on development sites,*** *2009, Sydney*
3. Australian Standard® ***AS4373-2007,Pruning of Amenity Trees,*** *2007, Sydney*
4. Alex L. Shigo, ***A New Tree Biology***. 1986. USA
5. Alex L. Shigo, ***Modern Arboriculture.*** 1991. USA
6. Richard W. Harris, *Arboriculture.* ***Integrated management of Landscape Trees, Shrubs and Vines.*** Second Edition. 1992. USA.
7. Keith Rushforth, ***Tree Planting and Management***. 1987. USA
8. David Jones and Roger Elliot, ***Pests, diseases and ailments of Australian Plants***. 1995. Australia
9. Frances Bodkin, ***Encyclopaedia Botanica***. 1990. Australia
10. Raven, Evert and Eichhorn, ***Biology of plants.*** 1991. USA.
11. Ivan Holliday, ***Australian Trees***, 1995. Australia
12. Leon Costermans, ***Native Trees and Shrubs of South-Eastern Australia,*** *1996, Australia*

Writings within the report are of the author's personal knowledge and belief. The information and knowledge released in the report when referenced should be referenced to

Matt Branagh, Dip.App.Scl – Horticulture/Arboriculture – Let's Talk About Trees.

8.0 Terms and Limitations of the Report

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- Great care has been taken in sourcing information for this report so as it is correct. Let's Talk About Trees cannot be responsible for information provided which is not directly under control of its staff.

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- In no way is this report biased or weighted. The content of the report is written in the full, honest opinion of the Let's Talk About Trees Consulting Arborist.

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- This report is developed around the information provided by our client in the project brief. Only issues covered by the project brief are discussed in this report.

- All details, information and advice contained in this report have been researched and referenced. Where no reference is included, it is the author's learned opinion, experience and observations.