79 Cabbage Tree Road, Bayview

Arboricultural Preliminary Assessment

Prepared for
Aveo Group

30 January 2018

DOCUMENT TRACKING

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Trees are living organisms. As such, their health and structure may alter, they will grow and their environmental circumstances may change from the time of the site inspection upon which this assessment is based. Trees, as with all living things, pose some level of risk.

Tree risk assessments are valid for 12 months after the date of inspection, unless otherwise stated. Any significant change to the subject tree(s) or surrounding environment, including significant or catastrophic storm/wind events will require the immediate re-inspection and assessment of the tree(s).

Trees fail in ways that the arboricultural community are yet to fully understand. There is no guarantee expressed or implied that failure or deficiencies may not arise of the subject trees in the future. No responsibility is accepted for damage to property or injury/death caused by the nominated trees.

Template 29/9/2015

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Abbreviations

Abbreviation	Description
AQF	Australian Qualifications Framework
AS	Australian Standards
DBH	Diameter at Breast Height
ELA	Eco Logical Australia
m	Metre
mm	Millimetre
NDE	Non-Destructive Excavation
NO	Number
NSW	New South Wales
SP	Species
SRZ	Structural Root Zone
TPZ	Tree Protection Zone
VTA	Visual Tree Assessment

1 Introduction

1.1 Purpose of this report

Eco Logical Australia Pty Ltd (ELA) was commissioned by Aveo Group Limited to prepare an arboricultural preliminary design assessment to trees within vacant land located at the northern part of 79 Cabbage Tree Road at Bayview.

The purpose of this report is to:

- identify the trees within the site that are likely to be affected
- assess the current overall health and condition of the subject trees
- evaluate the significance of the subject trees and assess their suitability for retention.

1.2 Proposal

The proposal is for the construction of a retirement village. The key features of the proposed upgrade works is for 25 independent living units.

1.3 Study area and subject trees

The study area is located within the property known as *Peninsula Gardens* at 79 Cabbage Tree Road, Bayview. Bayview is a suburb within the Northern Beaches Council local government area (LGA). Trees of the same species, with similar dimensions growing near each other, have been documented as a group and presented under a single way point. Further information, observations and measurements specific to each of the subject trees can be found in **Chapter 3.**

1.4 Documents and plans referenced

The conclusions and recommendations of this report are based on the *Australian Standard, AS 4970-2009, Protection of Trees on Development Sites*, the findings from the site inspections and analysis of the following documents/plans:

- *Masterplan Project No. 2017032A Drawing No. DA005* prepared by *Jackson Teece* Issue P1 dated December 2017
- *Partial Detail and Levels Over 79 Cabbage Tree Road Bayview NSW 2104* prepared by *Waterview Surveying Services*, Revision D, dated 3/1/18

2 Method

2.1 The field investigation

The subject trees were inspected on the 3rd, 4th and 6th October 2017 by an AQF Level 5 Arborist. Data was collected using Trimble Terraflex (GIS mapping) and the location of the trees are accurate to **2 to 3 metres only.**

2.2 Visual tree assessment

The subject trees were assessed in accordance with a stage one visual tree assessment (VTA) as formulated by Mattheck & Breloer (1994)[1], and practices consistent with modern arboriculture.

The following limitations apply to this methodology:

- Trees were inspected from ground level, without the use of any invasive or diagnostic tools and testing.
- Trees within adjacent properties or restricted areas were not subject to a complete visual inspection (i.e. defects and abnormalities may be present but not recorded).
- No aerial inspections or root mapping was undertaken.
- Tree heights, canopy spread and diameter at breast height (DBH) was estimated, unless otherwise stated.
- Tree identification was based on broad taxonomical features present and visible from ground level at the time of inspection.

2.3 Retention value

The retention value/importance of a tree or group of trees, is determined using a combination of environmental, cultural, physical and social values.

- **High**: These trees are considered important and should be retained and protected. Design modification or re-location of building/s should be considered to accommodate the setbacks as prescribed by Australian Standard AS4970 Protection of trees on development sites.
- **Medium**: These trees are moderately important for retention. Their removal should only be considered if adversely affected by the proposed works and all other alternatives have been considered and exhausted.
- **Low**: These trees are not considered important for retention, nor require special works or design modification to be implemented for their retention.

This tree retention assessment has been undertaken in accordance with the Institute of Australian Consulting Arboriculturists (IACA) Significance of a Tree, Assessment Rating System (STARS). Further details and assessment criteria are in **Appendix B**.

[1] VTA is an internationally recognised practice in the visual assessment of trees as prescribed by Mattheck, C. and Breloer, H. 1994. 'Field Guide for Visual Tree Assessment' *Arboricultural Journal*, Vol 18 pp 1-23.

2.4 Protection zones

2.4.1 Tree protection zone (TPZ)

The TPZ is the optimal combination of crown and root area (as defined by AS 4970-2009) that requires protection during the construction process. The TPZ is an area that is isolated from the work zone to ensure no disturbance or encroachment occurs into this zone. Tree sensitive construction measures must be implemented if works are to proceed within the Tree Protection Zone.

2.4.2 Structural root zone (SRZ)

The SRZ is the area of the root system (as defined by AS 4970-2009) used for stability, mechanical support and anchorage of the tree. It is critical for the support and stability of the tree, and provides the bulk of mechanical support and anchorage. Severance of roots (>50 mmØ) within the SRZ is generally not recommended as it may lead to the destabilisation and/or decline of the tree.

