

Mornington Peninsula Shire

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Arboricultural Construction Impact Assessment

Site location

**4 Woyna Ave,
Capel Sound**

Report date:

22nd July 2026

Site assessment date:

23rd February 2026

Prepared For:

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1. Introduction

1.1 Purpose of report

Arborscribe Tree Reports was instructed by SPD Building Design in February 2026 to provide a ground based visual assessment of all the trees on the site at 4 Woyna Ave, Chapel Sound as the owner of the property is proposing that the property it is sub-divided and that two dwellings are constructed on the site. An Arboricultural Impact Assessment to Australian Standard AS4970-2025 (Australian Standards- Protection of trees on development sites) has been requested to make an assessment and recommendations of all the trees surrounding the proposed construction site including trees in neighbouring properties to provide

- The species, height, crown spread, DBH, NRZ, DAB, SRZ, Circumference at 1.5m and at buttress, TPZ, Age Class, Useful Life Expectancy, Location relevance and to assess each tree to provide its health, structure, retention value and NRZ encroachment. (Abbreviations definitions in 6. Appendices for Tree Data Table)
- Identify the trees on the site, in neighbouring properties and nature strip that maybe impacted from an encroachment into their Notation Rotational Zone (NRZ) or Structural Root Zone (SRZ) because of the proposed construction works.
- To provide an assessment of the potential impact on each tree of the development and determine which trees can be retained in the context of the current plans,
- To recommended measures to be taken to protect any trees that are recommended to be retained during the proposed construction works under the guide lines of AS 4970-2025 (Australian Standards- Protection of trees on development sites)

1.2 Summary of report

The site under review is a residential allotment with a single dwelling constructed on the site. Woyna Ave is the street frontage with neighbouring properties to the east, west and north.

The site has a mixture of canopy trees and smaller trees including fruit trees. The neighbouring properties are single dwelling residential allotments a with mixture of canopy trees and smaller trees including fruit trees.

A total of eighteen trees were assessed for this report. This includes thirteen trees that are located on the property and five trees that are located in neighbouring properties. Each tree had been individually assessed and the results provide in table format. Each tree has been numbered and this number corresponds to assessment table and any plans

Eleven trees were assessed on the site, three trees have been given a low retention value (Trees numbered 2 & 13) eight trees and have been given a medium retention value (Trees numbered 5, 6, 7, 8, 9, 10, 12 & 14) and 2 trees have been given a high retention value (trees 1 & 11)

Five trees were as assessed that are that are located in neighbouring and have been given a high retention value (Trees 2, 15, 16, 17 & 18

1.3 Planning overlays

GRZ General Residential Zone

GRZ1 General Residential Zone-Schedule1

ESO Environmental Significance Overlay

ESO25 Environmental Significance Overlay 25

Mornington Peninsula Local Tree removal law

Victoria Planning Canopy Tree Law- Clause 52.37

2. Methodology

2.1 Date of inspection and Inspections procedure

A ground-based visual site and tree inspection was carried out by Sherrin Wiggans on the 23rd February 2026 at 4 Woyna Ave, Chapel Sound.

The assessment was to record

- Tree Species
- Location
- Height and Crown spread
- Age Class and Safe Useful Life Expectancy,
- Circumference 1.4m above ground level to calculate DSH (Diameter at standards height)
- Circumference at ground level, DAB (Diameter above buttress)
- Health and Structure,
- Retention value
- Photograph of tree

A ground based visual inspection of the tree was carried out according to the principles in Mattheck, Dr. Claus & Breloer, Helge (1994) – Sixth Edition (2001) *The Body Language of Trees* and Harris, Clark and Matheny (1999) *Arboriculture, integrated management of landscape trees, shrubs, and vines*, 3rd ed.

Tree location was determined by using site feature survey provide by the client. Trees have been numbered and this number corresponds to assessment table and any plans.

The height and canopy spread of the trees were estimated.

Health and structure are assessed based upon visual inspections and experience; Assessment was limited only to parts of the tree that were visible from ground level within the subject site.

A diameter tape was used to determine the trunk circumference of the tree and rounded up to the nearest whole number.

A proposed ground floor and basement plans have been provided by client for analysis. Trees have been numbered and Notational Root Zone and Structural Roots Zones are provided for specific trees.

Council Arboriculture Victoria- AS-4970-2009 Calculator was used to calculate diameter of tree.

A proposed ground floor and basement plans have been provided by client for analysis. Trees have been numbered and Notational Root Zone and Structural Roots Zones are provided for specific trees.

Encroachment into NRZ and SRZ by the proposed construction works have been calculated using Act Cad.

2.2 Limitation of assessment

- Tree defects not visible from the ground up have not been discussed and the risk associated is excluded from this report
- Health and structure are assessed based upon visual inspections and experience; Assessment was limited only to parts of the tree that were visible from ground level within the subject site. Aerial inspection was not carried out
- Height and canopy spread were estimated
- Circumference of some trees was estimated where access to the trunk was restricted due to site access restrictions.

2.3 References to plans provide for report

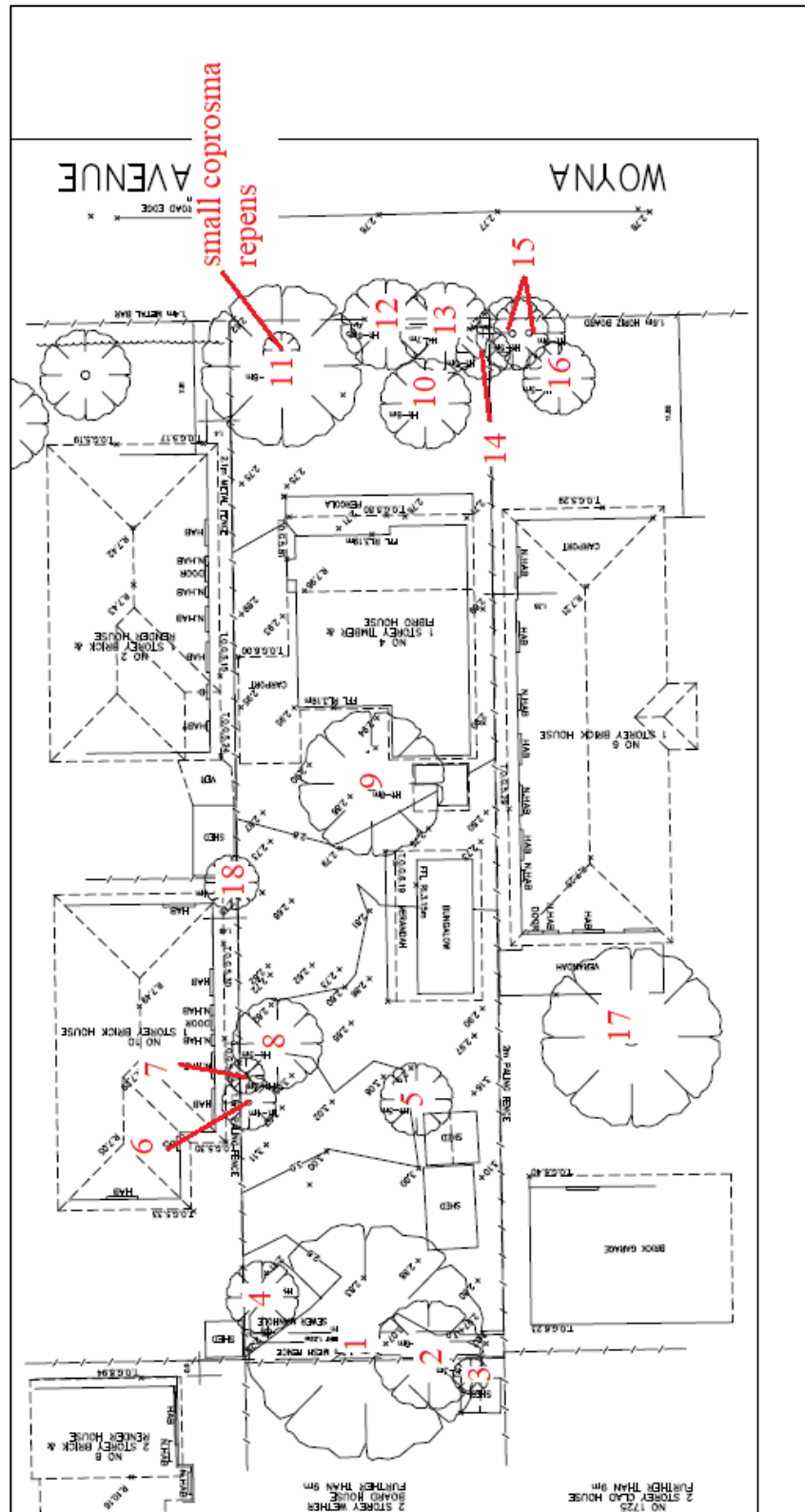
- Next Level Surveying, Site Feature Survey, 4 Woyna Ave, Capel Sound, 28.1.2026
- SPD Building Design, Ground Floor Plan 4, Woyna Ave, Capel Sound, 30th June 2026
Rev B

2.4 Referenced document used

- Australian standard AS4970-2025 Protection of trees on development sites.
- Australian Standards AS4373 (2007) Pruning of Amenity Trees.

3. Observations

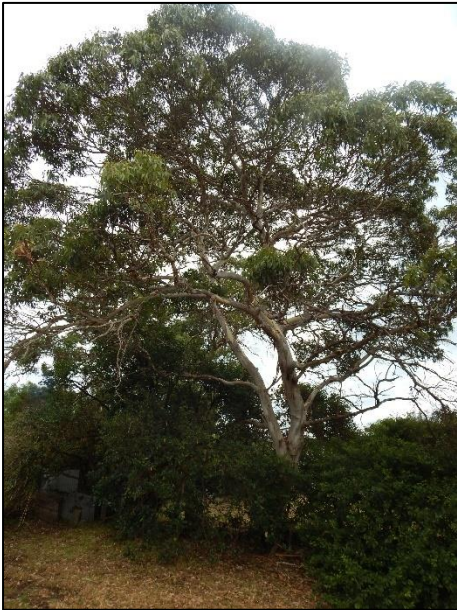
3.1 Site plan



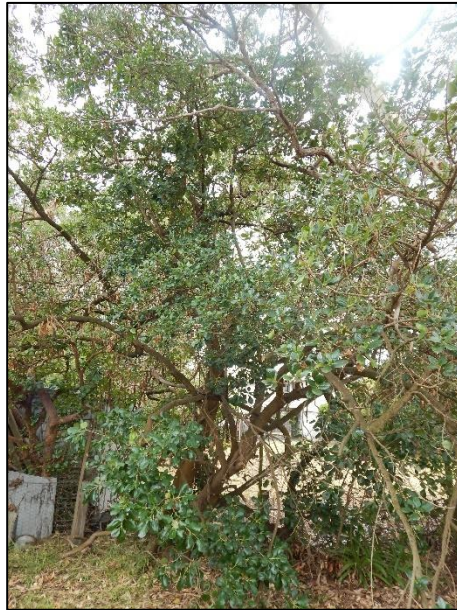
3.2 Tree Data Table

Tree No.	Botanical Name Common Name	Origin	Height (m)	Crown Spread (m)	DSH (cm)	NRZ (m)	DAB (cm)	SRZ (m)	Circum at 1.5m (cm)	Circum above root buttress (cm)	TPZ (m)	Age Class	SULE	Location Relevance	Retention Value	Vigour /Health	Structure /Form	NRZ (%)	Comments	Permit required for tree removal pursuant GRZ1, ESO25 and Clause 52.37	Arborist's recommendations
1	<i>Eucalyptus</i> species Eucalyptus	Native	10	11	47.7	5.7	47.7	2.4	150	150	5.7	Semi-Mature	10yrs	On site.	High	Good	Fair	0.00%	Tree bifurcated at 2m. Some deadwood and some epicormic growth in canopy.	Yes, Canopy boundary tree.	Tree to be retained. No encroachment. General requirements for construction apply outlined in discussion and tree is to be protected during proposed construction works. Protection measures outlined in Tree Management Plan.
2	<i>Coprosma repens</i> Mirror Bush	Exotic	4.7	6	36.6	4.4	28.6	2	80 + 60 + 40 + 40	90	4.4	Mature	10yrs	On Site	Low	Good	Fair	0.00%	Classified as an environmental weed.	No, under 5m in height.	No encroachment. Tree removal required as it is a weed species.
3	<i>Coprosma repens</i> Mirror Bush	Exotic	4	4	20.4	2.4	20.4	1.66	64	64	2.4	Mature	10yrs	3rd party tree, located in neighbouring property.	High	Fair	Fair	0.00%	Classified as an environmental weed. Foliage is sparse. Canopy overhangs boundary and can be pruned back to boundary.	No, under 5m in height	Tree to be retained. No encroachment. General requirements for construction apply outlined in discussion and tree is to be protected during proposed construction works. Protection measures outlined in Tree Management Plan.
4	<i>Acacia species</i> Wattle tree	Native	6	10	40.7	4.9	40.7	2.3	128	128	2.3	Mature	2yrs	On site.	Low	Fair	Poor	0.00%	Tree has been lopped at 4m and there is decay at this point. There is die back at the tips of the branches and the canopy of the tree is lop-sided. Very high risk of limb failure due to poor structure.	Yes, native	Major encroachment. Tree removal required to facilitate proposed construction works.
5	<i>Cupressus species</i> Cypress	Exotic	4.5	4	25.5	3.1	38.2	2.2	80	120	3.1	Semi-mature	4yrs	On site	Medium	Fair	Good	Major 100%	The foliage in the canopy is sparse and the health of this tree is declining.	No, exotic	Major encroachment. Tree removal required to facilitate proposed construction works.
6	<i>Acacia species</i> Wattle tree	Native	4.5	4	19.1	2.3	19.1	1.7	60	60	2.3	Mature	6yrs	On site	Medium	Fair	Fair	Major 100%	Canopy of tree is lop-sided. There is deadwood and several broken limbs in canopy.	Yes, native	Major encroachment. Tree removal required to facilitate proposed construction works.
7	<i>Callistemon species</i> Bottle Brush	Native	3	3	15.6	2	15.6	1.5	49	49	2	Semi-Mature	5yrs	On site	Medium	Good	Poor	Major 100%	Canopy of tree is lop-sided. Tree has been lopped at base.	Yes, native	Major encroachment. Tree removal required to facilitate proposed construction works.
8	<i>Prunus species</i> Plum tree	Exotic	4.5	8	41.1	5	41.1	2.3	130	130	5	Mature	7yrs	On site	Medium	Good	Fair	Major 100%	Some deadwood and some epicormic growth in canopy.	No, under 5m in height	Major encroachment. Tree removal required to facilitate proposed construction works.
9	<i>Brachychiton discolor</i> Lace Bark Tree	Native	8	8	41.4	5	41.4	2.3	130	130	5	Semi-Mature	10yrs	On site	Medium	Good	Fair	Major 100%	Tree is bifurcated at 2.5m	Yes, native	Major encroachment. Tree removal required to facilitate proposed construction works.
10	<i>Callistemon viminalis</i> Weeping Bottle Brush	Native	4.5	5	24.9	3	78	1.8	50 + 60	78	3	Mature	8yrs	On site	Medium	Good	Fair	Major 100%	Tree is multi-stemmed. Canopy is lop-sided due to it being pruned away from existing driveway	Yes, native	Major encroachment. Tree removal required to facilitate proposed construction works.
11	<i>Banksia integrifolia</i> Coast Banksia	Native	12	14	11.5	9	3.2	0.7	300	300	9	Mature	10yrs	On Site	High	Fair	Fair	Moderate 20%	Canopy of the is lop-sided due to it being pruned from service wires. Some decay in canopy limbs.	Yes, native and Canopy boundary tree.	Tree to be retained. Moderate encroachment. Proposed driveway and carport surface is to be constructed using alternative construction methods at existing grade. No excavations or changes to soil levels within the TPZ and SRZ of this tree. General requirements for construction apply outlined in discussion and tree is to be protected during proposed construction works. Protection measures outlined in Tree Management Plan.
12	<i>Leptospermum species</i> Tea Tree	Native	4	4	38.2	4.6	38.2	2.2	120	120	4.6	Mature	6yrs	On site	Medium	Fair	Fair	Major 100%	Dieback in canopy.	Yes, native	Minor encroachment. Tree removal required to facilitate proposed construction works.
13	<i>Acacia species</i> Wattle tree	Native	6	5	38.2	4.6	38.2	2.2	120	120	4.6	Mature	0yrs	On site	Low	Fair	Poor	Major 100%	Deadwood in canopy. Tree is bifurcated at 1m and one leader is dead. Extensive decay at bifurcation and a very high risk structural failure. Tree poses a hazard.	Yes, native	Minor encroachment. Tree removal required to facilitate proposed construction works.
14	<i>Acacia species</i> Wattle tree	Native	5	4	9.5	2	9.5	1.5	30	30	2	Mature	6yrs	On site	Medium	Good	Fair	0.00%	Tree bifurcated at base.	Yes, native	No encroachment. Tree to be removed as per landscaping requirements.
15	<i>Brachychiton discolor</i> Lace Bark Tree <i>Callistemon viminalis</i> Weeping Bottle Brush	Native Native	4.5	4	12.7	2	12.7	1.5	40	40	2	Semi-Mature	8yrs	3rd party tree, located in neighbouring property.	High	Good	Good	0.00%		Yes, native	2 x Tree to be retained. No encroachment. General requirements for construction apply outlined in discussion and tree is to be protected during proposed construction works. Protection measures outlined in Tree Management Plan.
16	<i>Liquidamber styraciflua</i> Liquidamber	Exotic	8	9	31.8	3.8	31.8	2	100	100	3.8	Semi-Mature	10yrs	3rd party tree, located in neighbouring property.	High	Good	Good	0.00%		Yes, Canopy boundary tree.	Tree to be retained. No encroachment. General requirements for construction apply outlined in discussion and tree is to be protected during proposed construction works. Protection measures outlined in Tree Management Plan.
17	<i>Ulmus procera</i> 'glabra' Golden Elm	Exotic	6	12	57.3	6.9	57.3	2.6	180	180	6.9	Semi-Mature	10yrs	3rd party tree, located in neighbouring property.	High	Fair	Good	0.00%	Canopy has Elm Leaf Beetle.	No, Exotic	Tree to be retained. No encroachment. General requirements for construction apply outlined in discussion and tree is to be protected during proposed construction works. Protection measures outlined in Tree Management Plan.
18	<i>Archontophoenix cunninghamiana</i> Banglow Palm	Native	4	2	15.6	2	15.6	1.5	49	49	2	Semi-Mature	10yrs	3rd party tree, located in neighbouring property.	High	Good	Good	Major 32.8%		Yes, native	Tree to be retained. Major encroachment. Proposed driveway is to be constructed using alternative construction methods at existing grade. No excavations or changes to soil levels within the TPZ and SRZ of this tree. General requirements for construction apply outlined in discussion and tree is to be protected during proposed construction works. Protection measures outlined in Tree Management Plan.

