

## Arboricultural Impact Assessment Report

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### 1. INTRODUCTION

1.1 Hugh The Arborist Pty Ltd have been instructed by the client Centuria Capital to provide an Arboricultural Impact Assessment Report to assess trees located on and adjoining the site that may be impacted by a proposed development.

### Table 1: Proposed Plans And Documents Reviewed For The Assessment

Title	Author	Date	Reference on document
Detail and Level Survey Plan	LTS	12/10/2020	51145001DT
Concept Bulk Earthworks Plan	Costin Roe Consulting	29/4/2024	Sheets 1 and 2 Issue C

- 1.2 The site assessment and tree data collection was carried out on 6<sup>th</sup> June 2023. Access was available to the subject site and adjoining public areas only. All tree data contained in this report was collected during this time.
- 1.3 The weather during of the site inspection was clear with average visibility.

### 2. SCOPE OF THE REPORT

- 2.1 This report has been undertaken to meet the following objectives.
- 2.1.1 Conduct a visual assessment from ground level of trees identified on the survey plan provided located on and adjoining the site that may be impacted by a proposed development.
- 2.1.2 For the purpose of this report, a tree taken to be a perennial plant with a selfsupporting stem with a height greater than 4 metres, a canopy spread of more than 3 metres and a trunk diameter of more than 75 millimetres when measured at 1 metre above ground level.
- 2.1.3 Determine the trees estimated contributing years, remaining useful life expectancy and award the trees a retention value.
- 2.1.4 Provide an assessment of the potential impact the proposed development is likely to have on the condition of the subject trees in accordance with AS4970 Protection of trees on development sites (2009).
- 2.1.5 Recommend methods to mitigate development impacts where appropriate.
- 2.1.6 Recommend pragmatic tree protection measures for any tree to be retained in accordance with AS4970 Protection of Trees on Development Sites 2009.



### 3. LIMITATIONS

- 3.1 The findings of this report are based on the observations and site conditions at the time inspection.
- 3.2 All observations were carried out from ground level. No detailed additional testing was carried out on trees or soil on site and none of the surrounding surfaces were lifted for investigation.
- 3.3 Trees that have not been included on the survey provided have been plotted using available setbacks on site. Therefore, their exact location and associated development impacts may vary.
- 3.4 Root decay can sometimes be present with no visual indication above ground. It is also impossible to know the extent of any root damage caused by mechanical damage such as underground root cutting during the installation of services without undertaking detailed root investigation. Any form of tree failure due to these activities is beyond the scope of this assessment.
- 3.5 The report reflects the subject tree(s) as found on the day of inspection. Any changes to the growing environment of the subject tree, or tree management works beyond those recommended in this report may alter the findings of the report. There is no warranty, expressed or implied, that problems or deficiencies relating to the subject tree, or subject site may not arise in the future.
- 3.6 Tree identification is based on accessible visual characteristics at the time of inspection. As key identifying features are not always available the accuracy of identification is not guaranteed. Where tree species is unknown, it is indicated with a spp.
- 3.7 All diagrams, plans and photographs included in this report are visual aids only and are not to scale unless otherwise indicated.
- 3.8 Hugh The Arborist neither guarantees, nor is responsible for, the accuracy of information provided by others that is contained within this report.
- 3.9 While an assessment of the subject trees estimated useful life expectancy is included in this report, no specific tree risk assessment has been undertaken for any of trees at the site.
- 3.10 The retention of trees subject to development impact is only feasible if all recommendations and specifications are followed accurately.



- 3.11 Sensitive methods of construction such as sub-surface boring, manual (or nondestructive excavation) and the use of structural soil for fill may have limitations where the engineering requirements of the design cannot be met using these methods or materials. These limitations may include pipe diameters, compaction and drainage requirements. Recommendations made in this report relating to amended methodology or materials should be reviewed by a professional qualified in the relevant field.
- 3.12 The ultimate safety of any tree cannot be categorically guaranteed. Even trees apparently free of defects can collapse or partially collapse in extreme weather conditions. Trees are dynamic, biological entities subject to changes in their environment, the presence of pathogens and the effects of ageing. These factors reinforce the need for regular inspections. It is generally accepted that hazards can only be identified from distinct defects or from other failure-prone characteristics of a tree or its locality.
- 3.13 Alteration of this report invalidates the entire report.

### 4. METHODOLOGY

- 4.1 The following information was collected during the assessment of the subject tree(s).
- 4.1.1 Tree common name
- 4.1.2 Tree botanical name
- 4.1.3 Tree age class
- 4.1.4 DBH (Trunk/Stem diameter at breast height/1.4m above ground level) millimetres.
- 4.1.5 Estimated height metres
- 4.1.6 Estimated crown spread (Radius of crown) metres
- 4.1.7 Health
- 4.1.8 Structural condition
- 4.1.9 Amenity value
- 4.1.10 Estimated remaining contribution years (SULE)<sup>1</sup>
- 4.1.11 Retention value (Tree AZ)<sup>2</sup>
- 4.1.12 Notes/comments

<sup>&</sup>lt;sup>1</sup> Barrell Tree Consultancy, SULE: Its use and status into the New Millennium, TreeAZ/03/2001, http://www.treeaz.com/.

<sup>&</sup>lt;sup>2</sup> Barrell Tree Consultancy, Tree AZ version 10.10-ANZ, <u>http://www.treeaz.com/</u>.



- 4.1.13 An assessment of the trees condition was made using the visual tree assessment (VTA) model (Mattheck & Breloer, 1994).<sup>3</sup>
- 4.1.14 Tree diameter was measured using a set of 400 millimetre metal callipers and a calculated DBH tape measure. All other measurements were estimations unless otherwise stated.
- 4.1.15 All DBH measurements, tree protection zones, and structural root zones were calculated in accordance with methods set out in AS4970 Protection of trees on development sites (2009) <sup>4</sup> and in some cases estimated. See appendices for information.
- 4.1.16 Details of how the observations in this report have been assessed are listed in the appendices.

### 5. SITE LOCATION AND BRIEF DESCRIPTION OF PROPOSAL

- 5.1 The site is located in the suburb of Wetherill Park within the Fairfield Council Local Government Area. This assessment has been carried out in accordance with the following policy and legislation.
- 5.1.1 Fairfield City Wide Development Control Plan 2013
- 5.1.2 Fairfield Local Environment Plan 2013
- 5.1.3 State Environmental Planning Policy (SEPP) (Biodiversity and Conservation Act) 2021
- 5.2 The subject site contains predominantly hard surfaces. The site contains multiple mature and semi mature trees of native and non-native origin.
- 5.3 The site has not been identified as within a heritage conservation area according to Councils LEP Maps.<sup>5</sup>
- 5.4 The proposed development comprises the demolition of existing buildings and structures, construction and operational use of a single-storey warehouse and distribution centre with ancillary office space and amenities, on-site parking, landscaping and access, and other associated works including bulk earthworks, site preparation works and site clearance, as well as augmentation and construction of servicing utilities.<sup>6</sup>

<sup>&</sup>lt;sup>3</sup> Mattheck, C. & Breloer, H., *The body language of trees - A handbook for failure analysis*, The Stationary Office, London, England (1994).

<sup>&</sup>lt;sup>4</sup> Council of Standards Australia, AS4970 Protection of trees on development sites (2009).

<sup>&</sup>lt;sup>5</sup> <u>https://eplanningdlprod.blob.core.windows.net/pdfmaps/2850\_COM\_HER\_010\_010\_20130117.pdf</u>

<sup>&</sup>lt;sup>6</sup> Centuria Capital



Image 1: Site location 7



# 6. OBSERVATIONS AND GENERAL INFORMATION IN RELATION TO PROTECTING TREES ON DEVELOPMENT SITES

6.1 **Tree information**: Details of each individual tree assessed, including the observations taken during the site inspection can be found in the tree inspection schedule in appendix 2, where the indicative tree protection zone (TPZ) for the subject trees has been calculated. The TPZ and SRZ should be measured in radius from the centre of the trunk. Trees have been awarded a retention value based on site observations. The system used to award the retention value is Tree AZ. Tree AZ is used to identify higher value trees worthy of being a constraint to development and lower value trees that should generally not be a constraint to the development. A field sheet of Tree AZ categories sheet (Barrell Tree Consultancy) has been included at the end of the report to assist with understanding the retention values. The retention value that has been allocated to the subject trees in this report is not definitive and should only be used as a guideline.

<sup>7</sup> https://www.google.com/maps



- 6.2 Site plans: The following site plans have been prepared in Appendix 1.
  - Appendix 1 Existing Site Plan
  - Appendix 1A Proposed Bulk Earthworks Plan Sheet 1
  - Appendix 1B Proposed Bulk Earthworks Plan Sheet 2

All site plans contain the tree identification numbers, canopy spread, Tree Protection Zone and Structural Root Zone overlaid.

- 6.3 **Tree protection zone (TPZ)**: The TPZ is principle means of protecting trees on development sites and is an area required to maintain the viability of trees during development. It is commonly observed that tree roots will extend significantly further than the indicative TPZ, however the TPZ is an area identified AS4970-2009 to be the extent where root loss or disturbance will generally impact the viability of the tree. The TPZ is identified as a restricted area to prevent damage to trees either above or below ground during a development. Where trees are intended to be retained proposed developments must provide an adequate TPZ around trees. The TPZ is set aside for the tree's root zone, trunk and crown and it is essential for the stability and longevity of the tree. The tree protection also incorporates the SRZ (see below for more information about the SRZ). The TPZ of palms, other monocots, cycads and tree ferns has been calculated at one metre outside the crown projection.
- 6.4 **Structural Root Zone (SRZ)**: This is the area around the base of a tree required for the trees stability in the ground. An area larger than the SRZ always needs to be maintained to preserve a viable tree. There are several factors that can vary the SRZ which include height, crown area, soil type and soil moisture. It can also be influenced by other factors such as natural or built structures. Generally work within the SRZ should be avoided. Soil level changes should also generally be avoided inside the SRZ of trees to be retained. Palms, other monocots, cycads and tree ferns do not have an SRZ.
- 6.5 **Minor encroachment into TPZ**: Sometimes encroachment into the TPZ is unavoidable. Encroachment includes but is not limited to activities such as excavation, compacted fill and machine trenching. Minor encroachment of up to 10% of the overall TPZ area is normally considered acceptable, providing there is space adjacent to the TPZ for the tree to compensate <u>and</u> the tree is displaying adequate vigour/health to tolerate changes to its growing environment.



6.6 **Major encroachment into TPZ**: Where encroachment of more than 10% of the overall TPZ area is proposed an Arborist must investigate and demonstrate that the tree will remain in a viable condition. In some cases, tree sensitive construction methods such as pier and beam footings, suspended slabs, or cantilevered sections, can be utilised to allow additional encroachment into the TPZ by bridging over roots and minimising root disturbance. Major encroachment is only possible if it can be undertaken without severing significant size roots, or if it can be demonstrated that significant roots will not be impacted.

### 7. ASSESSEMENT OF CONSTRUCTION IMPACTS

- 7.1 **Table 2:** The table below contains an impact summary of the proposed development impact to all trees included in the assessment. **Tree Protection Zone and Structural Root Zone have been abbreviated to TPZ and SRZ.**
- 7.2 The concept Bulk Earthworks Plans referenced in Table 1 of this report have been used for the basis of the tree assessment and are included in the appendices section of this report.

