REPORT: Arboricultural Impact Assessment Our Ref: 20153 V8Jm

REPORT COMMISSIONED FOR:

TSA Management c/o Mrs. Mardi Christian

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1.0 ABSTRACT

1.1 An Arboricultural Impact Assessment report was commissioned by School Infrastructure NSW in relation to the proposed development on site at Pendle Hill High School, and in response to the SEARs (dated 26th of October, 2020). An AQF Level 5 arborist previously attended the site on the 1st and 2nd of April, 2020 and reviewed the site report from the 25th of March, 2021.

1.2 A ground Visual Tree Assessment (VTA) was conducted to assess the potential impacts of the proposed development on approximately one hundred and eighty-three (183) trees of **VERY LOW** to **HIGH** retention value in the surrounding area.

1.3 The proposed development will have anticipated impacts **greater than 10%** on five (5) trees; and anticipated impacts **less than 10%** on four (4) trees.

1.4 The following works are proposed as a result of this assessment:

- The **removal** and **replenishment** of five (5) trees. None of the trees requiring removal have hollows.
- The **retention** of one hundred and seventy eight(178) trees and **protection** of one hundred and seventy-two (172) trees inclusive.

1.5 The removed trees are to be **replenished** with eleven (11) 50-litre potted volumes of suitable indigenous plant species from Appendix F, such as <u>*Callistemon*</u> <u>*viminalis*</u> (Weeping Bottlebrush) and <u>*Elaeocarpus reticulatus*</u> (Blueberry Ash).

1.6 **Tree Protection Systems** are required and must be installed prior to commencement of the development. This includes:

- Mulch ground cover protection.
- Tree protection fencing.
- Tree trunk/branch protection.

1.7 **AQF Level 5 arborist supervision** is required for all works carried out within the Tree Protection Zones (TPZ) of the retained trees.

1.8 The contractors and staff are to be inducted by the project arborist in relation to the health and protection of the retained trees and the replenishment of the removed trees in the Pendle Hill High School community.

REFERENCES Proposed Site Plan (Drawing No. ACD-1002), *Fulton Trotter Architects*, dated 10/03/2021. Parramatta Local Environmental Plan 2011.

2.0 INTRODUCTION

2.1 An Arboricultural Impact Assessment report was commissioned by School Infrastructure NSW in relation to the proposed development on site at Pendle Hill High School, and in response to the SEARs (dated 26th of October, 2020). Approximately one hundred and eighty-three (183) trees in the surrounding area of the proposed development were assessed by Mr. Jim McArdle B.Ed. Sc ACU, Dip Arb AQF L5 Ryde, QTRA, TRA Assessor and TCAA President, who attended the site on the 1st and 2nd of April, 2021, and the site report was reviewed from the 25th of March, 2021.

2.2 The retention value of approximately one hundred and eighty-three (183) trees were assessed as follows:

- Four (4) trees have **HIGH** retention value and are numbered: 52, 90, 96 & 124.
- Twenty-seven (27) trees have **MODERATE-HIGH** retention value.
- Fifty-one (51) trees have **MODERATE** retention value.
- Thirty-six (36) trees have **LOW-MODERATE** retention value.
- Fifty-nine (59) trees have **LOW** retention value.
- Six (6) trees are dead, or they are a noxious weed species that are exempt¹ from retention. These trees have **VERY LOW** retention value and are numbered: 23, 47, 54, 100, 109 & 115.

2.3 The proposed development will have anticipated impacts **greater than 10%** on five (5) trees numbered: 137, 138, 139, 140 & 141; and anticipated impacts **less than 10%** on four (4) trees numbered: 144, 145, 146 & 147.

2.4 The following works are proposed as a result of this assessment:

- The **removal of five trees** and **replenishment** of eleven (11) trees numbered: 137, 138, 139, 140 & 141. This includes five (5) highly impacted trees numbered: 137, 138, 139, 140 & 141;
- Retention of three (3) dead trees numbered: 23, 47 & 100 and three (3) noxious weed *Ligustrum spp.* (Privet) trees numbered: 54, 109 & 115 will also be retained for this development. None of the trees requiring removal have hollows.
- The **retention** of (178) trees and **protection** of one hundred and seventy-two (172) trees inclusive.

2.5 The removed trees are to be **replenished** with eleven (11) 50-litre potted volumes of suitable indigenous plant species from Appendix F, such as <u>*Callistemon*</u> <u>*viminalis*</u> (Weeping Bottlebrush) and <u>*Elaeocarpus reticulatus*</u> (Blueberry Ash).

 $^{^{1}\,}https://www.cityofparramatta.nsw.gov.au/sites/council/files/inline-files/05_OTHER\%20PROVISIONS_0.pdf$

2.6 **Tree Protection Systems** are required and must be installed prior to commencement of the development. This includes:

- The distribution of 75mm depth layers of clean, certified *Eucalyptus spp.* **mulch ground cover protection** over the TPZs of the retained trees, excluding areas outside the site boundaries and areas within the envelope of the proposed development.
- The installation of **tree protection fencing** around the TPZs of one hundred and sixty-four (164) trees numbered: 1 to 135, 148 to 157, 160, 163, 164, and 170 to 178. This excludes areas outside the site boundaries and areas within the envelope of the proposed development.
- The installation of **tree trunk/branch protection** around the trunks of fourteen (14) trees numbered: 136, 142, 143, 144, 145, 146, 147, 158, 161, 162, 165, 166, 167 & 168. Tree trunk protection installation is comprised of vertically-installed hardwood timber batons over geofabric and secured by framing steel with 150mm air gaps.
- The placement of **rumble boards**, **geotextile fabric** and **crushed inert gravel** over the TPZs of retained trees where construction vehicles require access to the proposed development area.
- The placement of **geotextile fabric** and 75mm depth layers of *Eucalyptus spp.* **mulch** over the TPZs of retained trees where scaffolding and soleplates are required.
- **Signage** is to be attached to the tree protection fencing and tree trunk/branch protection stating 'Tree Protection Zone: Keep Out' and the project arborist's contact number.
- Trees near building works must be drip irrigated so that the soil is kept moist.

2.7 **Canopy pruning** may be required to provide clearance for scaffolding and the proposed buildings. If required, pruning is to be completed by an AQF Level 3 arborist in accordance with *Australian Standard*® *AS* 4373-2007 – *Pruning of Amenity Trees*, with supervision by an AQF Level 5 project arborist for specification.

2.8 The site is estimated to have a total tree canopy cover of approximately 9,946m², including trees along common property boundaries. There will be an estimated canopy cover loss of approximately $497m^2$ (a ~5% loss of the total canopy cover) from the removal of five (5) trees. Offsets for these removed trees have been considered in the Tree Protection Plan (see Figure 4).

2.9 The contractors and staff are to be inducted by the project arborist in relation to the health and protection of the retained trees and the replenishment of the removed trees in the Pendle Hill High School community. This will benefit the community riparian area.

2.10 McArdle Arboricultural Consultancy Pty Ltd prepared the report. The Arboricultural Impact Assessment report is developed to assess the trees at the above address for health and status. Mr. Jim McArdle B.Ed. Sc ACU, Dip Arb AQF L5 Ryde, QTRA, Tree Risk Management Assessor and TCAA President, conducted the evaluation using Visual Tree Assessment (VTA) according to Claus Mattheck and Breloer's (1994) method for biological and lower level mechanical functions. The systems are in accordance with industry best practice and impact assessments are based upon the *Australian Standard*® *AS* 4970-2009 – Protection of Trees on Development Sites&As4373 2007 Pruning of Amenity Trees.

3.0 AIMS

The aim of the report is to:

3.1 To assess the potential impacts of the proposed development at Pendle Hill High School on approximately one hundred and eighty-three (183) trees on site, according to the methodologies presented in this report.

3.2 To give recommendations for management and protection during the proposed development. Protection measures will be referenced from *Australian Standard*® *AS* 4970-2009 – Protection of Trees on Development Sites.

4.0 METHODOLOGY

4.1 A ground Visual Tree Assessment (VTA) method was employed in this Arboricultural Impact Assessment. The VTA system is a method used to identify visible signs on trees that indicate health and potential hazards, and it is based on the theory of tree biology, physiology, tree architecture and structure.

4.2 The collection of data is performed in the field by an AQF Level 5 arborist. The assessment summarises the species, height, diameter, health and structural condition, hazards, and retention categories assigned to each tree.

4.3 Testing on site may include mallet sounding, non-invasive testing for hollows, probing cavities, and checking for white ant infestation. Invasive tests will determine the depth of decay around cavities. All testing is ground-based and options may include further investigation.

4.4 The planning guidelines and specific legislation for this site have been studied from desktop research.

4.5 Impact assessment data was recorded in a Tree Survey Table using various assessment methods from the appendices listed below and setbacks are calculated according to *Australian Standard*® *AS* 4970-2009 – *Protection of Trees on Development Sites*.

Appendix A:	Tree Useful Life Expectancy (TULE) 2014. Gives extra assessment of life expectancy categories. <i>Adapted from Jeremy Barrell 2014.</i>
Appendix B:	Tree A-Z Categories. Assesses the importance of trees on development
	sites. Version 10.04-ANZ 2010 Barrell.
Appendix C:	Health & Structural Condition of Tree Assessment. This describes the
	vigour and vitality of the tree. Mattheck (1994) The Body Language of
	Trees.
Appendix D:	Retention Values. Some trees have special restrictions including
	cultural, scientific, historical or threatened categories, and may be
	reviewed as part of this report or further reporting. Morton (2006)
	Determining Landscape Significance Ratings.
Appendix E:	Tree Protection. Details of Tree Protection Zones and minimum
	setback, distances for each numbered tree, according to Australian
	Standard® AS 4970-2009 – Protection of Trees on Development Sites.
Appendix F:	Tree Planting Specifications. Plants supplied for replenishment must
	be council-compliant, be in the specified container sizes, and within the
	approved plant heights specified. Australian Standard® AS 2303-2018 -
	Tree Stock for Landscape Use.

5.0 PLANNING GUIDELINES AND SPECIFIC LEGISLATION

5.1 Tree management measures are in place for The City of Parramatta Council under the provisions of the trees and vegetation preservation for properties covered under Parramatta Local Environmental Plan 2011.

5.2 According to the NSW Planning Portal, the site has **R2: Low Density Residential** land zoning, **Wind Turbine Buffer Zone** local provisions, and **Minimum Lot Size (sqm)** local provisions of 600m² permitted.

5.3 A search of local and state heritage registers, tree registers and determination of landscape significance were carried out for tree identified in the survey; however, no trees of heritage significance were identified at this site.

