



REPORT: **Arboricultural Impact Assessment**

REPORT COMMISSIONED FOR:

Andrew Doueihi, Development Manager
Peterose Pty Ltd

PP/2022/4283

Lot 1, DP 1143431 & Lot 1, DP 998240
9 Albert Street & 31 O'Connell Street
North Parramatta NSW 2151

22nd of February, 2024

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Document Tracking

Name	Contribution	Date		
Hephzibah Ryan & Michelle King Environmental Document Writer	Report Writer	31/10/2022 (V1)	15/12/2022 (V5)	19/02/2024 (V10)
		18/11/2022 (V2)	10/10/2023 (V6)	22/02/2024 (V12)
		28/11/2022 (V4)	26/10/2023 (V8)	
Jim McArdle AQF Level 5 Arborist	Site Assessor Editor	18/11/2022 (V3)	20/02/2024 (V11)	
		10/10/2023 (V7)		
		30/10/2023 (V9)		

1. EXECUTIVE SUMMARY

1.1 The client commissioned an Arboricultural Impact Assessment to evaluate the potential impacts on trees by a proposed development and, if viable, to make recommendations that reduce the impacts on trees at 9 Albert Street and 31 O'Connell Street, North Parramatta NSW 2151.

1.2 The proposed development (**PP/2022/4283**) involves the construction of an apartment complex with basement carparking and ground floor retail and childcare spaces.

1.3 The assessment was conducted on the 27th of October and the 21st of November, 2022 by an AQF Level 5 arborist. The trees were reassessed on the 3rd of October, 2023.

1.4 Approximately sixty-nine (69) trees/tree groups on site and in the adjacent surrounding area were assessed and are summarised as follows:

Table 1: Retention Values.

High (4 trees)	Moderate (13 trees)	Low-Moderate (18 trees/tree groups)	Low (17 trees/tree groups)	Very Low (10 trees)
1, 2, 34, 37.	4, 9, 11, 13, 17, 21, 31, 33, 35, 36, 41, 58, 61.	2a, 6, 8, 10, 12, 18, 42, 42b, 44, 45, 46, 48, 55, 61a, 64, 65, 66, 69.	3, 5, 38, 39, 40, 43, 45a, 47, 50, 51, 53, 54, 56, 59, 62, 63, 67.	4, 15, 16, 30, 32a, 32b, 52, 57, 60a, 60b.

Table 2: Tree Works.

Retain (16 trees)	Prune (1 tree)	Remove (46 trees)
1, 2, 2a, 3, 5, 12, 34, 35, 36, 37, 43, 50, 53, 58, 61, 62.	37.	4, 6, 8, 9, 10, 11, 13, 14, 15, 16, 17, 18, 21, 30, 31, 32a, 32b, 33, 38, 39, 40, 41, 42, 42b, 44, 45, 45a, 46, 47, 48, 51, 52, 54, 55, 56, 57, 59, 60a, 60b, 61a, 63, 64, 65, 66, 67, 69.

Table 3: Tree Management Plan.

Tree Management Measures	Tree No.
Mulch Ground Cover Protection	2, 2a, 36, 37, 43, 61.
Tree Protection Fencing	1, 2, 2a, 3, 35, 36, 37, 43, 50, 53, 58, 61, 62.
Tree Trunk Protection	5, 12, 34.
Branch Mapping Report	37.

1.5 **Retain** sixteen (16) trees numbered 1, 2, 2a, 3, 5, 12, 34, 35, 36, 37, 43, 50, 53, 58, 61 and 62.

1.6 **Prune** one (1) tree numbered 37 to provide clearance around the proposed apartment building. A branch mapping report is required to assess the extent of clearance pruning required for this tree.

1.7 **Remove** forty-six (46) trees/tree groups numbered 4, 6, 8, 9, 10, 11, 13, 14, 15, 16, 17, 18, 21, 30, 31, 32a, 32b, 33, 38, 39, 40, 41, 42, 42b, 44, 45, 45a, 46, 47, 48, 51, 52, 54, 55, 56, 57, 59, 60a, 60b, 61a, 63, 64, 65, 66, 67 and 69. Of these trees, twenty-seven (27) trees numbered 6, 10, 11, 14, 15, 16, 30, 32a, 32b, 38, 39, 40, 42, 47, 51, 52, 54, 56, 57, 59, 60a, 60b, 61a, 63, 66, 67 and 69 are exempt from preservation under Parramatta DCP 2023¹ and are not worthy of special measures to ensure their preservation.

¹ <https://www.cityofparramatta.nsw.gov.au/document/40611>

2. INTRODUCTION

2.1 AIMS

The aim of the report is to:

2.1.1 To assess the trees' health and retention value and to evaluate the potential impacts on trees by the proposed development.

2.1.2 To provide options, if viable, to reduce potential impacts on trees and make recommendations for tree management and protection during development.

2.2 SCOPE

2.2.1 Andrew Doueihi of Peterose Pty Ltd commissioned an Arboricultural Impact Assessment for the site at 9 Albert Street and 31 O'Connell Street, North Parramatta NSW 2151.

2.2.2 The assessment was conducted on the 27th of October and the 21st of November, 2022 by Jim McArdle B.Ed. Sci (ACU), Dip. Arb AQF L5 (Ryde), Tree Risk Assessment Qualified (TRA), Quantified Tree Risk Assessment (QTRA) & Tree Contractors Association of Australia (TCAA) Vice President. The trees were reassessed on the 3rd of October, 2023.

2.2.3 Tree management measures are regulated by Parramatta Development Control Plan (DCP) 2023 and Parramatta Local Environmental Plan (LEP) 2023.

2.2.4 Approximately sixty-nine (69) trees/tree groups on site and in the adjacent surrounding area were assessed.

2.2.5 The inspection does not include below ground root excavation, and no expert laboratory analyses – including internal diagnostics, inaccessible trunk and aerial inspections – were conducted. No pathology tests or soil analyses were conducted. Sketches, diagrams, graphs, and photographs in this report, being intended as visual aids, are not necessarily to scale.

2.2.6 The client has provided documentation relating to the trees prepared by Angela Maroney of Urban & Rural Design Landscape Architects.

2.3 METHODOLOGY

2.3.1 The inspection was primarily conducted using ground-based collection of data to identify visible signs of tree health, structure and potential hazards. Collection data methods may include the use of a mallet for sound testing, the use of a trowel to test for soil compaction, and the use of a screwdriver to probe cavities for pathogens, pests and disease. The assessments do not involve laboratory analysis. Methods may include the following:

Visual Tree Assessment (VTA) (Mattheck and Breloer 1994), a method for assessing biological and lower-level mechanical functions and signs of decay, damage or defects (Appendix A).

Tree AZ Categories (Barrell 2010) classifies the importance of trees on development sites (Appendix B).

- **Category A** – suitable for retention.
- **Category Z** – not worthy of constraint.

Tree Useful Life Expectancy (TULE) (Barrell 2014) determines the time a tree can be expected to be usefully retained in normal circumstances (Appendix C).

- **Long** > 40 years.
- **Medium** 15 – 40 years.
- **Short** 5 – 15 years.
- **No retention potential** 0 – 5 years.

Landscape Significance Rating (Morton 1996), (Appendix D).

- **Significant** – based on heritage or ecological value.
- **Very High** – based on adjacent area surrounding the site.
- **High** – neighbourhood status but may have some conditions or health issues.
- **Moderate** – good and worthy of preservation, may have minor health issues.
- **Low** – worthy of preservation, may have major conditions or health issues.
- **Very Low** – retain if possible.
- **Insignificant** – exempt from retention.

Retention Value Rating (Morton 2011), determined by considering both TULE and the Landscape Significance (Appendix E).

- **High** retention value trees are a priority for retention.
- **Medium** retention value trees are retained where possible.
- **Low** retention value trees are generally not a constraint to development.
- **Very Low** retention value trees may have potential hazards.

Planting Specifications from NATSPEC (Clark 2003) and Australian Standard® AS 2303-2018 – Tree Stock for Landscape Use (Appendix F).

2.3.2 **Tree Contractors** must have a minimum AQF Level 3 Certificate in Arboriculture and work in accordance with Australian Standard® AS 4373-2007 – Pruning of Amenity Trees, the Work Health & Safety (WHS) Act 2011 and the WHS Regulations 2017, the SafeWork NSW – Guide to Managing Risks of Tree Trimming and Removal Work 2016, and the Code of Practice for The Amenity Tree Industry 1998. Work near powerlines should be carried out in accordance with the Code of Practice for Work Near Overhead Power Lines.

3. RESULTS

3.1 THE SITE

3.1.1 The site is 9 Albert Street and 31 O'Connell Street, North Parramatta NSW 2151.

3.1.2 This landscape slopes to the south-west, and the soils² are classified generally as fine sandy loam.



Figure 1: Aerial site map of 9 Albert Street and 31 O'Connell Street, Parramatta NSW 2150 (Nearmap 2024). The site perimeter is outlined in yellow.

² [Espade.environment.nsw.gov.au](https://www.environment.nsw.gov.au/espace)

3.2 LEGISLATION AND SIGNIFICANCE IN THE ENVIRONMENT

Trees are subject to the following commonwealth and State Legislation:

3.2.1 NSW and Commonwealth Legislation regulates the **Biosecurity Act 2015** (diseases and pests) and the **Environmental Protection & Biodiversity Conservation Act 1999 (EPBC Act)**, which manages nationally endangered ecological communities (EEC) and national heritage items. The EPBC Act delegates to the **NSW Biodiversity Conservation Act 2016 (BC Act)**³ and allows state and local authorities to manage ecological and heritage matters of significance. The BC Act repealed (but still has some transitional arrangements) the NSW Threatened Species Conservation Act 1995. The BC Act may require a Species Impact Statement and Biodiversity Banking and Offset Scheme agreements determined by the Biodiversity Assessment Method (BAM).

3.2.2 NSW State Legislation³ is regulated under the **NSW Environmental Planning and Assessment Act 1979 (EP&A Act)**, which manages significant development and infrastructure in NSW. The EP&A Act utilises **Environmental Planning Instruments (EPI)**⁴. These instruments include **State Environment Planning Policies (SEPP)** that deal with matters of state or regional environmental planning significance and **Local Environmental Plans (LEP)** that provide local councils a framework for land usage. **SEPP (Vegetation in Non-Rural Areas) 2017** applies to this local government area (LGA) and prohibits clearing vegetation without council consent.

3.2.3 **NSW Rural Fire Act 1997**⁵ regulates a **10/50 Vegetation Clearing Code**, which may allow a designated area to clear trees within 10 metres of a home and clear underlying vegetation such as shrubs (but not trees), within 50 metres of a home to reduce risk from bushfires. The 10/50 Vegetation Clearing Code does not apply to this site.

3.2.4 An analysis of state and local legislation, development controls and planning instruments concludes the following:

- **Tree management measures**⁶ are regulated by Parramatta DCP 2023 and Parramatta LEP 2023.
- **Acid Sulfate Soils:** Class 5.
- **Key Sites:** Parramatta North Urban Renewal Area.
- **Land Zoning:** B4: Mixed Use.
- **Local Aboriginal Land Council:** Deerubbin.

³ <https://www.environment.nsw.gov.au>

⁴ <https://www.planningportal.nsw.gov.au/>

⁵ <https://www.rfs.nsw.gov.au/>

⁶ <https://www.cityofparramatta.nsw.gov.au/>

3.3 LOCAL PLANNING AND ZONING CONTROLS

Site Address: 9 Albert Street & 31 O'Connell Street, Parramatta NSW 2150.

