

Greenwood Consulting ^{P/L}

Address: PO Box 130 Emerald Vic 3782
Phone: (03) 5968 6626
Fax: (03) 8669 4302
Mobile: 0418 372 183
Email: luke.f@rgc.net.au
A.B.N. 54 170 171 876
Web: www.rgc.net.au



For

Veris

Site location

**42-52 Manuka Road
Berwick “Browns”**

Report type

Arboricultural Construction Impact Assessment

Prepared by

Roger Greenwood

Grad. Cert. Arb.
B. App. Sci. (Hort)
Dip. App. Sci. (Hort)
Adv. Cert. Arb.

Thursday, 20 February 2025

Table of contents

1.	Summary	4
2.	Document control	5
3.	Introduction.....	5
4.	Scope	6
5.	Methodology	6
6.	Documents reviewed	7
7.	Site context.....	7
8.	Notes	9
9.	Site plan	11
9.1.	Existing conditions (Overview).....	11
9.1.1.	Existing conditions (Inset 1).....	12
9.1.2.	Existing conditions (Inset 2).....	13
9.1.3.	Existing conditions (Inset 3).....	14
9.1.4.	Existing conditions (Inset 4).....	15
9.2.	Proposed development.....	16
9.3.	Proposed development – Inset 1	17
9.4.	Proposed development – Inset 4	18
10.	Tree summary data	19
11.	Construction impact	23
11.1.	Encroaching design elements	26
11.1.	Minor encroachment (construction impact = low)	26
11.2.	Major encroachment (construction impact = moderate)	26
11.2.1.	Tree 101.....	26
12.	Recommendations	26
13.	Construction – no impact	27
14.	Trees recommended for removal	28
15.	References.....	28
16.	Appendix 1 - Tree protection guidelines.....	29
17.	Appendix 2 - Tree data	31
18.	Appendix 3 – Arboricultural information	70
18.1.	Root plate estimation	70
18.1.1.	<u>Structural Root Zone</u>	70
18.1.2.	<u>Tree Protection Zone</u>	70
18.2.	Tree rooting patterns.....	70
18.3.	Construction impacts	71
19.	Appendix 4 - AS 4970 -2009	72

20.	Appendix 5 - Explanation of terms	73
20.1.	Origin.....	73
20.2.	Maturity	73
20.3.	Works required	73
20.4.	Priority	74
20.5.	Retention value (RV)	74
20.6.	Health.....	77
20.7.	Structure	78
20.8.	U.L.E. (Useful Life Expectancy)	79
21.	Form	80
22.	Glossary / notes.....	81
23.	Practice Note VCAT 2 — Expert Evidence	83
24.	Assumptions & limiting conditions	84

1. Summary

This report was commissioned by Mr Guillermo Cabala of Veris to assess the condition of 170 trees located on or adjacent to 42-52 Manuka Road, Berwick and to evaluate the impacts on these trees arising from the proposed development on this site.

1. 170 trees were originally assessed across the site:
 - a. 3 trees were identified as stumps.
 - i. These stumps are excluded from this report.
 - b. Trees 2 – 19 have been recently removed from the site.
 - i. These trees are excluded from the report.
 - c. 37 trees are exempt from removal permit requirement under both **Significant Landscape Overlay – Schedule 4** and **Clause 52.17 of the Casey Planning Scheme**.
 - i. These trees are excluded from this report.
 - d. A total of 114 trees are addressed in this report.
2. Of the 114 trees addressed in this report:
 - a. 103 trees are proposed to be removed on the plans provided. Of these trees:
 - i. Trees 39, 47, 125 & 164 are of high retention value.
 - b. Of the 11 trees proposed to be retained on this site:
 - i. 1 tree (Tree 153) is located on the adjoining property to the north.
 1. This tree will remain viable within the proposed development.
 - ii. 3 trees (Trees 1, 109 & 113) will incur a low impact from the proposed development.
 1. These trees will remain viable within the proposed development.
 - iii. 1 tree (Tree 101) will incur a moderate impact arising from the proposed development.
 1. This tree will remain viable within the proposed development provided that the recommendations of this report are adopted and effectively implemented.
 - iv. 7 trees will incur no construction impacts.
 1. These are Trees 80, 92, 118, 131, 153, 160 & 170.
 - c. **Tree 118 is an outstanding specimen, arguably deserving of a place on the Casey Significant Tree Register.**
3. The row of *Pinus radiata* along the southern site boundary have also been removed.
 - i. These trees were not assessed as a part of the original 2020 report.

2. Document control

File reference	File type	Modifications	Date
5715 210203	PAR	Original document. Preliminary Arboricultural Assessment for 1001 trees.	03/02/2021
5715 210708	CIR	Original document. Construction Impact Assessment for 170 trees (Brown section – 42-52 Manuka Rd)	03/02/2021
5715 211115	CIR	Modified building envelopes to incorporate retention of several trees; Update to tree proposed for removal/removal. (Brown section – 42-52 Manuka Rd)	15/11/2021
5715 250306	CIR	Report updated for latest subdivision plans. (Browns section – 42-52 Manuka Rd)	06/03/2025
5715 250312	CIR	Minor corrections.	12/03/2025
5715 250417	CIR	Minor edits & database corrections.	17/04/2025
5715 250516	CIR	Minor edits. Site plan font size increased for improved legibility.	16/05/2025

3. Introduction

This report was commissioned by Mr Guillermo Cabala of Veris to provide an assessment of the condition of 170 trees located on or adjacent to 42-52 Manuka Road, Berwick and to evaluate the impacts on these trees arising from the proposed development on this site.

The following trees are proposed to be retained within the development of this site:

1. Trees 1, 80, 92, 101, 109, 113, 118, 131, 153, 160 and 170.

Specifically, the report addresses the following issues:

- The health and structural condition of the trees.
- The suitability of these trees for retention on the site in light of the proposed development.
- The impact of the development on these trees.
- Recommendations for the protection of these trees.

This report is based, in part, on the plans provided and the accuracy of these plans is assumed. Inaccuracies in the plans provided may invalidate all or parts of this report.

The location of services within the site is not known and the possible impact of any services installation on the retained trees at this site is not included within this report.

The site was inspected by Dan van Kollenburg of this office on between 4th November 2020 and 28th January 2021. A further site inspection has not been undertaken for this report.

4. Scope

1. A total of 170 trees were assessed at this site (Browns). Of these trees:
 - a. 3 trees were identified as stumps.
 - i. These stumps are excluded from this report.
 - b. Trees 2 – 19 have been recently removed from the site.
 - i. These trees are excluded from the report.
 - c. 37 trees are exempt from removal permit requirement under both **Significant Landscape Overlay – Schedule 4** and **Clause 52.17 of the Casey Planning Scheme**.
 - i. These trees are excluded from this report.
 - d. A total of 114 trees are addressed in this report.

5. Methodology

This assessment was carried out from the ground and will generally include assessment of trees within the subject site, on the road reserve/s and on adjoining properties as set out in Section as set out in the Visual Tree Assessment (VTA) methodology proposed by Claus Mattheck (2015).

1. Each tree was assessed using the *Visual Tree Assessment* (VTA) methodology, as devised by Claus Mattheck. The assessment consists of 3 stages, and compares the tree being inspected to a notionally healthy, vigorous, and defect-free tree:
 - 1.1. Stage 1 – Visual inspection of the tree for defect symptoms and overall vitality. If there are no signs of any problems the assessment is concluded.
 - 1.2. Stage 2 – If a defect is suspected based on the symptoms, the presence or absence of that defect must be confirmed by thorough examination.
 - 1.3. Stage 3 – If the defect is confirmed, it must be quantified and the strength of the remaining part of the tree evaluated. This stage is beyond the scope of this assessment and further investigation may be required, including a separate climbing assessment.
2. Tree heights were measured using a *TruPulse 200b* laser rangefinder.
3. Tree canopy width was estimated.
4. Diameter at breast height (DBH) was measured using a surveyor's diameter tape at 1.4 m above ground level; where applicable due to relevant planning overlays, additional diameter measurements were taken using the same method.
5. Where access to a tree was not possible or practical (generally the case for trees on adjoining property) height, width, and DBH were estimated.
6. Attributes for each tree were assigned as per the *Explanation of terms*, included as an appendix to this report.
7. The photography used in this report was captured using a *Samsung Galaxy Note8* smartphone.

6. Documents reviewed

The following documents were reviewed in the preparation of this report.

Date	Title	Author	Company
27/06/2016	Tree dripline survey (Ref: Job number 31105, Sheet 1 of 1, Survey Data 3110517.see, CAD drawing number 3110500BB).	MT/BH	Bosco Jonson P/L
09/11/2021	Tree Retention Plan (Ref: 328131000-PB001, 328131UDEC-Brown.dwg).	Not stated	Veris Australia
June 2020	Bushfire Assessment Subdivision 42-52, 62-70 and 72-80 Manuka Road Berwick.	P. Walton	XWB Consulting

7. Site context

This site is located within a Neighbourhood Residential Zone (NRZ2) within the municipal area of Casey.

The following town planning overlays pertaining to trees are applicable to this site:

1. Bushfire Management Overlay (BMO)

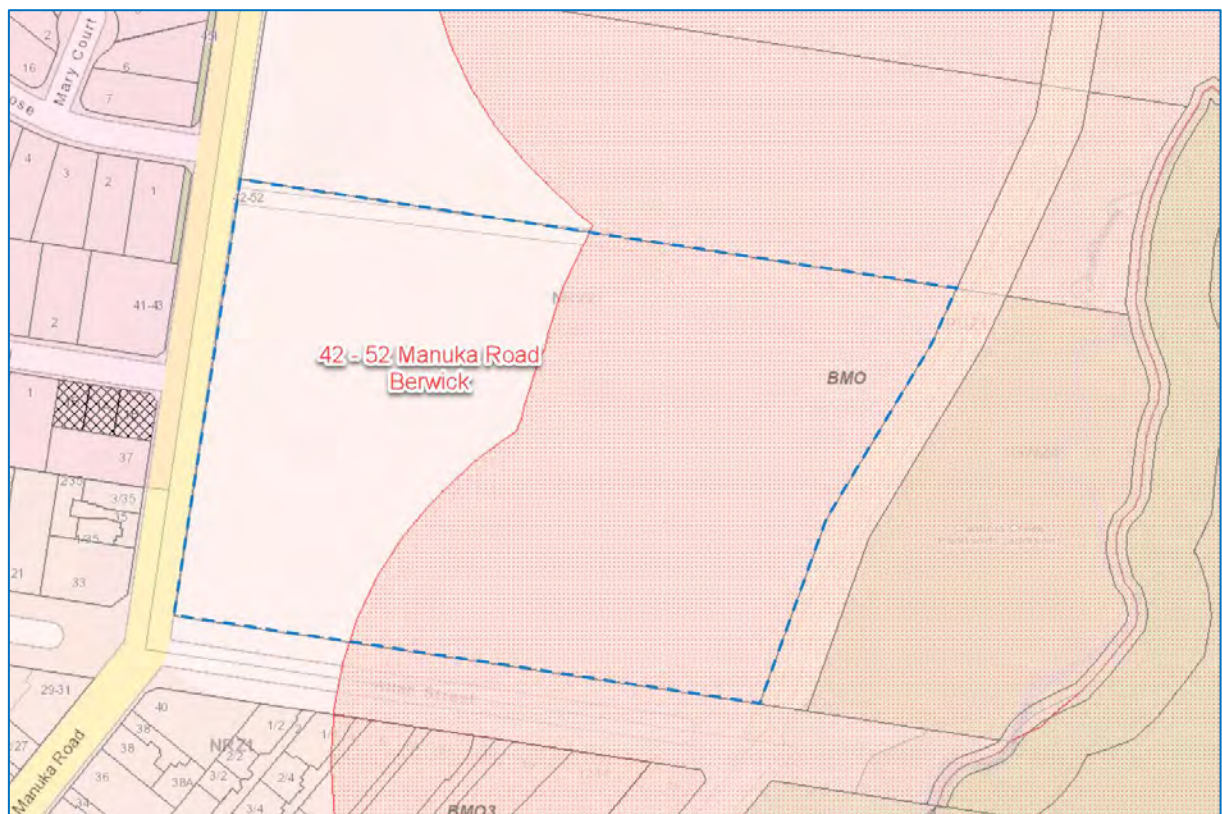


Figure 1 Bushfire Management Overlay

2. Significant Landscape Overlay (SLO)

The SLO stipulates that a permit is required to remove, destroy or lop any vegetation specified in a schedule to this overlay. This does not apply:

- If the table to Clause 42.03-3 specifically states that a permit is not required. (This table discusses permit exemptions including emergency works, extractive industry, fire protection, geothermal energy exploration and extraction, greenhouse gas sequestration and exploration, land management or directions notice, land use conditions, mineral exploration and extraction, noxious weeds, pest animal burrows, planted vegetation, railways, regrowth, road safety, stone exploration, surveying, and traditional owners, and should be referred to directly to determine whether a permit is required.)
- To the removal, destruction or lopping of native vegetation in accordance with a native vegetation precinct plan specified in the schedule to Clause 52.16. (The current list of native vegetation precinct plans listed in the schedule to Clause 52.16 of the Casey Planning Scheme should be referenced in determining whether a permit is required.)

a. Significant Landscape Overlay – Schedule 4 (SLO4)

SLO4 stipulates that a permit is required to remove, destroy or lop any tree if the trunk circumference is greater than 0.5m, or the trunk diameter is greater than 16cm, at one metre above ground level. This does not apply to the pruning of a tree for regeneration or ornamental shaping or the removal of dead trees or dead limbs or the partial removal of limbs and branches directly overhanging dwellings, garages and outbuildings.

3. Clause 52.17 of the Casey Planning Scheme

Clause 52.17 states that a permit is required to remove, destroy or lop native vegetation, including dead native vegetation. This does not apply:

- If the table to Clause 52.17-7 specifically states that a permit is not required. This table states the requirement to obtain a permit does not apply under certain conditions, including:
 - Dead native vegetation (This exemption does not apply to a standing dead tree with a trunk diameter of 40cm or more at a height of 1.3m above ground level).
 - Native vegetation that was either planted or grown as a result of direct seeding.
- To the removal, destruction or lopping of native vegetation specified in the schedule to this clause. The schedule to Clause 52.17 states that no permit is required to remove, destroy or lop:
 - Sweet Pittosporum (*Pittosporum undulatum*)
 - Sallow Wattle (*Acacia longifolia* subsp. *Longifolia*)
 - Coast Wattle (*Acacia longifolia* subsp. *Sophorae*)
- To an area specified in the schedule to this clause.

8. Notes

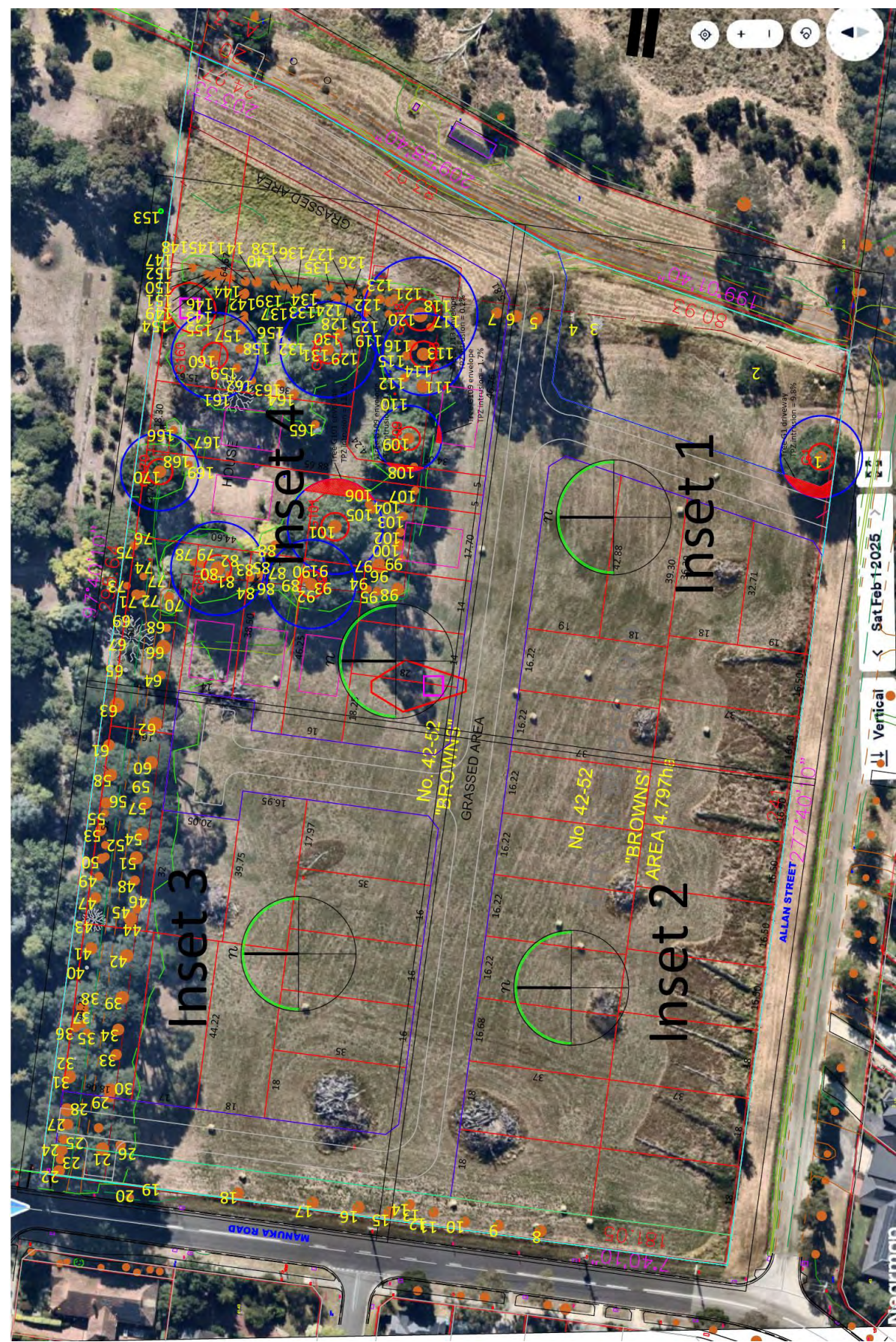
1. The column label “ID” is used in all the tables throughout this report. This refers to the tree identification number and to the tree numbering found on the “Site plan”. This number is the same as the “Tree ID” found in the “Tree data” section of the report.
2. Trees 2, 20, 59, 69, 76, 77, 82, 85, 86, 87, 93, 97, 104, 110, 114, 124, 132, 142, 147, 151, 153, and 168 were not shown on the survey provided. These trees have been added to the enclosed site plan based on a visual estimation of their location.
3. Trees 48, 49 and 50 were identified as stumps. These trees are not discussed further within this report.
4. A permit is not required for the removal of the following 37 trees under either the **Significant Landscape Overlay – Schedule 4** or **Clause 52.17 of the Casey Planning Scheme**. These trees are not further discussed within this report.

ID	Genus / Species	Origin	DBH	Health	SLO4 DBH Exempt	SLO4 Dead Exempt	52.17 Origin Exempt	52.17 Species Exempt	52.17 Planted Native Exempt	52.17 Dead <40 DBH Exempt
3	Pinus radiata	Exotic	102	Dead		Yes	Yes			
19	Pinus radiata	Exotic	130	Dead		Yes	Yes			
35	Fraxinus angustifolia	Exotic	11	Good	Yes		Yes			
40	Pinus radiata	Exotic	59	Dead		Yes	Yes			
43	Pinus radiata	Exotic	115	Dead		Yes	Yes			
52	Cotoneaster glaucohyllus	Exotic	13	Good	Yes		Yes			
59	Pittosporum undulatum	Victorian	13	Good	Yes			Yes		
61	Pinus radiata	Exotic	76	Dead		Yes	Yes			
65	Pinus radiata	Exotic	89	Dead		Yes	Yes			
68	Pinus radiata	Exotic	54	Dead		Yes	Yes			
71	Pinus radiata	Exotic	113	Dead		Yes	Yes			
73	Cotoneaster glaucohyllus	Exotic	15	Fair	Yes		Yes			
81	Pittosporum undulatum	Victorian	10	Good	Yes			Yes		
86	Ilex aquifolium	Exotic	15	Poor	Yes		Yes			
87	Pittosporum undulatum	Victorian	13	Good	Yes			Yes		
89	Prunus laurocerasus	Exotic	13	Good	Yes		Yes			
90	Prunus laurocerasus	Exotic	15	Good	Yes		Yes			
91	Prunus laurocerasus	Exotic	13	Good	Yes		Yes			
94	Prunus laurocerasus	Exotic	12	Good	Yes		Yes			
96	Hesperocyparis macrocarpa	Exotic	180	Dead		Yes	Yes			