5.4 SIGNIFICANCE IN THE ENVIRONMENT

Trees are subject to the following legislation:

- **Biodiversity Conservation Act NSW (BIO Act 2016)**: Provides provisions for conserving biodiversity.
- **Threatened Species Conservation Act NSW (1995 TCS Act)**: Provides provisions for conserving threatened species, populations and ecological communities of animals and plants, as well as managing key threatening processes.
- **Environmental Protection and Biodiversity Conservation Act NSW (EPBC Act 1999)**: Provides provisions to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places.
- **Biosecurity Act NSW (BIO Act 2015)**: Refers to the protection of native plant communities, reducing the risk to human's health and the risk to agricultural production from invasive weeds.
- **NSW Bushfire Brigade 10/50 Legislation** is not enforced for this site.

5.5 SIGNIFICANCE IN THE LANDSCAPE

Trees are generally categorised as either:

- Significant in the landscape, based on a broad landscape perspective, and has heritage or important ecological value. **SIGNIFICANT** retention value.
- Significant in the landscape; based on an adjacent area surrounding the site. **HIGH** retention value.
- Significant in the landscape; based on a neighbourhood perspective. Retained due to its status but may have some conditions or health issues. **MODERATE-HIGH** retention value.
- Good and worthy of preservation; retained due to its status, but may have minor conditions or health issues. **MODERATE** retention value.
- Worthy of preservation; retained due to its status, but may have major conditions or health issues. **LOW-MODERATE** retention value.
- Retain if Possible. **LOW** retention value.
- Exempt from retention. **VERY LOW** retention value.

REFERENCES

Retention Values Tables based on Melanie Howden and Andrew Morton.

6.0 ANALYSIS OF MAPPING CONTROLS



Figure 1: Land Zoning. R2: Low Density Residential (red).



Figure 2: Local Provisions (grey). Wind Turbine Buffer Zone. Minimum Lot Size (sqm) = 600m^{2.}

7.0 THE SITE

7.1 Approximately one hundred and eighty three (183) trees were assessed on site at Pendle Hill High School. The land is mainly composed of sandy-clay soils² and slopes to the north-west.

7.2 The collection of survey data was limited, and inspections were previously conducted on the 1^{st} and 2^{nd} of April, 2020, then reviewed from the 25^{th} March, 2021, by the AQF Level 5 arborist.

7.3 SCALED SITE MAP



Figure 3: A scaled site map of Pendle Hill High School. The site perimeter is outlined in yellow.

² https://www.environment.nsw.gov.au/eSpade2WebApp

8.0 TREE SURVEY TABLE

Table 1: Tree Survey Table. This table lists the results of the ground VTA for this site.

Tree No.	Location	Scientific & Common Names	Crown Spread (m)	Height (m)	Diam (cm)	TPZ SRZ (m)	Height Un'(m) Crown	Tree Condition (Health & Structure) (Defects & Measurements)	TULE	Retention Value	Intended Works
1		<u>Lophostemon confertus</u> Brush Box	5	11	25 30	3 2	4	Immature, good condition, with rubbing branches at 3m height.	2a	Low- Moderate	
2		<u>Eucalyptus saligna</u> Sydney Blue Gum	13	21	67 110	8.04 3.44	3	Semi-mature, poor condition and in decline, with borers at the base, and an unbalanced canopy.	3d	Low- Moderate	
3		<u>Eucalyptus elata</u> River Peppermint	3	5	16 20	2 1.68	1	Immature, poor condition, with a lean and an unbalanced canopy to the east.	2d-3d	Low- Moderate	
4		<u>Allocasuarina torulosa</u> Rose She-Oak	4	10	20 28	2.4 1.94	3	Immature, good condition, suppressed canopy, unbalanced canopy northeast	2a	Low- Moderate	
5		<u>Allocasuarina torulosa</u> Rose She-Oak	5	6	11/14 19	2.16 1.65	1	Immature, good condition but poor development, with a suppressed and unbalance canopy to the north.	2d	Low- Moderate	
6		<u>Eucalyptus scoparia</u> Wallangarra White gum	15	17	58 79	6.96 3	3	Semi-mature, good condition, with damaged roots, dead wood, and swelling to the north at 1m height.	2d	Moderate -High	
7		<u>Eucalyptus scoparia</u> Wallangarra White gum	4	8	14/10/ 3	2.04	3	Immature, poor condition, multi-stemmed.	2a	Low	
8		<u>Liquidambar styraciflua</u> Liquidambar	6	7	10/10/ 8/12 28	2.4 1.94	3	Immature, poor condition, previously pruned, with an unbalanced canopy to the south.	3d	Low	Retain and
9		<u>Allocasuarina torulosa</u> Rose She-Oak	4	7	12/15 20	2.28 1.68	1.5	Immature, good condition, with a suppressed canopy.	2a	Low- Moderate	protect.
10		<u>Angophora costata</u> Smooth-Barked Apple	9	10	36 43	4.32 2.32	4	Immature, good condition but poor development, with a lean and an unbalanced canopy to the north, and minor dead wood.	2d	Moderate	
11		<u>Allocasuarina torulosa</u> Rose She-Oak	5	10	23 27	2.76 1.91	1	Immature, with an inclusion at 2m height with fractured bark, epicormics at the base, and an unbalanced canopy to the west.	2d	Low- Moderate	
12		<u>Allocasuarina torulosa</u> Rose She-Oak	4	8	14 18	2 1.61	1	Immature, good condition but poor development, with a suppressed, unbalanced canopy to the west.	2d	Low- Moderate	
13		<u>Eucalyptus saligna</u> Sydney Blue Gum	18	20	78 112	9.36 3.47	7	Semi-mature, good condition but poor development, with a minor damaged cavity to the south-east at 8m height, epicormics, dead wood up to 10m height, and borers at the base.	2d	Moderate -High	
14		<u>Eucalyptus tereticornis</u> Forest Red Gum	12	22	48 56	5.76 2.59	10	Immature, with an unbalanced canopy to the north- east, epicormics, a failed branch, and exudation to the west at 2.5m height.	2a	Moderate -High	

Tree No.	Location	Scientific & Common Names	Crown Spread (m)	Height (m)	Diam (cm)	TPZ SRZ (m)	Height Un'(m) Crown	Tree Condition (Health & Structure) (Defects & Measurements)	TULE	Retention Value	Intended Works
15		<u>Eucalyptus tereticornis</u> Forest Red Gum	8	21	52 54	6.24 2.55	10	Immature, good condition, with an inclusion at 8m height.	2a	Moderate -High	
16		<u>Eucalyptus saligna</u> Sydney Blue Gum	16	18	67 100	8.04 3.31	5	Semi-mature, in decline, with borer infestation through 100% of the trunk, a sparse foliage crown, root damage, and a cavity with damage.	3d	Low	
17		<u>Callistemon salignus</u> Willow Bottlebrush	6	19	28 32	3.36 2.05	<1	Immature, good condition but poor development, with epicormics at the base, a suppressed and unbalanced canopy to the east, and an inclusion at 1m height.	2d	Moderate	
18		<u>Allocasuarina torulosa</u> Rose She-Oak	3	7	12/12/ 10 20	2.4 1.68	<1	Immature, good condition but poor development, with an unbalanced canopy to the north.	2d	Low- Moderate	Retain and
19		<u>Eucalyptus crebra</u> Narrow-Leaved Ironbark	6	13	34 40	4.08 2.25	7	Immature, in decline, with an unbalanced canopy to the north, 10%, dieback, significant dead wood, epicormics, and insect damage.	3d	Moderate	protect.
20		<u>Allocasuarina torulosa</u> Rose She-Oak	5	10	16/16/ 21 30	3.72 2	<1	Immature, good condition, with an inclusion at 1m height, and an unbalanced canopy to the north.	2a	Moderate	
21		<u>Allocasuarina torulosa</u> Rose She-Oak	6	11	29 34	3.48 2.1	<1	Immature, good condition.	2a	Moderate	
22		<u>Eucalyptus tereticornis</u> Forest Red Gum	8	18	57 69	6.48 2.83	2-3	Semi-mature, good condition but poor development, with a lean and an unbalanced canopy to the north- east, epicormics, and insect damage.	2d-3d	Moderate	
23		Species unknown (stag)	-	9	18 23	2.16 1.79	-	Dead.	4a	Very Low	Retain.
24		<u>Olea europaea</u> European Olive	9	8	17/15/ 16/14 45	3.72 2.37	<1	Semi-mature, good condition but poor development, previously pruned, with a fractured branch to the south at 1m height.	2d	Low	
25		<u>Callistemon salignus</u> Willow Bottlebrush	4	7	22 25	2.64 1.85	<1	Immature, with a lean and an unbalanced canopy to the north, a sparse foliage crown, and a suppressed canopy.	3d	Low- Moderate	Retain and
26		<u>Cedrus deodara</u> Deodar Cedar	7	15	18/17 33	3 2.08	3-4	Immature, good condition, previously pruned with an inclusion at 1m height, twin stems, and epicormics at 2m height.	2a	Moderate	protect.
27		<u>Jacaranda mimosifolia</u> Blue Jacaranda	8	9	31 34	3.72 2.1	1	Immature, good condition but poor development, previously pruned, with a lean and an unbalanced canopy to the west, and epicormics.	2d	Moderate	