Tree ID	Botanical Name	Retention Value	TPZ radius (m)	SRZ Radius (m)	TPZ Encroachment	Discussion	Conclusion
1	Eucalyptus tereticornis	A2	6.1	2.7	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
2	Eucalyptus tereticornis	A2	3.7	2.3	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
3	Eucalyptus tereticornis	A1	5.0	2.4	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
4	Schinus molle	A1	4.6	2.4	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
5	Eucalyptus tereticornis	A2	4.9	2.4	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
6	Schinus molle	A1	4.7	2.5	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
7	Eucalyptus tereticornis	A2	3.2	2.3	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
8	Eucalyptus saligna	A1	4.4	2.3	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
9	Eucalyptus moluccana	Z1	2.0	1.7	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
10	Eucalyptus moluccana	A2	2.0	2.1	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
11	Eucalyptus saligna	A1	3.1	1.9	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
12	Eucalyptus tereticornis	A1	3.5	2.0	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove



Tree ID	Botanical Name	Retention Value	TPZ radius (m)	SRZ Radius (m)	TPZ Encroachment	Discussion	Conclusion
13	Eucalyptus tereticornis	A1	6.0	2.6	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
14	Eucalyptus moluccana	A1	2.9	2.1	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
15	Eucalyptus moluccana	A2	2.0	1.5	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
16	Eucalyptus moluccana	A1	3.3	2.3	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
17	Eucalyptus moluccana	A1	3.2	2.0	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
18	Eucalyptus moluccana	A1	3.3	2.0	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
19	Eucalyptus resinifera	Z4	2.2	1.7	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
20	Eucalyptus tereticornis	A1	4.4	2.3	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
21	Eucalyptus resinifera	A1	3.2	2.0	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
22	Eucalyptus moluccana	A2	3.4	2.4	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
23	Eucalyptus moluccana	A1	2.0	1.6	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
24	Eucalyptus grandis	A1	3.1	2.0	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove



Tree ID	Botanical Name	Retention Value	TPZ radius (m)	SRZ Radius (m)	TPZ Encroachment	Discussion	Conclusion
25	Eucalyptus moluccana	A1	3.8	2.1	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
26	Eucalyptus grandis	A2	2.0	1.5	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
27	Eucalyptus moluccana	A2	2.9	2.3	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
28	Eucalyptus resinifera	A1	3.2	2.0	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
29	Eucalyptus moluccana	A1	4.2	2.2	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
30	Eucalyptus grandis	Z4	2.0	1.6	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
31	Eucalyptus tereticornis	A1	4.6	2.3	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
32	Corymbia citriodora	Z10	3.1	2.0	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
33	Eucalyptus grandis	A1	4.7	2.3	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
34	Schinus molle	A1	3.5	2.0	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
35	Schinus molle	A1	3.0	2.3	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
36	Fraxinus excelsior	A2	2.4	2.1	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
37	Schinus molle	A1	4.3	2.4	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove



Tree	Botanical	Retention	TPZ	SRZ	TPZ	Discussion	Conclusion
ID	Name	Value	radius (m)	Radius (m)	Encroachment		
38	Schinus molle	A1	4.6	2.7	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
39	Schinus molle	A1	4.6	2.4	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
40	Eucalyptus grandis	Z10	4.6	2.3	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
41	Eucalyptus grandis	A1	3.8	2.2	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
42	Eucalyptus grandis	A1	4.0	2.1	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
43	Eucalyptus grandis	A1	4.9	2.4	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
44	Schinus molle	Z1	3.7	1.8	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
45	Schinus molle	Z1	2.0	1.8	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
46	Schinus molle	A1	4.4	2.3	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
47	Schinus molle	Z1	2.9	2.1	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
48	Schinus molle	A1	4.0	2.3	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
49	Schinus molle	A1	2.2	1.7	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
50	Schinus molle	A1	2.5	1.9	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
51	Schinus molle	Z1	2.0	1.5	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
52	Schinus molle	A1	2.8	1.8	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove



Tree ID	Botanical Name	Retention Value	TPZ radius	SRZ Radius	TPZ Encroachment	Discussion	Conclusion
			(m)	(m)			
53	Eucalyptus grandis	Z4	2.3	1.7	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
54	Eucalyptus grandis	A1	3.7	2.1	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
55	Eucalyptus grandis	A1	4.5	2.2	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
56	Waterhousia floribunda	A1	2.0	1.5	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
57	Fraxinus raywood	A1	2.3	1.7	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
58	Fraxinus excelsior	A1	4.0	2.2	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
59	Waterhousia floribunda	A1	2.0	1.5	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
60	Eucalyptus grandis	Z10	4.9	2.3	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
G1	Pyrus ussuriensis	A1	2.0	1.6	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
61	Eucalyptus grandis	A1	4.3	2.2	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
62	Eucalyptus grandis	A1	3.2	2.0	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
63	Eucalyptus grandis	Z10	4.6	2.2	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
64	Eucalyptus grandis	Z4	4.1	2.3	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
65	Eucalyptus grandis	A1	5.0	2.4	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
66	Corymbia maculata	A2	4.4	2.2	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove



Tree ID	Botanical Name	Retention Value	TPZ radius	SRZ Radius	TPZ Encroachment	Discussion	Conclusion
		, and a	(m)	(m)			
67	Corymbia maculata	A1	4.6	2.3	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
68	Corymbia maculata	A1	4.0	2.1	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
69	Corymbia maculata	A1	4.2	2.3	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
70	Eucalyptus paniculata	A2	3.5	2.4	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
71	Eucalyptus paniculata	A1	4.0	2.3	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
72	Corymbia maculata	A1	4.7	2.3	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
73	Corymbia maculata	A1	3.2	2.0	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
74	Corymbia maculata	A1	5.0	2.5	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
75	Fraxinus excelsior	A1	3.3	2.3	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
76	Fraxinus excelsior	A1	4.2	2.5	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
77	Fraxinus excelsior	A1	2.6	2.2	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
78	Eucalyptus grandis	A1	4.3	2.3	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
79	Eucalyptus grandis	A1	4.8	2.5	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
80	Melaleuca quinquenervia	A2	2.9	2.0	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
81	Pyrus ussuriensis	A1	3.5	2.0	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove



Tree ID	Botanical Name	Retention Value	TPZ radius	SRZ Radius	TPZ Encroachment	Discussion	Conclusion
82	Platanus Spp.	A1	(m) 2.6	(m) 1.8	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
83	Platanus Spp.	A1	3.0	1.9	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
84	Pyrus ussuriensis	A1	3.2	1.8	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
85	Melaleuca quinquenervia	Z1	2.3	1.6	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
86	Corymbia citriodora	A1	4.1	2.3	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
87	Fraxinus excelsior	Z1	2.0	1.8	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
88	Fraxinus raywood	Z1	2.0	1.6	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
89	Corymbia maculata	AA1	7.0	2.8	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
90	Pyrus ussuriensis	A1	2.4	1.7	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
91	Pyrus ussuriensis	A1	2.2	1.7	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
92	Pyrus ussuriensis	A1	2.2	1.7	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
93	Pyrus ussuriensis	A1	2.2	1.7	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
94	Pyrus ussuriensis	A1	2.2	1.7	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
95	Schinus molle	A1	2.8	2.1	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
96	Schinus molle	A1	2.8	2.1	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove



Tree ID	Botanical Name	Retention Value	TPZ radius (m)	SRZ Radius (m)	TPZ Encroachment	Discussion	Conclusion
97	Schinus molle	Z1	2.0	1.7	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
98	Schinus molle	A1	2.4	1.8	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
99	Eucalyptus resinifera	A1	2.0	1.8	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
100	Eucalyptus grandis	A1	5.9	2.5	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
101	Pyrus ussuriensis	A1	2.5	1.8	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
102	Pyrus ussuriensis	A1	2.3	1.7	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
103	Pyrus ussuriensis	A1	2.0	1.6	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
104	Pyrus ussuriensis	A1	2.2	1.6	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
105	Fraxinus raywood	A1	2.0	1.8	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
106	Eucalyptus tereticornis	A1	4.6	2.3	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
107	Eucalyptus tereticornis	A1	4.1	2.2	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
108	Eucalyptus tereticornis	A1	15.3	3.9	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
109	Olea europaea subsp. cuspidata	Z3	2.0	1.6	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove



Tree ID	Botanical Name	Retention Value	TPZ radius (m)	SRZ Radius (m)	TPZ Encroachment	Discussion	Conclusion
110	Melaleuca linarifolia	Z1	2.0	1.5	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
111	Melaleuca linarifolia	A1	2.0	1.5	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
112	Melaleuca linarifolia	A1	2.0	1.5	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
113	Melaleuca linarifolia	A1	2.6	1.8	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
114	Olea europaea subsp. cuspidata	Z3	2.3	1.7	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
115	Melaleuca styphelioides	A1	2.8	2.0	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
116	Melaleuca linarifolia	A1	3.6	2.1	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
117	Melaleuca styphelioides	A1	2.4	1.8	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
118	Melaleuca styphelioides	A1	4.8	2.4	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
119	Melaleuca styphelioides	A1	3.0	2.0	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
G2	Ligustrum lucidum	Z3	2.4	2.0	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove



Tree ID	Botanical Name	Retention Value	TPZ radius	SRZ Radius	TPZ Encroachment	Discussion	Conclusion
			(m)	(m)			
120	Melaleuca linarifolia	A1	3.9	2.4	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
121	Eucalyptus tereticornis	A2	5.0	2.5	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
122	Eucalyptus tereticornis	A1	4.9	2.4	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
123	Eucalyptus tereticornis	Z10	2.6	1.7	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
124	Eucalyptus tereticornis	A2	4.7	2.4	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
125	Callistemon viminalis	A1	2.5	1.7	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
126	Callistemon viminalis	A2	2.4	2.0	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
127	Melaleuca linarifolia	A1	4.1	2.2	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
128	Eucalyptus tereticornis	A2	4.8	2.3	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
129	Melaleuca linarifolia	A1	2.3	1.7	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
130	Melaleuca linarifolia	A1	2.2	1.7	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
131	Melaleuca linarifolia	A1	2.9	1.9	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove



Tree ID	Botanical Name	Retention Value	TPZ radius	SRZ Radius	TPZ Encroachment	Discussion	Conclusion
	Humo	Value	(m)	(m)	Lineredeninent		
132	Eucalyptus tereticornis	A1	5.0	2.4	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
133	Melaleuca linarifolia	A1	2.4	1.8	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
134	Melaleuca linarifolia	A1	2.8	2.1	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
135	Melaleuca linarifolia	A1	3.0	1.8	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
136	Eucalyptus tereticornis	A1	5.3	2.4	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
137	Melaleuca linarifolia	A1	2.2	1.7	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
138	Melaleuca styphelioides	A1	2.2	1.7	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
139	Melaleuca linarifolia	A1	2.2	1.7	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
140	Melaleuca linarifolia	A1	2.2	1.7	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
141	Eucalyptus tereticornis	A1	6.0	2.6	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
142	Melaleuca styphelioides	A1	3.5	2.0	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
143	Melaleuca styphelioides	A1	3.5	2.4	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
144	Schinus molle	A1	6.8	2.6	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
145	Eucalyptus paniculata	A2	3.4	2.1	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
146	Eucalyptus paniculata	A2	3.4	2.1	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove