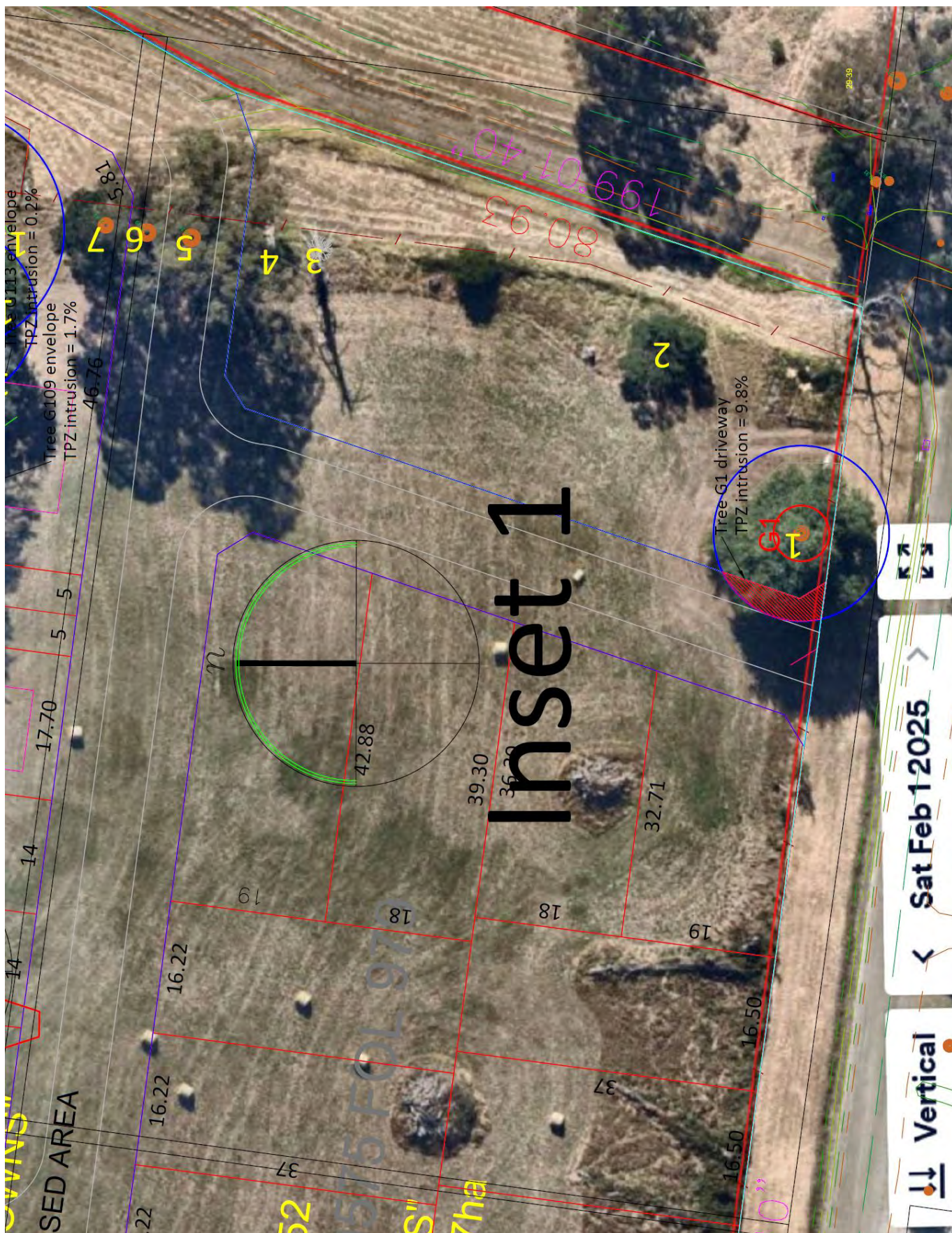
ID	Genus / Species	Origin	DBH	Health	SLO4 DBH Exempt	SLO4 Dead Exempt	52.17 Origin Exempt	52.17 Species Exempt	52.17 Planted Native Exempt	52.17 Dead <40 DBH Exempt
99	Prunus laurocerasus	Exotic	11	Good	Yes		Yes			
105	Unknown sp.	Unknown	26	Dead		Yes				Yes
114	Pittosporum undulatum	Victorian	13	Good	Yes			Yes		
121	Laurus nobilis	Exotic	9	Good	Yes		Yes			
124	Crataegus monogyna	Exotic	11	Good	Yes		Yes			
126	Coprosma repens	Exotic	15	Good	Yes		Yes			
127	Laurus nobilis	Exotic	13	Good	Yes		Yes			
128	Prunus laurocerasus	Exotic	8	Poor	Yes		Yes			
132	Coprosma repens	Exotic	15	Good	Yes		Yes			
135	Prunus laurocerasus	Exotic	12	Good	Yes		Yes			
138	Laurus nobilis	Exotic	9	Good	Yes		Yes			
139	Prunus laurocerasus	Exotic	13	Good	Yes		Yes			
140	Prunus laurocerasus	Exotic	13	Good	Yes		Yes			
144	Laurus nobilis	Exotic	15	Good	Yes		Yes			
151	Prunus laurocerasus	Exotic	11	Good	Yes		Yes			
167	Magnolia x soulangiana	Exotic	6	Good	Yes		Yes			
169	Betula pendula	Exotic	15	Good	Yes		Yes			

9. Site plan

9.1. Existing conditions (Overview)

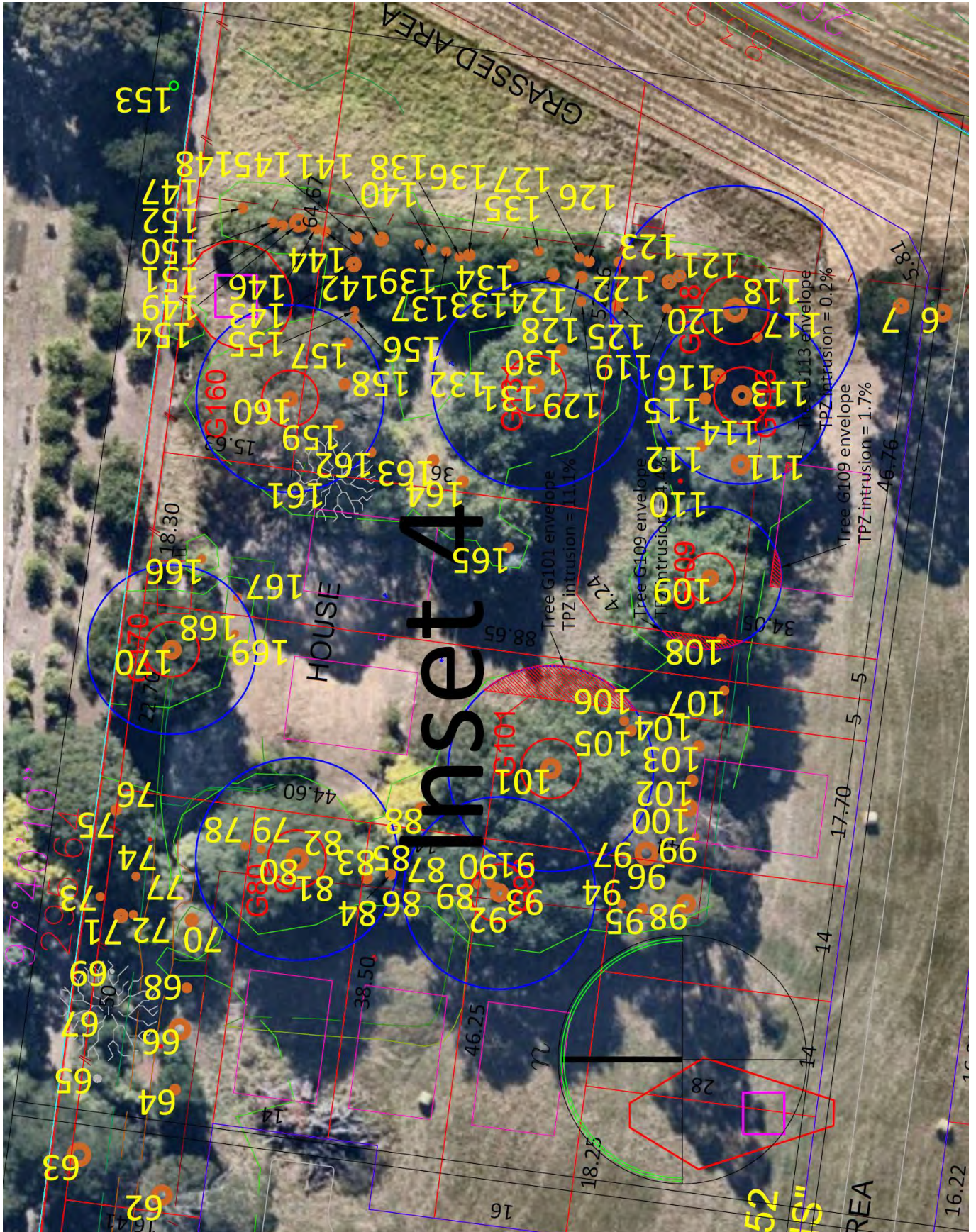


9.1.1. Existing conditions (Inset 1)

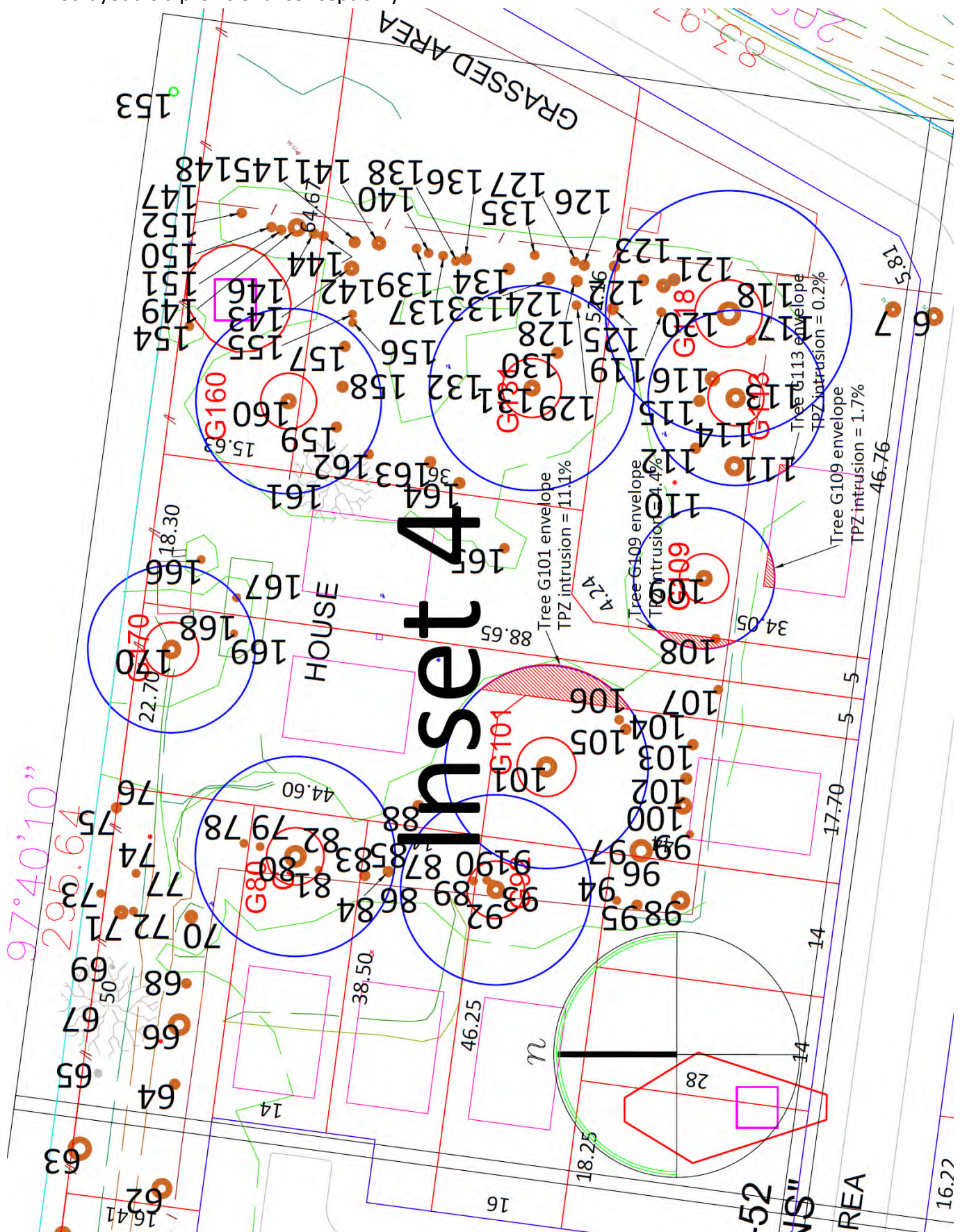


[illegible]

9.1.4. Existing conditions (Inset 4)



Lot layout is a provisional concept only.



TOWN'S

SSED AREA

6.22 16.22 17.70 46.76

39.30 32.71 16.50 16.50

10

Inset 1

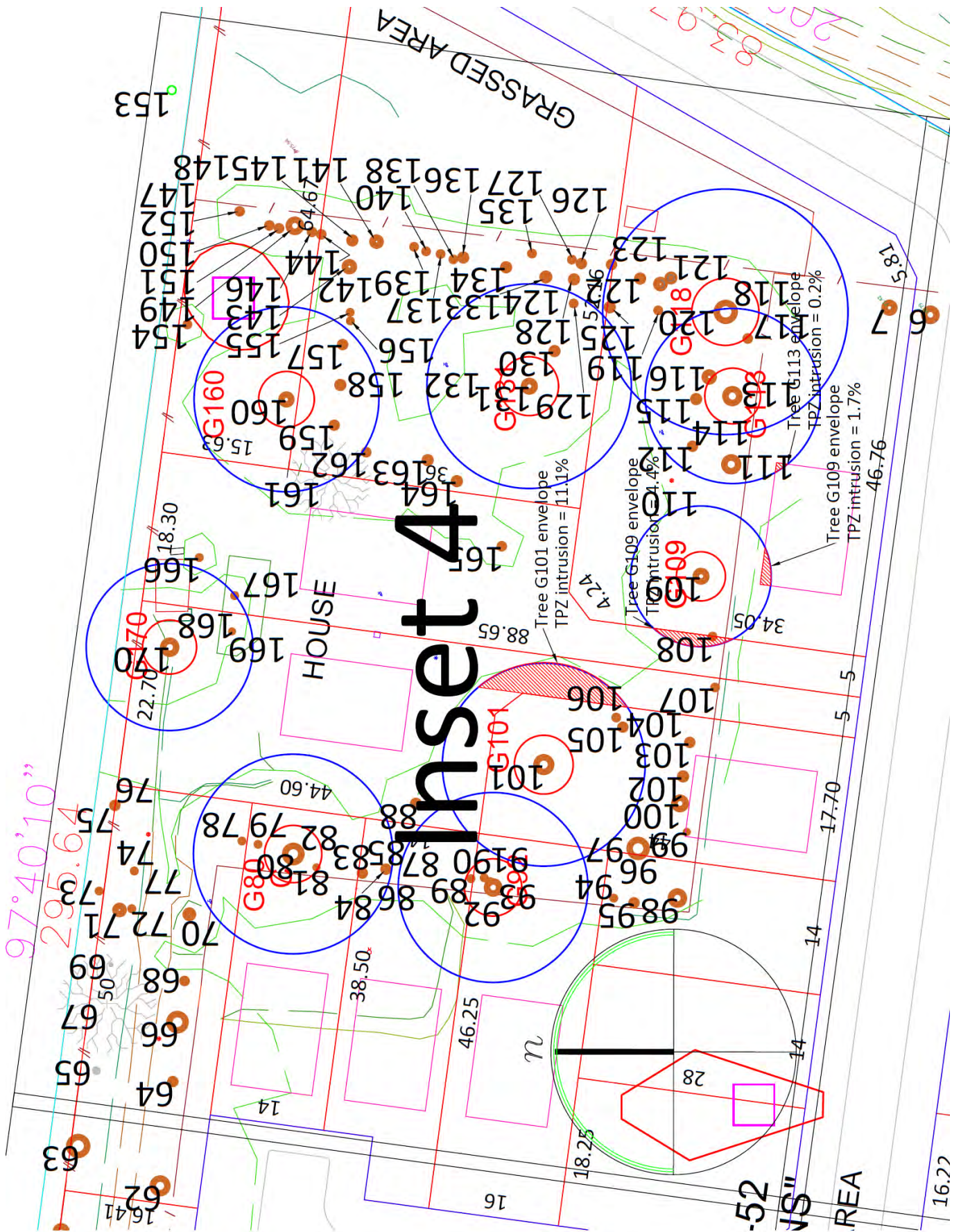
Tree G1113 envelope
TPZ intrusion = 0.2%

Tree G109 envelope
TPZ intrusion = 1.7%

Tree G1 driveway
TPZ intrusion = 9.8%

10

9.4. Proposed development – Inset 4



10. Tree summary data

This table contains a summary of data pertaining to all trees shown and numbered on the enclosed feature and levels survey.

Underlined and italicised species names have not been assessed. Generally these trees are <5m tall, not found or stumps. The construction impact values are blank for these records.

1. **Retention value:** The retention value of the tree to the site.
 - a. Tree number and species name are **Bold** for High and Very high values trees.
2. **Retained?:** Indicates whether the tree is proposed to be retained on the site.
3. **Construction impact:** Indicates the impact of the proposed development on the tree.
 - a. **None:** Works do not intrude onto the tree's TPZ.
 - b. **Low:** Construction intrusion is less than 10% of TPZ and contiguous area exists to compensate for any loss.
 - c. **Moderate:** Construction intrusion exceeds 10% of TPZ but construction methods or other factors make tree retention possible.
 - d. **High:** Construction intrusion is excessive and tree retention is generally considered not possible within the development as currently proposed.
 - e. **Blank:** The tree has not been assessed.
4. **Location:** Whether the tree is located on the site or adjacent to the site.
 - a. **Site:** the tree is located on the site.
 - b. **Off site:** the tree is located on land adjoining the site.
 - i. Trees in this category should generally be preserved without significant impact.

ID:	Genus / Species:	Retention Value:	Retained?:	Construction Impact:	Location:	SRZ:	TPZ:	Height (m) / Trunk circ (cm):
1	Quercus robur	High	Retained	Low	Site	3.1	10.7	18/280
20	Quercus robur	Low	Removed	None	Off site	3.6	15	7/408
21	Pinus radiata	Low	Removed	High	Site	3.6	15	30/399
22	Pinus radiata	Low	Removed	None	Site	3.3	12.2	24/320
23	Pinus radiata	Moderate	Removed	None	Site	2.5	5.3	18/138
24	Pinus radiata	Low	Removed	High	Site	3.1	10.1	32/264
25	Pinus radiata	Low	Removed	High	Site	2.1	4	17/104
26	Pinus radiata	Low	Removed	High	Site	2.5	5.4	27/141
27	Pinus radiata	Low	Removed	High	Site	3	9.2	33/242
28	Pinus radiata	Remove.	Removed	High	Site	3.1	10.6	28/276
29	Pittosporum undulatum	Low	Removed	High	Site	2.4	4.9	8/129
30	Pinus radiata	Moderate	Removed	High	Site	3.3	12	28/314
31	Pinus radiata	Moderate	Removed	High	Site	3.3	12.2	35/320
32	Pinus radiata	Moderate	Removed	High	Site	3.2	11.5	31/302
33	Pittosporum undulatum	Low	Removed	High	Site	2.2	4.1	8/107

ID:	Genus / Species:	Retention Value:	Retained?:	Construction Impact:	Location:	SRZ:	TPZ:	Height (m) / Trunk circ (cm):
34	Pinus radiata	Low	Removed	High	Site	2.8	7.3	15/192
36	Pinus radiata	Moderate	Removed	High	Site	2.9	8.5	31/223
37	Pittosporum undulatum	Low	Removed	High	Site	1.5	2	8/53
38	Pinus radiata	Moderate	Removed	High	Site	3.7	15	27/412
39	Pinus radiata	High	Removed	High	Site	3.6	14.9	38/390
41	Pinus radiata	Moderate	Removed	High	Site	3.3	11.8	26/308
42	Pinus radiata	Moderate	Removed	High	Site	3.7	15	34/424
44	Pittosporum undulatum	Low	Removed	High	Site	2.1	3.8	10/101
45	Pinus radiata	Moderate	Removed	High	Site	3.1	10.2	30/267
46	Pittosporum undulatum	Remove.	Removed	High	Site	2	3.5	8/91
47	Pinus radiata	High	Removed	High	Site	3.3	12.4	30/324
51	Pinus radiata	Moderate	Removed	High	Site	3	9.5	27/248
53	Pinus radiata	Moderate	Removed	High	Site	3.1	10	18/261
54	Pinus radiata	Moderate	Removed	High	Site	3.4	12.6	30/330
55	Pinus radiata	Moderate	Removed	High	Site	1.7	2.6	13/69
56	Pinus radiata	Moderate	Removed	High	Site	3.2	11.2	35/292
57	Pinus radiata	Moderate	Removed	High	Site	3.3	11.9	28/311
58	Pinus radiata	Moderate	Removed	High	Site	3.4	12.7	32/333
60	Pinus radiata	Low	Removed	High	Site	3.2	11.2	33/292
62	Pinus radiata	Moderate	Removed	High	Site	3.6	14.9	28/390
63	Pinus radiata	Moderate	Removed	High	Site	3.5	14.4	31/377
64	Pinus radiata	Moderate	Removed	High	Site	2.4	4.9	12/129
66	Pinus radiata	Moderate	Removed	High	Site	3.7	15	28/421
67	Pinus radiata	Remove.	Removed	High	Site	3.5	14	28/368
69	Crataegus monogyna	Low	Removed	High	Site	1.8	2.9	7/75
70	Crataegus monogyna	Low	Removed	High	Site	2.2	4.4	8/116
72	Pittosporum undulatum	Low	Removed	High	Site	1.7	2.6	10/69
74	Pittosporum undulatum	Low	Removed	None	Site	1.7	2.8	10/72
75	Lophostemon confertus	Low	Removed	High	Site	1.5	2	9/38
76	Prunus laurocerasus	Low	Removed	High	Site	2	3.6	7/94
77	Pittosporum eugenoides	Low	Removed	High	Site	1.5	2.3	7/60
78	Acer campestre	Moderate	Removed	High	Site	1.5	2	10/53
79	Euonymus japonica	Low	Removed	High	Site	1.5	2	8/53
80	Cedrus deodara	High	Retained	None	Site	3.3	12.2	23/320
82	Callistemon salignus	Low	Removed	High	Site	1.5	2	6/53
83	Pittosporum eugenoides	Low	Removed	High	Site	1.5	2	7/50
84	Pittosporum eugenoides	Low	Removed	High	Site	1.5	2.2	7/57
85	Euonymus japonica	Low	Removed	High	Site	1.6	2.4	6/63
88	Fraxinus excelsior 'Aurea'	Moderate	Removed	High	Site	2.6	6.4	14/167

