



Arboricultural Impact Assessment

Location:

1280 Barwon Heads Road, Connewarre



Arbkey ref: 26-05-08BarwonHeadsConnewarre.docx

Date submitted: May 12, 2026

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Table of Contents

1	Introduction.....	2
2	Site Details.....	3
3	Methodology.....	4
4	Observations.....	5
5	Discussion.....	5
6	Conclusions and Recommendations	8
7	References.....	8
8	Appendix 1: Site Map.....	9
9	Appendix 2: Tree Details.....	10
10	Appendix 3: NRZ and SRZ Details	13
11	Appendix 4: NRZ, SRZ and Encroachment Map.....	14
12	Appendix 5: Tree Photos	15
13	Appendix 6: Data Definitions	29
14	Appendix 7: Structural Root Zone and Notional Root Zone Overview.....	31

1 Introduction

Arbkey has been engaged by Harry O'Brien to provide an Arboricultural Impact Assessment for trees likely to be affected by a proposed development at 1280 Barwon Heads Road, Connewarre. Arboricultural Impact Assessments are a procedure for determining the viability of trees at the design and review stage of a project. For the report arbkey has:

- Identified and assessed the trees, providing their location, species, dimensions, useful life expectancy and health and structural condition.
- Allocated each tree an arboricultural value, indicating its merit for retention throughout nearby disturbance.
- Calculated the size of the Notional Root Zone (NRZ) in accordance with Australian Standard 4970, Protection of Trees on Development Sites.
- Calculated and provided comment regarding the impact of the proposed development to the trees NRZs and assessed the suitability for retention of all trees against the current development plans.
- Provided recommendations to protect any trees through the proposed developments.

2 Site Details

The subject site is a ~5000m² property featuring a heritage hall building, a weatherboard dwelling, sheds, and a border of trees (Figure 1). The trees at the site are typified by planted conifers, and eucalypts planted for firewood.



Figure 1: Subject site – existing entranceway

2.1 Development Proposal

Demolition of the existing weatherboard dwelling, extension of the hall building for reuse as a dwelling, and installation of a pool and driveway is proposed.

2.2 Planning and Policy Context

The subject site is located within Farming Zone of the Greater Geelong Planning Scheme (DTP 2026). The vegetation protection related planning or policy controls for the site and how they affect the assessed trees has been provided in Table 1.

Table 1: Vegetation controls at site

Planning/Policy Control	Overview of control	Trees affected
Heritage Overlay (H01704)	A permit is required to remove, destroy or lop a tree	All except Trees 1, 2, 3, 4, 52 and 53
52.17 Native Vegetation	A permit is required to remove non-planted, Victorian native vegetation. A list of exceptions applies.	None

Trees within 10m of an existing dwelling, or 1m of an existing fence, constructed prior to September 2009 are exempt from planning scheme controls due to the site's location within a Bushfire Prone Area (DTP 2026)

Due to their ownership, any trees within adjacent third-party owned property must remain viable throughout works at the subject site unless under agreement with the tree's respective owner. Modification of trees in adjacent property may also be subject to permit approval.

2.3 Site Map

A site map detailing existing conditions and tree locations has been provided in Appendix 1: Site Map

3 Methodology

On the 8 May 2026, Lachlan Scott undertook inspection of trees greater than 3m in height located at, or with notional root zones (AS4970 2025) likely to intersect the property at, 1280 Barwon Heads Road, Connewarre. The following information was collected for the trees:

- Tree Species
- Tree Location
- Height (m)
- Crown Spread (m)
- Diameter at Standard Height (DSH) at 1.4m above ground level (cm)
- Diameter at Base (DAB) at just above the root flare (cm)
- Health
- Structure
- Significance
- Photographs of tree

Only a ground based visual inspection was undertaken of all trees according to the principles of Visual Tree Assessment and tree hazard assessment described in Harris, Clark and Matheny (1999) and Mattheck and Breloer (1994).

Tree location has been derived using a feature survey provided by the client or if not present aligned using an RTK corrected GNSS receiver.

Height was measured on site using an impulse laser accurate to +/- 30cm. Crown spread values or drawings are indicative of crown size only, not shape or form.

A diameter tape was used to measure DSH. To prevent trespass, DSH has been estimated on adjacent sites.

Health, Structure and Significance are qualitative values derived from visual indicators and the authors experience and qualifications.

Encroachment of NRZs by the development has been calculated using GIS software.

Full data collection definitions are available in Appendix 6: Data Definitions.

3.1 Documents Reviewed

Table 2: Documents reviewed to assist in the compilation of this report

Document Name	DWG/Document #	Author	Document Description	Date compiled/drawn
2026-0175 - 1280 Barwon Heads Rd, Connewarre MGA2020 2D (1)	2026-0175	Surf Coast Survey	Feature Survey	26 March 2026
260325 1280 Barwon Heads Rd Renovations Extensions	26-011	JDA Architects	Site Plans	March 2026

4 Observations

4.1 Tree Details

53 trees were assessed, 46 on the site itself and seven (7) within adjacent third-party managed property (Table 3). Full details of the assessed trees have been provided in Appendix 2: Tree Details.

Table 3: Count of assessed species and their respective species origin

Genus Species	Common Name	Species Origin	Count of Trees	Tree IDs
<i>Eucalyptus cladocalyx</i>	Sugar Gum	Australian Native	14	8, 9, 10, 11, 17, 18, 19, 20, 32, 33, 40, 41, 49, 52
<i>Pinus radiata</i>	Monterey Pine	Exotic	14	14, 15, 16, 30, 38, 39, 42, 43, 44, 45, 46, 47, 48, 50
<i>Acacia pycnantha</i>	Golden Wattle	Indigenous	6	12, 13, 22, 23, 24, 25
<i>Allocasuarina verticillata</i>	Drooping She Oak	Indigenous	4	21, 34, 35, 36
<i>Hesperocyparis macrocarpa</i>	Monterey Cypress	Exotic	4	1, 2, 3, 37
<i>Hesperocyparis macrocarpa</i> 'Aurea'	Monterey Cypress	Exotic	4	26, 27, 28, 29
<i>Acacia sophorae</i>	Coast Wattle	Australian Native	1	5
<i>Eucalyptus gomphocephala</i>	Tuart	Australian Native	1	51
<i>Hakea drupacea</i>	Sweet-scented Hakea	Australian Native	1	7
<i>Melaleuca armillaris</i>	Giant Honey Myrtle	Australian Native	1	31
<i>Schinus ariera</i>	Peppercorn Tree	Exotic	1	6
<i>Syagrus romanzoffiana</i>	Queen Palm	Exotic	1	4
<i>xCuprocyparis leylandii</i>	Leyland Cypress	Exotic	1	53

5 Discussion

5.1 Arboricultural Value

All the assessed trees have been attributed an arboricultural value (Table 4). Arboricultural value is a calculated rating indicating the arboricultural merit of the tree for retention through any nearby disturbance. It is a qualitative combination of the trees ULE and significance values. Trees of higher arboricultural value should be prioritised for retention through works that may impact trees. Conversely, trees of low or no arboricultural value can often be removed to facilitate a development with little or no effect on wider landscape value.

