



Martin Peacock Tree Care
Arboricultural & Horticultural Consultancy

Arboricultural Impact Assessment Report

88 Waterloo Road
Macquarie Park
NSW

Prepared by: Martin Peacock Tree Care

Date: 11th February 2026

Phone: 0405 221 056

Email: martin@martinpeacocktreecare.com.au

Web: www.martinpeacocktreecare.com.au

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Executive Summary

This Arboricultural Impact Assessment Report has been prepared by Martin Peacock Tree Care to accompany a State Significant Development Application (**SSDA**) and concurrent Rezoning Proposal – SSD-94006708 for a mixed-use development identified at 15-21 Cottonwood Crescent, Macquarie Park (the site).

The proposal includes provision for the demolition of existing buildings and construction of a residential development comprising two residential flat buildings above a common basement car park / sleaved podium incorporating residential, car parking, and a retail component within the Waterloo Road frontage and provision of 10% affordable housing.

The legal description of the site is outlined in **Table 1** below.

Property Address	Title Description
15 Cottonwood Crescent, Macquarie Park	SP8144
17 Cottonwood Crescent, Macquarie Park	SP7630
19 Cottonwood Crescent, Macquarie Park	SP7892
21 Cottonwood Crescent, Macquarie Park	SP7984

Note: for the purposes of reporting and branding of the proposal, we will also refer to the site as '**88 Waterloo Road, Macquarie Park**'.

This report has been prepared to address the Secretary's Environmental Assessment Requirements (**SEARs**) issued for the project (SSD-94006708).

This report concludes that the proposed development is suitable and warrants approval subject to the implementation of the following planned management and mitigation measures:

- Establishment of Tree Protection Zone (TPZ) areas (as per AS4970) for trees proposed for retention
- Use of tree sensitive construction methods when working within TPZ areas, as specified within this report

Following the implementation of the above management measures / mitigation measures, the remaining impacts are considered negligible and appropriate.

1.0 Introduction

This report has been prepared in support of a State Significant Development Application (SSDA) and concurrent Rezoning Proposal – SSD-94006708 – at 15-21 Cottonwood Crescent, Macquarie Park (AKA. 88 Waterloo Road).

The application seeks development consent for the redevelopment of the site for a mixed-use development comprising residential accommodation and retail uses.

Specifically, this application seeks approval for the following:

- Demolition of all existing four-storey residential flat buildings on the site
- Site preparation works including:
 - Removal of existing forty-nine (49) trees
 - Excavation of the site to a maximum depth of six (6) basement levels
- Construction of two mixed-use buildings comprising a 60 and 52 storey building respectively, which will accommodate:
 - 858 Residential apartments inclusion 10% affordable housing of the uplift being sought
- Six (6) levels of basement with 733 car parking spaces, bicycle parking, services.
- A four-level commercial podium containing:
 - Retail spaces
 - Four townhouses
 - Residential lobbies
 - Waste Storages
 - Residential and visitor Parking spaces
 - Bicycle Parking spaces
- Communal Open Space and residential amenities on level four (4).
- Rooftop Terrace on Level 52 of Cottonwood Crescent Tower and level 60 of Waterloo Road Tower.

The proposal includes provision to amend Clauses 4.3 and 4.4 of the *Ryde Local Environmental Plan 2014 (RLEP2014)* by virtue of the concurrent rezoning process. This includes the following amendments:

- Clause 4.3 – Height of Buildings:
 - Amend the current 65m maximum building height to 212m
- Clause 4.4 – FSR:
 - Amend the current FSR of 4.5:1 to 16:8:1

Purpose of this Report

This report has been prepared in response to the requirements contained within the Secretary’s Environmental Assessment Requirements (SEARs) dated 8 October 2025 and issued for the SSDA (SSD-94006708). Specifically, this report has been prepared to respond to the SEARs requirement and government agency comments issued below.