ID:	Genus / Species:	Retention Value:	Retained?:	Construction Impact:	Location:	SRZ:	TPZ:	Height (m) / Trunk circ (cm):
92	Quercus robur	High	Retained	None	Site	3.3	11.6	21/305
93	Pittosporum undulatum	Low	Removed	High	Site	2.6	6.1	11/160
95	Grevillea robusta	Low	Removed	High	Site	1.9	3.4	11/88
97	Cotoneaster glaucophyllus	Low	Removed	High	Site	2.2	4.2	11/110
98	Corymbia maculata	Low	Removed	High	Site	3	9.1	21/239
100	Eucalyptus nicholii	Remove.	Removed	High	Site	3.4	13.3	25/349
101	Quercus palustris	High	Retained	Low	Site	3.3	12.4	25/324
102	Pittosporum tenuifolium	Low	Removed	High	Site	1.9	3.4	7/88
103	Acmena smithii	Remove.	Removed	High	Site	2	3.5	9/91
104	Arbutus unedo	Low	Removed	High	Site	3.2	10.9	15/286
106	Unknown sp.	Low	Removed	High	Site	1.5	2.3	9/60
107	Arbutus unedo	Low	Removed	High	Site	1.5	2.3	9/60
108	Pittosporum undulatum	Low	Removed	High	Site	1.5	2.3	8/60
109	Quercus palustris	Moderate	Retained	Low	Site	2.9	8.6	25/226
110	Magnolia sp.	Low	Removed	High	Site	1.5	2	6/50
111	Cedrus deodara	Moderate	Removed	High	Site	3.1	10	20/261
112	Pittosporum undulatum	Moderate	Removed	High	Site	2	3.6	11/94
113	Quercus robur	High	Retained	Low	Site	3.1	9.8	19/258
115	Pittosporum undulatum	Moderate	Removed	High	Site	1.8	3.1	11/82
116	Arbutus unedo	Low	Removed	High	Site	2.5	5.4	11/141
117	Laurus nobilis	Low	Removed	High	Site	1.9	3.2	11/85
118	Araucaria bidwillii	Very high	Retained	None	Site	3.8	15	20/459
119	Prunus x blireana	Low	Removed	High	Site	1.6	2.5	7/66
120	Laurus nobilis	Low	Removed	High	Site	1.9	3.2	8/85
122	Prunus x blireana	Low	Removed	High	Site	2	3.6	7/94
123	Laurus nobilis	Low	Removed	High	Site	1.5	2.2	8/57
125	Fraxinus angustifolia	High	Removed	High	Site	2.2	4.4	18/116
129	Pittosporum undulatum	Low	Removed	High	Site	1.6	2.5	8/66
130	Laurus nobilis	Low	Removed	High	Site	1.6	2.5	7/66
131	Quercus robur	High	Retained	None	Site	3.3	12.5	21/327
133	Prunus laurocerasus	Low	Removed	High	Site	1.7	2.6	5/69
134	Pittosporum undulatum	Low	Removed	High	Site	1.5	2.2	8/57
136	Prunus laurocerasus	Low	Removed	High	Site	2.6	6	9/157
137	Laurus nobilis	Low	Removed	High	Site	1.5	2	8/53
141	Prunus laurocerasus	Low	Removed	High	Site	3	8.8	12/229
142	Laurus nobilis	Low	Removed	High	Site	1.5	2.2	6/57
143	Laurus nobilis	Low	Removed	High	Site	2.2	4.2	7/110
145	Pittosporum undulatum	Low	Removed	High	Site	1.5	2	7/53
146	Pittosporum undulatum	Low	Removed	High	Site	1.6	2.4	7/63

ID:	Genus / Species:	Retention Value:	Retained?:	Construction Impact:	Location:	SRZ:	TPZ:	Height (m) / Trunk circ (cm):
147	Prunus laurocerasus	Low	Removed	High	Site	1.5	2	7/50
148	Eucalyptus botryoides	Low	Removed	High	Site	3.3	12.1	20/317
149	Pittosporum undulatum	Low	Removed	High	Site	1.5	2.2	8/57
150	Pittosporum undulatum	Low	Removed	High	Site	1.8	3.1	7/82
152	Pittosporum undulatum	Low	Removed	High	Site	1.8	3	7/79
153	Grevillea robusta	Moderate	Retained	None	Off site	2.5	5.4	17/141
154	Feijoa sellowiana	Low	Removed	High	Site	1.5	2.2	3/57
155	Pittosporum undulatum	Low	Removed	High	Site	1.8	2.9	6/75
156	Pittosporum undulatum	Low	Removed	High	Site	1.5	2	5/53
157	Pittosporum undulatum	Low	Removed	High	Site	2.2	4.1	7/107
158	Laurus nobilis	Low	Removed	High	Site	2	3.6	7/94
159	Laurus nobilis	Low	Removed	High	Site	2	3.6	7/94
160	Corymbia citriodora	Moderate	Retained	None	Site	3.2	11.3	24/295
161	Unknown sp.	Remove.	Removed	High	Site	2.9	8.6	10/226
162	Camellia japonica	Low	Removed	High	Site	1.8	2.9	6/75
163	Fraxinus excelsior 'Aurea'	Moderate	Removed	High	Site	2.4	5.2	12/135
164	Liquidambar styraciflua	High	Removed	High	Site	2.4	4.9	17/129
165	Picea pungens	Moderate	Removed	High	Site	2	3.6	10/94
166	Camellia japonica	Low	Removed	High	Site	1.5	2	5/50
168	Betula pendula	Low	Removed	High	Site	1.6	2.5	6/66
170	Quercus palustris	High	Retained	None	Site	3.1	10.2	20/267

Total number of tree/s referred to in this report(Total): 114

11. Construction impact

The following trees are regarded as being suitable for retention and are located within close proximity to elements of the proposed development. The successful retention of those trees that are proposed to be retained may require additional care and the adoption of the following recommendations.

Trees are considered to incur a potential construction impact when elements of the development encroach into the Tree Protection Zone (TPZ) or Structural Root Zone (SRZ).

As defined under *AS4970-2009 Protection of Trees on Development Sites* (AS 4970), a tree is subject to minor encroachment when the total combined TPZ encroachment does not exceed 10% and the SRZ is not encroached. Total combined encroachment exceeding 10%, or when the SRZ is encroached, results in major encroachment. Major encroachment could potentially have significant impact on tree health and longevity.

Note: **Construction Proximity** of 0.1 indicates construction over or immediately adjacent to the tree.

ID	Genus / species	DBH	SRZ	TPZ	TPZ	ConP	Ret Value	Impact
The following 148 tree/s have a Construction Impact of High								
3	<i>Pinus radiata</i>	102	3.5	12.2	= TPZ	0.1	Remove.	High
4	<i>Eucalyptus sp.</i>	88	3.3	10.6	= TPZ	0.1	Remove.	High
5	<i>Eucalyptus globulus</i>	140	4	15.0	= TPZ	0.1	High	High
6	<i>Eucalyptus globulus</i>	135	4	15.0	= TPZ	0.1	Remove.	High
7	<i>Pinus radiata</i>	104	3.6	12.5	= TPZ	7.7	High	High
8	<i>Pinus radiata</i>	138	4	15.0	= TPZ	5.6	Moderate	High
9	<i>Pinus radiata</i>	88	3.3	10.6	= TPZ	5.4	High	High
10	<i>Pinus radiata</i>	124	3.8	14.9	= TPZ	5.5	High	High
14	<i>Pinus radiata</i>	94	3.4	11.3	= TPZ	10	High	High
16	<i>Pinus radiata</i>	128	3.9	15.0	= TPZ	11.5	High	High
17	<i>Pinus radiata</i>	112	3.7	13.4	= TPZ	11.7	Moderate	High
18	<i>Pinus radiata</i>	115	3.7	13.8	= TPZ	10.8	Moderate	High
19	<i>Pinus radiata</i>	130	3.9	15.0	= TPZ	0.1	Remove.	High
21	<i>Pinus radiata</i>	127	3.9	15.0	= TPZ	0.1	Low	High
24	<i>Pinus radiata</i>	84	3.3	10.1	= TPZ	6	Low	High
25	<i>Pinus radiata</i>	33	2.2	4.0	= TPZ	0.1	Low	High
26	<i>Pinus radiata</i>	45	2.5	5.4	= TPZ	0.1	Low	High
27	<i>Pinus radiata</i>	77	3.2	9.2	= TPZ	0.1	Low	High
28	<i>Pinus radiata</i>	88	3.3	10.6	= TPZ	0.1	Low	High
29	<i>Pittosporum undulatum</i>	41	2.4	4.9	= TPZ	0.1	Low	High
30	<i>Pinus radiata</i>	100	3.5	12.0	= TPZ	5.1	Moderate	High
31	<i>Pinus radiata</i>	102	3.5	12.2	= TPZ	7.2	Moderate	High
32	<i>Pinus radiata</i>	96	3.5	11.5	= TPZ	3	Moderate	High
33	<i>Pittosporum undulatum</i>	34	2.2	4.1	= TPZ	0.1	Low	High
34	<i>Pinus radiata</i>	61	2.8	7.3	= TPZ	0.1	Low	High
35	<i>Fraxinus angustifolia</i>	11	1.6	2.0	= TPZ	0.1	Low	High
36	<i>Pinus radiata</i>	71	3	8.5	= TPZ	0.1	Moderate	High
37	<i>Pittosporum undulatum</i>	17	1.7	2.0	= TPZ	0.1	Low	High
38	<i>Pinus radiata</i>	131	3.9	15.0	= TPZ	0.1	Moderate	High
39	<i>Pinus radiata</i>	124	3.8	14.9	= TPZ	0.1	High	High
40	<i>Pinus radiata</i>	59	2.8	7.1	= TPZ	0.1	Remove.	High
41	<i>Pinus radiata</i>	98	3.5	11.8	= TPZ	0.1	Moderate	High
42	<i>Pinus radiata</i>	135	4	15.0	= TPZ	0.1	Moderate	High
43	<i>Pinus radiata</i>	115	3.7	13.8	= TPZ	0.1	Remove.	High
44	<i>Pittosporum undulatum</i>	32	2.2	3.8	= TPZ	0.1	Low	High

45	<i>Pinus radiata</i>	85	3.3	10.2	= TPZ	0.1	Moderate	High
46	<i>Pittosporum undulatum</i>	29	2.1	3.5	= TPZ	0.1	Very low	High
ID	Genus / species	DBH	SRZ	TPZ	TPZ	ConP	Ret Value	Impact
47	<i>Pinus radiata</i>	103	3.6	12.4	= TPZ	0.1	High	High
51	<i>Pinus radiata</i>	79	3.2	9.5	= TPZ	0.1	Moderate	High
52	<i>Cotoneaster glaucophyllus</i>	13	1.6	2.0	= TPZ	0.1	Low	High
53	<i>Pinus radiata</i>	83	3.3	10.0	= TPZ	0.1	Moderate	High
54	<i>Pinus radiata</i>	105	3.6	12.6	= TPZ	0.1	Moderate	High
55	<i>Pinus radiata</i>	22	1.9	2.6	= TPZ	0.1	Moderate	High
56	<i>Pinus radiata</i>	93	3.4	11.2	= TPZ	0.1	Moderate	High
57	<i>Pinus radiata</i>	99	3.5	11.9	= TPZ	0.1	Moderate	High
58	<i>Pinus radiata</i>	106	3.6	12.7	= TPZ	0.1	Moderate	High
59	<i>Pittosporum undulatum</i>	13	1.6	2.0	= TPZ	0.1	Low	High
60	<i>Pinus radiata</i>	93	3.4	11.2	= TPZ	0.1	Low	High
61	<i>Pinus radiata</i>	76	3	9.1	= TPZ	0.1	Remove.	High
62	<i>Pinus radiata</i>	124	3.8	14.9	= TPZ	0.1	Moderate	High
63	<i>Pinus radiata</i>	120	3.8	14.4	= TPZ	0.1	Moderate	High
64	<i>Pinus radiata</i>	41	2.4	4.9	= TPZ	0.1	Moderate	High
65	<i>Pinus radiata</i>	89	3.4	10.7	= TPZ	0.1	Remove.	High
66	<i>Pinus radiata</i>	134	3.9	15.0	= TPZ	0.1	Moderate	High
67	<i>Pinus radiata</i>	117	3.7	14.0	= TPZ	0.1	Remove.	High
68	<i>Pinus radiata</i>	54	2.7	6.5	= TPZ	0.1	Remove.	High
69	<i>Crataegus monogyna</i>	24	1.9	2.9	= TPZ	0.1	Low	High
70	<i>Crataegus monogyna</i>	37	2.3	4.4	= TPZ	0.1	Low	High
71	<i>Pinus radiata</i>	113	3.7	13.6	= TPZ	0.1	Remove.	High
72	<i>Pittosporum undulatum</i>	22	1.9	2.6	= TPZ	0.1	Low	High
73	<i>Cotoneaster glaucophyllus</i>	15	1.6	2.0	= TPZ	0.1	Very low	High
74	<i>Pittosporum undulatum</i>	23	1.9	2.8	= TPZ	0.1	Low	High
75	<i>Lophostemon confertus</i>	12	1.6	2.0	= TPZ	0.1	Low	High
76	<i>Prunus laurocerasus</i>	30	2.1	3.6	= TPZ	0.1	Low	High
77	<i>Pittosporum eugenioides</i>	19	1.7	2.3	= TPZ	0.1	Low	High
78	<i>Acer campestre</i>	17	1.7	2.0	= TPZ	0.1	Moderate	High
79	<i>Euonymus japonicus</i>	17	1.7	2.0	= TPZ	0.1	Low	High
81	<i>Pittosporum undulatum</i>	10	1.6	2.0	= TPZ	0.1	Low	High
82	<i>Callistemon salignus</i>	17	1.7	2.0	= TPZ	0.1	Low	High
83	<i>Pittosporum eugenioides</i>	16	1.6	2.0	= TPZ	0.1	Low	High
84	<i>Pittosporum eugenioides</i>	18	1.7	2.2	= TPZ	0.1	Low	High
85	<i>Euonymus japonicus</i>	20	1.8	2.4	= TPZ	0.1	Low	High
86	<i>Ilex aquifolium</i>	15	1.6	2.0	= TPZ	0.1	Very low	High
87	<i>Pittosporum undulatum</i>	13	1.6	2.0	= TPZ	0.1	Low	High
88	<i>Fraxinus excelsior</i> 'Aurea'	53	2.6	6.4	= TPZ	0.1	Moderate	High
89	<i>Prunus laurocerasus</i>	13	1.6	2.0	= TPZ	0.1	Low	High
90	<i>Prunus laurocerasus</i>	15	1.6	2.0	= TPZ	0.1	Low	High
91	<i>Prunus laurocerasus</i>	13	1.6	2.0	= TPZ	0.1	Low	High
93	<i>Pittosporum undulatum</i>	51	2.6	6.1	= TPZ	0.1	Low	High
94	<i>Prunus laurocerasus</i>	12	1.6	2.0	= TPZ	0.1	Low	High
95	<i>Grevillea robusta</i>	28	2	3.4	= TPZ	0.1	Low	High
96	<i>Hesperocyparis macrocarpa</i>	180	4.4	15.0	= TPZ	0.1	Remove.	High
97	<i>Cotoneaster glaucophyllus</i>	35	2.2	4.2	= TPZ	0.1	Low	High
98	<i>Corymbia maculata</i>	76	3	9.1	= TPZ	0.1	Low	High
99	<i>Prunus laurocerasus</i>	11	1.6	2.0	= TPZ	0.1	Low	High
100	<i>Eucalyptus nicholii</i>	111	3.7	13.3	= TPZ	0.1	Very low	High
102	<i>Pittosporum tenuifolium</i>	28	2	3.4	= TPZ	0.1	Low	High
103	<i>Acmena smithii</i>	29	2.1	3.5	= TPZ	0.1	Remove.	High
104	<i>Arbutus unedo</i>	91	3.4	10.9	= TPZ	0.1	Low	High
105	Unknown sp.	26	2	3.1	= TPZ	0.1	Remove.	High

ID	Genus / species	DBH	SRZ	TPZ	TPZ	ConP	Ret Value	Impact
106	<i>Unknown sp.</i>	19	1.7	2.3	= TPZ	0.1	Low	High
107	<i>Arbutus unedo</i>	19	1.7	2.3	= TPZ	0.1	Low	High
108	<i>Pittosporum undulatum</i>	19	1.7	2.3	= TPZ	0.1	Low	High
110	<i>Magnolia sp.</i>	16	1.6	2.0	= TPZ	0.1	Low	High
111	<i>Cedrus deodara</i>	83	3.3	10.0	= TPZ	0.1	Moderate	High
112	<i>Pittosporum undulatum</i>	30	2.1	3.6	= TPZ	0.1	Moderate	High
114	<i>Pittosporum undulatum</i>	13	1.6	2.0	= TPZ	0.1	Low	High
115	<i>Pittosporum undulatum</i>	26	2	3.1	= TPZ	0.1	Moderate	High
116	<i>Arbutus unedo</i>	45	2.5	5.4	= TPZ	0.1	Low	High
117	<i>Laurus nobilis</i>	27	2	3.2	= TPZ	0.1	Remove.	High
119	<i>Prunus x blireana</i>	21	1.8	2.5	= TPZ	0.1	Remove.	High
120	<i>Laurus nobilis</i>	27	2	3.2	= TPZ	0.1	Remove.	High
121	<i>Laurus nobilis</i>	9	1.6	2.0	= TPZ	0.1	Low	High
122	<i>Prunus x blireana</i>	30	2.1	3.6	= TPZ	0.1	Remove.	High
123	<i>Laurus nobilis</i>	18	1.7	2.2	= TPZ	0.1	Remove.	High
124	<i>Crataegus monogyna</i>	11	1.6	2.0	= TPZ	0.1	Low	High
125	<i>Fraxinus angustifolia</i>	37	2.3	4.4	= TPZ	0.1	High	High
126	<i>Coprosma repens</i>	15	1.6	2.0	= TPZ	0.1	Remove.	High
127	<i>Laurus nobilis</i>	13	1.6	2.0	= TPZ	0.1	Low	High
128	<i>Prunus laurocerasus</i>	8	1.6	2.0	= TPZ	0.1	Remove.	High
129	<i>Pittosporum undulatum</i>	21	1.8	2.5	= TPZ	0.1	Low	High
130	<i>Laurus nobilis</i>	21	1.8	2.5	= TPZ	0.1	Low	High
132	<i>Coprosma repens</i>	15	1.6	2.0	= TPZ	0.1	Low	High
133	<i>Prunus laurocerasus</i>	22	1.9	2.6	= TPZ	0.1	Low	High
134	<i>Pittosporum undulatum</i>	18	1.7	2.2	= TPZ	0.1	Low	High
135	<i>Prunus laurocerasus</i>	12	1.6	2.0	= TPZ	0.1	Low	High
136	<i>Prunus laurocerasus</i>	50	2.6	6.0	= TPZ	0.1	Low	High
137	<i>Laurus nobilis</i>	17	1.7	2.0	= TPZ	0.1	Low	High
138	<i>Laurus nobilis</i>	9	1.6	2.0	= TPZ	0.1	Low	High
139	<i>Prunus laurocerasus</i>	13	1.6	2.0	= TPZ	0.1	Low	High
140	<i>Prunus laurocerasus</i>	13	1.6	2.0	= TPZ	0.1	Low	High
141	<i>Prunus laurocerasus</i>	73	3	8.8	= TPZ	0.1	Low	High
142	<i>Laurus nobilis</i>	18	1.7	2.2	= TPZ	0.1	Low	High
143	<i>Laurus nobilis</i>	35	2.2	4.2	= TPZ	0.1	Low	High
144	<i>Laurus nobilis</i>	15	1.6	2.0	= TPZ	0.1	Low	High
145	<i>Pittosporum undulatum</i>	17	1.7	2.0	= TPZ	0.1	Low	High
146	<i>Pittosporum undulatum</i>	20	1.8	2.4	= TPZ	0.1	Low	High
147	<i>Prunus laurocerasus</i>	16	1.6	2.0	= TPZ	0.1	Low	High
148	<i>Eucalyptus botryoides</i>	101	3.5	12.1	= TPZ	0.1	Low	High
149	<i>Pittosporum undulatum</i>	18	1.7	2.2	= TPZ	0.1	Low	High
150	<i>Pittosporum undulatum</i>	26	2	3.1	= TPZ	0.1	Low	High
151	<i>Prunus laurocerasus</i>	11	1.6	2.0	= TPZ	0.1	Low	High
152	<i>Pittosporum undulatum</i>	25	1.9	3.0	= TPZ	0.1	Low	High
154	<i>Fejoa sellowiana</i>	18	1.7	2.2	= TPZ	0.1	Low	High
155	<i>Pittosporum undulatum</i>	24	1.9	2.9	= TPZ	0.1	Low	High
156	<i>Pittosporum undulatum</i>	17	1.7	2.0	= TPZ	0.1	Low	High
157	<i>Pittosporum undulatum</i>	34	2.2	4.1	= TPZ	0.1	Low	High
158	<i>Laurus nobilis</i>	30	2.1	3.6	= TPZ	0.1	Low	High
159	<i>Laurus nobilis</i>	30	2.1	3.6	= TPZ	0.1	Low	High
161	<i>Unknown sp.</i>	72	3	8.6	= TPZ	0.1	Remove.	High
162	<i>Camellia japonica</i>	24	1.9	2.9	= TPZ	0.1	Low	High
163	<i>Fraxinus excelsior 'Aurea'</i>	43	2.4	5.2	= TPZ	0.1	Moderate	High
164	<i>Liquidambar styraciflua</i>	41	2.4	4.9	= TPZ	0.1	High	High
165	<i>Picea pungens</i>	30	2.1	3.6	= TPZ	0.1	Moderate	High
166	<i>Camellia japonica</i>	16	1.6	2.0	= TPZ	0.1	Low	High
167	<i>Magnolia x soulangiana</i>	6	1.6	2.0	= TPZ	0.1	Low	High
168	<i>Betula pendula</i>	21	1.8	2.5	= TPZ	0.1	Low	High
169	<i>Betula pendula</i>	15	1.6	2.0	= TPZ	0.1	Low	High

The following 2 tree/s have a Construction Impact of Low							
1	<i>Quercus robur</i>	89	3.4	10.7	= TPZ	6.7	High Low
109	<i>Quercus palustris</i>	72	3	8.6	= TPZ	7.1	Moderate Low
The following 1 tree/s have a Construction Impact of Moderate							
101	<i>Quercus palustris</i>	103	3.6	12.4	= TPZ	8.3	High Moderate
SRZ: Structural Root Zone. TPZ: Tree Protection Zone. mTPZ: Tree Protection Zone.(Canopy) ConP: Construction Proximity.							
Number of trees in this section (total): 151							

11.1. Encroaching design elements

The following design elements encroach into the Tree Protection Zone (TPZ) of trees shown as *Retained* on the plans provided.

ID	Encroaching Design Element	Direction from Tree	Dist. from Tree (m)	TPZ Enc	SRZ Enc.
1	Driveway allocation.	West	6.7	9.8%	No
101	Driveway allocation.	East	8.3	11.1%	No
109	Driveway allocation.	West	7.1	4.4	No
109	Building envelope	South	7.3	0.2%	No
113	Building envelope	South	9.8	0.2%	No

11.1. Minor encroachment (construction impact = low)

Trees 1, 109 & 113 are subject to TPZ encroachment totalling less than 10% with no encroachment into the SRZ. These are classified as minor encroachments under AS 4970 which are unlikely to significantly affect tree health and longevity.

These trees will remain viable under the proposed development provided that the recommendations of this report are adopted and effectively implemented.

11.2. Major encroachment (construction impact = moderate)

11.2.1. Tree 101

Tree 101 is a mature *Quercus palustris* (Pin Oak) that exhibits Good health and Fair structure and has a Useful Life Expectancy of 15 - 30 years. It is located on the subject site and has a retention value of High.

This tree has a DBH of 103 cm, an SRZ of 3.6 m, a TPZ of 12.4 m and a construction impact of Moderate.

The proposed driveway allocation will intrude into the TPZ for this tree and will occupy approximately 11.1% of the TPZ for this tree.

However, provided that the driveway is constructed at or above existing grade then the impact of the proposed works on this tree will be very low.

The driveway should be constructed using steel reinforced concrete and excavation should be limited to not deeper than 0.1 metres below existing grade.