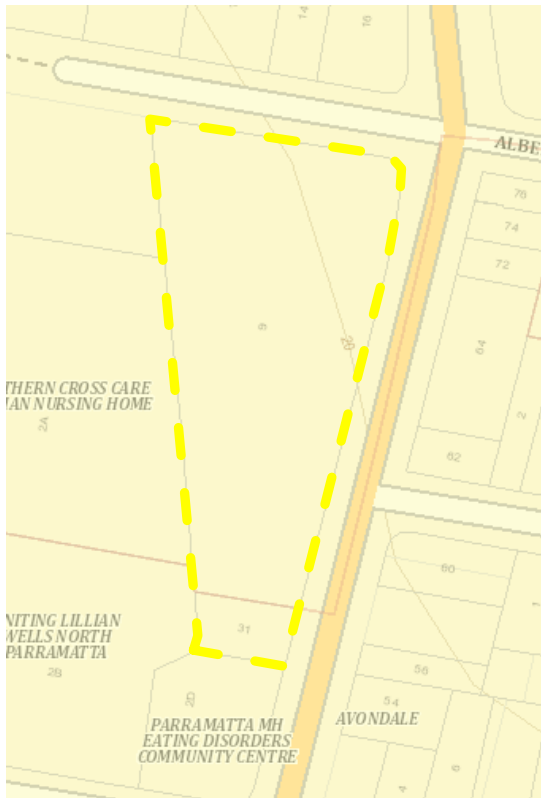


Figure 2: Acid Sulfate Soils.
Class 5 (yellow).

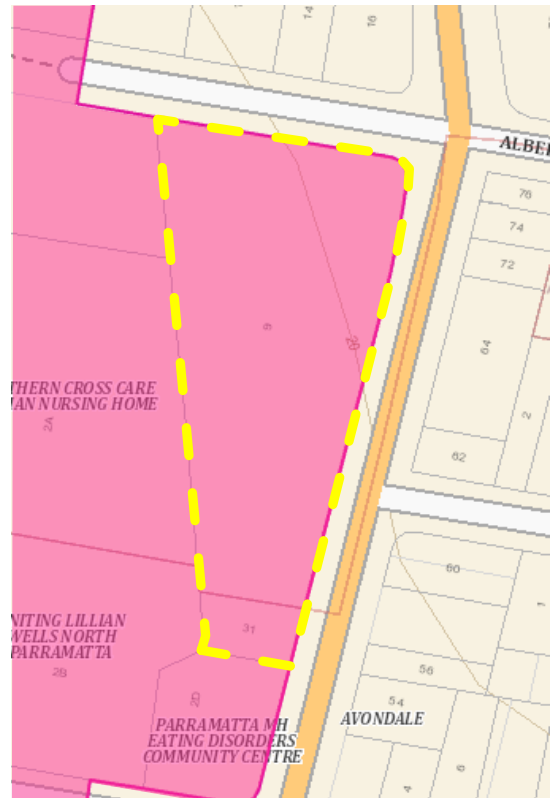


Figure 3: Key Sites.
Parramatta North Urban Renewal Area (pink).

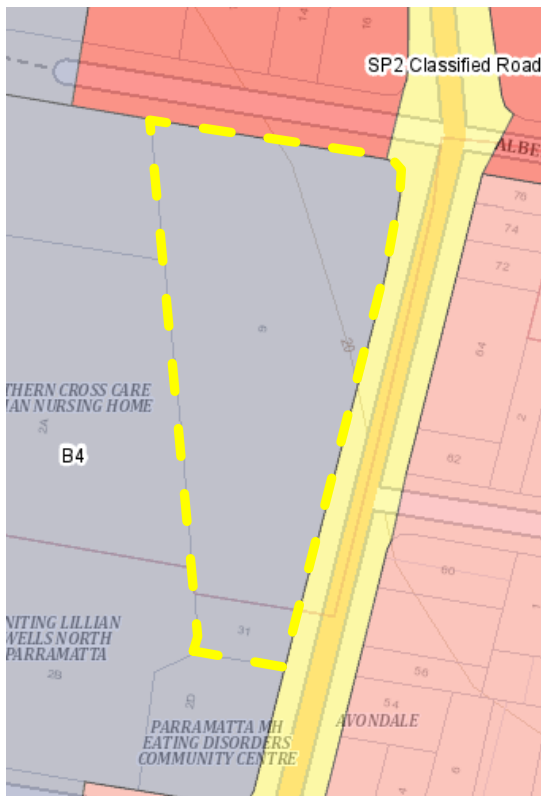


Figure 4: Land Zoning.
B4: Mixed Use (purple).

3.4 TREE SCHEDULE

Table 4: Tree Schedule – Health and Structural Condition of Trees.

(*DBH – Diameter Breast Height, *DRC – Diameter Root Collar, *TPZ – Tree Protection Zone, *SRZ – Structural Root Zone, *TULE – Tree Useful Life Expectancy).

Tree No.	Location	Botanical Name Common Name	Crown (m)	Height (m)	DBH* DRC* (cm)	TPZ* SRZ* (m)	Tree Health & Condition	TULE* A-Z	Retention Value	Control Measures
1	2b Fleet Street.	<i>Ficus spp.</i> Ficus	20	15	100 150	12.0 3.9	Mature, good condition.	2d A1	High	Retain and protect.
2	North-western corner.	<i>Eucalyptus microcorys</i> Tallowwood	18	26	75 80	9.0 3.0	Semi-mature, good condition but poor development.	3a A1	High	Retain and protect.
2a	North-western corner.	<i>Ficus spp.</i> Ficus	6	10	8/24 25	3.0 1.9	Immature, good condition but poor development, with an extensive lean to the east.	2d A2	Low-Moderate	Retain and protect.
3	North-western corner.	<i>Phoenix canariensis</i> Canary Island Date Palm	< 2	< 2	17 30	2.0# 2.0	Immature, good condition.	2a A1	Low	Retain and protect.
4	North-western corner.	<i>Eucalyptus piperita</i> Sydney Peppermint	14	25	40 45	4.8 2.4	Semi-mature, good condition but poor development.	2d Z10	Moderate	Remove and replenish.
5	Council street tree.	<i>Fraxinus spp.</i> Ash	5	5	10/15/15 20	2.8 1.7	Immature, good condition but poor development, heavily pruned.	2a A1	Low	Retain and protect.
6	Northern boundary.	<i>Liquidambar styraciflua</i> American Sweet Gum	5	10	22 23	2.6 1.8	Immature, dead/dying.	4a Z4	Low-Moderate	Remove (Exempt, dead/dying).
7	Removed prior to this report.									
8	Council street tree.	<i>Fraxinus spp.</i> Ash	NS 4 EW 1	4	30 32	3.6 2.1	Immature, good condition but poor development.	2a Z10	Low-Moderate	Remove and replenish.
9	Council street tree.	<i>Fraxinus spp.</i> Ash	NS 5 EW 6	8	20/20 28	3.4 1.9	Immature, good condition but poor development.	2a Z10	Moderate	Remove and replenish.
10	Northern boundary.	<i>Grevillea robusta</i> Silky Oak	8	8	34 40	4.1 2.3	Semi-mature, dead/dying, with damaged roots.	4a Z4	Low-Moderate	Remove (Exempt, dead/dying).
11	Northern boundary.	<i>Fraxinus angustifolia</i> Claret Ash	14	10	16/49 47	6.2 2.4	Semi-mature, dead/dying,	4a Z4	Moderate	Remove (Exempt, dead/dying).
12	Council street tree.	<i>Fraxinus species</i> Ash	NS 4 EW 3	4	15/15 20	2.5 1.7	Immature, good condition but poor development.	2a A1	Low-Moderate	Retain and protect.
13	Northern boundary.	<i>Eucalyptus cinerea</i> Argyle Apple	12	12	18/50 60	6.4 2.7	Semi-mature, good condition.	2a Z10	Moderate	Remove and replenish.
14	Northern boundary.	<i>Species unknown</i> (stag)	4	6	70 74	8.4 2.9	Dead, with no hollows.	4a Z4	Very Low	Remove (Exempt, dead/dying).
15	East of Tree 14.	<i>Corymbia maculata</i> Spotted Gum	5	12	17 20	2.0 1.7	Immature, poor condition, with a cavity at the base of the tree.	4c Z5	Very Low	Remove (Exempt, risk to safety).
16	North-eastern corner.	<i>Corymbia citriodora</i> Lemon-Scented Gum	2	4	5 5	2.0 1.5	Juvenile, good condition.	2a Z1	Very Low	Remove (Exempt, less than 5m height).
17	North-eastern corner.	<i>Corymbia citriodora</i> Lemon-Scented Gum	16	25	44 50	5.3 2.5	Semi-mature, moderate condition, previously pruned, with minor decay.	2d Z10	Moderate	Remove and replenish.

Tree No.	Location	Botanical Name Common Name	Crown (m)	Height (m)	DBH* DRC* (cm)	TPZ* SRZ* (m)	Tree Health & Condition	TULE* A-Z	Retention Value	Control Measures
18	North-eastern corner.	<i>Corymbia citriodora</i> Lemon-Scented Gum	8	16	30 40	3.6 2.3	Immature, with a lean to the east.	2d Z10	Low-Moderate	Remove and replenish.
19-20	Removed prior to this report.									
21	Eastern boundary.	<i>Jacaranda mimosifolia</i> Jacaranda	8	8	17/28 45	4.0 2.4	Semi-mature, growing from an old stump.	3d Z10	Moderate	Remove and replenish.
22-29	Removed prior to this report.									
30	South-eastern area.	<i>Species unknown</i> (stag)	6	10	50 53	6.0 2.5	Dead, with no hollows.	4c Z4	Very Low	Remove (Exempt, dead/dying).
31	West of Tree 30.	<i>Lophostemon confertus</i> Brush Box	10	12	40/40/50 76	9.0 3.0	Immature, good condition but poor development, with minor dehydration.	2a Z10	Moderate	Remove and replenish.
32a	West of Tree 31.	<i>Ligustrum lucidum</i> Broad-Leaf Privet	12	8	40 42	4.8 2.3	Immature, good condition but poor development.	5f Z3	Very Low	Remove (Exempt, weed species).
32b	West of Tree 31.	<i>Ligustrum lucidum</i> Broad-Leaf Privet	12	8	40 42	4.8 2.3	Immature, good condition but poor development.	5f Z3	Very Low	Remove (Exempt, weed species).
33	Southern area.	<i>Liquidambar formosana</i> Chinese Sweet Gum	16	18	70 75	8.4 2.9	Semi-mature, good condition.	2a Z10	Moderate	Remove and replenish.
34	Council street tree.	<i>Platanus orientalis</i> Oriental Plane	14	20	40 50	4.8 2.5	Immature, good condition.	2a A1	High	Retain and protect.
35	Southern boundary.	<i>Jacaranda mimosifolia</i> Jacaranda	10	12	20/30 40	4.3 2.3	Immature, good condition but poor development.	2a A1	Moderate	Retain and protect.
36	Southern boundary.	<i>Syzygium australe</i> Brush Cherry	12	14	50 55	6.0 2.6	Semi-mature, good condition.	2a A1	Moderate	Retain and protect.
37	Southern boundary.	<i>Liquidambar styraciflua</i> American Sweet Gum	20	22	75 80	9.0 3.0	Semi-mature, good condition.	2d A1	High	Retain and protect (Branch Mapping Required).
38	Western boundary.	<i>Olea europaea</i> Olive	8	8	20/20 40	3.4 2.3	Semi-mature, good condition but poor development.	2a A1	Low	Remove (Exempt, weed species).
39	Western boundary.	<i>Erythrina x sykesii</i> Common Coral Tree	20	18	110 150	13.2 3.9	Mature, dead/dying, with a broken branch.	4a Z3	Low	Remove (Exempt, weed species).
40	Western boundary.	<i>Erythrina x sykesii</i> Common Coral Tree	20	18	46/63 87	9.4 3.1	Mature, moderate condition, with a broken lateral.	2d Z3	Low	Remove (Exempt, weed species).
41	Western boundary.	<i>Lophostemon confertus</i> Brush Box	16	14	92 89	11.0 3.2	Mature, good condition but poor development.	2a Z10	Moderate	Remove and replenish.
42 (x 2)	5 metres west of fence.	<i>Lagerstroemia indica</i> Crepe Myrtle & <i>Ligustrum lucidum</i> Broad-Leaf Privet	6	10	10 (x 6) 40	2.9 2.3	Semi-mature, growing with privet.	2d Z3	Low-Moderate	Remove and replenish Crepe Myrtle. Remove Privet (Exempt, weed species).
42b	5 metres west of fence.	<i>Lagerstroemia indica</i> Crepe Myrtle	6	8	10 (x 3) 30	2.0 2.0	Semi-mature, multi-stemmed, with a cavity at the base of the tree.	2d Z10	Low-Moderate	Remove and replenish.
43	Western boundary.	<i>Lagerstroemia indica</i> Crepe Myrtle	5	8	30 32	3.6 2.1	Immature, good condition but poor development.	2d A1	Low	Retain and protect.