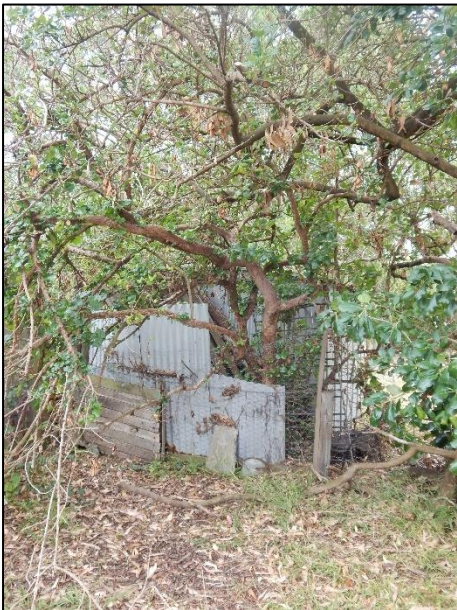
3.3 Tree photos



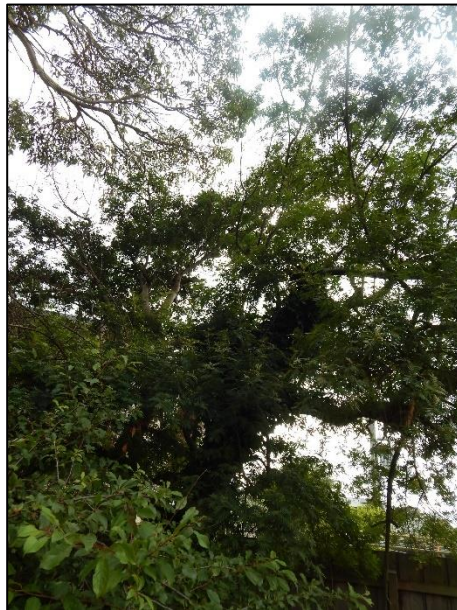
Tree 1



Tree 2



Tree 3



Tree 4



Tree 5



Tree 6



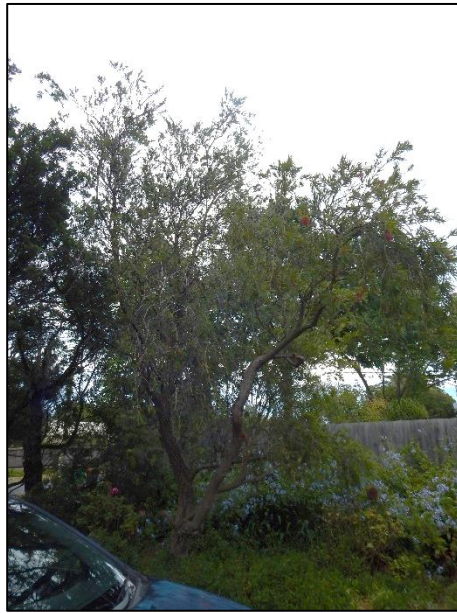
Tree 7



Tree 8



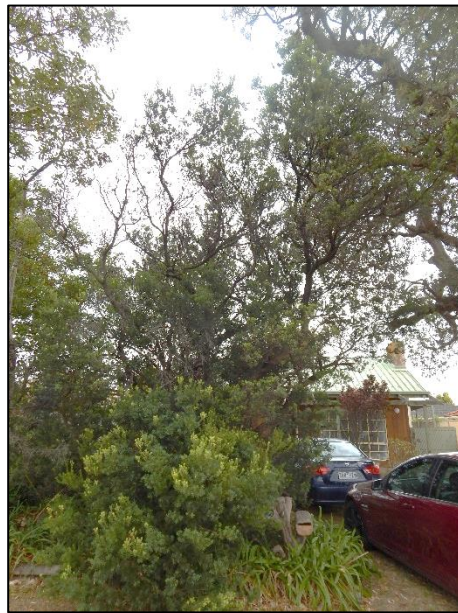
Tree 9



Tree 10



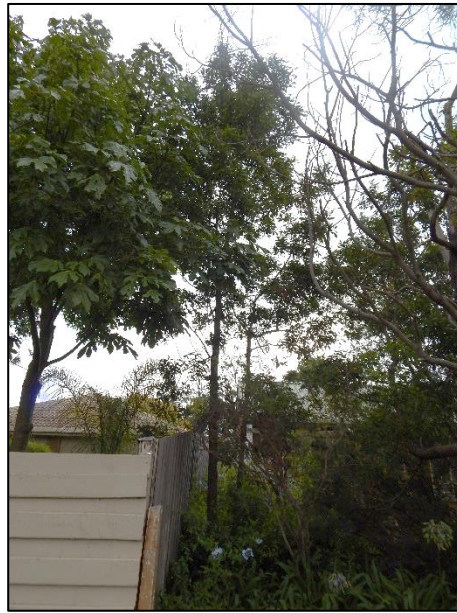
Tree 11



Tree 12



Tree 13



Tree 14



Tree 15



Tree 16



Tree 17



Tree 18

4. Discussion

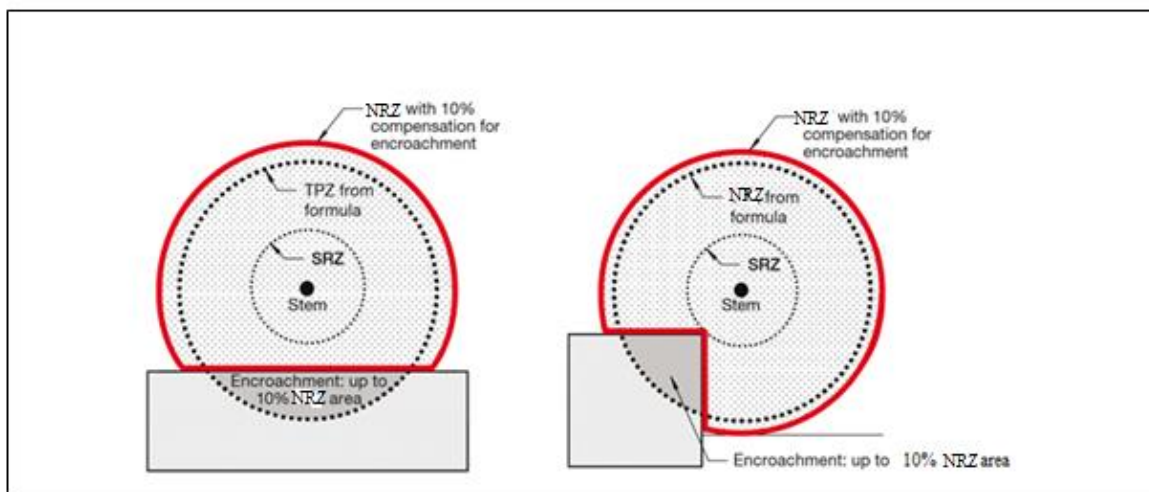
Australian Standards AS4970-2025 Protection of trees on development sites:

The Australian standards cover tree management guidelines for the proper care and protection of trees recommended to be retained and integrated into construction sites throughout all stages of the development. It also has guidelines for establishing which trees should be retained and the impact the proposed works will have upon trees. The standards ensure a uniform approach to trees on development sites and calculations of tree protection zones and crown area that require protection during construction. It also states what construction activities are restricted or excluded within the Notional Root Zone and the tree protection measures required during the development of the site.

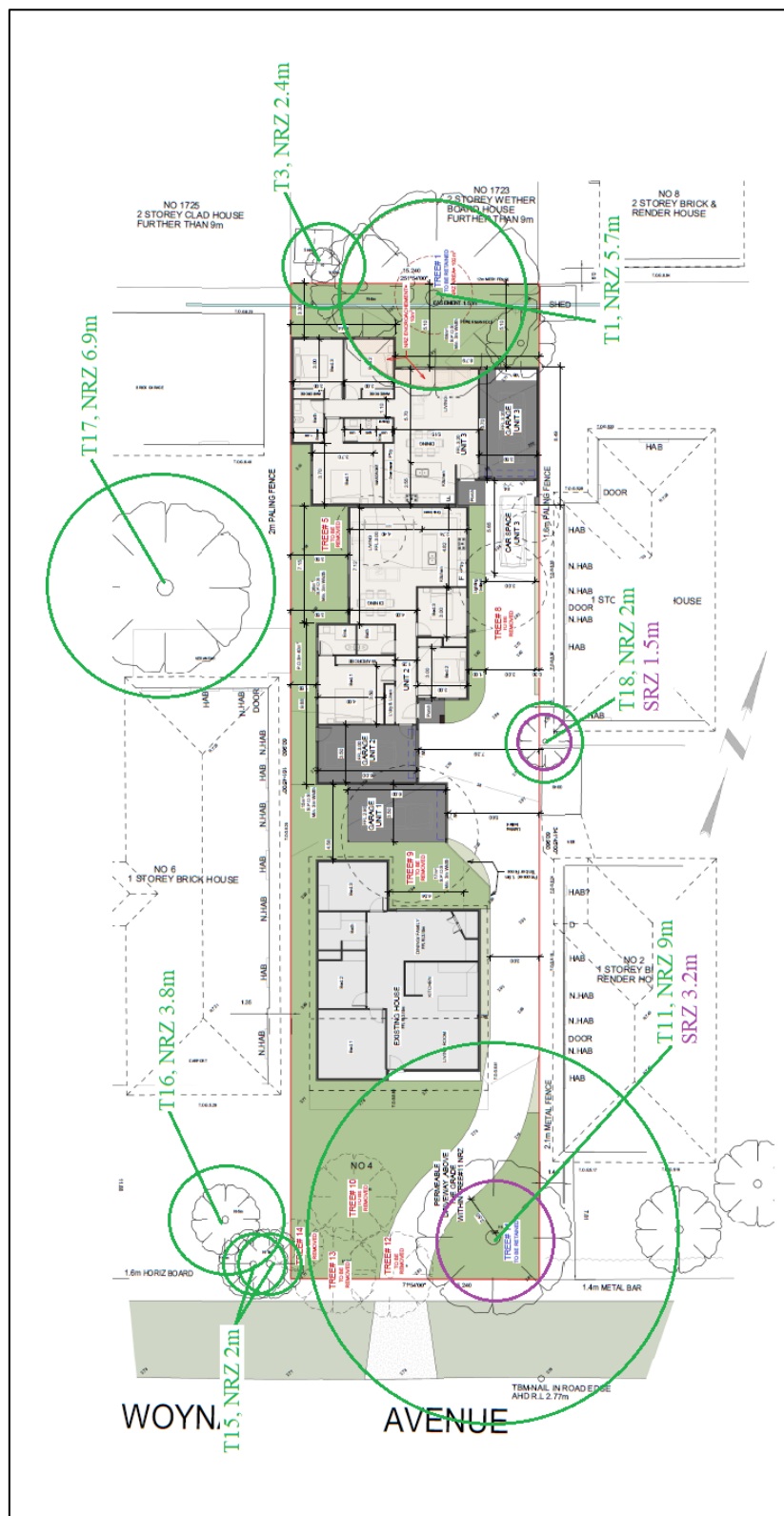
The Notional Root Zone (NRZ) is the principal means of protecting trees on development sites. The NRZ is a combination of the root area and crown area requiring protection. It is an area isolated from construction disturbance, so that the tree remains viable. Australian Standards AS4970 allow for minor encroachment into NRZ of less than 10% of the area of the NRZ and is outside the SRZ. Moderate encroachment where the area of encroachment is greater than 10% and up to 20% but outside the SRZ, with no recent NRZ encroachments. The Project Arborist must review the proposal and demonstrate whether the tree's viability can be maintained. This may involve site-specific mitigation strategies and appropriate design or construction controls. The area lost to this encroachment should be compensated for elsewhere and contiguous with the NRZ. However, if the proposed encroachment is greater than 10% of the NRZ 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 NRZ. This may require root investigation by non-destructive methods and consideration of relevant factors. Also design factors like tree sensitive construction measures such as pier and beam, suspended slabs, cantilevered building sections, screw piles and contiguous piling can minimize the impact of encroachment. Also, the future growth of the tree, both above and below ground should be taken into account. Precautions should be taken at the planning and design stage to minimize potential conflict between trees and new structures.

The structural root zone (SRZ) is the area required for tree stability. A larger area is required to maintain a viable tree. The SRZ only needs to be calculated when major encroachment into a NRZ is proposed.

Tree crowns may be injured by machinery such as excavators, drilling rigs, cranes, trucks, hoarding installation and scaffolding. The NRZ may need to include additional protection of the above ground parts of the tree. Crown protection may include pruning, tying-back of branches or other measures. If pruning is required, requirements are specified in Australian Standards AS4373 (2007) Pruning of Amenity Trees. The pruning to be undertaken by an arborist with a minimum qualification of AQF Level 3.



4.2 Site Plan Proposed Works



4.3 Review of work and impacts table and Analysis of NRZ or SRZ encroachment

Trees to be removed

Tree No.	Botanical Name Common Name	Origin	Height (m)	Crown Spread (m)	DSH (cm)	NRZ (m)	DAB (cm)	SRZ (m)	Circum at 1.5m (cm)	Circum above root buttress (cm)	TPZ (m)	Age Class	SULE	Location Relevance	Retention Value	Vigour/Health	Structure/Form	NRZ (%) encroachment	Comments	Permit required for tree removal pursuant GRZ1, ESO25 and Clause 52.37	Arborist's recommendations
2	<i>Coprosma repens</i> Mirror Bush	Exotic	4.7	6	36.6	4.4	28.6	2	80 + 60 + 40 + 40	90	4.4	Mature	10yrs	On Site	Low	Good	Fair	0.00%	Classified as an environmental weed.	No, under 5m in height.	No encroachment. Tree removal required as it is a weed species.
4	<i>Acacia species</i> Wattle tree	Native	6	10	40.7	4.9	40.7	2.3	128	128	2.3	Mature	2yrs	On site.	Low	Fair	Poor	0.00%	Tree has been lopped at 4m and there is decay at this point. There is die back at the tips of the branches and the canopy of the tree is lop-sided. Very high risk of limb failure due to poor structure.	Yes, native	Major encroachment. Tree removal required to facilitate proposed construction works.
5	<i>Cupressus species</i> Cypress	Exotic	4.5	4	25.5	3.1	38.2	2.2	80	120	3.1	Semi-Mature	4yrs	On site	Medium	Fair	Good	Major 100%	The foliage in the canopy is sparse and the health of this tree is declining.	No, exotic	Major encroachment. Tree removal required to facilitate proposed construction works.
6	<i>Acacia species</i> Wattle tree	Native	4.5	4	19.1	2.3	19.1	1.7	60	60	2.3	Mature	6yrs	On site	Medium	Fair	Fair	Major 100%	Canopy of tree is lop-sided. There is deadwood and several broken limbs in canopy.	Yes, native	Major encroachment. Tree removal required to facilitate proposed construction works.
7	<i>Callistemon species</i> Bottle Brush	Native	3	3	15.6	2	15.6	1.5	49	49	2	Semi-Mature	5yrs	On site	Medium	Good	Poor	Major 100%	Canopy of tree is lop-sided. Tree has been lopped at base.	Yes, native	Major encroachment. Tree removal required to facilitate proposed construction works.
8	<i>Prunus species</i> Plum tree	Exotic	4.5	8	41.1	5	41.1	2.3	130	130	5	Mature	7yrs	On site	Medium	Good	Fair	Major 100%	Some deadwood and some epicormic growth in canopy.	No, under 5m in height	Major encroachment. Tree removal required to facilitate proposed construction works.
9	<i>Brachychiton discolor</i> Lace Bark Tree	Native	8	8	41.4	5	41.4	2.3	130	130	5	Semi-Mature	10yrs	On site	Medium	Good	Fair	Major 100%	Tree is bifurcated at 2.5m	Yes, native	Major encroachment. Tree removal required to facilitate proposed construction works.
10	<i>Callistemon viminalis</i> Weeping Bottle Brush	Native	4.5	5	24.9	3	78	1.8	50 + 60	78	3	Mature	8yrs	On site	Medium	Good	Fair	Major 100%	Tree is multi-stemmed. Canopy is lop-sided due to it being pruned away from existing driveway	Yes, native	Major encroachment. Tree removal required to facilitate proposed construction works.
12	<i>Leptospermum species</i> Tea Tree	Native	4	4	38.2	4.6	38.2	2.2	120	120	4.6	Mature	6yrs	On site	Medium	Fair	Fair	Major 100%	Dieback in canopy.	Yes, native	Minor encroachment. Tree removal required to facilitate proposed construction works.
13	<i>Acacia species</i> Wattle tree	Native	6	5	38.2	4.6	38.2	2.2	120	120	4.6	Mature	0yrs	On site	Low	Fair	Poor	Major 100%	Deadwood in canopy. Tree is bifurcated at 1m and one leader is dead. Extensive decay at bifurcation and a very high risk structural failure. Tree poses a hazard.	Yes, native	Minor encroachment. Tree removal required to facilitate proposed construction works.
14	<i>Acacia species</i> Wattle tree	Native	5	4	9.5	2	9.5	1.5	30	30	2	Mature	6yrs	On site	Medium	Good	Fair	0.00%	Tree bifurcated at base.	Yes, native	No encroachment. Tree to be removed as per landscaping requirements.

Tree 2: Tree is located on site. Tree is classified as a weed species. Proposed Unit 3 will be 5.8m from the trunk of the tree and will not enter the NRZ or SRZ of this tree. However, this tree is recommended for removal as it is a weed species. No permit is required for the removal of this tree as it is exotic, a weed species and under 5m in height.

Tree 4: Tree is located on site. Tree has been lopped at 4m and there is decay at this point. There is die back at the tips of the branches and the canopy of the tree is lop-sided. There is a very high risk of limb failure due to poor structure of this tree and this poses a threat to life and property. No Arboricultural work will remove or reduce the risk of structural failure. Proposed Unit 3 will be 5.2m from the trunk of the tree and will not enter the NRZ or SRZ of this tree. However, this tree is recommended for removal due to its poor structure and high risk of limb failure and would still be recommended removal even if the proposed construction works did not commence. Therefore, it is recommended for removal to allow for the proposed construction works. A permit is required to remove this tree as it is a native but it is under 5m in height so not classified as a canopy boundary tree.

Tree 5: Tree is located on site. The foliage in the canopy is sparse and the health of this tree is declining. Proposed Unit 2 will require the removal of this tree. Therefore, as this tree is not a significant native canopy tree and its health is declining it is recommended for removal to allow for the proposed construction works. No permit is required for the removal of this tree as it is exotic.

Tree 6: Tree is located on site. Canopy of tree is lop-sided. There is deadwood and several broken limbs in canopy. There is a risk of limb failure due to poor structure of this tree. Proposed garage and driveway for Unit 3 will require the removal of this tree. Therefore, as this tree has structural faults and it is not a significant canopy tree it is recommended for removal to allow for the proposed construction works. A permit is required to remove this tree as it is a native.

Tree 7: Tree is located on site. Canopy of tree is lop-sided and tree has been lopped at base. There is a risk of limb failure due to poor structure of this tree. Proposed garage and driveway for Unit 3 will require the removal of this tree. Therefore, as this tree has structural faults and it is not a significant canopy tree it is recommended for removal to allow for the proposed construction works. A permit is required to remove this tree as it is a native.

Tree 8: Tree is located on site. There is some deadwood and some epicormic growth in canopy. Proposed driveway for Unit 3 will require the removal of this tree. Therefore, as this tree is a fruit tree and not a significant native canopy tree it is recommended for removal to allow for the proposed construction works. No permit is required for the removal of this tree as it is exotic and under 5m in height.

Tree 9: Tree is located on site. Tree is bifurcated at 2.5m. Proposed garage for Unit 1 will require the removal of this tree. Therefore, as this tree has structural faults and it will outgrow its location at maturity and its retention reduces the building envelope it is recommended for removal to allow for the proposed construction works. A permit is required to remove this tree as it is a native.

Tree 10: Tree is located on site. Tree is multi-stemmed and its canopy is lop-sided due to it being pruned away from existing driveway. Proposed driveway and carport for existing house will require the removal of this tree. A permit is required to remove this tree as it is a native.

Tree 12: Tree is located on site. There is dieback in canopy. Proposed driveway will require the removal of this tree. Therefore, as this tree is not a significant canopy tree it is recommended for removal to allow for the proposed construction works. A permit is required to remove this tree as it is a native.

Tree 13: Tree is located on site. There is deadwood in canopy. Tree is bifurcated at 1m and one leader is dead. There is extensive decay at bifurcation and a very high risk of limb failure due to poor structure of this tree and this poses a threat to life and property. No Arboricultural work will remove or reduce the risk of structural failure. Proposed driveway will require the removal of this tree. However, this tree is recommended for removal due to its poor structure and high risk of limb failure and would still be recommended removal even if the proposed construction works did not commence. Therefore, it is recommended for removal to allow for the proposed construction works. A permit is required to remove this tree as it is a native.

Tree 14: Tree is located on site. Tree is bifurcated at the base. Proposed driveway will be 2m from the trunk of the tree and will not enter the NRZ or SRZ of this tree. However, the proposed landscaping will require the removal of this tree. Therefore, as this tree is not a significant canopy tree and it has a poor structure it is recommended for removal to allow for the proposed construction works. A permit is required to remove this tree as it is a native.