Trees attributed an arboricultural value of 'Third Party Ownership' are located on adjacent land to the assessment. It is assumed that the owner of the tree attributes it a 'High' arboricultural value and requires its retention in the landscape.

Table 4: Overview of arboricultural value

Arboricultural Value	Count	Tree IDs
High	4	26, 27, 28, 29
Medium	20	3, 8, 14, 15, 16, 17, 18, 38, 39, 40, 41, 42, 43, 44, 45, 47, 48, 49, 51, 52
Low	18	2, 4, 6, 7, 9, 10, 11, 19, 20, 21, 23, 30, 31, 32, 33, 46, 50, 53
None	4	1, 5, 12, 13
Third Party Ownership	7	22, 24, 25, 34, 35, 36, 37

5.2 Notional Root Zone (NRZ) and Structural Root Zone (SRZ)

AS4970 (2025) specifies areas drawn radially from each tree's stem which indicate the area required for its stability (SRZ) and viability (NRZ) throughout nearby disturbance such as development. Further information on NRZs and SRZs has provided in Appendix 7: Structural Root Zone and Notional Root Zone Overview

5.2.1 NRZ and SRZ details

NRZ and SRZ details for all trees has been supplied in Appendix 3: NRZ and SRZ Details.

5.3 Arboricultural Impact, NRZ Encroachment and Viability

To assess the viability of the trees throughout the design's implementation, their NRZ and SRZ has been calculated and mapped as per AS4970 (2025). Where a development's footprint overlaps a NRZ it is termed 'encroachment' within AS4970 (2025). AS4970 (2005) categorises NRZ encroachment into:

- Minor ($\leq 10\%$ NRZ encroachment)
 - Minor NRZ encroachment is unlikely to cause a significant impact to tree health or longevity and is considered generally acceptable. Trees with 'Minor' NRZ encroachment would remain viable throughout the implementation of the proposed design without the implementation of encroachment mitigation measures.
- Moderate ($>10\%$ and $\leq 20\%$ NRZ encroachment)
 - Moderate NRZ encroachment is considered tolerable providing that an arborist demonstrates, usually through desktop analysis and/or recommendations of construction controls, that the tree would remain viable throughout the NRZ encroachment.
- Major ($>20\%$ NRZ encroachment)
 - Major NRZ encroachment is considered generally intolerable. To manage these trees throughout the development either:
 - an alternative design must be explored with the design team, or
 - a detailed investigation and/or justifications must be undertaken/supplied by an arborist that demonstrates that the tree would remain viable throughout the major NRZ encroachment.

14 of the trees have NRZ encroached by the proposed development's footprint.

Table 5: Overview of trees with NRZ encroached by the design footprint.

Encroachment Classification (AS4970 2025)	Count	Tree ID
Minor ($\leq 10\%$ Encroachment) Generally Acceptable	4	3, 29, 30, 38
Moderate (10% - 20% Encroachment) Generally Tolerable with Arborist Review	1	32
Major ($>20\%$ Encroachment) Generally Intolerable	9	33, 46, 47, 48, 49, 50, 51, 52, 53

Table 6: Trees with NRZ encroached by the design footprint.

Tree ID	Genus Species	NRZ Encroachment (%)	SRZ Encroachment?	Encroachment Classification
3	<i>Hesperocyparis macrocarpa</i>	3.62	No	Minor
29	<i>Hesperocyparis macrocarpa</i> 'Aurea'	9.23	No	Minor
30	<i>Pinus radiata</i>	1.86	No	Minor
32	<i>Eucalyptus cladocalyx</i>	19.57	Yes	Moderate
33	<i>Eucalyptus cladocalyx</i>	21.03	Yes	Major
38	<i>Pinus radiata</i>	4.2	No	Minor
46	<i>Pinus radiata</i>	100	Yes	Major
47	<i>Pinus radiata</i>	100	Yes	Major
48	<i>Pinus radiata</i>	52.17	Yes	Major
49	<i>Eucalyptus cladocalyx</i>	52.23	Yes	Major
50	<i>Pinus radiata</i>	100	Yes	Major
51	<i>Eucalyptus gomphocephala</i>	32.37	Yes	Major
52	<i>Eucalyptus cladocalyx</i>	100	Yes	Major
53	<i>xCuprocyparis leylandii</i>	27.48	Yes	Major

The remaining trees do not have NRZ encroached by the design footprint and would remain viable throughout the design's implementation.

5.3.1 NRZ, SRZ and Encroachment Map

Maps detailing the NRZ, SRZ and Encroachment have been provided in Appendix 4: NRZ, SRZ and Encroachment Map.

5.3.2 Mitigation measures

Trees 32, 33, 46, 47, 48, 49, 50, 51, 52, 53 have NRZ majorly encroached by the proposed structures. Considering their significant encroachment, and proximity to the works, removal of these trees would be necessitated if the current plants were installed. Permit approval, due to the site's heritage overlay, would be required for the removal of all these trees, except for Trees 52 and 53.

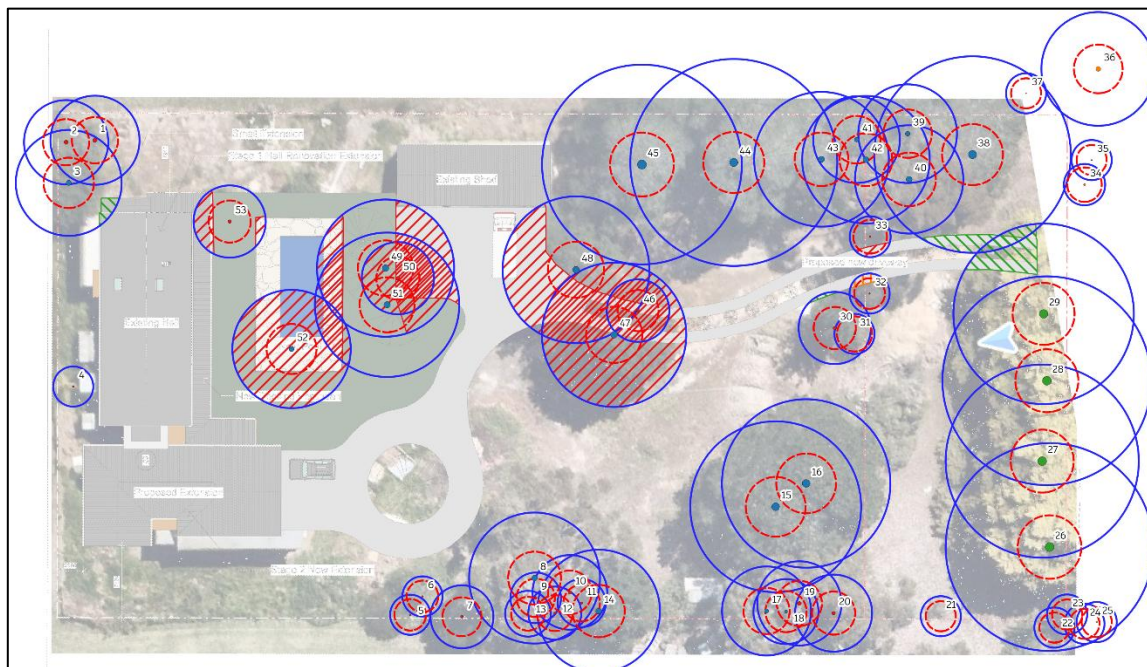


Figure 2: NRZ encroachment (hatching) of assessed trees.