Tree No.	Location	Botanical Name Common Name	Crown (m)	Height (m)	DBH* DRC* (cm)	TPZ* SRZ* (m)	Tree Health & Condition	TULE* A-Z	Retention Value	Control Measures
44	Western boundary.	<i>Lagerstroemia indica</i> Crepe Myrtle	7	8	14 (x 8) 60	4.8 2.7	Immature, good condition but poor development, with a suppressed canopy.	2d Z10	Low-Moderate	Remove and replenish.
45	Western boundary.	<i>Cinnamomum camphora</i> Camphor Laurel	14	15	20/53 65	6.8 2.8	Immature, good condition but poor development.	2d Z10	Low-Moderate	Remove and replenish.
45a (x 4)	Western boundary.	<i>Cinnamomum camphora</i> Camphor Laurel	4-5	10-12	10-20 15-25	2.4 1.9	Immature, good condition but poor development, with suckering re-growth.	2d Z10	Low	Remove and replenish.
46	Western boundary.	<i>Lagerstroemia indica</i> Crepe Myrtle	8	9	40 42	4.8 2.3	Immature, good condition but poor development.	2a Z10	Low-Moderate	Remove and replenish.
47	Western boundary.	<i>Lagerstroemia indica</i> Crepe Myrtle	2	3	10 10	2.0 1.5	Immature, good condition but poor development, with four (4) main stems.	1a Z1	Low	Remove (Exempt, less than 5m height).
48	Western boundary.	<i>Lagerstroemia indica</i> Crepe Myrtle	6	8	10 (x 4) 50	2.4 2.5	Semi-mature, good condition but poor development, with decay.	3a Z10	Low-Moderate	Remove and replenish.
49	Removed prior to this report.									
50	Western boundary.	<i>Lagerstroemia indica</i> Crepe Myrtle	5	6	20 20	2.4 1.7	Immature, good condition.	2d A1	Low	Retain and protect.
51	Western boundary.	<i>Lagerstroemia indica</i> Crepe Myrtle	3	4	20 20	2.4 1.7	Immature, good condition but poor development.	2d Z10	Low	Remove (Exempt, less than 5m height).
52	Western boundary.	<i>Ligustrum lucidum</i> Broad-Leaf Privet	6	6	10/10/15 30	2.5 2.0	Semi-mature, moderate condition.	5f Z3	Very Low	Remove (Exempt, weed species).
53	On embankment.	<i>Pittosporum undulatum</i> Sweet Pittosporum	6	5	15 16	2.0 1.5	Immature, moderate condition, with decay, and termite damage.	3d A2	Low	Retain and protect.
54	Western Boundary.	<i>Lagerstroemia indica</i> Crepe Myrtle	3	6	10 10	2.0 1.5	Juvenile, dead/dying, with multiple stems.	4a Z4	Low	Remove (Exempt, dead/dying).
55	Western Boundary.	<i>Cinnamomum camphora</i> Camphor Laurel	8	12	20/24/24/35 60	6.4 2.7	Immature, good condition but poor development, with an inclusion at 1m height.	2d Z10	Low-Moderate	Remove and replenish.
56	Western Boundary.	<i>Lagerstroemia indica</i> Crepe Myrtle	6	3	10 10	2.0 1.5	Immature, dead/dying, with multiple stems, and dead wood.	4a Z4	Low	Remove (Exempt, dead/dying).
57	Western Boundary.	<i>Ligustrum lucidum</i> Broad-Leaf Privet	6	6	5/12/12/12 22	2.5 1.8	Immature, good condition but poor development.	5f Z3	Very Low	Remove (Exempt, weed species).
58	Western Boundary.	<i>Corymbia citriodora</i> Lemon-Scented Gum	10	20	42 44	5.0 2.3	Immature, with physical damage on the stem at 6m height, and an inclusion at 8m height.	2d A2	Moderate	Retain and protect.
59	Western Boundary.	<i>Lagerstroemia indica</i> Crepe Myrtle	2	5	5/10 15	2.0 1.5	Juvenile, dead/dying.	4a Z4	Low	Remove (Exempt, dead/dying).
60a	Western Boundary.	Species unknown (stag)	4	15	5 5	2.0 1.5	Dead, with no hollows.	4a Z4	Very Low	Remove (Exempt, dead).
60b	Western Boundary.	Species unknown (stag)	4	15	5 5	2.0 1.5	Dead, with no hollows.	4a Z4	Very Low	Remove (Exempt, dead).
61	Western Boundary.	<i>Phoenix canariensis</i> Canary Island Date Palm	8	8	50 60	6.0# 2.7	Semi-mature, good condition but poor development.	2a A1	Moderate	Retain and protect.

Tree No.	Location	Botanical Name Common Name	Crown (m)	Height (m)	DBH* DRC* (cm)	TPZ* SRZ* (m)	Tree Health & Condition	TULE* A-Z	Retention Value	Control Measures
61a	Western Boundary.	<u><i>Olea europaea</i></u> Olive	8	7	10/10/20 40	2.9 2.3	Immature, good condition but poor development, with a spreading habit.	2d Z3	Low-Moderate	Remove (Exempt, weed species).
62	Western Boundary.	<u><i>Glochidion ferdinandi</i></u> Cheese Tree	3	3	10/10 15	2.0 1.5	Immature, poor condition, with 50% dehydration.	3d A2	Low	Retain and protect.
63	Western Boundary.	<u><i>Ligustrum lucidum</i></u> Broad-Leaf Privet	3	5	15/15 20	2.5 1.7	Semi-mature, dead/dying.	4c Z4	Low	Remove (Exempt, dead/dying).
64	Western Boundary.	<u><i>Lagerstroemia indica</i></u> Crepe Myrtle	8	8	35 40	4.2 2.3	Semi-mature, good condition but poor development, with multiple stems.	2d Z10	Low-Moderate	Remove and replenish.
65	Western Boundary.	<u><i>Lagerstroemia indica</i></u> Crepe Myrtle	8	8	40 42	4.8 2.3	Immature, good condition but poor development, with decay.	2d Z10	Low-Moderate	Remove and replenish.
66	Western Boundary.	<u><i>Lagerstroemia indica</i></u> Crepe Myrtle	6	6	15/15/15 20	3.1 1.7	Semi-mature, dead/dying, with decay.	4a Z4	Low-Moderate	Remove (Exempt, dead/dying).
67	Western Boundary.	<u><i>Lagerstroemia indica</i></u> Crepe Myrtle	5	6	10/10/10 20	2.0 1.7	Semi-mature, dead/dying, with physical damage, and a cavity.	4c Z4	Low	Remove (Exempt, dead/dying).
68	Removed prior to this report.									
69 (x 2)	2b Fleet Street.	<u><i>Ligustrum lucidum</i></u> Broad-Leaf Privet & <u><i>Cinnamomum camphora</i></u> Camphor Laurel	10	10	14/25/25/35 60	6.2 2.7	Semi-mature, good condition but poor development, with multiple stems.	2d Z3	Low-Moderate	Remove and replenish Camphor Laurel Remove Privet (Exempt, weed species).

The TPZ of palms, other monocots, cycads and tree ferns should not be less than 1 metre outside the crown projection.

3.5 OBSERVATIONS

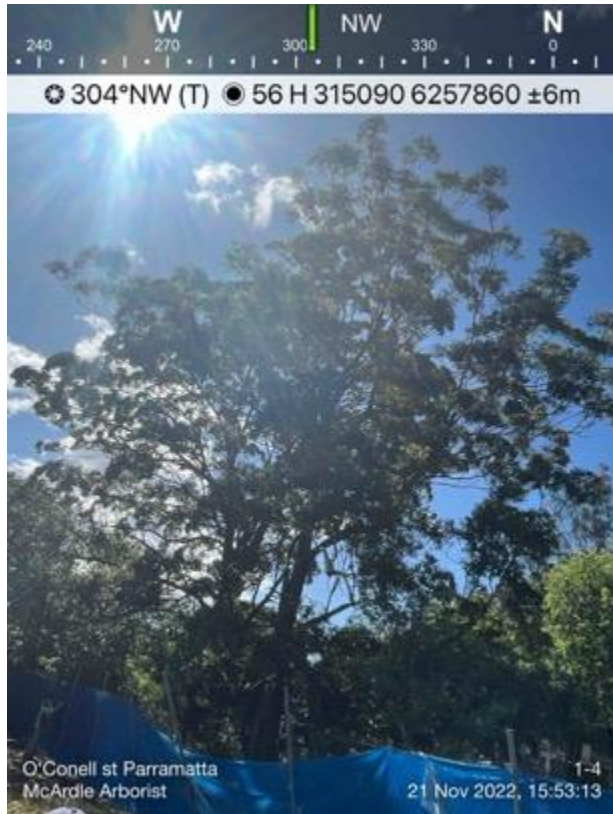


Plate 1: Tree 1 and 2a, *Ficus* spp. (*Ficus*), Tree 2, *Eucalyptus microcorys* (Tallowwood), Tree 3, *Phoenix canariensis* (Canary Island Date Palm) and Tree 4, *Eucalyptus piperita* (Sydney Peppermint).



Plate 2: Tree 2, *Eucalyptus microcorys* (Tallowwood).



Plate 3: Tree 2, *Eucalyptus microcorys* (Tallowwood).



Plate 4: Tree 4, *Eucalyptus piperita* (Sydney Peppermint).



Plate 5: Trees 10, 11 12 and 14.



Plate 6: Tree 13, Eucalyptus cinerea (Argyle Apple).



Plate 7: Tree 6, a stag.



Plate 8: Tree 14, dead stag.



Plate 9: Tree 15, *Corymbia maculata* (Spotted Gum).



Plate 10: Tree 17 and 18, *Corymbia citriodora* (Lemon-Scented Gum).



Plate 11: Tree 30, a stag.



Plate 12: Tree 33, *Liquidambar styraciflua* (Liquidambar).



Plate 13: Tree 34, *Platanus orientalis* (Oriental Plane).



Plate 14: Tree 33 and 37, *Liquidambar styraciflua* (Liquidambar).



Plate 15: Tree 42, *Lagerstroemia indica* (Crepe Myrtle) and *Ligustrum lucidum* (Privet).

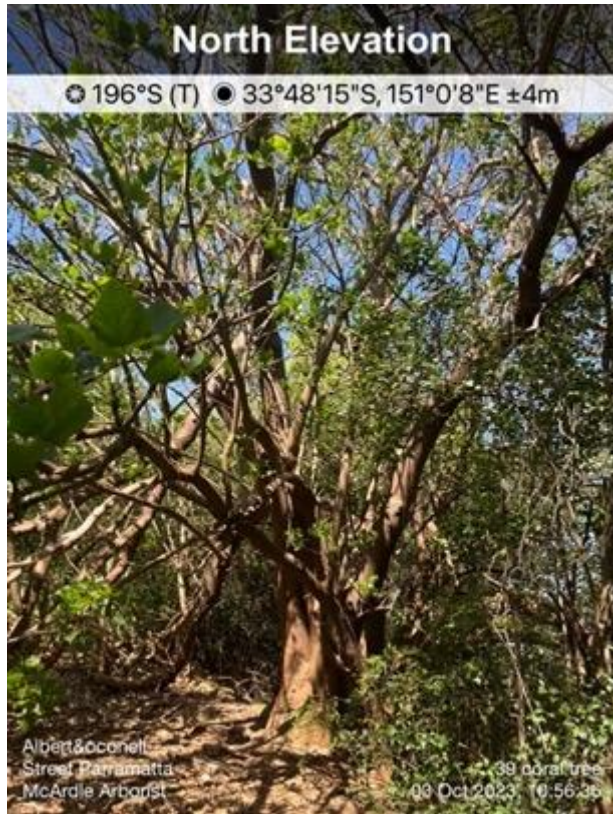


Plate 16: Tree 39 *Erythrina* sp.(Coral)..