Trees to be retained, 3rd party trees

Tree No.	Botanical Name Common Name	Origin	Height (m)	Crown Spread (m)	DSH (cm)	NRZ (m)	DAB (cm)	SRZ (m)	Circum at 1.5m (cm)	Circum above root buttress (cm)	TPZ (m)	Age Class	SULE	Location Relevance	Retention Value	Vigour /Health	Structure /Form	NRZ (%) encroachment	Comments	Permit required for tree removal pursuant GRZ1, ESO25 and Clause 52.37	Arborist's recommendations
3	<i>Coprosma repens</i> Mirror Bush	Exotic	4	4	20.4	2.4	20.4	1.66	64	64	2.4	Mature	10yrs	3rd party tree, located in neighbouring property.	High	Fair	Fair	0.00%	Classified as an environmental weed. Foliage is sparse. Canopy overhangs boundary and can be pruned back to boundary.	No, under 5m in height	Tree to be retained. No encroachment. General requirements for construction apply outlined in discussion and tree is to be protected during proposed construction works. Protection measures outlined in Tree Management Plan.
15	<i>Brachychiton discolor</i> Lace Bark Tree <i>Callistemon viminalis</i> Weeping Bottle Brush	Native	4.5	4	12.7	2	12.7	1.5	40	40	2	Semi-Mature	8yrs	3rd party tree, located in neighbouring property.	High	Good	Good	0.00%		Yes, native	2 x Tree to be retained. No encroachment. General requirements for construction apply outlined in discussion and tree is to be protected during proposed construction works. Protection measures outlined in Tree Management Plan.
16	<i>Liquidambar styraciflua</i> Liquidamber	Exotic	8	9	31.8	3.8	31.8	2	100	100	3.8	Semi-Mature	10yrs	3rd party tree, located in neighbouring property.	High	Good	Good	0.00%		Yes, Canopy boundary tree.	Tree to be retained. No encroachment. General requirements for construction apply outlined in discussion and tree is to be protected during proposed construction works. Protection measures outlined in Tree Management Plan.
17	<i>Ulmus procera</i> 'glabra' Golden Elm	Exotic	6	12	57.3	6.9	57.3	2.6	180	180	6.9	Semi-Mature	10yrs	3rd party tree, located in neighbouring property.	High	Fair	Good	0.00%	Canopy has Elm Leaf Beetle.	No, Exotic	Tree to be retained. No encroachment. General requirements for construction apply outlined in discussion and tree is to be protected during proposed construction works. Protection measures outlined in Tree Management Plan.
18	<i>Archontophoenix cunninghamiana</i> Banglow Palm	Native	4	2	15.6	2	15.6	1.5	49	49	2	Semi-Mature	10yrs	3rd party tree, located in neighbouring property.	High	Good	Good	Major 32.8%		Yes, native	Tree to be retained. Major encroachment. Proposed driveway is to be constructed using alternative construction methods at existing grade. No excavations or changes to soil levels within the TPZ and SRZ of this tree. General requirements for construction apply outlined in discussion and tree is to be protected during proposed construction works. Protection measures outlined in Tree Management Plan.

Tree 3: Tree is located in the neighbouring property. Tree is classified as a weed species. The foliage is sparse. The canopy overhangs boundary and can be pruned back to boundary. Proposed Unit 3 will be 7.6m from the trunk of the tree and will not enter the NRZ or SRZ. Therefore, the proposed construction works will not cause the health or stability of this tree to decline and no design alterations are recommended. However, general requirements for construction apply (see below) and tree protection measures must be installed to ensure that the health and stability of this tree do not decline as a direct result of the proposed construction works (see tree protection plan). No permit is required for the removal of this tree as it is exotic, a weed species and under 5m in height.

Tree 15: Consists of a group of 2 trees. Trees are located in the neighbouring property. Proposed driveway will be 3.8m from the trunk of the trees and will not enter the NRZ or SRZ. Therefore, the proposed construction works will not cause the health or stability of these trees to decline and no design alterations are recommended. However, general requirements for construction apply (see below) and tree protection measures must be installed to ensure that the health and stability of these trees do not decline as a direct result of the proposed construction works (see tree protection plan). A permit is required to remove these trees as they are native.

Tree 16: Tree is located in the neighbouring property. Proposed driveway will be 6.4m from the trunk of the tree and will not enter the NRZ or SRZ. Therefore, the proposed construction works will not cause the health or stability of this tree to decline and no design alterations are recommended. However, general requirements for construction apply (see below) and tree protection measures must be installed to ensure that the health and stability of this tree do not decline as a direct result of the proposed construction works (see tree protection plan). under clause 52.37 as it is a canopy boundary tree.

Tree 17: Tree is located in the neighbouring property. There is Elm leaf Beetle present in canopy. Proposed Units 2 & 3 will be 9.1m from the trunk of the tree and will not enter the NRZ or SRZ. Therefore, the proposed construction works will not cause the health or stability of this tree to decline and no design alterations are recommended. However, general requirements for construction apply (see below) and tree protection measures must be installed to ensure that the health and stability of this tree do not decline as a direct result of the proposed construction works (see tree protection plan). No exotic.

Tree 18: Tree is located in the neighbouring property. Proposed driveway for Units 2 & 3 will be 0.6m from the trunk of the tree entering the NRZ by 1.4m and entering the SRZ by 0.9m. Construction works will enter 4.1m², 32.8% of the total TPZ which is 12.5m². The encroachment is major, as it is more than 20% and enters the SRZ, based upon the guide lines of the Australian Standards AS4970. Therefore, it is recommended that the proposed driveway is constructed using alternative construction methods. This tree will tolerate the encroachment into the NRZ and SRZ as it is a hardy species the only construction in the NRZ and SRZ of this tree is for a driveway. Furthermore, if the driveway is constructed using alternative construction methods it will mean there are no excavations or changes to soil levels within the NRZ and SRZ of this tree. Root investigation for the driveway is not required if the driveway constructed using alternative construction methods above existing grade level. However, if excavations or soil fill are required for the driveway, then root investigation will be required to establish if any significant roots or a large percentage of fine fibrous roots will be damaged by the proposed earth works. If significant roots or a large percentage of fine fibrous roots are discovered then proposed driveway must be redesigned around these roots. Therefore, it is recommended that where the driveway enters the NRZ of this tree that it is constructed using alternative construction methods above existing grade level. A permit is required to remove this tree as it is a native.

Tree 18 Alternative Construction Methods: Where the proposed driveway enters the NRZ of this tree it must be constructed above existing grade level. There must be no grade changes within the NRZ (no excavations and no soil fill) and no roots are to be cut or damaged during any part of the construction process. It is also recommended that the surface must be constructed using porous materials approved by the Responsible Authority. The surface treatment must allow water to penetrate through the surface and into the soil profile.

General requirements for construction for all trees recommended to be retained.

Root Barriers: There is also a risk that the root system of this tree may cause damage to the property in the future. Therefore, it is recommended that root barriers are installed. Any root barrier must be installed outside the NRZ of this tree and the installation of the root barrier must be approved by the Project arborist or Responsible Authority prior to installation to determine the impact upon retained trees.

Services: All services and pits must be routed outside the NRZ's of the trees. If underground services must be routed within the NRZ, they must be installed by boring under the tree protection zone or installed using hydro excavation under the supervision of the project arborist. The direct drilling bore must be at least 600mm deep. The project arborist must be advised that the work is going to be carried out and present if roots larger than 20mm are to be cut or damaged. Any root pruning must be carried out by the project Arborist, and they must be pruned with a final cut to undamaged wood. Pruning cuts must be made with a sharp secateurs, pruners, handsaw or chainsaw. Pruning cuts must NOT be treated with dressings or paints. No roots to be pruned with machinery such as backhoes or excavators.

Landscaping within NRZ: Changes to soil conditions for landscaping shall be avoided within NRZ of trees, all landscaping must be above existing grade level. There must be no grade changes within the NRZ and no roots are to be cut or damaged during any part of the construction process. If excavations or fill are required for approved landscaping works then root investigation must be carried out to establish if any significant root will be damaged. (Tree roots with a diameter large than 20mm are significant roots) Root investigation will allow the location and distribution of the root to be determined through non-destructive methods like pneumatic, hydraulic, hand digging or ground penetrating radar. Any approved excavations or fill are to be carried out manually within the NRZ of the tree. Mechanical digging is not permitted. This includes excavations for paths. Any root severance with the NRZ must be approved by the Responsible Authority and undertaken by the project Arborist to their satisfaction.

Fencing: All foundations for fences within the NRZ/TPZ of the tree must be designed and constructed using an approved tree sensitive non-destructive footing design to the satisfaction of the Responsible Authority. Any holes for posts for new or replacement boundary fences or within the NRZ of this tree must be re positioned around significant roots (tree roots with a diameter large than 25mm are significant roots) if required. All excavations within the NRZ of trees for the construction of foundations for posts must be dug under the direct supervision of the project Arborist and no roots greater than 25mm in diameter are to be cut or damaged during any part of the construction process. If posts are required in the SRZ of this tree, holes must be hand dug under the direct supervision of the project Arborist and no roots greater than 25mm in diameter are to be cut or damaged during any part of the construction process. Any pruning must be carried out by the project Arborist, and they must be pruned with a final cut to undamaged wood. Pruning cuts must be made with a sharp secateurs, pruners, handsaw or chainsaw. Pruning cuts must NOT be treated with dressings or paints. No roots to be pruned with machinery such as backhoes or excavators.

Pruning: Any removal or pruning of council owned trees must be undertaken by a council approved contractor. The lower limbs of any tree to be retained maybe lifted to ensure that they are not damaged. Any pruning to be carried out before any excavation/construction works begin to ensure that the tree is not damaged by machinery. This work must be carried out to Australian Standards AS4373 (2007) Pruning of Amenity Trees. The pruning to be undertaken by an arborist with a minimum qualification of AQF Level 3.

Trees to be retained, on site

Tree No.	Botanical Name Common Name	Origin	Height (m)	Crown Spread diameter (m)	DSH (cm)	NRZ (m)	DAB (cm)	SRZ (m)	Circum at 1.5m (cm)	Circum above root buttress (cm)	TPZ (m)	Age Class	SULE	Location Relevance	Retention Value	Vigour /Health	Structure /Form	NRZ (%) encroachment	Comments	Permit required for tree removal pursuant GRZ1, ESO25 and Clause 52.37	Arborist's recommendations
1	<i>Eucalyptus</i> species Eucalyptus	Native	10	11	47.7	5.7	47.7	2.4	150	150	5.7	Semi-Mature	10yrs	On site.	High	Good	Fair	0.00%	Tree bifurcated at 2m. Some deadwood and some epicormic growth in canopy.	Yes, Canopy boundary tree.	Tree to be retained. No encroachment. General requirements for construction apply outlined in discussion and tree is to be protected during proposed construction works. Protection measures outlined in Tree Management Plan.
11	<i>Banksia integrifolia</i> Coast Banksia	Native	12	14	11.5	9	3.2	0.7	300	300	9	Mature	10yrs	On Site	High	Fair	Fair	Moderate 20%	Canopy of the is lop-sided due to it being pruned from service wires. Some decay in canopy limbs.	Yes, native and Canopy boundary tree.	Tree to be retained. Moderate encroachment. Proposed driveway and carport surface is to be constructed using alternative construction methods at existing grade. No excavations or changes to soil levels within the TPZ and SRZ of this tree. General requirements for construction apply outlined in discussion and tree is to be protected during proposed construction works. Protection measures outlined in Tree Management Plan.

Tree 1: Tree is located on site. Tree bifurcated at 2m. There is some deadwood and some epicormic growth in canopy. Proposed construction works of Unit 3 will be 6.4m from the trunk of the tree and will not enter the NRZ or SRZ of this tree. Therefore, the proposed construction works will not cause the health or stability of this tree to decline and no design alterations are recommended. However, general requirements for construction apply (see below) and tree protection measures must be installed to ensure that the health and stability of this tree do not decline as a direct result of the proposed construction works (see tree protection plan). A permit is required to remove this tree as it is native and under clause 52.37 as it is a canopy boundary tree.

Tree 11: Tree is located on site. Canopy of the is lop-sided due to it being pruned from service wires. There is some decay in canopy limbs. Proposed cross over, driveway and carport will be 2.5m from the trunk of the tree entering the NRZ by 9m and entering the SRZ by 0.7m Construction works will enter 86.9m², 20% of the total TPZ which is 416.2m². The encroachment is moderate, as it is more than 10% but less than 20% but enters the SRZ, based upon the guide lines of the Australian Standards AS4970. However, the proposed driveway extends over an area in the NRZ where there is an existing driveway. The presence of this existing structure will have affected root growth and will reduce the impact of the proposed driveway will have upon the health and stability of this tree. Therefore, it is recommended that the proposed driveway is constructed using alternative construction methods. This tree will tolerate the encroachment into the NRZ and SRZ as it is a hardy species the only construction in the NRZ and SRZ of this tree is for a cross over, driveway and carport where the driveway and carport surface are preample at existing grade. Furthermore, if the driveway is constructed using alternative construction methods it will mean there are no excavations or changes to soil levels within the NRZ and SRZ of this tree. Root investigation for the driveway is not required if the driveway constructed using alternative construction methods above existing grade level. However, if excavations or soil fill are required for the driveway, then root investigation will be required to establish if any significant roots or a large percentage of fine fibrous roots will be damaged by the proposed earth works. If significant roots or a large percentage of fine fibrous roots are discovered then proposed driveway must be redesigned around these roots. Therefore, it is recommended that where the driveway enters the NRZ of this tree that it is constructed using alternative construction methods above existing grade level. A permit is required to remove this tree as it is a native and under clause 52.37 as it is a canopy boundary tree.

Tree 11 Alternative Construction Methods: Where the proposed driveway and carport surface enters the NRZ of this tree it must be constructed above existing grade level. There must be no grade changes within the NRZ (no excavations and no soil fill) and no roots are to be cut or damaged during any part of the construction process. It is also recommended that the surface must be constructed using porous materials approved by the Responsible Authority. The surface treatment must allow water to penetrate through the surface and into the soil profile.

General requirements for construction for all trees recommended to be retained.

Root Barriers: There is also a risk that the root system of this tree may cause damage to the property in the future. Therefore, it is recommended that root barriers are installed. Any root barrier must be installed outside the NRZ of this tree and the installation of the root barrier must be approved by the Project arborist or Responsible Authority prior to installation to determine the impact upon retained trees.

Services: All services and pits must be routed outside the NRZ's of the trees. If underground services must be routed within the NRZ, they must be installed by boring under the tree protection zone or installed using hydro excavation under the supervision of the project arborist. The direct drilling bore must be at least 600mm deep. The project arborist must be advised that the work is going to be carried out and present if roots larger than 20mm are to be cut or damaged. Any root pruning must be carried out by the project Arborist, and they must be pruned with a final cut to undamaged wood. Pruning cuts must be made with a sharp secateurs, pruners, handsaw or chainsaw. Pruning cuts must NOT be treated with dressings or paints. No roots to be pruned with machinery such as backhoes or excavators.

Landscaping within NRZ: Changes to soil conditions for landscaping shall be avoided within NRZ of trees, all landscaping must be above existing grade level. There must be no grade changes within the NRZ and no roots are to be cut or damaged during any part of the construction process. If excavations or fill are required for approved landscaping works then root investigation must be carried out to establish if any significant root will be damaged. (Tree roots with a diameter large than 20mm are significant roots) Root investigation will allow the location and distribution of the root to be determined through non-destructive methods like pneumatic, hydraulic, hand digging or ground penetrating radar. Any approved excavations or fill are to be carried out manually within the NRZ of the tree. Mechanical digging is not permitted. This includes excavations for paths. Any root severance within the NRZ must be approved by the Responsible Authority and undertaken by the project Arborist to their satisfaction.

Fencing: All foundations for fences within the NRZ/TPZ of the tree must be designed and constructed using an approved tree sensitive non-destructive footing design to the satisfaction of the Responsible Authority. Any holes for posts for new or replacement boundary fences or within the NRZ of this tree must be re positioned around significant roots (tree roots with a diameter large than 25mm are significant roots) if required. All excavations within the NRZ of trees for the construction of foundations for posts must be dug under the direct supervision of the project Arborist and no roots greater than 25mm in diameter are to be cut or damaged during any part of the construction process. If posts are required in the SRZ of this tree, holes must be hand dug under the direct supervision of the project Arborist and no roots greater than 25mm in diameter are to be cut or damaged during any part of the construction process. Any pruning must be carried out by the project Arborist, and they must be pruned with a final cut to undamaged wood. Pruning cuts must be made with a sharp secateurs, pruners, handsaw or chainsaw. Pruning cuts must NOT be treated with dressings or paints. No roots to be pruned with machinery such as backhoes or excavators.

Pruning: Any removal or pruning of council owned trees must be undertaken by a council approved contractor. The lower limbs of any tree to be retained may be lifted to ensure that they are not damaged. Any pruning to be carried out before any excavation/construction works begin to ensure that the tree is not damaged by machinery. This work must be carried out to Australian Standards AS4373 (2007) Pruning of Amenity Trees. The pruning to be undertaken by an arborist with a minimum qualification of AQF Level 3.

5. Recommendations

A total of 18 trees were assessed for this report. With 1 of the trees consisting of a group of multiple trees. 13 trees are located on the property and 5 trees are located in neighbouring properties or on the nature strip.

Tree 2: Tree is located on site. Tree is classified as a weed species. The encroachment is minor, as it is less than 10%, based upon the guide lines of the Australian Standards AS4970. However, this tree is recommended for removal as it is a weed species. No permit is required for the removal of this tree as it is exotic, a weed species and under 5m in height.

Tree 4: Tree is located on site. There is a very high risk of limb failure due to poor structure of this tree and this poses a threat to life and property. No Arboricultural work will remove or reduce the risk of structural failure. The encroachment is major, as it is more than 20% and enter the SRZ, based upon the guide lines of the Australian Standards AS4970. However, this tree is recommended for removal due to its poor structure and high risk of limb failure and would still be recommended removal even if the proposed construction works did not commence. Therefore, it is recommended for removal to allow for the proposed construction works. A permit is required to remove this tree as it is a native.

Tree 5: Tree is located on site. Proposed construction works will require the removal of this tree. Therefore, as this tree is not a significant native canopy tree and its health is declining it is recommended for removal to allow for the proposed construction works. No permit is required for the removal of this tree as it is exotic and under 5m in height.

Tree 6 & 7: Trees are located on site. Proposed construction works will require the removal of these trees. Therefore, as these trees have structural faults and are not a significant canopy trees, they are recommended for removal to allow for the proposed construction works. A permit is required to remove these trees as they are native.

Tree 8: Tree is located on site. Proposed construction works will require the removal of this tree. Therefore, as this tree is a fruit tree and not a significant native canopy tree it is recommended for removal to allow for the proposed construction works. No permit is required for the removal of this tree as it is exotic and under 5m in height.

Tree 9: Tree is located on site. Proposed construction works will require the removal of this tree. Therefore, as this tree has structural faults and it will outgrow its location at maturity and its retention reduces the building envelope it is recommended for removal to allow for the proposed construction works. A permit is required to remove this tree as it is a native.

Tree 10: Tree is located on site. The encroachment is minor, as it is less than 10%, based upon the guide lines of the Australian Standards AS4970. However, this tree is recommended for removal as the canopy will impact the proposed driveway. A permit is required to remove this tree as it is a native.

Tree 12: Tree is located on site. Proposed driveway will require the removal of this tree. Therefore, as this tree is not a significant canopy tree it is recommended for removal to allow for the proposed construction works. A permit is required to remove this tree as it is a native.

Tree 13: Tree is located on site. There is extensive decay at bifurcation and a very high risk of limb failure due to poor structure of this tree and this poses a threat to life and property. No Arboricultural work will remove or reduce the risk of structural failure. The encroachment is moderate, as it is more than 10% but less than 20%, based upon the guide lines of the Australian Standards AS4970. However, this tree is recommended for removal due to its poor structure and high risk of limb failure and would still be recommended removal even if the proposed construction works did not commence. Therefore, it is recommended for removal to allow for the proposed construction works. A permit is required to remove this tree as it is a native.

Tree 14: Tree is located on site. Proposed driveway will not enter the NRZ or SRZ of this tree. However, the proposed landscaping will require the removal of this tree. Therefore, as this tree is not a significant canopy tree and it has a poor structure it is recommended for removal to allow for the proposed construction works. A permit is required to remove this tree as it is a native.

Tree 3: Tree is located in the neighbouring property. Proposed construction works will not enter the NRZ or SRZ. Therefore, the proposed construction works will not cause the health or stability of this tree to decline and no design alterations are recommended. However, general requirements for construction apply (see below) and tree protection measures must be installed to ensure that the health and stability of this tree do not decline as a direct result of the proposed construction works (see tree protection plan). No permit is required for the removal of this tree as it is exotic, a weed species and under 5m in height.

Tree 15: Consists of a group of 2 trees. Trees are located in the neighbouring property. Proposed construction works will not enter the NRZ or SRZ. Therefore, the proposed construction works will not cause the health or stability of these trees to decline and no design alterations are recommended. However, general requirements for construction apply (see below) and tree protection measures must be installed to ensure that the health and stability of these trees do not decline as a direct result of the proposed construction works (see tree protection plan). A permit is required to remove these trees as they are native.

Tree 16 & 17: Trees are located in the neighbouring property. Proposed construction works will not enter the NRZ or SRZ. Therefore, the proposed construction works will not cause the health or stability of these trees to decline and no design alterations are recommended. However, general requirements for construction apply (see below) and tree protection measures must be installed to ensure that the health and stability of these trees do not decline as a direct result of the proposed construction works (see tree protection plan). A permit is required to remove these trees as they are over 5m in height, their canopy spread is more than 4m and circumference is more than 50cm.