6 Conclusions and Recommendations

Demolition of the existing weatherboard dwelling, extension of the hall building for reuse as a dwelling, and installation of a pool and driveway is currently proposed at 1280 Barwon Heads Road, Connewarre. Arbkey has been engaged to assess the impact of the development on the trees at or adjacent to the site. 53 trees were assessed, 46 on the site and seven (7) within adjacent property.

To assess the viability of the trees throughout the design's implementation, their notional root zone (NRZ) and structural root zone (SRZ) has been calculated and mapped as per AS4970 (2025). Where a development's footprint overlaps a NRZ it is termed 'encroachment' within AS4970 (2025). 14 of the trees have NRZ encroached by the proposed design footprint.

Table 7: Overview of trees with NRZ encroached by the design footprint.

Encroachment Classification (AS4970 2025)	Count	Tree ID
Minor (<=10% Encroachment) Generally Acceptable	4	3, 29, 30, 38
Moderate (10% - 20% Encroachment) Generally Tolerable with Arborist Review	1	32
Major (>20% Encroachment) Generally Intolerable	9	33, 46, 47, 48, 49, 50, 51, 52, 53

Trees 32, 33, 46, 47, 48, 49, 50, 51, 52, 53 have NRZ majorly encroached by the proposed structures. Considering their significant encroachment, and proximity to the works, removal of these trees would be necessitated if the current plants were installed. Permit approval, under the site's heritage overlay, would be required for the removal of all these trees, except for Trees 52 and 53.

The remaining trees do not have NRZ encroached by the design footprint and would remain viable throughout the design's implementation. It is recommended that:

- Trees that are unable to be retained through the development are removed prior to the commencement of construction but after the approval of final plans by the relevant authority and tree-owners.
- Prior to the commencement of any construction or demolition activities, a Tree Protection Specification (TPS) and Tree Protection Plan (TPP) in accordance with AS4970 (2025) is prepared outlining the procedure for protecting any impacted trees throughout the implementation of the endorsed design.

7 References

AS 4373, 2007, Australian Standard, Pruning Amenity Trees, 2nd Edition Standards Australia

AS 4970, 2025, Australian Standard, Protection of Trees on Development Sites, Standards Australia

DTP 2026, Vicplan, Department of Transport and Planning, <https://mapshare.vic.gov.au/vicplan/>

Harris, R.W., Clark, J.R. & Matheny, N.P., 1999, Arboriculture; Integrated management of landscape trees, shrubs, and vines, Prentice Hall, Upper Saddle River, New Jersey

IACA 2010, IACA Significance of a Tree, Assessment Rating System (STARS), Institute of Australian Consulting Arboriculturists, Australia

Mattheck, C. and Breloer, H. 1994, The body language of trees: a handbook for failure analysis, London: HMSO

8 Appendix 1: Site Map



LEGEND

- | | |
|----------------------------------|------------------------------|
| Assessed Trees | DTP |
| ● High arboricultural value | □ VicMap Property Boundaries |
| ● Medium arboricultural value | — VicMap Roads |
| ● Low or no arboricultural value | |
| ● Third party ownership | |

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Figure 3: Site Map – Existing Condition

9 Appendix 2: Tree Details

Table 8: Details of assessed trees

Tree ID	Genus Species	Common Name	Species Origin	Height (m)	Crown Spread (m)	DSH [Stems] (cm)	DAB (cm)	Health	Structure	Maturity	ULE (years)	Arboricultural Value	Comments
1	<i>Hesperocyparis macrocarpa</i>	Monterey Cypress	Exotic	5	3	37	42	Poor	Fair	Mature	<5	None	
2	<i>Hesperocyparis macrocarpa</i>	Monterey Cypress	Exotic	7	4	35	42	Fair	Fair	Mature	5 to 15	Low	
3	<i>Hesperocyparis macrocarpa</i>	Monterey Cypress	Exotic	7	4	44	52	Good	Fair	Mature	15 to 40	Medium	
4	<i>Syagrus romanzoffiana</i>	Queen Palm	Exotic	3	1	12	20	Good	Good	Semi-mature	15 to 40	Low	
5	<i>Acacia sophorae</i>	Coast Wattle	Australian Native	3	3	14	17	Fair	Poor	Mature	<5	None	Has collapsed and is horizontal
6	<i>Schinus ariera</i>	Peppercorn Tree	Exotic	4	3	15.56 [11, 11]	17	Good	Fair	Semi-mature	15 to 40	Low	
7	<i>Hakea drupacea</i>	Sweet-scented Hakea	Australian Native	4	4	26.15 [21, 9, 9, 9]	28	Fair	Fair	Mature	5 to 15	Low	
8	<i>Eucalyptus cladocalyx</i>	Sugar Gum	Australian Native	13	9	54.41 [44, 32]	58	Fair	Fair	Mature	15 to 40	Medium	
9	<i>Eucalyptus cladocalyx</i>	Sugar Gum	Australian Native	7	4	21	27	Good	Fair	Semi-mature	15 to 40	Low	
10	<i>Eucalyptus cladocalyx</i>	Sugar Gum	Australian Native	7	8	31	37	Fair	Poor	Semi-mature	5 to 15	Low	
11	<i>Eucalyptus cladocalyx</i>	Sugar Gum	Australian Native	12	4	20	24	Good	Fair	Semi-mature	15 to 40	Low	
12	<i>Acacia pycnantha</i>	Golden Wattle	Indigenous	7	3	22	23	Poor	Fair	Mature	<5	None	In decline
13	<i>Acacia pycnantha</i>	Golden Wattle	Indigenous	4	4	19	20	Fair	Poor	Mature	<5	None	In decline
14	<i>Pinus radiata</i>	Monterey Pine	Exotic	10	6	51	57	Good	Fair	Mature	15 to 40	Medium	
15	<i>Pinus radiata</i>	Monterey Pine	Exotic	12	11	71	78	Fair	Fair	Mature	5 to 15	Medium	Thin canopy
16	<i>Pinus radiata</i>	Monterey Pine	Exotic	13	8	70	78	Fair	Good	Mature	5 to 15	Medium	
17	<i>Eucalyptus cladocalyx</i>	Sugar Gum	Australian Native	12	8	37	42	Fair	Fair	Mature	5 to 15	Medium	
18	<i>Eucalyptus cladocalyx</i>	Sugar Gum	Australian Native	13	6	27	32	Good	Fair	Semi-mature	15 to 40	Medium	
19	<i>Eucalyptus cladocalyx</i>	Sugar Gum	Australian Native	6	5	35	40	Fair	Fair	Semi-mature	15 to 40	Low	
20	<i>Eucalyptus cladocalyx</i>	Sugar Gum	Australian Native	6	6	32	36	Fair	Fair	Semi-mature	5 to 15	Low	