Table 1 – SEARs Requirements & Government Agency Comments

Item	Description of Requirement	Section Reference (this Report)
14	Trees and Landscaping	Arboricultural Impact Assessment

2.0 The Site

The site is at 15-21 Cottonwood Crescent; Macquarie Park is located within the Ryde Local Government Area (**LGA**). The site occupies a prominent and highly accessible position within the Macquarie Park precinct, benefitting from dual street frontages to Waterloo Road along the north-eastern boundary and Cottonwood Crescent along the south-eastern boundary. These street interfaces provide strong address, visibility and access opportunities for the proposed development.

The western boundary adjoins Elouera Reserve, providing a high-amenity interface with publicly accessible open space, mature vegetation and a landscaped green corridor. This relationship enhances the site's environmental quality and outlook and provides opportunities for sensitive integration of the proposed development with the adjoining parkland.

The south-western boundary adjoins existing residential properties at 13 Cottonwood Crescent and 12–14 Lachlan Avenue, which represent the primary low-rise residential interface for the site.

The approximate boundary dimensions are as follows:

52.45 metres to Waterloo Road

97.35 metres to Cottonwood Crescent

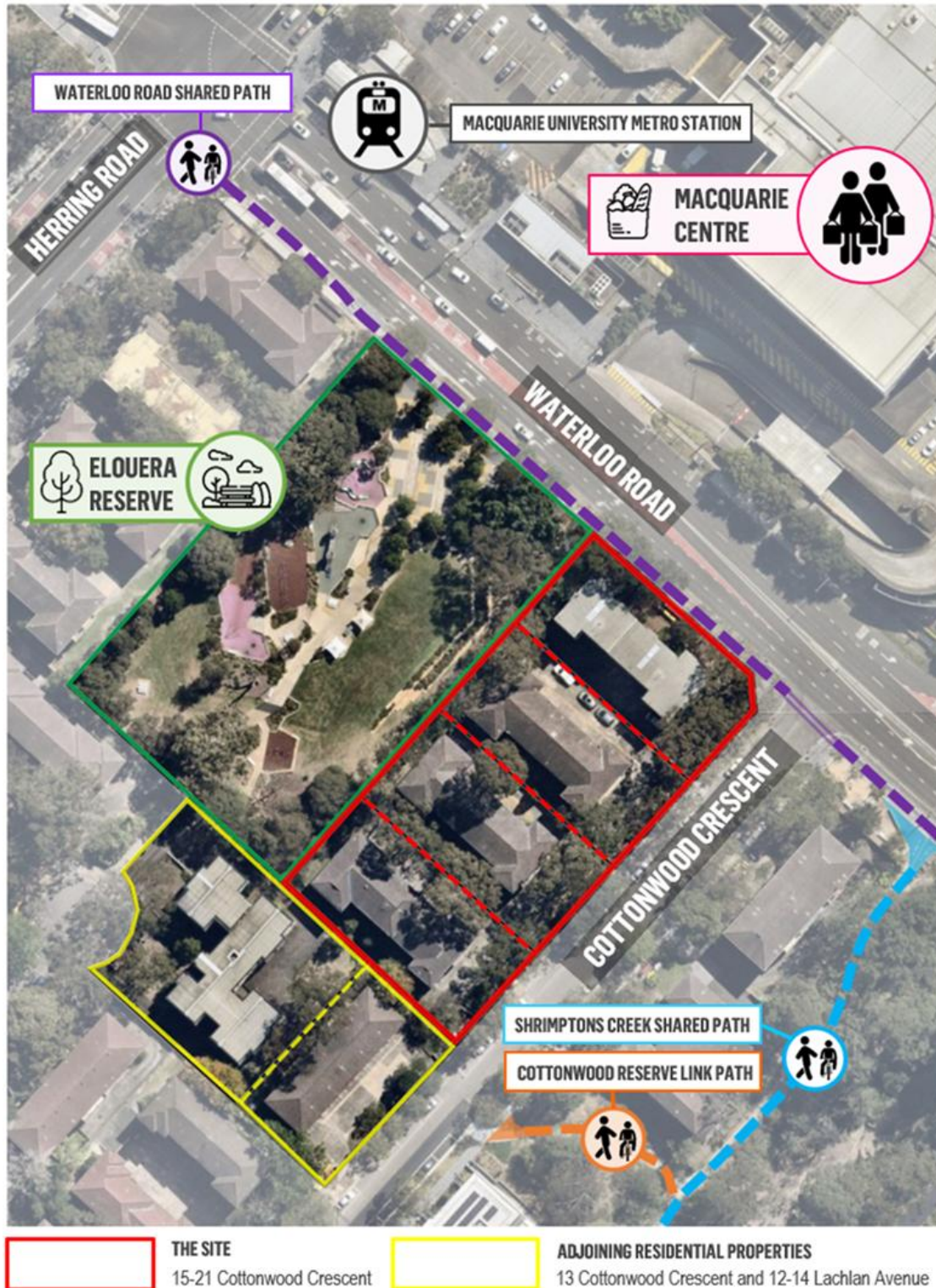
50.6 metres to adjoining residential properties