Tree ID	Botanical Name	Retention Value	TPZ radius	SRZ Radius	TPZ Encroachment	Discussion	Conclusion
			(m)	(m)	_		
147	Eucalyptus paniculata	A1	3.4	2.0	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
148	Eucalyptus tereticornis	A2	4.5	2.3	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
149	Eucalyptus tereticornis	A2	4.9	2.4	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
150	Eucalyptus tereticornis	A1	4.4	2.4	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
151	Eucalyptus tereticornis	Z10	2.9	2.1	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
152	Eucalyptus tereticornis	A1	4.9	2.4	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
153	Eucalyptus tereticornis	Z10	2.0	1.8	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
154	Eucalyptus tereticornis	A1	6.0	2.6	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
155	Eucalyptus tereticornis	A2	4.9	2.4	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
156	Eucalyptus tereticornis	A2	3.9	2.5	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
157	Eucalyptus grandis	Z4	3.0	1.9	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
158	Eucalyptus grandis	Z4	4.8	2.4	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
159	Eucalyptus grandis	Z10	4.9	2.4	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
160	Eucalyptus moluccana	Z10	2.0	1.5	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove



Tree	Botanical	Retention	TPZ	SRZ	TPZ	Discussion	Conclusion
ID	Name	Value	radius (m)	Radius (m)	Encroachment		
161	Eucalyptus tereticornis	A1	4.8	2.4	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
162	Eucalyptus tereticornis	A1	5.0	2.4	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
163	Eucalyptus tereticornis	A1	4.1	2.6	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
164	Eucalyptus tereticornis	A1	4.9	2.4	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
165	Eucalyptus tereticornis	A1	4.8	2.3	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
166	Eucalyptus tereticornis	Z4	3.6	2.1	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
167	Eucalyptus tereticornis	A2	5.0	2.3	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
168	Eucalyptus tereticornis	A1	4.7	2.3	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
169	Eucalyptus grandis	Z10	4.2	2.3	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
170	Eucalyptus tereticornis	A2	4.7	2.3	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
171	Eucalyptus grandis	A1	4.0	2.2	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
172	Eucalyptus tereticornis	A1	4.1	2.2	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
173	Eucalyptus tereticornis	A1	4.8	2.3	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
174	Eucalyptus grandis	A1	4.0	2.1	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove



Tree ID	Botanical Name	Retention Value	TPZ radius (m)	SRZ Radius (m)	TPZ Encroachment	Discussion	Conclusion
175	Eucalyptus grandis	Z10	4.8	2.3	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
176	Eucalyptus grandis	A1	4.4	2.2	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
177	Eucalyptus grandis	A1	4.1	2.2	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
178	Corymbia maculata	A2	4.5	2.3	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
179	Corymbia maculata	A1	4.4	2.3	Footprint	Tree located within the footprint of bulk earthworks and is not retainable under the proposal.	Remove
180	Eucalyptus moluccana	A1	2.6	1.8	None	Tree located on adjoining land. No encroachment proposed.	Retain and protect
181	Eucalyptus moluccana	A1	3.5	2.0	Major	Tree located on adjoining land. The tree has been identified as within a 6m wide Sydney Water drainage easement. The tree will be subject to up to 50% encroachment within the TPZ and the SRZ from proposed bulk earthworks which is likely to significantly affect the viability of the tree resulting in the trees removal. Trees on adjoining sites cannot be removed without the tree owner's permission and approval from the relevant Consent Authority.	Tree on adjoining site impacted
182	Eucalyptus moluccana	A1	2.6	2.0	None	Tree located on adjoining land. No encroachment proposed.	Retain and protect
183	Erythrina x sykesii	Z3	4.3	2.5	Major	Tree located on adjoining land. The tree has been identified as within a 6m wide Sydney Water drainage easement. The tree will be subject to up to 50% encroachment within the TPZ and the SRZ from proposed bulk earthworks which is likely to significantly affect the viability of the tree resulting in the trees removal. Trees on adjoining sites cannot be removed without the	Tree on adjoining site impacted



Tree ID	Botanical Name	Retention Value	TPZ radius (m)	SRZ Radius (m)	TPZ Encroachment	Discussion	Conclusion
						tree owner's permission and approval from the relevant Consent Authority.	

### 8. CONCLUSIONS

8.1 <u>**Table 3:**</u> Summary of the impact to trees during the development. Refer to Appendix A and section 7 of this report for further detail.

Reason/	Tree ID Number	Total
Description		
Category A trees to be removed due to site grading, new surfacing and/or proximity to proposed structures	1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 13, 14, 15, 16, 17, 18, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 31, 33, 34, 35, 36, 37, 38, 39, 41, 42, 43, 46, 48, 49, 50, 52, 54, 55, 56, 57, 58, 59, G1, 61, 62, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 86, 89, 90, 91, 92, 93, 94, 95, 96, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 111, 112, 113, 115, 116, 117, 118, 119, 120, 121, 122, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 152, 154, 155, 156, 161, 162, 163, 164, 165, 167, 168, 170, 171, 172, 173, 174, 176, 177, 178, 179	149 Plus 1 Group
Category Z trees to be removed due to site grading, new surfacing and/or proximity to proposed structures or trees in poor condition.	9, 19, 30, 32, 40, 44, 45, 47, 51, 53, 60, 63, 64, 85, 87, 88, 97, 109, 110, 114, G2, 123, 151, 153, 157, 158, 159, 160, 166, 169, 175	30 and 1 Group
Category A trees that may be retained that will not be significantly impacted by the development works	180, 182	2
Category Z trees that may be retained that will not be significantly impacted by the development works	None	0
Trees on adjoining land that will be significantly impacted by the development works resulting in tree removal	181, 183	2



### 9. **RECOMMENDATIONS**

- 9.1 This report assesses the impact of a proposed development at the site on one hundred and eighty three (183) individual trees and two groups of trees located on and adjoining the site in accordance with AS4970 Protection of trees on development sites (2009).
- 9.2 A total of one hundred and seventy nine (179) trees and two groups of trees will require removing to facilitate the proposal. Of these, 149 and Group 1 are category A trees and 30 and Group 2 are category Z trees.
- 9.3 Two trees (T181 and T183) are located on an adjoining site and will be significantly impacted by the proposed works. The trees will both require removing as a result of the associated works. Trees on adjoining sites cannot be removed without the tree owner's permission and approval from the relevant Consent Authority.
- 9.4 Two trees (180 and 182) also located on adjoining land can be retained in a viable condition under the proposed works.
- 9.5 As a result of the required bulk earthworks throughout the site is it not considered possible to retain any existing trees. However, the tree removal should be offset with suitably sized replacement plantings as detailed in the accompanying Landscape Plans and Statement of Environmental Effects (SEE).
- 9.6 The following statement was made by Costin Roe Consulting regarding the proposed earthworks and confirming the point above. 'The proposed development requires cut to fill earthworks including excavations, placement of engineered fill, batter and retaining wall construction. Noting the building is sited generally below the existing street level there will be extensive batter and excavation works along the street frontage where the majority of existing trees are located. Further, noting the application is for a large industrial building there will be extensive foundation and footing constructions associated with the building construction. The works will necessitate the removal and revegetation of the landscape setback zones, within the site and around the boundaries of the property.'
- 9.7 Refer to the concept Bulk Earthworks plan referenced in Table 1. The following information explains how bulk earthworks impacts trees in the event it is required to be avoided or reduced.

### 9.8 Bulk Earthworks - Soil Level Modifications (Cut and Fill):

**Cut:** A trees root system is generally located far shallower in the soil than is normally considered and should be thought of as a 'root plate'. The majority of a trees root growth is usually found in the upper 600mm of the soil closest to the surface, but a percentage of the roots will extend deeper in the soil. An image has been included below that is taken from AS4970-2009 which provides an example of the structure of a trees root system. Any significant cut/lowering the soil level in the TPZ can impact



the tree. The only way to identify the precise impact to a trees root system by cut in the TPZ is by carrying out detailed root investigation to identify the individual significant roots. No detailed root investigations have been undertaken as part of the assessment.



Image A: An image from AS4970-2009 showing the structure of a trees root system in normal (unobstructed) growing conditions.

**Fill:** tree roots require air, water and nutrients to function properly. Increasing the soil level in the TPZ can impact the trees by reducing the availability of water, nutrients and air to the trees underlying root system and can cause the decline of a trees health and vigour. Placing fill directly against the trunk of a tree can potentially cause collar rot. Collar rot forms when soil against the trunk of the tree accelerates sapwood or heartwood decay.<sup>8</sup>

**Tree Sensitive Fill in the TPZ:** Fill material of less than 0.2 metres will not significantly impact trees. Where fill material of more than 0.2 metres is proposed in the TPZ, a structural/gap graded soil should be used that allows filtration of water, nutrients and gaseous exchange to the trees underlying root system. A suitable soil should consist of a mixing ratio of 80% angular size aggregate (crushed stone or coarse sand) and 20% filler soil by volume (clay loam). The aggregate size part should range from 1.5-2.5cm. The filler soil should contain 2-5% organic matter by

<sup>&</sup>lt;sup>8</sup> Dunster, Julian A., Thomas Smiley, Nelda Matheny, and Sharon Lilly, *Tree Risk Assessment Manual*, Champaign, Illinois: International Society of Arboriculture (2013), page 108.



dry weight. A soil specialist will be able to provide additional information in relation to soil specifications.

9.9 **Retaining Walls to Limit Cut and Fill in the TPZ:** The image below is an example of how a retaining wall can limit fill within the TPZ.



- 9.10 **Tree Sensitive Retaining Walls:** To reduce the impact of the retaining walls, timber sleeper retaining walls should be used to avoid severing/pruning significant roots in the TPZ (no continuous strip footing). During the construction of the retaining walls, all sleepers should be located on or above existing soil grades, and piers/posts locations should be flexible to avoid significant roots (roots greater than 40mm in diameter) that are critical to the health and stability of the tree. The project Arborist should directly supervise the construction of retaining walls and no roots greater than 40mm in diameter should be pruned/severed unless assessed and approved in writing by the project Arborist
- 9.11 All construction activity is recommended to comply with Australian Standard AS4970 Protection of Trees on Development Sites (2009), sections 7, 10 and 11 of this report.
- 9.12 This report does not provide approval for tree removal or pruning works. All recommendations in this report are subject to approval by the relevant authorities and/or tree owners.

<sup>&</sup>lt;sup>9</sup> Matheny, N. & Clark, J. R, *A technical guide to preservation of trees during land development*, International Society of Arboriculture, P.O Box 3029, Champaign, IL, USA (1998), page 98.



### 10. ARBORICULTURAL WORK METHOD STATEMENT (AMS) AND TREE PROTECTION REQUIREMENTS

- 10.1 **Use of this report:** All contractors must be made aware of the tree protection requirements prior to commencing works at the site and be provided a copy of this report.
- 10.2 **Project Arborist:** Prior to any works commencing at the site a project Arborist should be appointed. The project Arborist should be qualified to a minimum AQF level 5 and/or equivalent qualifications and experience, and should assist with any development issues relating to trees that may arise. If at any time it is not feasible to carryout works in accordance with this, an alternative must be agreed in writing with the project Arborist.
- 10.3 **Tree work:** All tree work must be carried out by a qualified and experienced Arborist with a minimum of AQF level 3 in arboriculture, in accordance with NSW Work Cover Code of Practice for the Amenity Tree Industry (1998) and AS4373 Pruning of amenity trees (2007).
- 10.4 **Initial site meeting/on-going regular inspections:** The project Arborist is to hold a pre-construction site meeting with principle contractor to discuss methods and importance of tree protection measures and resolve any issues in relation to tree protection that may arise. In accordance with AS4970-2009, the project Arborist should carryout regular site inspections to ensure works are carried out in accordance with this document throughout the development process. I recommend regular site inspections on a frequency based on the longevity of the project, this is to be agreed in the initial meeting.
- **10.5 Table 4 Site Specific Tree Protection Recommendations:**

Tree Number	Protection specification				
T180 and T182	- Site fencing will sufficiently isolate the trees.				