This tree is likely to remain viable provided that the recommendations of this report are adopted and effectively implemented.

12. Recommendations

The following recommendations should be adopted to ensure the successful retention of those trees that are proposed to be retained.

1. A services plan should be created for this site and this construction impact report should be revised as required to ensure that services installation impacts on retained trees are avoided.
 - a. Where services are proposed within the TPZ of a retained tree(s), they should be installed using either:
 - i. Hydro-vacuum excavation under the supervision of a suitably qualified arborist (minimum AQF level 5).
 - ii. Horizontal boring, with the top-of-bore at least 600mm below natural ground level (NGL)
2. A Tree Management Plan should be created for this site to inform tree management and guide construction within the Tree Protection Zones for retained trees.
3. Any driveway that is to be constructed within the TPZ for Tree G101 should be:
 - a. Located as close to possible to the east boundary of the lot.
 - b. Constructed at or above existing grade.

13. Construction – no impact

The following trees are proposed to be retained within the proposed development, are regarded as being suitable for retention and are unlikely to suffer any significant impact from the proposed development.

While significant care may be required to successfully retain these trees, no modification of the plans or special precautions are likely to be required to ensure this outcome. If these trees are to be retained, then they should be protected during construction as outlined the Tree Protection Guidelines appendix to this report - Tree Protection Guidelines.

ID	Genus / species	DBH	SRZ	TPZ	TPZ	ConP	Ret Value	Impact
The following 6 tree/s have a Construction Impact of None								
80	<i>Cedrus deodara</i>	102	3.5	12.2	= TPZ	14	High	None
92	<i>Quercus robur</i>	97	3.3	11.6	= TPZ	13.2	High	None
118	<i>Araucaria bidwillii</i>	146	4.1	15.0	= TPZ	19.5	Very high	None
131	<i>Quercus robur</i>	104	3.6	12.5	= TPZ	20.6	High	None
153	<i>Grevillea robusta</i>	45	2.5	5.4	= TPZ	53.8	Moderate	None
160	<i>Corymbia citriodora</i>	94	3.4	11.3	= TPZ	13.6	Moderate	None
170	<i>Quercus palustris</i>	85	3.3	10.2	= TPZ	14.8	High	None
SRZ: Structural Root Zone. TPZ: Tree Protection Zone. mTPZ: Tree Protection Zone.(Canopy) ConP: Construction Proximity.								
Number of trees in this section (total):			6					

14. Trees recommended for removal

The following trees are recommended for removal generally on the basis of poor, or worse, health and/or structure.

ID	Genus / species	Common name	ULE	Reason:	Ret value
The following 10 tree/s are shown as Removed on the plans provided.					
4	<i>Eucalyptus sp.</i>	Gum	0	Health ULE.	Remove.
6	<i>Eucalyptus globulus</i>	Blue Gum	1 - 5	Structure ULE.	Remove.
67	<i>Pinus radiata</i>	Monterey Pine	1 - 5	Health ULE.	Remove.
103	<i>Acmena smithii</i>	Lilly Pilly	0	Health ULE.	Remove.
117	<i>Laurus nobilis</i>	Bay Tree	5 - 15	BMO requirements.	Remove.
119	<i>Prunus x blireana</i>	Double-rose Cherry Plum	5 - 15	BMO requirements.	Remove.
120	<i>Laurus nobilis</i>	Bay Tree	15 - 30	BMO requirements.	Remove.
122	<i>Prunus x blireana</i>	Double-rose Cherry Plum	5 - 15	BMO requirements.	Remove.
123	<i>Laurus nobilis</i>	Bay Tree	5 - 15	BMO requirements.	Remove.
161	<i>Unknown sp.</i>	Unknown	0	Health ULE.	Remove.
Number of tree/s in this section (Total): 10					

Note: several of these trees have been recommended for removal in order to meet the tree canopy separation requirements outlined in the Bushfire Assessment prepared by P. Walton of XWB Consulting in June 2020 (Ref: Bushfire Assessment Subdivision 42-52, 62-70 and 72-80 Manuka Road Berwick).

15. References

- Coder, K.D 1996, Construction Damage Assessments, University of Georgia.
<http://www.forestry.uga.edu/warnell/service/library/for96-039a/index.html>
- Harris, R.W., Clark, J.R. & Matheny, N.P. 2004, *Arboriculture: Integrated management of landscape trees, shrubs and vines*, 4th edn., Prentice Hall, New Jersey, USA.
- Hitchmough, J. D. 1994, *Urban Landscape Management*, Inkata Press, Chatswood, NSW.
- Society for Growing Australian Plants Maroondah, 1991, *Flora of Melbourne, a guide to the indigenous plants of the greater Melbourne area*, Society for Growing Australian Plants, Maroondah.
- Mattheck, C., Bethge, K. & Weber, K., 2015, *The body language of trees*, Karlsruhe Institute of Technology – Campus North, KS Druck GmbH, Germany.
- Standards Australia, 2009, *AS 4970 - 2009 Protection of trees on development sites*, Standards Australia, Sydney.

16. Appendix 1 - Tree protection guidelines

The following tree protection guidelines should be observed as appropriate. Where it is not possible to comply with these recommendations alternative arrangements should be decided with a qualified arborist.

1. A site specific Tree Protection Report should be commissioned prior to the commencement of construction to guide construction activity around any retained trees on or adjacent to the site.
2. Clearly marked as being retained on the site to avoid confusion during the tree removal phase.
3. The stumps of removed trees should be ground out rather than pulled to avoid injury to adjacent trees.
4. Construction specifications should include the plan location of those trees that are to be retained.
5. Penalties should be included in the construction specifications for damage to trees that are to be retained.
6. The trees to be retained should be enclosed with a 1.8 meter high chain link fence supported on steel posts driven 0.6 meters into the ground.
 - 6.1. Tree protection fencing should be established as shown.
 - 6.1.1. If tree protection fencing is not detailed in the report it should enclose, at a minimum, the entire **Structural Root Zone** and as much of the **Tree Protection Zone** as possible.
 - 6.2. Access should be provided by a single gate that should be kept locked at all times except when required for tree inspection or maintenance.
 - 6.3. Tree protection fencing should be installed following the removal of trees and prior to any other works being commenced.
 - 6.4. The area inside the fence should be mulched to a depth of 0.15 meters with general arboricultural wood chip mulch or similar.
7. Where construction clearance is required and areas of the Tree Protection Zone cannot be fenced the ground in these areas should be protected from compaction with **Ground Protection**.
 - 7.1. **Ground Protection** can consist of any constructed platform that prevents point loads on the soil within the **Tree Protection Zone**. These could include:
 - 7.1.1. Industrial pallets joined together to form a platform.
 - 7.1.2. 12 mm plywood joined together to form a platform.
 - 7.1.3. Planks of timber joined together to form a platform.
 - 7.2. **Ground Protection** should be constructed with sufficient strength to allow it to survive the entire construction process.
 - 7.3. **Ground Protection** should be installed following the removal of trees and prior to any other works being commenced.

8. Excavation within the **Structural Root Zone** should be avoided unless absolutely necessary.
 - 8.1. Any excavation within the **Structural Root Zone** should be performed by hand.
 - 8.2. Any excavation within or tunnelling under the **Structural Root Zone** should be supervised by a qualified arborist.
 - 8.3. Any roots encountered from the retained trees should be pruned carefully and cleanly, preferably back to a branch root.
 - 8.4. Before any roots are pruned the effect of such pruning on the health and structural stability of the tree should be evaluated by a qualified arborist.
9. Excavation within the **Tree Protection Zone** should be avoided where possible.
 - 9.1. Any excavation within the **Tree Protection Zone** should be performed carefully to minimise root injury.
 - 9.2. Any roots encountered from the retained trees should be pruned carefully and cleanly, preferably back to a branch root.
 - 9.3. Before any excavation occurs the effect of such excavation on the health and structural stability of the tree should be evaluated by a qualified arborist.
10. Concrete and other washout or waste disposal areas should be kept well away from trees to be retained.
11. Where automatic irrigation systems are installed the amount of irrigation that is applied should be checked against the requirements of the existing trees on the site.
12. Any pruning works that are required to facilitate construction should be performed by a qualified arborist.

Adapted from Harris, Clark and Matheny (2004)

17. Appendix 2 - Tree data

Note: Where **Retention value** = "Remove" only the arboricultural attributes of the tree (i.e. health, structure and ULE) are considered. Other factors that may affect the decision to retain or remove the tree are not considered.

- Where the 'Construction Proximity' is larger than the 'Tree Protection Zone (TPZ)' it is probable that the development will have **no significant impact on the health and longevity** of the tree.
- Where the 'Construction Proximity' is larger than the 'Structural Root Zone (SRZ)' it is probable that the development will have **no significant impact on the stability** of the tree.
- The following information should be read in conjunction with the 'Explanation of Terms' and the 'Glossary / Notes' sections found later in this report.

SRZ (m):	AS 4970-2009 Protection of trees on development sites. (Radius)	Total Number of trees
TPZ (m):	AS 4970-2009 Protection of trees on development sites (Radius)	114
mTPZ (m):	Modification to TPZ as required to protect canopy	
Construction Proximity:	0.1 indicates construction over or immediately adjacent to the tree	

Tree ID: 1

Genus / species: *Quercus robur*

Deciduous English Oak

Height (m): 18 Structure: Fair
 Width (m): 20 Health: Fair
 DBH (cm): 89 Measured Maturity: Mature
 Origin: Exotic ULE (years): 15 - 30
 Retained?: Retained Form: Good
 Retention Value: High
 Removal / retention reason: N/A.
 Amenity value: High
 Works Required: >50mm dead wood

SRZ (m): 3.1 Works priority: Low
 TPZ (m): 10.7 Construction Proximity: 22.1
 mTPZ (m): = TPZ



Tree ID: 20

Genus / species: *Quercus robur*

Deciduous English Oak

Height (m): 7 Structure: Good
 Width (m): 11 Health: Good
 DBH (cm): 130 Measured Maturity: Mature
 Origin: Exotic ULE (years): 15 - 30
 Retained?: Removed Form: Good
 Retention Value: Low
 Removal / retention reason: Road reserve.
 Amenity value: Low
 Works Required: N/A.

SRZ (m): 3.6 Works priority: Very low
 TPZ (m): 15.0 Construction Proximity: 17.1
 mTPZ (m): = TPZ



Tree ID: 21Genus / species: *Pinus radiata*

Evergreen Monterey Pine

Height (m): 30 Structure: Fair
 Width (m): 15 Health: Fair
 DBH (cm): 127 Measured Maturity: Mature
 Origin: Exotic ULE (years): 5 - 15
 Retained?: Removed Form: Fair
 Retention Value: Low

Removal / retention reason: N/A.

Amenity value: Moderate

Works Required: >50mm dead wood

SRZ (m): 3.6 Works priority: Moderate

TPZ (m): 15.0 Construction Proximity: 0.1

mTPZ (m): = TPZ

**Tree ID: 22**Genus / species: *Pinus radiata*

Evergreen Monterey Pine

Height (m): 24 Structure: Fair
 Width (m): 18 Health: Fair
 DBH (cm): 102 Measured Maturity: Mature
 Origin: Exotic ULE (years): 5 - 15
 Retained?: Removed Form: Fair
 Retention Value: Low

Removal / retention reason: N/A.

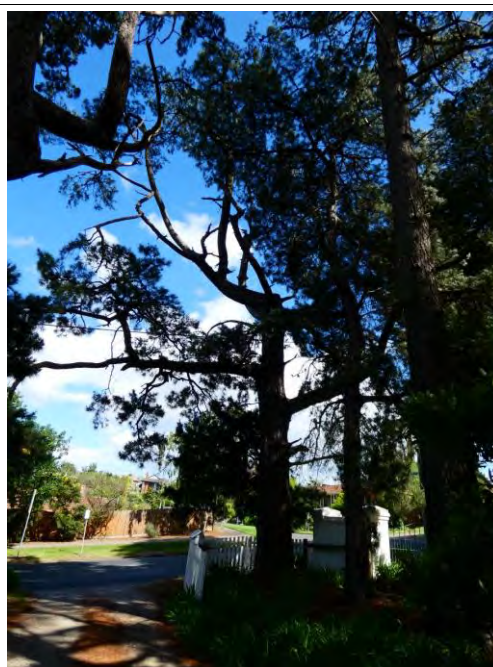
Amenity value: Moderate

Works Required: >50mm dead wood

SRZ (m): 3.3 Works priority: Moderate

TPZ (m): 12.2 Construction Proximity: 11.5

mTPZ (m): = TPZ

**Tree ID: 23**Genus / species: *Pinus radiata*

Evergreen Monterey Pine

Height (m): 18 Structure: Good
 Width (m): 8 Health: Good
 DBH (cm): 44 Measured Maturity: Mature
 Origin: Exotic ULE (years): 15 - 30
 Retained?: Removed Form: Good
 Retention Value: Moderate

Removal / retention reason: N/A.

Amenity value: Moderate

Works Required: N/A.

SRZ (m): 2.5 Works priority: Moderate

TPZ (m): 5.3 Construction Proximity: 8.5

mTPZ (m): = TPZ



Tree ID: **24**

Genus / species: *Pinus radiata*

Evergreen Monterey Pine

Height (m): 32 Structure: Fair
Width (m): 14 Health: Fair
DBH (cm): 84 Measured Maturity: Mature
Origin: Exotic ULE (years): 5 - 15
Retained?: Removed Form: Fair
Retention Value: Low

Removal / retention reason: N/A.

Amenity value: Moderate

Works Required: >50mm dead wood

SRZ (m): 3.1 Works priority: Moderate

TPZ (m): 10.1 Construction Proximity: 6

mTPZ (m): = TPZ



Tree ID: **25**

Genus / species: *Pinus radiata*

Evergreen Monterey Pine

Height (m): 17 Structure: Good
Width (m): 5 Health: Fair
DBH (cm): 33 Measured Maturity: Mature
Origin: Exotic ULE (years): 5 - 15
Retained?: Removed Form: Fair
Retention Value: Low

Removal / retention reason: N/A.

Amenity value: Moderate

Works Required: N/A.

SRZ (m): 2.1 Works priority: Low

TPZ (m): 4.0 Construction Proximity: 0.1

mTPZ (m): = TPZ



Tree ID: **26**

Genus / species: *Pinus radiata*

Evergreen Monterey Pine

Height (m): 27 Structure: Good
Width (m): 5 Health: Fair
DBH (cm): 45 Measured Maturity: Mature
Origin: Exotic ULE (years): 5 - 15
Retained?: Removed Form: Fair
Retention Value: Low

Removal / retention reason: N/A.

Amenity value: Moderate

Works Required: N/A.

SRZ (m): 2.5 Works priority: Low

TPZ (m): 5.4 Construction Proximity: 0.1

mTPZ (m): = TPZ



Tree ID: 27Genus / species: *Pinus radiata*

Evergreen Monterey Pine

Height (m): 33 Structure: Good
 Width (m): 13 Health: Fair
 DBH (cm): 77 Measured Maturity: Mature
 Origin: Exotic ULE (years): 5 - 15
 Retained?: Removed Form: Fair
 Retention Value: Low

Removal / retention reason: N/A.

Amenity value: Moderate

Works Required: >50mm dead wood

SRZ (m): 3 Works priority: Low
 TPZ (m): 9.2 Construction Proximity: 0.1
 mTPZ (m): = TPZ

**Tree ID: 28**Genus / species: *Pinus radiata*

Evergreen Monterey Pine

Height (m): 28 Structure: Fair
 Width (m): 19 Health: Poor
 DBH (cm): 88 Measured Maturity: Mature
 Origin: Exotic ULE (years): 1 - 5
 Retained?: Removed Form: Poor
 Retention Value: Remove.

Removal / retention reason: N/A.

Amenity value: Moderate

Works Required: >50mm dead wood

SRZ (m): 3.1 Works priority: Moderate
 TPZ (m): 10.6 Construction Proximity: 0.1
 mTPZ (m): = TPZ

**Tree ID: 29**Genus / species: *Pittosporum undulatum*

Evergreen Sweet Pittosporum

Height (m): 8 Structure: Fair
 Width (m): 10 Health: Good
 DBH (cm): 41 Measured Maturity: Mature
 Origin: Victorian ULE (years): 15 - 30
 Retained?: Removed Form: Good
 Retention Value: Low

Removal / retention reason: N/A.

Amenity value: Low

Works Required: N/A.

SRZ (m): 2.4 Works priority: Moderate
 TPZ (m): 4.9 Construction Proximity: 0.1
 mTPZ (m): = TPZ



Tree ID: 30Genus / species: *Pinus radiata*

Evergreen Monterey Pine

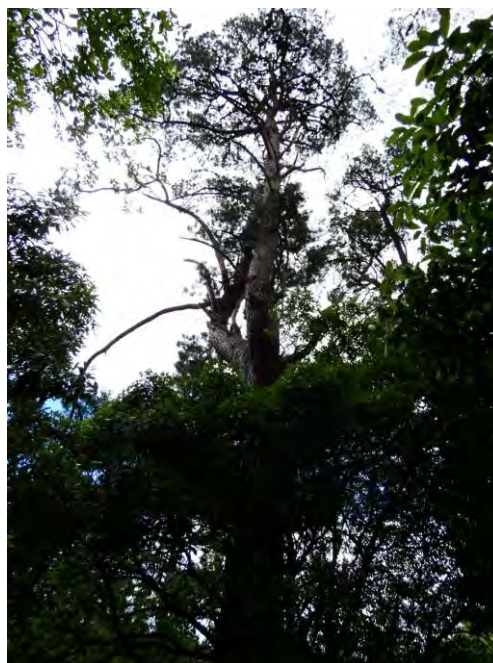
Height (m):	28	Structure:	Fair
Width (m):	15	Health:	Fair
DBH (cm):	100 Measured	Maturity:	Mature
Origin:	Exotic	ULE (years):	5 - 15
Retained?:	Removed	Form:	Fair
Retention Value:	Moderate		

Removal / retention reason: N/A.

Amenity value: High

Works Required: >50mm dead wood

SRZ (m):	3.3	Works priority:	Low
TPZ (m):	12.0	Construction Proximity:	5.1
mTPZ (m): = TPZ			

**Tree ID: 31**Genus / species: *Pinus radiata*

Evergreen Monterey Pine

Height (m):	35	Structure:	Fair
Width (m):	23	Health:	Fair
DBH (cm):	102 Measured	Maturity:	Mature
Origin:	Exotic	ULE (years):	5 - 15
Retained?:	Removed	Form:	Fair
Retention Value:	Moderate		

Removal / retention reason: N/A.

Amenity value: High

Works Required: >50mm dead wood

SRZ (m):	3.3	Works priority:	Low
TPZ (m):	12.2	Construction Proximity:	7.2
mTPZ (m): = TPZ			

**Tree ID: 32**Genus / species: *Pinus radiata*

Evergreen Monterey Pine

Height (m):	31	Structure:	Fair
Width (m):	17	Health:	Fair
DBH (cm):	96 Measured	Maturity:	Mature
Origin:	Exotic	ULE (years):	5 - 15
Retained?:	Removed	Form:	Fair
Retention Value:	Moderate		

Removal / retention reason: N/A.

Amenity value: High

Works Required: >50mm dead wood

SRZ (m):	3.2	Works priority:	Moderate
TPZ (m):	11.5	Construction Proximity:	3
mTPZ (m): = TPZ			



Tree ID: 33Genus / species: *Pittosporum undulatum*

Evergreen Sweet Pittosporum

Height (m): 8 Structure: Fair
 Width (m): 9 Health: Fair
 DBH (cm): 34 Measured Maturity: Mature
 Origin: Victorian ULE (years): 5 - 15
 Retained?: Removed Form: Fair
 Retention Value: Low
 Removal / retention reason: N/A.
 Amenity value: Low
 Works Required: N/A.

SRZ (m): 2.2 Works priority: Moderate
 TPZ (m): 4.1 Construction Proximity: 0.1
 mTPZ (m): = TPZ

**Tree ID: 34**Genus / species: *Pinus radiata*

Evergreen Monterey Pine

Height (m): 15 Structure: Fair
 Width (m): 9 Health: Fair
 DBH (cm): 61 Measured Maturity: Mature
 Origin: Exotic ULE (years): 5 - 15
 Retained?: Removed Form: Fair
 Retention Value: Low
 Removal / retention reason: N/A.
 Amenity value: Moderate
 Works Required: >50mm dead wood

SRZ (m): 2.8 Works priority: Low
 TPZ (m): 7.3 Construction Proximity: 0.1
 mTPZ (m): = TPZ

**Tree ID: 36**Genus / species: *Pinus radiata*

Evergreen Monterey Pine

Height (m): 31 Structure: Good
 Width (m): 13 Health: Fair
 DBH (cm): 71 Measured Maturity: Mature
 Origin: Exotic ULE (years): 5 - 15
 Retained?: Removed Form: Fair
 Retention Value: Moderate
 Removal / retention reason: N/A.
 Amenity value: High
 Works Required: >50mm dead wood

SRZ (m): 2.9 Works priority: Low
 TPZ (m): 8.5 Construction Proximity: 0.1
 mTPZ (m): = TPZ



Tree ID: 37Genus / species: *Pittosporum undulatum*

Evergreen Sweet Pittosporum

Height (m): 8 Structure: Good
 Width (m): 6 Health: Good
 DBH (cm): 17 Measured Maturity: Mature
 Origin: Victorian ULE (years): 15 - 30
 Retained?: Removed Form: Good

Retention Value: Low

Removal / retention reason: N/A.

Amenity value: Low

Works Required: N/A.

SRZ (m): 1.5 Works priority: Low
 TPZ (m): 2.0 Construction Proximity: 0.1
 mTPZ (m): = TPZ

**Tree ID: 38**Genus / species: *Pinus radiata*

Evergreen Monterey Pine

Height (m): 27 Structure: Fair
 Width (m): 15 Health: Poor
 DBH (cm): 131 Measured Maturity: Mature
 Origin: Exotic ULE (years): 5 - 15
 Retained?: Removed Form: Poor

Retention Value: Moderate

Removal / retention reason: N/A.

Amenity value: High

Works Required: >50mm dead wood

SRZ (m): 3.7 Works priority: Moderate
 TPZ (m): 15.0 Construction Proximity: 0.1
 mTPZ (m): = TPZ

**Tree ID: 39**Genus / species: *Pinus radiata*

Evergreen Monterey Pine

Height (m): 38 Structure: Fair
 Width (m): 20 Health: Good
 DBH (cm): 124 Measured Maturity: Mature
 Origin: Exotic ULE (years): 15 - 30
 Retained?: Removed Form: Good

Retention Value: High

Removal / retention reason: N/A.