100.9 metres to Elouera Reserve

The site is fully serviced, with existing connections to water, sewer, electricity, gas and telecommunications, and is therefore capable of supporting redevelopment without the need for major external servicing upgrades.

Refer Figure 1 (overleaf)

Figure 1 Aerial Photo



Source: Urbis (Nearmap)

3.0 Scope of The Report

- 3.1 This Report provides an assessment of forty-nine (49) trees growing at the site. An additional sixteen (16) trees growing in the street, Council reserve and neighbouring property are also included in this report, however being located outside of the site these trees have not been fully assessed.
- 3.2 Martin Peacock (Martin Peacock Tree Care) visited the site on the 3rd of July 2023 and the 24th of January 2024 and assessed the trees and their growing environment. Selected images showing a number of the trees are contained within Appendix B – Photographs.
- 3.3 This report has been prepared to meet the following objectives:
- Conduct at ground level, a visual inspection of the subject tree(s) and their growing environment.
 - Assess the physiological and structural condition of the subject tree(s).
 - Determine the useful life expectancy, quality and value(s) of the subject tree(s).
 - Award a retention category for the subject tree(s).
 - Assess relevant plans and documentation to determine the potential impacts of the proposed development upon the subject tree(s).
 - Make recommendations for retention, removal or remedial works to the subject tree(s), and/or implementation of tree protection measures as appropriate.
- 3.4 The following plans/documentation were reviewed as part of the preparation of this report:
- Detail & Level Survey (Issue 1), dated 25.05.23 – prepared by CMS Surveyors
 - Architectural Plans DA0000 – DA6100 (Rev A), dated 05.02.26 – prepared by AJC
 - Landscape SSDA Application Report & Landscape Plans 100 - 650 (Issue B), dated 06.02.26 – prepared by Place Design Group

These plans should be referenced when reading this Report.

4.0 Caveats & Limitations

- 4.1 The subject trees were inspected from the ground only, using the methodology detailed in this Report. The findings of this Report are based on the observations made at the time of inspection and from the information contained within the supplied plans/documentation.
- 4.2 The report reflects the subject trees as found on the day of inspection. There is no warranty or guarantee, expressed or implied, that problems or deficiencies with the site or the subject trees may not arise in the future. Any changes to development proposals or tree management works beyond those recommended in this report may alter the findings of the report.

5.0 Methodology

5.1 Data Collection:

The methodology used in this report follows the procedures detailed in *Australian Standard: AS 4970—2025. Protection of Trees on Development Sites*. This report also references the *British Standard BS: 5837 (2005) Trees in Relation to Construction – Recommendations*.

The methodology used in this report provides the following information:

1. Tree species - botanical and common name.
2. Age class - Juvenile, semi-mature, mature, senescent.
3. DSH – Diameter at standard height (mm)*
4. Height – estimated total height (m)
5. Crown spread – estimated, average radial crown spread in meters (m)
6. Physiological condition - good, fair, poor
7. Structural condition - good, fair, poor
8. Useful Life Expectancy - <5, 5–15, 15–40, >40 (years)**
9. Quality & Value – A, B, C, D ***
10. Retention Category - Priority for Retention, Consider for Retention, Consider for Removal, Priority for Removal****
11. SRZ – Structural Root Zone radius (m)
12. NRZ – Notional Root Zone radius (m)
13. Comments / Preliminary Management Recommendations

5.2 *DSH (Diameter at Standard Height) - Stem/trunk diameter measured at 1.4m above ground level. On sloping ground, measurements will be taken at the mid slope point at the base of the tree. Where a tree stem / trunk begins to branch at a point that is less than 1.4m above ground, a combined stem diameter is calculated using the formula:

$$\text{Total DBH} = \sqrt{\text{DSH}^2 + \text{DSH}^2 + \text{DSH}^2}$$

5.3 **Useful Life Expectancy – The estimated lifespan of the tree over which it will positively contribute to the amenity of the area and to the local environment, in a safe, healthy condition.