Tree No.	Location	Scientific & Common Names	Crown Spread (m)	Height (m)	Diam (cm)	TPZ SRZ (m)	Height Un'(m) Crown	Tree Condition (Health & Structure) (Defects & Measurements)	TULE	Retention Value	Intended Works
28		<u>Jacaranda mimosifolia</u> Blue Jacaranda	7	10	28/12 35	3.6 2.13	2	Immature, good condition but poor development, previously pruned, with a lean and an unbalanced canopy to the west, and epicormics.	2d	Moderate	
29		<u>Jacaranda mimosifolia</u> Blue Jacaranda	8	11	29 35	3.48 2.13	2	Immature, good condition but poor development, previously pruned, with a lean and an unbalanced canopy to the west, and epicormics.	2d	Moderate	
30		<i>Jacaranda mimosifolia</i> Blue Jacaranda	6	11	17/21/ 17 29	3.84 1.97	2	Immature, good condition but poor development, previously pruned, with a lean and an unbalanced canopy to the west, and epicormics.	2d	Moderate	
31		<i>Jacaranda mimosifolia</i> Blue Jacaranda	8	12	35/34	5.88	2	Immature, good condition but poor development, previously pruned, with a lean and an unbalanced canopy to the west, epicormics, and physical damage at 1m height.	-	Moderate	
32		<u>Hibiscus spp.</u> Hibiscus	5	5	5-10 80	2 3.01	<1	Immature, good condition, previously pruned.	3a	Low	
33		<u>Callistemon viminalis</u> Weeping Bottlebrush	2	3	10 16	2 1.53	<1	Immature, with a lean to the north-west, and a fractured stem at the base.	3d	Low	
34		Leptospermum petersonii Lemon-Scented Teatree	5	6	20/10/ 13 30	3.12 2	1-2	Semi-mature, multi-stemmed, with damage at the base, and a cavity to the east at 1m height.	3d	Low	Retain and protect .
35		<u>Leptospermum petersonii</u> Lemon-Scented Teatree	4	5	10/14 26	2.04 1.88	1-2	Semi-mature, with epicormics and a significant cavity at the base, and an unbalanced canopy.	3d	Low	
36		<u>Leptospermum petersonii</u> Lemon-Scented Teatree	5	5	21/18/ 17 34	3.84 2.1	1-2	Semi-mature, with fungi on a branch, epicormics at the base, a previously pruned leader, and an unbalanced canopy.	3d	Low	
37		<u>Leptospermum petersonii</u> Lemon-Scented Teatree	3	5	17 28	2.04 1.94	1-2	Mature, with a failed leader, epicormics at the base, and an unbalanced canopy.	3d	Low	
38		<u>Leptospermum petersonii</u> Lemon-Scented Teatree	2	4	14/12/ 8 18	2.4 1.61	1-2	Immature, good condition but poor development, with epicormics, and a parasitic vine on the stem.	3d	Low	
39		<u>Leptospermum petersonii</u> Lemon-Scented Teatree	6	6	20/18/ 16 40	3.72 2.25	1-2	Semi-mature, good condition but poor development, with twin stems, epicormics and a parasitic vine at the base.	3d	Low	

Tree No.	Location	Scientific & Common Names	Crown Spread (m)	Height (m)	Diam (cm)	TPZ SRZ (m)	Height Un'(m) Crown	Tree Condition (Health & Structure) (Defects & Measurements)	TULE	Retention Value	Intended Works
40		<u>Leptospermum petersonii</u> Lemon-Scented Teatree	4	6	16/20 38	3.12 2.2	1-2	Semi-mature, good condition but poor development, with twin stems, a failed branch, and a fracture at the base.	3d	Low	
41		<u>Plumeria species</u> Frangipani	2-3	2-3	2-5 8	2 1.5	<1	Immature, good condition.	2a	Low	
42 (x 3)		<u>Plumeria species</u> Frangipani	1-2	1-2	2-4 7	2 1.5	<1	Immature, good condition.	2a	Low	
43		<u>Elaeocarpus reticulatus</u> Blueberry Ash	3	7	6/10 20	2 1.68	1	Immature, good condition, previously pruned at the base, with twin stems, and an unbalanced canopy to the west.	2d	Low	Retain and protect.
44		<u>Elaeocarpus reticulatus</u> Blueberry Ash	5	8	12/14 22	2.16 1.75	1	Immature, good condition, with twin stems.	2a	Low- Moderate	
45		<u>Grevillea robusta</u> Silky Oak	8	17	43 56	5.16 2.59	3	Semi-mature, good condition but poor development, previously pruned, with dead wood, a sparse foliage crown, and an unbalanced canopy to the east.	2d	Moderate	
46		<u>Brachychiton acerifolius</u> Illawarra Flame Tree	6	11	26 27	3.12 1.91	2	Immature, good condition, with an inclusion at 1m height, and an unbalanced canopy to the east.	2a	Moderate	
47		Species unknown (stag)	-	8	14/11	2.16	-	Dead.	4a	Very Low	Retain
48		<u>Stenocarpus sinuatus</u> Firewheel Tree	3	8	16 19	2 1.65	1.5	Immature, good condition, with an inclusion at 1.5m height, and a supressed canopy.	2d	Low- Moderate	
49		<u>Grevillea robusta</u> Silky Oak	6	19	37 44	4.44 2.34	2-3	Semi-mature, good condition but poor development, with exposed and damaged roots, and damage to the north at the base.	2d	Moderate	
50		<u>Corymbia maculata</u> Spotted Gum	17	17	58 75	6.96 2.93	6 west	Semi-mature, good condition but poor development, with exposed and damaged roots.	2d	Moderate -High	
51		<u>Corymbia citriodora</u> Lemon-Scented Gum	13	18	55 67	6.6 2.8	5	Semi-mature, previously pruned, with exudation, and an unbalanced canopy to the south.	2d	Moderate -High	Retain and
52		<u>Corymbia maculata</u> Spotted Gum	16	26	91 120	10.9 2 3.57	8	Mature, good condition, with an unbalanced canopy to the north, damaged roots, and epicormics.	2a	High	protect.
53		<u>Corymbia maculata</u> Spotted Gum	18	27	54/44/ 45 125	9.96 3.63	11	Mature, good condition but poor development, with three main leaders, girdling roots, and epicormics at the base.	2d	Moderate -High	

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54		<u>Ligustrum spp.</u> Privet	6	9	20/20 38	3.36 2.2	1	Semi-mature, good condition but poor development, with epicormics, and an inclusion at 1m height.	2d-3c	Very Low	Retain
55		<i>Jacaranda mimosifolia</i> Blue Jacaranda	7	10	33 39	3.9 2.23	1.5	Immature, good condition but poor development, with significant root damage to the south, a lean and an unbalanced canopy to the north, and epicormics.	2d	Moderate	
56		<u>Eucalyptus crebra</u> Narrow-Leaved Ironbark	10	16	72 90	8.64 3.17	7	Semi-mature, previously pruned to the south-west at 6m height, with a fracture, epicormics, and minor dead wood.	2d	Moderate -High	
57		<u>Melaleuca quinquenervia</u> Broad-Leaved Paperbark	5	6	20/10/ 18 35	3.48 2.13	<1	Immature, good condition but poor development with unnatural form, growing along the ground to the north.	2d-3d	Moderate	
58		<u>Melaleuca quinquenervia</u> Broad-Leaved Paperbark	4	7	30 39	3.6 2.23	1	Immature, good condition.	2a	Moderate	
59		<u>Melaleuca quinquenervia</u> Broad-Leaved Paperbark	4	7	11/10/ 18 29	2.76 1.97	1	Immature, good condition, with an inclusion at the base.	2a	Moderate	
60		<u>Melaleuca quinquenervia</u> Broad-Leaved Paperbark	3	5	23 35	2.76 2.13	1	Immature, good condition but poor development, with epicormics at the base.	2d	Moderate	
61		<u>Eucalyptus microcorys</u> Tallowwood	3	5	4/6/3/ 2 10	2 1.5	<1	Immature, good condition.	2a	Low	Retain and protect.
62		<u>Eucalyptus microcorys</u> Tallowwood	8	17	72 95	8.64 3.24	5	Semi-mature, good condition but poor development, with exposed and damaged roots epicormics, and a failed branch to the west at 6m height.	2d	Moderate -High	
63		<u>Eucalyptus microcorys</u> Tallowwood	20	19	72 90	8.64 3.17	5	Semi-mature, good condition, with epicormics, and exposed damaged roots to the north.	2d	Moderate -High	
64		<u>Eucalyptus microcorys</u> Tallowwood	18	17	70 80	8.4 3.01	5	Semi-mature, good condition but poor development, previously pruned at 2-3m height, with an unbalanced canopy to the west.	2d	Moderate -High	
65		<u>Eucalyptus microcorys</u> Tallowwood	14	16	77 105	9.24 3.38	6	Semi-mature, previously pruned, with exposed and damaged roots, epicormics, a sparse foliage crown, dead wood in the canopy, and an unbalanced canopy to the north-west.	2d	Moderate -High	
66		<u>Callistemon viminalis</u> Weeping Bottlebrush	4	4	5/5/4/ 5/4 20	2 1.68	1	Immature, good condition but poor development, with an unbalanced canopy.	3d	Low	

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67		<u>Callistemon viminalis</u> Weeping Bottlebrush	3	4	5/5/6/ 4 16	2 1.53	1	Immature, good condition but poor development, with an unbalanced canopy.	3d	Low	
68		<u>Acacia implexa</u> Hickory Wattle	14	11	50/30 100	6.96 3.31	3	Semi-mature, good condition but poor development, previously pruned, with a lean and an unbalanced canopy to the north-west, cankers, dead wood, and exposed roots.	3d	Moderate	
69		<u>Callistemon salignus</u> White bottlebrush	4	7	18 20	2.16 1.68	2	Immature, good condition, previously pruned to the east, with a lean and an unbalanced canopy to the north-west, cankers, dead wood, and exposed roots.	2d-3d	Low- Moderate	
70		<u>Callistemon salignus</u> Willow Bottlebrush	3	6	17/14 22	2.64 1.75	1	Immature, previously pruned dead leaders, with 20% dieback in the remaining leader, a lean, and an unbalanced canopy.	3d	Low	
71		<u>Corymbia maculata</u> Spotted Gum	10	13	44/45/ 15 50	7.8 2.47	6	Semi-mature, in decline, multi-stemmed at the base, with one dead leader, and a sparse foliage crown.	3d	Low- Moderate	
72		<u>Schinus molle</u> Peppercorn Tree	11	9	40/14/ 9 85	5.16 3.09	<1	Semi-mature, good condition, previously pruned to the east, with exposed roots to the south, and an unbalanced canopy to the north.	2d	Moderate	Retain and
73		<u>Schinus molle</u> Peppercorn tree	12	8	23/14/ 50 130	6.84 3.69	<1	Semi-mature, good condition, previously pruned, with an unbalanced canopy to the north, a minor cavity, and decay at the base.	2d	Moderate	protect.
74		<u>Eucalyptus tereticornis</u> Forest Red Gum	5	15	28 35	3.36 2.13	9	Immature, good condition but poor development, with an unbalanced canopy to the north-west.	2a	Moderate	
75		<u>Eucalyptus tereticornis</u> Forest Red Gum	3	14	19 22	2.28 1.75	7	Immature, good condition but poor development, with a sparse foliage crown, and epicormics.	2d	Moderate	
76		<u>Eucalyptus tereticornis</u> Forest Red Gum	4	10	17 20	2.04 1.68	6	Immature, good condition, with a lean and an unbalanced canopy to the north.	2a	Moderate	
77		<u>Eucalyptus paniculata</u> Grey Ironbark	12	15	74 60	8.88 2.67	5	Semi-mature, good condition but poor development, with an inclusion at 1m height, a previously failed branch to the north at 1m height, and an unbalanced canopy to the east.	2d	Moderate -High	
78		<u>Schinus molle</u> Peppercorn Tree	4	3	12/10/ 5 16	2 1.53	<1	Immature, good condition but poor development.	2a	Low	
79		<u>Eucalyptus globulus</u> Tasmanian Blue Gum	11	14	116 133	13.9 2 3.73	5-6	Mature, in decline, with a very sparse foliage crown.	3d	Moderate	