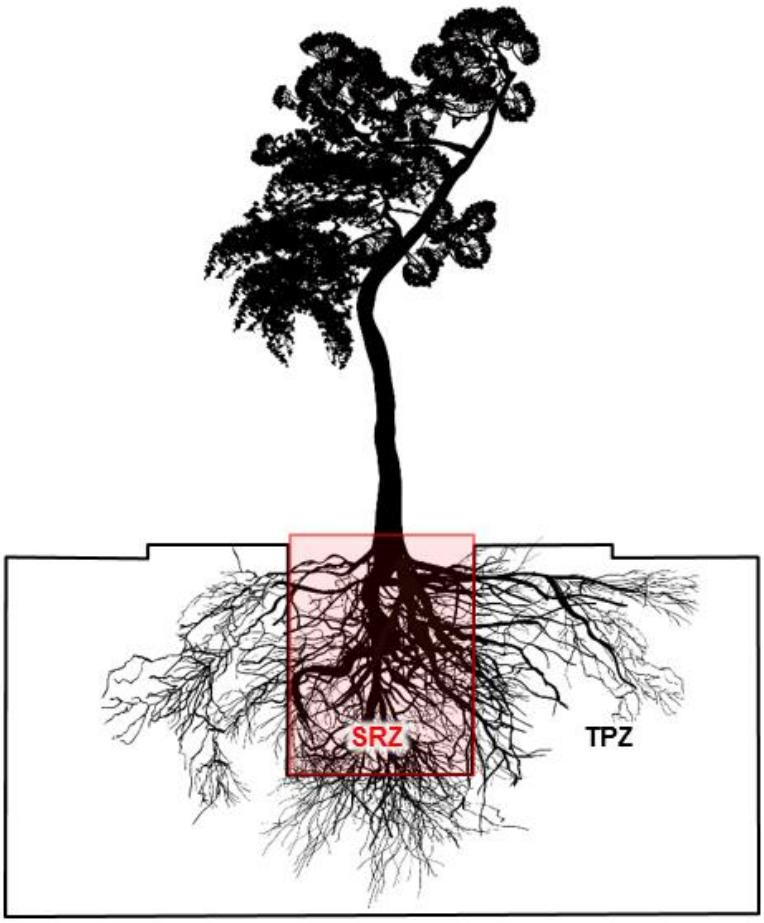


Figure 1: Indicative TPZ and SRZ

2.5 Root investigation

When assessing the potential impacts of encroachment into the TPZ consideration will need to be given to the location and distribution of the roots, including above or below ground restrictions affecting root growth. Location and distribution of roots may be determined through non-destructive excavation (NDE) methods such as hydro-vacuum excavation (sucker truck), air spade and manual excavation. Root investigation is used to determine the extent and location of roots within the zone of conflict. Root investigation does not guarantee the retention of the tree.

2.6 Impacts within the TPZ

- **No impact (0%):** No likely or foreseeable encroachment within the TPZ.

- **Low impact (<10%):** If the proposed encroachment is less than 10% (total area) of the TPZ, and outside of the SRZ, detailed root investigations should not be required. The area lost to this encroachment should be compensated for elsewhere, and be contiguous with the TPZ.

- **Medium impact (<20%):** If the proposed encroachment is greater than 10% of the TPZ and outside of the SRZ, the project arborist must demonstrate that the tree(s) remain viable. The area lost to this encroachment should be compensated for elsewhere, and be contiguous with the TPZ. All work within the TPZ must be carried out under the supervision of the project arborist.

- **High impact (>20%):** If the proposed encroachment is greater than 20% of the TPZ the SRZ may be impacted. Tree sensitive construction techniques may be used for minor works within this area providing no structural roots are likely to be impacted, and the project arborist can demonstrate that the tree(s) remain viable. Root investigation by non-destructive methods is essential for any proposed works within this area.