Tree 18: Tree is located in the neighbouring property. The encroachment is major, as it is more than 20% and enters the SRZ, based upon the guide lines of the Australian Standards AS4970. Therefore, it is recommended that the proposed driveway is constructed using alternative construction methods. This tree will tolerate the encroachment into the NRZ and SRZ as it is a hardy species the only construction in the NRZ and SRZ of this tree is for a driveway. Furthermore, if the driveway is constructed using alternative construction methods it will mean there are no excavations or changes to soil levels within the NRZ and SRZ of this tree. Root investigation for the driveway is not required if the driveway constructed using alternative construction methods above existing grade level. However, if excavations or soil fill are required for the driveway, then root investigation will be required to establish if any significant roots or a large percentage of fine fibrous roots will be damaged by the proposed earth works. If significant roots or a large percentage of fine fibrous roots are discovered then proposed driveway must be redesigned around these roots. Therefore, it is recommended that where the driveway enters the NRZ of this tree that it is constructed using alternative construction methods above existing grade level. A permit is required to remove this tree as it is a native.

Tree 1: Tree is located on site. The encroachment is minor, as it is less than 10%, based upon the guide lines of the Australian Standards AS4970. Therefore, the proposed construction works will not cause the health or stability of this tree to decline and no design alterations are recommended. However, general requirements for construction apply (see below) and tree protection measures must be installed to ensure that the health and stability of this tree do not decline as a direct result of the proposed construction works (see tree protection plan). A permit is required to remove this tree.

Tree 11: Tree is located on site. The encroachment is major, as it is less than 10% but enters the SRZ, based upon the guide lines of the Australian Standards AS4970. However, the proposed driveway extends over an area in the NRZ where there is an existing driveway. The presence of this existing structure will have affected root growth and will reduce the impact of the proposed driveway will have upon the health and stability of this tree. Therefore, it is recommended that the proposed driveway is constructed using alternative construction methods. This tree will tolerate the encroachment into the NRZ and SRZ as it is a hardy species the only construction in the NRZ and SRZ of this tree is for a driveway and cross over. Furthermore, if the driveway is constructed using alternative construction methods it will mean there are no excavations or changes to soil levels within the NRZ and SRZ of this tree. Root investigation for the driveway is not required if the driveway constructed using alternative construction methods above existing grade level. However, if excavations or soil fill are required for the driveway, then root investigation will be required to establish if any significant roots or a large percentage of fine fibrous roots will be damaged by the proposed earth works. If significant roots or a large percentage of fine fibrous roots are discovered then proposed driveway must be redesigned around these roots. Therefore, it is recommended that where the driveway enters the NRZ of this tree that it is constructed using alternative construction methods above existing grade level. A permit is required to remove this tree as it is a native.

Tree 11 Alternative Construction Methods: Where the proposed driveway and carport surface enters the NRZ of this tree it must be constructed above existing grade level. There must be no grade changes within the NRZ (no excavations and no soil fill) and no roots are to be cut or damaged during any part of the construction process. It is also recommended that the surface must be constructed using porous materials approved by the Responsible Authority. The surface treatment must allow water to penetrate through the surface and into the soil profile.

Tree 18 Alternative Construction Methods: Where the proposed driveway enters the NRZ of this tree it must be constructed above existing grade level. There must be no grade changes within the NRZ (no excavations and no soil fill) and no roots are to be cut or damaged during any part of the construction process. It is also recommended that the surface must be constructed using porous materials approved by the Responsible Authority. The surface treatment must allow water to penetrate through the surface and into the soil profile.

General requirements for construction for all trees recommended to be retained.

Root Barriers: There is also a risk that the root system of this tree may cause damage to the property in the future. Therefore, it is recommended that root barriers are installed. Any root barrier must be installed outside the NRZ of this tree and the installation of the root barrier must be approved by the Project arborist or Responsible Authority prior to installation to determine the impact upon retained trees.

Services: All services and pits must be routed outside the NRZ's of the trees. If underground services must be routed within the NRZ, they must be installed by boring under the tree protection zone or installed using hydro excavation under the supervision of the project arborist. The direct drilling bore must be at least 600mm deep. The project arborist must be advised that the work is going to be carried out and present if roots larger than 20mm are to be cut or damaged. Any root pruning must be carried out by the project Arborist, and they must be pruned with a final cut to undamaged wood. Pruning cuts must be made with a sharp secateurs, pruners, handsaw or chainsaw. Pruning cuts must NOT be treated with dressings or paints. No roots to be pruned with machinery such as backhoes or excavators.

Landscaping within NRZ: Changes to soil conditions for landscaping shall be avoided within NRZ of trees, all landscaping must be above existing grade level. There must be no grade changes within the NRZ and no roots are to be cut or damaged during any part of the construction process. If excavations or fill are required for approved landscaping works then root investigation must be carried out to establish if any significant root will be damaged. (Tree roots with a diameter large than 20mm are significant roots) Root investigation will allow the location and distribution of the root to be determined through non-destructive methods like pneumatic, hydraulic, hand digging or ground penetrating radar. Any approved excavations or fill are to be carried out manually within the NRZ of the tree. Mechanical digging is not permitted. This includes excavations for paths. Any root severance with the NRZ must be approved by the Responsible Authority and undertaken by the project Arborist to their satisfaction.

Fencing: All foundations for fences within the NRZ/TPZ of the tree must be designed and constructed using an approved tree sensitive non-destructive footing design to the satisfaction of the Responsible Authority. Any holes for posts for new or replacement boundary fences or within the NRZ of this tree must be re positioned around significant roots (tree roots with a diameter large than 25mm are significant roots) if required. All excavations within the NRZ of trees for the construction of foundations for posts must be dug under the direct supervision of the project Arborist and no roots greater than 25mm in diameter are to be cut or damaged during any part of the construction process. If posts are required in the SRZ of this tree, holes must be hand dug under the direct supervision of the project Arborist and no roots greater than 25mm in diameter are to be cut or damaged during any part of the construction process. Any pruning must be carried out by the project Arborist, and they must be pruned with a final cut to undamaged wood. Pruning cuts must be made with a sharp secateurs, pruners, handsaw or chainsaw. Pruning cuts must NOT be treated with dressings or paints. No roots to be pruned with machinery such as backhoes or excavators.

Pruning: Any removal or pruning of council owned trees must be undertaken by a council approved contractor. The lower limbs of any tree to be retained may be lifted to ensure that they are not damaged. Any pruning to be carried out before any excavation/construction works begin to ensure that the tree is not damaged by machinery. This work must be carried out to Australian Standards AS4373 (2007) Pruning of Amenity Trees. The pruning to be undertaken by an arborist with a minimum qualification of AQF Level 3.

6. Appendices for Tree Data Table

Genus/Species: The identification of the tree is based upon visual characteristics and given that the key identifying features of a tree are not often available the accuracy of identification cannot be guaranteed. Where the species of any tree is not known, sp. is used.

Native/Exotic: Native. Original origin of that Genus/Species is Australia

Exotic. Original origin of that Genus/Species is not Australia

Height and Spread: The height and crown spread were estimated from the ground level.

DSH (Diameter at Standard Height): The diameter of the trunk (DSH) of the tree is the nominal trunk diameter at 1.4m above ground level and is determined from the circumference of the trunk divided by π . Where a tree is multi-stemmed the combined DSH is calculated using the formula

$$\text{Total DSH} = \sqrt{(\text{DSH}_1)^2 + (\text{DSH}_2)^2 + (\text{DSH}_3)^2}$$

Notional Root Zone (NRZ:) represents the theoretical area required to sustain a tree's health and long-term viability. It continues to include the Structural Root Zone (SRZ), which is the innermost zone critical for tree stability due to woody root growth and soil cohesion.

Importantly, the term Tree Protection Zone (TPZ) is still in use, but it now refers specifically to the area protected during development activities, typically through physical barriers and site management measures to ensure tree viability.

Tree Protection Zone: The tree protection zone (TPZ) is the principal means of protecting trees on development sites. The TPZ is a combination of the root area and the crown area requiring protection. It is an area isolated from construction disturbance, so that the tree remains viable. The TPZ incorporates the structural root zone (SRZ). The radius of the TPZ is calculated for each tree by multiplying its DSH x 12.

DAB: Diameter above buttress in cm, measured above root buttress and is determined from the circumference of the trunk divided by π . Where a tree is multi-stemmed the combined DAB is calculated using the formula

$$\text{Total DAB} = \sqrt{(\text{DAB}_1)^2 + (\text{DAB}_2)^2 + (\text{DAB}_3)^2}$$

Structural Root Zone: The structural root zone (SRZ) is the area required for tree stability. The SRZ only need to be calculated when encroachment of larger than 10 % is proposed into a TPZ. The radius of the SRZ is calculated for each tree by the formula.

SRZ radius = $(D \times 50)^{0.42} \times 0.64$.

D= trunk diameter, in m, measured above the root buttress.

Age Class:

Young	80% of life expectancy remaining
Semi-Mature	60% of life expectancy remaining
Mature	40% of life expectancy remaining
Senescent	10% of life expectancy remaining
Dead	0% of life expectancy remaining

S.U.L.E (Safe Useful Life Expectancy);

0 yrs	The tree is dead or almost dead and constitutes a hazard or has structural faults that poses a real threat to life and property.
5 yrs	The trees health is in decline and unlikely to recover or has structural faults that poses a real threat to life and property.
5-15yrs	The health of the tree is likely to decline during the next 15 years. This may be due to it being a short-lived species. It also may require high levels of maintenance after 15 years
15-25 yrs	The health and structure of the tree are likely to decline in the next 15-25 years. This may be due to it being a short-lived species. It also may require high levels of maintenance after 15 years.
25-50yrs	The health and structure of the tree are likely to still to be in good condition in the next 25-50 years. It may require a moderated level of maintenance after 25 years.
>50yrs	The health and structure of the tree are likely to still to be good condition in the next 50 years. It may require a low level of maintenance after 50 years.

Location relevance:

- On Site Tree is located on the property.
- 3rd Party Tree is located in a neighbouring property, reserve or on the nature strip.

Retention Value:

High Retention Value	The tree must be retained and the design must accommodate its long-term retention.
Medium Retention Value	The tree may be retained if it does not hamper the design intent.
Low Retention Value	The tree is recommended for removal.

Vigor/Health:

Excellent	Crown full with full foliage density. Good new leaf and shoot growth with no dieback. Less than 30% deadwood. Tree is considered to be an excellent example of that species.
Good	Crown full with good foliage density. Average new leaf and shoot growth with little or no dieback. Less than 30% deadwood.
Fair	Crown foliage density below average. Less than average new leaf and shoot growth with minor dieback. More than 30% deadwood.
Poor	Poor new leaf and shoot growth. Extensive dieback and epicormic growth. Pathogens maybe present. More than 30% deadwood.
Dead	Tree is dead.

Structure:

Excellent	Tree has an excellent defined and balanced canopy. Good branch union with no defects visible. No defect visible in the trunk. Tree is considered to be an excellent example of that species.
Good	Tree has a well-defined and balanced canopy. Good branch unions with little or no defects visible. Little or no defects visible in the trunk.
Fair	Tree has minor defaults in crown. Maybe unbalanced or some branch unions may show minor faults. Defects in trunk, bifurcated, leaning, wounds or decay.
Poor	Tree has significant faults with canopy or trunk. Poor branch unions with visible defects. Visible defects in trunk. The tree may have suffered significant root damage.

Percentage encroachment:

- **Major Encroachment:** More than 20% of the NRZ area, and/or encroachment into the SRZ. Response: The Project Arborist must be engaged to investigate alternative designs or demonstrate whether the tree can remain viable. This requires a detailed assessment of the tree and site, and may involve non-destructive root investigations.
- **Moderate Encroachment:** Greater than 10% and up to 20% of the NRZ area, outside the SRZ, with no recent NRZ encroachments. The Project Arborist must review the proposal and demonstrate whether the tree's viability can be maintained. This may involve site-specific mitigation strategies and appropriate design or construction controls.
- **Minor Encroachment:** 10% or less of the NRZ area, outside the SRZ, with no recent NRZ encroachments. Generally considered low-risk. If standard tree protection measures are implemented, significant impacts to tree health, structure, or longevity are unlikely.

7. Glossary: Explanation of Terms

Air Knife: To reduce the damage to the root system of this tree it is recommended that the soil excavated for the services within the optimum tree protection zone of this tree is cleared away with an air knife. This will allow the roots to be exposed without damaging them. This work is to be carried out by a qualified Arborist to recommended Australian Arboricultural standards. Where possible the pipes for the services to the proposed units must be placed under the tree roots and tree roots may only be cut by a qualified Arborist.

Bifurcated: Bifurcations are where two or more stems arise near or at the same position on a trunk. As a result of these stems growing simultaneously they do not develop layers of supporting wood which is normally associated with branch development. This point of attachment is further weakened by included bark, which is the result of the bark of the internal faces of the stem becoming enclosed. There is also a risk of failure at this point due to the weight and leverage of these branches in relation to the strength of their attachment. This risk increases as this tree matures the branches spread, further increasing the stress on this point of attachment.

Building up of soil: The build-up of soil around the base of the tree will result in serious structural problems in the future. The building up of soil around the base of trees smothers the root system. Most of the trees woody transport roots and fine absorption roots, which absorb and transport water and nutrients are found in the top 150mm of soil. The loss of these roots will result in a decline in the health of the tree. The build-up of soil around the trunk of the tree also encourages diseases and causes the trunk of the tree to rot, resulting in an increased risk of structural failure.

Central leader: The main stem of the tree.

Cracks in outer bark of trees: the crack/splits due to irregular watering. The cracks/splits are a result of the trunk of the tree swelling as it takes up water after a period of drought. These crack/splits do not weakening the structure of the tree but deep cracks can create wounds that are vulnerable to decay and diseases.

Crowded out by neighbouring trees: As a result of this tree being crowded out by neighbouring trees there are few lateral branches. The lateral branches in the canopy of this tree concentrated at the top of the tree. An ideal branch distribution would centre the wind load acting on the tree at about two thirds of the total height. Ideally, one-half or more of the foliage should be on branches originating on the lower two-thirds of the trunk, and one-half or less should originate on the upper one-third. Pruning will not improve the shape or stability of this tree, nor will it reduce the potential of limb failure.

Dead tree: This tree is dead, there is no foliage on this tree and the bark is starting to peel off the trunk and canopy limbs. The health of this tree will not recover. This tree has died due to old age and a lack of water.

Deadwood: Branch or stem bearing no live tissue

Decay: The process of degradation of woody tissue by fungi or bacteria through decomposition. The decomposition of woody tissue had an effect upon the health and structural integrity of trees.

Decline due to old age: The health of this tree is in decline due to the natural process of old age. Trees slow in growth as they approach maximum age, and become more vulnerable to disease and wind. The indicators that the health of a tree is in decline are the die back of the branches at the tips and the epicormic growth in the canopy.

Dieback: The progressive death of small branches generally from the tip off the branch to the base.

Epicormic growth: Epicormic growth are shoots that arise from latent buds on mature branches. When a mature tree is stressed by drought, nutrient deficiency, old age, or disease, inside branches are exposed to more light due to the loss of foliage. Higher light intensity causes many low vigor epicormic shoots to sprout along the upper sides of the main branches to replace the loss of foliage and to increase photosynthesis. These epicormic shoots have a high risk of failure as they are only attached to the outside of the stem they grow from. As an epicormic shoot increases in size there is a high risk that it will fail at the point of attachment, as it is not strong enough to support its weight.

Fungal Bract: The fungal bracts are an indicator of fungal disease in the tree. Airborne fungal spores enter a tree through wounds and will have entered this tree through the wound in the trunk of the tree. Fungal diseases infect and decompose the heartwood in the centre of trees; they break down the cell walls and reduce the structural strength of the tree. The wood in the center of a tree trunk is not living tissue, so a tree continues to look and function normally until the disease is quite advanced. When you see bracts, the tree has probably been infected for several years. The fungi destroy the internal framework of the tree and in advanced stages, splits; cavities and cracks develop in the trunk and branches.

The number, location and size of the fungal bracts are indicative of the extent of fungal disease in the tree. The large number of the fungal bracts on this tree indicates that the disease is active. This disease has weakened the tree's structure; it will cause the failure of limbs, failure of the trunk of the tree at the point where the fungal bracts are located and it will eventually kill the tree. The health of this tree will decline in the future as a direct result of the fungal disease. There is a very high risk of limb and structural failure due to the fungal disease in trees and this poses an immediate threat to life and property.

Included Bark: Pattern of development at branch junction where bark is turned inwards rather than pushed out.

Lopping: The removal of the crown or several of the major canopy limbs. This method of pruning leaves large wounds exposed vulnerable to attack by decay fungus. It also promotes the growth of new shoots from epicormic buds. These new shoots have a high risk of failure as they are only attached to the outside of the stem they grow from. As a shoot increases in size there is a high risk that it will fail at the point of attachment, as it is not strong enough to support its weight.

Noxious weed: This tree is classified as a noxious weed due to its ability to self-seed prolifically and its potential to displace indigenous vegetation.

Root damage: Tree roots cause movement in the soil as they take up water and nutrients; and this results in cracks and movement in structures. There are two types of damage trees may cause to property, namely direct (through physical contact) and indirect (subsidence). Direct damage is the result of pressure that may be exerted by a tree's roots or trunk. This pressure can affect lightly loaded structures such as garden walls, driveways and paved surfaces but rarely affect heavily loaded structures such as houses. And indirect damage that is the result of tree roots extracting moisture and nutrients from the soils and this results in subsidence and cracks appearing in the building.

Soil Compaction: Soil compaction is the loss of the large pore spaces within the soil. These pore spaces are essential for aeration, the exchange of gases between the soil air and the atmosphere and drainage, the removal of excess water from the soil. Soil compaction is caused by the stress forces applied by foot and vehicle traffic and the storage of materials. The degree of the soil compaction will depend upon the weight of vehicles, number of vehicles, soil moisture levels and clay content.

The loss of the pore spaces results in reduced aeration, loss of root growth, reduced infiltration of water, increased water run-off, reduced availability of plant nutrients and a reduction in the number and diversity of beneficial soil organisms. Damage to the root system of a tree can also result in the loss of structural woody roots, which will leave the tree unstable, reduce water and nutrient uptake which results in the eventual loss of leaves, reduced photosynthesis and thus sugar production. It may take many years for the health of the tree to decline and for the tree to eventually die from root damaged caused by soil compaction.

Windrow Tree: Trees that have grown close together are largely protected from wind forces by adjacent trees. However, they must also compete for light, space, soil area, water and nutrients and unless evenly spaced some trees will outperform other adjacent trees and will suppress the weaker trees. Weak performing trees may grow asymmetrically, with poor stem taper, little canopy and lack a well-developed root system. It is also essential in situations where trees are growing in close proximity to one another and where their canopies and root systems are intertwined that they are removed at the same time. Also, removing just one tree or just several trees resulted in the remaining trees becoming vulnerable to failure as they are now exposed to the elements.

8. References

- Australian Standards AS4373 (2007) Pruning of amenity Trees,
- Australian Standards AS4970 -20025 Protection of trees on development sites.
- Mattheck, Dr. Claus & Breloer, Helge (1994) – Sixth Edition (2001) The Body Language of Trees – A Handbook for Failure Analysis the Stationery Office, London, England

9. Terms and Conditions

This Report has been prepared in accordance with and is provided subject to the Terms and Conditions hereinafter contained and/or endorsed

1. Reference in this Report to-

“Arbor Scribe” means and includes all principals, partners or other proprietors, employees, agents, licensees, sub-contractors, consultants and representatives of Arbor Scribe.

“the stipulated constraints” means a ground level inspection conducted at the Location during day light hours subject to prevailing weather conditions on the day of inspection

“special activities” means climbing, lifting, excavating or use of special equipment

“special equipment” includes a cherry picker, ladder or other apparatus or appliance

2. Possession of this report or a copy thereof does not imply right of publication or use of any purpose by anyone but the client or their directed representatives, without the prior written consent of Arbor Scribe.

3. The Client warrants to Arbor Scribe that –

- 3.1. this Report has neither been commissioned and nor will it be used for or in connection with any legal proceedings and acknowledges that Arbor Scribe is not compelled to attend or provide evidence before any Court or Tribunal in connection herewith and may rely on this warranty as a fundamental term and bar to any summons or subpoena being issued against or complied with by Arbor Scribe.

- 3.2. the Client is the owner or occupier and has a legal right or permission to authorize Arbor Scribe's entry upon the Location.

- 3.3. Any legal description provided to the consultant is assumed to be correct. Any titles and ownership to any property assumed to be good. No responsibility is assumed for matters legal in character. It is assumed that nay property/project is not in violation of any codes, ordinances, statutes or other government regulation.