Tree ID	Genus Species	Common Name	Species Origin	Height (m)	Crown Spread (m)	DSH [Stems] (cm)	DAB (cm)	Health	Structure	Maturity	ULE (years)	Arboricultural Value	Comments
21	<i>Allocasuarina verticillata</i>	Drooping She Oak	Indigenous	4	2	5	6	Good	Fair	Immature	>40	Low	
22	<i>Acacia pycnantha</i>	Golden Wattle	Indigenous	4	2	6	8	Fair	Fair	Semi-mature	5 to 15	Third Party Ownership	
23	<i>Acacia pycnantha</i>	Golden Wattle	Indigenous	4	2	6	7	Good	Fair	Semi-mature	5 to 15	Low	
24	<i>Acacia pycnantha</i>	Golden Wattle	Indigenous	5	3	11	12	Fair	Fair	Semi-mature	5 to 15	Third Party Ownership	
25	<i>Acacia pycnantha</i>	Golden Wattle	Indigenous	4	2	13	15	Fair	Fair	Semi-mature	5 to 15	Third Party Ownership	
26	<i>Hesperocyparis macrocarpa</i> 'Aurea'	Monterey Cypress	Exotic	13	15	86.33 [78, 37]	90	Fair	Fair	Mature	15 to 40	High	
27	<i>Hesperocyparis macrocarpa</i> 'Aurea'	Monterey Cypress	Exotic	11	14	80.28 [69, 30, 28]	88	Fair	Fair	Mature	15 to 40	High	A split in scaffold branch
28	<i>Hesperocyparis macrocarpa</i> 'Aurea'	Monterey Cypress	Exotic	11	14	86.77 [77, 40]	88	Fair	Fair	Mature	15 to 40	High	
29	<i>Hesperocyparis macrocarpa</i> 'Aurea'	Monterey Cypress	Exotic	10	14	75	85	Fair	Fair	Mature	15 to 40	High	
30	<i>Pinus radiata</i>	Monterey Pine	Exotic	12	4	30	34	Good	Good	Semi-mature	15 to 40	Low	
31	<i>Melaleuca armillaris</i>	Giant Honey Myrtle	Australian Native	4	2	13	22	Fair	Poor	Mature	5 to 15	Low	
32	<i>Eucalyptus cladocalyx</i>	Sugar Gum	Australian Native	8	2	15	16	Fair	Fair	Semi-mature	5 to 15	Low	
33	<i>Eucalyptus cladocalyx</i>	Sugar Gum	Australian Native	5	4	17	20	Good	Fair	Semi-mature	5 to 15	Low	
34	<i>Allocasuarina verticillata</i>	Drooping She Oak	Indigenous	4	3	17.15 [9, 8, 8, 7, 6]	21	Fair	Poor	Mature	<5	Third Party Ownership	
35	<i>Allocasuarina verticillata</i>	Drooping She Oak	Indigenous	3	2	10.86 [10, 3, 3]	13	Fair	Fair	Semi-mature	15 to 40	Third Party Ownership	
36	<i>Allocasuarina verticillata</i>	Drooping She Oak	Indigenous	6	6	47.29 [28, 26, 14, 16, 18]	48	Poor	Poor	Over-mature	<5	Third Party Ownership	
37	<i>Hesperocyparis macrocarpa</i>	Monterey Cypress	Exotic	4	2	8	10	Good	Good	Semi-mature	>40	Third Party Ownership	
38	<i>Pinus radiata</i>	Monterey Pine	Exotic	15	9	81.63 [42, 70]	82	Fair	Fair	Mature	5 to 15	Medium	In decline . Secondary stem potentially subsiding
39	<i>Pinus radiata</i>	Monterey Pine	Exotic	16	5	41	47	Fair	Good	Mature	15 to 40	Medium	

Tree ID	Genus Species	Common Name	Species Origin	Height (m)	Crown Spread (m)	DSH [Stems] (cm)	DAB (cm)	Health	Structure	Maturity	ULE (years)	Arboricultural Value	Comments
40	<i>Eucalyptus cladocalyx</i>	Sugar Gum	Australian Native	19	7	45	60	Good	Fair	Mature	15 to 40	Medium	
41	<i>Eucalyptus cladocalyx</i>	Sugar Gum	Australian Native	8	7	36	45	Fair	Fair	Mature	5 to 15	Medium	
42	<i>Pinus radiata</i>	Monterey Pine	Exotic	11	6	53	58	Fair	Fair	Mature	15 to 40	Medium	
43	<i>Pinus radiata</i>	Monterey Pine	Exotic	10	7	56	60	Fair	Fair	Mature	15 to 40	Medium	
44	<i>Pinus radiata</i>	Monterey Pine	Exotic	18	11	86	82	Fair	Fair	Mature	5 to 15	Medium	
45	<i>Pinus radiata</i>	Monterey Pine	Exotic	17	10	83	91	Good	Fair	Mature	15 to 40	Medium	
46	<i>Pinus radiata</i>	Monterey Pine	Exotic	7	3	26	32	Good	Good	Semi-mature	15 to 40	Low	
47	<i>Pinus radiata</i>	Monterey Pine	Exotic	13	8	60	67	Fair	Fair	Mature	15 to 40	Medium	
48	<i>Pinus radiata</i>	Monterey Pine	Exotic	12	8	61	67	Fair	Poor	Mature	5 to 15	Medium	Erosion at base
49	<i>Eucalyptus cladocalyx</i>	Sugar Gum	Australian Native	14	14	57	65	Fair	Fair	Mature	5 to 15	Medium	
50	<i>Pinus radiata</i>	Monterey Pine	Exotic	7	4	30	36	Good	Fair	Semi-mature	15 to 40	Low	
51	<i>Eucalyptus gomphocephala</i>	Tuart	Australian Native	11	9	60	64	Fair	Fair	Mature	15 to 40	Medium	
52	<i>Eucalyptus cladocalyx</i>	Sugar Gum	Australian Native	9	9	49.19 [20, 16, 42]	51	Good	Fair	Mature	15 to 40	Medium	
53	<i>Cuprocyparis leylandii</i>	Leyland Cypress	Exotic	7	4	30	34	Fair	Fair	Mature	5 to 15	Low	

10 Appendix 3: NRZ and SRZ Details

Table 9: NRZ and SRZ details of assessed trees (AS4970 2025)