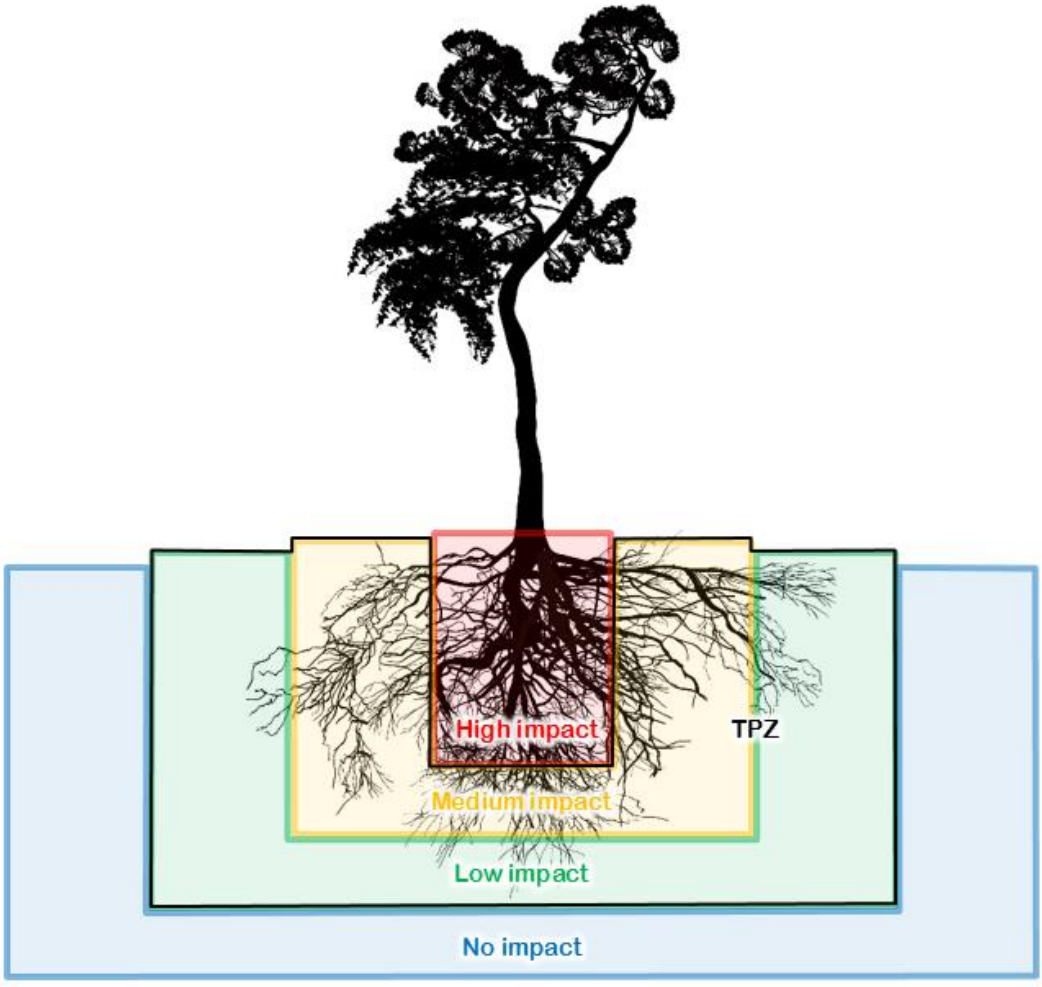


Figure 2: Indicative zones of impact within the TPZ

3 Results and discussion

3.1 Summary of site inspection data

- **Low retention value:** A total of **116** trees with a low retention value are recommended for removal.
- **Medium retention value:** A total of **96** trees with a medium retention value should be retained wherever possible, but should not be a constraint on the development.
- **High retention value**: A total of **8** trees with a high retention value are considered important for retention and should be retained and protected wherever possible. All opportunities for retaining these subject trees using design modification and tree sensitive construction techniques should be explored.
- **Offsetting:** any loss of trees should be offset with replacement planting in accordance with the relevant offset policy.

Table 1: Results of the arboricultural assessment

No.	Botanical Name	Trees In Group	Height (m)	Spread (m)	Health	Structure	**Retention value**	DBH (mm)	TPZ (mm)	SRZ (mm)
1	*Allocasuarina torulosa*	1	15	7	Fair	Fair	**Medium**	400	4800	2300
2	*Syzygium sp.*	1	10	5	Fair	Fair	**Medium**	400	4800	2300
3	*Angophora costata*	1	30	15	Fair	Fair	**Medium**	700	8400	2900
4	*Angophora costata*	1	27	16	Good	Fair	**Medium**	700	8400	2900
5	*Angophora costata*	1	30	16	Good	Good	**High**	900	10800	3200
6	*Syncarpia glomulifera*	1	15	6	Fair	Fair	**Medium**	400	4800	2300
7	*Syncarpia glomulifera*	1	15	7	Poor	Fair	**Low**	650	7800	2800
8	*Syncarpia glomulifera*	1	15	5	Poor	Fair	**Low**	500	6000	2500
9	*Allocasuarina torulosa*	1	11	3	Fair	Poor	**Low**	400	4800	2300
10	*Allocasuarina torulosa*	1	20	5	Fair	Poor	**Low**	500	6000	2500
11	*Syagrus romanzoffiana*	1	15	5	Fair	Poor	**Low**	600	7200	2700

No.	Botanical Name	Trees In Group	Height (m)	Spread (m)	Health	Structure	**Retention value**	DBH (mm)	TPZ (mm)	SRZ (mm)
12	*Syncarpia glomulifera*	1	15	5	Fair	Poor	**Low**	550	6600	2600
13	*Syncarpia glomulifera*	1	13	4	Fair	Fair	**Low**	450	5400	2400
14	*Allocasuarina torulosa*	1	17	4	Fair	Fair	**Medium**	450	5400	2400
15	*Syncarpia glomulifera*	1	15	5	Good	Fair	**Medium**	450	5400	2400
16	*Allocasuarina torulosa*	1	16	5	Fair	Fair	**Medium**	450	5400	2400
17	*Allocasuarina torulosa*	1	8	3	Fair	Poor	**Low**	200	2400	1700
18	*Syncarpia glomulifera*	1	16	4	Fair	Good	**Medium**	400	4800	2300
19	*Allocasuarina torulosa*	1	11	2	Poor	Poor	**Low**	400	4800	2300
20	*Ceratopetalum apetalum*	1	11	4	Good	Fair	**Medium**	300	3600	2000
21	*Allocasuarina torulosa*	1	21	3	Good	Fair	**Low**	400	4800	2300
22	*Allocasuarina torulosa*	1	17	4	Fair	Poor	**Medium**	450	5400	2400