4. Arbor Scribe has in accordance with the stipulated constraints exercised due care and skill in conducting an inspection at the Location and preparing this Report. Arbor Scribe will not and is not obliged in connection therewith to carry out any special activities but recommend the Client engages a specialist contractor where appropriate. Information contained in this report covers only those items that were examined and reflect the condition of those items at the time of inspection. The inspection is limited to visual examination of accessible components without dissection, excavation or probing. There is no warranty or guarantee, expressed or implied that the problems or deficiencies of the plants or property in question may not arise in future.
5. Care has been taken to obtain all information from reliable sources. All data has been verified in so far as possible; however the consultant can neither guarantee nor be responsible for the accuracy of the information provided by others.
6. Sketches, diagrams, graphs and photographs in this report, being intended as visual aids, are not necessarily to scale and should not be construed as engineering or architectural reports or surveys.
7. Loss or alteration of any part of this report invalidates the entire report.
8. The Client acknowledges having been provided with a copy of both read and understood these Terms and Conditions prior to engaging the services of Arbor Scribe.
9. Arbor Scribe's terms of payment are (unless otherwise stated in writing) 7 days nett upon issue of Invoice. An administration charge of \$1.00 applies per day and accrues calendar monthly commencing 14 days from the date of Arbor Scribe's invoice.

10. Expertise to report

Qualification & Experience

- Advanced Certificate in Arboriculture
- Certificate in Horticulture
- 24 years experience in Arboriculture
- 12 years in private sector as a consultant Arborist
- 3 years at Daryl's Tree Care & Surgery, as a crew member and consulting Arborist
- 4 years at City of Banyule, as apprentice Gardener/Arborist
- 5 years at The Hurlingham Club, London, England, as Senior gardener

Expertise to report

Australian Standards AS4970, 1.4.4 Project Arborist

The person responsible for carrying out the tree assessment, report preparation, consultation with designer, specifying tree protection measures, monitoring and certification. The project arborist will be suitably experienced and competent in arboriculture, having acquired through training, qualifications (minimum Australian Qualification Framework (AQF) Level 5, Diploma of Horticulture (Arboriculture) and/or **equivalent experience, the knowledge and skills enabling that person to perform the tasks required by this standard.**

I have been a qualified Arborist for 27 years and have been writing tree reports for the past 16 Years. Therefore, I am qualified to write tree report to Australian standards AS4970 based upon **'or equivalent experience, the knowledge and skills enabling that person to perform the tasks required by this standard.'**

Arbor Scribe Tree Reports
ABN 80 902 938 963
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Kinglake West, 3757
Mobile: 0411 962 365
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Tree protection requirements during construction:

- Any works within the Tree Protection Zone of any tree, whether the zone is fully enclosed by Tree protection fencing/Ground protection or not, MUST comply with tree protection measures described.
- Temporary irrigation - A manually operated surface/drip irrigation system should be used to water the root zones of the trees within TPZ's during dry spells and after construction works have been completed.
- Excavation work must be carried out manually within the TPZ of the tree. No roots larger than 20mm in diameter are to be cut and the project arborist must be advised that the work is going to be carried out and present if roots are to be cut or damaged.
- Any holes for post within the TPZ of tree for new or replacement boundary fences or replacement retaining walls must be excavated manually and re positioned around significant roots (tree roots with a diameter large than 20mm are significant roots). If tree roots must be cut inside or outside the TPZ any pruning must be carried out by the project Arborist. No roots to be pruned with machinery such as backhoes or excavators.
- All services and pits must be routed outside the TPZ's of the trees. If underground services must be routed within the TPZ, they must be installed by boring under the tree protection zone or installed using hydro excavation under the supervision of the project arborist.
- Where roots are left exposed by excavations, temporary root protection must be installed to prevent them drying out.
- No persons, vehicles or machinery to enter TPZ without written consent of the responsible authority. No fuel, oil dumps, waste or chemicals are allowed in or are to be stored within TPZ and the servicing of equipment or vehicles should be carried out away from the TPZ. No temporary buildings or waste to be stored within the TPZ.
- The area within the TPZ must be mulched with organic woodchip mulch within the designated TPZ that is recommended to be protected. Where the existing landscape within the TPZ is to remain unaltered (e.g., garden beds or turf) mulch may not be required.
- All weeds that grow during construction works within the designated protected TPZ must be removed by hand without soil disturbance or controlled with appropriate use of non-residual herbicide.
- Removal of protection measures and cessation of the tree management plan must be authorized by the responsible authority.

LANDSCAPING WORKS: Where the landscaping works enter the TPZ of the trees the changes to soil condition shall be avoided wherever possible. Where unavoidable in order to carry out approved works to be carried out manually to the maximum depth of excavations or fill to be 100mm within the TPZ of this tree. Mechanical digging is not permitted. Any root severance with the TPZ must be approved by the Responsible Authority and undertaken by the project Arborist to their satisfaction. If excavations deeper than 100mm are required then root investigation must be carried out to establish if any significant root will be damaged. Any holes for post or foundations for decks or retaining walls within the TPZ of this tree must be excavated manually and reposition around roots with a diameter large than 20mm. Any root severance with the TPZ must be approved by the Responsible Authority and undertaken by the project Arborist to their satisfaction. Any planting holes for new trees and shrubs must be excavated manually and reposition around roots with a diameter large than 20mm. Any root severance with the TPZ must be approved by the Responsible Authority and undertaken by the project Arborist to their satisfaction. The removal of any protective fencing to allow for landscaping works must be approved by the Responsible Authority and undertaken by the project Arborist to their satisfaction.

Refer to Tree Protection Specifications Report for further details

PROTECTIVE FENCING:

- Must be chain wire mesh panels, high wire mesh fencing or high wire reinforced para-web mesh with reinforcing fencing wire to a height of 1.8m, held in place with concrete feet or 1.8m star pickets every 3-4m. Alternatively plywood or wooden paling fence panels to a height of 1.8m may be used. If excavation is required for the insertion of supports posts for the fencing it must not involve the severance of any roots greater than 20mm in diameter and must be carried out by the project Arborist, and they must be pruned with a final cut to undamaged wood. Pruning cuts must be made with a sharp secateurs, pruners, handsaw or chainsaw. Pruning cuts must NOT be treated with dressings or paints. No roots to be pruned with machinery such as backhoes or excavators.
- The protective fencing must not be removed or altered without approval of the responsible authority and must remain in place until its removal is approved by project arborist. Existing perimeter fencing and other structures may be suitable as part of the protective fencing. No temporary services, wires, nails, screws or any other fixing device to be attached to the tree. Signs identifying the TPZ should be placed around all sides of the TPZ and be visible from within the development site. The lettering on the sign must comply with Australian standard AS1319.

Refer to Tree Protection Specifications Report for further details

GROUND PROTECTION:

- If temporary access 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. Measures may include a permeable membrane such as geotextile fabric beneath a layer of mulch or crushed rock below rumble boards. For trunk and branch protection use boards and padding that will prevent damage to bark. Boards are to be strapped to trees, not nailed or screwed. Rumble boards should be of a suitable thickness to prevent soil compaction and root damage
- Ground protection must not be removed or altered without approval of the responsible authority and must remain in place until its removal is approved by project arborist.

Refer to Tree Protection Specifications Report for further details

-Tree to be retained and protected in accordance with the TPS, refer to TPS for specific details on actions.
-All services to be located outside the TPZ.
-If underground services must be routed within the TPZ, they must be installed by boring under the tree protection zone or installed using hydro excavation under the supervision of the project arborist.
-Any root barrier must be installed outside the TPZ of this tree and the installation of the root barrier must be approved by the Project arborist or Responsible Authority prior to installation.
-Changes to soil conditions for landscaping shall be avoided within TPZ of trees, all landscaping must be above existing grade level
-Any holes for posts for new or replacement boundary fences or retaining walls with the TPZ of this tree must be excavated manually and re positioned around significant roots if required.
-Pruning must be carried out to Australian Standards AS4373 (2007) Pruning of Amenity Trees. The pruning to be undertaken by an Arborist with a minimum qualification of AQF Level 3.

-Tree to be retained and protected in accordance with the TPS, refer to TPS for specific details on actions.
-All services to be located outside the TPZ.
-If underground services must be routed within the TPZ, they must be installed by boring under the tree protection zone or installed using hydro excavation under the supervision of the project arborist.
-Any root barrier must be installed outside the TPZ of this tree and the installation of the root barrier must be approved by the Project arborist or Responsible Authority prior to installation.
-Changes to soil conditions for landscaping shall be avoided within TPZ of trees, all landscaping must be above existing grade level
-Any holes for posts for new or replacement boundary fences or retaining walls with the TPZ of this tree must be excavated manually and re positioned around significant roots if required.
-Pruning must be carried out to Australian Standards AS4373 (2007) Pruning of Amenity Trees. The pruning to be undertaken by an Arborist with a minimum qualification of AQF Level 3.

-Tree to be retained and protected in accordance with the TPS, refer to TPS for specific details on actions
-Where the proposed driveway/carport surface enters the NRZ of this tree it must be constructed above existing grade level. There must be no grade changes within the NRZ (no excavations and no soil fill) and no roots are to be cut or damaged during any part of the construction process. It is also recommended that the surface must be constructed using porous materials approved by the Responsible Authority. The surface treatment must allow water to penetrate through the surface and into the soil profile.
-All services to be located outside the TPZ.
-If underground services must be routed within the TPZ, they must be installed by boring under the tree protection zone or installed using hydro excavation under the supervision of the project arborist.
-Any root barrier must be installed outside the TPZ of this tree and the installation of the root barrier must be approved by the Project arborist or Responsible Authority prior to installation.
-Changes to soil conditions for landscaping shall be avoided within TPZ of trees, all landscaping must be above existing grade level
-Any holes for posts for new or replacement boundary fences or retaining walls with the TPZ of this tree must be excavated manually and re positioned around significant roots if required.
-Pruning must be carried out to Australian Standards AS4373 (2007) Pruning of Amenity Trees. The pruning to be undertaken by an Arborist with a minimum qualification of AQF Level 3.

Tree 17
TPZ 6.9m
SRZ 2.6m

Tree 3
TPZ 2.4m
SRZ 1.66m

Tree 1
TPZ 5.7m
SRZ 2.4m
9.7% encroachment

Tree 18
TPZ 2m
SRZ 1.5m
32.8% encroachment

Tree 16
TPZ 3.8m
SRZ 2m

Tree 15
TPZ 2m
SRZ 1.5m

Tree 11
TPZ 11.5m
SRZ 3.2m
20% encroachment

Tree protection management plan	4 Woyna Ave, Capel Sound	22.7.2026
Protective fencing Ground protection Tree protection zone (TPZ) Structural Root Zone (SRZ)		

Tree No.	Botanical Name Common Name	DSH (cm)	NRZ (m)	DAB (cm)	SRZ (m)	TPZ (m)
1	<i>Eucalyptus species</i> Eucalyptus	47.7	5.7	47.7	2.4	5.7
3	<i>Coprosma repens</i> Mirror Bush	20.4	2.4	20.4	1.66	2.4
11	<i>Banksia integrifolia</i> Coast Banksia	11.5	9	3.2	0.7	9
15	<i>Brachychiton discolor</i> Lace Bark Tree <i>Callistemon viminalis</i> Weeping Bottle Brush	12.7	2	12.7	1.5	2
16	<i>Liquidamber styraciflua</i> Liquidamber	31.8	3.8	31.8	2	3.8
17	<i>Ulmus procera</i> 'glabra ' Golden Elm	57.3	6.9	57.3	2.6	6.9
18	<i>Archantophoenix cunninghamiana</i> Banglow Palm	15.6	2	15.6	1.5	2

Project Arborist role and responsibilities

Time table/schedule for tree protection measures and monitoring trees:

A project Arborist in conjunction with any requirements from the responsible authority to be appointed to implement tree protection management plan. They must ensure tree protection measures have been installed correctly and must supervise works within Tree Protection Zones during pre-demolition works, pre-construction work, construction works, landscaping works and final certification. The owner of the property is responsible for the installation and retention of the tree protection measures.

- Contractors to be advised of trees to be retained. The owner and occupier of the site must ensure that, prior to the commencement of demolition, buildings and works, all contractors and trades persons operating on the site are advised of the status of trees to be retained as detailed in the Tree Protection Specifications Report (TPS) and are advised of any obligations in relation to the protection of those trees, including the attendance of site meetings.
- If any canopies, trunk or root system of trees recommended to be retained are damaged at any stage of demolition/construction this damage must be reported to the project arborist immediately. All works must stop around the tree immediately. The damage must be assessed by the project arborist. The responsible authority must be notified by the project arborist to establish the appropriate action to be taken. The local council is to be notified within 24 hours of any breach of the Tree Protection Management Plan of where damage has occurred to a tree.
- Pre-demolition:** Site induction meeting, Tree pruning and root pruning as per TPS, The tree protection measures must be installed in the location shown on the tree protection plan prior to demolition works, excavation works, and delivery of goods etc. occurring. The protection fencing and ground protection systems are inspected by project arborist prior to demolition works. The temporary repositioning of tree protection fencing/ground protection as may be required to provide access in situations where this relocation, both in terms of its repositioning and its purpose, are approved and supervised by the project's arborist, and the approved fencing position/ ground protection reinstated immediately following any such access.
- Pre-Construction:** Site induction meeting. Designated storage area, Installation of utility services, Inspection of tree protection measures. The temporary repositioning of tree protection fencing/ground protection as may be required to provide access in situations where this relocation, both in terms of its repositioning and its purpose, are approved and supervised by the project's arborist, and the approved fencing position/ ground protection reinstated immediately following any such access.
- Construction works:** The building site to be inspected a minimum of every 3 months by project arborist. The project arborist to be present during excavations with TPZ of trees to be retained and is to undertake any root severance within the TPZ of trees recommended to be retained. **Supervision** of approved footings, driveway and cross overs within the TPZ as per TSP , inspection of tree protection measures. The temporary repositioning of tree protection fencing/ground protection as may be required to provide access in situations where this relocation, both in terms of its repositioning and its purpose, are approved and supervised by the project's arborist, and the approved fencing position/ ground protection reinstated immediately following any such access.
- Landscaping works:** Site induction meeting. The project arborist may need to approve removal of protective measures to allow for landscaping works. Tree pruning and root pruning as per TPS, On going care including mulching and watering of trees. P
- Final Certification:** Project arborist will confirm if all inspections carried out at all stages of construction works and attached copies of the inspection reports. They will provide a statement on condition of the retained trees and details of deviations from the tree protection management plan and the impact upon tree if any. A detail report maybe required if significant deviation form tree management plan or significant damage to trees.

Refer to Tree Protection Specifications report for further details



Arborscribe Tree Reports

Tree Protection Specifications Report

Site location

**4 Woyna Ave,
Capel Sound**

Report date:

22nd July 2026

Site assessment date:

23rd February 2026

Prepared For:

SPD Building Design

Prepared by

Sherrin Wiggans

Cert. Horticulture

Northern Metropolitan Tafe, 1996

Adv. Cert. Arboriculture

Northern Metropolitan Tafe, 1998

Qualified Arborist for 24 years

14 Years tree assessment and report writing.

Arborscribe Tree Reports

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1. Introduction

1.1 Purpose of report

Arborscribe Tree Reports was instructed by SPD Building Design in February 2026 to provide a tree protection specifications report and a tree protection management plan to Australian Standard AS4970 (Australian Standards- Protection of trees on development sites) on and surrounding the site at 4 Woyna Ave, to recommended measures to be taken to ensure that the trees are maintained and protected appropriately during proposed works.

- The species, height, crown spread, DBH, NRZ, DAB, SRZ, Circumference at 1.5m and at buttress, TPZ, Age Class, Useful Life Expectancy, Location relevance and to assess each tree to provide its health, structure, retention value and NRZ encroachment. (Abbreviations definitions in 6. Appendices for Tree Data Table)
- Identify the trees on the site, in neighbouring properties and nature strip that maybe impacted from an encroachment into their Notation Rotational Zone (NRZ) or Structural Root Zone (SRZ) because of the proposed construction works.
- To provide an assessment of the potential impact on each tree of the development and determine which trees can be retained in the context of the current plans,
- To recommended measures to be taken to protect any trees that are recommended to be retained during the proposed construction works under the guide lines of AS 4970-2025 (Australian Standards- Protection of trees on development sites)

1.2 Summary of report

The site under review is a residential allotment with a single dwelling constructed on the site. Woyna Ave is the street frontage with neighbouring properties to the south, west and north.

The site has a mixture of canopy trees and smaller trees including fruit trees. The neighbouring properties are single dwelling residential allotments a with mixture of canopy trees and smaller trees including fruit trees.

A total of seven trees are recommended to be retained and protected appropriately during proposed works. Each tree had been individually assessed and the results provide in table format. Each tree has been numbered and this number corresponds to assessment table and any plans.

1.3 Planning overlays

GRZ General Residential Zone
GRZ1 General Residential Zone-Schedule1
ESO Environmental Significance Overlay
ESO25 Environmental Significance Overlay 25
Mornington Peninsula Local Tree removal law
Victoria Planning Canopy Tree Law- Clause 52.37

2. Methodology

2.1 Date of inspection and Inspections procedure

A ground-based visual site and tree inspection was carried out by Sherrin Wiggans on the 23rd February 2026 at 4 Woyna Ave, Chapel Sound.

The assessment was to record

- Tree Species
- Location
- Height and Crown spread
- Age Class and Safe Useful Life Expectancy,
- Circumference 1.4m above ground level to calculate DSH (Diameter at standards height)
- Circumference at ground level, DAB (Diameter above buttress)
- Health and Structure,
- Retention value
- Photograph of tree

A ground based visual inspection of the tree was carried out according to the principles in Mattheck, Dr. Claus & Breloer, Helge (1994) – Sixth Edition (2001) The Body Language of Trees and Harris, Clark and Matheny (1999) Arboriculture, integrated management of landscape trees, shrubs, and vines, 3rd ed.

Tree location was determined by using site feature survey provide by the client. Trees have been numbered and this number corresponds to assessment table and any plans.

The height and canopy spread of the trees were estimated.

Health and structure are assessed based upon visual inspections and experience; Assessment was limited only to parts of the tree that were visible from ground level within the subject site.

A diameter tape was used to determine the trunk circumference of the tree and rounded up to the nearest whole number.

A proposed ground floor and basement plans have been provided by client for analysis. Trees have been numbered and Notational Root Zone and Structural Roots Zones are provided for specific trees.

Council Arboriculture Victoria- AS-4970-2009 Calculator was used to calculate diameter of tree.

A proposed ground floor and basement plans have been provided by client for analysis. Trees have been numbered and Notational Root Zone and Structural Roots Zones are provided for specific trees.

Encroachment into NRZ and SRZ by the proposed construction works have been calculated using Act Cad.

2.2 Limitation of assessment

- Tree defects not visible from the ground up have not been discussed and the risk associated is excluded from this report
- Health and structure are assessed based upon visual inspections and experience; Assessment was limited only to parts of the tree that were visible from ground level within the subject site. Aerial inspection was not carried out
- Height and canopy spread were estimated
- Circumference of some trees was estimated where access to the trunk was restricted due to site access restrictions.