Tree ID	Genus Species	Common Name	SRZ radius (m) AS4970	NRZ radius (m) AS4970	NRZ Area AS 4970 (m2)
1	<i>Hesperocyparis macrocarpa</i>	Monterey Cypress	2.3	4.44	61.932
2	<i>Hesperocyparis macrocarpa</i>	Monterey Cypress	2.3	4.2	55.418
3	<i>Hesperocyparis macrocarpa</i>	Monterey Cypress	2.51	5.28	87.583
4	<i>Syagrus romanzoffiana</i>	Queen Palm	0	2	12.566
5	<i>Acacia sophorae</i>	Coast Wattle	1.57	2	12.566
6	<i>Schinus ariera</i>	Peppercorn Tree	1.57	2	12.566
7	<i>Hakea drupacea</i>	Sweet-scented Hakea	1.94	3.14	30.975
8	<i>Eucalyptus cladocalyx</i>	Sugar Gum	2.63	6.53	133.96
9	<i>Eucalyptus cladocalyx</i>	Sugar Gum	1.91	2.52	19.95
10	<i>Eucalyptus cladocalyx</i>	Sugar Gum	2.18	3.72	43.475
11	<i>Eucalyptus cladocalyx</i>	Sugar Gum	1.82	2.4	18.096
12	<i>Acacia pycnantha</i>	Golden Wattle	1.79	2.64	21.896
13	<i>Acacia pycnantha</i>	Golden Wattle	1.68	2.28	16.331
14	<i>Pinus radiata</i>	Monterey Pine	2.61	6.12	117.666
15	<i>Pinus radiata</i>	Monterey Pine	2.98	8.52	228.049
16	<i>Pinus radiata</i>	Monterey Pine	2.98	8.4	221.671
17	<i>Eucalyptus cladocalyx</i>	Sugar Gum	2.3	4.44	61.932
18	<i>Eucalyptus cladocalyx</i>	Sugar Gum	2.05	3.24	32.979
19	<i>Eucalyptus cladocalyx</i>	Sugar Gum	2.25	4.2	55.418
20	<i>Eucalyptus cladocalyx</i>	Sugar Gum	2.15	3.84	46.325
21	<i>Allocasuarina verticillata</i>	Drooping She Oak	1.5	2	12.566
22	<i>Acacia pycnantha</i>	Golden Wattle	1.5	2	12.566
23	<i>Acacia pycnantha</i>	Golden Wattle	1.5	2	12.566
24	<i>Acacia pycnantha</i>	Golden Wattle	1.5	2	12.566
25	<i>Acacia pycnantha</i>	Golden Wattle	1.5	2	12.566
26	<i>Hesperocyparis macrocarpa</i> 'Aurea'	Monterey Cypress	3.17	10.36	337.186
27	<i>Hesperocyparis macrocarpa</i> 'Aurea'	Monterey Cypress	3.14	9.63	291.342
28	<i>Hesperocyparis macrocarpa</i> 'Aurea'	Monterey Cypress	3.14	10.41	340.448
29	<i>Hesperocyparis macrocarpa</i> 'Aurea'	Monterey Cypress	3.09	9	254.469
30	<i>Pinus radiata</i>	Monterey Pine	2.1	3.6	40.715
31	<i>Melaleuca armillaris</i>	Giant Honey Myrtle	1.75	2	12.566
32	<i>Eucalyptus cladocalyx</i>	Sugar Gum	1.53	2	12.566
33	<i>Eucalyptus cladocalyx</i>	Sugar Gum	1.68	2.04	13.074
34	<i>Allocasuarina verticillata</i>	Drooping She Oak	1.72	2.06	13.332
35	<i>Allocasuarina verticillata</i>	Drooping She Oak	1.5	2	12.566
36	<i>Allocasuarina verticillata</i>	Drooping She Oak	2.43	5.67	100.999
37	<i>Hesperocyparis macrocarpa</i>	Monterey Cypress	1.5	2	12.566
38	<i>Pinus radiata</i>	Monterey Pine	3.04	9.8	301.719
39	<i>Pinus radiata</i>	Monterey Pine	2.41	4.92	76.047
40	<i>Eucalyptus cladocalyx</i>	Sugar Gum	2.67	5.4	91.609
41	<i>Eucalyptus cladocalyx</i>	Sugar Gum	2.37	4.32	58.63
42	<i>Pinus radiata</i>	Monterey Pine	2.63	6.36	127.076
43	<i>Pinus radiata</i>	Monterey Pine	2.67	6.72	141.869
44	<i>Pinus radiata</i>	Monterey Pine	3.04	10.32	334.587
45	<i>Pinus radiata</i>	Monterey Pine	3.18	9.96	311.651
46	<i>Pinus radiata</i>	Monterey Pine	2.05	3.12	30.582
47	<i>Pinus radiata</i>	Monterey Pine	2.8	7.2	162.86
48	<i>Pinus radiata</i>	Monterey Pine	2.8	7.32	168.334
49	<i>Eucalyptus cladocalyx</i>	Sugar Gum	2.76	6.84	146.981
50	<i>Pinus radiata</i>	Monterey Pine	2.15	3.6	40.715
51	<i>Eucalyptus gomphocephala</i>	Tuart	2.74	7.2	162.86
52	<i>Eucalyptus cladocalyx</i>	Sugar Gum	2.49	5.9	109.359
53	<i>xCuprocyparis leylandii</i>	Leyland Cypress	2.1	3.6	40.715