No.	Botanical Name	Trees In Group	Height (m)	Spread (m)	Health	Structure	**Retention value**	DBH (mm)	TPZ (mm)	SRZ (mm)
23	*Syncarpia glomulifera*	1	15	5	Fair	Fair	**Medium**	400	4800	2300
24	*Allocasuarina torulosa*	1	22	4	Good	Good	**High**	600	7200	2700
25	*Allocasuarina torulosa*	1	17	4	Fair	Poor	**Low**	500	6000	2500
26	*Allocasuarina torulosa*	1	16	4	Fair	Fair	**Medium**	500	6000	2500
27	*Allocasuarina torulosa*	1	16	5	Fair	Poor	**Low**	550	6600	2600
28	*Syncarpia glomulifera*	1	20	9	Poor	Fair	**Low**	550	6600	2600
29	*Syncarpia glomulifera*	1	16	8	Good	Fair	**Medium**	600	7200	2700
30	*Syncarpia glomulifera*	1	20	9	Good	Fair	**Medium**	500	6000	2500
31	*Allocasuarina torulosa*	1	22	7	Fair	Poor	**Medium**	500	6000	2500
32	*Allocasuarina torulosa*	1	16	4	Good	Fair	**Medium**	500	6000	2500
33	*Allocasuarina torulosa*	1	24	6	Fair	Poor	**Low**	400	4800	2300

No.	Botanical Name	Trees In Group	Height (m)	Spread (m)	Health	Structure	**Retention value**	DBH (mm)	TPZ (mm)	SRZ (mm)
34	*Syncarpia glomulifera*	1	16	4	Fair	Fair	**Low**	450	5400	2400
35	*Allocasuarina torulosa*	1	16	3	Fair	Poor	**Low**	400	4800	2300
36	*Syncarpia glomulifera*	1	20	6	Good	Fair	**Medium**	500	6000	2500
37	*Syncarpia glomulifera*	1	17	4	Good	Fair	**Medium**	400	4800	2300
38	*Livistona australis*	1	15	4	Good	Good	**High**	450	5400	2400
39	*Allocasuarina torulosa*	1	15	6	Fair	Poor	**Low**	500	6000	2500
40	*Syncarpia glomulifera*	1	17	6	Good	Fair	**Medium**	400	4800	2300
41	*Syncarpia glomulifera*	1	16	5	Fair	Poor	**Low**	400	4800	2300
42	*Allocasuarina torulosa*	1	15	5	Poor	Poor	**Low**	550	6600	2600
43	*Syncarpia glomulifera*	1	30	15	Good	Good	**High**	900	10800	3200
44	*Allocasuarina torulosa*	1	15	6	Fair	Fair	**Low**	500	6000	2500

No.	Botanical Name	Trees In Group	Height (m)	Spread (m)	Health	Structure	**Retention value**	DBH (mm)	TPZ (mm)	SRZ (mm)
45	*Livistona australis*	1	12	2	Good	Good	**High**	550	6600	2600
46	*Allocasuarina torulosa*	1	22	9	Fair	Poor	**Low**	600	7200	2700
47	*Allocasuarina torulosa*	1	15	4	Fair	Poor	**Low**	450	5400	2400
48	*Syncarpia glomulifera*	1	30	12	Good	Fair	**Medium**	600	7200	2700
49	*Allocasuarina torulosa*	1	18	7	Good	Good	**High**	500	6000	2500
50	*Allocasuarina torulosa*	1	16	6	Poor	Poor	**Low**	650	7800	2800
51	*Allocasuarina torulosa*	1	20	6	Good	Fair	**Medium**	400	4800	2300
52	*Syncarpia glomulifera*	1	25	14	Fair	Fair	**Medium**	800	9600	3000
53	*Allocasuarina torulosa*	1	22	11	Good	Fair	**Medium**	600	7200	2700
54	*Allocasuarina torulosa*	1	15	5	Fair	Poor	**Low**	400	4800	2300
55	*Allocasuarina torulosa*	1	16	4	Fair	Poor	**Low**	400	4800	2300

No.	Botanical Name	Trees In Group	Height (m)	Spread (m)	Health	Structure	**Retention value**	DBH (mm)	TPZ (mm)	SRZ (mm)
56	*Syncarpia glomulifera*	1	14	6	Fair	Poor	**Low**	500	6000	2500
57	*Syncarpia glomulifera*	1	12	4	Fair	Fair	**Low**	400	4800	2300
58	*Allocasuarina torulosa*	1	13	4	Fair	Poor	**Low**	450	5400	2400
59	*Eucalyptus gummifera*	1	25	12	Good	Fair	**Medium**	700	8400	2900
60	*Syncarpia glomulifera*	1	17	4	Fair	Poor	**Low**	400	4800	2300
61	*Allocasuarina torulosa*	1	15	6	Fair	Fair	**Medium**	550	6600	2600
62	*Allocasuarina torulosa*	1	15	4	Fair	Fair	**Medium**	600	7200	2700
63	*Syncarpia glomulifera*	1	12	6	Fair	Fair	**Low**	550	6600	2600
64	*Allocasuarina torulosa*	1	9	3	Fair	Fair	**Low**	300	3600	2000
65	*Eucalyptus gummifera*	1	9	3	Poor	Poor	**Low**	300	3600	2000
66	*Allocasuarina torulosa*	1	7	2	Fair	Poor	**Low**	300	3600	2000