Amenity value: High

Works Required: >50mm dead wood

SRZ (m): 3.6 Works priority: Low
 TPZ (m): 14.9 Construction Proximity: 0.1
 mTPZ (m): = TPZ



Tree ID: 41

Genus / species: *Pinus radiata*

Evergreen Monterey Pine

Height (m): 26 Structure: Fair
Width (m): 11 Health: Fair
DBH (cm): 98 Measured Maturity: Mature
Origin: Exotic ULE (years): 5 - 15
Retained?: Removed Form: Fair
Retention Value: Moderate

Removal / retention reason: N/A.

Amenity value: High

Works Required: >50mm dead wood

SRZ (m): 3.3 Works priority: Low
TPZ (m): 11.8 Construction Proximity: 0.1
mTPZ (m): = TPZ



Tree ID: 42

Genus / species: *Pinus radiata*

Evergreen Monterey Pine

Height (m): 34 Structure: Fair
Width (m): 18 Health: Fair
DBH (cm): 135 Measured Maturity: Mature
Origin: Exotic ULE (years): 5 - 15
Retained?: Removed Form: Fair
Retention Value: Moderate

Removal / retention reason: N/A.

Amenity value: High

Works Required: >50mm dead wood

SRZ (m): 3.7 Works priority: Moderate
TPZ (m): 15.0 Construction Proximity: 0.1
mTPZ (m): = TPZ



Tree ID: 44

Genus / species: *Pittosporum undulatum*

Evergreen Sweet Pittosporum

Height (m): 10 Structure: Fair
Width (m): 9 Health: Good
DBH (cm): 32 Measured Maturity: Mature
Origin: Victorian ULE (years): 15 - 30
Retained?: Removed Form: Good
Retention Value: Low

Removal / retention reason: N/A.

Amenity value: Low

Works Required: N/A.

SRZ (m): 2.1 Works priority: Moderate
TPZ (m): 3.8 Construction Proximity: 0.1
mTPZ (m): = TPZ



Tree ID: **45**

Genus / species: *Pinus radiata*

Evergreen Monterey Pine

Height (m): 30 Structure: Good
Width (m): 10 Health: Fair
DBH (cm): 85 Measured Maturity: Mature
Origin: Exotic ULE (years): 5 - 15
Retained?: Removed Form: Fair
Retention Value: Moderate

Removal / retention reason: N/A.

Amenity value: High

Works Required: >50mm dead wood

SRZ (m): 3.1 Works priority: Low
TPZ (m): 10.2 Construction Proximity: 0.1
mTPZ (m): = TPZ



Tree ID: **46**

Genus / species: *Pittosporum undulatum*

Evergreen Sweet Pittosporum

Height (m): 8 Structure: Fair
Width (m): 7 Health: Fair
DBH (cm): 29 Measured Maturity: Mature
Origin: Victorian ULE (years): 1 - 5
Retained?: Removed Form: Fair
Retention Value: Remove.

Removal / retention reason: N/A.

Amenity value: Low

Works Required: N/A.

SRZ (m): 2 Works priority: Low
TPZ (m): 3.5 Construction Proximity: 0.1
mTPZ (m): = TPZ



Tree ID: **47**

Genus / species: *Pinus radiata*

Evergreen Monterey Pine

Height (m): 30 Structure: Good
Width (m): 15 Health: Good
DBH (cm): 103 Measured Maturity: Mature
Origin: Exotic ULE (years): 15 - 30
Retained?: Removed Form: Good
Retention Value: High

Removal / retention reason: N/A.

Amenity value: High

Works Required: >50mm dead wood

SRZ (m): 3.3 Works priority: Low
TPZ (m): 12.4 Construction Proximity: 0.1
mTPZ (m): = TPZ



Tree ID: 51Genus / species: *Pinus radiata*

Evergreen Monterey Pine

Height (m):	27	Structure:	Fair
Width (m):	9	Health:	Fair
DBH (cm):	79	Measured Maturity:	Mature
Origin:	Exotic	ULE (years):	5 - 15
Retained?:	Removed	Form:	Fair
Retention Value:		Moderate	

Removal / retention reason: N/A.

Amenity value: High

Works Required: >50mm dead wood

SRZ (m):	3	Works priority:	Low
TPZ (m):	9.5	Construction Proximity:	0.1
mTPZ (m):	= TPZ		

**Tree ID: 53**Genus / species: *Pinus radiata*

Evergreen Monterey Pine

Height (m):	18	Structure:	Fair
Width (m):	16	Health:	Fair
DBH (cm):	83	Measured Maturity:	Mature
Origin:	Exotic	ULE (years):	5 - 15
Retained?:	Removed	Form:	Fair
Retention Value:		Moderate	

Removal / retention reason: N/A.

Amenity value: High

Works Required: >50mm dead wood

SRZ (m):	3.1	Works priority:	Low
TPZ (m):	10.0	Construction Proximity:	0.1
mTPZ (m):	= TPZ		

**Tree ID: 54**Genus / species: *Pinus radiata*

Evergreen Monterey Pine

Height (m):	30	Structure:	Fair
Width (m):	16	Health:	Good
DBH (cm):	105	Measured Maturity:	Mature
Origin:	Exotic	ULE (years):	5 - 15
Retained?:	Removed	Form:	Good
Retention Value:		Moderate	

Removal / retention reason: N/A.

Amenity value: High

Works Required: >50mm dead wood

SRZ (m):	3.4	Works priority:	Low
TPZ (m):	12.6	Construction Proximity:	0.1
mTPZ (m):	= TPZ		



Tree ID: 55Genus / species: *Pinus radiata*

Evergreen Monterey Pine

Height (m):	13	Structure:	Fair
Width (m):	3	Health:	Good
DBH (cm):	22	Measured Maturity:	Immature
Origin:	Exotic	ULE (years):	15 - 30
Retained?:	Removed	Form:	Good
Retention Value:	Moderate		
Removal / retention reason:	N/A.		
Amenity value:	Moderate		
Works Required:	N/A.		

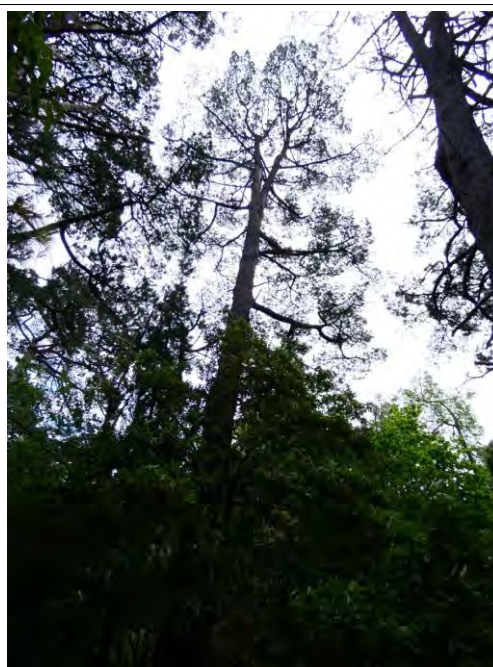
SRZ (m):	1.7	Works priority:	Low
TPZ (m):	2.6	Construction Proximity:	0.1
mTPZ (m):	= TPZ		

**Tree ID: 56**Genus / species: *Pinus radiata*

Evergreen Monterey Pine

Height (m):	35	Structure:	Fair
Width (m):	14	Health:	Fair
DBH (cm):	93	Measured Maturity:	Mature
Origin:	Exotic	ULE (years):	5 - 15
Retained?:	Removed	Form:	Fair
Retention Value:	Moderate		
Removal / retention reason:	N/A.		
Amenity value:	High		
Works Required:	>50mm dead wood		

SRZ (m):	3.2	Works priority:	Low
TPZ (m):	11.2	Construction Proximity:	0.1
mTPZ (m):	= TPZ		

**Tree ID: 57**Genus / species: *Pinus radiata*

Evergreen Monterey Pine

Height (m):	28	Structure:	Fair
Width (m):	14	Health:	Fair
DBH (cm):	99	Measured Maturity:	Mature
Origin:	Exotic	ULE (years):	5 - 15
Retained?:	Removed	Form:	Fair
Retention Value:	Moderate		
Removal / retention reason:	N/A.		
Amenity value:	High		
Works Required:	>50mm dead wood		

SRZ (m):	3.3	Works priority:	Low
TPZ (m):	11.9	Construction Proximity:	0.1
mTPZ (m):	= TPZ		



Tree ID: 58Genus / species: *Pinus radiata*

Evergreen Monterey Pine

Height (m):	32	Structure:	Fair
Width (m):	17	Health:	Fair
DBH (cm):	106	Measured Maturity:	Mature
Origin:	Exotic	ULE (years):	5 - 15
Retained?:	Removed	Form:	Fair
Retention Value:		Moderate	

Removal / retention reason: N/A.

Amenity value: High

Works Required: >50mm dead wood

SRZ (m):	3.4	Works priority:	Low
TPZ (m):	12.7	Construction Proximity:	0.1
mTPZ (m):	= TPZ		

**Tree ID: 60**Genus / species: *Pinus radiata*

Evergreen Monterey Pine

Height (m):	33	Structure:	Good
Width (m):	14	Health:	Good
DBH (cm):	93	Measured Maturity:	Mature
Origin:	Exotic	ULE (years):	15 - 30
Retained?:	Removed	Form:	Good
Retention Value:		Low	

Removal / retention reason: N/A.

Amenity value: Low

Works Required: >50mm dead wood

SRZ (m):	3.2	Works priority:	Low
TPZ (m):	11.2	Construction Proximity:	0.1
mTPZ (m):	= TPZ		

**Tree ID: 62**Genus / species: *Pinus radiata*

Evergreen Monterey Pine

Height (m):	28	Structure:	Fair
Width (m):	19	Health:	Fair
DBH (cm):	124	Measured Maturity:	Mature
Origin:	Exotic	ULE (years):	5 - 15
Retained?:	Removed	Form:	Fair
Retention Value:		Moderate	

Removal / retention reason: N/A.

Amenity value: High

Works Required: >50mm dead wood

SRZ (m):	3.6	Works priority:	Moderate
TPZ (m):	14.9	Construction Proximity:	0.1
mTPZ (m):	= TPZ		



Tree ID: 63Genus / species: *Pinus radiata*

Evergreen Monterey Pine

Height (m): 31 Structure: Fair
 Width (m): 16 Health: Good
 DBH (cm): 120 Measured Maturity: Mature
 Origin: Exotic ULE (years): 5 - 15
 Retained?: Removed Form: Fair
 Retention Value: Moderate

Removal / retention reason: N/A.

Amenity value: High

Works Required: >50mm dead wood

SRZ (m): 3.5 Works priority: Low
 TPZ (m): 14.4 Construction Proximity: 0.1
 mTPZ (m): = TPZ

**Tree ID: 64**Genus / species: *Pinus radiata*

Evergreen Monterey Pine

Height (m): 12 Structure: Good
 Width (m): 7 Health: Good
 DBH (cm): 41 Measured Maturity: Immature
 Origin: Exotic ULE (years): 30 - 60
 Retained?: Removed Form: Good
 Retention Value: Moderate

Removal / retention reason: N/A.

Amenity value: Moderate

Works Required: N/A.

SRZ (m): 2.4 Works priority: Low
 TPZ (m): 4.9 Construction Proximity: 0.1
 mTPZ (m): = TPZ

**Tree ID: 66**Genus / species: *Pinus radiata*

Evergreen Monterey Pine

Height (m): 28 Structure: Fair
 Width (m): 21 Health: Fair
 DBH (cm): 134 Measured Maturity: Mature
 Origin: Exotic ULE (years): 5 - 15
 Retained?: Removed Form: Fair
 Retention Value: Moderate

Removal / retention reason: N/A.

Amenity value: High

Works Required: >50mm dead wood

SRZ (m): 3.7 Works priority: Moderate
 TPZ (m): 15.0 Construction Proximity: 0.1
 mTPZ (m): = TPZ



Tree ID: **67**

Genus / species: *Pinus radiata*

Evergreen Monterey Pine

Height (m): 28 Structure: Poor
Width (m): 17 Health: Poor
DBH (cm): 117 Measured Maturity: Mature
Origin: Exotic ULE (years): 1 - 5
Retained?: Removed Form: Poor

Retention Value: Remove.

Removal / retention reason: Health ULE.

Amenity value: Low

Works Required: N/A.

SRZ (m): 3.5 Works priority: Moderate

TPZ (m): 14.0 Construction Proximity: 0.1

mTPZ (m): = TPZ



Tree ID: **69**

Genus / species: *Crataegus monogyna*

Deciduous Hawthorn

Height (m): 7 Structure: Fair
Width (m): 5 Health: Good
DBH (cm): 24 Measured Maturity: Mature
Origin: Exotic ULE (years): 15 - 30
Retained?: Removed Form: Good

Retention Value: Low

Removal / retention reason: N/A.

Amenity value: Low

Works Required: N/A.

SRZ (m): 1.8 Works priority: Moderate

TPZ (m): 2.9 Construction Proximity: 0.1

mTPZ (m): = TPZ



Tree ID: **70**

Genus / species: *Crataegus monogyna*

Deciduous Hawthorn

Height (m): 8 Structure: Fair
Width (m): 7 Health: Good
DBH (cm): 37 Measured Maturity: Mature
Origin: Exotic ULE (years): 15 - 30
Retained?: Removed Form: Good

Retention Value: Low

Removal / retention reason: N/A.

Amenity value: Low

Works Required: N/A.

SRZ (m): 2.2 Works priority: Moderate

TPZ (m): 4.4 Construction Proximity: 0.1

mTPZ (m): = TPZ



Tree ID: 72

Genus / species: *Pittosporum undulatum*

Evergreen Sweet Pittosporum

Height (m): 10 Structure: Good
Width (m): 6 Health: Good
DBH (cm): 22 Measured Maturity: Mature
Origin: Victorian ULE (years): 15 - 30
Retained?: Removed Form: Good

Retention Value: Low

Removal / retention reason: N/A.

Amenity value: Low

Works Required: N/A.

SRZ (m): 1.7 Works priority: Low

TPZ (m): 2.6 Construction Proximity: 0.1

mTPZ (m): = TPZ



Tree ID: 74

Genus / species: *Pittosporum undulatum*

Evergreen Sweet Pittosporum

Height (m): 10 Structure: Good
Width (m): 9 Health: Good
DBH (cm): 23 Measured Maturity: Mature
Origin: Victorian ULE (years): 15 - 30
Retained?: Removed Form: Good

Retention Value: Low

Removal / retention reason: N/A.

Amenity value: Low

Works Required: N/A.

SRZ (m): 1.7 Works priority: Low

TPZ (m): 2.8 Construction Proximity: 0.1

mTPZ (m): = TPZ



Tree ID: 75

Genus / species: *Lophostemon confertus*

Evergreen Queensland Brush Box

Height (m): 9 Structure: Poor
Width (m): 4 Health: Good
DBH (cm): 12 Measured Maturity: Mature
Origin: Australian ULE (years): 5 - 15
Retained?: Removed Form: Fair

Retention Value: Low

Removal / retention reason: N/A.

Amenity value: Low

Works Required: N/A.

SRZ (m): 1.5 Works priority: Low

TPZ (m): 2.0 Construction Proximity: 0.1

mTPZ (m): = TPZ



Tree ID: 76Genus / species: *Prunus laurocerasus*

Evergreen Cherry Laurel

Height (m): 7 Structure: Fair
 Width (m): 6 Health: Good
 DBH (cm): 30 Measured Maturity: Mature
 Origin: Exotic ULE (years): 5 - 15
 Retained?: Removed Form: Fair
 Retention Value: Low
 Removal / retention reason: N/A.
 Amenity value: Low
 Works Required: N/A.

SRZ (m): 2 Works priority: Low
 TPZ (m): 3.6 Construction Proximity: 0.1
 mTPZ (m): = TPZ

**Tree ID: 77**Genus / species: *Pittosporum eugenioides*

Evergreen Tarata

Height (m): 7 Structure: Fair
 Width (m): 7 Health: Good
 DBH (cm): 19 Measured Maturity: Mature
 Origin: Australian ULE (years): 15 - 30
 Retained?: Removed Form: Good
 Retention Value: Low
 Removal / retention reason: N/A.
 Amenity value: Low
 Works Required: N/A.

SRZ (m): 1.5 Works priority: Low
 TPZ (m): 2.3 Construction Proximity: 0.1
 mTPZ (m): = TPZ

**Tree ID: 78**Genus / species: *Acer campestre*

Deciduous Field Maple

Height (m): 10 Structure: Fair
 Width (m): 7 Health: Good
 DBH (cm): 17 Measured Maturity: Mature
 Origin: Exotic ULE (years): 15 - 30
 Retained?: Removed Form: Good
 Retention Value: Moderate
 Removal / retention reason: N/A.
 Amenity value: Moderate
 Works Required: N/A.

SRZ (m): 1.5 Works priority: Low
 TPZ (m): 2.0 Construction Proximity: 0.1
 mTPZ (m): = TPZ



Tree ID: 79

Genus / species: *Euonymus japonica*

Evergreen Japanese Spindle Tree

Height (m): 8 Structure: Fair
Width (m): 6 Health: Good
DBH (cm): 17 Measured Maturity: Mature
Origin: Exotic ULE (years): 15 - 30
Retained?: Removed Form: Good
Retention Value: Low
Removal / retention reason: N/A.
Amenity value: Low
Works Required: N/A.

SRZ (m): 1.5 Works priority: Low
TPZ (m): 2.0 Construction Proximity: 0.1
mTPZ (m): = TPZ



Tree ID: 80

Genus / species: *Cedrus deodara*

Evergreen Deodar Cedar

Height (m): 23 Structure: Fair
Width (m): 23 Health: Good
DBH (cm): 102 Measured Maturity: Mature
Origin: Exotic ULE (years): 15 - 30
Retained?: Retained Form: Good
Retention Value: High
Removal / retention reason: N/A.
Amenity value: High
Works Required: >50mm dead wood, Broken branch/s

SRZ (m): 3.3 Works priority: High
TPZ (m): 12.2 Construction Proximity: 0.1
mTPZ (m): = TPZ



Tree ID: 82

Genus / species: *Callistemon salignus*

Evergreen Willow Bottle Brush

Height (m): 6 Structure: Fair
Width (m): 3 Health: Good
DBH (cm): 17 Measured Maturity: Mature
Origin: Australian ULE (years): 5 - 15
Retained?: Removed Form: Fair
Retention Value: Low
Removal / retention reason: N/A.
Amenity value: Low
Works Required: N/A.

SRZ (m): 1.5 Works priority: High
TPZ (m): 2.0 Construction Proximity: 0.1
mTPZ (m): = TPZ



Tree ID: 83Genus / species: *Pittosporum eugenioides*

Evergreen Tarata

Height (m): 7 Structure: Fair
 Width (m): 6 Health: Good
 DBH (cm): 16 Measured Maturity: Mature
 Origin: Australian ULE (years): 5 - 15
 Retained?: Removed Form: Fair

Retention Value: Low

Removal / retention reason: N/A.

Amenity value: Low

Works Required: N/A.

SRZ (m): 1.5 Works priority: High
 TPZ (m): 2.0 Construction Proximity: 0.1
 mTPZ (m): = TPZ

**Tree ID: 84**Genus / species: *Pittosporum eugenioides*

Evergreen Tarata

Height (m): 7 Structure: Fair
 Width (m): 6 Health: Good
 DBH (cm): 18 Measured Maturity: Mature
 Origin: Australian ULE (years): 5 - 15
 Retained?: Removed Form: Fair

Retention Value: Low

Removal / retention reason: N/A.

Amenity value: Low

Works Required: N/A.

SRZ (m): 1.5 Works priority: High
 TPZ (m): 2.2 Construction Proximity: 0.1
 mTPZ (m): = TPZ

**Tree ID: 85**Genus / species: *Euonymus japonica*

Evergreen Japanese Spindle Tree

Height (m): 6 Structure: Fair
 Width (m): 5 Health: Good
 DBH (cm): 20 Measured Maturity: Mature
 Origin: Exotic ULE (years): 5 - 15
 Retained?: Removed Form: Fair

Retention Value: Low

Removal / retention reason: N/A.

Amenity value: Low

Works Required: N/A.

SRZ (m): 1.6 Works priority: High
 TPZ (m): 2.4 Construction Proximity: 0.1
 mTPZ (m): = TPZ



Tree ID: 88Genus / species: *Fraxinus excelsior* 'Aurea'

Deciduous Golden Ash

Height (m): 14 Structure: Fair
 Width (m): 12 Health: Good
 DBH (cm): 53 Measured Maturity: Mature
 Origin: Exotic ULE (years): 15 - 30
 Retained?: Removed Form: Good
 Retention Value: Moderate

Removal / retention reason: N/A.

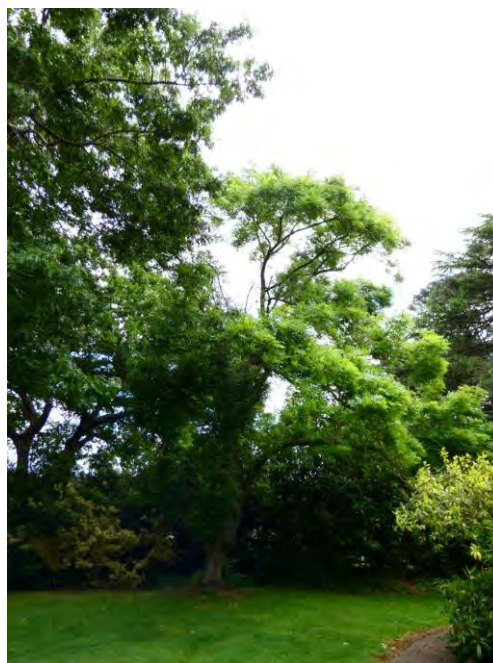
Amenity value: Moderate

Works Required: >50mm dead wood

SRZ (m): 2.6 Works priority: Moderate

TPZ (m): 6.4 Construction Proximity: 0.1

mTPZ (m): = TPZ

**Tree ID: 92**Genus / species: *Quercus robur*

Deciduous English Oak

Height (m): 21 Structure: Fair
 Width (m): 23 Health: Good
 DBH (cm): 97 Measured Maturity: Mature
 Origin: Exotic ULE (years): 30 - 60
 Retained?: Retained Form: Good
 Retention Value: High

Removal / retention reason: N/A.

Amenity value: High

Works Required: >50mm dead wood

SRZ (m): 3.3 Works priority: Low

TPZ (m): 11.6 Construction Proximity: 13.2

mTPZ (m): = TPZ

**Tree ID: 93**Genus / species: *Pittosporum undulatum*

Evergreen Sweet Pittosporum

Height (m): 11 Structure: Fair
 Width (m): 11 Health: Fair
 DBH (cm): 51 Measured Maturity: Mature
 Origin: Victorian ULE (years): 5 - 15
 Retained?: Removed Form: Fair
 Retention Value: Low

Removal / retention reason: N/A.