10.6 **Tree protection Specifications:** It is the responsibility of the principle contractor to install tree protection prior to works commencing at the site (prior to demolition works) and to ensure that the tree protection remains in adequate condition for the duration of the development. The tree protection must not be moved without prior agreement of the project Arborist. The project Arborist must inspect that the tree protection has been installed in accordance with this document and AS4970-2009 prior to works commencing.



- 10.7 **Protective fencing:** Where it is not feasible to install fencing at the specified location due to factors such restricting access to areas of the site or for constructing new structures, an alternative location and protection specification must be agreed with the project Arborist. Where the installation of fencing in unfeasible due to restrictions on space, trunk and branch protection will be required (see below). The protective fencing must be constructed of 1.8 metre 'cyclone chainmesh fence'. The fencing must only be removed for the landscaping phase and must be authorised by the project Arborist. Any modifications to the fencing locations must be approved by the project Arborist.
- 10.8 **TPZ signage:** Tree protection signage is to be attached to the protective fencing, displayed in a prominent position and the sign repeated at 10 metres intervals or closer where the fence changes direction. Each sign shall contain in a clearly legible form, the following information:
  - Tree protection zone/No access.
  - This fence has been installed to prevent damage to the tree/s and their growing environment both above and below ground. Do not move fencing or enter TPZ without the agreement of the project Arborist.
  - The name, address, and telephone number of the developer/builder and project Arborist
- 10.9 **Trunk and Branch Protection:** The trunk must be protected by wrapped hessian or similar material to limit damage. Timber planks (50mm x 100mm or similar) should then be placed around tree trunk. The timber planks should be spaced at 100mm intervals, and must be fixed against the trunk with tie wire, or strapping and connections finished or covered to protect pedestrians from injury. The hessian and timber planks must not be fixed to the tree in any instance. The trunk and branch protection shall be installed prior to any work commencing on site and shall be maintained in good condition for the entire development period.
- 10.10 **Mulch:** Any areas of the TPZ located inside the subject site (only trees to be retained directly adjacent to site works must be mulched to a depth of 75mm with good quality composted wood chip/leaf mulch.
- 10.11 **Ground Protection:** Ground protection is required to protect the underlying soil structure and root system in areas where it is not practical to restrict access to whole TPZ, while allowing space for construction. Ground protection must consist of good quality composted wood chip/leaf mulch to a depth of between 150-300mm, laid on top of geo textile fabric. If vehicles are to be using the area, additional protection will be required such as rumble boards or track mats to spread the weight of the vehicle and avoid load points. Ground protection is to be specified by the project Arborist as required.





<sup>&</sup>lt;sup>10</sup> Council of Standards Australia, AS4970 Protection of trees on development sites (2009), page 16.





<sup>&</sup>lt;sup>11</sup> Council of Standards Australia, AS4970 Protection of trees on development sites (2009), page 17.



- 10.12 **Root investigations:** Where major TPZ encroachments require demonstrating the viability of trees the following method for root investigations is to be used. Non-destructive excavations are to be carried out along the outer edge of proposed or existing structures within the TPZ (excavation methods include the use of pneumatic and hydraulic tools, high-pressure air or a combination of high-pressure water and a vacuum device). Excavations generally consist of a trench to a depth dictated by the location of significant roots, bedrock, unfavourable conditions for root growth, or the required depth for footings up to 1 metre. The investigation is to be carried out by AQF5 consulting Arborist who is to record all roots greater than 30 millimetres in diameter and produce a report discussing the significance of the findings. No roots 30 millimetres in diameter are to be frayed or damaged during excavation and the trench is to be backfilled as soon as possible to reduce the risk of roots drying out. In the event roots must be left exposed they are to be wrapped in hessian sack and regularly irrigated for the duration of exposure.
- 10.13 **Restricted activities inside TPZ:** The following activities must be avoided inside the TPZ of all trees to be retained unless approved by the project Arborist. If at any time these activities cannot be avoided an alternative must be agreed in writing with the project Arborist to minimise the impact to the tree.
  - A) Machine excavation.
  - B) Ripping or cultivation of soil.
  - C) Storage of spoil, soil or any such materials
  - D) Preparation of chemicals, including preparation of cement products.
  - E) Refueling.
  - F) Dumping of waste.
  - G) Wash down and cleaning of equipment.
  - H) Placement of fill.
  - I) Lighting of fires.
  - J) Soil level changes.
  - K) Any physical damage to the crown, trunk, or root system.
  - L) Parking of vehicles.
- 10.14 **Demolition:** The demolition of all existing structures inside or directly adjacent to the TPZ of trees to be retained must be undertaken in consultation with the project Arborist. Any machinery is to work from inside the footprint of the existing structures or outside the TPZ, reaching in to minimise soil disturbance and compaction. If it is not feasible to locate demolition machinery outside the TPZ of trees to be retained, ground protection will be required. The demolition should be undertaken inwards into the footprint of the existing structures, sometimes referred to as the 'top down, pull back' method.



- 10.15 Excavations and root pruning: The project Arborist must supervise and certify that all excavations and root pruning are in accordance with AS4373-2007 and AS4970-2009. For excavations within the TPZ, manual excavation is required along the edge of the structures closest to the subject trees. Manual excavation should be a depth of 1 metre (or to unfavourable root growth conditions such as bed rock or heavy clay, if agreed by project Arborist). Next roots must be pruned back in accordance with AS4373-2007. After all root pruning is completed, machine excavation is permitted within the footprint of the structure. For tree sensitive footings, such as pier and beam, all excavations inside the TPZ must be manual. Manual excavation may include the use of pneumatic and hydraulic tools, high-pressure air or a combination of high-pressure water and a vacuum device. No pruning of roots greater 30mm in diameter is to be carried out without approval of the project arborist. All pruning of roots greater than 10mm in diameter must be carried out by a gualified Arborist/Horticulturalist with a minimum AQF level 3. Root pruning is to be a clean cut with a sharp tool in accordance with AS4373 Pruning of amenity trees (2007).<sup>12</sup> The tree root is to be pruned back to a branch root if possible. Make a clean cut and leave as small a wound as possible.
- 10.16 **Landscaping:** All landscaping works within the TPZ of trees to be retained are to be undertaken in consultation with a consulting Arborist to minimize the impact to trees. General guidance is provided below to minimise the impact of new landscaping to trees to be retained.

**New footpaths** and hard surfaces should be minimised, as they can limit the availability of water, nutrients and air to the trees root system. Where they are proposed, they should be constructed on or above existing soil grades to minimise root disturbance and consider using a permeable surface. Footpath should be located outside the SRZ.

**The location of new plantings** inside the TPZ of trees to be retained should be flexible to avoid unnecessary damage to tree roots greater than 30mm in diameter.

**Sediment and Contamination:** All contamination run off from the development such as but not limited to concrete, sediment and toxic wastes must be prevented from entering the TPZ at all times.

10.17 **Tree Wounding/Injury:** Any wounding or injury that occurs to a tree during the construction process will require the project Arborist to be contacted for an assessment of the injury and provide mitigation/remediation advice. It is generally accepted that trees may take many years to decline and eventually die from root damage. All repair work is to be carried out by the project Arborist, at the contractor's expense.

<sup>&</sup>lt;sup>12</sup> Council Of Standards Australia, AS 4373 Pruning of amenity trees (2007) page 18



10.18 **Completion of Development Works:** After all construction works are complete the project Arborist should assess that the subject trees have been retained in the same condition and vigour. If changes to condition are identified the project Arborist should provide recommendations for remediation.

### 11. HOLD POINTS

11.1 **Hold Points:** Below is a sequence of hold points requiring project Arborist certification throughout the development process. It provides a list of hold points that must be checked and certified. All certification must be provided in written format upon completion of the development. The final certification must include details of any instructions for remediation undertaken during the development.

Hold Point	Stage	Responsibility	Certification	Complete Y/N and date
Project Arborist to hold pre construction site meeting with principal contractor to discuss methods and importance of tree protection measures and resolve any issues in relation to feasibility of tree protection requirements that may arise.	Prior to work commencing.	Principle contractor	Project Arborist	
Project Arborist To supervise all pruning works to retained trees.	Prior to works commencing	Principal Contractor	Project Arborist	
Project Arborist to assess and certify that tree protection has been installed in accordance with section 11 and AS4970-2009 prior to works commencing at site.	Prior to development work commencing.	Principle contractor	Project Arborist	
In accordance with AS4970-2009 the project arborist should carry out regular site inspections to ensure works are carried out in accordance with the recommendations. I recommend site inspections on a monthly frequency.	Ongoing throughout the development	Principle contractor	Project Arborist	
Project Arborist to supervise all manual excavations and demolition inside the TPZ of any tree to be retained.	Construction	Principle contractor	Project Arborist	



Hold Point	Stage	Responsibility	Certification	Complete Y/N and date
Project Arborist to certify that all pruning of roots greater than 40mm in diameter has been carried out in accordance with AS4373-2007. All root pruning must be carried out by a qualified Arborist/Horticulturalist with a minimum AQF level 3.	Construction	Principle contractor	Project Arborist	
Project Arborist to certify that all underground services including storm water inside TPZ of any tree to be retained have been installed in accordance with AS4970-2009.	Construction	Principle contractor	Project Arborist	
All landscaping works within the TPZ of trees to be retained are to be undertaken in consultation with the project Arborist to minimize the impact to trees.	Landscape	Principle contractor	Project Arborist	
After all construction works are complete the project Arborist should assess that the subject trees have been retained in the same condition and vigor and authorize the removal of protective fencing. If changes to condition are identified the project Arborist should provide recommendations for remediation.	Upon completion of construction	Principle contractor	Project Arborist	
Any wounding or injury that occurs to a tree during the demolition/construction process will require the project arborist to be contacted for an assessment of the injury and provide mitigation/remediation advice. All remediation work is to be carried out by the project arborist, at the contractor's expense.	Ongoing throughout the development	Principle contractor	Project Arborist	


## 12. BIBLIOGRAPHY/REFERENCES

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### 13. LIST OF APPENDICES

The following are included in the appendices that have been provided as separate documents to this report:

Appendix 1 – Existing Site Plan Appendix 1A – Proposed Bulk Earthworks Plan Sheet 1 Appendix 1B – Proposed Bulk Earthworks Plan Sheet 2 Appendix 3 – Health Appendix 4 – Amenity Value Appendix 5 – Age Class Appendix 6 – Structural Condition Appendix 7 – SULE Categories Appendix 8 – Retention Values Appendix 9 – Trees AZ Appendix 10 – TPZ Encroachment

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> Report on trees at: 88 Newton Road Wetherill Park Prepared for: Centuria Capital Ltd Prepared by: Hugh Millington, hugh@hughtheArborist.com.au Date prepared: 1<sup>st</sup> May 2024 Revision A