No.	Botanical Name	Trees In Group	Height (m)	Spread (m)	Health	Structure	**Retention value**	DBH (mm)	TPZ (mm)	SRZ (mm)
67	*Allocasuarina torulosa*	1	16	4	Fair	Poor	**Low**	550	6600	2600
68	*Allocasuarina torulosa*	1	17	6	Fair	Poor	**Medium**	650	7800	2800
69	*Allocasuarina torulosa*	3	14	3	Fair	Poor	**Low**	500	6000	2500
70	*Syncarpia glomulifera*	1	16	9	Fair	Fair	**Medium**	600	7200	2700
71	*Syncarpia glomulifera*	1	15	6	Fair	Fair	**Medium**	600	7200	2700
72	*Syncarpia glomulifera*	1	12	4	Fair	Poor	**Low**	550	6600	2600
73	*Syncarpia glomulifera*	1	11	5	Good	Fair	**Medium**	600	7200	2700
74	*Syncarpia glomulifera*	1	19	4	Good	Fair	**Medium**	550	6600	2600
75	*Syncarpia glomulifera*	1	16	6	Fair	Fair	**Medium**	500	6000	2500
76	*Syncarpia glomulifera*	1	27	10	Good	Fair	**Medium**	550	6600	2600
77	*Syncarpia glomulifera*	1	22	14	Good	Good	**High**	650	7800	2800

No.	Botanical Name	Trees In Group	Height (m)	Spread (m)	Health	Structure	**Retention value**	DBH (mm)	TPZ (mm)	SRZ (mm)
78	*Syncarpia glomulifera*	1	15	5	Fair	Fair	**Medium**	500	6000	2500
79	*Syncarpia glomulifera*	1	18	7	Good	Good	**High**	700	8400	2900
80	*Allocasuarina torulosa*	1	15	6	Fair	Good	**Medium**	500	6000	2500
81	*Syncarpia glomulifera*	1	16	5	Good	Fair	**Medium**	500	6000	2500
82	*Allocasuarina torulosa*	1	16	6	Fair	Fair	**Low**	500	6000	2500
83	*Syncarpia glomulifera*	1	16	7	Good	Fair	**Medium**	500	6000	2500
84	*Allocasuarina torulosa*	1	17	8	Poor	Poor	**Low**	650	7800	2800
85	*Allocasuarina torulosa*	1	17	6	Fair	Poor	**Low**	800	9600	3000
86	*Allocasuarina torulosa*	1	14	3	Fair	Fair	**Low**	550	6600	2600
87	*Allocasuarina torulosa*	1	19	7	Fair	Poor	**Low**	650	7800	2800
88	*Syncarpia glomulifera*	1	22	12	Good	Fair	**Medium**	850	10300	3100

No.	Botanical Name	Trees In Group	Height (m)	Spread (m)	Health	Structure	**Retention value**	DBH (mm)	TPZ (mm)	SRZ (mm)
89	*Syncarpia glomulifera*	1	16	5	Fair	Fair	**Low**	450	5400	2400
90	*Allocasuarina torulosa*	1	16	5	Poor	Poor	**Low**	500	6000	2500
91	*Eucalyptus robusta*	1	22	12	Fair	Fair	**Medium**	900	10800	3200
92	*Eucalyptus gummifera*	1	28	12	Poor	Fair	**Low**	1000	12000	3300
93	*Eucalyptus paniculata*	1	18	6	Fair	Poor	**Medium**	600	7200	2700
94	*Eucalyptus robusta*	1	15	6	Fair	Fair	**Medium**	600	7200	2700
95	*Allocasuarina torulosa*	1	11	4	Fair	Poor	**Low**	500	6000	2500
96	*Syncarpia glomulifera*	1	16	7	Fair	Poor	**Low**	500	6000	2500
97	*Eucalyptus robusta*	1	24	10	Fair	Fair	**Medium**	800	9600	3000
98	*Eucalyptus robusta*	1	25	12	Fair	Fair	**Medium**	800	9600	3000
99	*Allocasuarina torulosa*	1	15	5	Fair	Fair	**Medium**	600	7200	2700

No.	Botanical Name	Trees In Group	Height (m)	Spread (m)	Health	Structure	**Retention value**	DBH (mm)	TPZ (mm)	SRZ (mm)
100	*Syncarpia glomulifera*	1	12	5	Fair	Fair	**Low**	450	5400	2400
101	*Syncarpia glomulifera*	1	14	5	Fair	Fair	**Low**	450	5400	2400
102	*Syncarpia glomulifera*	1	12	4	Fair	Poor	**Low**	400	4800	2300
103	*Eucalyptus paniculata*	1	12	5	Fair	Fair	**Low**	500	6000	2500
104	*Syncarpia glomulifera*	1	11	3	Fair	Fair	**Medium**	450	5400	2400
105	*Angophora costata*	1	9	5	Fair	Poor	**Low**	400	4800	2300
106	*Eucalyptus paniculata*	1	15	6	Fair	Fair	**Medium**	500	6000	2500
107	*Syncarpia glomulifera*	1	9	4	Fair	Fair	**Medium**	450	5400	2400
108	*Syncarpia glomulifera*	1	11	5	Fair	Fair	**Medium**	750	9000	2900
109	*Syncarpia glomulifera*	1	20	4	Fair	Fair	**Low**	200	2400	1700
110	*Syncarpia glomulifera*	1	15	4	Fair	Fair	**Low**	300	3600	2000