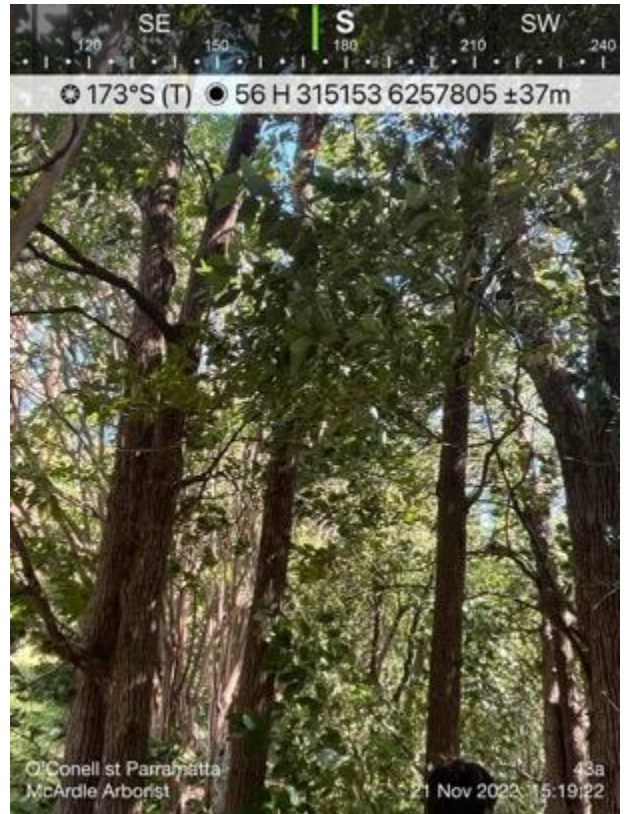


Plate 17: Tree 42b, *Lagerstroemia indica* (Crepe Myrtle).



Plate 18: Tree 54, a stag.



Plate 19: Tree 56, a stag.



Plate 20: Tree 59, a stag.



Plate 21: Tree group 60 is two dead stags.



Plate 22: Tree 61, *Phoenix canariensis* (Phoenix Palm).

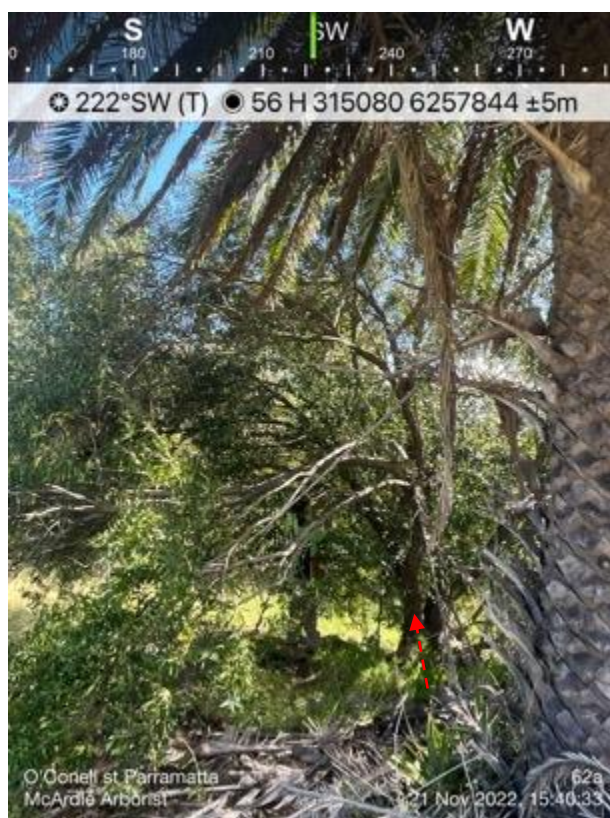


Plate 23: Tree 61a, *Olea europaea* (Olive tree).



Plate 24: Tree 63, a stag.



Plate 25: Tree 66, a stag.



Plate 26: Tree 67, a stag.

4. DISCUSSION

4.1 GENERAL DISCUSSION OF TREES ON SITE

4.1.1 Approximately sixty-nine (69) trees/tree groups on site and in the adjacent surrounding area were assessed.

4.1.2 Sixteen (16) trees numbered 1, 2, 2a, 3, 5, 12, 34, 35, 36, 37, 43, 50, 53, 58, 61 and 62 are proposed for **retention**; and forty-six (46) trees/tree groups numbered 4, 6, 8, 9, 10, 11, 13, 14, 15, 16, 17, 18, 21, 30, 31, 32a, 32b, 33, 38, 39, 40, 41, 42, 42b, 44, 45, 45a, 46, 47, 48, 51, 52, 54, 55, 56, 57, 59, 60a, 60b, 61a, 63, 64, 65, 66, 67 and 69 are proposed for **removal** to support the proposed works.

4.1.3 One (1) tree numbered 37 requires **pruning** to provide clearance around the proposed apartment building. A branch mapping report is required to assess the extent of pruning required for this tree.

4.1.4 Tree 63 has an issue with a wasp nest (see Plate 24), and as a result, Tree 61a was left untagged (see Plate 23).

4.2 SIGNIFICANCE IN THE LANDSCAPE AND USEFUL LIFE EXPECTANCY

4.2.1 Tree 2, *Eucalyptus microcorys* (Tallowwood), has a **short** useful life expectancy rating (3a) and an estimated life duration of 5 to 15 years. As the tree is a native plant species of the Sydney region and has a large live crown size exceeding 200m², the tree is considered to have **high** value in the landscape.

4.2.2 Trees 1, 34 and 37 have **medium** useful life expectancy ratings (2a/2d) and estimated life durations of 15 to 40 years. As the trees are exotic plant species and have large live crown sizes exceeding 100m², the trees are considered to have **moderate** value in the landscape.

4.3 RETENTION VALUES

4.3.1 Retention values are determined by considering both TULE and Significance in The Landscape (Appendix E). The retention values of the assessed trees are as follows:

Table 5: Retention Values.

High (4 trees)	Moderate (13 trees)	Low-Moderate (18 trees/tree groups)	Low (17 trees/tree groups)	Very Low (10 trees)
1, 2, 34, 37.	4, 9, 11, 13, 17, 21, 31, 33, 35, 36, 41, 58, 61.	2a, 6, 8, 10, 12, 18, 42, 42b, 44, 45, 46, 48, 55, 61a, 64, 65, 66, 69.	3, 5, 38, 39, 40, 43, 45a, 47, 50, 51, 53, 54, 56, 59, 62, 63, 67.	4, 15, 16, 30, 32a, 32b, 52, 57, 60a, 60b.

4.3.2 The trees of **high** retention value are numbered 1, 2, 34 and 37. These trees are worthy of preservation and consideration should be given to their retention.

4.3.3 The trees of **moderate** retention value are numbered 4, 9, 11, 13, 17, 21, 31, 33, 35, 36, 41, 58 and 61. These trees are desirable for retention and should be retained if possible.

4.3.4 The trees of **low-moderate** retention value are numbered 2a, 6, 8, 10, 12, 18, 42, 42b, 44, 45, 46, 48, 55, 61a, 64, 65, 66 and 69. These trees require substantial remediation and are only suitable for retention in the short term.

4.3.5 The trees of **low** retention value are numbered 3, 5, 38, 39, 40, 43, 45a, 47, 50, 51, 53, 54, 56, 59, 62, 63 and 67. These trees do not have special ecological or amenity value and are not considered to be worthy of preservation.

4.3.6 The trees of **very low** retention value are numbered 4, 15, 16, 30, 32a, 32b, 52, 57, 60a and 60b. These trees are considered to be potentially hazardous or are noxious weeds or very poor specimens.

4.4 IMPACT ASSESSMENT

4.4.1 The assessment determines how the proposed development will impact the assessed trees and their canopies. The impacts are classified as minor or major Tree Protection Zone (TPZ) encroachments.

Table 6: TPZ Encroachments.

Tree No.	<u>Botanical Name</u> (Common Name)	TPZ Encroachment	Category
2	<u>Eucalyptus microcorys</u> (Tallowwood)	2.9% (+4.6% canopy)	Minor (less than 10%)
4	<u>Eucalyptus piperita</u> (Sydney Peppermint)	25.9% (+ 20.2% canopy)	Major (more than 10%)
6	<u>Liquidambar styraciflua</u> (American Sweet Gum)	27.2%	Major (more than 10%)
8	<u>Fraxinus spp.</u> (Ash)	2.0%	Major (SRZ encroachment)
9	<u>Fraxinus spp.</u> (Ash)	25.2%	Major (more than 10%)
10	<u>Grevillea robusta</u> (Silky Oak)	100%	Major (more than 10%)
11	<u>Fraxinus angustifolia</u> (Claret Ash)	100%	Major (more than 10%)
13	<u>Eucalyptus cinerea</u> (Argyle Apple)	15.4% (+51.2% canopy)	Major (more than 10%)
14	<i>Species unknown</i> (stag)	95.9%	Major (more than 10%)
15	<u>Corymbia maculata</u> (Spotted Gum)	100%	Major (more than 10%)
16	<u>Corymbia citriodora</u> (Lemon-Scented Gum)	(100% canopy)	Major (more than 10%)
17	<u>Corymbia citriodora</u> (Lemon-Scented Gum)	(34.7% canopy)	Major (more than 10%)
18	<u>Corymbia citriodora</u> (Lemon-Scented Gum)	(35.7% canopy)	Major (more than 10%)
21	<u>Jacaranda mimosifolia</u> (Jacaranda)	1.5% (+28.8% canopy)	Major (more than 10%)
30	<i>Species unknown</i> (stag)	63.6%	Major (more than 10%)
31	<u>Lophostemon confertus</u> (Brush Box)	97.5% (+ 87.4% canopy)	Major (more than 10%)
32a	<u>Ligustrum lucidum</u> (Broad-Leaf Privet)	100%	Major (more than 10%)
32b	<u>Ligustrum lucidum</u> (Broad-Leaf Privet)	100%	Major (more than 10%)
33	<u>Liquidambar formosana</u> (Chinese Sweet Gum)	64.2% (+91.6% canopy)	Major (more than 10%)
37	<u>Liquidambar styraciflua</u> (American Sweet Gum)	1.2% (+24.4% canopy)	Major (more than 10%)
39	<u>Erythrina x sykesii</u> (Common Coral Tree)	8.7%	Minor (less than 10%)
40	<u>Erythrina x sykesii</u> (Common Coral Tree)	2.0%	Minor (less than 10%)
41	<u>Lophostemon confertus</u> (Brush Box)	30.5% (+61.2% canopy)	Major (more than 10%)
44	<u>Lagerstroemia indica</u> (Crepe Myrtle)	79.9%	Major (more than 10%)
45	<u>Cinnamomum camphora</u> (Camphor Laurel)	35.5%	Major (more than 10%)
45a	<u>Cinnamomum camphora</u> (Camphor Laurel)	28.6%	Major (more than 10%)
46	<u>Lagerstroemia indica</u> (Crepe Myrtle)	14.1%	Major (more than 10%)
55	<u>Cinnamomum camphora</u> (Camphor Laurel)	3.4%	Minor (less than 10%)
61	<u>Phoenix canariensis</u> (Canary Island Date Palm)	3.8%	Minor (less than 10%)
64	<u>Lagerstroemia indica</u> (Crepe Myrtle)	2.5%	Minor (less than 10%)

Tree No.	<u>Botanical Name</u> (Common Name)	TPZ Encroachment	Category
65	<u>Lagerstroemia indica</u> (Crepe Myrtle)	7.9%	Minor (less than 10%)

4.4.2 Twenty-six (26) trees numbered 4, 6, 8, 9, 10, 11, 13, 14, 15, 16, 17, 18, 21, 30, 31, 32a, 32b, 33, 37, 41, 44, 45, 45a and 46 will have major anticipated impacts from TPZ encroachments of greater than 10% and/or encroachments within their canopies. Of these trees, one (1) tree numbered 37 is to be retained with pruning to provide clearance around the proposed apartment building. A branch mapping report is required to assess the extent of clearance pruning required for this tree.