Amenity value: Moderate

Works Required: N/A.

SRZ (m): 2.6 Works priority: Low

TPZ (m): 6.1 Construction Proximity: 0.1

mTPZ (m): = TPZ



Tree ID: 95Genus / species: *Grevillea robusta*

Evergreen Silky Oak

Height (m): 11 Structure: Good

Width (m): 7 Health: Fair

DBH (cm): 28 Measured Maturity: Mature

Origin: Australian ULE (years): 5 - 15

Retained?: Removed Form: Good

Retention Value: Low

Removal / retention reason: N/A.

Amenity value: Moderate

Works Required: N/A.

SRZ (m): 1.9 Works priority: Low

TPZ (m): 3.4 Construction Proximity: 0.1

mTPZ (m): = TPZ

**Tree ID: 97**Genus / species: *Cotoneaster glaucophyllus*

Evergreen Cotoneaster

Height (m): 11 Structure: Fair

Width (m): 10 Health: Good

DBH (cm): 35 Measured Maturity: Mature

Origin: Exotic ULE (years): 5 - 15

Retained?: Removed Form: Fair

Retention Value: Low

Removal / retention reason: N/A.

Amenity value: Moderate

Works Required: N/A.

SRZ (m): 2.2 Works priority: Very low

TPZ (m): 4.2 Construction Proximity: 0.1

mTPZ (m): = TPZ

**Tree ID: 98**Genus / species: *Corymbia maculata*

Evergreen Spotted Gum

Height (m): 21 Structure: Poor

Width (m): 8 Health: Good

DBH (cm): 76 Measured Maturity: Mature

Origin: Victorian ULE (years): 5 - 15

Retained?: Removed Form: Poor

Retention Value: Low

Removal / retention reason: N/A.

Amenity value: Moderate

Works Required: Broken branch/s

SRZ (m): 3 Works priority: Low

TPZ (m): 9.1 Construction Proximity: 0.1

mTPZ (m): = TPZ



Tree ID: **100**

Genus / species: *Eucalyptus nicholii*

Evergreen Willow Leaf Peppermint

Height (m): 25 Structure: Poor
Width (m): 18 Health: Fair
DBH (cm): 111 Measured Maturity: Mature
Origin: Australian ULE (years): 1 - 5
Retained?: Removed Form: Fair
Retention Value: Remove.

Removal / retention reason: N/A.

Amenity value: Low

Works Required: >50mm dead wood

SRZ (m): 3.4 Works priority: Moderate

TPZ (m): 13.3 Construction Proximity: 0.1

mTPZ (m): = TPZ



Tree ID: **101**

Genus / species: *Quercus palustris*

Deciduous Pin Oak

Height (m): 25 Structure: Fair
Width (m): 31 Health: Good
DBH (cm): 103 Measured Maturity: Mature
Origin: Exotic ULE (years): 15 - 30
Retained?: Retained Form: Good
Retention Value: High

Removal / retention reason: N/A.

Amenity value: High

Works Required: Broken branch/s, >50mm dead wood

SRZ (m): 3.3 Works priority: High

TPZ (m): 12.4 Construction Proximity: 9.2

mTPZ (m): = TPZ



Tree ID: **102**

Genus / species: *Pittosporum tenuifolium*

Evergreen Kohuhu

Height (m): 7 Structure: Poor
Width (m): 8 Health: Good
DBH (cm): 28 Measured Maturity: Mature
Origin: Exotic ULE (years): 5 - 15
Retained?: Removed Form: Poor
Retention Value: Low

Removal / retention reason: N/A.

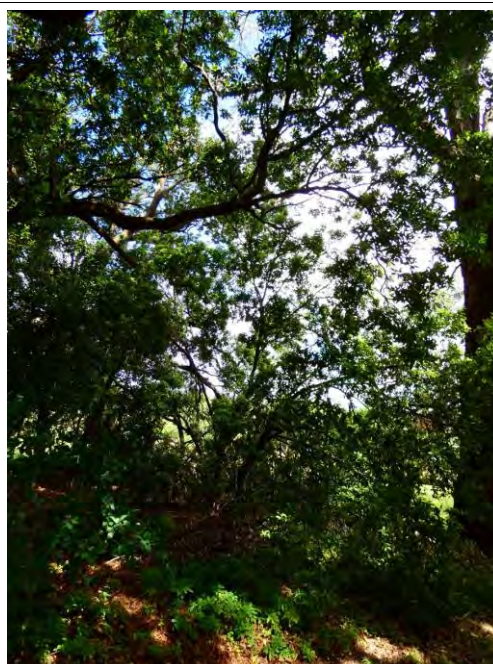
Amenity value: Low

Works Required: N/A.

SRZ (m): 1.9 Works priority: Low

TPZ (m): 3.4 Construction Proximity: 0.1

mTPZ (m): = TPZ



Tree ID: 103

Genus / species: *Acmena smithii*

Evergreen Lilly Pilly

Height (m): 9 Structure: Poor
Width (m): 7 Health: Very poor
DBH (cm): 29 Measured Maturity: Mature
Origin: Victorian ULE (years): 0
Retained?: Removed Form: Very poor
Retention Value: Remove.
Removal / retention reason: Health ULE.
Amenity value: Low
Works Required: N/A.

SRZ (m): 2 Works priority: Low
TPZ (m): 3.5 Construction Proximity: 0.1
mTPZ (m): = TPZ



Tree ID: 104

Genus / species: *Arbutus unedo*

Evergreen Irish Strawberry Tree

Height (m): 15 Structure: Poor
Width (m): 14 Health: Good
DBH (cm): 91 Measured Maturity: Mature
Origin: Exotic ULE (years): 5 - 15
Retained?: Removed Form: Good
Retention Value: Low
Removal / retention reason: N/A.
Amenity value: Low
Works Required: >50mm dead wood

SRZ (m): 3.2 Works priority: Low
TPZ (m): 10.9 Construction Proximity: 0.1
mTPZ (m): = TPZ



Tree ID: 106

Genus / species: *Unknown sp.*

Unknown Unknown

Height (m): 9 Structure: Fair
Width (m): 6 Health: Good
DBH (cm): 19 Measured Maturity: Mature
Origin: Unknown ULE (years): 15 - 30
Retained?: Removed Form: Good
Retention Value: Low
Removal / retention reason: N/A.
Amenity value: Low
Works Required: N/A.

SRZ (m): 1.5 Works priority: Low
TPZ (m): 2.3 Construction Proximity: 0.1
mTPZ (m): = TPZ



Tree ID: 107

Genus / species: *Arbutus unedo*

Evergreen Irish Strawberry Tree

Height (m): 9 Structure: Fair
Width (m): 8 Health: Good
DBH (cm): 19 Measured Maturity: Mature
Origin: Exotic ULE (years): 5 - 15
Retained?: Removed Form: Fair
Retention Value: Low
Removal / retention reason: N/A.
Amenity value: Low
Works Required: N/A.

SRZ (m): 1.5 Works priority: Low
TPZ (m): 2.3 Construction Proximity: 0.1
mTPZ (m): = TPZ



Tree ID: 108

Genus / species: *Pittosporum undulatum*

Evergreen Sweet Pittosporum

Height (m): 8 Structure: Good
Width (m): 6 Health: Good
DBH (cm): 19 Measured Maturity: Mature
Origin: Victorian ULE (years): 15 - 30
Retained?: Removed Form: Good
Retention Value: Low
Removal / retention reason: N/A.
Amenity value: Low
Works Required: N/A.

SRZ (m): 1.5 Works priority: Low
TPZ (m): 2.3 Construction Proximity: 0.1
mTPZ (m): = TPZ



Tree ID: 109

Genus / species: *Quercus palustris*

Deciduous Pin Oak

Height (m): 25 Structure: Fair
Width (m): 18 Health: Good
DBH (cm): 72 Measured Maturity: Mature
Origin: Exotic ULE (years): 30 - 60
Retained?: Retained Form: Good
Retention Value: Moderate
Removal / retention reason: N/A.
Amenity value: Moderate
Works Required: >50mm dead wood

SRZ (m): 2.9 Works priority: Very low
TPZ (m): 8.6 Construction Proximity: 0.1
mTPZ (m): = TPZ



Tree ID: **110**

Genus / species: *Magnolia sp.*

Evergreen Magnolia

Height (m): 6 Structure: Good
Width (m): 4 Health: Fair
DBH (cm): 16 Measured Maturity: Mature
Origin: Exotic ULE (years): 5 - 15
Retained?: Removed Form: Fair
Retention Value: Low
Removal / retention reason: N/A.
Amenity value: Low
Works Required: N/A.

SRZ (m): 1.5 Works priority: Very low
TPZ (m): 2.0 Construction Proximity: 0.1
mTPZ (m): = TPZ



Tree ID: **111**

Genus / species: *Cedrus deodara*

Evergreen Deodar Cedar

Height (m): 20 Structure: Fair
Width (m): 18 Health: Fair
DBH (cm): 83 Measured Maturity: Mature
Origin: Exotic ULE (years): 5 - 15
Retained?: Removed Form: Fair
Retention Value: Moderate
Removal / retention reason: N/A.
Amenity value: High
Works Required: >50mm dead wood

SRZ (m): 3.1 Works priority: Low
TPZ (m): 10.0 Construction Proximity: 0.1
mTPZ (m): = TPZ



Tree ID: **112**

Genus / species: *Pittosporum undulatum*

Evergreen Sweet Pittosporum

Height (m): 11 Structure: Fair
Width (m): 9 Health: Good
DBH (cm): 30 Measured Maturity: Mature
Origin: Victorian ULE (years): 15 - 30
Retained?: Removed Form: Good
Retention Value: Moderate
Removal / retention reason: N/A.
Amenity value: Moderate
Works Required: N/A.

SRZ (m): 2 Works priority: Very low
TPZ (m): 3.6 Construction Proximity: 0.1
mTPZ (m): = TPZ



Tree ID: **113**

Genus / species: *Quercus robur*

Deciduous English Oak

Height (m): 19 Structure: Good
Width (m): 17 Health: Good
DBH (cm): 82 Measured Maturity: Mature
Origin: Exotic ULE (years): 30 - 60
Retained?: Retained Form: Good
Retention Value: High

Removal / retention reason: N/A.

Amenity value: High

Works Required: >50mm dead wood

SRZ (m): 3.1 Works priority: Low
TPZ (m): 9.8 Construction Proximity: 0.1
mTPZ (m): = TPZ



Tree ID: **115**

Genus / species: *Pittosporum undulatum*

Evergreen Sweet Pittosporum

Height (m): 11 Structure: Fair
Width (m): 10 Health: Good
DBH (cm): 26 Measured Maturity: Mature
Origin: Victorian ULE (years): 15 - 30
Retained?: Removed Form: Good
Retention Value: Moderate

Removal / retention reason: N/A.

Amenity value: Moderate

Works Required: >50mm dead wood

SRZ (m): 1.8 Works priority: Low
TPZ (m): 3.1 Construction Proximity: 0.1
mTPZ (m): = TPZ



Tree ID: **116**

Genus / species: *Arbutus unedo*

Evergreen Irish Strawberry Tree

Height (m): 11 Structure: Poor
Width (m): 9 Health: Good
DBH (cm): 45 Measured Maturity: Mature
Origin: Exotic ULE (years): 5 - 15
Retained?: Removed Form: Good
Retention Value: Low

Removal / retention reason: N/A.

Amenity value: Moderate

Works Required: N/A.

SRZ (m): 2.5 Works priority: Low
TPZ (m): 5.4 Construction Proximity: 0.1
mTPZ (m): = TPZ



Tree ID: 117Genus / species: *Laurus nobilis*

Evergreen Bay Tree

Height (m): 11 Structure: Fair
 Width (m): 8 Health: Good
 DBH (cm): 27 Measured Maturity: Mature
 Origin: Exotic ULE (years): 5 - 15
 Retained?: Removed Form: Fair
 Retention Value: Low
 Removal / retention reason: BMO requirements.
 Amenity value: Moderate
 Works Required: N/A.

SRZ (m): 1.9 Works priority: Low
 TPZ (m): 3.2 Construction Proximity: 0.1
 mTPZ (m): = TPZ

**Tree ID: 118**Genus / species: *Araucaria bidwillii*

Evergreen Bunya Bunya Pine

Height (m): 20 Structure: Fair
 Width (m): 10 Health: Good
 DBH (cm): 146 Measured Maturity: Mature
 Origin: Australian ULE (years): > 60
 Retained?: Retained Form: Good
 Retention Value: Very high
 Removal / retention reason: N/A.
 Amenity value: High
 Works Required: Broken branch/s

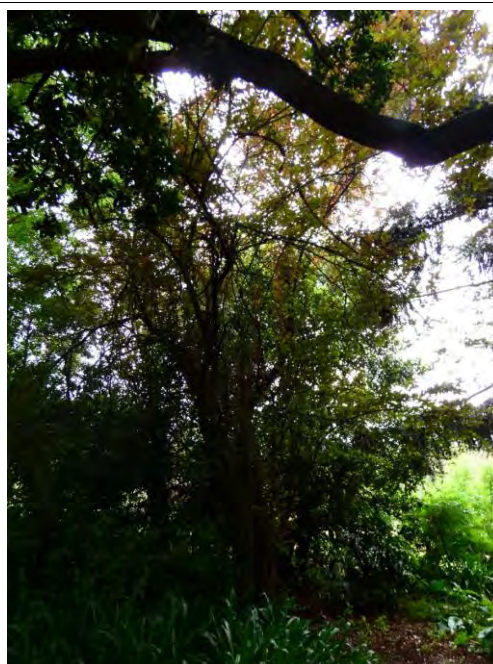
SRZ (m): 3.8 Works priority: Low
 TPZ (m): 15.0 Construction Proximity: 10
 mTPZ (m): = TPZ

**Tree ID: 119**Genus / species: *Prunus x blireana*

Deciduous Double-rose Cherry Plum

Height (m): 7 Structure: Fair
 Width (m): 5 Health: Fair
 DBH (cm): 21 Measured Maturity: Mature
 Origin: Exotic ULE (years): 5 - 15
 Retained?: Removed Form: Fair
 Retention Value: Low
 Removal / retention reason: BMO requirements.
 Amenity value: Low
 Works Required: >50mm dead wood

SRZ (m): 1.6 Works priority: Low
 TPZ (m): 2.5 Construction Proximity: 0.1
 mTPZ (m): = TPZ



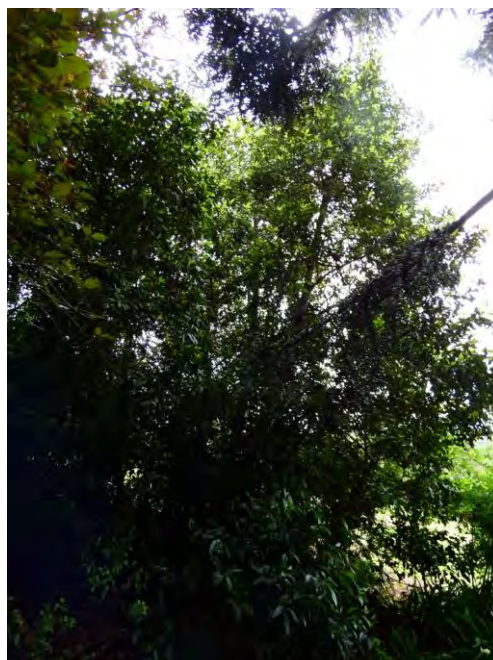
Tree ID: **120**

Genus / species: *Laurus nobilis*

Evergreen Bay Tree

Height (m): 8 Structure: Fair
Width (m): 5 Health: Good
DBH (cm): 27 Measured Maturity: Mature
Origin: Exotic ULE (years): 15 - 30
Retained?: Removed Form: Good
Retention Value: Low
Removal / retention reason: BMO requirements.
Amenity value: Low
Works Required: N/A.

SRZ (m): 1.9 Works priority: Low
TPZ (m): 3.2 Construction Proximity: 0.1
mTPZ (m): = TPZ



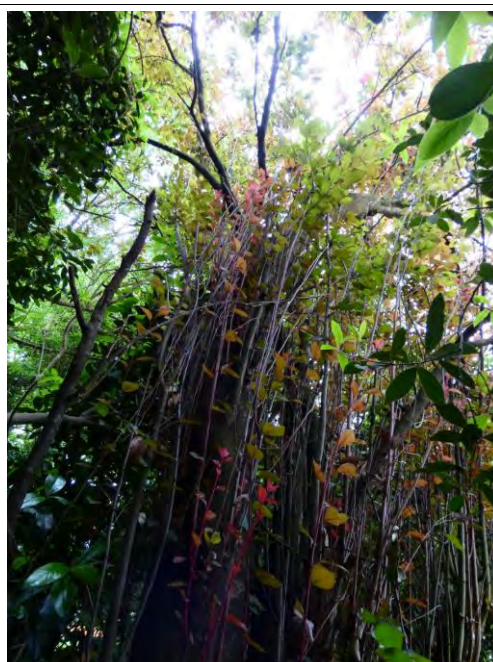
Tree ID: **122**

Genus / species: *Prunus x blireana*

Deciduous Double-rose Cherry Plum

Height (m): 7 Structure: Fair
Width (m): 5 Health: Good
DBH (cm): 30 Measured Maturity: Mature
Origin: Exotic ULE (years): 5 - 15
Retained?: Removed Form: Fair
Retention Value: Low
Removal / retention reason: BMO requirements.
Amenity value: Low
Works Required: N/A.

SRZ (m): 2 Works priority: Low
TPZ (m): 3.6 Construction Proximity: 0.1
mTPZ (m): = TPZ



Tree ID: **123**

Genus / species: *Laurus nobilis*

Evergreen Bay Tree

Height (m): 8 Structure: Fair
Width (m): 5 Health: Good
DBH (cm): 18 Measured Maturity: Mature
Origin: Exotic ULE (years): 5 - 15
Retained?: Removed Form: Fair
Retention Value: Low
Removal / retention reason: BMO requirements.
Amenity value: Low
Works Required: N/A.

SRZ (m): 1.5 Works priority: Low
TPZ (m): 2.2 Construction Proximity: 0.1
mTPZ (m): = TPZ



Tree ID: **125**

Genus / species: *Fraxinus angustifolia*

Deciduous Narrow Leaf Ash

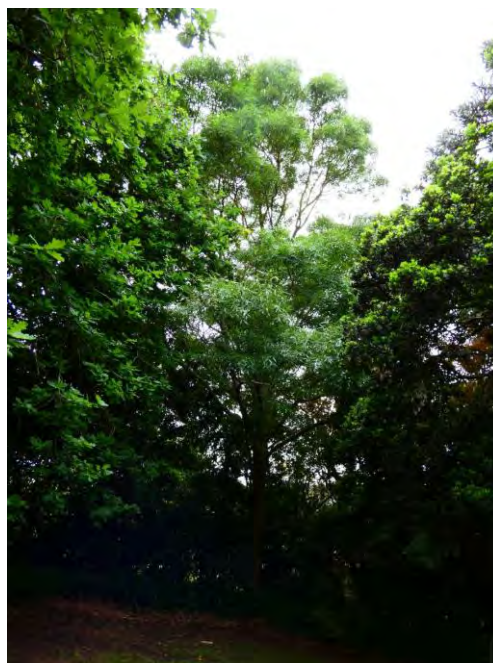
Height (m): 18 Structure: Good
Width (m): 15 Health: Good
DBH (cm): 37 Measured Maturity: Mature
Origin: Exotic ULE (years): 15 - 30
Retained?: Removed Form: Good
Retention Value: High

Removal / retention reason: N/A.

Amenity value: High

Works Required: >50mm dead wood

SRZ (m): 2.2 Works priority: Low
TPZ (m): 4.4 Construction Proximity: 0.1
mTPZ (m): = TPZ



Tree ID: **129**

Genus / species: *Pittosporum undulatum*

Evergreen Sweet Pittosporum

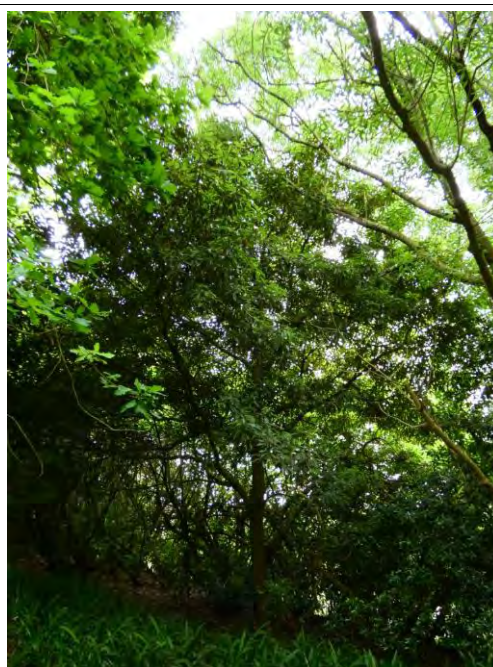
Height (m): 8 Structure: Good
Width (m): 7 Health: Good
DBH (cm): 21 Measured Maturity: Mature
Origin: Victorian ULE (years): 15 - 30
Retained?: Removed Form: Good
Retention Value: Low

Removal / retention reason: N/A.

Amenity value: Low

Works Required: N/A.

SRZ (m): 1.6 Works priority: Low
TPZ (m): 2.5 Construction Proximity: 0.1
mTPZ (m): = TPZ



Tree ID: **130**

Genus / species: *Laurus nobilis*

Evergreen Bay Tree

Height (m): 7 Structure: Fair
Width (m): 4 Health: Good
DBH (cm): 21 Measured Maturity: Mature
Origin: Exotic ULE (years): 15 - 30
Retained?: Removed Form: Good
Retention Value: Low

Removal / retention reason: N/A.

Amenity value: Low

Works Required: N/A.

SRZ (m): 1.6 Works priority: Low
TPZ (m): 2.5 Construction Proximity: 0.1
mTPZ (m): = TPZ



Tree ID: 131Genus / species: *Quercus robur*

Deciduous English Oak

Height (m): 21 Structure: Fair
Width (m): 27 Health: Good
DBH (cm): 104 Measured Maturity: Mature
Origin: Exotic ULE (years): 30 - 60
Retained?: Retained Form: Good

Retention Value: High

Removal / retention reason: N/A.

Amenity value: High

Works Required: >50mm dead wood

SRZ (m): 3.3 Works priority: Low

TPZ (m): 12.5 Construction Proximity: 0.1

mTPZ (m): = TPZ

**Tree ID: 133**Genus / species: *Prunus laurocerasus*

Evergreen Cherry Laurel

Height (m): 5 Structure: Fair
Width (m): 4 Health: Good
DBH (cm): 22 Measured Maturity: Mature
Origin: Exotic ULE (years): 5 - 15
Retained?: Removed Form: Fair

Retention Value: Low

Removal / retention reason: N/A.