No.	Botanical Name	Trees In Group	Height (m)	Spread (m)	Health	Structure	**Retention value**	DBH (mm)	TPZ (mm)	SRZ (mm)
111	*Allocasuarina torulosa*	1	15	3	Fair	Poor	**Low**	400	4800	2300
112	*Eucalyptus robusta*	1	20	11	Good	Fair	**Medium**	600	7200	2700
113	*Syncarpia glomulifera*	1	10	3	Fair	Fair	**Low**	400	4800	2300
114	*Allocasuarina torulosa*	1	20	6	Fair	Poor	**Low**	500	6000	2500
115	*Syncarpia glomulifera*	1	20	7	Fair	Poor	**Low**	500	6000	2500
116	*Syncarpia glomulifera*	1	15	6	Good	Fair	**Medium**	650	7800	2800
117	*Allocasuarina torulosa*	1	13	5	Good	Fair	**Low**	450	5400	2400
118	*Syncarpia glomulifera*	3	11	4	Fair	Fair	**Low**	350	4200	2100
119	*Allocasuarina torulosa*	1	15	6	Fair	Poor	**Low**	500	6000	2500
120	*Allocasuarina torulosa*	1	15	5	Fair	Fair	**Low**	500	6000	2500
121	*Allocasuarina torulosa*	1	12	3	Fair	Fair	**Low**	400	4800	2300

No.	Botanical Name	Trees In Group	Height (m)	Spread (m)	Health	Structure	**Retention value**	DBH (mm)	TPZ (mm)	SRZ (mm)
122	*Allocasuarina torulosa*	1	15	6	Fair	Fair	**Medium**	400	4800	2300
123	*Syncarpia glomulifera*	1	15	6	Fair	Poor	**Medium**	700	8400	2900
124	*Livistona australis*	1	8	4	Fair	Good	**Medium**	400	4800	2300
125	*Allocasuarina torulosa*	1	13	4	Fair	Good	**Medium**	400	4800	2300
126	*Livistona australis*	1	10	3	Fair	Fair	**Medium**	550	6600	2600
127	*Allocasuarina torulosa*	4	11	4	Fair	Fair	**Low**	400	4800	2300
128	*Ceratopetalum apetalum*	1	9	4	Good	Fair	**Low**	350	4200	2100
129	*Syncarpia glomulifera*	1	8	3	Fair	Fair	**Low**	350	4200	2100
130	*Syncarpia glomulifera*	5	10	4	Fair	Fair	**Medium**	400	4800	2300
131	*Syncarpia glomulifera*	1	13	6	Good	Fair	**Medium**	600	7200	2700
132	*Syncarpia glomulifera*	1	15	6	Fair	Fair	**Medium**	600	7200	2700

No.	Botanical Name	Trees In Group	Height (m)	Spread (m)	Health	Structure	**Retention value**	DBH (mm)	TPZ (mm)	SRZ (mm)
133	*Allocasuarina torulosa*	3	11	3	Fair	Fair	**Medium**	450	5400	2400
134	*Allocasuarina torulosa*	2	12	5	Fair	Fair	**Medium**	500	6000	2500
135	*Allocasuarina torulosa*	1	11	3	Fair	Fair	**Medium**	400	4800	2300
136	*Allocasuarina torulosa*	2	8	3	Poor	Poor	**Low**	200	2400	1700
137	*Allocasuarina torulosa*	2	9	3	Fair	Fair	**Low**	400	4800	2300
138	*Syncarpia glomulifera*	1	12	3	Fair	Fair	**Medium**	500	6000	2500
139	*Allocasuarina torulosa*	1	8	3	Fair	Fair	**Low**	300	3600	2000
140	*Allocasuarina torulosa*	1	15	9	Fair	Fair	**Medium**	700	8400	2900
141	*Allocasuarina torulosa*	2	6	3	Fair	Fair	**Low**	250	3000	1900
142	*Syncarpia glomulifera*	1	14	5	Good	Fair	**Medium**	450	5400	2400
143	*Allocasuarina torulosa*	1	12	5	Fair	Poor	**Low**	550	6600	2600

No.	Botanical Name	Trees In Group	Height (m)	Spread (m)	Health	Structure	**Retention value**	DBH (mm)	TPZ (mm)	SRZ (mm)
144	*Livistona australis*	3	4	4	Fair	Fair	**Medium**	600	7200	2700
145	*Allocasuarina torulosa*	3	8	3	Fair	Poor	**Low**	400	4800	2300
146	*Allocasuarina torulosa*	2	9	3	Fair	Poor	**Low**	300	3600	2000
147	*Allocasuarina torulosa*	1	9	3	Fair	Fair	**Low**	300	3600	2000
148	*Syncarpia glomulifera*	1	11	4	Fair	Fair	**Low**	500	6000	2500
149	*Allocasuarina torulosa*	3	8	3	Fair	Fair	**Low**	350	4200	2100
150	*Allocasuarina torulosa*	5	11	6	Fair	Fair	**Medium**	400	4800	2300
151	*Syncarpia glomulifera*	1	11	5	Fair	Fair	**Low**	450	5400	2400
152	*Syncarpia glomulifera*	2	15	5	Good	Fair	**Medium**	600	7200	2700
153	*Allocasuarina torulosa*	1	12	4	Fair	Fair	**Medium**	500	6000	2500
154	*Allocasuarina torulosa*	8	10	4	Fair	Poor	**Low**	450	5400	2400