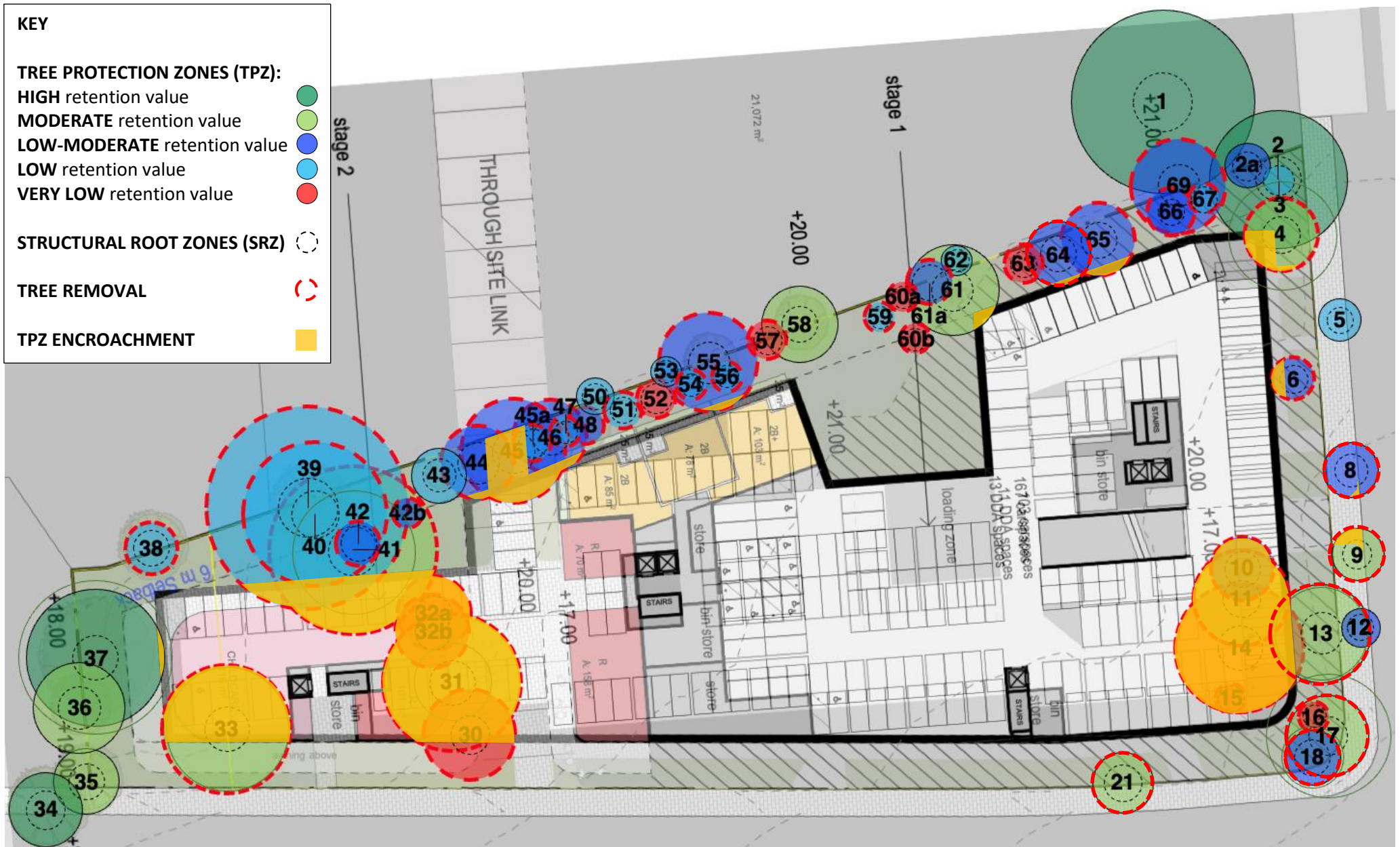
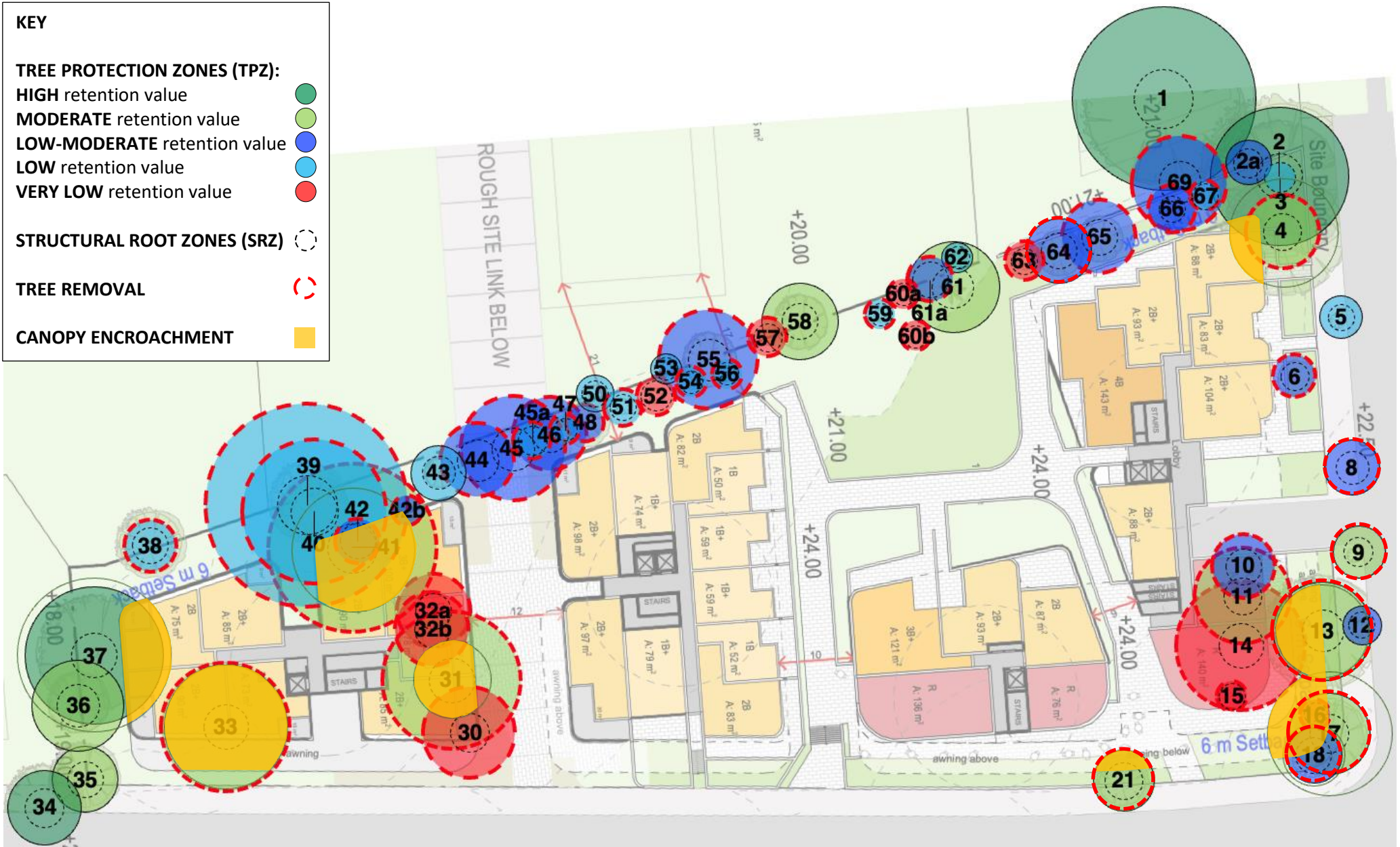


Figure 5: TPZ encroachments from the proposed development. Encroachments are highlighted in orange.



McArdle Arboricultural Consultancy Pty Ltd ©

5. RECOMMENDATIONS

5.1 TREE WORKS

Table 7: Tree Works.

Retain (16 trees)	Prune (1 tree)	Remove (46 trees)
1, 2, 2a, 3, 5, 12, 34, 35, 36, 37, 43, 50, 53, 58, 61, 62.	37.	4, 6, 8, 9, 10, 11, 13, 14, 15, 16, 17, 18, 21, 30, 31, 32a, 32b, 33, 38, 39, 40, 41, 42, 42b, 44, 45, 45a, 46, 47, 48, 51, 52, 54, 55, 56, 57, 59, 60a, 60b, 61a, 63, 64, 65, 66, 67, 69.

5.1.1 Retain sixteen (16) trees numbered 1, 2, 2a, 3, 5, 12, 34, 35, 36, 37, 43, 50, 53, 58, 61 and 62. Of these trees:

- One (1) tree numbered 37 will have canopy encroachments of greater than 10%. The tree is to be retained with pruning to provide clearance around the proposed apartment building. A branch mapping report is required to assess the extent of clearance pruning required for this tree.
- Fifteen (15) trees numbered 1, 2, 2a, 3, 5, 12, 34, 35, 36, 43, 50, 53, 58, 61 and 62 will have minor or no encroachments from the proposed development.

5.1.2 Remove forty-six (46) trees/tree groups numbered 4, 6, 8, 9, 10, 11, 13, 14, 15, 16, 17, 18, 21, 30, 31, 32a, 32b, 33, 38, 39, 40, 41, 42, 42b, 44, 45, 45a, 46, 47, 48, 51, 52, 54, 55, 56, 57, 59, 60a, 60b, 61a, 63, 64, 65, 66, 67 and 69. Of these trees:

- Twenty-five (25) trees numbered 4, 6, 8, 9, 10, 11, 13, 14, 15, 16, 17, 18, 21, 30, 31, 32a, 32b, 33, 41, 44, 45, 45a and 46 will have major anticipated impacts from TPZ and/or canopy encroachments of greater than 10%.
- Twenty-seven (27) trees numbered 6, 10, 11, 14, 15, 16, 30, 32a, 32b, 38, 39, 40, 42, 47, 51, 52, 54, 56, 57, 59, 60a, 60b, 61a, 63, 66, 67 and 69 are exempt from preservation under Parramatta DCP 2023⁷ and are not worthy of special measures to ensure their preservation.

5.1.3 Suitably Qualified Arborist: Most councils require written consent prior to tree pruning or removal. Tree contractors must have a minimum AQF Level 3 Certificate in Arboriculture and work in accordance with Australian Standard® AS 4373-2007 – Pruning of Amenity Trees, the Work Health & Safety (WHS) Act 2011 and the WHS Regulations 2017, the SafeWork NSW – Guide to Managing Risks of Tree Trimming and Removal Work 2016, and the Code of Practice for The Amenity Tree Industry 1998. Work near powerlines should be carried out in accordance with the Code of Practice for Work Near Overhead Power Lines. Tree contractors shall be members of Tree Contractors Association Australia (TCAA) or Arborists Australia (AA) and hold Workers Compensation and Public Liability Insurance. Tree contractors must liaise with the consulting arborist to ensure that tree pruning and removal works are completed according to specification.