2.3 References to plans provide for report

- Next Level Surveying, Site Feature Survey, 4 Woyna Ave, Capel Sound, 28.1.2026
- SPD Building Design, Ground Floor Plan 4, Woyna Ave, Capel Sound, 30th June 2026 Rev B

2.4 Referenced document used

- Australian standard AS4970-2025 Protection of trees on development sites.
- Australian Standards AS4373 (2007) Pruning of Amenity Trees.
- Impact assessment, Arborscribe Tree Reports, 4 Woyna Ave, Chapel Sound 22.7.26

3.Tree data

3.1 Trees to be retained, 3rd party trees

Tree No.	Botanical Name Common Name	Origin	Height (m)	Crown Spread diameter (m)	DSH (cm)	NRZ (m)	DAB (cm)	SRZ (m)	Circum at 1.5m (cm)	Circum above root buttress (cm)	TPZ (m)	Age Class	SULE	Location Relevance	Retention Value	Vigour/Health	Structure/Form	NRZ (%) encroachment	Comments	Permit required for tree removal pursuant GRZ1, ESO25 and Clause 52.37	Arborist's recommendations
3	<i>Coprosma repens</i> Mirror Bush	Exotic	4	4	20.4	2.4	20.4	1.66	64	64	2.4	Mature	10yrs	3rd party tree, located in neighbouring property.	High	Fair	Fair	0.00%	Classified as an environmental weed. Foliage is sparse. Canopy overhangs boundary and can be pruned back to boundary.	No, under 5m in height	Tree to be retained. No encroachment. General requirements for construction apply outlined in discussion and tree is to be protected during proposed construction works. Protection measures outlined in Tree Management Plan.
15	<i>Brachychiton discolor</i> Lace Bark Tree <i>Callistemon viminalis</i> Weeping Bottle Brush	Native Native	4.5	4	12.7	2	12.7	1.5	40	40	2	Semi-Mature	8yrs	3rd party tree, located in neighbouring property.	High	Good	Good	0.00%		Yes, native	2 x Tree to be retained. No encroachment. General requirements for construction apply outlined in discussion and tree is to be protected during proposed construction works. Protection measures outlined in Tree Management Plan.
16	<i>Liquidambar styraciflua</i> Liquidamber	Exotic	8	9	31.8	3.8	31.8	2	100	100	3.8	Semi-Mature	10yrs	3rd party tree, located in neighbouring property.	High	Good	Good	0.00%		Yes, Canopy boundary tree.	Tree to be retained. No encroachment. General requirements for construction apply outlined in discussion and tree is to be protected during proposed construction works. Protection measures outlined in Tree Management Plan.
17	<i>Ulmus procera glabra</i> * Golden Elm	Exotic	6	12	57.3	6.9	57.3	2.6	180	180	6.9	Semi-Mature	10yrs	3rd party tree, located in neighbouring property.	High	Fair	Good	0.00%	Canopy has Elm Leaf Beetle.	No, Exotic	Tree to be retained. No encroachment. General requirements for construction apply outlined in discussion and tree is to be protected during proposed construction works. Protection measures outlined in Tree Management Plan.
18	<i>Archontophoenix cunninghamiana</i> Banglow Palm	Native	4	2	15.6	2	15.6	1.5	49	49	2	Semi-Mature	10yrs	3rd party tree, located in neighbouring property.	High	Good	Good	Major 32.8%		Yes, native	Tree to be retained. Major encroachment. Proposed driveway is to be constructed using alternative construction methods at existing grade. No excavations or changes to soil levels within the TPZ and SRZ of this tree. General requirements for construction apply outlined in discussion and tree is to be protected during proposed construction works. Protection measures outlined in Tree Management Plan.

3.2 Trees to be retained, On site

Tree No.	Botanical Name Common Name	Origin	Height (m)	Crown Spread diameter (m)	DSH (cm)	NRZ (m)	DAB (cm)	SRZ (m)	Circum at 1.5m (cm)	Circum above root buttress (cm)	TPZ (m)	Age Class	SULE	Location Relevance	Retention Value	Vigour/Health	Structure/Form	NRZ (%) encroachment	Comments	Permit required for tree removal pursuant GRZ1, ESO25 and Clause 52.37	Arborist's recommendations
1	<i>Eucalyptus species</i> Eucalyptus	Native	10	11	47.7	5.7	47.7	2.4	150	150	5.7	Semi-Mature	10yrs	On site.	High	Good	Fair	0.00%	Tree bifurcated at 2m. Some deadwood and some epicormic growth in canopy.	Yes, Canopy boundary tree.	Tree to be retained. No encroachment. General requirements for construction apply outlined in discussion and tree is to be protected during proposed construction works. Protection measures outlined in Tree Management Plan.
11	<i>Banksia integrifolia</i> Coast Banksia	Native	12	14	11.5	9	3.2	0.7	300	300	9	Mature	10yrs	On Site	High	Fair	Fair	Moderate 20%	Canopy of the is lop-sided due to it being pruned from service wires. Some decay in canopy limbs.	Yes, native and Canopy boundary tree.	Tree to be retained. Moderate encroachment. Proposed driveway and carport surface is to be constructed using alternative construction methods at existing grade. No excavations or changes to soil levels within the TPZ and SRZ of this tree. General requirements for construction apply outlined in discussion and tree is to be protected during proposed construction works. Protection measures outlined in Tree Management Plan.

Tree 11 Alternative Construction Methods: Where the proposed driveway and carport surface enters the NRZ of this tree it must be constructed above existing grade level. There must be no grade changes within the NRZ (no excavations and no soil fill) and no roots are to be cut or damaged during any part of the construction process. It is also recommended that the surface must be constructed using porous materials approved by the Responsible Authority. The surface treatment must allow water to penetrate through the surface and into the soil profile.

Tree 18 Alternative Construction Methods: Where the proposed driveway enters the NRZ of this tree it must be constructed above existing grade level. There must be no grade changes within the NRZ (no excavations and no soil fill) and no roots are to be cut or damaged during any part of the construction process. It is also recommended that the surface must be constructed using porous materials approved by the Responsible Authority. The surface treatment must allow water to penetrate through the surface and into the soil profile.

General requirements for construction for all trees recommended to be retained.

Root Barriers: There is also a risk that the root system of this tree may cause damage to the property in the future. Therefore, it is recommended that root barriers are installed. Any root barrier must be installed outside the NRZ of this tree and the installation of the root barrier must be approved by the Project arborist or Responsible Authority prior to installation to determine the impact upon retained trees.

Services: All services and pits must be routed outside the NRZ's of the trees. If underground services must be routed within the TPZ, they must be installed by boring under the tree protection zone or installed using hydro excavation under the supervision of the project arborist. The direct drilling bore must be at least 600mm deep. The project arborist must be advised that the work is going to be carried out and present if roots larger than 20mm are to be cut or damaged. Any root pruning must be carried out by the project Arborist, and they must be pruned with a final cut to undamaged wood. Pruning cuts must be made with a sharp secateurs, pruners, handsaw or chainsaw. Pruning cuts must NOT be treated with dressings or paints. No roots to be pruned with machinery such as backhoes or excavators.

Landscaping within NRZ: Changes to soil conditions for landscaping shall be avoided within NRZ of trees, all landscaping must be above existing grade level. There must be no grade changes within the NRZ and no roots are to be cut or damaged during any part of the construction process. If excavations or fill are required for approved landscaping works then root investigation must be carried out to establish if any significant root will be damaged. (Tree roots with a diameter large than 20mm are significant roots) Root investigation will allow the location and distribution of the root to be determined through non-destructive methods like pneumatic, hydraulic, hand digging or ground penetrating radar. Any approved excavations or fill are to be carried out manually within the NRZ of the tree. Mechanical digging is not permitted. This includes excavations for paths. Any root severance within the NRZ must be approved by the Responsible Authority and undertaken by the project Arborist to their satisfaction.

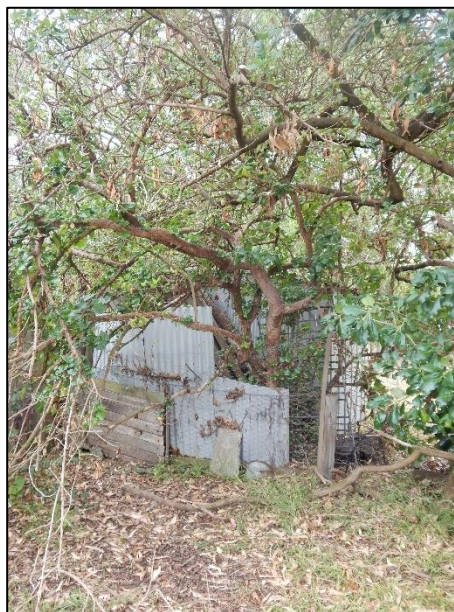
Fencing: All foundations for fences within the NRZ/TPZ of the tree must be designed and constructed using an approved tree sensitive non-destructive footing design to the satisfaction of the Responsible Authority. Any holes for posts for new or replacement boundary fences or within the NRZ of this tree must be re positioned around significant roots (tree roots with a diameter large than 25mm are significant roots) if required. All excavations within the NRZ of trees for the construction of foundations for posts must be dug under the direct supervision of the project Arborist and no roots greater than 25mm in diameter are to be cut or damaged during any part of the construction process. If posts are required in the SRZ of this tree, holes must be hand dug under the direct supervision of the project Arborist and no roots greater than 25mm in diameter are to be cut or damaged during any part of the construction process. Any pruning must be carried out by the project Arborist, and they must be pruned with a final cut to undamaged wood. Pruning cuts must be made with a sharp secateurs, pruners, handsaw or chainsaw. Pruning cuts must NOT be treated with dressings or paints. No roots to be pruned with machinery such as backhoes or excavators.

Pruning: Any removal or pruning of council owned trees must be undertaken by a council approved contractor. The lower limbs of any tree to be retained maybe lifted to ensure that they are not damaged. Any pruning to be carried out before any excavation/construction works begin to ensure that the tree is not damaged by machinery. This work must be carried out to Australian Standards AS4373 (2007) Pruning of Amenity Trees. The pruning to be undertaken by an arborist with a minimum qualification of AQF Level 3.

3.3 Tree photos



Tree 1



Tree 3



Tree 11



Tree 15



Tree 16



Tree 17



Tree 18

4. Tree protection measures

The tree protection guidelines are to ensure that the health and stability of retained trees do not decline as a direct result of the proposed construction works and to minimize the risk of decline or structural deterioration of retained trees following development.

The main function of roots is to take up water and nutrients, anchorage, storage of sugar reserves and the production of some plant hormones required by the shoots. In order for the roots to function, they must be provided with oxygen from the soil. A root system consists of three main parts. The structural woody roots and the lower order roots for anchorage, storage and transports of water and nutrients. And the non-woody roots for absorption of water and nutrients, extensions, synthesis of amino acids and growth regulators. Most of the tree roots are found at the very top of the soil and the vast majority of these roots are small non-woody roots. This delicate, non-woody system is very vulnerable to damage due to its close proximity to the surface.

The root system of a tree can be damaged in many ways. Excavation works, building up of soil, trenching, chemical contamination, laying of pavements, changes in drainage patterns and changes in water availability. However, the major cause of damage to the root system of tree on development sites is soil compaction. Soil compaction is the loss of the large pore spaces within the soil. These pore spaces are essential for aeration, the exchange of gases between the soil air and the atmosphere and drainage, the removal of excess water from the soil. Soil compaction is caused by the stress forces applied by foot and vehicle traffic and the storage of materials. The degree of the soil compaction will depend upon the weight of vehicles, number of vehicles, soil moisture levels and clay content.

The loss of the pore spaces results in reduced aeration, loss of root growth, reduced infiltration of water, increased water run-off, reduced availability of plant nutrients and a reduction in the number and diversity of beneficial soil organisms. Damage to the root system of a tree can also result in the loss of structural woody roots, which will leave the tree unstable, reduce water and nutrient uptake which results in the eventual loss of leaves, reduced photosynthesis and thus sugar production. There will also be decay developing as a result of wounding and the exposure to soil borne pathogens. It may take many years for the health of the tree to decline and for the tree to eventually die from root damage.

Therefore, it is essential that the TPZ of this tree is protected prior to the commencement of any site works including demolition, excavations, delivery of materials etc.

4.1 Demolition and Pre-construction

Protective fencing and ground protection to extend where shown on tree protection management plan. Protective fencing and ground protection must be in place before demolition commences.

- **Project Arborist to be appointed to implement tree protection management plan**

Project arborist must meet 1.4.4 of Australian standards AS 4970-2025 Protection of trees on development sites. The project arborist will be suitably experienced and competent in arboriculture, having acquired through training, qualifications (minimum Australian Qualification Framework (AQF) Level 5, Diploma of Horticulture (Arboriculture) and/or equivalent experience, the knowledge and skills enabling that person to perform the tasks required by this standard. Project arborist must ensure tree protection measures have been installed correctly and must supervise works if protective measures are removed within Tree Protection Zones during demolition works, pre-construction work, construction works, landscaping works and practical completion.

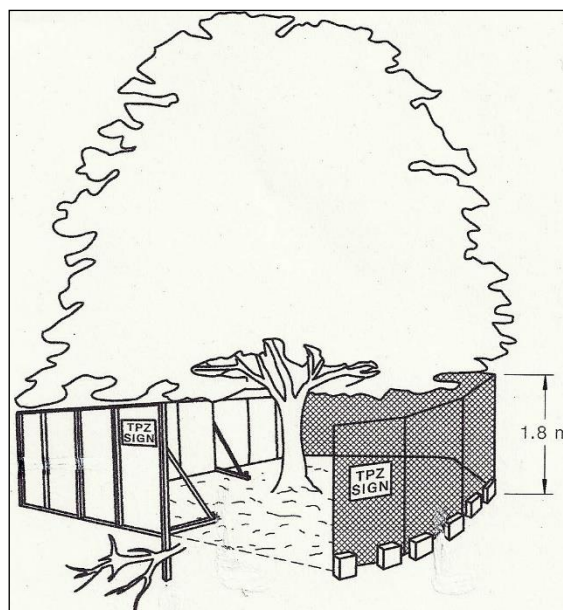
- **Contractors to be advised of trees to be retained**

The owner and occupier of the site must ensure that, prior to the commencement of demolition, buildings and works, all contractors and tradespersons operating on the site are advised of the status of trees to be retained as detailed in the tree protection management plan and are advised of any obligations in relation to the protection of those trees.

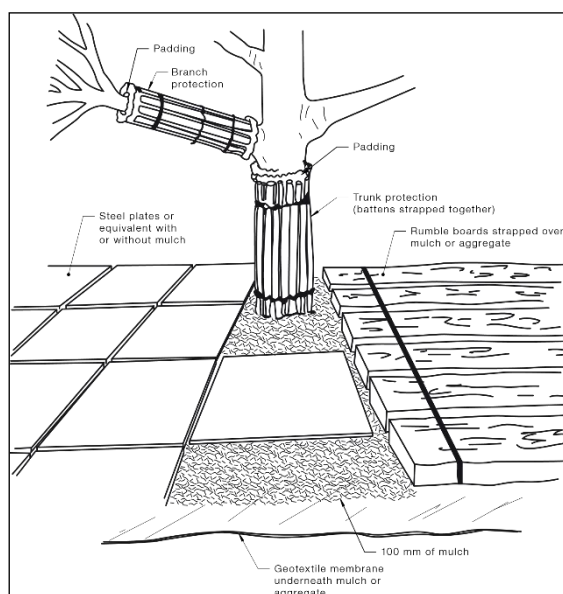
- If any canopies, trunk or root system of trees recommended to be retained are damaged at any stage of demolition/construction this damage must be reported to the project arborist immediately. All works must stop around the tree immediately. The damage must be assessed by the project arborist. The responsible authority must be notified by the project arborist to establish the appropriate action to be taken. The local council is to be notified within 24 hours of any breach of the Tree Protection Management Plan of where damage has occurred to a tree.
- The tree protection measures must be installed in the location shown on the tree protection plan prior to demolition works, excavation works, and delivery of goods etc. occurring. The protection fencing and ground protection systems are inspected by project arborist prior to demolition works, pre-construction work, construction works, landscaping works and practical completion. The temporary repositioning of tree protection fencing/ground protection as may be required to provide access in situations where this relocation, both in terms of its repositioning and its purpose, are approved and supervised by the project's arborist, and the approved fencing position/ ground protection reinstated immediately following any such access.

- **PROTECTIVE FENCING:** Must be chain wire mesh panels, high wire mesh fencing or high wire reinforced para-web mesh with reinforcing fencing wire to a height of 1.8m, held in place with concrete feet or 1.8m star pickets every 3-4m. Alternatively plywood or wooden paling fence panels to a height of 1.8m may be used. If excavation is required for the insertion of supports posts for the fencing it must be carried out by the project Arborist in accordance with AS4373-2007 and they must be pruned with a final cut to undamaged wood. Pruning cuts must be made with a sharp secateurs, pruners, handsaw or chainsaw. Pruning cuts must NOT be treated with dressings or paints. No roots to be pruned with machinery such as backhoes or excavators.
- The protective fencing must not be removed or altered without approval of the responsible authority and must remain in place until the completion of all works at the site and its removal is approved by project arborist. Existing perimeter fencing and other structures may be suitable as part of the protective fencing. No temporary services, wires, nails, screws or any other fixing device to be attached to the tree. Signs identifying the TPZ should be placed around all sides of the TPZ and be visible from within the development site. The lettering on the sign must comply with Australian standard AS1319.





- GROUND PROTECTION:** If temporary access 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. Measures may include a permeable membrane such as geotextile fabric beneath a layer of mulch or crushed rock below rumble boards. For trunk and branch protection use boards and padding that will prevent damage to bark. Boards are to be strapped to trees, not nailed or screwed. Rumble boards should be of a suitable thickness to prevent soil compaction and root damage
- Ground protection must not be removed or altered without approval of the responsible authority and must remain in place until the completion of all works at the site and its removal is approved by project arborist.

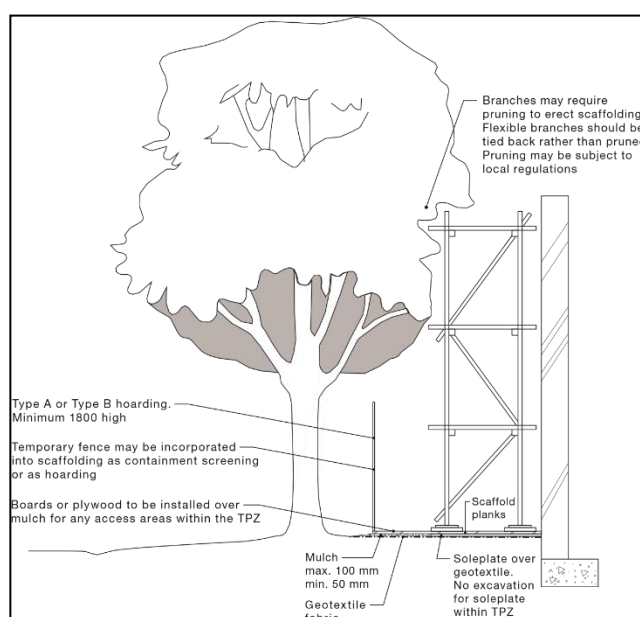


- Stumps to be removed from within a TPZ must be removed in a manner that avoid damaging or disturbing roots of trees to be retained before protective fencing/ground protection is installed.

4.2 During Construction

- Any works within the Tree Protection Zone of any tree, whether the zone is fully enclosed by Tree protection fencing/Ground protection or not, MUST comply with tree protection measures described.
- Temporary irrigation - A manually operated surface/drip irrigation system should be used to water the root zones of the trees within TPZ's during dry spells and after construction works have been completed. The watering regime and its duration to be established when root protection measures are installed and based upon the time of the year and soil moisture levels at the time by the project arborist. Early morning watering to the outer areas of the root zone once a week when there is no rain, to provide 30-50mm of water, will meet the needs of most trees. Such a system should be installed beneath mulch and should only be operated in compliance with any relevant water restrictions
- Excavation work must be carried out manually within the TPZ of the tree. No roots larger than 20mm in diameter are to be cut and the project arborist must be advised that the work is going to be carried out and present if roots are to be cut or damaged.
- Any holes for post within the TPZ of tree for new or replacement boundary fences or replacement retaining walls must be excavated manually and re positioned around significant roots (tree roots with a diameter large than 20mm are significant roots). The project arborist must be advised that the work is going to be carried out and present if roots are to be cut or damaged. If excavation is required for the insertion of supports posts for the fencing it must be carried out by the project Arborist in accordance with AS4373-2007 and they must be pruned with a final cut to undamaged wood. Pruning cuts must be made with a sharp secateurs, pruners, handsaw or chainsaw. Pruning cuts must NOT be treated with dressings or paints. No roots to be pruned with machinery such as backhoes or excavators.
- All services and pits must be routed outside the TPZ's of the trees. If underground services must be routed within the TPZ, they must be installed by boring under the tree protection zone or installed using hydro excavation under the supervision of the project arborist. The direct drilling bore must be at least 600mm deep. The project arborist must be advised that the work is going to be carried out and present if roots are to be cut or damaged. Any root pruning must be carried out by the project Arborist in accordance with AS4373-2007 and they must be pruned with a final cut to undamaged wood. Pruning cuts must be made with a sharp secateurs, pruners, handsaw or chainsaw. Pruning cuts must NOT be treated with dressings or paints. No roots to be pruned with machinery such as backhoes or excavators.
- Where roots are left exposed by excavations, temporary root protection must be installed to prevent them drying out. Jute mesh or hessian sheeting must be placed in multiple layers over exposed roots and the excavations soil profile to the full depth of the root zone. The protective sheeting is to be pegged down and kept moist during for the periods of time that the roots are left exposed. The watering regime and its duration to be established when root protection measures are installed and based upon the time of the year and soil moisture levels at the time by the project arborist.