				1					-		_									_	
Tree ID	Common Name	Botanical Name	Age Class	Height (m)	Canopy Spread Radius (m)	Stem 1 (mm)	Stem 2 (mm)	Stem 3	Stem 4	Stem 5	Stem 6	DBH (mm)	DAB (mm)	Health	Structure	Landscape Value	SULE	Trees AZ Value	TPZ Radius (m)	SRZ Radius (m)	Notes
1	Forest Red Gum	Eucalyptus tereticornis	Semi-mature	11	5	510						510	608	Fair	Good	Moderate	2. Medium	A2	6.1	2.7	
2	Forest Red Gum	Eucalyptus tereticornis	Semi-mature	8	5	310						310	400	Fair	Good	Moderate	2. Medium	A2	3.7	2.3	
3	Forest Red Gum	Eucalyptus tereticornis	Semi-mature	15		420						420	450	Good	Good	High	1.Long	A1	5.0	2.4	
4	Peppercorn Tree	Schinus molle	Mature	7	5	260	210	190				384	480	Good	Good	Moderate	-	A1	4.6	2.4	
5	Forest Red Gum Peppercorn Tree	Eucalyptus tereticornis Schinus molle	Semi-mature Mature	11 8		410 390						410 390	450 500	Fair Good		Moderate	2. Medium 1.Long	A2 A1	4.9 4.7	2.4 2.5	
7	Forest Red Gum	Eucalyptus tereticornis	Young	8			180	50	50	50		269	400	Good	Fair		2. Medium		3.2	2.3	
8	Sydney Blue Gum	Eucalyptus saligna	Semi-mature	9		370						370	400	Good	Good	High	1.Long	A1	4.4	2.3	
9	Grey Box	Eucalyptus moluccana	Young	5	1	80	80	80	50	50		156	200	Good	Fair	Low	2. Medium	Z1	2.0	1.7	
10	Grey Box	Eucalyptus moluccana	Young	5		80	80	50	50	50		142	350	Good	Fair	Moderate		A2	2.0	2.1	
11	Sydney Blue Gum	Eucalyptus saligna	Semi-mature		5	260						260	280	Good	Good	High	1.Long	A1	3.1	1.9	
12	Forest Red Gum	Eucalyptus tereticornis	Semi-mature	9	5	290						290	310	Good	Good	High	1.Long	A1	3.5	2.0	
13 14	Forest Red Gum Grey Box	Eucalyptus tereticornis Eucalyptus moluccana	Semi-mature Young	10 7		501 190	150					501 242	550 350	Good Good	Good Good	High High	1.Long 1.Long	A1 A1	6.0 2.9	2.6	
14	Grey Box	Eucalyptus moluccana	Young		3	120	150					120	130	Fair	Good	-	2. Medium		2.9	1.5	
16	Grey Box	Eucalyptus moluccana	Young	8		160	170	100	100			273	410	Good	Good	High	1.Long	A1	3.3	2.3	
17	Grey Box	Eucalyptus moluccana	Semi-mature	9	4	270						270	300	Good	Good	High	1.Long	A1	3.2	2.0	
18	Grey Box	Eucalyptus moluccana	Semi-mature	9	3	170	170	90	90			272	300	Good	Good	High	1.Long	A1	3.3	2.0	
19	Red Mahogany	Eucalyptus resinifera	Semi-mature	9	3	185						185	200	Poor	Fair	Low	3. Short	Z4	2.2	1.7	
20	Forest Red Gum	Eucalyptus tereticornis	Semi-mature		6	370						370	410	Good	Good	High	1.Long	A1	4.4	2.3	
21	Red Mahogany	Eucalyptus resinifera	Semi-mature	9	6	270	100			50		270	310	Good	Good	High	1.Long	A1	3.2	2.0	
22 23	Grey Box Grey Box	Eucalyptus moluccana Eucalyptus moluccana	Young Young	9 7		170 120	190	80	80	50		283 120	480 170	Good Good	Fair Good	Moderate High	2. Medium 1.Long	A2 A1	3.4 2.0	2.4 1.6	
23	Flooded Gum	Eucalyptus molaceana	Young	10	_	220	140					261	310	Good	Good	High	1.Long	A1 A1	3.1	2.0	1
25	Grey Box	Eucalyptus moluccana	Semi-mature			320	1.0					320	350	Good	Good	High	1.Long	A1	3.8	2.1	
26	Flooded Gum	Eucalyptus grandis	Young	7		140						140	160	Good	Fair	Ŭ	2. Medium		2.0	1.5	Bark wounds
27	Grey Box	Eucalyptus moluccana	Young	10	2	110	110	120	100	100		242	400	Good	Fair		2. Medium	A2	2.9	2.3	
28	Red Mahogany	Eucalyptus resinifera	Semi-mature	10	6	270						270	300	Good	Good	High	1.Long	A1	3.2	2.0	
29	Grey Box	Eucalyptus moluccana	Semi-mature		6	350						350	360	Good	Good	High	1.Long	A1	4.2	2.2	
30 31	Flooded Gum Forest Red Gum	Eucalyptus grandis Eucalyptus tereticornis	Young Semi-mature	9 11		170 380						170 380	190 400	Poor Good	Good Good	Low High	3. Short 1.Long	Z4 A1	2.0 4.6	1.6 2.3	
32	Lemon Scented Gum	Corymbia citriodora	Young	12	6	260						260	300	Fair	Poor	Low	3. Short	Z10	3.1	2.0	Included stems
33	Flooded Gum	Eucalyptus grandis	Semi-mature	12	7	390						390	410	Good	Good	High	1.Long	A1	4.7	2.3	
34	Peppercorn Tree	Schinus molle	Semi-mature	7	4	290						290	310	Good	Good	Moderate	1.Long	A1	3.5	2.0	
35	Peppercorn Tree	Schinus molle	Semi-mature	-		250						250	400	Good	Good	Moderate	J	A1	3.0	2.3	
36	Common Ash	Fraxinus excelsior	Young	5	2	110	110	80	80	50		199	350	Good	Fair		2. Medium		2.4	2.1	
37	Peppercorn Tree	Schinus molle	Semi-mature	7	4	360 380						360	480 600	Good	Good	Moderate Moderate		A1	4.3	2.4	
38 39	Peppercorn Tree Peppercorn Tree	Schinus molle Schinus molle	Semi-mature Semi-mature	8	5	380						380 380	460	Good Good	Good Good	Moderate	J	A1 A1	4.6 4.6	2.7	
40	Flooded Gum	Eucalyptus grandis	Semi-mature	-	6	380						380	400	Fair	Fair	Low	3. Short	Z10	4.6	2.4	Cankers on trunk and borers
41	Flooded Gum	Eucalyptus grandis	Semi-mature	11	6	270	170					319	360	Good	Good	High	1.Long	A1	3.8	2.2	
42	Flooded Gum	Eucalyptus grandis	Semi-mature	15	6	334						334	350	Good	Good	High	1.Long	A1	4.0	2.1	
43	Flooded Gum	Eucalyptus grandis	Semi-mature		6	410						410	480	Good	Good	High	1.Long	A1	4.9	2.4	
44	Peppercorn Tree	Schinus molle	Semi-mature		3	230	200					305	250	Good	Good	Moderate		Z1	3.7	1.8	Easily replaced
45 46	Peppercorn Tree Peppercorn Tree	Schinus molle Schinus molle	Semi-mature Semi-mature		-	170 370		<u> </u>				170 370	230 400	Good Good	Good Good	Moderate Moderate		Z1	2.0 4.4	1.8 2.3	Easily replaced
46	Peppercorn Tree	Schinus molle	Semi-mature		3	240						240	350	Good	Good	Moderate		A1 Z1	4.4 2.9	2.3	Easily replaced
47	Peppercorn Tree	Schinus molle	Semi-mature	6	4	280	180					333	400	Good	Good	Moderate	<u> </u>	A1	4.0	2.1	
49	Peppercorn Tree	Schinus molle	Semi-mature	5	2	180						180	210	Good	Good	Moderate		A1	2.2	1.7	
50	Peppercorn Tree	Schinus molle	Semi-mature	5	2	210						210	280	Good	Good	Moderate	1.Long	A1	2.5	1.9	
51	Peppercorn Tree	Schinus molle	Semi-mature	4	2	140						140	160	Good	Good	Moderate		Z1	2.0	1.5	Easily replaced
52	Peppercorn Tree	Schinus molle	Semi-mature	5	3	230						230	250	Good	Good	Moderate		A1	2.8	1.8	4
53	Flooded Gum	Eucalyptus grandis	Semi-mature	9	2	195 310						195	210 330	Poor	Good	Low	3. Short	Z4	2.3	1.7	
54 55	Flooded Gum Flooded Gum	Eucalyptus grandis Eucalyptus grandis	Semi-mature Semi-mature	J.	6	260	270					310 375	330 380	Good Good	Good Good	High High	1.Long 1.Long	A1 A1	3.7 4.5	2.1	
56	Weeping Lilly Pilly	Waterhousia floribunda	Young	5		111	2/0	<u> </u>				111	120	Good	Good	Moderate		A1 A1	2.0	1.5	1
57	Ash 'Raywood'	Fraxinus raywood	Semi-mature	7	4	190						190	200	Good	Good	Moderate		A1	2.3	1.7	
58	Common Ash	Fraxinus excelsior	Semi-mature	8	4	330						330	390	Good	Good	Moderate	<u> </u>	A1	4.0	2.2	
59	Weeping Lilly Pilly	Waterhousia floribunda	Young	5	2	111						111	120	Good	Good	Moderate		A1	2.0	1.5	
60	Flooded Gum	Eucalyptus grandis	Semi-mature			410						410	430	Good	Poor	Low	3. Short	Z10	4.9	2.3	Decay between stems
G1	Manchurian Pear Flooded Gum	Pyrus ussuriensis	Semi-mature Semi-mature			160 360						160 360	170 380	Good Good		Moderate High	1.Long 1.Long	A1 A1	2.0 4.3	1.6 2.2	
61	FIDDUEU GUITI	Eucalyptus grandis	I semi-mature	112	0	500				I		000	380	9000	0000		T T'LOUR	AT	4.3	2.2	