5.1.4 Canopy Cover Loss: Replenish tree removals with new tree plants within the site to compensate for loss of amenity in accordance with council requirements. To compensate for the reduced canopy cover, planting of indigenous trees which are appropriate to the local environment and provide koala habitat should be considered using the canopy cover formula ($(\frac{1}{2} \times \text{canopy diameter})^2 \times \pi$). The removal of forty-six (46) trees/tree groups will result in a canopy cover loss of approximately **3,248.01m²**. Twenty-seven (27)

⁷ <https://www.cityofparramatta.nsw.gov.au/document/40611>

trees numbered 6, 10, 11, 14, 15, 16, 30, 32a, 32b, 38, 39, 40, 42, 47, 51, 52, 54, 56, 57, 59, 60a, 60b, 61a, 63, 66, 67 and 69 are exempt from preservation under Parramatta DCP 2023⁸ and do not require replenishment.

5.1.5 Replenishment Planting: Nineteen (19) trees of 45L potted volumes that are capable of reaching canopy diameters at maturity of 14 to 15 metres are required. In accordance with Council requirements, new tree plantings should be a native species or from a vegetation community present on site to compensate for loss of amenity. Replenishment is to be completed in accordance with planting specifications from NATSPEC (Clark 2003) and Australian Standard® AS 2303-2018 – Tree Stock for Landscape Use (Appendix F).

5.1.6 Mulch: Maintain aged *Eucalyptus spp.* mulch around all the retained and replenished trees in accordance with Australian Standard® AS 4454-2003 – Compost, Soil Conditioners and Mulches.

5.1.7 Watering Schedule: Maintain a watering schedule for replenished trees. A 45L potted volume requires approximately 35L of water daily (Trees Impact: 2021).

5.2 TREE PROTECTION MEASURES

5.2.1 Minor TPZ encroachments must be compensated for elsewhere and be contiguous with the TPZs of the assessed trees. All measures must be certified by an AQF Level 5 arborist in accordance with Council requirements and Australian Standard® AS 4970-2009 – Protection of Trees on Development Sites.

Table 8: Tree Management Plan.

Tree Management Measures	Tree No.
Mulch Ground Cover Protection	2, 2a, 36, 37, 43, 61.
Tree Protection Fencing	1, 2, 2a, 3, 35, 36, 37, 43, 50, 53, 58, 61, 62.
Tree Trunk Protection	5, 12, 34.
Branch Mapping Report	37.

5.2.2 Mulch ground cover protection is required over the TPZs (where viable) of six (6) trees numbered 2, 2a, 36, 37, 43 and 61 to minimise soil compaction and root damage. This is to consist of 75mm depth layers of clean and certified *Eucalyptus spp.* mulch.

5.2.3 Tree protection fencing is required around the TPZs (where viable) of thirteen (13) trees numbered 1, 2, 2a, 3, 35, 36, 37, 43, 50, 53, 58, 61 and 62 to preserve their root zones. This is to consist of 1.8-metre-high steel mesh fencing anchored with concrete blocks, or, red high-visibility plastic mesh fencing attached to star pickets. Tree protection fencing may be relocated with the project arborist's permission to access the work site. TPZ signage with the project arborist's contact details is to be attached to the tree protection fencing and read 'Tree Protection Zone: Do Not Enter' written in large font with waterproof ink, in accordance with Australian Standard® AS 1319-1994 – Safety Signage.

5.2.4 Tree trunk protection is required around the stems of three (3) trees numbered 5, 12 and 34. This is to consist of hessian, padding or geotextile fabric wrapped around the trees' trunk, with 1.8 metre lengths of timber spaced at small intervals and strapped over the top of the padding, not nailed or screwed into the trees.

⁸ <https://www.cityofparramatta.nsw.gov.au/document/40611>

5.3 FURTHER INVESTIGATION

5.3.1 A **branch mapping report** is to be prepared by an AQF Level 5 arborist prior to construction to assess the extent of clearance pruning required for one (1) tree numbered 37.

5.4 SITE MONITORING

5.4.1 An AQF Level 5 arborist must monitor trees throughout the construction process. The site manager should notify the project arborist prior to works within the TPZs of the retained trees.

Table 9: Project Arborist Inspections.

SITE INSPECTIONS DURING CONSTRUCTION			
Stage	General Schedule of Work	Person Responsible	Certification by Project Arborist
Pre-Construction	Induction of tree protection systems. A waterproof copy of the tree protection plan is to be displayed within the site manager's office or on the front fence adjacent to the DA signage for viewing by contractors. An arborist can induct the contractors who have access to tree protection areas.	Project Engineer or Site Manager	Induction and Logbook Certification.
	Root mapping investigations to locate roots within footprint of development.	Project Arborist	Root Mapping Report
	Branch mapping to assess the extent of canopy clearing required to accommodate awnings and buildings.	Project Arborist	Branch Mapping Report
	Prior to demolition, earthworks or site clearing, clearly mark trees for removal (spray paint on trunks).	Competent Person	n/a
	Tree Protection Systems (for retained trees) must be installed prior to demolition, include mulching in TPZ.	Competent Person	Pre-Construction Tree Protection Certificate
Construction	Scheduled inspection of trees during construction-usually monthly.	Project Arborist	Inspection and Certification
	Supervise and protect any excavations within the TPZ of retained trees.	Project Arborist	Supervision and Certification
Post-Construction	Final inspection after construction and prior to the removal of protection measures.	Project Arborist	Final Tree Protection Certificate

6. HOLDING POINTS

6.1 Tree protection measures are to be installed around the retained trees and certified by the project arborist prior to any demolition, development, or soil stripping. The protected area is an exclusion zone. Protection measures should not be removed or altered unless agreed by the supervising arborist. Ground protection should support all anticipated loading and prevent compaction in the TPZ.

6.2 All works carried out within the TPZs of the retained trees must be supervised by an AQF Level 5 arborist. Activities prohibited in TPZs are listed in [8. Tree Management Specifications](#).

6.3 A branch mapping report is to be prepared by an AQF Level 5 arborist prior to construction to assess the extent of clearance pruning required for one (1) tree numbered 37.

6.5 Tree pruning and removal works are to be completed by qualified AQF Level 3 arborists in accordance with Australian Standard® AS 4373-2007 – Pruning of Amenity Trees and SafeWork NSW – Guide to Managing Risks of Tree Trimming and Removal Works. Tree contractors shall be members of Tree Contractors Association Australia (TCAA) or Arborists Australia (AA) and hold Workers Compensation and Public Liability Insurance. Tree contractors must liaise with the consulting arborist to ensure that pruning and removal works are completed in accordance with specification.

6.6 Nineteen (19) trees of 45L potted volumes are required. The trees are to be planted in suitable locations at least 3-5 metres away from buildings and away from power lines, hard-surface infrastructure and underground services. The replenishment trees are to be certified by an AQF Level 5 arborist and planted in accordance with Australian Standard® AS 2303-2018 – Tree Stock for Landscape Use.

6.7 Inspections monthly or every second month are to be carried out by an AQF Level 5 arborist to ensure the retained trees are preserved in viable condition, and to certify that tree protection measures are compliant and being maintained around the trees.

6.8 Hoarding, waste and amenities (HWA) should be stored outside the TPZs of the retained trees.

6.9 If any of the retained trees are damaged during the proposed development, then a remedial plan must be prepared by an AQF Level 5 arborist for each damaged tree.

7. MAPS

MAP A TREE RETENTION AND REMOVAL PLAN

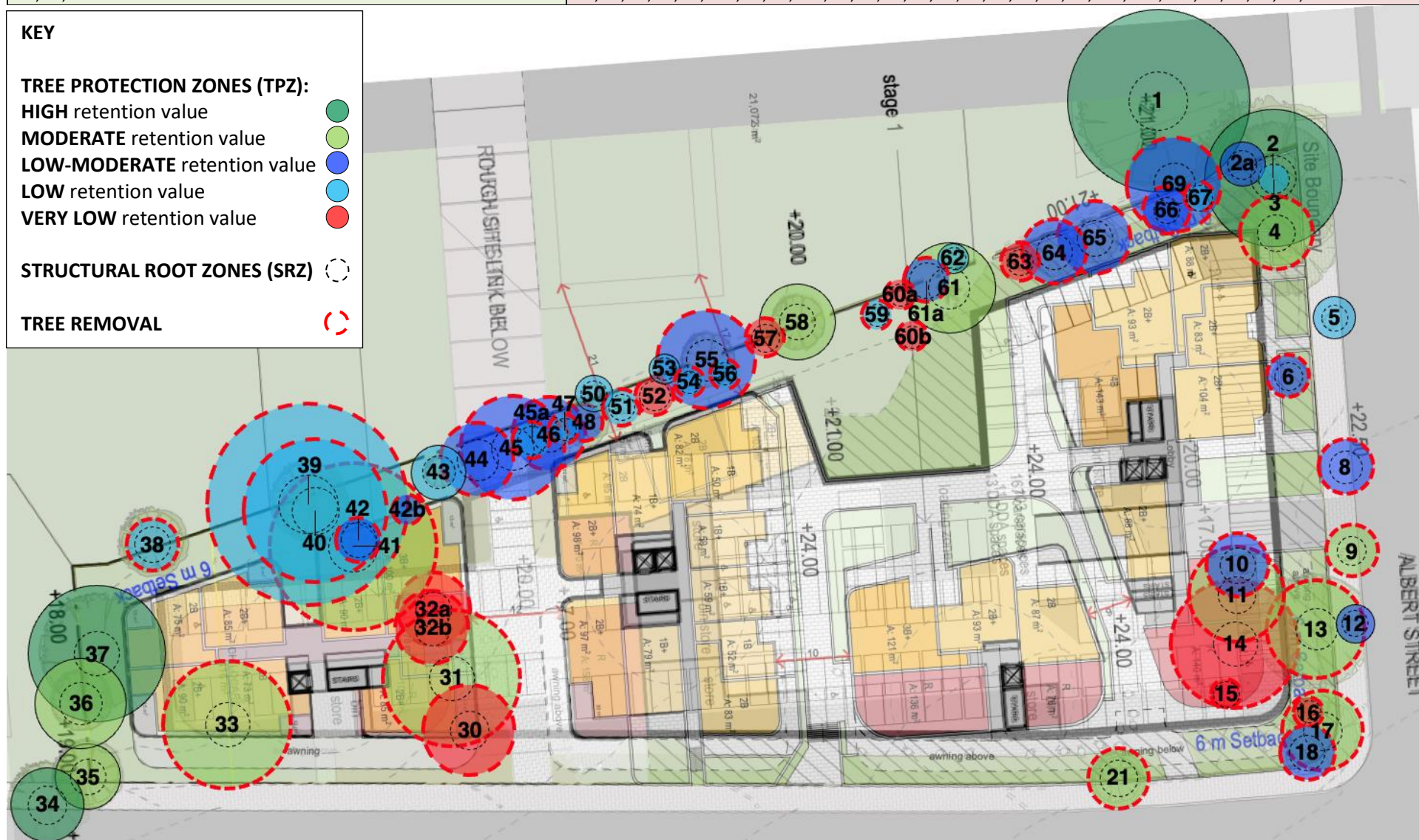
Retain sixteen (16) trees numbered 1, 2, 2a, 3, 5, 12, 34, 35, 36, 37, 43, 50, 53, 58, 61 and 62.

Remove forty-six (46) trees/tree groups numbered 4, 6, 8, 9, 10, 11, 13, 14, 15, 16, 17, 18, 21, 30, 31, 32a, 32b, 33, 38, 39, 40, 41, 42, 42b, 44, 45, 45a, 46, 47, 48, 51, 52, 54, 55, 56, 57, 59, 60a, 60b, 61a, 63, 64, 65, 66, 67 and 69.

KEY

TREE PROTECTION ZONES (TPZ):

- HIGH** retention value ●
- MODERATE** retention value ●
- LOW-MODERATE** retention value ●
- LOW** retention value ●
- VERY LOW** retention value ●

STRUCTURAL ROOT ZONES (SRZ) ○TREE REMOVAL ○

Plans Referenced: Basement 01, Lower Ground Floor and Upper Ground Floor prepared by DKO Architecture, dated 6th of February, 2024.