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80		<u>Eucalyptus tereticornis</u> Forest Red Gum	5	12	26 32	3.12 2.05	6	Immature, good condition but poor development, with minor dead wood.	2d	Low- Moderate	
81		<u>Eucalyptus tereticornis</u> Forest Red Gum	6	14	30 39	3.6 2.23	7	Immature, good condition, with significant dead wood to the south at 2m height.	2d	Low- Moderate	
82		<u>Eucalyptus tereticornis</u> Forest Red Gum	7	5	15/16/ 13 35	3 2.13	1-2	Immature, previously damaged at base and losing form, growing to the south-east.	3d	Low	
83		<u>Eucalyptus tereticornis</u> Forest Red Gum	8	17	52 60	6.24 2.67	10	Immature, good condition, with an unbalanced canopy to the south.	2a	Moderate -High	
84		<u>Eucalyptus tereticornis</u> Forest Red Gum	2	9	20 28	2.4 1.94	6	Immature, good condition but poor development, with decay and a scar to the north-west at the base.	2a	Low	
85		<u>Eucalyptus crebra</u> Narrow-Leaved Ironbark	10	12	37/48 90	7.32 3.17	1 east 4 west	Semi-mature, good condition, with an unbalanced canopy to the east, and an inclusion at 1m height.	2d	Moderate -High	
86		<u>Eucalyptus tereticornis</u> Forest Red Gum	5	12	29 35	3.48 2.13	6	Immature, good condition.	2a	Low- Moderate	
87		<u>Eucalyptus tereticornis</u> Forest Red Gum	6	14	34 37	4.08 2.18	8	Immature, good condition, with an inclusion at 1.5m height, minor dead wood, and insect damage.	2a	Low- Moderate	
88		<u>Eucalyptus tereticornis</u> Forest Red Gum	6	12	26 31	3.12 2.02	7	Immature, good condition, with an inclusion at 1.5m height, and minor dead wood.	2a	Low- Moderate	Retain and
89		<u>Eucalyptus tereticornis</u> Forest Red Gum	5	19	32 34	3.84 2.1	7	Immature, good condition but poor development, with a previously failed leader at 2m height.	2d	Low- Moderate	protect.
90		<u>Eucalyptus resinifera</u> Red Mahogany	16	23	43/35/6 0/30 111	10.4 3.46	3	Mature, good condition but poor development, with termite damage, epicormics, and minor dieback.	2d-3d	High	
91		<u>Eucalyptus microcarpa</u> Grey Box	9	20	65 79	7.8 3	10	Semi-mature, good condition but poor development, with a lean to the north, cankers, lesions on the stem, and epicormics.	2d	Moderate	
92		<u>Eucalyptus microcarpa</u> Grey Box	14	21	87 109	10.4 4 3.43	10	Semi-mature, good condition, with twin stems at 3m height, an unbalanced canopy to the east, epicormics, and minor dead wood.	2d	Moderate -High	
93		<u>Eucalyptus microcarpa</u> Grey Box	12	20	63 71	7.56 2.87	7	Semi-mature, good condition, with minor dead wood, growing adjacent to a pathway.	2a	Moderate	
94		<u>Ficus elastica</u> Rubber Fig	6	6	18/18/ 14 30	3.48 2	<1	Immature, good condition but poor development, growing against a shed.	3d	Low	
95		<u>Eucalyptus paniculata</u> Grey Ironbark	11	17	67 73	8.04 2.9	5-6	Semi-mature, good condition, with epicormics.	2a	Moderate -High	

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96		<u>Eucalyptus tereticornis</u> Forest Red Gum	13	22	108 127	12.9 3.66	7-8	Semi-mature, significant, good condition, with an inclusion at 5m height, and new growth.	2a	High	
97		<i>Eucalyptus paniculata</i> Grey Ironbark	9	17	60 64	7.2 2.74	6	Immature, good condition but poor development, with a suppressed canopy, epicormics, a cavity at the base, and termites.	2d	Moderate -High	Dotain and
98		<u>Citrus spp.</u> Citrus	2	3	5/5/5/ 5 10	2 1.5	1	Immature, poor condition, with 50% dieback.	3d	Low	protect.
99		<u>Lophostemon confertus</u> Brush Box	6	9	30/36/ 15 49	5.88 2.45	2-3	Immature, good condition, with fungal damage to the south at 1m height.	2a	Moderate	
100		Species unknown (stag)	-	7	42 60	5.04 2.67	-	Dead, with fractures near the top.	4a	Very Low	Retain
101		<u>Syagrus romanzoffiana</u> Cocos Palm	6	7	28 32	3.36 2.05	4-5	Immature, good condition but poor development.	2d	Low	
102		<u>Backhousia myrtifolia</u> Grey Myrtle	3	4	18	2.16	<1	Immature, good condition.	3a	Low	
103		<u>Backhousia myrtifolia</u> Grey Myrtle	4	6	15 20	2 1.68	<1	Immature, good condition.	3a	Low	
104		<u>Ailanthus altissimia</u> Tree of Heaven	5	8	12/15 23	2.28 1.79	1	Immature, with an inclusion at the base.	5e	Low	
105		<u>Plumeria species</u> Frangipani	4	2	10 10	2 1.5	<1	Immature, with an unbalanced canopy.	3d	Low	Retain and protect.
106		<u>Citrus spp.</u> Citrus	3	3	5 8	2 1.5	<1	Immature, good condition.	3a	Low	
107		<u>Bamboo spp.</u> Bamboo	8	3	< 5	2	<1	Immature, multi-stemmed, group of bamboo trees.	3a	Low	
108		<u>Cupressus sempervirens</u> Mediterranean Cypress	2	5	11 15	2 1.5	<1	Immature, good condition.	3a	Low	
109		<u>Ligustrum spp.</u> Privet	4	6	20/15 30	3 2	1	Immature, with an unbalanced canopy, and fruiting berries in the leaders.	5e	Very Low	Retain
110		<u>Grevillea robusta</u> Silky Oak	4	7	28 34	3.36 2.1	2	Immature, multi-stemmed, with minor damage, an unbalanced canopy, and epicormics at the base.	3d	Low- Moderate	Retain and
111		<u>Jacaranda mimosifolia</u> Blue Jacaranda	8	8	25/15/1 2/12 40	4.08 2.25	2	Immature, multi-stemmed, with minor damage to the south, an unbalanced canopy, and epicormics.	2d	Low- Moderate	protect.

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112		<u>Callistemon viminalis</u> Weeping Bottlebrush	9	11	40/25 56	5.64 2.59	1.5	Mature, good condition, with an inclusion at 1m height, and an unbalanced canopy east.	3d	Moderate	
113		<u>Callistemon viminalis</u> Weeping Bottlebrush	7	8	22/18/ 17 45	3.96 2.37	1.5	Semi-mature, good condition but poor development, previously pruned, with an inclusion at the base, and unbalanced canopy, and a fail to the south at 3m height.	3d	Moderate	Retain and protect.
114		Leptospermum petersonii Lemon-Scented Teatree	5	6	28/17	3.96	1	Semi-mature, good condition but poor development, with a suppressed & unbalanced canopy, and previously failed branches.	3d	Low- Moderate	
115		<u>Ligustrum spp.</u> Privet	4	6	10/10 14	2 1.5	1	Immature, good condition but poor development.	5e	Very Low	Retain.
116		<u>Cinnamomum camphora</u> Camphor Laurel	7	13	23/20 40	3.6 2.25	1	Immature, good condition but poor development, with twin stems and an unbalanced canopy to the north-east.	3d	Low	
116a		<u>Melaleuca quinquenervia</u> Broad-Leaved Paperbark	8	12	80 100	9.6 3.31	3-4	Semi-mature, good condition, with a lean to the west.	2d	Moderate	
117		<u>Morus spp.</u> Mulberry Tree	6	9	12/5 16	2 1.53	1-2	Immature, good condition but poor development, with borers, and an unbalanced canopy to the north- west.	3d	Low	
118		<u>Hakea. Spp.</u> Hakea	6	7	18/101 0 19	2.76 1.65	1	Semi-mature, good condition, with an unbalanced canopy, and competing with nearby trees.	3d	Low- Moderate	
119		<u>Olea europaea</u> European Olive	4	6	18/11 30	2.52 2	1	Immature, with an unbalanced canopy to the north.	3d	Low	Retain and
120		<u>Ficus carica</u> Common Fig	6	6	27/13 35	3.6 2.13	1	Over-mature, in decline.	3d-4a	Low	protect.
121 (x 6)		<u>Citrus spp.</u> Citrus	2	2	3-8 12	2 1.5	<1	Immature, good condition but poor development.	3a	Low	
122		<u>Prunus spp.</u>	3	2	3-5 20	2 1.68	1	Mature, poor condition, with rot and a cavity to the east at the base.	3d	Low	
123		<u>Prunus spp.</u>	2	2	3-6 20	2 1.68	1	Immature, good condition but poor development, previously pruned.	3a	Low	
124		<u>Eucalyptus tereticornis</u> Forest Red Gum	15	23	89 118	10.6 8 3.55	11	Mature, good condition, previously pruned, with minor dead wood, two hollows at 10m height, and swelling at the base.	2d	High	
124a		<u>Banksia integrifolia</u> Coast Banksia	2	5	12 15	2 1.5	1	Immature, poor condition, with a sparse foliage crown.	3d	Low	