- No persons, vehicles or machinery to enter TPZ without written consent of the responsible authority. No fuel, oil dumps, waste or chemicals are allowed in or are to be stored within TPZ and the servicing of equipment or vehicles should be carried out away from the TPZ. No temporary buildings or waste to be stored within the TPZ.
- The area within the TPZ must be mulched with organic woodchip mulch within the designated TPZ that is recommended to be protected. The mulch must be maintained to a depth of 50-100mm using material that complies with AS4454. Where the existing landscape within the TPZ is to remain unaltered (e.g., garden beds or turf) mulch may not be required.
- All weeds that grow during construction works within the designated protected TPZ must be removed by hand without soil disturbance or controlled with appropriate use of non-residual herbicide.
- **SCAFFOLDING:** Where scaffolding is required by the building contractor or sub-contractor or OH&S regulations it must be erected outside the TPZ. Where it is essential for scaffolding to be erected within the TPZ, the tree trunk and branches must be avoided. This can be achieved by designing scaffolding to avoid the tree trunk and branches.
- Ground below the scaffolding must be protected by boarding (e.g., scaffold board or plywood sheeting). Where access is required, a board walk or other surface material must be installed to minimize soil compaction. Boarding must be placed over a layer of mulch and impervious sheeting to prevent soil contamination. The boarding must be left in place until the scaffolding is removed. Excavation required for the insertion of support posts for tree protection fencing must not involve the severance of any roots. The project arborist must be advised that the work is going to be carried out and present if roots are to be cut or damaged. Any root pruning must be carried out by the project Arborist in accordance with AS4373-2007 and they must be pruned with a final cut to undamaged wood. Pruning cuts must be made with a sharp secateurs, pruners, handsaw or chainsaw. Pruning cuts must NOT be treated with dressings or paints. No roots to be pruned with machinery such as backhoes or excavators.



- Removal of protection measures and cessation of the tree management plan must be authorized by the responsible authority.
- **LANDSCAPING WORKS:** Where the landscaping works enter the TPZ of the trees the changes to soil condition must be avoided wherever possible. Where unavoidable in order to carry out approved works the maximum depth of excavations or fill to be 100mm within the TPZ of this tree. Any excavations or fill must be carried out manually within the TPZ of the tree. Mechanical digging is not permitted. This includes excavations for paths. Any root severance with the TPZ must be approved by the Responsible Authority and undertaken by the project Arborist in accordance with AS4373-2007. If excavations deeper than 100mm are required then root investigation must be carried out to establish if any significant root will be damaged. Root investigation will allow the location and distribution of the root to be determined through non-destructive methods like pneumatic, hydraulic, hand digging or ground penetrating radar.
Also, any holes for post or foundations for decks or retaining walls within the TPZ of this tree must be excavated manually and reposition around significant roots if required (tree roots with a diameter large than 20mm are significant roots). The project arborist must be advised that the work is going to be carried out and present if roots are to be cut or damaged. Any root pruning must be carried out by the project Arborist in accordance with AS4373-2007 and they must be pruned with a final cut to undamaged wood. Pruning cuts must be made with a sharp secateurs, pruners, handsaw or chainsaw. Pruning cuts must NOT be treated with dressings or paints. No roots to be pruned with machinery such as backhoes or excavators.
And any planting holes for new trees and shrubs must be excavated manually and reposition around significant roots if required (tree roots with a diameter large than 20mm are significant roots) The project arborist must be advised that the work is going to be carried out and present if roots are to be cut or damaged. Any root pruning must be carried out by the project Arborist in accordance with AS4373-2007 and they must be pruned with a final cut to undamaged wood. Pruning cuts must be made with a sharp secateurs, pruners, handsaw or chainsaw. Pruning cuts must NOT be treated with dressings or paints. No roots to be pruned with machinery such as backhoes or excavators.
The removal of any protective fencing to allow for landscaping works must be approved by the Responsible Authority and undertaken by the project Arborist to their satisfaction.

5. Time Table for monitoring of trees by project arborist

Project Arborist to be appointed to implement tree protection management plan

Project arborist must meet 1.4.4 of Australian standards AS 4970-2025 Protection of trees on development sites.

The project arborist will be suitably experienced and competent in arboriculture, having acquired through training, qualifications (minimum Australian Qualification Framework (AQF) Level 5, Diploma of Horticulture (Arboriculture) and/or equivalent experience, the knowledge and skills enabling that person to perform the tasks required by this standard. Project arborist in conjunction with any requirements from the responsible authority must ensure tree protection measures have been installed correctly and must supervise works within Tree Protection Zones during demolition works, pre-construction work, construction works, landscaping works and practical completion.

Pre-Demolition:

- Pre-Demolition Site Induction meeting.
- Establish Site access and removal of infrastructure within the Tree Protection Zone.
- Tree pruning and Vegetation clearance within the Tree protection zone to be carried out. If root pruning required it is to be carried out.
- Protective fencing and ground protection must be in place, including signage.
- The owner of the property, builder and contractors are responsible for the installation and retention of the tree protection measures.
- Certifications of the above activities by the Project Arbrosit.

Pre-construction: Must be undertaken prior to the establishment of any services and foots/foundations and the delivery of goods.

- Pre-Construction Site Induction meeting.
- Designated Storage areas established.
- Installation of utility services
- The trees recommended for retention will need to be monitored by the project arborist in conjunction with any requirements from the responsible authority to ensure that the tree protection measures have been installed correctly.
- Certifications of the above activities by the Project Arbrosit.

Construction works:

- The building site to be inspected a minimum of every 3 months by project arborist.
- The project arborist to be present during excavations or installation of approved footings with TPZ of trees to be retained and is to undertake any root severance within the TPZ of trees recommended to be retained.
- Identify construction methods of any building works and materials for any proposed driveway or cross overs including where necessary bridging over Tree Protection Zones.
- The Project arborist is to ensure that the tree protection measures have been installed correctly. The owner of the property is responsible for the installation and retention of the tree protection measures.
- Certifications of the above activities by the Project Arbrosit.

Post Construction Landscaping works:

- Landscaping Construction site Induction meeting.
- The Project arborist is to ensure that the tree protection measures have been installed correctly. The owner of the property is responsible for the installation and retention of the tree protection measures.
- Tree pruning and Vegetation clearance within the Tree protection zone to be carried out. If root pruning required it is to be carried out.
On going car measures including mulching, water regime and monitoring to be established.
- Certifications of the above activities by the Project Arbsosit.

Post Construction/Final Certification: At conclusion of the landscaping works.

- Trees will need to be inspected by project arborist in conjunction with any requirements from the responsible authority when all the construction works are completed to assess the condition of the trees and to certify that the completed works have been carried out in compliance with the permit condition and specifications for tree protection and to approve the removal of protective measures.
- Project arborist will confirm if all inspections carried out at all stages of construction works and attached copies of the inspection reports. They will comment if actions were required as part of inspections and if action required that it was rectified in accordance with tree management plan. That all works and recommendations were undertaken in accordance with tree management plan and that any alterations to the tree management plan were approved in writing by local responsible authority. They will provide a statement on condition of the retained trees and details of deviations from the tree protection management plan and the impact upon tree if any. A detail report maybe required if significant deviation from tree management plan or significant damage to trees.
- If any canopies, trunk or root system of trees recommended to be retained are damaged at any stage of construction this damage must be reported to the project arborist immediately. All works must stop around the tree immediately. The damage must be assessed by the project arborist. The responsible authority must be notified by the project arborist to establish the appropriate action to be taken. The local council is to be notified within 24 hours of any breach of the Tree Protection Management Plan of where damage has occurred to a tree.

6. Tree Protection Management Plan Certification Template

Site address:

Project Arborist:

Contact number:

Project manager:

Contact Number:

Pre-Demolition

Meeting on Site held	Yes / No	Date/Time of meeting	
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Persons present:

TMP copy given to all parties present?	Yes / No
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Site access available and acceptable?	Yes / No
Modifications Required to Tree Protection Plan?	Yes/ No/ NA

Tree pruning required?	Yes / No/ NA
Tree pruning undertaken to AS4373?	Yes / No/ NA
Tree pruning undertaken in accordance with TMP recommendations?	Yes / No/ NA
Has root pruning been undertaken in accordance with TMP recommendations?	Yes / No/ NA

Tree pruning required?	Yes / No/ NA
Tree pruning undertaken to AS4373?	Yes / No/ NA
Tree pruning undertaken in accordance with TMP recommendations?	Yes / No/ NA
Has root pruning been undertaken in accordance with TMP recommendations?	Yes / No/ NA
Vegetation cleared from TPZ in accordance with TMP recommendations?	Yes / No/ NA
Infrastructure cleared from TPZ in accordance with TMP recommendations?	Yes / No/ NA

Fencing installed in correct location as per TMP?	Yes / No/ NA
Ground Protection installed correctly as per TMP?	Yes / No/ NA
Trunk and Branch protection installed correctly as per TMP?	Yes / No/ NA
Signage present on TPZ protection?	Yes / No/ NA
Signage has project Arborist contact details?	Yes / No/ NA

Mulch type in accordance the TMP?	Yes / No/ NA
TPZ mulched to a depth of 100mm?	Yes / No/ NA
Has the tree been watered in accordance the TMP?	Yes / No/ NA

Have any canopies, trunk or root system of trees been damaged? if yes this must be report to responsible authority, please detail in comments	Yes / No
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Comments:

Photographs taken?	Yes / No	Date inspected:	
Compliance date:		Signed:	

Tree Protection Management Plan Certification Template

Site address:

Project Arborist:	Contact number:
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Project manager:	Contact Number:
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Pre-Construction

Meeting on Site held with Builders/Construction trades	Yes / No	Date/Time of meeting	
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Persons present:

TMP copy given to all parties present?	Yes / No
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Site access available and acceptable?	Yes / No
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Modifications Required to Tree Protection Plan?	Yes/ No/ NA
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Area designated on site for the storage of materials/goods?	Yes / No/ NA
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Does the storage area for materials/goods comply with the TMP?	Yes / No/ NA
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Have all utilities services been marked out on site?	Yes / No/ NA
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Are all service located outside the TPZ?	Yes / No/ NA
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Are service required to be bored under TPZ?	Yes / No/ NA
---	--------------

Fencing in correct location as per TMP?	Yes / No/ NA
---	--------------

Ground Protection in correct location as per TMP?	Yes / No/ NA
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Does the TMP need to be modified?	Yes / No/ NA
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Trunk and Branch protection correct as per TMP?	Yes / No/ NA
---	--------------

Signage present on TPZ protection?	Yes / No/ NA
------------------------------------	--------------

Signage has project Arborist contact details?	Yes / No/ NA
---	--------------

Mulch type in accordance the TMP?	Yes / No/ NA
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TPZ mulched to a depth of 100mm?	Yes / No/ NA
----------------------------------	--------------

Has the tree been watered in accordance the TMP?	Yes / No/ NA
--	--------------

Have any canopies, trunk or root system of trees been damaged? if yes this must be report to responsible authority, please detail in comments	Yes / No
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Comments:

Photographs taken?	Yes / No	Date inspected:	
Compliance date:		Signed:	

Tree Protection Management Plan Certification Template

Site address:

Project Arborist:	Contact number:
-------------------	-----------------

Project manager:	Contact Number:
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Construction

Site access available and acceptable?	Yes / No
Modifications Required to Tree Protection Plan?	Yes/ No/ NA

Area designated on site for the storage of materials/goods?	Yes / No/ NA
Does the storage area for materials/goods comply with the TMP?	Yes / No/ NA

Are all footings and installation in accordance the TMP?	Yes / No/ NA
Project arborist contacted when works enter the TPZ in accordance with tree management plan?	Yes / No/ NA

Fencing in correct location as per TMP?	Yes / No/ NA
Ground Protection in correct location as per TMP?	Yes / No/ NA
Does the TMP need to be modified?	Yes / No/ NA
Trunk and Branch protection correct as per TMP?	Yes / No/ NA
Signage present on TPZ protection?	Yes / No/ NA
Signage has project Arborist contact details?	Yes / No/ NA
Mulch type in accordance the TMP?	Yes / No/ NA
TPZ mulched to a depth of 100mm?	Yes / No/ NA
Has the tree been watered in accordance the TMP?	Yes / No/ NA

Have any canopies, trunk or root system of trees been damaged? if yes this must be report to responsible authority, please detail in comments	Yes / No
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Comments:

Photographs taken?	Yes / No	Date inspected:	
Compliance date:		Signed:	

Tree Protection Management Plan Certification Template

Site address:

Project Arborist:	Contact number:
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Project manager:	Contact Number:
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Post Construction and Landscaping Works

Meeting on Site held with Landscaping trades	Yes / No	Date/Time of meeting	
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Persons present:

TMP copy given to all parties present?	Yes / No
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Site access available and acceptable for landscaping?	Yes / No
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Modifications Required to Tree Protection Plan?	Yes/ No/ NA
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Area designated on site for the storage of materials/waste?	Yes / No/ NA
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Does the storage area for materials/goods comply with the TMP?	Yes / No/ NA
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Can the tree protection fencing and ground protection be removed	Yes / No/ NA
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Are specialised tree protection measures required?	Yes / No/ NA
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Project arborist contacted when works enter the TPZ in accordance with tree management plan	Yes / No/ NA
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Do all works within the TPZ comply with the TMP?	Yes / No/ NA
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Has the tree been watered in accordance the TMP?	Yes / No/ NA
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Have any canopies, trunk or root system of trees been damaged? if yes this must be report to responsible authority, please detail in comments	Yes / No
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Comments:

Photographs taken?	Yes / No	Date inspected:	
Compliance date:		Signed:	

Tree Protection Management Plan Certification Template

Site address:

Project Arborist:

Contact number:

Project manager:

Contact Number:

Post Construction/Final Certification:

Where inspections carried out at all stages of construction works? please attached copies of inspection reports	Yes / No
If actions were required as part of inspections where they rectified in accordance with tree management plan?	Yes / No / NA
Have all works and recommendations been undertaken in accordance with tree management plan?	Yes / No
Have alterations to the Tree Management plan been undertaken and if so were they approved in writing by local responsible authority?	Yes / No

The Project Arborist has inspected all stages of the project has defined by the TMP. Any action that has not complied has been rectified and approved by the Project Arborist. All works as noted within the approved TMP have been undertaken and any modifications to the TMP have been approved in writing by the local responsible authority.

Photographs taken?	Yes / No	Date inspected:	
Final Certification approved?	Yes / No	Signed:	

Date of Final Certification:

7. Appendices for Tree Data Table

Genus/Species: The identification of the tree is based upon visual characteristics and given that the key identifying features of a tree are not often available the accuracy of identification cannot be guaranteed. Where the species of any tree is not known, sp. is used.

Native/Exotic: Native. Original origin of that Genus/Species is Australia

Exotic. Original origin of that Genus/Species is not Australia

Height and Spread: The height and crown spread were estimated from the ground level.

DSH (Diameter at Standard Height): The diameter of the trunk (DSH) of the tree is the nominal trunk diameter at 1.4m above ground level and is determined from the circumference of the trunk divided by π . Where a tree is multi-stemmed the combined DSH is calculated using the formula

$$\text{Total DSH} = \sqrt{(\text{DSH}_1)^2 + (\text{DSH}_2)^2 + (\text{DSH}_3)^2}$$

Notional Root Zone (NRZ:) represents the theoretical area required to sustain a tree's health and long-term viability. It continues to include the Structural Root Zone (SRZ), which is the innermost zone critical for tree stability due to woody root growth and soil cohesion.

Importantly, the term Tree Protection Zone (TPZ) is still in use, but it now refers specifically to the area protected during development activities, typically through physical barriers and site management measures to ensure tree viability.

Tree Protection Zone: The tree protection zone (TPZ) is the principal means of protecting trees on development sites. The TPZ is a combination of the root area and the crown area requiring protection. It is an area isolated from construction disturbance, so that the tree remains viable. The TPZ incorporates the structural root zone (SRZ). The radius of the TPZ is calculated for each tree by multiplying its DSH x 12.

DAB: Diameter above buttress in cm, measured above root buttress and is determined from the circumference of the trunk divided by π . Where a tree is multi-stemmed the combined DAB is calculated using the formula

$$\text{Total DAB} = \sqrt{(\text{DAB}_1)^2 + (\text{DAB}_2)^2 + (\text{DAB}_3)^2}$$

Structural Root Zone: The structural root zone (SRZ) is the area required for tree stability. The SRZ only need to be calculated when encroachment of larger than 10 % is proposed into a NRZ. The radius of the SRZ is calculated for each tree by the formula.

$$\text{SRZ radius} = (D \times 50)^{0.42} \times 0.64.$$

D= trunk diameter, in m, measured above the root buttress.

Age Class:

Young	80% of life expectancy remaining
Semi-Mature	60% of life expectancy remaining
Mature	40% of life expectancy remaining
Senescent	10% of life expectancy remaining
Dead	0% of life expectancy remaining

S.U.L.E (Safe Useful Life Expectancy);

0 yrs	The tree is dead or almost dead and constitutes a hazard or has structural faults that poses a real threat to life and property.
5 yrs	The trees health is in decline and unlikely to recover or has structural faults that poses a real threat to life and property.
5-15yrs	The health of the tree is likely to decline during the next 15 years. This may be due to it being a short-lived species. It also may require high levels of maintenance after 15 years
15-25 yrs	The health and structure of the tree are likely to decline in the next 15-25 years. This may be due to it being a short-lived species. It also may require high levels of maintenance after 15 years.
25-50yrs	The health and structure of the tree are likely to still to be in good condition in the next 25-50 years. It may require a moderated level of maintenance after 25 years.
>50yrs	The health and structure of the tree are likely to still to be good condition in the next 50 years. It may require a low level of maintenance after 50 years.

Location relevance:

- On Site Tree is located on the property.
- 3rd Party Tree is located in a neighbouring property, reserve or on the nature strip.

Retention Value:

High Retention Value	The tree must be retained and the design must accommodate its long-term retention.
Medium Retention Value	The tree may be retained if it does not hamper the design intent.
Low Retention Value	The tree is recommended for removal.

Vigor/Health:

Excellent	Crown full with full foliage density. Good new leaf and shoot growth with no dieback. Less than 30% deadwood. Tree is considered to be an excellent example of that species.
Good	Crown full with good foliage density. Average new leaf and shoot growth with little or no dieback. Less than 30% deadwood.
Fair	Crown foliage density below average. Less than average new leaf and shoot growth with minor dieback. More than 30% deadwood.
Poor	Poor new leaf and shoot growth. Extensive dieback and epicormic growth. Pathogens maybe present. More than 30% deadwood.
Dead	Tree is dead.

Structure:

Excellent	Tree has an excellent defined and balanced canopy. Good branch union with no defects visible. No defect visible in the trunk. Tree is considered to be an excellent example of that species.
Good	Tree has a well-defined and balanced canopy. Good branch unions with little or no defects visible. Little or no defects visible in the trunk.
Fair	Tree has minor defaults in crown. Maybe unbalanced or some branch unions may show minor faults. Defects in trunk, bifurcated, leaning, wounds or decay.
Poor	Tree has significant faults with canopy or trunk. Poor branch unions with visible defects. Visible defects in trunk. The tree may have suffered significant root damage.

Percentage encroachment:

- **Major Encroachment:** More than 20% of the NRZ area, and/or encroachment into the SRZ. Response: The Project Arborist must be engaged to investigate alternative designs or demonstrate whether the tree can remain viable. This requires a detailed assessment of the tree and site, and may involve non-destructive root investigations.
- **Moderate Encroachment:** Greater than 10% and up to 20% of the NRZ area, outside the SRZ, with no recent NRZ encroachments. The Project Arborist must review the proposal and demonstrate whether the tree's viability can be maintained. This may involve site-specific mitigation strategies and appropriate design or construction controls.
- **Minor Encroachment:** 10% or less of the NRZ area, outside the SRZ, with no recent NRZ encroachments. Generally considered low-risk. If standard tree protection measures are implemented, significant impacts to tree health, structure, or longevity are unlikely.

8. Glossary: Explanation of Terms

Air Knife: To reduce the damage to the root system of this tree it is recommended that the soil excavated for the services within the optimum tree protection zone of this tree is cleared away with an air knife. This will allow the roots to be exposed without damaging them. This work is to be carried out by a qualified Arborist to recommended Australian Arboricultural standards. Where possible the pipes for the services to the proposed units must be placed under the tree roots and tree roots may only be cut by a qualified Arborist.

Bifurcated: Bifurcations are where two or more stems arise near or at the same position on a trunk. As a result of these stems growing simultaneously they do not develop layers of supporting wood which is normally associated with branch development. This point of attachment is further weakened by included bark, which is the result of the bark of the internal faces of the stem becoming enclosed. There is also a risk of failure at this point due to the weight and leverage of these branches in relation to the strength of their attachment. This risk increases as this tree matures the branches spread, further increasing the stress on this point of attachment.