MAP B TREE PROTECTION PLAN

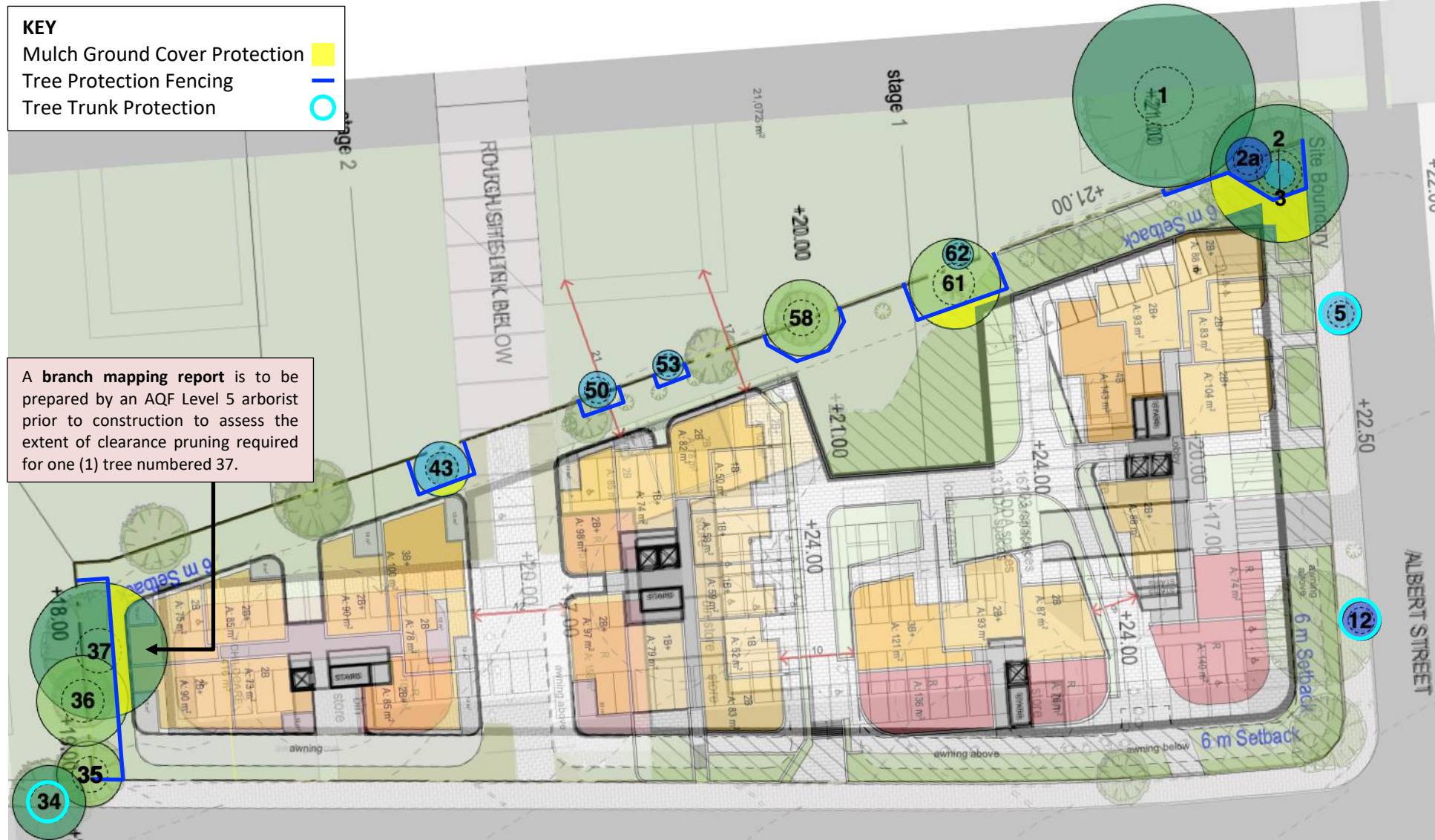
Mulch: 2, 2a, 36, 37, 43, 61.	Tree Protection Fencing: 1, 2, 2a, 3, 35, 36, 37, 43, 50, 53, 58, 61, 62.	Tree Trunk Protection: 5, 12, 34.	AQF Level 5 arborist supervision is required for all works carried out within the TPZs of the retained trees.
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KEY

Mulch Ground Cover Protection

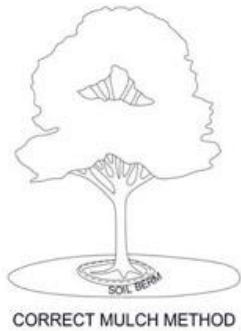
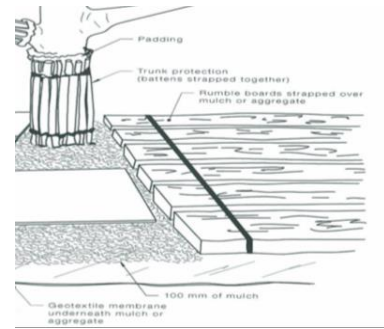
Tree Protection Fencing

Tree Trunk Protection

Plans Referenced: Basement 01, Lower Ground Floor and Upper Ground Floor prepared by DKO Architecture, dated 6th of February, 2024.

Root Protection Specifications: If temporary access for machinery is required within the TPZ, ground protection measures will be required to prevent root damage and soil compaction. Specifications for ground protection are as follows:

- Permeable membrane such as geotextile fabric.
- Layer of mulch or crushed rock (at minimum depth of 100mm).
- Or rumble boards strapped over mulch or aggregate.



Mulch Within TPZ: Maintain aged *Eucalyptus spp.* mulch around the retained trees for the duration of the development in accordance with Australian Standard® AS 4454-2003 – Compost, Soil Conditioners and Mulches.

Mulch should have at least 70% by mass of its particles, with a maximum size of greater than 16mm and spread 50-75mm deep to the extent of the dripline, (never exceed 100mm depth). Mulch should not have contact with a tree's trunk. Apply 200mm from the trunk, shaping a soil berm dish close to the root ball to facilitate establishment of watering.

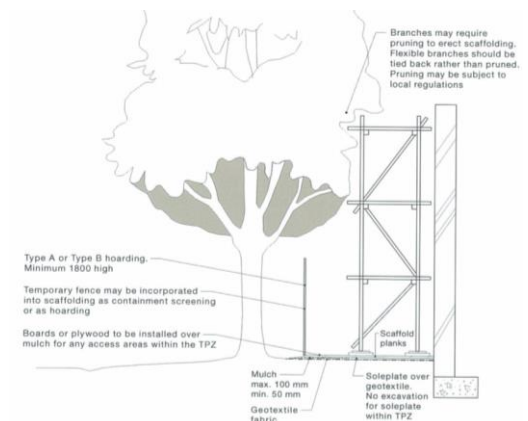
Watering Schedule: Maintain a watering schedule for retained trees at a rate of approximately 45 litres daily (Trees Impact: 2021).

Excavation Within TPZ's: Excavations shall be undertaken under the supervision of a project arborist, using tree-sensitive, non-destructive methods (e.g. manual excavation with hand tools, air-spade or hydro-vacuum machinery).

- No roots greater than 40mm in diameter are to be damaged, pruned or removed. All care shall be taken to preserve and avoid damaging roots. Excavations should not occur within a tree's SRZ.
- Exposed roots shall be protected from direct sunlight by covering with hessian or similar fabric and kept moist at all times.
- Hand excavation and root mapping shall be undertaken along excavation lines within the TPZ. Any conflicting roots greater than 40mm in diameter shall be pruned using clean, sharp secateurs or a pruning saw to ensure a clean cut that is free from tears.

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 boring methods, such as horizontal drilling (HDD) may be at least 600mm deep. The project arborist should assess the likely impacts of boring and bore pits on retained trees.
- Excavations for entry/exit pits must be located outside the TPZ.



9. GLOSSARY

Aerial inspection: Where a tree is climbed by an arborist to inspect the upper stem and crown for signs or symptoms of defects and disease.

Assets Protection Zone (APZ): A fuel-reduced area surrounding a built asset or structure.

Bracket fungus: The rigid fruiting body of some fungus species.

Branch collar: The ring of wood tissue, which forms around the base of a branch (near the branch attachment).

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

Canker: Fungal infections of the bark and cambium that can occur on all parts of the tree.

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

Crown: All the parts of a tree arising above the trunk where it terminates by its division forming branches e.g. the branches, leaves, flowers and fruit, or the total amount of foliage supported by branches.

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

Dead wood: Refers to any whole limb that no longer contains living tissues

Decay: Process of degradation of woody tissues by fungi or bacteria through decomposition of cellulose and lignin.

Deciduous: Describes trees and bushes that shed their leaves in the autumn (opposite to evergreen).

Dieback: Tree deterioration where the branches and leaves die.

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

DBH: Diameter at breast height, about 1.4 metres of trunk height.

Epicormic Shoots: These shoots often have a weak point of attachment. Epicormic growth/shoots are generally a survival mechanism, often indicating the presence of a current, or past stress event such as fire, pruning, drought, etc.

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 botanical name. Where the species name is not known, species (spp.) is used. The common name for trees may vary considerably in each area by geographical differences.

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

Inclusion: The pattern of development at branch or stem junctions where bark is turned inward rather than pushed out. This fault is located at the point where the stems/branches meet.

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: The removal of damaged or dead wood; or the trimming of diseased or infested branches. Trimming branches back to undamaged tissue in order to induce shoots, from which a new crown will be established.

Resistograph® testing: A resistograph® is a specialised machine that measures timber density by a drilling a 3mm diameter probe through the wood, simultaneously plotting the results on a graph at full scale.

Structural integrity: Describes the internal supporting timber (substantial to frail).

Structural Root Zone (SRZ): Refers to the radial distance in metres, measured from the centre of the tree stem, which defines the critical area required to maintain stability of the tree.

Targets: Are people, property, or activities that could be injured, damaged, or disrupted by a tree.

Tree Protection Zone (TPZ): Refers to the radius distance in metres, measured from the centre of the tree stem which defines the tree protection zone for a tree to be retained. This is generally the minimum distance from the centre of the tree trunk where protective fencing is to be installed to create an exclusion zone associated with construction works.

Vigour: Refers to the tree's health as exhibited by the crown density, leaf colour, presence of epicormic shoots, ability to withstand disease/invasion, and the degree of dieback.

Windthrow: Tree failure when a force exerted by wind against the foliage crown and trunk overcomes resistance to that force in the root plate.

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APPENDICES

Appendix A Visual Tree Assessment (VTA)

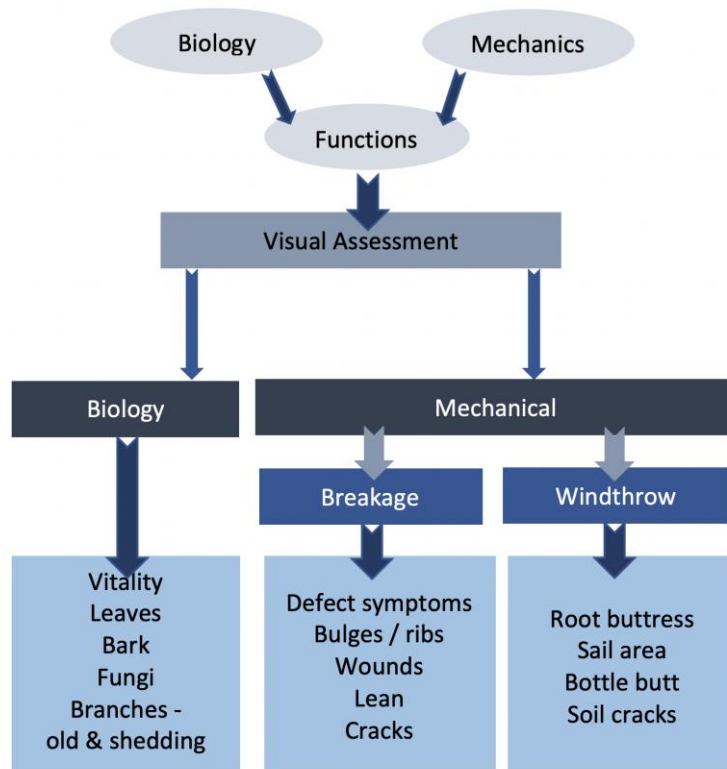


Diagram 1: VTA Chart by Claus Mattheck (1994) *The Body Language of Trees* adapted

Schedule 1: Categories for VTA.