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Tree ID	Common Name	Botanical Name	Age Class	Height (m)	Canopy Spread Radius (m)	Stem 1 (mm)	Stem 2 (mm)	Stem 3	Stem 4	Stem 5	Stem 6	DBH (mm)	DAB (mm)	Health	Structure	Landscape Value	SULE	Trees AZ Value	TPZ Radius (m)	SRZ Radius (m)	Notes
62	Flooded Gum	Eucalyptus grandis	Semi-mature	10	4	270						270	290	Good	Good	High	1.Long	A1	3.2	2.0	
63	Flooded Gum	Eucalyptus grandis	Semi-mature		4	380						380	390	Fair	Fair	Low	3. Short	Z10	4.6	2.2	Basal cambium dieback and large deadwood
64	Flooded Gum	Eucalyptus grandis	Semi-mature		6	260	220					341	400	Fair	Fair	Low	3. Short	Z4	4.1	2.3	Advanced Cankers on trunk
65	Flooded Gum	Eucalyptus grandis	Semi-mature		7	420						420	450 380	Good	Good	High	1.Long	A1	5.0	2.4	
66 67	Spotted Gum Spotted Gum	Corymbia maculata Corymbia maculata	Semi-mature Semi-mature		4	370 385						370 385	400	Fair Good	Good Good	High	2. Medium 1.Long	AZ A1	4.4 4.6	2.2 2.3	
68	Spotted Gum	Corymbia maculata	Semi-mature		3	330						330	350	Good	Good	High	1.Long	A1	4.0	2.1	
69	Spotted Gum	Corymbia maculata	Semi-mature	_	3	350						350	400	Good	Good	High	1.Long	A1	4.2	2.3	
70	Grey Ironbark	Eucalyptus paniculata	Semi-mature		6	150	180	100	100	100		291	450	Good	Fair	Moderate	-	A2	3.5	2.4	
71	Grey Ironbark	Eucalyptus paniculata	Semi-mature	12	7	330						330	400	Good	Good	High	1.Long	A1	4.0	2.3	
72	Spotted Gum	Corymbia maculata	Semi-mature		4	390						390	410	Good	Good	High	1.Long	A1	4.7	2.3	
73	Spotted Gum	Corymbia maculata	Semi-mature		3	265						265	300	Good	Good	High	1.Long	A1	3.2	2.0	
74 75	Spotted Gum Common Ash	Corymbia maculata Fraxinus excelsior	Semi-mature Semi-mature	14	/	420	170	120				420 278	500 400	Good Good	Good Good	High Moderate	1.Long 1.Long	A1 A1	5.0 3.3	2.5 2.3	
75	Common Ash	Fraxinus excelsior	Semi-mature	7	5		150		150			347	520	Good		Moderate		A1 A1	4.2	2.5	
70	Common Ash	Fraxinus excelsior	Semi-mature		-	180		150	150			216	395	Good		Moderate		A1 A1	2.6	2.2	
78	Flooded Gum	Eucalyptus grandis	Semi-mature			355						355	400	Good	Good	High	1.Long	A1	4.3	2.3	
79	Flooded Gum	Eucalyptus grandis	Semi-mature	11	6	400						400	510	Good	Good	High	1.Long	A1	4.8	2.5	
80	Broad Leaved Paperbark	Melaleuca quinquenervia	Semi-mature	8	3	245						245	310	Fair	Good			A2	2.9	2.0	
81	Manchurian Pear	Pyrus ussuriensis	Mature	7	4	295						295	310	Good	Good	Moderate		A1	3.5	2.0	
82	Plantaus Spp.	Platanus Spp.	Semi-mature		4	220						220	250 280	Good	Good	Moderate		A1	2.6	1.8	
83 84	Plantaus Spp. Manchurian Pear	Platanus Spp. Pyrus ussuriensis	Semi-mature Semi-mature	8 6	4 4	250	190					250 269	280	Good Good	Good Good	Moderate Moderate	1.Long 1.Long	A1 A1	3.0 3.2	1.9 1.8	
85	Broad Leaved Paperbark	Melaleuca quinquenervia	Young	4	2		160					189	180	Good	Good	High	1.Long	Z1	2.3	1.6	Easily replaced
86	Lemon Scented Gum	Corymbia citriodora	Semi-mature			345						345	400	Good	Good	High	1.Long	A1	4.1	2.3	
87	Common Ash	Fraxinus excelsior	Young	4	2	100	80	80	50			159	250	Good	Good	Moderate	1.Long	Z1	2.0	1.8	Easily replaced
88	Ash 'Raywood'	Fraxinus raywood	Young	4	-	100	80	50	50	50		155	180	Good		Moderate	0	Z1	2.0	1.6	Easily replaced
89	Spotted Gum	Corymbia maculata	Mature	20		580						580	690	Good	Good	Very High		AA1		2.8	
90	Manchurian Pear Manchurian Pear	Pyrus ussuriensis Pyrus ussuriensis	Semi-mature Semi-mature		3	200 180						200 180	200 200	Good Good	Good Good	Moderate Moderate		A1 A1	2.4 2.2	1.7 1.7	
91 92	Manchurian Pear	Pyrus ussuriensis	Semi-mature		3	180						180	200	Good	Good	Moderate		A1 A1	2.2	1.7	
93	Manchurian Pear	Pyrus ussuriensis	Semi-mature	-	3	180						180	200	Good	Good	Moderate	1.Long	A1	2.2	1.7	
94	Manchurian Pear	Pyrus ussuriensis	Semi-mature	5	3	180						180	200	Good	Good	Moderate		A1	2.2	1.7	
95	Peppercorn Tree	Schinus molle	Semi-mature		3		170					233	350	Good	Good	Moderate		A1	2.8	2.1	
96	Peppercorn Tree	Schinus molle	Semi-mature		_		170					233	350	Good		Moderate		A1	2.8	2.1	
97	Peppercorn Tree	Schinus molle Schinus molle	Semi-mature		2	100 200	120					156 200	210 220	Good	Fair	Moderate Moderate	2. Medium		2.0	1.7	Easily replaced
98 99	Peppercorn Tree Red Mahogany	Eucalyptus resinifera	Semi-mature Young	6	2		100					149	220	Good Good	Good Good	High	1.Long 1. Long	A1 A1	2.4 2.0	1.8 1.8	
100	Flooded Gum	Eucalyptus resimjera	Semi-mature		6	490	100					490	520	Good	Good	High	1. Long	A1	5.9	2.5	
101	Manchurian Pear	Pyrus ussuriensis	Semi-mature		3	210						210	250	Good	Good	Moderate		A1	2.5	1.8	
102	Manchurian Pear	Pyrus ussuriensis	Semi-mature	5	3							189	200	Good	Good	Moderate	1.Long	A1	2.3	1.7	
103	Manchurian Pear	Pyrus ussuriensis	Semi-mature		3	100	90	100				168	180	Good	Good	Moderate	1.Long	A1	2.0	1.6	
104	Manchurian Pear	Pyrus ussuriensis	Semi-mature			180	400	50	50	50		180	190	Good	Good	Moderate		A1	2.2	1.6	4
105 106	Ash 'Raywood' Forest Red Gum	Fraxinus raywood	Young Semi-mature	5 17		80 380	100	50	50	50		155 380	240 400	Good Good	Good Good	Moderate High	1.Long	A1 A1	2.0 4.6	1.8 2.3	+
106	Forest Red Gum	Eucalyptus tereticornis Eucalyptus tereticornis	Semi-mature	17		340						380	380	Good	Good	High	1. Long 1. Long	A1 A1	4.0	2.3	+
107	Forest Red Gum	Eucalyptus tereticornis	Mature	20	-		900					1273	1500	Good	Good	High	1. Long	A1	15.3	3.9	Bark wounds
109	African Olive	Olea europaea subsp. cuspidata	Young	4	2	20	20	20	50	50		79	180	Good	Good	Low	1. Long	Z3	2.0	1.6	Easily replaced
110	Snow In Summer	Melaleuca linarifolia	Semi-mature		1	165						165	100	Good	Good	High	1. Long	Z1	2.0	1.5	Easily replaced
111	Snow In Summer	Melaleuca linarifolia	Semi-mature		1	165						165	100	Good	Good	High	1. Long	A1	2.0	1.5	
112	Snow In Summer	Melaleuca linarifolia	Semi-mature		1	165	<u> </u>					165	100	Good	Good	High	1. Long	A1	2.0	1.5	4
113 114	Snow In Summer African Olive	Melaleuca linarifolia Olea europaea subsp. cuspidata	Semi-mature Semi-mature		2	220 100	100	80	80	50		220 188	230 200	Good Good	Good Good	High Low	1. Long 1. Long	A1 Z3	2.6 2.3	1.8 1.7	+
	Prickly Leaved Paperbark	Melaleuca styphelioides	Semi-mature		3	180	150	00	80	50		234	300	Good	Good	High	1. Long	A1	2.3	2.0	
116	Snow In Summer	Melaleuca linarifolia	Semi-mature	7	3	300			$\mid$			300	320	Good	Good	High	1. Long	A1	3.6	2.1	1
	Prickly Leaved Paperbark	Melaleuca styphelioides	Semi-mature		2	200						200	220	Good	Good	High	1. Long	A1	2.4	1.8	
118	Prickly Leaved Paperbark	Melaleuca styphelioides	Semi-mature	6	3	400						400	450	Good	Good	High	1. Long	A1	4.8	2.4	
119	Prickly Leaved Paperbark	Melaleuca styphelioides	Semi-mature	5	3	170	180					248	310	Good	Good	High	1. Long	A1	3.0	2.0	