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124b		<u>Callistemon salignus</u> Willow Bottlebrush	4	5	7/6/6/ 5 20	2 1.68	1	Immature, good condition.	3a	Low	
125		<u>Quercus robur</u> English Oak	7	10	22 30	2.64 2	1-2	Immature, poor condition.	3d	Moderate	
126		<u>Eucalyptus sideroxylon</u> Mugga Ironbark	11	17	40 45	4.8 2.37	2-3	Semi-mature, good condition, with an unbalanced canopy to the east.	2d	Moderate -High	
127		<u>Eucalyptus paniculata</u> Grey Ironbark	13	26	60/65 82	10.5 6 3.04	6	Semi-mature, good condition, with twin stems and an inclusion at the base, and an inclusion at 10m height.	2a	Moderate -High	
128		<u>Eucalyptus tereticornis</u> Forest Red Gum	10	22	55 60	6.6 2.67	9	Semi-mature, good condition but poor development, with an unbalanced canopy to the west.	2d	Moderate -High	
129		<u>Eucalyptus tereticornis</u> Forest Red Gum	9	22	35/40 75	6.36 2.93	10	Semi-mature, good condition but poor development, with twin stems, and minor dead wood.	2d	Moderate -High	
130		<u>Morus nigra</u> Mulberry	8	10	32 35	3.84 2.13	1	Semi-mature, good condition, with a lean and an unbalanced canopy to the north.	2d	Low- Moderate	
130a		<u>Morus nigra</u> Mulberry	7	10	40/25 55	5.64 2.53	1	Mature, good condition but poor development, with dead leaders, and damaged roots.	2d-3d	Low- Moderate	Retain and
130b		<u>Leptospermum spp.</u> Teatree	5	7	18 20	2.16 1.68	<1	Immature, with a lean and a suppressed unbalanced canopy.	3d	Low	protect.
131		<u>Lophostemon confertus</u> Brush Box	14	12	31/40/ 40 80	7.8 3.01	3	Semi-mature, triple-stemmed, with an unbalanced canopy to the west, and good growth.	2d	Moderate	
132		<u>Lophostemon confertus</u> Brush Box	12	12	20/34/3 5 50	6.36 2.47	3	Multi-stemmed.	2a	Moderate	
133		<u>Lophostemon confertus</u> Brush Box	8	8	25/25 30	4.2 2	3	Immature, with co-dominant stems.	2a	Low- Moderate	
134	North- east side.	<u>Casuarina</u> <u>cunninghamiana</u> River She-Oak	8	12	32 34	3.84 2.1	4	Immature, good condition.	2a	Moderate	
135		<u>Corymbia citriodora</u> Lemon-Scented Gum	16	14	46 50	5.5 2.47	6	Semi-mature, good condition but poor development, with root damage.	2d	Moderate -High	
136	Adjacent courtyard	<u>Ficus rubiginosa</u> Port Jackson Fig	N-E 22 E-W 16	14	150 140	15 3.81	3	Semi-mature, with minor pruning to the south, and an unbalanced canopy.	2d	Moderate -High	
137	North of oval east side	J <u>acaranda mimosifolia</u> Blue Jacaranda	10	8	25/25/ 20 50	4.92 2.47	4	Semi-mature, triple stemmed, with 40% dieback.	2a	Moderate	Remove and replenish.

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138		<u>Jacaranda mimosifolia</u> Blue Jacaranda	10	10	30/30 40	5.04 2.25	4	Semi-mature, with physical damage, steel stakes at the base, and co-dominant stems.	2d	Moderate	
139		<u>Jacaranda mimosifolia</u> Blue Jacaranda	15	12	50 50	6 2.47	4	Semi-mature, crown-lifted and previously pruned, with root damage.	2d	Moderate	Remove
140	East side	<u>Callistemon viminalis</u> Weeping Bottlebrush	12	8	34/20/ 30 47	6 2.41	3	Semi-mature, good condition but poor development.	2a	Moderate	and replenish.
141	East side	<u>Callistemon viminalis</u> Weeping Bottlebrush	5	6	18/15/1 5/15 33	3.84 2.08	3	Immature, good condition but poor development.	2d	Low- Moderate	
142	East side	<u>Eucalyptus tereticornis</u> Forest Red Gum	7	15	33 38	3.96 2.2	6	Immature, good condition.	2a	Moderate	
143	East side	<u>Lophostemon confertus</u> Brush Box	6	6	38 20	3.36 1.68	2	Immature, excellent condition.	2a	Low	
144	East side	<u>Corymbia maculata</u> Spotted Gum	14	20	72 68	8.64 2.81	10	Semi-mature, with twin stems, and a leader pruned at 2m height (350mm cut).	2a	Moderate -High	
145	East side	<u>Corymbia citriodora</u> Lemon-Scented Gum	16	20	54 56	6.48 2.59	13	Semi-mature, good condition but poor development, with an unbalanced canopy to the west.	2a	Moderate -High	
146	Adjacent water	<u>Eucalyptus tereticornis</u> Forest Red Gum	12	13	38/50/ 24 60	8.04 2.67	5	Semi-mature, good condition but poor development, pruned close to the stem.	2d	Moderate	
147	East side	<u>Eucalyptus tereticornis</u> Forest Red Gum	14	14	44/33/ 60 81	9.72 3.03	6	Semi-mature, good condition but poor development, multi-stemmed at 1m height.	2d	Moderate	Retain and protect.
148		<u>Eucalyptus spp.</u>	4	5	5/5/5 10	2 1.5	1	Multi-stemmed.	2d	Low	
149		<u>Eucalyptus spp.</u>	4	4	10/10 20	2 1.68	2	Semi mature, previously pruned	3d	Low	
150		<u>Leptospermum petersonii</u> Lemon-Scented Teatree	7	5	25 36	3 2.15	2	Semi-mature, good condition but poor development, with a suppressed canopy.	2d	Low	
151		<u>Eucalyptus sideroxylon</u> Mugga Ironbark	6	6	20/10 25	2.64 1.85	2	Immature, good condition.	2a	Low	
152		<u>Corymbia maculata</u> Spotted Gum	14	10	43 48	5.16 2.43	5	Semi-mature, good condition but poor development, previously pruned to the east.	2a	Moderate	
153	East walkway	<u>Eucalyptus rubida</u> Candlebark	10	14	32 40	3.84 2.25	5	Immature, good condition.	2d	Moderate	

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154		<u>Eucalyptus nicholii</u> Black Peppermint	8	8	33 35	3.96 2.13	4	Immature, with a lean and an unbalanced canopy to the east.	3d	Low	
155	South fence	<u>Eucalyptus tereticornis</u> Forest Red Gum	6	7	20 25	2.4 1.85	3	Immature, with a kink in the stem, and physical damage at the base.	3a	Low	
156		<u>Corymbia citriodora</u> Lemon-Scented Gum	12	14	42 50	5.04 2.47	8	Semi-mature, good condition, with minor root damage, and unbalanced leaders at 7m height.	2d	Moderate	
157	South	<u>Olea europaea</u> European Olive	8	6	30/20/ 10 40	4.44 2.25	2	Semi-mature, good condition, multiple-stemmed, with termite damage on an old stem.	3a	Low	
158	Adjacent building	<u>Grevillea robusta</u> Silky Oak	8	18	48 62	5.76 2.71	4	Immature, good condition.	2a	Moderate	
159		<u>Callistemon viminalis</u> Weeping Bottlebrush	6	7	20/18/1 2/12/13 75	7.8 2.93	1	Semi-mature, previously pruned, with an inclusion at the base, and an unbalanced canopy to the north- west.	3d	Low- Moderate	
160		<u>Camellia spp.</u> Camellia	2	2	2-5	2.0	<1	Immature, good condition.	3a	Low	
161		<u>Platanus x acerifolius</u> London Plane Tree	12	14	62 80	7.44 3.01	2-3	Semi-mature, good condition, with a lean to the north, and exposed roots.	2a	Moderate	
162		<u>Platanus x acerifolius</u> London Plane Tree	4	13	59 67	7.09 2.8	2-3	Semi-mature, good condition but poor development, with exposed roots, an unbalanced canopy to the east, and a slight lean to the north.	2d	Moderate	Retain and protect.
163		<u>Livistona chinensis</u> Chinese Fan Palm	4	9	50 65	6.0 2.76	7	Semi-mature, good condition, with dead fronds along the trunk.	2d	Low	
164 (x 2)		<u>Camellia spp.</u> Camellia	2	2	2-5	2.0 1.5	<1	Immature, good condition.	3a	Low	
165		<u>Callistemon viminalis</u> Weeping Bottlebrush	5	6	15/14/1 4/15/12 32	3.72 2.1	2	Semi-mature, good condition but poor development, multi-stemmed, with an unbalanced canopy to the west.	2d-3d	Low- Moderate	
166		<u>Callistemon viminalis</u> Weeping Bottlebrush	5	6	16/13/1 3/1/12/ 12 30	3.12	2	Semi-mature, good condition but poor development, multi-stemmed, with unbalanced canopies to the south and north.	2d-3d	Low- Moderate	
167		<u>Callistemon viminalis</u> Weeping Bottlebrush	5	6	16/15/ 14/13 35	3.48 2.13	2	Semi-mature, good condition but poor development, with an unbalanced canopy to the east.	2d-3d	Low- Moderate	
168		<u>Jacaranda mimosifolia</u> Blue Jacaranda	-	-	44/46 67	7.68 2.8	4	Semi-mature, good condition, with twin stems, and an unbalanced canopy to the north-west.	2d	Moderate	
169		Prunus spp.	5	3	9/3/3/ 3	2.0 1.5	<1	Immature, good condition but poor development, with an unbalanced canopy.	3a	Low	

Tree No.	Location	Scientific & Common Names	Crown Spread (m)	Height (m)	Diam (cm)	TPZ SRZ (m)	Height Un'(m) Crown	Tree Condition (Health & Structure) (Defects & Measurements)	TULE	Retention Value	Intended Works
170		<u>Camellia spp.</u> Camellia	2	3	5/3/4 10	2.0 1.5	1	Immature, with a lean and an unbalanced canopy to the south.	3a	Low	
171		<u>Camellia spp.</u> Camellia	3	4	6/6/5/ 4/3 12	2 1.5	2	Immature, good condition but poor development, with a lean and an unbalanced canopy to the south, and two fractured branches at 1m height.	3d	Low	
172		<u>Brachychiton acerifolius</u> Firewheel Tree	3	10	87 93	10.4 3.21	4	Semi-mature, good condition but poor development, with an unbalanced canopy to the north.	2d	Moderate -High	
173		<u>Camellia spp.</u> Camellia	3	5	7/3	2	<1	Immature, good condition but poor development, with an unbalanced canopy to the west.	3d	Low	
174		<u>Prunus spp.</u>	2	2	2-3 5	2.0 1.5	<1	Immature, good condition, with an unbalanced canopy.	3a	Low	Retain and protect.
175	Easement	<u>Cupaniopsis anacardioides</u> Tuckeroo	4	6	10/10/8 16	2 1.53	1	Immature, good condition.	2a	Low- Moderate	
176		<u>Lophostemon confertus</u> Brush Box	3	6	14/10/ 10	2.4 1.5	2	Immature, good condition but poor development, with a sparse foliage crown.	2d	Low- Moderate	
177		<u>Cupaniopsis anacardioides</u> Tuckeroo	4	6	15/12 18	2.28 1.61	1	Immature, good condition.	2a	Low- Moderate	
178		<u>Casuarina</u> <u>cunninghamiana</u> River She-Oak	5	8	21 28	2.52 1.94	2	Immature, good condition, with a lean to the west.	2d	Low- Moderate	

9.0 FINDINGS



Plate 1: Tree 90 (yellow arrow), a <u>Eucalyptus resinifera</u> of HIGH retention value. This tree requires **retention** and **protection**.