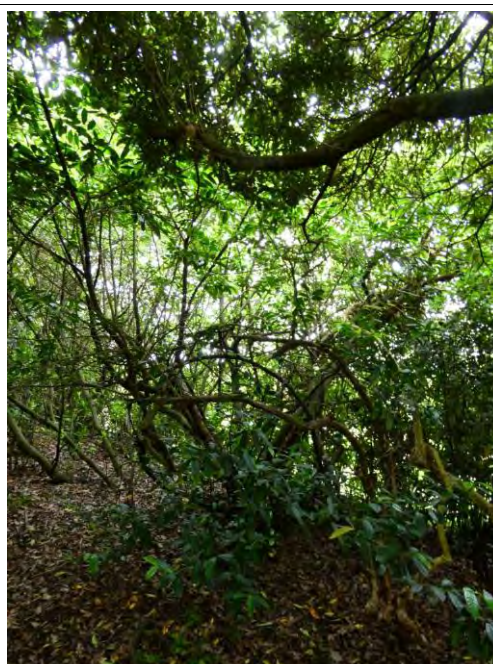
Amenity value: Low

Works Required: >50mm dead wood

SRZ (m): 1.7 Works priority: Low

TPZ (m): 2.6 Construction Proximity: 0.1

mTPZ (m): = TPZ

**Tree ID: 134**Genus / species: *Pittosporum undulatum*

Evergreen Sweet Pittosporum

Height (m): 8 Structure: Good
Width (m): 7 Health: Good
DBH (cm): 18 Measured Maturity: Mature
Origin: Victorian ULE (years): 15 - 30
Retained?: Removed Form: Good

Retention Value: Low

Removal / retention reason: N/A.

Amenity value: Low

Works Required: N/A.

SRZ (m): 1.5 Works priority: Low

TPZ (m): 2.2 Construction Proximity: 0.1

mTPZ (m): = TPZ



Tree ID: 136Genus / species: *Prunus laurocerasus*

Evergreen Cherry Laurel

Height (m): 9 Structure: Fair
 Width (m): 10 Health: Good
 DBH (cm): 50 Measured Maturity: Mature
 Origin: Exotic ULE (years): 15 - 30
 Retained?: Removed Form: Fair
 Retention Value: Low
 Removal / retention reason: N/A.
 Amenity value: Low
 Works Required: N/A.

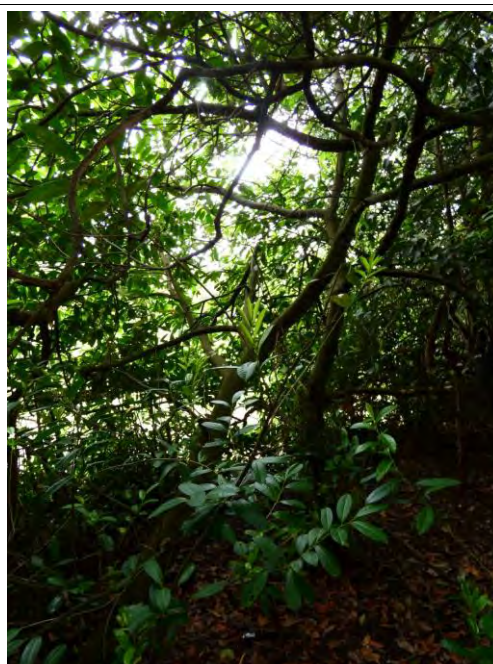
SRZ (m): 2.6 Works priority: Low
 TPZ (m): 6.0 Construction Proximity: 0.1
 mTPZ (m): = TPZ

**Tree ID: 137**Genus / species: *Laurus nobilis*

Evergreen Bay Tree

Height (m): 8 Structure: Fair
 Width (m): 6 Health: Good
 DBH (cm): 17 Measured Maturity: Mature
 Origin: Exotic ULE (years): 15 - 30
 Retained?: Removed Form: Fair
 Retention Value: Low
 Removal / retention reason: N/A.
 Amenity value: Low
 Works Required: N/A.

SRZ (m): 1.5 Works priority: Low
 TPZ (m): 2.0 Construction Proximity: 0.1
 mTPZ (m): = TPZ

**Tree ID: 141**Genus / species: *Prunus laurocerasus*

Evergreen Cherry Laurel

Height (m): 12 Structure: Poor
 Width (m): 12 Health: Good
 DBH (cm): 73 Measured Maturity: Mature
 Origin: Exotic ULE (years): 5 - 15
 Retained?: Removed Form: Fair
 Retention Value: Low
 Removal / retention reason: N/A.
 Amenity value: Moderate
 Works Required: >50mm dead wood

SRZ (m): 3 Works priority: Low
 TPZ (m): 8.8 Construction Proximity: 0.1
 mTPZ (m): = TPZ



Tree ID: 142Genus / species: *Laurus nobilis*

Evergreen Bay Tree

Height (m): 6 Structure: Fair
Width (m): 6 Health: Good
DBH (cm): 18 Measured Maturity: Mature
Origin: Exotic ULE (years): 5 - 15
Retained?: Removed Form: Fair
Retention Value: Low
Removal / retention reason: N/A.
Amenity value: Low
Works Required: N/A.

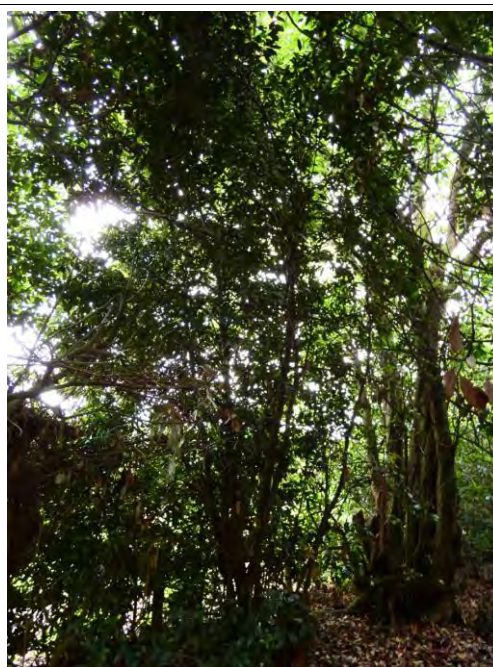
SRZ (m): 1.5 Works priority: Low
TPZ (m): 2.2 Construction Proximity: 0.1
mTPZ (m): = TPZ

**Tree ID: 143**Genus / species: *Laurus nobilis*

Evergreen Bay Tree

Height (m): 7 Structure: Fair
Width (m): 7 Health: Good
DBH (cm): 35 Measured Maturity: Mature
Origin: Exotic ULE (years): 5 - 15
Retained?: Removed Form: Fair
Retention Value: Low
Removal / retention reason: N/A.
Amenity value: Low
Works Required: N/A.

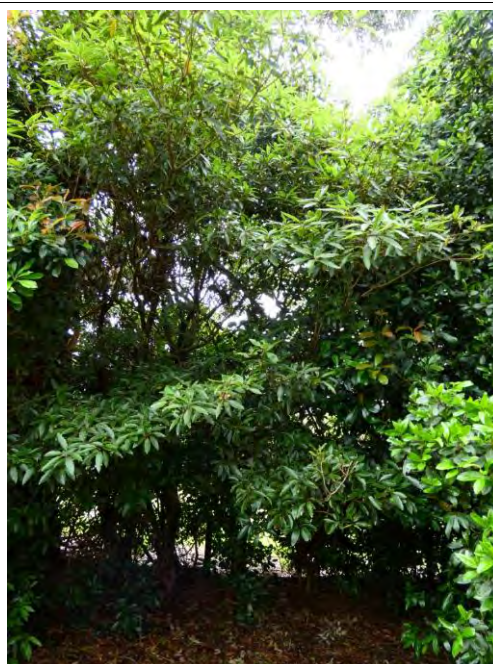
SRZ (m): 2.2 Works priority: Low
TPZ (m): 4.2 Construction Proximity: 0.1
mTPZ (m): = TPZ

**Tree ID: 145**Genus / species: *Pittosporum undulatum*

Evergreen Sweet Pittosporum

Height (m): 7 Structure: Fair
Width (m): 6 Health: Good
DBH (cm): 17 Measured Maturity: Mature
Origin: Victorian ULE (years): 15 - 30
Retained?: Removed Form: Good
Retention Value: Low
Removal / retention reason: N/A.
Amenity value: Low
Works Required: N/A.

SRZ (m): 1.5 Works priority: Low
TPZ (m): 2.0 Construction Proximity: 0.1
mTPZ (m): = TPZ



Tree ID: 146Genus / species: *Pittosporum undulatum*

Evergreen Sweet Pittosporum

Height (m): 7 Structure: Fair
 Width (m): 6 Health: Good
 DBH (cm): 20 Measured Maturity: Mature
 Origin: Victorian ULE (years): 15 - 30
 Retained?: Removed Form: Good

Retention Value: Low

Removal / retention reason: N/A.

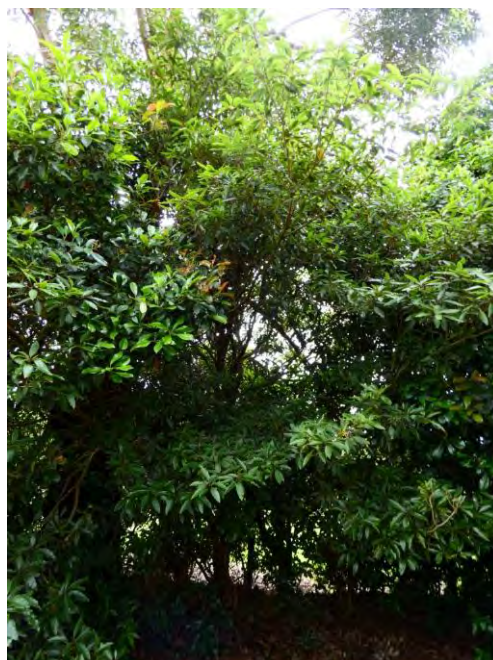
Amenity value: Low

Works Required: N/A.

SRZ (m): 1.6 Works priority: Low

TPZ (m): 2.4 Construction Proximity: 0.1

mTPZ (m): = TPZ

**Tree ID: 147**Genus / species: *Prunus laurocerasus*

Evergreen Cherry Laurel

Height (m): 7 Structure: Fair
 Width (m): 6 Health: Good
 DBH (cm): 16 Measured Maturity: Mature
 Origin: Exotic ULE (years): 5 - 15
 Retained?: Removed Form: Fair

Retention Value: Low

Removal / retention reason: N/A.

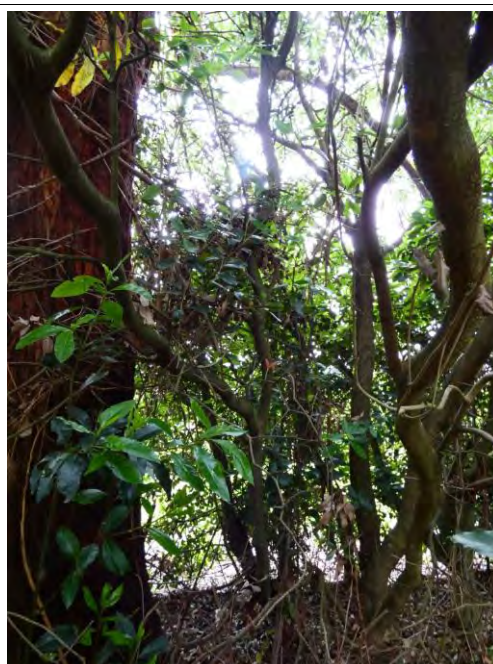
Amenity value: Low

Works Required: N/A.

SRZ (m): 1.5 Works priority: Low

TPZ (m): 2.0 Construction Proximity: 0.1

mTPZ (m): = TPZ

**Tree ID: 148**Genus / species: *Eucalyptus botryoides*

Evergreen Southern Mahogany

Height (m): 20 Structure: Fair
 Width (m): 12 Health: Good
 DBH (cm): 101 Measured Maturity: Mature
 Origin: Victorian ULE (years): 15 - 30
 Retained?: Removed Form: Good

Retention Value: Low

Removal / retention reason: N/A.

Amenity value: Low

Works Required: N/A.

SRZ (m): 3.3 Works priority: Low

TPZ (m): 12.1 Construction Proximity: 0.1

mTPZ (m): = TPZ



Tree ID: 149Genus / species: *Pittosporum undulatum*

Evergreen Sweet Pittosporum

Height (m):	8	Structure:	Fair
Width (m):	6	Health:	Good
DBH (cm):	18	Measured Maturity:	Mature
Origin:	Victorian	ULE (years):	15 - 30
Retained?:	Removed	Form:	Good

Retention Value: Low

Removal / retention reason: N/A.

Amenity value: Low

Works Required: N/A.

SRZ (m): 1.5 Works priority: Low

TPZ (m): 2.2 Construction Proximity: 0.1

mTPZ (m): = TPZ

**Tree ID: 150**Genus / species: *Pittosporum undulatum*

Evergreen Sweet Pittosporum

Height (m):	7	Structure:	Fair
Width (m):	6	Health:	Good
DBH (cm):	26	Measured Maturity:	Mature
Origin:	Victorian	ULE (years):	15 - 30
Retained?:	Removed	Form:	Good

Retention Value: Low

Removal / retention reason: N/A.

Amenity value: Low

Works Required: N/A.

SRZ (m): 1.8 Works priority: Low

TPZ (m): 3.1 Construction Proximity: 0.1

mTPZ (m): = TPZ

**Tree ID: 152**Genus / species: *Pittosporum undulatum*

Evergreen Sweet Pittosporum

Height (m):	7	Structure:	Fair
Width (m):	6	Health:	Good
DBH (cm):	25	Measured Maturity:	Mature
Origin:	Victorian	ULE (years):	15 - 30
Retained?:	Removed	Form:	Good

Retention Value: Low

Removal / retention reason: N/A.

Amenity value: Low

Works Required: N/A.

SRZ (m): 1.8 Works priority: Low

TPZ (m): 3.0 Construction Proximity: 0.1

mTPZ (m): = TPZ



Tree ID: **153**

Genus / species: *Grevillea robusta*

Evergreen Silky Oak

Height (m): 17 Structure: Poor

Width (m): 12 Health: Good

DBH (cm): 45 Measured Maturity: Mature

Origin: Australian ULE (years): 15 - 30

Retained?: Retained Form: Good

Retention Value: Moderate

Removal / retention reason: Adjoining property.

Amenity value: Moderate

Works Required: N/A.

SRZ (m): 2.5 Works priority: Low

TPZ (m): 5.4 Construction Proximity: 4.7

mTPZ (m): = TPZ



Tree ID: **154**

Genus / species: *Feijoa sellowiana*

Evergreen Feijoa

Height (m): 3 Structure: Good

Width (m): 3 Health: Good

DBH (cm): 18 Measured Maturity: Mature

Origin: Exotic ULE (years): 15 - 30

Retained?: Removed Form: Good

Retention Value: Low

Removal / retention reason: N/A.

Amenity value: Low

Works Required: N/A.

SRZ (m): 1.5 Works priority: Low

TPZ (m): 2.2 Construction Proximity: 0.1

mTPZ (m): = TPZ



Tree ID: **155**

Genus / species: *Pittosporum undulatum*

Evergreen Sweet Pittosporum

Height (m): 6 Structure: Good

Width (m): 6 Health: Good

DBH (cm): 24 Measured Maturity: Mature

Origin: Victorian ULE (years): 15 - 30

Retained?: Removed Form: Good

Retention Value: Low

Removal / retention reason: N/A.

Amenity value: Low

Works Required: N/A.

SRZ (m): 1.8 Works priority: Low

TPZ (m): 2.9 Construction Proximity: 0.1

mTPZ (m): = TPZ



Tree ID: 156Genus / species: *Pittosporum undulatum*

Evergreen Sweet Pittosporum

Height (m): 5 Structure: Poor
 Width (m): 4 Health: Good
 DBH (cm): 17 Measured Maturity: Mature
 Origin: Victorian ULE (years): 5 - 15
 Retained?: Removed Form: Fair

Retention Value: Low

Removal / retention reason: N/A.

Amenity value: Low

Works Required: N/A.

SRZ (m): 1.5 Works priority: Low

TPZ (m): 2.0 Construction Proximity: 0.1

mTPZ (m): = TPZ

**Tree ID: 157**Genus / species: *Pittosporum undulatum*

Evergreen Sweet Pittosporum

Height (m): 7 Structure: Poor
 Width (m): 6 Health: Good
 DBH (cm): 34 Measured Maturity: Mature
 Origin: Victorian ULE (years): 5 - 15
 Retained?: Removed Form: Good

Retention Value: Low

Removal / retention reason: N/A.

Amenity value: Low

Works Required: N/A.

SRZ (m): 2.2 Works priority: Low

TPZ (m): 4.1 Construction Proximity: 0.1

mTPZ (m): = TPZ

**Tree ID: 158**Genus / species: *Laurus nobilis*

Evergreen Bay Tree

Height (m): 7 Structure: Fair
 Width (m): 5 Health: Good
 DBH (cm): 30 Measured Maturity: Mature
 Origin: Exotic ULE (years): 15 - 30
 Retained?: Removed Form: Good

Retention Value: Low

Removal / retention reason: N/A.

Amenity value: Low

Works Required: N/A.

SRZ (m): 2 Works priority: Low

TPZ (m): 3.6 Construction Proximity: 0.1

mTPZ (m): = TPZ



Tree ID: 159Genus / species: *Laurus nobilis*

Evergreen Bay Tree

Height (m): 7 Structure: Fair
 Width (m): 5 Health: Good
 DBH (cm): 30 Measured Maturity: Mature
 Origin: Exotic ULE (years): 15 - 30
 Retained?: Removed Form: Good
 Retention Value: Low
 Removal / retention reason: N/A.
 Amenity value: Low
 Works Required: N/A.

SRZ (m): 2 Works priority: Low
 TPZ (m): 3.6 Construction Proximity: 0.1
 mTPZ (m): = TPZ

**Tree ID: 160**Genus / species: *Corymbia citriodora*

Evergreen Lemon Scented Gum

Height (m): 24 Structure: Good
 Width (m): 25 Health: Good
 DBH (cm): 94 Measured Maturity: Mature
 Origin: Australian ULE (years): > 60
 Retained?: Retained Form: Good
 Retention Value: Moderate
 Removal / retention reason: N/A.
 Amenity value: Low
 Works Required: N/A.

SRZ (m): 3.2 Works priority: Low
 TPZ (m): 11.3 Construction Proximity: 0.1
 mTPZ (m): = TPZ

**Tree ID: 161**Genus / species: *Unknown sp.*

Unknown Unknown

Height (m): 10 Structure: Very poor
 Width (m): 10 Health: Very poor
 DBH (cm): 72 Measured Maturity: Mature
 Origin: Unknown ULE (years): 0
 Retained?: Removed Form: Very poor
 Retention Value: Remove.
 Removal / retention reason: Health ULE.
 Amenity value: Low
 Works Required: N/A.

SRZ (m): 2.9 Works priority: Moderate
 TPZ (m): 8.6 Construction Proximity: 0.1
 mTPZ (m): = TPZ



Tree ID: **162**

Genus / species: *Camellia japonica*

Evergreen Camellia

Height (m): 6 Structure: Fair
Width (m): 6 Health: Good
DBH (cm): 24 Measured Maturity: Mature
Origin: Exotic ULE (years): 15 - 30
Retained?: Removed Form: Good

Retention Value: Low

Removal / retention reason: N/A.

Amenity value: Low

Works Required: N/A.

SRZ (m): 1.8 Works priority: Moderate

TPZ (m): 2.9 Construction Proximity: 0.1

mTPZ (m): = TPZ



Tree ID: **163**

Genus / species: *Fraxinus excelsior 'Aurea'*

Deciduous Golden Ash

Height (m): 12 Structure: Good
Width (m): 10 Health: Good
DBH (cm): 43 Measured Maturity: Mature
Origin: Exotic ULE (years): 30 - 60
Retained?: Removed Form: Good

Retention Value: Moderate

Removal / retention reason: N/A.

Amenity value: Moderate

Works Required: N/A.

SRZ (m): 2.4 Works priority: Moderate

TPZ (m): 5.2 Construction Proximity: 0.1

mTPZ (m): = TPZ



Tree ID: **164**

Genus / species: *Liquidambar styraciflua*

Deciduous Liquidambar

Height (m): 17 Structure: Good
Width (m): 15 Health: Good
DBH (cm): 41 Measured Maturity: Mature
Origin: Exotic ULE (years): 30 - 60
Retained?: Removed Form: Good

Retention Value: High

Removal / retention reason: N/A.

Amenity value: High

Works Required: N/A.

SRZ (m): 2.4 Works priority: Moderate

TPZ (m): 4.9 Construction Proximity: 0.1

mTPZ (m): = TPZ



Tree ID: **165**

Genus / species: *Picea pungens*

Evergreen Blue Spruce

Height (m): 10 Structure: Good
Width (m): 3 Health: Good
DBH (cm): 30 Measured Maturity: Mature
Origin: Exotic ULE (years): 30 - 60
Retained?: Removed Form: Good

Retention Value: Moderate

Removal / retention reason: N/A.

Amenity value: Moderate

Works Required: N/A.

SRZ (m): 2 Works priority: Moderate

TPZ (m): 3.6 Construction Proximity: 0.1

mTPZ (m): = TPZ



Tree ID: **166**

Genus / species: *Camellia japonica*

Evergreen Camellia

Height (m): 5 Structure: Good
Width (m): 4 Health: Good
DBH (cm): 16 Measured Maturity: Mature
Origin: Exotic ULE (years): 15 - 30
Retained?: Removed Form: Good

Retention Value: Low

Removal / retention reason: N/A.

Amenity value: Low

Works Required: N/A.

SRZ (m): 1.5 Works priority: Moderate

TPZ (m): 2.0 Construction Proximity: 0.1

mTPZ (m): = TPZ



Tree ID: **168**

Genus / species: *Betula pendula*

Deciduous Silver Birch

Height (m): 6 Structure: Fair
Width (m): 3 Health: Good
DBH (cm): 21 Measured Maturity: Mature
Origin: Exotic ULE (years): 5 - 15
Retained?: Removed Form: Fair

Retention Value: Low

Removal / retention reason: N/A.

Amenity value: Low

Works Required: N/A.

SRZ (m): 1.6 Works priority: Moderate

TPZ (m): 2.5 Construction Proximity: 0.1

mTPZ (m): = TPZ



Tree ID: 170

Genus / species: *Quercus palustris*

Deciduous Pin Oak

Height (m): 20 Structure: Good

Width (m): 19 Health: Good

DBH (cm): 85 Measured Maturity: Mature

Origin: Exotic ULE (years): 30 - 60

Retained?: Retained Form: Good

Retention Value: High

Removal / retention reason: N/A.