120       S         121       1         122       1         123       1         124       1         125       We         126       We         127       S         128       1         129       S         130       S         131       S	road Leaved Privet Snow In Summer Forest Red Gum Forest Red Gum Forest Red Gum Forest Red Gum Veeping Bottlebrush Veeping Bottlebrush Snow In Summer Snow In Summer Snow In Summer Snow In Summer Snow In Summer Forest Red Gum	Ligustrum lucidum Melaleuca linarifolia Eucalyptus tereticornis Eucalyptus tereticornis Eucalyptus tereticornis Eucalyptus tereticornis Callistemon viminalis Callistemon viminalis Melaleuca linarifolia Eucalyptus tereticornis Melaleuca linarifolia Melaleuca linarifolia	Semi-mature Semi-mature Semi-mature Semi-mature Semi-mature Semi-mature Semi-mature Semi-mature Semi-mature Semi-mature Semi-mature Semi-mature	6 9 9 9 9 5 5 5	2 6 5 3 5	200 220 420 410 220	140	190			1	200	300	Good	Good	Very Low	1. Long	Z3	2.4	2.0	Small and broad
122       1         123       1         124       1         125       We         126       We         127       S         128       1         129       S         130       S         131       S         132       1	Forest Red Gum Forest Red Gum Forest Red Gum Veeping Bottlebrush Veeping Bottlebrush Snow In Summer Forest Red Gum Snow In Summer Snow In Summer Snow In Summer	Eucalyptus tereticornis Eucalyptus tereticornis Eucalyptus tereticornis Callistemon viminalis Callistemon viminalis Melaleuca linarifolia Eucalyptus tereticornis Melaleuca linarifolia Melaleuca linarifolia	Semi-mature Semi-mature Semi-mature Semi-mature Semi-mature Semi-mature Semi-mature	9 9 9 5 5	3 5	410 220						323	450	Good	Good	High	1. Long	A1	3.9	2.4	
123       1         124       1         125       We         126       We         127       S         128       1         129       S         130       S         131       S         132       1	Forest Red Gum Forest Red Gum /eeping Bottlebrush /eeping Bottlebrush Snow In Summer Forest Red Gum Snow In Summer Snow In Summer Snow In Summer	Eucalyptus tereticornis Eucalyptus tereticornis Callistemon viminalis Callistemon viminalis Melaleuca linarifolia Eucalyptus tereticornis Melaleuca linarifolia Melaleuca linarifolia	Semi-mature Semi-mature Semi-mature Semi-mature Semi-mature Semi-mature	9 9 5 5	3 5	220						420	500	Fair	Good	Moderate	2. Medium	A2	5.0	2.5	
124       125         125       We         126       We         127       S         128       1         129       S         130       S         131       S         132       1	Forest Red Gum Veeping Bottlebrush Snow In Summer Forest Red Gum Snow In Summer Snow In Summer Snow In Summer	Eucalyptus tereticornis Callistemon viminalis Callistemon viminalis Melaleuca linarifolia Eucalyptus tereticornis Melaleuca linarifolia Melaleuca linarifolia	Semi-mature Semi-mature Semi-mature Semi-mature Semi-mature	9 5 5	5							410	480	Good	Good	High	1. Long	A1	4.9	2.4	
125     We       126     We       127     S       128     I       129     S       130     S       131     S       132     I	Veeping Bottlebrush Veeping Bottlebrush Snow In Summer Forest Red Gum Snow In Summer Snow In Summer Snow In Summer	Callistemon viminalis Callistemon viminalis Melaleuca linarifolia Eucalyptus tereticornis Melaleuca linarifolia Melaleuca linarifolia	Semi-mature Semi-mature Semi-mature Semi-mature	5 5		390						220 390	200 450	Poor Good	Fair Fair	Low Moderate		Z10 A2	2.6 4.7	1.7 2.4	Borers at base
126     We       127     S       128     I       129     S       130     S       131     S       132     I	Yeeping Bottlebrush Snow In Summer Forest Red Gum Snow In Summer Snow In Summer Snow In Summer	Callistemon viminalis Melaleuca linarifolia Eucalyptus tereticornis Melaleuca linarifolia Melaleuca linarifolia	Semi-mature Semi-mature Semi-mature	5		90	100	90	90	90		206	210	Good	Good	Moderate		A2	2.5	1.7	
128     1       129     5       130     5       131     5       132     1	Forest Red Gum Snow In Summer Snow In Summer Snow In Summer	Eucalyptus tereticornis Melaleuca linarifolia Melaleuca linarifolia	Semi-mature	6	3	100			80	80		197	310	Fair	Good	Moderate	1.Long	A2	2.4	2.0	
129         S           130         S           131         S           132         I	Snow In Summer Snow In Summer Snow In Summer	Melaleuca linarifolia Melaleuca linarifolia		6	3		240					339	390	Good	Good	High	1. Long	A1	4.1	2.2	
130         S           131         S           132         I	Snow In Summer Snow In Summer	Melaleuca linarifolia	Semi-mature	_		400						400	420	Fair	Good		2. Medium	A2	4.8	2.3	
131 S 132 I	Snow In Summer				3	190 180						190	210	Good	Good	High	1. Long	A1	2.3	1.7	
132		Melaleuca linarifolia	Semi-mature Semi-mature	_	2	240						180 240	200 280	Good Good	Good Good	High High	1. Long 1. Long	A1 A1	2.2 2.9	1.7 1.9	
		Eucalyptus tereticornis	Semi-mature	_	6	420						420	480	Good		High	1. Long	A1	5.0	2.4	
	Snow In Summer	Melaleuca linarifolia	Semi-mature			201						201	220		Good	High	1. Long	A1	2.4	1.8	
	Snow In Summer	Melaleuca linarifolia	Semi-mature		3	235						235	320		Good	High	1. Long	A1	2.8	2.1	
	Snow In Summer	Melaleuca linarifolia	Semi-mature		3	160	190					248	240	Good	Good	High	1. Long	A1	3.0	1.8	
	Forest Red Gum Snow In Summer	Eucalyptus tereticornis Melaleuca linarifolia	Semi-mature Semi-mature			440 180						440 180	480 210	Good Good	Good Good	High High	1. Long 1. Long	A1 A1	5.3 2.2	2.4 1.7	
138 Prick	kly Leaved Paperbark	Melaleuca styphelioides	Semi-mature	6	2	180						180	210	Good	Good	High	1. Long	A1	2.2	1.7	
	Snow In Summer	Melaleuca linarifolia	Semi-mature		2	180						180	210	Good	Good	High	1. Long	A1	2.2	1.7	
	Snow In Summer	Melaleuca linarifolia	Semi-mature		2	180						180	210	Good	Good	High	1. Long	A1	2.2	1.7	
141	Forest Red Gum	Eucalyptus tereticornis	Semi-mature			501						501	550	Good	Good	High	1. Long	A1	6.0	2.6	
142 Prick	kly Leaved Paperbark	Melaleuca styphelioides	Semi-mature	7	3	290						290	310	Good	Good	High	1. Long	A1	3.5	2.0	
	kly Leaved Paperbark	Melaleuca styphelioides	Semi-mature			210						290	450	Good	Good	High	1. Long	A1	3.5	2.4	
	Peppercorn Tree	Schinus molle	Mature	8			340	300				567	550	Good	Good	High	1. Long	A1	6.8	2.6	
145 146	Grey Ironbark Grey Ironbark	Eucalyptus paniculata Eucalyptus paniculata	Semi-mature Semi-mature	_		280 280						280 280	320 320	Fair Fair	Good Good	Moderate	2. Medium 2. Medium	A2 A2	3.4 3.4	2.1	
	Grey Ironbark	Eucalyptus paniculata	Semi-mature	_		285						285	300	Good	Good	High	1. Long	A1	3.4	2.0	
	Forest Red Gum	Eucalyptus tereticornis	Semi-mature			375						375	400	Fair	Good	Moderate	2. Medium	A2	4.5	2.3	
	Forest Red Gum	Eucalyptus tereticornis	Semi-mature			410						410	450	Fair	Good	Moderate			4.9	2.4	
	Forest Red Gum	Eucalyptus tereticornis	Semi-mature	_		365	1.05					365	450	Good	Good	High	1. Long	A1	4.4	2.4	
	Forest Red Gum Forest Red Gum	Eucalyptus tereticornis Eucalyptus tereticornis	Semi-mature Semi-mature			410	165					241 410	350 450	Good Good	Poor Good	Low High	3. Short 1. Long	Z10 A1	2.9 4.9	2.1	Defective base
	Forest Red Gum	Eucalyptus tereticornis	Young	3		50	50	50				87	250	Poor	Poor	Low	3. Short	Z10	2.0		Easily replaced
	Forest Red Gum	Eucalyptus tereticornis	Semi-mature			500						500	550	Good	Good	High	1. Long	A1	6.0	2.6	
	Forest Red Gum	Eucalyptus tereticornis	Semi-mature	_	6	410						410	450	Fair	Good	Moderate	2. Medium	A2	4.9		Borers in trunk
	Forest Red Gum	Eucalyptus tereticornis	Semi-mature	_	3		220	120				327	500	Good	Fair	Moderate	2. Medium	A2	3.9	2.5	
157 158	Flooded Gum Flooded Gum	Eucalyptus grandis Eucalyptus grandis	Semi-mature Semi-mature		5	250 400				+		250 400	280 480	Poor Poor	Poor Poor	Low Low	3. Short 3. Short	Z4 Z4	3.0 4.8	1.9 2.4	
159	Flooded Gum	Eucalyptus grandis	Semi-mature			400						400	450	Good	Poor	Low	3. Short	Z10	4.8	2.4	Significant branch failure
160	Grey Box	Eucalyptus moluccana	Young	3		50	60	80				112	120	Poor	Fair	Low	3. Short	Z10	2.0		Easily replaced
	Forest Red Gum	Eucalyptus tereticornis	Semi-mature		6	400						400	450	Good	Good	High	1. Long	A1	4.8	2.4	
	Forest Red Gum	Eucalyptus tereticornis	Semi-mature		6	420	200	200	440			420	450	Good	Good	High	1. Long	A1	5.0	2.4	
	Forest Red Gum Forest Red Gum	Eucalyptus tereticornis Eucalyptus tereticornis	Semi-mature Semi-mature	_		165 410	200	200	110	+		345 410	550 450	Good Good	Fair Good	Moderate High	2. Medium 1. Long	A1 A1	4.1 4.9	2.6 2.4	
	Forest Red Gum	Eucalyptus tereticornis	Semi-mature			410	-			+	-	410	430	Good	Good	High	1. Long	A1 A1	4.9	2.4	<u> </u>
	Forest Red Gum	Eucalyptus tereticornis	Semi-mature	-	4	301						301	320	Poor	Poor	Low	3. Short	Z4	3.6	2.1	
	Forest Red Gum	Eucalyptus tereticornis	Semi-mature	_		415						415	410	Good	Fair	Moderate	2. Medium	A2	5.0	2.3	
	Forest Red Gum	Eucalyptus tereticornis	Semi-mature	-	_	390	<b> </b>					390	410	Good	Good	High	1. Long	A1	4.7	2.3	
169 170 I	Flooded Gum Forest Red Gum	Eucalyptus grandis Eucalyptus tereticornis	Semi-mature Semi-mature			350 395	-					350 395	400 410	Fair Fair	Fair Good	Low Moderate	3. Short 2. Medium	Z10 A2	4.2 4.7	2.3	<u> </u>
170	Flooded Gum	Eucalyptus grandis	Semi-mature			330	-	1		+	+	395	380	Good	Fair	Moderate			4.7		Bark wounds on multiple trees due to storage
	Forest Red Gum	Eucalyptus tereticornis	Semi-mature	_	_	345						345	360	Good	Good	High	1. Long	A1	4.1	2.2	
	Forest Red Gum	Eucalyptus tereticornis	Semi-mature	_		400						400	420	Good	Good	High	1. Long	A1	4.8	2.3	
174	Flooded Gum	Eucalyptus grandis	Semi-mature			330	0			<u> </u>		330	340	Good	Good	High	1. Long	A1	4.0	2.1	
175 176	Flooded Gum Flooded Gum	Eucalyptus grandis Eucalvptus arandis	Semi-mature Semi-mature			310 365	250					398 365	400 380	Fair Good	Fair Good	Low High	3. Short 1. Long	Z10 A1	4.8 4.4	2.3	<u> </u>
176	Flooded Gum	Eucalyptus grandis	Semi-mature Semi-mature			365	-	-				365		Good		High	1. Long 1. Long	A1 A1		2.2	

Tree ID	Common Name	Botanical Name	Age Class	Height (m)	Canopy Spread Radius (m)	Stem 1 (mm)	Stem 2 (mm)	Stem 3	Stem 4	Stem 5	Stem 6	DBH (mm)	DAB (mm)	Health	Structure	Landscape Value	SULE	Trees AZ Value	TPZ Radius (m)	SRZ Radius (m)	Notes
178	Spotted Gum	Corymbia maculata	Semi-mature	10	6	375						375	400	Fair	Good	Moderate	2. Medium	A2	4.5	2.3	
179	Spotted Gum	Corymbia maculata	Semi-mature	10	7	370						370	400	Good	Good	High	1. Long	A1	4.4	2.3	
180	Grey Box	Eucalyptus moluccana	Semi-mature	10	4	220						220	250	Good	Good	High	1. Long	A1	2.6	1.8	On adjoining site no tag
181	Grey Box	Eucalyptus moluccana	Semi-mature	10	4	290						290	310	Good	Good	High	1. Long	A1	3.5	2.0	On adjoining site no tag
182	Grey Box	Eucalyptus moluccana	Semi-mature	12	4	220						220	300	Good	Good	High	1. Long	A1	2.6	2.0	On adjoining site no tag
183	Indian Coral	Erythrina x sykesii	Semi-mature	7	6	220	180	220				359	500	Good	Good	Low	1.Long	Z3	4.3	2.5	On adjoining site no tag

#### **Explanatory Notes**

Tree Species - Botanical name followed by common name in brackets. Where species is unknown it is indicated with an 'spp'.

Age Class - Over mature (OM), Mature (M), Early mature (EM), Semi mature (SM), Young (Y), Dead (D).

Diameter at Breast Height (DBH) - Measured with a DBH tape or estimated at approximately 1.4m above ground level. Where DBH has been estimated it is indicated with an 'est'. Diameter Above root Buttresses (DAB): Measured with a DBH tape or estimated above root buttresses (DAB) for calculating the SRZ.

Height - Height from ground level to top of crown. All heights are estimated unless otherwise indicated.

**Spread** - Radius of crown at widest section. All tree spreads are estimated unless otherwise indicated.

Tree Protection Zone (TPZ) - DBH x 12. Measured in radius from the centre of the trunk. Rounded to nearest 0.1m. For monocots, the TPZ is set at 1 metre outside the crown projection. **Structural Root Zone (SRZ)** - (DAB x 50) <sup>0.42</sup> x 0.64. Measured in radius from the centre of the trunk. Rounded up to nearest 0.1m.

Health - Good/Fair/Poor/Dead

**Structure** - Good/Fair/Poor

Safe Useful Life Expectancy (SULE) - 1. Long (40+years), 2. Medium (15 - 40 years), 3. Short (5 - 15 years), 4. Remove (under 5 years), 5. Small/young. Amenity Value - Very High/High/Medium/Low/Very Low.

(x) Indicates the measurement taken for the diameter at tree base above the buttress roots.

(E) Indicates estimated measurements.