11 Appendix 4: NRZ, SRZ and Encroachment Map

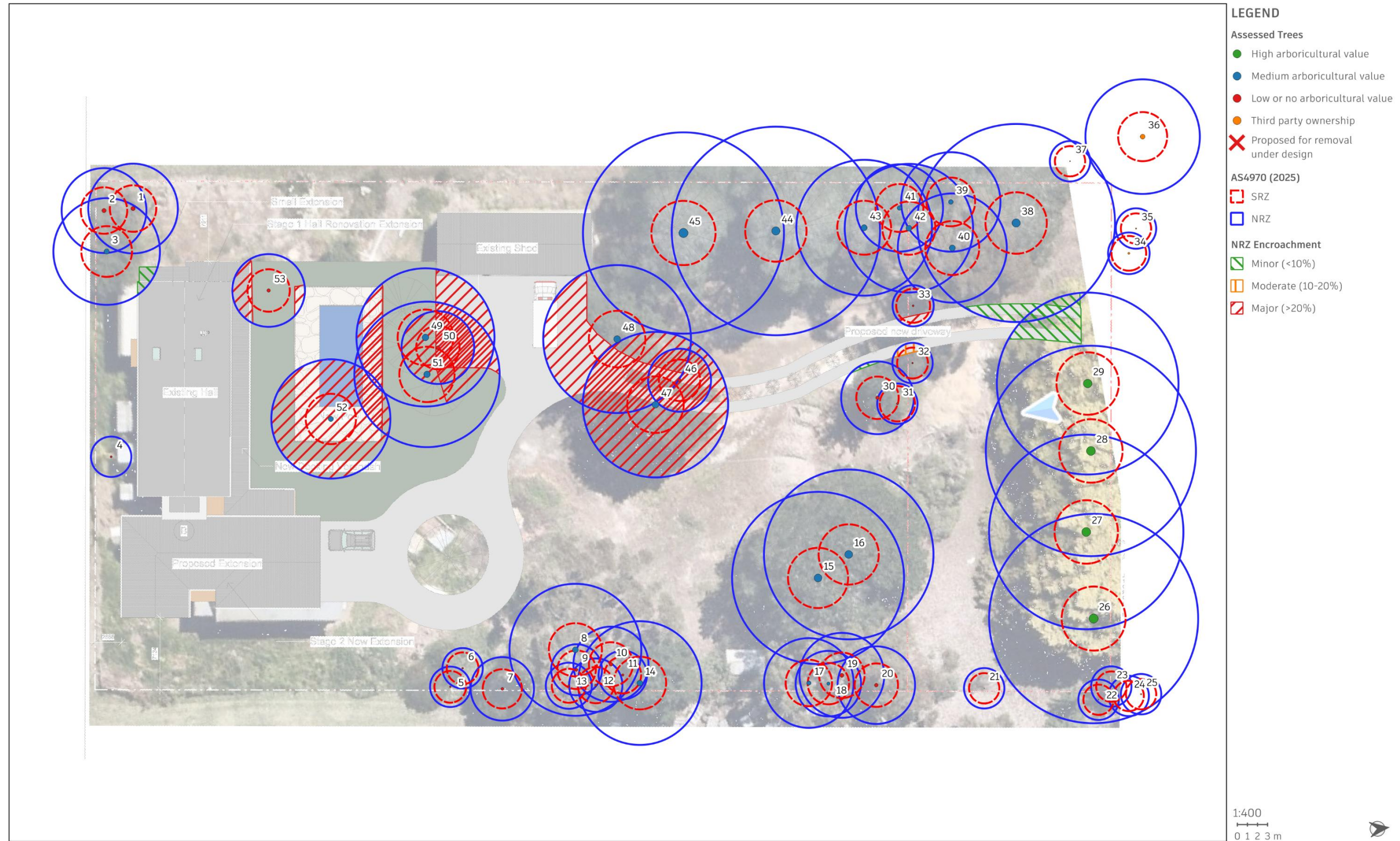


Figure 4: NRZ, SRZ and Encroachment Map

12 Appendix 5: Tree Photos

Tree ID: 1



Tree ID: 2



Tree ID: 3



Tree ID: 4



Tree ID: 5



Tree ID: 6



Tree ID: 7



Tree ID: 8



Tree ID: 9



Tree ID: 10



Tree ID: 11



Tree ID: 12



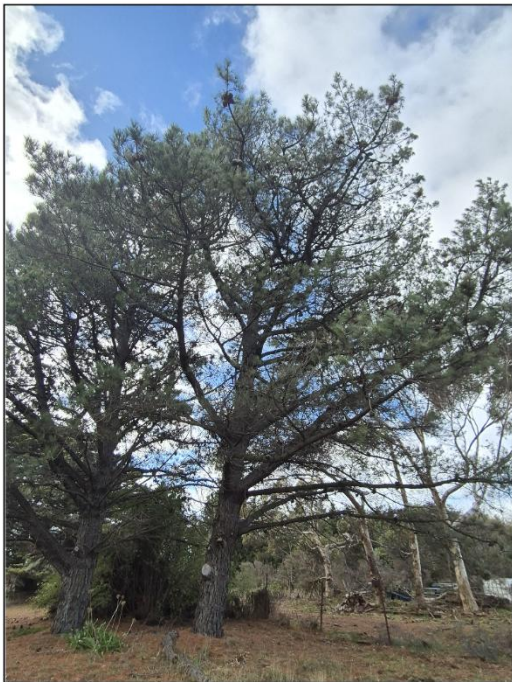
Tree ID: 13



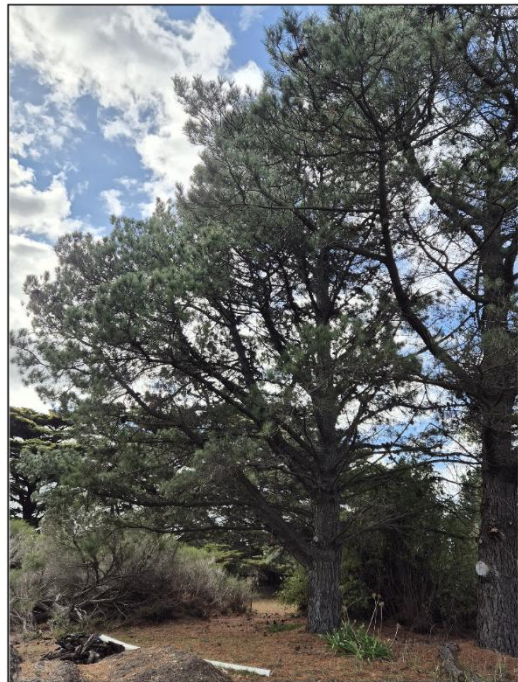
Tree ID: 14



Tree ID: 15



Tree ID: 16



Tree ID: 17



Tree ID: 18



Tree ID: 19



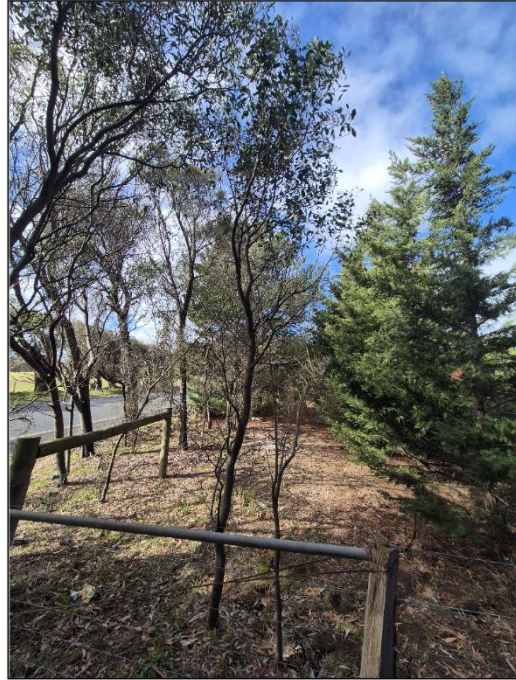
Tree ID: 20



Tree ID: 21



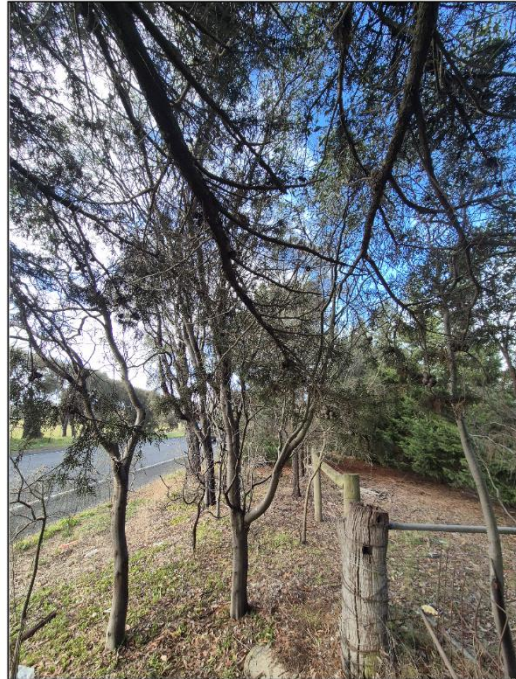
Tree ID: 22



Tree ID: 23



Tree ID: 24



Tree ID: 25



Tree ID: 26



Tree ID: 27



Tree ID: 28



Tree ID: 29



Tree ID: 30



Tree ID: 31



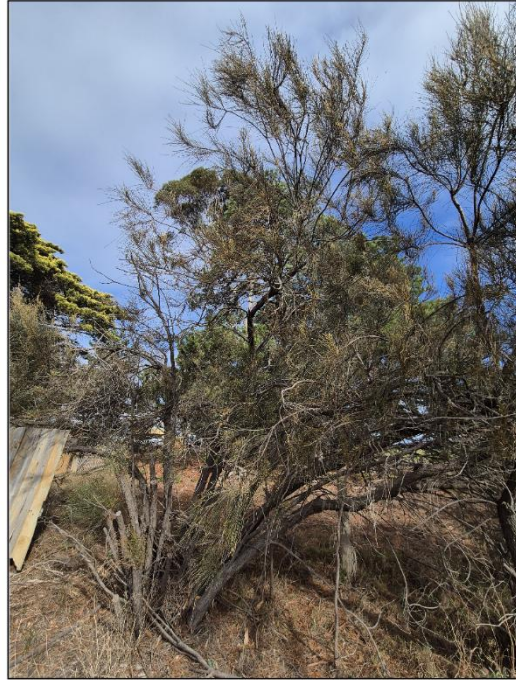
Tree ID: 32



Tree ID: 33



Tree ID: 34



Tree ID: 35



Tree ID: 36



Tree ID: 37



Tree ID: 38



Tree ID: 39



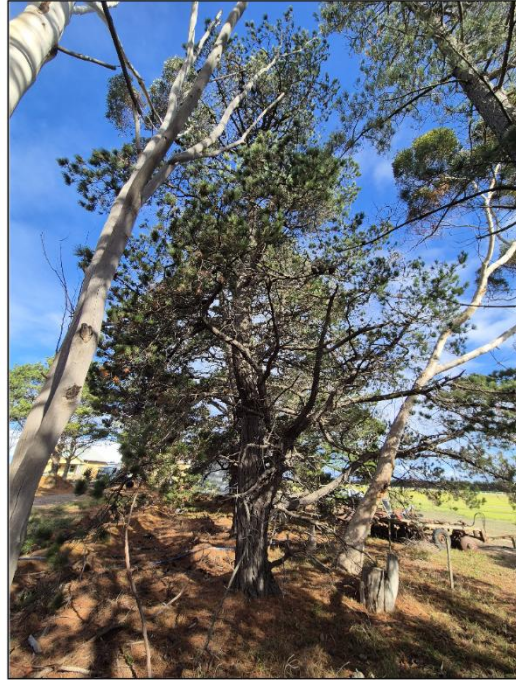
Tree ID: 40



Tree ID: 41



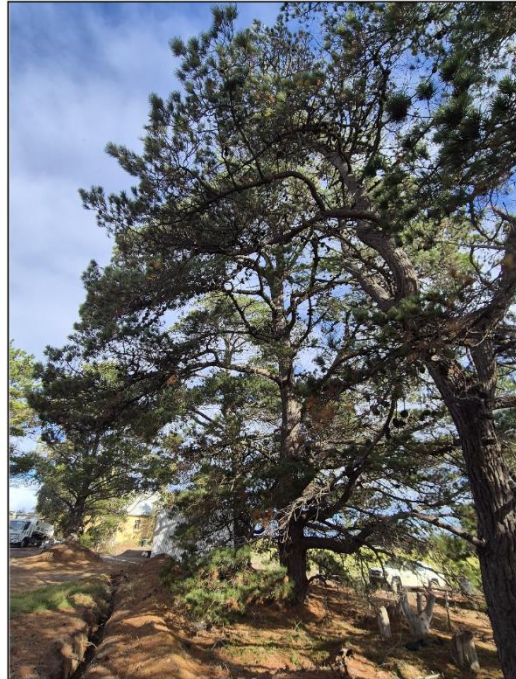
Tree ID: 42



Tree ID: 43



Tree ID: 44



Tree ID: 45



Tree ID: 46



Tree ID: 47



Tree ID: 48



Tree ID: 49



Tree ID: 50



Tree ID: 51



Tree ID: 52



Tree ID: 53



13 Appendix 6: Data Definitions

DSH (Diameter at Standard Height) is measured at 1.4 m above ground level or calculated from the total stem area if the tree was multi-stemmed at 1.4m above ground level in accordance with AS 4970 (2025).

DAB (Diameter at Base) is measured just above the root collar of a tree in accordance with AS 4970 (2025)

Health summarises qualitative observations of canopy density, overall vigour and vitality made in the field:

- Good - Canopy is visually dense with less than 10% dieback and shows no, or only very minor nutrient deficiencies, pest and disease presence or stress-induced epicormic growth.
- Fair - Canopy is of average density, consists of between 10-30% dieback and shows a minor, or occasionally moderate, level of nutrient deficiency, pest and disease presence or stress-induced epicormic growth.