Plate 2: Tree 172 (yellow arrow), a <u>Brachychiton</u> <u>acerifolius</u> (Firewheel Tree) of MODERATE-HIGH retention value. This tree requires retention and protection.



Plate 3: Trees at the northern end of the school that require **retention**. Tree 99 (red arrow), Tree 100, dead (yellow arrow).



Plate 4: Trees 73 to 88. Tree 88 (yellow arrow) and Tree Group 85 (red arrow).



Plate 5: Tree 136 (yellow arrow), a *Ficus rubiginosa* (Port Jackson Fig) of **MODERATE-HIGH** retention value. This tree requires **retention** and **protection**.

10.0 TREE PROTECTION PLAN



Figure 4: Tree Protection Plan for Pendle Hill High School.

Five (5) trees numbered: 137, 138, 139, 140 & 141 require **removal** and **replenishment**, due to high anticipated impacts from the proposed development.



Figure 5: Tree Protection Plan of Pendle Hill High School.

Arboricultural Impact Assessment



Figure 6: Tree Protection Plan for Pendle Hill High School.



Figure 7: Tree Protection Plan for Pendle Hill High School.

11.0 DISCUSSION

11.1 Approximately one hundred and eighty-three (183) trees were assessed in relation to their anticipated impacts from the proposed development on site at Pendle Hill High School. The proposed development involves the construction of one (1) building (referred to as 'Building H' in the proposed site plan). The proposed development also involves the construction of fencing, landscaping, signage, gates and pedestrian access pathways, services and an on-site detention tank.

11.2 The retention value of approximately one hundred and eighty-three (183) trees were assessed as follows:

- Four (4) trees have **HIGH** retention value and are numbered: 52, 90, 96 & 124.
- Twenty-seven (27) trees have **MODERATE-HIGH** retention value.
- Fifty-one (51) trees have **MODERATE** retention value.
- Thirty-six (36) trees have **LOW-MODERATE** retention value.
- Fifty-nine (59) trees have **LOW** retention value.
- Six (6) trees are dead, or they are a noxious weed species that are exempt from retention. These trees have **VERY LOW** retention value and are numbered: 23, 47, 54, 100, 109 & 115.

11.3 The proposed development will have anticipated impacts **greater than 10%** on five (5) trees numbered: 137, 138, 139, 140 & 141; and anticipated impacts **less than 10%** on four (4) trees numbered: 144, 145, 146 & 147.

11.4 Five (5) trees of **VERY LOW** to **MODERATE** retention value numbered: 137, 138, 139, 140 & 141 are proposed for **removal** and **replenishment**, as five (5) trees numbered: 137, 138, 139, 140 & 141 will have high anticipated impacts from the proposed building and pedestrian access pathways; three (3) trees numbered: 23, 47 & 100 are dead and will be retained ; and three (3) trees numbered: 54, 109 & 115 are noxious weed species, *Ligustrum spp.* (Privet), that are exempt from retention and do not require development consent to be removed³ for this proposed development.

11.5 The five (5) removed trees are to be **replenished** with eleven (11) 50-litre potted volumes of suitable indigenous plant species from Appendix F, such as <u>*Callistemon*</u> <u>*viminalis*</u> (Weeping Bottlebrush) and <u>*Elaeocarpus reticulatus*</u> (Blueberry Ash). None of the trees requiring removal have hollows.

11.6 One hundred and seventy eight require retention and of these One hundred and seventy-two (172) trees require **retention** and **protection inclusively** for this proposed development. **Tree Protection Systems** are required and must be installed prior to commencement of the development. This includes:

³ https://www.cityofparramatta.nsw.gov.au/sites/council/files/inline-files/05_OTHER%20PROVISIONS_0.pdf

- The distribution of 75mm depth layers of clean, certified *Eucalyptus spp.* **mulch ground cover protection** over the TPZs of the retained trees, excluding areas outside the site boundaries and areas within the envelope of the proposed development.
- The installation of **tree protection fencing** around the TPZs of one hundred and sixty-four (164) trees numbered: 1 to 135, 148 to 157, 160, 163, 164, and 170 to 178. This excludes areas outside the site boundaries and areas within the envelope of the proposed development. Tree protection fencing is to consist of 1.8 to 2m-tall steel meshing fencing anchored with concrete blocks. TPZ signage must be attached to the fence and written in indelible ink that reads '*Tree Protection Zone: Authorised Personnel Only*'.
- The installation of **tree trunk/branch protection** around the trunks of fourteen (14) trees numbered: 136, 142, 143, 144, 145, 146, 147, 158, 161, 162, 165, 166, 167 & 168. This is to consist of hessian wrapped around the stem of the tree, with 1.8 to 2m lengths of 50mm x 100mm lengths of timber batons strapped to the tree with framing steel and screws drilled into the batons, not into the trees' stems.
- The placement of **rumble boards**, **geotextile fabric** and **crushed inert gravel** over the TPZs of retained trees where construction vehicles require access to the proposed development area.
- The placement of **geotextile fabric** and 75mm depth layers of *Eucalyptus spp.* **mulch** over the TPZs of retained trees where scaffolding and soleplates are required.

11.7 **Canopy pruning** may be required to provide clearance for scaffolding and the proposed buildings. If required, pruning is to be completed by an AQF Level 3 arborist in accordance with *Australian Standard*® *AS* 4373-2007 – *Pruning of Amenity Trees*, with supervision by an AQF Level 5 project arborist for specification.

11.8 The trees are to be removed and pruned by qualified AQF Level 3 arborists in accordance with *Australian Standard*® *AS* 4743-2007 – *Pruning of Amenity Trees* and *SafeWork NSW* – *Guide to Managing Risks of Tree Trimming and Removal Works.* A registered current member of the Tree Contractors Association Australia (TCAA) or Arboriculture Australia (AA) must complete the works.

DEVELOPMENT STAGE	ACTIVITY	RESPONSIBILITY	SUPPLY	
Pro-Construction	Cortification of Tree Protection	AOE Loval 5 Arborist	Certification of Tree	
FIE-Collsci uccioli	Certification of free Frotection.	AQF Level 5 Al Dollst.	Protection.	
Construction and	Bi-Monthly Certification of Tree	AOE Lough E Anhonist	Certificate of Tree	
Ongoing	Protection.	AQF Level 5 Arborist.	Protection.	
	Certification of Replenishment.		Cortificate of Trop	
Post-Construction	Certification of Tree Protection	AQF Level 5 Arborist.	Destaction	
	prior to Occupation Certificate.		i i otection.	

Table 2: Arborist requirements during the stages of development.

Table 2: Tree Impacts Table. This table summarises the numbered trees, the calculated impacts of the proposed developments on these trees, and the works required to protect them during development.

Tree No.	Impact (%)	Works Required				
1-22, 24-46, 48-53, 55-99, 101-108, 110-114, 116-135, 148-157, 160, 163, 164, 170-178.	No anticipated	Retain and protect , with tree protection fencing installed around the trees' TPZs, 75mm depth layers of clean and certified <u>Eucalyptus spp.</u> mulch ground cover protection distributed over the trees' TPZs, and AQF Level 5 arborist supervision for any works carried out within the trees' TPZs.				
136, 142, 143, 158, 161, 162, 165 to 168.	impacts.	Retain and protect , with tree trunk/branch protection installed around the				
144	9.75	ground cover protection distributed over the trace' TP7c and AOE Level E				
145	3.34	arborist supervision for any works carried out within the trees' TPZs				
146	2.55	a boi ist super vision for any works carried out within the trees 112s.				
147	6.01					
23, 47, 100.	No	Retain (the trees are dead).				
54, 109, 115.	impacts.	Retain (the trees are noxious weed species that are 'exempt' from retention).				
137	43.54					
138	43.70	Domovo and vonlonich				
139	21.92	(due to high anticipated impacts from the proposed development)				
140	35.72	(due to high and cipated impacts if one die proposed development).				
141	81.82					

11.9 The site is estimated to have a total tree canopy cover of approximately $9,946m^2$, including trees along common property boundaries. There will be an estimated canopy cover loss of approximately $497m^2$ (a ~5% loss of the total canopy cover) from the removal of five (5) trees. Offsets for these removed trees have been considered in the Tree Protection Plan (see Figure 4).

Trees		Tree canopy m ² and site coverage	Trees
Current		183	9,946m2 (15%)
Retain		172	9,426m2 (14.2%)
Remove		5	497m2 (5%)
Additional		54	1319 m2 (2%)
Total development	after	226	10,745m2 (16.2%)
Difference		+49	+799m2 (+1.2%)

Table 3 Canopy Cover Estimates

11.10 Forty-four (44) trees have canopies that extend within three (3) metres of common property boundaries. The total canopy cover of these trees is approximately $3061m^2$, with an estimated loss of approximately $117.5m^2$ canopy cover from the removal of Trees 140 & 141 (~3.8% of the total canopy cover of the forty-four trees).

11.11 Twenty (20) trees have main stems within three (3) metres of common property boundaries. The total canopy cover of these trees is approximately $630m^2$, with an estimated loss of approximately $35.72m^2$ canopy cover from the removal of Trees 140 (~5% of the total canopy cover of the twenty trees).

12.0 HOLDING POINTS

12.1 Five (5) trees of **VERY LOW** to **MODERATE** retention value numbered137, 138, 139, 140 & 141 are proposed for **removal** and **replenishment**. The high-anticipated impacts from the proposed building and pedestrian access pathways will necessitate the removal of five (5) trees numbered: 137, 138, 139, 140 & 141. These trees are to be **replenished** with eleven (11) 50-litre potted volumes of suitable indigenous plant species from Appendix F, such as *Callistemon viminalis* (Weeping Bottlebrush) and *Elaeocarpus reticulatus* (Blueberry Ash), or other non-toxic indigenous species that will attain a height of eight (8) metres and a canopy width of six (6) metres minimum.

12.2 The replenishment trees are to be planted within the area suggested in the Tree Protection Plan (Figure 4) in accordance with *Australian Standard*® *AS 2303-2018 – Tree Stock for Landscape Use.* This is to be certified by an AQF Level 5 arborist to ensure that the removed trees have been replenished with indigenous plants and planted accordingly in suitable areas.