5.4 ***Quality & Value – The quality of the tree when compared to an idealised example of the species and the values which the tree provides to the site and local area (see Appendix D – Cascade Chart for Assessment of Tree Quality & Value).

5.5 ****Retention Category – The subject tree is allocated one of four categories based on a combination of its Quality and Value and Useful Life Expectancy. A certain amount of flexibility may be allowed when allocating a Retention Category, to take into account tree species, significance and site/environmental conditions.

5.6 An assessment of the trees condition is made using the Visual Tree Assessment (VTA) method (Mattheck & Breoler, 1994).

5.7 Tree assessment results are recorded in the Tree Assessment Schedule (see section 6.0 Results). Note: for trees growing outside of the site, only the species and trunk diameter is recorded for the purposes of calculating the NRZ/SRZ.

6.0 Results

Tree Assessment Schedule

Site: 88 Waterloo Road, Macquarie Park, NSW

Date of survey: January 2024 & December 2025

Tree No.	Species	DBH (mm)	Height (m)	Radial Crown Spread (m)	Health	Structure	Comments	Age Class	ULE (years)	L/Sign	Retention Value	Radial TPZ (m)	Radial SRZ (m)
1	<i>Agonis flexuosa</i> (Willow Myrtle)	700	10	5	Fair	Poor	Crown density 25-50%. Bark inclusion(s), major. Wound(s) with fungal brackets.	Late Mature	<5	Moderate	Priority for Removal	8.4	3.0
2	<i>Leptospermum petersonii</i> (Lemon Scented Tea Tree)	175	6	4	Good	Fair	Heavily suppressed. Wound(s), early signs of decay. Poor form.	Late Mature	15-40	Low	Consider for Removal	2.1	1.7
3	<i>Photinia sp.</i> (Photinia)	150	5	3	Poor	Poor	Crown density 0-25%. Wound(s) with fungal brackets.	Late Mature	<5	Low	Priority for Removal	2.0	1.6
4	<i>Callistemon viminalis</i> (Weeping Bottlebrush)	250	6	3	Good	Fair	Trunk leaning on boundary fence	Mature	5-15	Low	Consider for Removal	3.0	1.9
5	<i>Callistemon viminalis</i> (Weeping Bottlebrush)	200	7	4	Good	Fair	Trunk lean, previous root plate movement, now stable.	Mature	5-15	Low	Consider for Removal	2.4	1.8

6	<i>Cyathea cooperi</i> (Scaly Tree Fern)	125	4	2	Good	Good	n/a	Mature	15-40	Low	Consider for Removal	2.0	1.5
7	<i>Callistemon viminalis</i> (Weeping Bottlebrush)	125	7	3	Poor	Fair	Crown density 0-25%. Wound(s), advanced stages of decay.	Senescent	<5	Low	Priority for Removal	2.0	1.5
8	<i>Eucalyptus sideroxylon</i> (Red Ironbark)	450	14	6	Fair	Good	Crown density 0-25%. in moderate volumes. Small (<25mm ϕ) epicormic growth	Mature	5-15	Moderate	Consider for Removal	5.4	2.5
9	<i>Corymbia maculata</i> (Spotted Gum)	550	20	8	Good	Good	Growing to rear of retaining wall	Mature	15-40	Moderate	Consider for Retention	6.6	2.7
10	<i>Eucalyptus sideroxylon</i> (Red Ironbark)	350	7	5	Poor	Fair	Crown density 0-25%. Heavily suppressed. Wound(s), various stages of decay. Trunk cavity(s), minor.	Mature	<5	Low	Priority for Removal	4.2	2.2
11	<i>Corymbia maculata</i> (Spotted Gum)	250	13	3	Good	Good	Trunk contact with T10. Growing to rear of retaining wall. Partially suppressed.	Semi-mature	15-40	Low	Consider for Removal	3.0	1.9
12	<i>Eucalyptus sideroxylon</i> (Red Ironbark)	350	10	7	Fair	Good	Crown density 25-50%. Partially suppressed.	Mature	5-15	Moderate	Consider for Removal	4.2	2.2
13	<i>Corymbia maculata</i> (Spotted Gum)	475	18	5	Good	Good	Growing to rear of retaining wall	Mature	15-40	Moderate	Consider for Retention	5.7	2.5