No.	Botanical Name	Trees In Group	Height (m)	Spread (m)	Health	Structure	**Retention value**	DBH (mm)	TPZ (mm)	SRZ (mm)
155	*Allocasuarina torulosa*	1	11	5	Poor	Poor	**Low**	550	6600	2600
156	*Allocasuarina torulosa*	6	7	4	Fair	Fair	**Medium**	350	4200	2100
157	*Allocasuarina torulosa*	6	11	4	Fair	Fair	**Low**	450	5400	2400
158	*Allocasuarina torulosa*	6	9	3	Fair	Fair	**Low**	550	6600	2600
159	*Syncarpia glomulifera*	5	11	7	Fair	Fair	**Medium**	450	5400	2400
160	*Syncarpia glomulifera*	1	13	4	Good	Fair	**Medium**	500	6000	2500
161	*Angophora costata*	1	16	5	Fair	Fair	**Medium**	500	6000	2500
162	*Syncarpia glomulifera*	4	8	3	Fair	Fair	**Low**	400	4800	2300

4 Recommendations

4.1 Tree removal or pruning

- All tree work must be in accordance with Australian Standard AS 4373-2007, Pruning of Amenity Trees and the NSW WorkCover Code of Practice for the Amenity Tree Industry (1998).
- All tree work is to be carried out by an arborist with a minimum AQF Level 3 qualification in Arboriculture.
- Permission must be granted from the relevant consent authority, prior to removing or pruning of any of the subject trees.
- A tree management plan (see below) should be implemented for all trees proposed to be retained

4.2 Tree management plan

4.2.1 Mitigation measures

Encroachment within the TPZ must be offset with a range of mitigation measures to ensure that impacts to the subject tree(s) are reduced or restricted wherever possible. Mitigation must be increased relative to the level of encroachment within the TPZ to ensure the subject tree remains viable.

4.2.2 Tree protection measures

The following tree protection measures will be required if trees are retained:

- Tree protection fencing must be established around the perimeter of the TPZ. If the protective fencing requires temporary removal, trunk, branch and ground protection must be installed and must comply with AS 4970-2009 - Protection of trees on development sites. Existing fencing and site hoarding may be used as tree protection fencing.
- If temporary access for machinery is required within the TPZ, ground protection measures will be required. The purpose of ground protection is to prevent root damage and soil compaction within the TPZ. Ground protection may include a permeable membrane such as geotextile fabric beneath a layer of mulch, crushed rock or rumble boards.
- Any additional construction activities within the TPZ of the subject trees must be assessed and approved by the project arborist, and must comply with AS 4970-2009 - Protection of trees on development sites.

4.3 Offset planting

Any loss of trees should be offset with replacement planting in accordance with any relevant offset policy.

References

Australian Standard, AS 4373-2007*, Pruning of Amenity Trees*.

Australian Standard, AS 4970-2009, *Protection of Trees on Development Sites*.

Harris, R., Clark, J., Matheny, N. and Harris, V. 2004. *Arboriculture: Integrated Management of Landscape Trees, Shrubs and Vines*, Upper Saddle River, N.J.: Prentice Hall, London

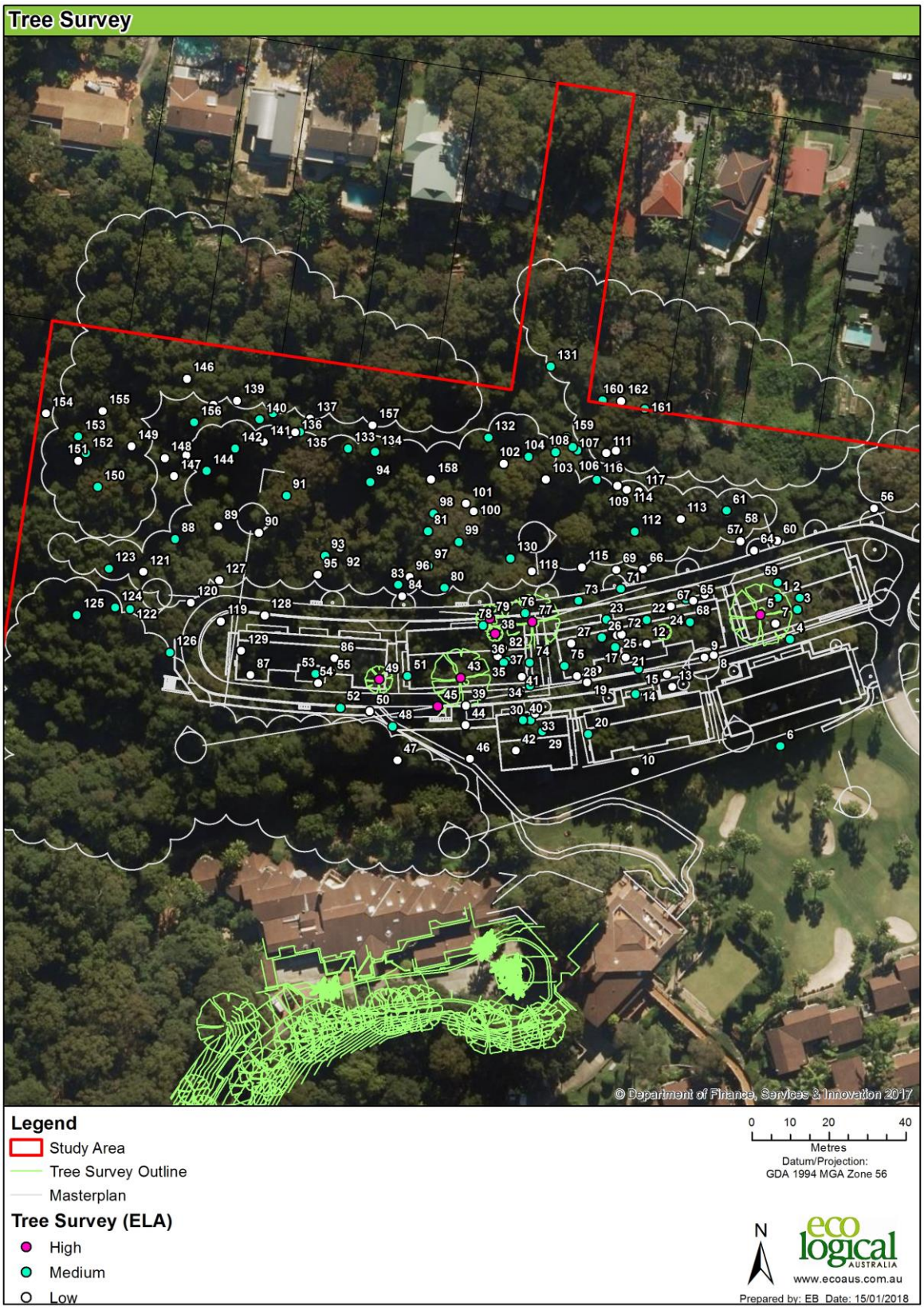
Robinson L, 2003, *Field Guide to the Native Plants of Sydney*, 3rd Edition, Simon & Schuster Australia