12.3 One hundred and seventy-two (172) trees require **retention** and **protection**, and six (6) additional trees which are dead or noxious will be retained as prescribed in the Tree Management Plan (Figures 4 to 7), Discussion 11.6, and the Tree Impacts Table (Table 3). Tree protection measures are to be certified by an AQF Level 5 arborist prior to any demolition and construction, in accordance with *Australian Standard AS 4970-2009* – *Protection of Trees on Development Sites*. Tree trunk protection includes utilising geofabric wrap (or hessian) around the trunk with hardwood timber batons of 2m x 100mm x 50mm strapped vertically around the trunk with air gaps of 150mm.

12.4 All works carried out in the TPZ of retained and protected trees must be supervised by an AQF Level 5 arborist. Special attention must be given to the activities listed in Appendix D, I-IV, that are prohibited from TPZs. Regular inspections by an AQF Level 5 arborist will be conducted to ensure that the trees are being protected in accordance with *Australian Standard AS 4970-2009 – Protection of Trees on Development Sites*.

12.5 Where construction vehicles require access through the TPZ of the **retained** trees, the ground and roots are to be protected with geotextile fabric, a 100mm depth layer of crushed inert gravel and rumble boards.

12.6 Where scaffolding is required within the TPZ of retained trees, the ground and roots are to be protected with geotextile fabric and a 75mm depth layer of clean, certified gravel on weighted plates. Scaffolding is to be erected under AQF Level 5 arborist supervision, and any canopy pruning required for clearance must be completed by an AQF Level 3 arborist.

12.7 The trees are to be removed are to be marked by a competent project arborist and pruned by qualified AQF Level 3 arborists in accordance with *Australian Standard*® *AS 4743-2007 – Pruning of Amenity Trees* and *SafeWork NSW – Guide to Managing Risks of Tree Trimming and Removal Works.* A registered current member of the Tree Contractors Association Australia (TCAA) or Arboriculture Australia (AA) must complete the works. A registered current member of Australia (TCAA) or Arboriculture Australia (AA) must complete the works.

12.8 Certification of Tree Protection is to be completed by an AQF Level 5 arborist prior to any demolition, construction or landscaping.

12.9 The contractors and staff are to be inducted by the project arborist in relation to the health and protection of the retained trees and the replenishment of the removed trees in the Pendle Hill High School community. A register of the inductees is required for reference for the project arborist with the date of their induction signed.

12.10 Waterproof tree protection signage in indelible ink at 20-point (*font size*) font must be displayed in the induction site room with a copy of these holding points; and tree protection signage must be displayed on the tree protection fencing and tree trunk/branch protection trunks of the retained trees, stating 'Tree Protection Zone: Keep Out' and the project arborist's contact number.

12.11 Trees near building works must be **drip irrigated** so that the soil is moist. Any excavations which are exposed in the TPZ of the retained and protected trees must be covered to allow moisture to be retained in the subsoil.

12.12 Any trees which are damaged or dehydrating are to have a remedial plan written within seven (7) days of reporting and auditing on the remedial health of affected trees by the project arborist.

13.0 RECOMMENDATIONS

13.1 **Remove** five (5) trees numbered: 137, 138, 139, 140 & 141 and **replenish with eleven (11) trees.**

13.2 **Retain** one hundred and seventy eight trees and **protect** one hundred and seventy-two (172) trees of these inclusively, as prescribed in the Tree Management Plan (Figures 4 to 7), Discussion 11.6, and the Tree Impacts Table (Table 3).

13.3 The trees are to be removed and pruned by qualified AQF Level 3 arborists in accordance with *Australian Standard*® *AS* 4743-2007 – *Pruning of Amenity Trees* and *SafeWork NSW* – *Guide to Managing Risks of Tree Trimming and Removal Works.* A registered current member of the Tree Contractors Association Australia (TCAA) or Arboriculture Australia (AA) must complete the works.

13.4 Holding points 12.1 to 12.12 will be held compliant and certified by an AQF Level 5 arborist.

13.5 Annual monitoring is recommended by an AQF Level 5 arborist to assess and provide recommendations for the management of trees on site.

14.0 CONCLUSION

14.1 Approximately one hundred and eighty-three (183) trees were assessed in relation to their anticipated impacts from the proposed development on site at Pendle Hill High School. The proposed development will have anticipated impacts on five (5) trees, requiring:

- The **removal** of five (5) trees and **replenishment** of eleven (11) trees.
- The **retention** one hundred and seventy eight (178) trees and **protection and retention** of one hundred and two (172) trees (of these inclusive).

15.0 GLOSSARY

Borer: larvae beetles, moths or wasps that cause damage within the phloem/cambium, sapwood and heartwood of the tree. Borers generally attack weakened trees or stressed trees.

Cambium: The layer of cells between the exterior bark and the inner wood which control cell division, hence stem, branch and shoot expansion.

Cavity: A void, initiated by a wound within the trunk, branches or roots. These voids are referred to as hollows.

Co-dominant: Stems or branches equal in size and relative importance.

Crown: The width of the foliage in the upper canopy of the assessed tree to the four cardinal points.

Crown lifting: The removal of the lower branches of the tree.

Crown thinning: The portion of the tree consisting of branches and leaves and any part of the stem from which branches arise.

Drip line: Where the canopy releases water shed from the foliage during precipitation.

DBH/Diameter: Diameter of trunk at 14meters in height of assessed tree.

Dead wooding: The removal dead branches from a tree.

Dieback: Tree deterioration where the branches and leaves die.

Flush cut: A cut that damages or removes the branch collar or removes the branch and stem tissue and is inconsistent with the branch attachment as indicated by the bark branch ridge.

Genus/ Species: Identified using its scientific name. Where the species name is not known, species is used. The common name for trees may vary considerably in each area of geographical differences and so will not be used in the field survey.

Height: Height has been estimated to + / - 2 meters.

Maturity: Tree age, Assessed as over mature (last 1/3 of life expectancy), mature (1/3 to 2/3 life expectancy) and semi mature (less than 1/3 life expectancy).

Remedial (restorative) pruning: includes: Removing damaged, deadwood; trimming diseased or infested branches. Trimming branches back to undamaged tissue in order to induce the production of shoots from latent or adventitious buds, from which a new crown will be established.

SRZ-Structural Root Zone: An area within the trees root zone in which roots stabilize the tree. Roots cut in this zone can cause instability and lead to anchorage loss.

Structural Integrity: Describes the internal supporting timber. (Substantial to frail)

Target: risk targets are people, property or activities that could injure, damage or disrupted.

Tree Numbering: All trees listed in the tree survey have been numbered and plotted.

TULE- Tree Useful Life Expectancy: An estimation of the trees useful life expectancy using appropriate industry methods with an inspection regime.

Vigour: This is an indication of the tree health. Trees have either been assessed as Good Vigour, Normal Vigour or Low Vigour.

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files/05_OTHER%20PROVISIONS_0.pdf

APPENDIX A TREE USEFUL LIFE EXPECTANCY - TULE

	Adapted from Jeremy Barrell (SULE) 2014 for TCAA Consultant Arborists							
	1 Long TULE Trees that appeared to be retainable at the time of assessment for more than 40 years with low level of risk.	2 Medium TULE Trees that appeared to be retainable at the time of assessment for 15 to 40 years with and with low to medium level risk.	3 Short TULE Trees that appeared to be retainable at the time of assessment for 5 to 15 years with medium to high level of risk.	4 Remove Trees that should be removed within the next 5 years High to Very high level of risk.	5. No Potential for Retention REMOVE IMMEDIATELY Trees that must be removed immediately. Very high to Extreme level of risk.	6 Small, Young or Regularly clipped Trees that can be easily transplanted or replaced.		
A	Structurally sound trees located in positions that can accommodate future growth.	Trees that may only live for between 15 and 40 more years.	Trees that may only live for between 5 and 15 more years.	Dead, dying, suppressed or declining trees through disease or inhospitable conditions.	Dead, dying or declining trees diseased or inhospitable conditions.	Small trees less than 5 metres in height.		
В	Trees that could be made suitable for retention in the long term by Intervention Works.	Trees that may live for more than 40 years, but would need to be removed for safety or nuisance reasons.	Trees that may live for more than 15 years, but would need to be removed for safety or nuisance reasons.	Dangerous trees through instability or recent loss of adjacent trees.	Dangerous trees through instability or recent loss of adjacent trees.	Young trees less than 15 years old but over 5 metres in height.		
С	Trees of special significance for historical, commemorative or rarity reasons that would warrant extraordinary efforts to secure their long-term retention.	Trees that may live for more than 40 years, but should be removed to prevent interference with more suitable individuals or to provide space for new planting.	Trees that may live for more than 15 years, but should be removed to prevent interference with more suitable individuals or to provide space for new planting.	Dangerous trees through structural defects including cavities, decay, included bark, wounds or poor form.	Dangerous trees through structural defects including cavities, decay, included bark, wounds or poor form.	Trees that have been regularly pruned to artificially control growth.		
D		Trees that could be made suitable for retention in the medium term by Intervention Works.	Trees that require substantial Intervention Works, and are only suitable for retention in the short-term.	Damaged trees that are clearly not safe to retain.	Damaged trees that are clearly not safe to retain and must be removed immediately.			
E				Trees that may live for more than 5 years, but should be removed to prevent interference with more suitable individuals or to provide space for new planting.	High Toxicity Allegan trees, asthmatic and poisonous trees and must be removed immediately.			
F				Trees that may cause damage to existing structures within 5 years.	OTHER, with legitimate explanation to be removed immediately.			
G				Trees that will become dangerous after removal of other trees for reasons given in 1A-1F.				
INSPEC TION FREQU ENCY	Inspection frequency 1-5 Years by competent inspector unless event monitored.	Inspection frequency 1-5 Years by competent inspector unless event monitored.	Inspection frequency 1-3 years by competent inspector unless event monitored.	Inspection frequency to 1 year by competent inspector unless event monitored.	1-7 days by competent inspector and event monitored.	Inspection frequency Biannually by competent inspector.		

KEY	Health & Structural Condition of Tree						
1.	Maturity: J - Juvenile; IM - Immature; SM -	Semi-Mature; M - Mature					
2.	Excellent condition						
3.	Good condition but poor development	3b Moderate					
4.	Dieback is more than 20%.	4b Epicormics					
5.	Sparse foliage crown	5b Unbalanced Canopy					
6.	Physical damage						
7.	Insect damage	7b Borers					
8.	Fungal attack						
9.	Cavity						
10.	Termite damage inclusions						
11.	Lean						
12.	Heavily pruned	12b Dying					
13.	Damage to roots	13b Encroachment					
14.	Parasitic vine present						
15.	Damage by climbing plant						
16.	Inclusions						
17.	Habitat tree						
18.	Endangered species						

APPENDIX B HEALTH & STRUCTURAL CONDITION OF TREE-VISUAL

Mattheck The Body Language of Trees 1994 adapted; Hornsby Shire Council.