## Appendix 3 – Assessment of Health

Category	Example condition	<u>Summary</u>
Good	<ul> <li>Crown has good foliage density for species.</li> <li>Tree shows no or minimal signs of pathogens that are unlikely to have an effect on the health of the tree.</li> <li>Tree is displaying good vigour and reactive growth development.</li> </ul>	The tree is in above average health and condition and no remedial works are required.
Fair	<ul> <li>The tree may be starting to dieback or have over 25% deadwood.</li> <li>Tree may have slightly reduced crown density or thinning.</li> <li>There may be some discolouration of foliage.</li> <li>Average reactive growth development.</li> <li>There may be early signs of pathogens which may further deteriorate the health of the tree.</li> <li>There may be epicormic growth indicating increased levels of stress within the tree.</li> </ul>	The tree is in below average health and condition and may require remedial works to improve the trees health.
Poor	<ul> <li>The may be in decline, have extensive dieback or have over 30% deadwood.</li> <li>The canopy may be sparse or the leaves may be unusually small for species.</li> <li>Pathogens or pests are having a significant detrimental effect on the tree health.</li> </ul>	The tree is displaying low levels of health and removal or remedial works may be required.
Dead	• The tree is dead or almost dead.	The tree should generally be removed.

RATING	HERITAGE VALUE	ECOLOGICAL VALUE	AMENITY VALUE
	The subject tree is listed as a Heritage Item under the Local Environment Plan (LEP) with a local, state or national level of significance or is listed on Council's Significant Tree Register	The subject tree is scheduled as a Threatened Species as defined under the Threatened Species Conservation Act 1995 (NSW) or the Environmental Protection and Biodiversity Conservation Act 1999	The subject tree has a very large live crown size exceeding 300m <sup>2</sup> with normal to dense foliage cover, is located in a visually prominent position in the landscape, exhibits very good form and habit typical of the species
1. SIGNIFICANT	The subject tree forms part of the curtilage of a Heritage Item (building /structure /artefact as defined under the LEP) and has a known or documented association with that item	The tree is a locally indigenous species, representative of the original vegetation of the area and is known as an important food, shelter or nesting tree for endangered or threatened fauna species	The subject tree makes a significant contribution to the amenity and visual character of the area by creating a sense of place or creating a sense of identity
	The subject tree is a Commemorative Planting having been planted by an important historical person (s) or to Commemorate an important historical event	The subject tree is a Remnant Tree, being a tree in existence prior to development of the area	The tree is visually prominent in view from surrounding areas, being a landmark or visible from a considerable distance
2. VERY HIGH	The tree has a strong historical association with a heritage item (building/structure/artefact/garden etc) within or adjacent the property and/or exemplifies a particular era or style of landscape design associated with the original development of the site.	The tree is a locally–indigenous species, representative of the original vegetation of the area and is a dominant or associated canopy species of an Endangered Ecological Community (EEC) formerly occurring in the area occupied by the site.	The subject tree has a very large live crown size exceeding 200m <sup>2</sup> ; a crown density exceeding 70% (normal-dense), is a very good representative of the species in terms of its form and branching habit or is aesthetically distinctive and makes a positive contribution to the visual character and the amenity of the area
3. High	The tree has a suspected historical association with a heritage item or landscape supported by anecdotal or visual evidence	The tree is a locally–indigenous species and representative of the original vegetation of the area and the tree is located within a defined Vegetation Link / Wildlife Corridor or has known wildlife habitat value	The subject tree has a large live crown size exceeding 100m <sup>2</sup> ; The tree is a good representative of the species in terms of its form and branching habit with minor deviations from normal (e.g. crown distortion/suppression) with a crown density of at least 70% normal); The subject tree is visible from the street and surrounding properties and makes a positive contribution to the visual character and the amenity of the area
4. MODERATE	The tree has no known or suspected historical association, but does not detract or diminish the value of the item and is sympathetic to the original era of planting.	The subject tree is a non-local native or exotic species that is protected under the provisions of this DCP.	The subject tree has a medium live crown size exceeding 40m <sup>2</sup> ;The tree is a fair representative of the species, exhibiting moderate deviations from typical form (distortion/suppression etc) with a crowndensity of more than 50% (thinning to normal); and The tree is visible from surrounding properties, but is not visually prominent – view may be partially obscured by other vegetation or built forms. The tree makes a fair contribution to the visual character and amenity of the area.
5. LOW	The subject tree detracts from heritage values or diminishes the value of a heritage item	The subject tree is scheduled as exempt (not protected) under the provisions of this DCP due to its species, nuisance or position relative to buildings or other structures.	The subject tree has a small live crown size of less than 40m <sup>2</sup> and can be replaced within the short term (510 years) with new tree planting
6. VERY LOW	The subject tree is causing significant damage to a heritage Item.	The subject tree is listed as an Environment Weed Species in the Local Government Area, being invasive, or is a known nuisance species.	The subject tree is not visible from surrounding properties (visibility obscured) and makes a negligible contribution or has a negative impact on the amenity and visual character of the area. The tree is a poor representative of the species, showing significant deviations from the typical form and branching habit with a crown density of less than 50% (sparse).
7. INSIGNIFICANT	The tree is completely dead and has no visible habitat value	The tree is a declared Noxious Weed under the Noxious Weeds Act (NSW) 1993 within the relevant Local Government Area.	The tree is completely dead and represents a potential hazard.

#### <u>Appendix 5 - Age class</u>

Determining the exact age of a tree is difficult without carrying out potentially invasive testing. The age class of the subject tree has been estimated using the definitions below.

<u>Category</u>	<u>Description</u>
Young/Newly planted	• Young or recently planted tree.
Semi Mature	<ul> <li>Up to 20% of the usual life expectancy for the species.</li> </ul>
Early mature/Mature	<ul> <li>Between 20% - 80% of the usual life expectancy for the species.</li> </ul>
Over mature	<ul> <li>Over 80% of the usual life expectancy for the species.</li> </ul>
Dead	• Tree is dead or almost dead.

# Appendix 4 - Structural condition

Category	Example condition	<u>Summary</u>
Good	<ul> <li>Branch unions appear to be strong with no sign of defects.</li> <li>There are no significant cavities.</li> <li>The tree is unlikely to fail in usual conditions.</li> <li>The tree has a balanced crown shape and form.</li> </ul>	The tree is considered structurally good with well developed form.
Fair	<ul> <li>The tree may have minor structural defects within the structure of the crown that could potentially develop into more significant defects.</li> <li>The tree may a cavity that is currently unlikely to fail but may deteriorate in the future.</li> <li>The tree is an unbalanced shape or leans significantly.</li> <li>The tree may have minor damage to its roots.</li> <li>The root plate may have moved in the past but the tree has now compensated for this.</li> <li>Branches may be rubbing or crossing.</li> </ul>	<ul> <li>The identified defects are unlikely cause major failure.</li> <li>Some branch failure may occur in usual conditions.</li> <li>Remedial works can be undertaken to alleviate potential defects.</li> </ul>
Poor	<ul> <li>The tree has significant structural defects.</li> <li>Branch unions may be poor or weak.</li> <li>The tree may have a cavity or cavities with excessive levels of decay that could cause catastrophic failure.</li> <li>The tree may have root damage or is displaying signs of recent movement.</li> <li>The tree crown may have poor weight distribution which could cause failure.</li> </ul>	The identified defects are likely to cause either partial or whole failure of the tree.

### Appendix 7 - Safe Useful Life Expectancy (SULE), (Barrel, 2001)

A trees safe useful life expectancy is determined by assessing a number of different factors including the health and vitality, estimated age in relation to expected life expectancy for the species, structural defects, and remedial works that could allow retention in the existing situation.

Category	Description
1. Long	Useful life expectancy over 40 years
2. Medium	Useful life expectancy 15 to 40 years
3. Short	Useful life expectancy 5 to 15 years
4. Remove	Useful life expectancy under 5 years
5. Small/Young	Trees that could be transplanted or replaced with similar specimen.
6. Unstable	Tree has become hazardous or structurally unstable.

#### TreeAZ Categories (Version 10.04-ANZ)

**CAUTION:** TreeAZ assessments <u>must</u> be carried out by a competent person qualified and experienced in arboriculture. The following category descriptions are designed to be a brief field reference and are <u>not</u> intended to be self-explanatory. They <u>must</u> be read in conjunction with the most current explanations published at www.TreeAZ.com.

#### Category Z: Unimportant trees not worthy of being a material constraint

Local p	bolicy exemptions: Trees that are unsuitable for legal protection for local policy reasons including size, proximity and species
<b>Z</b> 1	Young or insignificant small trees, i.e. below the local size threshold for legal protection, etc
<b>Z2</b>	Too close to a building, i.e. exempt from legal protection because of proximity, etc
<b>Z3</b>	Species that cannot be protected for other reasons, i.e. scheduled noxious weeds, out of character in a setting of acknowledged importance, etc
High r	isk of death or failure: Trees that are likely to be removed within 10 years because of acute health issues or severe structural failure
<b>Z4</b>	Dead, dying, diseased or declining
<b>Z</b> 5	Severe damage and/or structural defects where a high risk of failure <u>cannot</u> be satisfactorily reduced by reasonable remedial care, i.e. cavities, decay, included bark, wounds, excessive imbalance, overgrown and vulnerable to adverse weather conditions, etc
<b>Z6</b>	Instability, i.e. poor anchorage, increased exposure, etc
	Excessive nuisance: Trees that are likely to be removed within 10 years because of unacceptable impact on people
<b>Z7</b>	Excessive, severe and intolerable inconvenience to the extent that a locally recognized court or tribunal would be likely to authorize removal, i.e. dominance, debris, interference, etc
<b>Z8</b>	Excessive, severe and intolerable damage to property to the extent that a locally recognized court or tribunal would be likely to authorize removal, i.e. severe structural damage to surfacing and buildings, etc
Good	<b>I management:</b> Trees that are likely to be removed within 10 years through responsible management of the tree population
<b>Z</b> 9	Severe damage and/or structural defects where a high risk of failure can be <u>temporarily</u> reduced by reasonable remedial care, i.e. cavities, decay, included bark, wounds, excessive imbalance, vulnerable to adverse weather conditions, etc
Z10	Poor condition or location with a low potential for recovery or improvement, i.e. dominated by adjacent trees or buildings, poor architectural framework, etc
Z11	Removal would benefit better adjacent trees, i.e. relieve physical interference, suppression, etc
Z12	Unacceptably expensive to retain, i.e. severe defects requiring excessive levels of maintenance, etc
NOTE:	Z trees with a high risk of death/failure (Z4, Z5 & Z6) or causing severe inconvenience (Z7 &

**NOTE:** Z trees with a high risk of death/failure (Z4, Z5 & Z6) or causing severe inconvenience (Z7 & Z8) at the time of assessment and need an urgent risk assessment can be designated as ZZ. ZZ trees are likely to be unsuitable for retention and at the bottom of the categorization hierarchy. In contrast, although Z trees are not worthy of influencing new designs, urgent removal is not essential and they could be retained in the short term, if appropriate.

#### Category A: Important trees suitable for retention for more than 10 years and worthy of being a material constraint

A1	No significant defects and could be retained with minimal remedial care
A2	Minor defects that could be addressed by remedial care and/or work to adjacent trees
A3	Special significance for historical, cultural, commemorative or rarity reasons that would warrant extraordinary efforts to retain for more than 10 years
A4	Trees that may be worthy of legal protection for ecological reasons (Advisory requiring specialist assessment)

**NOTE:** Category A1 trees that are already large and exceptional, or have the potential to become so with minimal maintenance, can be designated as AA at the discretion of the assessor. Although all A and AA trees are sufficiently important to be material constraints, AA trees are at the top of the categorization hierarchy and should be given the most weight in any selection process.

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#### Appendix 10 – Examples of TPZ Encroachment

Encroachment into the Tree Protection Zone is sometimes unavoidable. The following diagram shows examples of acceptable levels of encroachment and how they may be compensated for by providing additional space contiguous to the TPZ area.



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