14	<i>Corymbia maculata</i> (Spotted Gum)	625	22	9	Good	Good	Growing to rear of retaining wall	Mature	15-40	High	Priority for Retention	7.5	2.8
15	<i>Eucalyptus botryooides</i> (Bangalay)	550	13	8	Good	Good	Crown density 75-95%. Small (<25mmø) & medium (25-75mmø) epicormic growth in moderate volumes. Wound(s), various stages of decay. Termites.	Mature	15-40	Moderate	Consider for Retention	6.6	2.7
16	<i>Eucalyptus botryooides</i> (Bangalay)	450	12	9	Poor	Fair	Crown density 0-25%. Small (<25mmø) epicormic growth in moderate volumes. Termites.	Mature	<5	Moderate	Priority for Removal	5.4	2.5
17	<i>Eucalyptus punctata</i> (Grey Gum)	550	18	9	Good	Fair	Crown density 75-95%. Partially suppressed. Termites.	Mature	15-40	Moderate	Consider for Retention	6.6	2.7
18	<i>Eucalyptus punctata</i> (Grey Gum)	650	18	10	Good	Good	Crown density 75-95%. Adaptive growth.	Mature	15-40	Moderate	Consider for Retention	7.8	2.9
19	<i>Eucalyptus viminalis</i> (Ribbon Gum)	550	20	6	Good	Good	Partially suppressed.	Mature	15-40	Moderate	Consider for Retention	6.6	2.7

20	<i>Eucalyptus grandis</i> (Flooded Gum)	575	19	7	Good	Good	Crown density 75-95%. Medium (25-75mmø) & large (>75mmø) deadwood in moderate volumes. Partially suppressed.	Mature	15-40	Moderate	Consider for Retention	6.9	2.7
21	<i>Corymbia maculata</i> (Spotted Gum)	375	10	4	Poor	Poor	Crown density 0-25%. Small (<25mmø), medium (25-75mmø) & large (>75mmø) deadwood in moderate volumes. Wound(s), advanced stages of decay.	Mature	<5	Low	Priority for Removal	4.5	2.3
22	<i>Juniperus sp.</i> (Juniper)	200	6	2	Fair	Fair	Crown density 50-75%. Co-dominant inclusions, minor.	Mature	5-15	Low	Consider for Removal	2.4	1.8
23	<i>Corymbia maculata</i> (Spotted Gum)	725	25	6	Good	Good	Kino exudate at basal flare	Mature	15-40	High	Priority for Retention	8.7	3.0
24	<i>Quercus robur</i> (English Oak)	400	10	5	Fair	Good	n/a	Mature	5-15	Moderate	Consider for Removal	4.8	2.3
25	<i>Eucalyptus punctata</i> (Grey Gum)	650	20	6	Good	Good	n/a	Mature	15-40	High	Priority for Retention	7.8	2.9