APPENDIX C RETENTION VALUES

DETERMINING LANDSCAPE SIGNIFICANCE RATINGS MORTON, A (2006)						
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 ² 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/gard en 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 ² , 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 ² ; 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 ² ; The tree is a fair representative of the species, exhibiting moderate deviations from typical form (distortion/suppression etc.) with a crown density 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			
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 building or other structures.	amenity of the area. The subject tree has a small live crown size of less than 40m ² and can be replaced within the short term (5-10 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 relevant 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.			

APPENDIX C Continued

RETENTION VALUES: MORTON, A 2006 Determining landscape significance ratings.		
RETENTION VALUE	RECOMMENDED ACTION	
High	 These trees considered worthy of preservation; as such careful consideration should be given to their retention as a priority. Proposed site design and placement of buildings and infrastructure should consider the Tree Protection Zones as discussed in the following section to minimise any adverse impact. In addition to Tree Protection Zones, the extent of the canopy (canopy dripline) should also be considered, particularly in relation to a high-rise development. Significant pruning of the trees to accommodate the building envelope or temporary scaffolding is generally not acceptable. 	
Moderate	 The retention of these trees is desirable. These trees should be retained as part of any proposed development if possible, however these trees are considered less critical for retention. If these trees must be removed, replacement planting should be considered in accordance with Council's Tree Replacement Policy to compensate for loss of amenity. 	
Low	 These trees are not considered to be worthy of any special measures to ensure their preservation, due to current health, condition or suitability. They do not have any special ecological, heritage or amenity value, or these values are substantially diminished due to their SULE. These trees should not be considered as a constraint to the future development of the site. 	
Very Low	 These trees are considered potentially hazardous or very poor specimens, or may be environmental or noxious weeds. The removal of these trees is therefore recommended regardless of the implications of any proposed development. 	

APPENDIX D TREE PROTECTION

Extract from Australian Standard® AS 4970-2009 – Protection of Trees on Development Sites.



Figure 8: The Structural Root Zone (SRZ), Tree Protection Zone (TPZ), and crown spread of a tree.

D.3 PROTECTIVE FENCING

It shall be installed prior to any demolition or construction. Chain wire mesh panel of 1.8 to 2 metres, cyclone fencing, or star pickets at 2m intervals, connected bv а continuous highly-visible barrier/hazard mesh at a height of 1.8 metres is to be used. Alternatively, plywood or wooden paling fence panels may be used. This fencing material also prevents building material and soil from entering the TPZ. Mulch must be installed across the surface of the TPZ. Bracing is permissible within the TPZ and care must be taken to avoid damaging the roots. This fencing will remain in place until all the construction work has been completed.

D.4 TREE PROTECTION ZONES

D.1 STRUCTURAL ROOT ZONE (SRZ)

The SRZ is the area considered essential for tree stability. Temporary tree protection fencing shall be erected around the perimeter of all tree protection zones.

D.2 OTHER TREE PROTECTION MEASURES

When tree protection fencing cannot be installed due to restricted access (e.g. tree located along the side of an access way or requires temporary removal) other tree protection measures should be used, including those set out below:



Figure 9: Tree Protection Fencing.

Signage must be attached to the fence at regular 10 metre intervals. Signage shall read **"TREE PROTECTION ZONE. NO ENTRY EXCEPT TO AUTHORISED PERSONNEL. FINES APPLY."**

D.5 GROUND PROTECTION

If temporary access for machinery is required within the TPZ, ground protection measures will be required to prevent compaction in the root zone. Measures may include permeable membranes, such as geotextile fabric beneath a 50-100mm depth layer of mulch or crushed rock below rumble boards.

D.6 INSTALLING UNDERGROUND SERVICES WITHIN TPZ

All services should be routed outside the TPZ. If underground services must be routed within the TPZ, they should be installed by directional drilling or in manually-excavated trenches. The directional drilling bore should be at least 600mm deep. The project arborist should assess the likely impacts of boring and bore pits on the retained trees. For manually-excavated trenches, the project arborist should advise on the roots to be retained and monitor the works. Manual excavation may include the use of pneumatic and hydraulic tools.

D.7 TRUNK AND BRANCH PROTECTION

For tree trunk and branch protection, use boards and padding that will prevent damage to bark. Boards are to be strapped to trees, not nailed or screwed. Rumble boards should be a suitable thickness to prevent soil compaction and root damage.

D.8 EXCAVATION REQUIRED for the insertion of support posts for tree protection fencing should not involve the severance of any roots greater than 20mm in diameter without the prior approval of the project arborist.



Figure 11: Appropriate measures for the erection of scaffolding.



Figure 10: Tree trunk/branch protection and ground cover protection.

APPENDIX D Continued

PROHIBITIONS

- I The following activities shall not be carried out within any Tree Protection Zone:
 - a. Disposal of chemicals and liquids (including concrete and mortar slurry, solvents, paint, fuel or oil);
 - b. Stockpiling, storage or mixing of materials;
 - c. Refuelling, parking, storing, washing and repairing tools, equipment, machinery and vehicles;
 - d. Disposal of building materials and waste;
- II The following activities shall not be carried out within any Tree Protection Zone unless under the supervision of the Project Arborist:
 - a. Increasing or decreasing soil levels (including cut and fill);
 - b. Soil cultivation, excavation or trenching;
 - c. Placing offices or sheds;
 - d. Erection of scaffolding or hoardings; and/or
 - e. Any other act that may adversely affect the vitality or structural condition of the tree.
- III All work undertaken within or above a Tree Protection Zone shall be supervised by the Project Arborist.
- IV Excavation within the Tree Protection Zone of any tree to be retained shall:
 - a. Be undertaken using non-destructive methods (e.g. an air-spade or by hand) to ensure no roots greater than 40mm in diameter are damaged, pruned or removed.
 - b. All care shall be taken to preserve and avoid damaging roots; excavation should not occur within the Structural Root Zone (SRZ).

APPENDIX E TREE PLANTING SPECIFICATIONS AND MAINTENANCE

Australian Standard® AS 2303-2018 – Tree Stock for Landscape Use.

Careful consideration should be given to the location of trees and shrubs to minimise future problems. A basic guide for planting follows:

E.1 Don't plant trees too close to buildings, in-ground pools or other large trees. Determine the height and canopy spread of trees when fully grown and allow room for root growth (at least twice the height of the tree). Large trees should be planted at least three (3) metres from buildings and hard surfaces.

E.2 Avoid planting trees under power lines and over drainage pipes. Determine the size of the tree at maturity and the size and nature of its root system.

E.3 When choosing plants and planting them, consider the effect they might have on neighbouring properties (i.e. shading, loss of views, impact on foundations, fences and services).

E.4 Use trees to provide your home with summer shade and/or winter sun. Plant deciduous trees that are suitable to the climate and soils of your local area; and consider the shadows cast in summer and winter from evergreen trees.

E.5 Don't grow climbers on trees. Climbers can strangle trees, leading to the tree's eventual death.

E.6 Retain and protect as many trees as possible when building or extending your home. This will be a Council requirement.

E.7 Use locally native and non-invasive species in your garden to increase the success rate of your garden, to attract native fauna to your garden, and to reduce the amount of watering required.

E.8 Don't excavate or alter the ground level around trees. This can cause root damage and starvation, limb drop, instability or tree death. Substantially altering the soil level within three (3) metres of the trunk is in breach of the Tree Preservation Order.

E.9 When buying plants, check their characteristics to determine their suitability: size at maturity, shade requirements, the potential for roots to cause damage, flowers, fruits and pollen.

E.10 Mature trees need maintenance. Remove or trim misshapen branches. Check for fungal decay or disease. If in doubt, contact Council for a tree inspection or contact an experienced arborist. Indiscriminate lopping can be dangerous to your safety and the health of the tree.

E.11 Staking of trees and mulch should be carried out similar to the diagrams below.



Figure 12: Tree replenishment.

APPENDIX F INDIGENOUS TREE REPLENISHMENT

F.1 Check your local Council's community nursery for suitable trees and possible free native tree giveaways. For suitable community plants in addition to this, the following species should be considered for replenishment.

F.2 *Recommended Replacement Species

Botanical Name	Common Name	Height (m) at maturity	Crown Spread (m) at maturity
Syzygium smithii	Common Lilly Pilly	10	8
Tristaniopsis laurina	Water Gum	7	6
Corymbia eximia	Yellow Bloodwood	12	9
Backhousea citriodora	Lemon-Scented Myrtle	8	6
*Elaeocarpus reticulatus	Blueberry Ash	7	5
Waterhousea floribunda	Weeping Lilly Pilly	8	5
Syzygium luehmannii	Riberry	8	5
Hymenosporum flavum	Native Frangipani	8	6
Eucalyptus haemastoma	Scribbly Gum	15	7
Eucalyptus moluccana	Grey Box	20	16
Eucalyptus punctata	Grey Gum	20	18
Eucalyptus leucoxylon	Yellow Gum	20	8
Eucalyptus crebra	Narrow-Leaved Ironbark	20	16
Lophostemon confertus	Brush Box	12-20	16
Eucalyptus tereticornis	Forest Red Gum	20	16
*Callistemon viminalis	Weeping Bottlebrush	5-8	3-5

DISCLAIMER

McArdle Arboricultural Consultancy Pty Ltd does not assume responsibility for liability associated with the tree on or adjacent to this project site, their future demise and/or any damage, which may result therefrom.

McArdle Arboricultural Consultancy Pty Ltd takes care to obtain all information from reliable sources. All data has been verified insofar as possible; however, the consultant can neither guarantee nor be responsible for the accuracy of information provided by others.

McArdle Arboricultural Consultancy Pty Ltd cannot be held responsible for any consequences as a result of work carried out outside specifications, not in compliance with Australian Standards or by inappropriately qualified staff.

Sketches, diagrams, graphs, and photographs in this report, being intended as visual aids, are not necessarily to scale.

LIMITS OF OBSERVATION

McArdle Arboricultural Consultancy Pty Ltd makes every effort to accurately identify current tree health and safety issues. Results may or may not correlate to actual tree structural integrity. There are many factors that may contribute to limb or total tree failure. Not all these symptoms are visible. There can be hidden defects that may result in a failure even though it would seem that other, more obvious defects would be the likely cause of failure. All standing trees have an element of unpredictable risk.

June M Adle

Consulting Arborist Jim McArdle

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