- Poor - Canopy is visually sparse, consists of more than 30% dieback and typically has significant nutrient deficiency, pest and disease presence or stress induced epicormic growth.
- Dead – No indication the tree is alive

Structure summarises qualitative observations of tree structure and stability made in the field:

- Good - The tree's form is optimal for the species. Typically trees of 'Good' structure have no or only very minor trunk leans or canopy asymmetry. These trees have parts that are not structurally compromised by decay, cracks, or other structural faults. Structural failure of these trees is only likely only under strong and unusual weather events
- Fair - The tree's structure includes minor structural defects that do not typically fail in light or moderate weather events. Typically trees of 'Fair' structure have minor trunk leans or slightly asymmetric canopies. These trees are likely to have parts that are partly compromised by decay or structural defects such as included bark.
- Poor - The tree's structure includes major structural defects. Failure of these trees is considered possible under light or moderate weather events. Typically trees of 'Poor' structure have major trunk leans or heavily asymmetric canopies. These trees are likely to have parts that are heavily compromised by decay or structural defects such as included bark.

Maturity summarises the life stage of the tree.

- Juvenile – The tree is in approximately the first 10% of its expected lifespan in its current environment
- Semi-mature – Tree is 10%-20% through its expected lifespan in its current environment and has not yet reached its mature dimensions.
- Mature – The tree is through 20%-90% of its expected lifespan in its current environment.
- Over-mature – The tree is through approximately 90% of its expected lifespan in its current environment

ULE (Useful Life Expectancy) indicates the anticipated remaining years of lifespan of the tree in its existing surroundings. The tree's lifespan is the time that it will continue to provide amenity value without undue risk or hazard and with a reasonable amount of maintenance.