26	<i>Eucalyptus punctata</i> (Grey Gum)	500	18	7	Fair	Good	Crown density 75-95%. Partially suppressed.	Mature	15-40	Moderate	Consider for Retention	6.0	2.6
27	<i>Corymbia citriodora</i> (Lemon Scented Gum)	375	13	5	Fair	Good	Crown density 50-75%.	Mature	15-40	Moderate	Consider for Retention	4.5	2.3
28	<i>Corymbia maculata</i> (Spotted Gum)	550	18	9	Good	Good	Medium (25-75mmØ) & large (>75mmØ) deadwood in low volumes. Partially suppressed.	Mature	15-40	Moderate	Consider for Retention	6.6	2.7
29	<i>Corymbia maculata</i> (Spotted Gum)	275	7	5	Poor	Fair	Heavily suppressed. Poor form. Canker/gall/burl.	Mature	<5	Low	Priority for Removal	3.3	2.0
30	<i>Corymbia maculata</i> (Spotted Gum)	425	18	6	Good	Good	Crown density 75-95%. Partially suppressed.	Mature	15-40	Moderate	Consider for Retention	5.1	2.4
31	<i>Melaleuca quinquenervia</i> (Broad Leaved Paperbark)	450	-	-	-	-	Council street tree.	-	-	-	-	5.5	2.5
32	<i>Jacaranda mimosifolia</i> (Jacaranda)	175	-	-	-	-	Council street tree.	-	-	-	-	2.1	1.7
33	<i>Lophostemon confertus</i> (Brush Box)	375	-	-	-	-	Council street tree	-	-	-	-	4.5	2.3

34	<i>Lophostemon confertus</i> (Brush Box)	325	-	-	-	-	Council street tree	-	-	-	-	3.9	2.1
35	<i>Lophostemon confertus</i> (Brush Box)	389	-	-	-	-	Council street tree	-	-	-	-	4.7	2.3
36	<i>Corymbia gummifera</i> (Red Bloodwood)	300	-	-	-	-	Council street tree	-	-	-	-	3.6	2.1
37	<i>Corymbia maculata</i> (Spotted Gum)	425	-	-	-	-	Council street tree	-	-	-	-	5.1	2.4
38	<i>Cotoneaster sp.</i> (Cotoneaster)	300	-	-	-	-	Located in Council reserve	-	-	-	-	3.6	2.1
39	<i>Acacia sp.</i> (Wattle)	100	-	-	-	-	Located in Council reserve	-	-	-	-	2.0	1.5
40	<i>Melaluca stypheloides</i> (Prickly Leaved Paperbark)	700	-	-	-	-	Located in Council reserve	-	-	-	-	8.4	3.0
41	<i>Casuarina glauca</i> (Swamp She Oak)	225	-	-	-	-	Located in Council reserve. Crown extends 2m over boundary	-	-	-	-	2.8	1.9
42	<i>Casuarina glauca</i> (Swamp She Oak)	225	-	-	-	-	Located in Council reserve	-	-	-	-	2.8	1.9
43	<i>Casuarina glauca</i> (Swamp She Oak)	225	-	-	-	-	Located in Council reserve	-	-	-	-	2.8	1.9

44	<i>Citharexylum spinosum</i> (Fiddlewood Tree)	500	-	-	-	-	Located in no. 13 Cottonwood Crescent. Crown extends 3m over boundary	-	-	-	-	6.0	2.6
45	<i>Corymbia maculata</i> (Spotted Gum)	600	22	9	Good	Good	Crown density 75-95%. Small (<25mmø) & medium (25-75mmø) deadwood in low volumes. Partially suppressed.	Mature	15-40	Moderate	Consider for Retention	7.2	2.8
45A	<i>Corymbia maculata</i> (Spotted Gum)	200	9	3	Fair	Fair	Crown density 25-50%. Heavily suppressed. Poor form.	Semi Mature	5-15	Low	Consider for Removal	2.4	1.8
46	<i>Corymbia maculata</i> (Spotted Gum)	400	20	8	Good	Good	Small (<25mmø) & medium (25-75mmø) deadwood in low volumes. Partially suppressed.	Mature	15-40	Moderate	Consider for Retention	4.8	2.3
47	<i>Corymbia maculata</i> (Spotted Gum)	400	10	5	Poor	Good	Crown density 25-50%. Small (<25mmø) & medium (25-75mmø) deadwood in low volumes. Partially suppressed. Poor form.	Mature	5-15	Moderate	Consider for Removal	4.8	2.3
48	<i>Corymbia maculata</i> (Spotted Gum)	400	18	4	Good	Good	Partially suppressed.	Mature	15-40	Moderate	Consider for Retention	4.8	2.3
49	<i>Corymbia maculata</i> (Spotted Gum)	450	16	5	Good	Good	Crown density 75-95%. Small (<25mmø) epicormic growth in low	Mature	15-40	Moderate	Consider for Retention	5.4	2.5