Amenity value: High

Works Required: N/A.

SRZ (m): 3.1 Works priority: Moderate

TPZ (m): 10.2 Construction Proximity: 10.2

mTPZ (m): = TPZ



18. Appendix 3 – Arboricultural information

The following sections are presented to provide an introduction to the process of tree root system protection. A tree's root system is the critical element to be protected during the development process and if the tree's roots are adequately protected then the rest of the tree will generally survive without significant injury.

18.1. Root plate estimation

One of the primary purposes of this report is to estimate the impact of the development on the trees on this site. This is mainly achieved by estimating the extent of the root plate area of the trees that are proposed to be retained and the proportion of this area that is likely to be excised or affected during the construction process.

In this report two elements of the tree root area are described. These are:

18.1.1. Structural Root Zone

This is an estimate of the radius that is likely to encompass the major scaffold roots of the tree. These roots are critical to anchoring the tree and damage to these roots will increase the risk of entire tree failure (i.e. uprooting). This radius is based on AS 4970-2009.

18.1.2. Tree Protection Zone

This is an estimate of the radius that is likely to encompass enough of the smaller absorbing roots to allow the tree to obtain sufficient nutrients and water to allow it to survive in the long term. This radius is based on AS 4970-2009 and is based on the size of the tree.

Estimation of the likely root plate radius for both methods are based on the DBH (Diameter at Breast Height) of each tree. This is usually measured but where the tree is inaccessible or has numerous trunks a visual estimation may be used. Whether the DBH is estimated or measured is noted within the "Tree Data" section of the report.

The two elements of each tree's root zone is transposed over the site survey and building footprint and the degree of root injury is calculated from this.

18.2. Tree rooting patterns

Contrary to common belief, trees usually have a broad flat plate of roots that may extend 1.5 – 3 times the radius of the canopy (Harris, Matheny & Clark, 1999; Coder, 1996; Hitchmough, 1994). Relatively few trees have deep roots and Harris, Matheny and Clark (2004) note that most tree roots will be found in the top 1.0 metre of the soil profile.

While the models used to approximate the size of tree root plates assume a uniformly radial root system, in highly disturbed urban soils root systems often develop in a highly asymmetric manner (Matheny & Clarke, 2004). This may require the modification of the models used where it is likely that the root system is asymmetric.

18.3. Construction impacts

Construction in the vicinity of trees can have several negative impacts on their health, longevity and structural stability. Harris, Matheny and Clark (2004) note that some level of tree root injury or root zone change is almost inevitable during construction around trees and maintain that the goal of tree preservation is to reduce the injury or change to a level that will enable the long term preservation of the retained trees.

Negative impacts can include:

- Root severance from trenching and grading activities. Damage to the transport and absorbing root system may deprive the tree of the ability to absorb nutrients and water and damage to the structural scaffold roots that support the tree may result in instability and uprooting. Depending on the percentage of the root plate affected and proximity to the tree, the affects can range from minor degradation of health through to total root plate failure (i.e. uprooting).
- Compaction and root injury. Most trees require a well aerated and friable soil to allow normal physiological processes to occur and to allow root growth. Soil compaction from pedestrian or vehicular traffic can result in direct injury to the roots, indirect injury through soil drainage changes, reduced soil aeration or decreased soil penetrability. If severe enough soil compaction can lead to a rapid decline in many tree species and may eventually result in instability and uprooting.
- Changes in drainage patterns. Changes in drainage patterns may result from hard surfacing, trenching, land shaping and other construction activities. These can result in either drought stress or waterlogging, both of which can cause a rapid decline in trees and may result in instability and uprooting.

19. Appendix 4 - AS 4970 -2009

This report generally conforms to *AS 4970 – 2009 Protection of Trees on Development Sites* except in the following areas.

1. AS 4970 notes that the project arborist should verify the accuracy of feature survey for the subject site.
 - a. This is generally not feasible and the feature survey is taken as being an accurate representation of the features of the site.
 - b. However if trees are found on the site that are not represented in the feature survey then these trees will be added to the report plans based on a visual estimation of their location.
 - i. Accordingly the location of these trees may not be sufficiently accurate for the purposes of the report.
 - ii. The location of these trees should be verified by a qualified surveyor where appropriate.
2. *AS 4970-2009 Protection of Trees on Development Sites* makes no differentiation between the Tree Protection Zone (TPZ) derived from the trees DBH and the modified TPZ derived from the trees canopy where it extends past the DBH derived TPZ. As the two forms of TPZ are independent a differentiation between the two forms of TPZ needs to be made. In this report:
 - a. “TPZ” refers to the DBH derived Tree Protection Zone (12 x DBH) and “mTPZ” pertains to the TPZ where it is modified to account for a canopy that extends beyond the DBH derived TPZ.
 - b. The modified Tree Protection Zone (mTPZ) for all trees is taken as being identical to the Tree Protection Zone (TPZ) except where the canopy of the tree extends beyond the TPZ. Where this is the case the TPZ is shown on the site plans and any tree canopy impacts are addressed as required within the report. Otherwise the mTPZ is recorded within this report as “= TPZ”.

20. Appendix 5 - Explanation of terms

The assessment of Health, Structure, Condition, U.L.E. (Useful Life Expectancy), Origin, Maturity, Form and Retention value are based on the following definitions. In the case of health and structure these definitions encompass only the more common indicators for these assessments. Other indicators not included in these definitions may lead to the ascribing of a particular health or structure category.

20.1. Origin

The notation of “Origin” is based on the following categories.

➤ Category	Description
➤ Melbourne	Native to the greater Melbourne metropolitan area as defined by Flora of Melbourne (S. G. A. P. M., 1991).
➤ Victorian	Native to Victoria but not the greater Melbourne Metropolitan area.
➤ Australian	Native to Australia but not Victoria.
➤ Exotic	Not native to Australia.

20.2. Maturity

The notation of “Maturity” is based on the following categories.

➤ Category	Description
➤ Immature	Less than 20% of the life expectancy for that tree.
➤ Mature	20 – 80% of the life expectancy for that tree.
➤ Over mature	> 80% of the life expectancy for that tree.

20.3. Works required

The works required listed in this report are of a general nature only and should be reviewed following the completion of any works on the site.

Where a tree is recommended for removal (Recommendation) it is not listed in the Works required section of the report.

20.4. Priority

The priority accorded particular works is based on a projected increased site usage following the completion of a development on the site. The priority is of a general nature only and should be reviewed following the completion of any works on the site.

“Priority” is based on the following categories.

<u>Category</u>	<u>Description</u>
➤ N/A.	No tree works are required
➤ Very low	Tree works are optional and could be performed at any time..
➤ Low	Works should be performed within five years.
➤ Moderate	Works should be performed within 3 years.
➤ High	Works should be performed within 12 months.
➤ Urgent	Works should be performed immediately.

20.5. Retention value (RV)

The Retention value ascribed to each tree in this report is not definitive and should be used as a guide only. Many factors influence the comparative value of a tree and a number of these factors are outside the scope of arboricultural assessment. These factors cannot therefore be addressed in a single rating system.

Retention value is comprised of two parts. These are the Amenity Value of the tree rated as Very Low to Very high and the Useful Life Expectancy (ULE) of the tree.

The Amenity Value of the tree relates to the contribution of the tree to the aesthetic amenity of the area. The primary determinants of amenity value are tree health, size and form.

The Amenity Value is then modified by the ULE of the tree with short ULE values reducing the RV of the tree and long ULE values increasing the RV of the tree.

Trees that are listed on a register of heritage or significant trees are not accommodated within this rating system as these values are often independent from the arboricultural attributes of the tree. Heritage and significant trees may be ascribed a very low retention value despite their listing on any register. Where known, any heritage or significant register listing it will be noted in the report.

RV is assessed on each tree as a single entity. The value of a group of trees is not considered in this context and each tree within the group will be assessed as an individual.

Amenity value is based on the following categories and is ascribed an Amenity Value (AVV) ranging from 2 - 10.

<u>Category</u>	<u>Example</u>	<u>AVV</u>
➤ Very high	Generally a very large tree that exhibits excellent health and/or form or a tree that is listed on a heritage or significant tree register.	10
➤ High	Generally a large tree that exhibits good health and/or form.	8
➤ Medium	Generally a medium tree that exhibits good health and/or form. May be a large tree that exhibits fair health and/or form.	6
➤ Low	Generally a small tree that exhibits good health and/or form. May be a large or medium tree that exhibits fair or poor health and/or form.	4
➤ Very low	Generally a small tree that exhibits poor health and/or form. May be a large or medium tree that exhibits poor, or worse, health and/or form.	2

U.L.E. is based on the following categories each of which have a modifier (ULEM) ranging from 0 – 12.

<u>Category</u>	<u>Example</u>	<u>ULEM</u>
➤ 0	The tree is dead or almost dead or constitutes an immediate and unacceptable hazard.	0
➤ 0 – 5	The tree is unlikely to provide useful amenity for longer than 5 years. The tree is in serious decline, poses an unacceptable hazard and/or requires a level of maintenance disproportionate with its' value.	4
➤ 5 – 15	The tree is unlikely to provide useful amenity for longer than 15 years. The tree may be in serious decline, be a very short lived species, present a moderately elevated hazard and/or require high levels of maintenance.	7
➤ 15 – 25	The tree is unlikely to provide useful amenity for longer than 25 years.	10

The tree may be in moderate decline, a short lived species, present a slightly elevated hazard and/or require moderate levels of maintenance.

➤ **25 – 50** The tree is likely to provide useful amenity for up to 50 years. 11

The tree may be in fair to good condition, have a moderate life-span, present a low to moderate level of hazard and/or require moderate levels of maintenance.

➤ **> 50** The tree is likely to provide useful amenity for greater than 50 years. 12

The tree may be in good to excellent condition, a long lived species, present a low level of hazard and/or require low levels of maintenance.

RV is then derived from the multiplication of AVV by ULEM and the resulting score is categorised as Very high to Very low.

<u>Category</u>	<u>Example</u>	<u>RV value</u>
➤ Very high	Every effort should be made to preserve trees in this category	96 - 120
➤ High	These trees should be retained if at all possible	72 - 95
➤ Moderate	These trees should be retained if they do not overly constrain development on the site.	48 - 71
➤ Low	These trees should not create a material constraint on development of the site. These trees should be removed where they conflict with development of the site.	24 - 47
➤ Very low	Generally a small tree that exhibits poor health and/or form. May be a large or medium tree that exhibits poor, or worse, health and/or form. These trees should generally be removed.	1 – 23
➤ Remove	These trees are not suitable for retention within the site and are recommended to be removed.	0

20.6. Health

Pertains to the health and growth potential of the tree.

The notation of “Health” is based on the following categories.

<u>Category</u>	<u>Example</u>
➤ Good	<p>Crown full, with good foliage density. Foliage is entire with average colour, minimal or no pathogen damage. Above average growth indicators such as extension growth, leaf size and canopy density. Little or no canopy die-back. Generally no dead wood on the perimeter of the canopy. Good wound wood development.</p> <p>Tree exhibits above average health and no works are required.</p>
➤ Fair	<p>Tree may have more than 30% dead wood, or may have minor canopy dieback. Foliage density may be slightly below average for the species. Foliage colour may be slightly lower than average and some discolouration may be present. Typical growth indicators, e.g. extension growth, leaf size, canopy density for species in location. Average wound wood development.</p> <p>The tree exhibits below average health and remedial works may be employed to improve health.</p>
➤ Poor	<p>Tree may have more than 30% dead wood and canopy die back may be present. Leaves may be discoloured and/or distorted, often small, and excessive epicormic growth may be present. Pathogens and/or stress agents may be present that could lead, or are leading to, the decline of tree. Poor wound wood development.</p> <p>The tree exhibits low health and remedial works or removal may be required.</p>
➤ Very poor	<p>The tree has more than 30% dead wood. Extensive canopy die back is present. Canopy is very sparse. Pathogens and/or stress agents are present that are leading to the decline of the tree. Very poor wound wood development.</p> <p>The tree exhibits very low health and remedial works or removal are required.</p>
➤ Dead	<p>Tree is dead and generally should be removed.</p>

20.7. Structure

Pertains to the physical structure of the tree including the main scaffold branches and roots. Structure includes those attributes that may influence the probability of major trunk, root or limb failure.

The notation of “Structure” is based on the following categories.

<u>Category</u>	<u>Example</u>
➤ Good	<p>The tree has a well-defined and balanced crown. Branch unions appear to be strong with no defects evident in the trunk or the branches. The tree is unlikely to suffer trunk or branch failure under normal conditions.</p> <p>The tree is considered a good example of the species with a well-developed form.</p>
➤ Fair	<p>The tree has some minor problems in the structure of the crown. The crown may be slightly out of balance and some branch unions may exhibit minor structural faults or have the potential to create faults. If the tree is single trunked, this may be on a slight lean or be exhibiting minor defects.</p> <p>These defects are not likely to result in catastrophic trunk or branch failure although some branch failure may occur under normal conditions.</p>
➤ Poor	<p>The tree has significant problems in the structure of the scaffold limbs or trunk. It may be lop-sided or have few branches on one side or have large gaps in the crown. Large branches may be rubbing or crossing over. Branch unions may be poor, and faults at the point of attachment or along the branches may be evident. The tree may have a substantial lean. The tree may have suffered significant root damage. The tree may have some degree of basal or trunk damage.</p> <p>These defects may predispose the tree to major trunk or branch failure.</p>
➤ Very poor	<p>The tree has some very significant problems in the structure of the crown. It may be lop-sided or have few branches on one side or have large gaps in the crown. Branches may be rubbing or crossing over and causing damage to each other. Branch unions may be poor, and faults at the point of attachment or along the branches may be evident. The tree may have a substantial lean. The tree may have suffered major root damage. The tree may have extensive basal or trunk damage.</p> <p>These defects are likely to predispose the tree to trunk or scaffold limb failure.</p>

20.8. U.L.E. (Useful Life Expectancy)

U.L.E. pertains to the span of time that the tree might reasonably be expected to provide useful amenity value with an acceptable level of safety at an acceptable cost. Depending on the situation, available financial resources and other factors, two identical trees may be accorded different longevity ratings.

The notation of U.L.E. is based on the following categories.

Category	Example
➤ 0	The tree is dead or almost dead or constitutes an immediate and unacceptable hazard. The tree should generally be removed unless other considerations require its' retention.
➤ 0 – 5	The tree is unlikely to provide useful amenity for longer than 5 years. The tree is in serious decline, poses an unacceptable hazard and/or requires a level of maintenance disproportionate with its' value. The tree should generally be removed unless other considerations require its' retention.
➤ 5 – 15	The tree is unlikely to provide useful amenity for longer than 15 years. The tree may be in serious decline, be a very short lived species, present a moderately elevated hazard and/or require high levels of maintenance. The tree could be retained or removed depending on the situation.
➤ 15 – 25	The tree is unlikely to provide useful amenity for longer than 25 years. The tree may be in moderate decline, be a short lived species, present a slightly elevated hazard and/or require moderate levels of maintenance. The tree should generally be retained unless other factors dictate its' removal.
➤ 25 – 50	The tree is likely to provide useful amenity for up to 50 years. The tree may be in fair to good condition, have a moderate life-span, present a low to moderate level of hazard and/or require moderate levels of maintenance. The tree should generally be retained unless other factors dictate its' removal.
➤ > 50	The tree is likely to provide useful amenity for greater than 50 years. The tree may be in good to excellent condition, a long lived species, present a low level of hazard and/or require low levels of maintenance. The tree should generally be retained unless other factors dictate its' removal.

21. Form

The notation of “Form” pertains to the aesthetic qualities of the trees live canopy. Generally good form is indicative of a symmetrical, well-balanced canopy although this is dependent on the particular species. Some species naturally develop an asymmetric canopy and in this case a highly irregular canopy might be described as good.

The form of a tree is considered assuming that the tree stands in isolation from any surrounding trees. This may mean that a group of trees that exhibit good form as a group, may be described as having poor form as individuals.

The notation of “Form” is based on the following categories.

<u>Category</u>	<u>Example</u>
➤ Very good	<p>An outstanding specimen of that species.</p> <p>Generally a very evenly balanced and symmetrical canopy with no deformation.</p> <p>If the development of that species is naturally irregular then an outstanding specimen of that species.</p>
➤ Good	<p>A good specimen of that species.</p> <p>Generally a well balanced and symmetrical canopy with minor deformation.</p> <p>If the development of that species is naturally irregular then a good specimen of that species.</p>
➤ Fair	<p>An average specimen of that species.</p> <p>Generally a balanced canopy with some minor to moderate asymmetry.</p> <p>If the development of that species is naturally irregular then an average specimen of that species.</p>
➤ Poor	<p>A below average specimen of that species.</p> <p>Generally a moderate to high degree of asymmetry.</p> <p>If the development of that species is naturally irregular then a poor specimen of that species.</p>
➤ Very poor	<p>A very poor specimen of that species.</p> <p>Generally a high to extreme degree of asymmetry.</p> <p>If the development of that species is naturally irregular then a very poor specimen of that species.</p>

22. Glossary / notes

<u>Tree Protection Zone (TPZ)</u>	Is based on AS 4970-2009 <i>Protection of trees on development sites</i> and defines the soil volume that is likely to be required to encompass enough of the trees absorbing root system to ensure the long term survival of the tree. The radius specified as the TPZ is an estimate of the minimum distance from the tree that excavation or other activities that might result in root damage should occur to avoid negative impacts on the health and longevity of the tree. AS 4970 states that intrusion of up to 10% of the surface area of the TPZ may occur without further assessment or analysis.
<u>Structural Root Zone (SRZ)</u>	<p>Is based on AS 4970-2009 (Protection of trees on development sites) and defines the likely spread of the trees scaffold root system. These roots are the primary anchoring roots for the tree and damage to these roots may render the tree liable to uprooting.</p> <p>SRZ is based on measurement of the trunk above the root flair (AS 4970) However in this report SRZ is based on the measured or estimated DBH and there should be taken as an estimate only. Additional measurement may be required if construction near the SRZ is expected to occur.</p>
<u>Modified Tree Protection Zone (mTPZ)</u>	Is based on the TPZ and includes any requirement to protect the above ground parts of the tree that project beyond the TPZ. However generally the mTPZ will be equal to the TPZ. TPZ extension beyond the TPZ to protect the tree canopy will be shown on the site plan but will not be reflected in the TPZ radius measurements quoted in this report.
<u>DBH (Diameter at Breast Height)</u>	Is the diameter of the tree at approximately 1.4 meters above ground level. Where a trunk is divided at or near 1.4 meters above ground the DBH is generally measured at the narrowest point of the trunk between ground level and 1.4 meters. Alternatively, where a higher level of accuracy is required with multi stemmed trees, DBH is derived from the combined cross sectional area of all trunks. The DBH of all accessible trees is measured unless otherwise stated in the Tree Data section of this report. The DBH of trees on adjoining properties is measured where access can be readily gained to the property, otherwise it is estimated.
<u>Measured</u>	Indicates whether the DBH has been measured or estimated. DBH may be estimated for small low value multi stem trees or trees that are inaccessible.
<u>Retained?</u>	Indicates whether the tree is shown as being removed or retained on the plans provided. This is generally derived from the site plans provided but the removal or retention of trees might be communicated by other means.

Recommendation reason	Pertains to the reason that removal or retention or other works are recommended. Other than trees on adjoining properties or road reserves a reason for retention is usually not given. In this case N/A is used.
Height & width	Tree height is generally measured for moderate, high and very high value trees and is measured with an Impulse Laser infrared range finder. The height of low and very low value trees is usually estimated. Canopy width is estimated unless otherwise stated.
Genus / species	The identification of trees is based on accessible visual characteristics and given that key identifying features are often not available at the time of assessment the accuracy of identification is not guaranteed. Where the species of any tree is not known, sp. is used.

23. Practice Note VCAT 2 — Expert Evidence

Name & address of consultant

Luke Fisher – Greenwood Consulting, 2 Vista Rd, Belgrave Heights, Victoria, 3160

Qualifications & experience

Luke Fisher has the following qualifications and experience:

- Diploma of Arboriculture.
- Over 10 years experience in arboriculture.
 - 10 years as a practical arborist and operations manager within both commercial and local government areas.

Area of expertise

Luke Fisher provides specialist technical advice in the field of arboriculture. This is predominantly from a practical background within local government municipalities and commercial companies.

Expertise to report

Luke Fisher has, by training, education, experience and research, knowledge relating to the care, maintenance and management of trees in a wide variety of contexts.

Significant areas of operation and expertise include the provision of tree management and maintenance, hazard assessment and tree condition appraisal.

Considerable effort is expended in research to remain current with the latest advances in all areas relating to tree care.

Declaration

“I have made all the inquiries that I believe are desirable and appropriate and that no matters of significance which I regard as relevant have to my knowledge been withheld from the Tribunal.”

24. Assumptions & limiting conditions

1. R. Greenwood Consulting Pty Ltd (herein after referred to as Greenwood Consulting) contracts with you on the basis that you promise that all legal information which you provide, including land title and ownership of other property, are correct. Greenwood Consulting is not responsible for verifying or ascertaining any of these issues.
2. Greenwood Consulting contracts with you on the basis that your promise that all affected property complies with all applicable statutes and subordinate legislation.
3. Greenwood Consulting will take all reasonable care to obtain necessary information from reliable sources and to verify data. However Greenwood Consulting neither guarantees nor is responsible for the accuracy of information provided by others.
4. If, after delivery of this report, you later require a representative of Greenwood Consulting to attend court to give evidence or to assist in the preparation for a hearing because of this report, you must pay an additional hourly fee at our then current rate for expert evidence.
5. Alteration of this report invalidates the entire report.
6. Greenwood Consulting retains the copyright in this report. Possession of the original or a copy of this report does not give you or anyone else any right of reproduction, publication or use without the written permission of Greenwood Consulting.
7. The contents of this report represent the professional opinion of the consultant. Greenwood Consulting's consultancy fee for the preparation of this report is in no way contingent upon the consultant reporting a particular conclusion of fact, nor upon the occurrence of a subsequent event.
8. Sketches, diagrams, graphs and photographs in this report are intended as visual aids, are not to scale unless stated to be so, and must not be construed as engineering or architectural reports or as surveys.
9. Unless expressly stated otherwise:
 - 9.1. The information in this report covers only those items which were examined and reflects the condition of those items at the time of the inspection.
 - 9.2. Our inspection is limited to visual examination of accessible components without dissection, excavation or probing. There is no warranty or guarantee, express or implied, that even if they were not present during our inspection, problems or defects in plants or property examined may not arise in the future.
10. This agreement supersedes all prior discussions and representations between Greenwood Consulting and the client on the subject, and is the entire agreement and understanding between us.

Yours sincerely,



Luke Fisher
AQF V. Dip. Arb.