Mattheck, C. 2007. *Updated field guide for visual tree assessment*. Karlsruhe: Forschungszentrum Karlsruhe.

WorkCover NSW. 1998. *Code of Practice: Amenity Tree Industry*

Institute of Australian Consulting Arboriculturists (IACA) 2010. *IACA Significance of a Tree, Assessment Rating System (STARS).* Australia, www.iaca.org.au

Appendix A - Tree Location Map



Appendix B - Assessment rating system

Tree Significance - Assessment Criteria - STARS©		
Low	**Medium**	**High**
The tree is in fair-poor condition and good or low vigour. The tree has form atypical of the species The tree is not visible or is partly visible from the surrounding properties or obstructed by other vegetation or buildings The tree provides a minor contribution or has a negative impact on the visual character and amenity of the local area The tree is a young specimen which may or may not have reached dimensions to be protected by local Tree Preservation Orders or similar protection mechanisms and can easily be replaced with a suitable specimen The tree's growth is severely restricted by above or below ground influences, unlikely to reach dimensions typical for the taxa in situ – tree is inappropriate to the site conditions The tree is listed as exempt under the provisions of the local Council Tree Preservation Order or similar protection mechanisms The tree has a wound or defect that has the potential to become structurally unsound. The tree is an environmental pest species due to its invasiveness or poisonous/allergenic properties. The tree is a declared noxious weed by legislation	The tree is in fair to good condition The tree has form typical or atypical of the species The tree is a planted locally indigenous species or a common species with its taxa commonly planted in the local area The tree is visible from surrounding properties, although not visually prominent as partially obstructed by other vegetation or buildings when viewed from the street The tree provides a fair contribution to the visual character and amenity of the local area The tree's growth is moderately restricted by above or below ground influences, reducing its ability to reach dimensions typical for the taxa in situ	The tree is in good condition and good vigour The tree has a form typical for the species The tree is a remnant or is a planted locally indigenous specimen and/or is rare or uncommon in the local area or of botanical interest or of substantial age. The tree is listed as a heritage item, threatened species or part of an endangered ecological community or listed on Councils significant tree register The tree is visually prominent and visible from a considerable distance when viewed from most directions within the landscape due to its size and scale and makes a positive contribution to the local amenity. The tree supports social and cultural sentiments or spiritual associations, reflected by the broader population or community group or has commemorative values. The tree's growth is unrestricted by above and below ground influences, supporting its ability to reach dimensions typical for the taxa in situ – tree is appropriate to the site conditions.

Tree Significance

Useful Life Expectancy	High	Medium	Low		
Long >40 years					
Medium 15-40 years					
Short <1-15 years					
Dead					

Legend for Matrix Assessment

	Priority for retention (High): These trees are considered important for retention and should be retained and protected. Design modification or re-location of building/s should be considered to accommodate the setbacks as prescribed by the Australian Standard AS4970 Protection of trees on development sites. Tree sensitive construction measures must be implemented if works are to proceed within the Tree Protection Zone.
	Consider for retention (Medium): These trees may be retained and protected. These are considered less critical; however their retention should remain priority with the removal considered only if adversely affecting the proposed building/works and all other alternatives have been considered and exhausted.
	Consider for removal (Low): These trees are not considered important for retention, nor require special works or design modification to be implemented for their retention.
	Consider for removal (Low): These trees are not considered important for retention, nor require special works or design modification to be implemented for their retention.

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ISO 14001 Environmental Management

AS/NZS 4801:2001 Occupational Health and Safety Management

ISO 9001 Quality Management