Building up of soil: The build-up of soil around the base of the tree will result in serious structural problems in the future. The building up of soil around the base of trees smothers the root system. Most of the trees woody transport roots and fine absorption roots, which absorb and transport water and nutrients are found in the top 150mm of soil. The loss of these roots will result in a decline in the health of the tree. The build-up of soil around the trunk of the tree also encourages diseases and causes the trunk of the tree to rot, resulting in an increased risk of structural failure.

Central leader: The main stem of the tree.

Cracks in outer bark of trees: the crack/splits due to irregular watering. The cracks/splits are a result of the trunk of the tree swelling as it takes up water after a period of drought. These crack/splits do not weakening the structure of the tree but deep cracks can create wounds that are vulnerable to decay and diseases.

Crowded out by neighbouring trees: As a result of this tree being crowded out by neighbouring trees there are few lateral branches. The lateral branches in the canopy of this tree concentrated at the top of the tree. An ideal branch distribution would centre the wind load acting on the tree at about two thirds of the total height. Ideally, one-half or more of the foliage should be on branches originating on the lower two-thirds of the trunk, and one-half or less should originate on the upper one-third. Pruning will not improve the shape or stability of this tree, nor will it reduce the potential of limb failure.

Dead tree: This tree is dead, there is no foliage on this tree and the bark is starting to peel off the trunk and canopy limbs. The health of this tree will not recover. This tree has died due to old age and a lack of water.

Deadwood: Branch or stem bearing no live tissue

Decay: The process of degradation of woody tissue by fungi or bacteria through decomposition. The decomposition of woody tissue had an effect upon the health and structural integrity of trees.

Decline due to old age: The health of this tree is in decline due to the natural process of old age. Trees slow in growth as they approach maximum age, and become more vulnerable to disease and wind. The indicators that the health of a tree is in decline are the die back of the branches at the tips and the epicormic growth in the canopy.

Dieback: The progressive death of small branches generally from the tip off the branch to the base.

Epicormic growth: Epicormic growth are shoots that arise from latent buds on mature branches. When a mature tree is stressed by drought, nutrient deficiency, old age, or disease, inside branches are exposed to more light due to the loss of foliage. Higher light intensity causes many low vigor epicormic shoots to sprout along the upper sides of the main branches to replace the loss of foliage and to increase photosynthesis. These epicormic shoots have a high risk of failure as they are only attached to the outside of the stem they grow from. As an epicormic shoot increases in size there is a high risk that it will fail at the point of attachment, as it is not strong enough to support its weight.

Fungal Bract: The fungal bracts are an indicator of fungal disease in the tree. Airborne fungal spores enter a tree through wounds and will have entered this tree through the wound in the trunk of the tree. Fungal diseases infect and decompose the heartwood in the centre of trees; they break down the cell walls and reduce the structural strength of the tree. The wood in the center of a tree trunk is not living tissue, so a tree continues to look and function normally until the disease is quite advanced. When you see bracts, the tree has probably been infected for several years. The fungi destroy the internal framework of the tree and in advanced stages, splits; cavities and cracks develop in the trunk and branches.

The number, location and size of the fungal bracts are indicative of the extent of fungal disease in the tree. The large number of the fungal bracts on this tree indicates that the disease is active. This disease has weakened the tree's structure; it will cause the failure of limbs, failure of the trunk of the tree at the point where the fungal bracts are located and it will eventually kill the tree. The health of this tree will decline in the future as a direct result of the fungal disease. There is a very high risk of limb and structural failure due to the fungal disease in trees and this poses an immediate threat to life and property.

Included Bark: Pattern of development at branch junction where bark is turned inwards rather than pushed out.

Lopping: The removal of the crown or several of the major canopy limbs. This method of pruning leaves large wounds exposed vulnerable to attack by decay fungus. It also promotes the growth of new shoots from epicormic buds. These new shoots have a high risk of failure as they are only attached to the outside of the stem they grow from. As a shoot increases in size there is a high risk that it will fail at the point of attachment, as it is not strong enough to support its weight.

Noxious weed: This tree is classified as a noxious weed due to its ability to self-seed prolifically and its potential to displace indigenous vegetation.

Root damage: Tree roots cause movement in the soil as they take up water and nutrients; and this results in cracks and movement in structures. There are two types of damage trees may cause to property, namely direct (through physical contact) and indirect (subsidence). Direct damage is the result of pressure that may be exerted by a tree's roots or trunk. This pressure can affect lightly loaded structures such as garden walls, driveways and paved surfaces but rarely affect heavily loaded structures such as houses. And indirect damage that is the result of tree roots extracting moisture and nutrients from the soils and this results in subsidence and cracks appearing in the building.

Soil Compaction: Soil compaction is the loss of the large pore spaces within the soil. These pore spaces are essential for aeration, the exchange of gases between the soil air and the atmosphere and drainage, the removal of excess water from the soil. Soil compaction is caused by the stress forces applied by foot and vehicle traffic and the storage of materials. The degree of the soil compaction will depend upon the weight of vehicles, number of vehicles, soil moisture levels and clay content.

The loss of the pore spaces results in reduced aeration, loss of root growth, reduced infiltration of water, increased water run-off, reduced availability of plant nutrients and a reduction in the number and diversity of beneficial soil organisms. Damage to the root system of a tree can also result in the loss of structural woody roots, which will leave the tree unstable, reduce water and nutrient uptake which results in the eventual loss of leaves, reduced photosynthesis and thus sugar production. It may take many years for the health of the tree to decline and for the tree to eventually die from root damaged caused by soil compaction.

Windrow Tree: Trees that have grown close together are largely protected from wind forces by adjacent trees. However, they must also compete for light, space, soil area, water and nutrients and unless evenly spaced some trees will outperform other adjacent trees and will suppress the weaker trees. Weak performing trees may grow asymmetrically, with poor stem taper, little canopy and lack a well-developed root system. It is also essential in situations where trees are growing in close proximity to one another and where their canopies and root systems are intertwined that they are removed at the same time. Also, removing just one tree or just several trees resulted in the remaining trees becoming vulnerable to failure as they are now exposed to the elements.

9. References

- Australian Standards AS4373 (2007) Pruning of amenity Trees,
- Australian Standards AS4970 -2025 Protection of trees on development sites.
- Mattheck, Dr. Claus & Breloer, Helge (1994) – Sixth Edition (2001) The Body Language of Trees – A Handbook for Failure Analysis the Stationery Office, London, England

10. Terms and Conditions

This Report has been prepared in accordance with and is provided subject to the Terms and Conditions hereinafter contained and/or endorsed

1. Reference in this Report to-

“Arbor Scribe” means and includes all principals, partners or other proprietors, employees, agents, licensees, sub-contractors, consultants and representatives of Arbor Scribe.

“the stipulated constraints” means a ground level inspection conducted at the Location during day light hours subject to prevailing weather conditions on the day of inspection

“special activities” means climbing, lifting, excavating or use of special equipment

“special equipment” includes a cherry picker, ladder or other apparatus or appliance

2. Possession of this report or a copy thereof does not imply right of publication or use of any purpose by anyone but the client or their directed representatives, without the prior written consent of Arbor Scribe.

3. The Client warrants to Arbor Scribe that –

- 3.1. this Report has neither been commissioned and nor will it be used for or in connection with any legal proceedings and acknowledges that Arbor Scribe is not compelled to attend or provide evidence before any Court or Tribunal in connection herewith and may rely on this warranty as a fundamental term and bar to any summons or subpoena being issued against or complied with by Arbor Scribe.

- 3.2. the Client is the owner or occupier and has a legal right or permission to authorize Arbor Scribe's entry upon the Location.

- 3.3. Any legal description provided to the consultant is assumed to be correct. Any titles and ownership to any property assumed to be good. No responsibility is assumed for matters legal in character. It is assumed that any property/project is not in violation of any codes, ordinances, statutes or other government regulation.

4. Arbor Scribe has in accordance with the stipulated constraints exercised due care and skill in conducting an inspection at the Location and preparing this Report. Arbor Scribe will not and is not obliged in connection therewith to carry out any special activities but recommend the Client engages a specialist contractor where appropriate. Information contained in this report covers only those items that were examined and reflect the condition of those items at the time of inspection. The inspection is limited to visual examination of accessible components without dissection, excavation or probing. There is no warranty or guarantee, expressed or implied that the problems or deficiencies of the plants or property in question may not arise in future.
5. Care has been taken to obtain all information from reliable sources. All data has been verified in so far as possible; however the consultant can neither guarantee nor be responsible for the accuracy of the information provided by others.
6. Sketches, diagrams, graphs and photographs in this report, being intended as visual aids, are not necessarily to scale and should not be construed as engineering or architectural reports or surveys.
7. Loss or alteration of any part of this report invalidates the entire report.
8. The Client acknowledges having been provided with a copy of both read and understood these Terms and Conditions prior to engaging the services of Arbor Scribe.
9. Arbor Scribe's terms of payment are (unless otherwise stated in writing) 7 days nett upon issue of Invoice. An administration charge of \$1.00 applies per day and accrues calendar monthly commencing 14 days from the date of Arbor Scribe's invoice.

11. Expertise to report

Qualification & Experience

- Advanced Certificate in Arboriculture
- Certificate in Horticulture
- 24 years experience in Arboriculture
- 12 years in private sector as a consultant Arborist
- 3 years at Daryl's Tree Care & Surgery, as a crew member and consulting Arborist
- 4 years at City of Banyule, as apprentice Gardener/Arborist
- 5 years at The Hurlingham Club, London, England, as Senior gardener

Expertise to report

Australian Standards AS4970, 1.4.4 Project Arborist

The person responsible for carrying out the tree assessment, report preparation, consultation with designer, specifying tree protection measures, monitoring and certification. The project arborist will be suitably experienced and competent in arboriculture, having acquired through training, qualifications (minimum Australian Qualification Framework (AQF) Level 5, Diploma of Horticulture (Arboriculture) and/or **equivalent experience, the knowledge and skills enabling that person to perform the tasks required by this standard.**

I have been a qualified Arborist for 24 years and have been writing tree reports for the past 14 Years. Therefore, I am qualified to write tree report to Australian standards AS4970 based upon **'or equivalent experience, the knowledge and skills enabling that person to perform the tasks required by this standard.'**

Tree protection requirements during construction:

- Any works within the Tree Protection Zone of any tree, whether the zone is fully enclosed by Tree protection fencing/ground protection or not, MUST comply with tree protection measures described.
- Temporary irrigation - A manually operated surface/drip irrigation system should be used to water the root zones of the trees within TPZ's during dry spells and after construction works have been completed.
- Excavation work must be carried out manually within the TPZ of the tree. No roots larger than 20mm in diameter are to be cut and the project arborist must be advised that the work is going to be carried out and present if roots are to be cut or damaged.
- Any holes for post within the TPZ of tree for new or replacement boundary fences or replacement retaining walls must be excavated manually and re positioned around significant roots (tree roots with a diameter large than 20mm are significant roots). If tree roots must be cut inside or outside the TPZ any pruning must be carried out by the project arborist. No roots to be pruned with machinery such as backhoes or excavators.
- All services and pits must be routed outside the TPZ's of the trees. If underground services must be routed within the TPZ, they must be installed by boring under the tree protection zone or installed using hydro excavation under the supervision of the project arborist.
- Where roots are left exposed by excavations, temporary root protection must be installed to prevent them drying out.
- No persons, vehicles or machinery to enter TPZ without written consent of the responsible authority. No fuel, oil, dumps, waste or chemicals are allowed in or are to be stored within TPZ and the servicing of equipment or vehicles should be carried out away from the TPZ. No temporary buildings or waste to be stored within the TPZ.
- The area within the TPZ must be mulched with organic woodchip mulch within the designated TPZ that is recommended to be protected. Where the existing landscape within the TPZ is to remain unaltered (e.g., garden beds or turf) mulch may not be required.
- All weeds that grow during construction works within the designated protected TPZ must be removed by hand without soil disturbance or controlled with appropriate use of non-residual herbicide.
- Removal of protection measures and cessation of the tree management plan must be authorized by the responsible authority.

LANDSCAPING WORKS: Where the landscaping works enter the TPZ of the trees the changes to soil condition shall be avoided wherever possible. Where unavoidable in order to carry out approved works to be carried out manually to the maximum depth of excavations or fill to be 100mm within the TPZ of this tree. Mechanical digging is not permitted. Any root severance with the TPZ must be approved by the Responsible Authority and undertaken by the project arborist to their satisfaction. If excavations deeper than 100mm are required then root investigation must be carried out to establish if any significant root will be damaged.

Any holes for post or foundations for decks or retaining walls within the TPZ of this tree must be excavated manually and reposition around roots with a diameter large than 20mm. Any root severance with the TPZ must be approved by the Responsible Authority and undertaken by the project arborist to their satisfaction. Any planting holes for new trees and shrubs must be excavated manually and reposition around roots with a diameter large than 20mm. Any root severance with the TPZ must be approved by the Responsible Authority and undertaken by the project arborist to their satisfaction. The removal of any protective fencing to allow for landscaping works must be approved by the Responsible Authority and undertaken by the project arborist to their satisfaction.

Refer to Tree Protection Specifications Report for further details

PROTECTIVE FENCING:

- Must be chain wire mesh panels, high wire mesh fencing or high wire reinforced para-web mesh with reinforcing fencing wire to a height of 1.8m, held in place with concrete feet or 1.8m star pickets every 3-4m. Alternatively plywood or wooden paling fence panels to a height of 1.8m may be used. If excavation is required for the insertion of supports posts for the fencing it must not involve the severance of any roots greater than 20mm in diameter and must be carried out by the project arborist, and they must be pruned with a final cut to undamaged wood. Pruning cuts must NOT be treated with dressings or paints. No roots to be pruned with machinery such as backhoes or excavators.
- The protective fencing must not be removed or altered without approval of the responsible authority and must remain in place until its removal is approved by project arborist. Existing perimeter fencing and other structures may be suitable as part of the protective fencing. No temporary services, wires, nails, screws or any other fixing device to be attached to the tree. Signs identifying the TPZ should be placed around all sides of the TPZ and be visible from within the development site. The lettering on the sign must comply with Australian standard AS1319.

Refer to Tree Protection Specifications Report for further details

GROUND PROTECTION:

- If temporary access 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. Measures may include a permeable membrane such as geotextile fabric beneath a layer of mulch or crushed rock below rumble boards. For trunk and branch protection use boards and padding that will prevent damage to bark. Boards are to be strapped to trees, not nailed or screwed. Rumble boards should be of a suitable thickness to prevent soil compaction and root damage.
- Ground protection must not be removed or altered without approval of the responsible authority and must remain in place until its removal is approved by project arborist.

Refer to Tree Protection Specifications Report for further details

-Tree to be retained and protected in accordance with the TPG, refer to TPG for specific details on actions.
-All services to be located outside the TPZ.
-If underground services must be routed within the TPZ, they must be installed by boring under the tree protection zone or installed using hydro excavation under the supervision of the project arborist.
-Any root barrier must be installed outside the TPZ of this tree and the installation of the root barrier must be approved by the Project arborist or Responsible Authority prior to installation.
-Changes to soil conditions for landscaping shall be avoided within TPZ of trees, all landscaping must be above existing grade level.
-Any holes for posts for new or replacement boundary fences or retaining walls with the TPZ of this tree must be excavated manually and re positioned around significant roots if required.
-Pruning must be carried out to Australian Standards AS4373 (2007) Pruning of Amenity Trees. The pruning to be undertaken by an Arborist with a minimum qualification of AQF Level 3.

Tree 17
TPZ 6.9m
SRZ 2.6m

-Tree to be retained and protected in accordance with the TPG, refer to TPG for specific details on actions.
-All services to be located outside the TPZ.
-If underground services must be routed within the TPZ, they must be installed by boring under the tree protection zone or installed using hydro excavation under the supervision of the project arborist.
-Any root barrier must be installed outside the TPZ of this tree and the installation of the root barrier must be approved by the Project arborist or Responsible Authority prior to installation.
-Changes to soil conditions for landscaping shall be avoided within TPZ of trees, all landscaping must be above existing grade level.
-Any holes for posts for new or replacement boundary fences or retaining walls with the TPZ of this tree must be excavated manually and re positioned around significant roots if required.
-Pruning must be carried out to Australian Standards AS4373 (2007) Pruning of Amenity Trees. The pruning to be undertaken by an Arborist with a minimum qualification of AQF Level 3.

Tree 16
TPZ 3.8m
SRZ 2m

Tree 15
TPZ 2m
SRZ 1.5m

Tree 3
TPZ 2.4m
SRZ 1.66m

Tree 1
TPZ 5.7m
SRZ 2.4m
9.7% encroachment

Tree 18
TPZ 2m
SRZ 1.5m
32.8% encroachment

Tree 11
TPZ 11.5m
SRZ 3.2m
20% encroachment

Tree protection management plan	4 Woyna Ave, Capel Sound	22.7.2026
 Protective fencing	 Ground protection	 Tree protection zone (TPZ)
		 Structural Root Zone (SRZ)

Tree No.	Botanical Name	Common Name	DSH (cm)	NRZ (m)	DAB (cm)	SRZ (m)	TPZ (m)
1	<i>Eucalyptus species</i>	Eucalyptus	47.7	5.7	47.7	2.4	5.7
3	<i>Capparea repens</i>	Miner Bush	20.4	2.4	20.4	1.66	2.4
11	<i>Banksia integrifolia</i>	Coast Banksia	11.5	9	3.2	0.7	9
15	<i>Brachycten discolor</i>	Lace Bark Tree	12.7	2	12.7	1.5	2
16	<i>Aspidiandra styriacifolia</i>	Liquidamber	31.8	3.8	31.8	2	3.8
17	<i>Oliva procera</i>	'Glabra' Golden Elm	57.3	6.9	57.3	2.6	6.9
18	<i>Archamphocarpus conninghamiana</i>	Banglow Palm	15.6	2	15.6	1.5	2

Project Arborist role and responsibilities**Time table/schedule for tree protection measures and monitoring trees:**

A project arborist in conjunction with any requirements from the responsible authority to be appointed to implement tree protection management plan. They must ensure tree protection measures have been installed correctly and must supervise works within Tree Protection Zones during pre-demolition works, pre-construction work, construction works, landscaping works and final certification. The owner of the property is responsible for the installation and retention of the tree protection measures.

Contractors to be advised of trees to be retained. The owner and occupier of the site must ensure that, prior to the commencement of demolition, buildings and works, all contractors and trades persons operating on the site are advised of the status of trees to be retained as detailed in the Tree Protection Specifications Report (TPS) and are advised of any obligations in relation to the protection of those trees, including the attendance of site meetings.

If any canopies, trunk or root system of trees recommended to be retained are damaged at any stage of demolition/construction this damage must be reported to the project arborist immediately. All works must stop around the tree immediately. The damage must be assessed by the project arborist. The responsible authority must be notified by the project arborist to establish the appropriate action to be taken. The local council is to be notified within 24 hours of any breach of the Tree Protection Management Plan of where damage has occurred to a tree.

Pre-demolition: Site induction meeting, Tree pruning and root pruning as per TPS. The tree protection measures must be installed in the location shown on the tree protection plan prior to demolition works, excavation works, and delivery of goods etc. occurring. The protection fencing and ground protection systems are inspected by project arborist prior to demolition works. The temporary repositioning of tree protection fencing/ground protection as may be required to provide access in situations where this relocation, both in terms of its repositioning and its purpose, are approved and supervised by the project's arborist, and the approved fencing position/ ground protection reinstated immediately following any such access.

Pre-Construction: Site induction meeting. Designated storage area, installation of utility services, inspection of tree protection measures. The temporary repositioning of tree protection fencing/ground protection as may be required to provide access in situations where this relocation, both in terms of its repositioning and its purpose, are approved and supervised by the project's arborist, and the approved fencing position/ ground protection reinstated immediately following any such access.

Construction works: The building site to be inspected a minimum of every 3 months by project arborist. The project arborist to be present during excavations with TPZ of trees to be retained and is to undertake any root severance within the TPZ of trees recommended to be retained. Supervision of approved footings, driveway and cross overs within the TPZ as per TSP. Inspection of tree protection measures. The temporary repositioning of tree protection fencing/ground protection as may be required to provide access in situations where this relocation, both in terms of its repositioning and its purpose, are approved and supervised by the project's arborist, and the approved fencing position/ ground protection reinstated immediately following any such access.

Landscaping works: Site induction meeting. The project arborist may need to approve removal of protective measures to allow for landscaping works. Tree pruning and root pruning as per TPS. On going care including mulching and watering of trees. P

Final Certification: Project arborist will confirm if all inspections carried out at all stages of construction works and attached copies of the inspection reports. They will provide a statement on condition of the retained trees and details of deviations from the tree protection management plan and the impact upon tree if any. A detail report may be required if significant deviation from tree management plan or significant damage to trees.

Refer to Tree Protection Specifications report for further details