Significance indicates the importance a tree may have on a respective site. The following descriptors are used to derive this value (adapted from IACA 2010):

High -

- | | |
|--|---|
| <ul style="list-style-type: none"> • Tree is good condition and good vigour • The tree has a form typical for the species • The tree is a remnant specimen or is rare or uncommon in the local area or of botanical interest or substantial age • The tree is listed as a heritage item or threatened species or listed on a municipal significant tree register | <ul style="list-style-type: none"> • The tree is visually prominent and visible from a considerable distance when viewed from most directions due to its size and scale. The tree makes a positive contribution to the local amenity. • The tree supports social or cultural sentiments or spiritual associations or has commemorative values • The tree is appropriate to the site conditions |
|--|---|

Medium -

- The tree is in fair condition and good or low vigour
- The tree has form typical or atypical of the species
- The tree is a planted locally indigenous taxa or a common species within the area.
- The tree is visible from surrounding properties, although not visually prominent as partially obstructed by other vegetation or buildings when viewed from a public space. The tree provides a moderate contribution to the amenity and character of the local area
- The tree is often partially restricted by above or below ground influences and/or resources.

Low -

- The tree is in fair condition and good or low vigour
- The tree has form atypical of the species.
- The tree is not visible or is partly visible from surrounding properties due to obstructions.
- The tree provides a minor contribution or has a negative impact on landscape amenity or character of the local area.
- The tree is a juvenile specimen that can easily be replaced.
- The tree's growth is severely restricted by above or below ground influences and/or resources.
- The tree has a feature that has potential to become structurally unsound.
- The tree is listed as a noxious or environmental weed under state, federal or municipal policy

Dead/Irreversible Decline -

- The tree is structurally unsound or unstable
- The tree is dead or in irreversible decline

Third Party Ownership

- The tree is located on adjoining land to the assessment.

A tree is to meet several or all the criteria in a category to be classified in that group

Arboricultural Value is a calculated value indicating the merit of the tree for retention through any nearby developments. It is a qualitative combination of the trees ULE and Significance Values (Table 10).

Table 10: Matrix for the calculation of Arboricultural Value

ULE	Significance Value					
		High	Medium	Low	Dead/Irreversible Decline	Third Party Ownership
	>40 years	High	Medium	Low	Low	Third Party Ownership
	15-40 years	High	Medium	Low	Low	Third Party Ownership
	5-15 years	High	Medium	Low	None	Third Party Ownership
	<5 years	Medium	Low	None	None	Third Party Ownership
	0 years	Low	None	None	None	Third Party Ownership

- High – Trees attributed a 'High' arboricultural value are generally of strong visual amenity and significant in the landscape. The utmost level of consideration should be given for the retention of these trees throughout development activities and/or nearby disturbance
- Medium – Trees attributed a 'Medium' arboricultural value are of moderate amenity value and have been attributed some value in the landscape. Trees attributed a 'Medium' arboricultural value should be retained and designed around during developments or nearby disturbance. If retention is not possible for these trees, removal and replacement can be often considered as an acceptable compromise.
- Low – Trees attributed a Low arboricultural value are of poor arboricultural merit. Removal and replacement is an acceptable compromise if designing around these trees is not possible.
- None – Trees attributed an arboricultural value of none have no arboricultural merit. Removal is usually acceptable or required for these trees.
- Third Party Ownership – The tree is located on adjacent land to the assessment. It is assumed that the owner of the tree attributes it a High arboricultural value and requires its retention in the landscape.

14 Appendix 7: Structural Root Zone and Notional Root Zone Overview

14.1 Structural Root Zone (SRZ)

The SRZ is an indication of the area surrounding the base of a tree that is required for its stability. AS 4970 (2025) provides a method to calculate the SRZ of trees: The SRZ is calculated as

$$(DAB \times 50)^{0.42} \times 0.64$$

For grass like trees such as palms or tree ferns; SRZs are not calculated.

14.2 Notional Root Zone (NRZ)

The NRZ is an indication of the area surrounding the base of a tree that is required for its viability. AS 4970 (2025) provides a method for calculating the standard area of NRZ's. For all broadleaf trees, the radius of the NRZ is calculated as:

$$12 * DSH$$

For grass like trees such as palms or tree ferns; NRZs are calculated as 2m in radius.

Dead trees are attributed a NRZ of the same size as their SRZ as only their stability can be protected and not their vigour

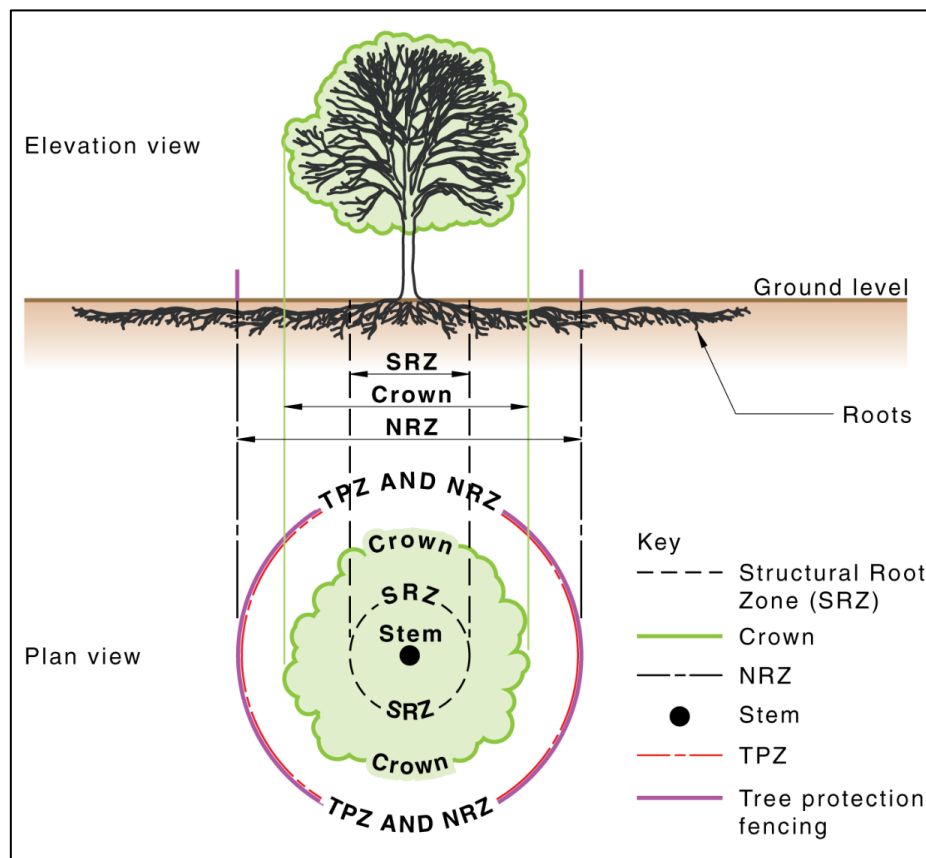


Figure 5: Diagram of NRZ and SRZ (AS 4970 2025)