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

Appendix B Tree A-Z Categories

Schedule 2: Tree A-Z Categories Field Sheet (version 10.04-U8C)

Barrell (2019) Criteria for Assessing the Importance of Trees on Development Sites.

TreeAZ Categories Field Sheet (Version 10.04-USC)

CAUTION: TreeAZ assessments must 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 not intended to be self-explanatory. They must 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 policy exemptions: Trees that are unsuitable for legal protection for local policy reasons including size, proximity and species

Z1	Young or insignificant small trees, i.e. below the local size threshold for legal protection, etc
Z2	Too close to a building, i.e. exempt from legal protection because of proximity, etc
Z3	Species that cannot be protected for other reasons, i.e. scheduled noxious weeds, out of character in a setting of acknowledged importance, etc

High risk of death or failure: Trees that are likely to be removed within 10 years because of acute health issues or severe structural failure

Z4	Dead, dying, diseased or declining
Z5	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
Z6	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

Z7	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
Z8	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 management: Trees that are likely to be removed within 10 years through responsible management of the tree population

Z9	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 & 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.

Appendix C Tree Useful Life Expectancy – (TULE)

Schedule 3: Adapted with permission Jeremy Barrell (SULE) 2014 for TCAA consulting arborists.

	1 LONG TULE	2 MEDIUM TULE	3 SHORT TULE	4 REMOVE	5 NO POTENTIAL FOR RETENTION	6 SMALL, YOUNG OR REGULARLY CLIPPED
	Trees that appear to be retainable for more than 40 years with a low level of risk.*	Trees that appear to be retainable for 15-40 years with a low to medium level of risk.*	Trees that appear to be retainable for 5-15 years with a medium to high level of risk.*	Trees that should be removed within the next 5 years with a high to very high level of risk.*	Trees that should be removed immediately with a very high to extreme level of risk.*	Trees than 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 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.
B	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.
C	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/allergen trees, asthmatic and poisonous trees that 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 4A to 4F.		

INSPECTION FREQUENCY					
Every 1-5 years by a competent inspector, or event monitored.	Every 1-5 years by a competent inspector, or event monitored.	Every 1-3 years by a competent inspector, or event monitored.	Annually by a competent inspector, or event monitored.	Every 1-7 days by a competent inspector and event monitored.	Bi-annually by a competent inspector.

* For sites with higher occupation.

Appendix D Landscape Significance Rating

Schedule 4: Heritage, Ecological and Amenity Significance. Source: Morton, A (2006) Criteria for Assessment of Landscape Significance.

RATING	HERITAGE VALUE	ECOLOGICAL VALUE	AMENITY VALUE
SIGNIFICANT	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 in a visually prominent position in the landscape, exhibits very good form and habit typical of the species.
	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.
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 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.
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.
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 amenity of the area.
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.	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.
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).
INSIGNIFICANT	The tree is completely dead and has no visible habitat value.	The tree is a declared noxious weed under the Biosecurity Act 2015 (NSW) within the relevant Local Government Area.	The tree is completely dead and presents a potential hazard.

Appendix E Retention Value Rating

Schedule 5: Determining the Tree Retention Value Morton, A (2011).

Evaluating Sustainability and Landscape Significance to Determine Retention Value	
Retention Value	Criteria and Categories
HIGH	<p>These trees are worthy of preservation. As such, careful consideration should be given to their retention as a priority.</p> <p>Proposed site design and placement of buildings and infrastructure should consider the Tree Protection Zones (TPZ), as discussed in the following section, to minimise any adverse impact.</p> <p>In addition to TPZs, 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.</p>
MODERATE	<p>The retention of these trees is desirable.</p> <p>These trees should be retained as part of any proposed development, if possible; however, these trees are less critical for retention.</p> <p>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.</p>
LOW	<p>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.</p> <p>These trees should not be considered as a constraint to the future development of the site.</p>
VERY LOW	<p>These trees are potentially hazardous or very poor specimens, or may be environmental or noxious weeds.</p> <p>The removal of these trees is therefore recommended regardless of the implications of any proposed development.</p>

Appendix F Tree Planting Specifications

Tree planting specifications are in accordance with NATSPEC Specification for Trees, Ross Clark (2003) and Australian Standard® AS 2303-2018 – Tree Stock for Landscape Use.

BEFORE PLANTING

- Don't plant trees too close to buildings, in-ground pools, avoid planting under power lines and over drainage pipes or near other large trees.
- A consider the effect on neighbouring properties (i.e. shade, loss of views, impact on foundations, fences and services).
- Plant deciduous trees if you want in summer shade and winter sun. Consider shadows cast from evergreen trees.
- Use locally native to attract native fauna and to reduce watering required.

BASIC TREE PLANTING

1. Dig the hole at least twice as wide as the pot size.
2. Loosen the soil at the sides of the hole. Fill hole with water and allow to drain away.
3. Place the loosened root ball in the hole. Fill back soil. The top of the root ball should be level with the surrounding soil.
4. Water the plant deeply after planting, once a week for the first two months.

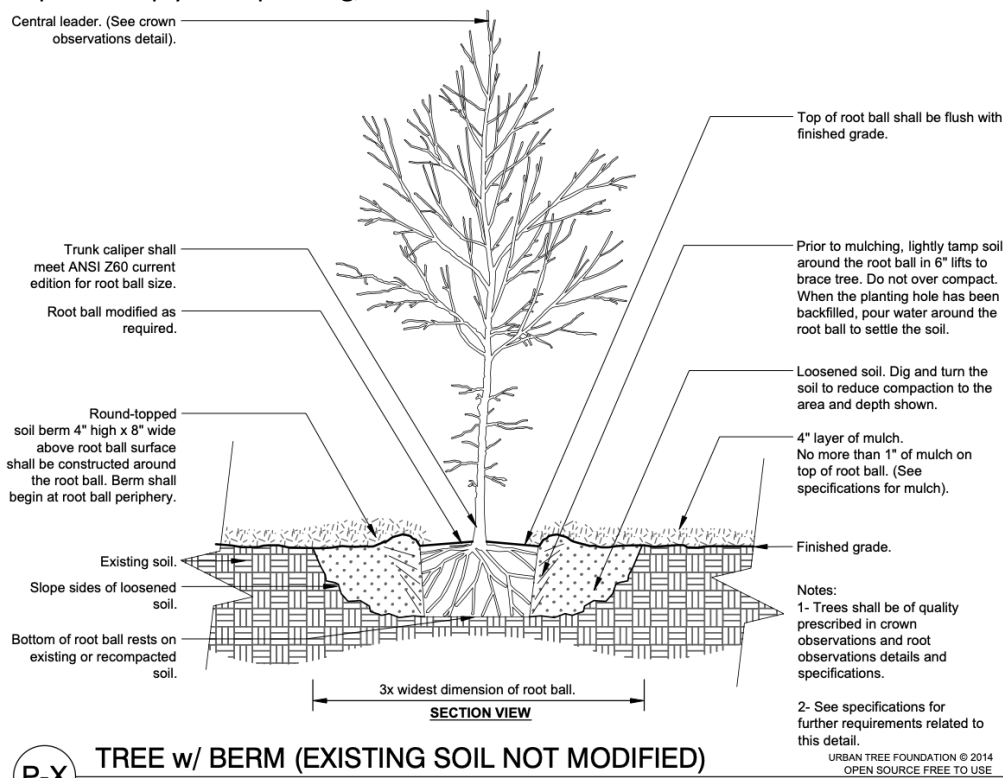


Diagram 2: Urban J (2014) Tree Planting Specification.

Schedule 6: Watering Frequency.

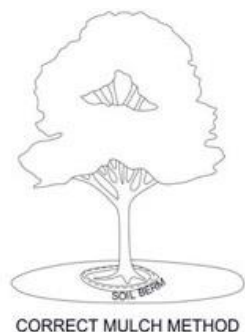
Watering frequency for 45L pot			
Time of year	1 st month	2nd and 3rd month	4th to 6th month
Sept-Feb.	4x week	3 x week	2 x week
Mar-May	3 x week	2 x week	1 x week
Jun-August	2 x week	1 x week	1x fortnight

Appendix G Replenishment of Native Trees Species

Schedule 7: Tree Species and Sizes.

Botanical Name	Common Name	Height (m) at maturity	Crown Spread (m)
<i>Leptospermum petersonii</i>	Lemon-Scented Tea Tree	5	6
<i>Agonis flexuosa</i>	Willow Myrtle	7	6
<i>Elaeocarpus eumundi</i>	Quandong	8	4
<i>Corymbia ficifolia</i>	Red Flowering Gum	8	5
<i>Syzygium luehmannii</i>	Riberry	8	5
<i>Waterhousea floribunda</i>	Weeping Lilly Pilly	8	5
<i>Acacia implexa</i>	Hickory Wattle	8	6
<i>Hymenosporum flavum</i>	Native Frangipani	8	6
<i>Tristaniopsis laurina</i>	Water Gum	9	5
<i>Corymbia eximia</i>	Yellow Bloodwood	10	7
<i>Callistemon viminalis</i>	Weeping Bottlebrush	10	8
<i>Melaleuca linariifolia</i>	Narrow-Leaved Paperbark	10	8
<i>Cupaniopsis anacardioides</i>	Tuckeroo	10	10
<i>Callistemon salignus</i>	Willow Bottlebrush	12	6
<i>Eucalyptus cinerea</i>	Argyle Apple	12	7
<i>Elaeocarpus reticulatus</i>	Blueberry Ash	15	8
<i>Flindersia australis</i>	Australian Teak	15	10
<i>Brachychiton populneus</i>	Kurrajong Tree	15	12
<i>Backhousia citriodora</i>	Lemon Myrtle	18	6
<i>Angophora costata</i>	Sydney Red Gum	20	10
<i>Lophostemon confertus</i>	Brush Box	20	16

MULCH: Adding a layer of mulch to reach 75mm, encourages water retention and microbes, that will break down and incorporate organic matter into the soil. Organic mulch will reduce weeds and root development.



- Add at least 70% by mass of its particles with a maximum size of greater than 16 mm in accordance with Australian Standard® AS 4454-2003 – Compost, Soil Conditioners and Mulches. Apply 200mm from trunk and shaping a soil berm dish close to the root ball to facilitate establishment of watering.
- The TPZ of retained trees should be maintained with a 75mm depth of organic, certified, coarse Eucalyptus mulch.
- Mulch should be retained at 5075mm depth and never exceed 100mm in depth.
- Do not allowed mulch to contact the tree trunk. Retain a mulch free gap of not less than 75mm and preferably 200mm clear from the base of the tree trunk.

Disclaimer

McArdle Arboricultural Consultancy Pty Ltd does not assume responsibility for liability associated with the tree on/or adjacent to this project site, the future demise and/or any damage which may result therefrom. They take 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 result of work carried out outside specifications, not in compliance with Australian Standard® or by inappropriately qualified staff. If further investigations such as, aerial, drill and root test are recommended, the report shall not be considered final until all investigations have been completed, as further defects may be found.

STATEMENT OF LIMITATIONS

McArdle Arboricultural Consultancy Pty Ltd makes every effort to accurately identify current tree health and hazards. 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.

The inspection was limited to a visual ground examination of the tree, without aerial inspections and below ground excavations. The assessments are limited and do not include specialised analysis. No internal diagnostics, aerial inspection and pathology test were conducted. Sketches, diagrams, graphs, and photographs in this report, being intended as visual aids, are not necessarily to scale. No part of this report is to be reproduced without written permission from the author.



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