							volumes. Partially suppressed.						
50	<i>Corymbia maculata</i> (Spotted Gum)	325	14	6	Poor	Good	Crown density 25-50%. Small (<25mmø) epicormic growth in moderate volumes. Partially suppressed.	Mature	5-15	Moderate	Consider for Removal	3.9	2.1
51	<i>Melaleuca quinquenervia</i> (Broad Leaved Paperbark)	375	8	5	Poor	Good	Crown density 25-50%. Partially suppressed. Phototrophic lean, slight.	Mature	5-15	Moderate	Consider for Retention	4.5	2.3
52	<i>Melaleuca quinquenervia</i> (Broad Leaved Paperbark)	675	11	6	Good	Fair	Crown density 50-75%. Partially suppressed. Co-dominant inclusions, minor.	Mature	15-40	Moderate	Consider for Retention	8.2	2.9
53	<i>Brachychiton acerifolius</i> (Illawarra Flame tree)	350	9	4	Fair	Good	Crown density 25-50%. Partially suppressed. Poor form.	Semi-mature	5-15	Low	Consider for Removal	4.2	2.2
54	<i>Banksia integrifolia</i> (Coastal Banksia)	200	6	3	Good	Good	Partially suppressed.	Mature	15-40	Low	Consider for Removal	2.4	1.8
55	<i>Casuarina cunninghamiana</i> (River She Oak)	600	17	8	Good	Good	Crown density 75-95%. Partially suppressed. Wound(s), various stages of decay.	Mature	15-40	Moderate	Consider for Retention	7.2	2.8

							Previous branch failure(s).						
56	<i>Casuarina cunninghamiana</i> (River She Oak)	600	17	8	Good	Good	Crown density 75-95%. Partially suppressed. Wound(s), various stages of decay.	Mature	15-40	Moderate	Consider for Retention	7.2	2.8
57	<i>Casuarina cunninghamiana</i> (River She Oak)	200	6	6	Good	Fair	Heavily suppressed. Poor form.	Semi-mature	5-15	Low	Consider for Removal	2.4	1.8
58	<i>Eucalyptus botryooides</i> (Bangalay)	600	20	7	Good	Fair	Small (<25mm \varnothing) & medium (25-75mm \varnothing) deadwood in low volumes. Small (<25mm \varnothing) epicormic growth in low volumes. Termites.	Mature	15-40	Moderate	Consider for Retention	7.3	2.8
59	<i>Eucalyptus botryooides</i> (Bangalay)	325	9	9	Fair	Fair	Crown density 50-75%. Small (<25mm \varnothing) & large (>75mm \varnothing) deadwood in low volumes. Partially suppressed. Poor form. Phototrophic lean, slight. Termites.	Mature	5-15	Moderate	Consider for Removal	3.9	2.1
60	<i>Acer negundo</i> (Box Elder)	425	9	6	Fair	Fair	Crown density 25-50%. Small (<25mm \varnothing) deadwood in moderate volumes. Partially suppressed.	Mature	5-15	Low	Consider for Removal	5.1	2.4

							Wound(s), advanced stages of decay.						
61	<i>Jacaranda mimosifolia</i> (Jacaranda)	275	8	5	Fair	Good	Crown density 25-50%. Localised crown death. Heavily suppressed. Poor form.	Mature	5-15	Low	Consider for Removal	3.3	2.0
62	<i>Corymbia maculata</i> (Spotted Gum)	400	-	-	-	-	Located in Council reserve	-	-	-	-	4.8	2.3
63	<i>Callistemon citrinus</i> (Lemon Scented Bottlebrush)	250	-	-	-	-	Council street tree	-	-	-	-	3.0	1.9
64	<i>Leptospermum petersonii</i> (Lemon Scented Tea Tree)	225	-	-	-	-	Council street tree	-	-	-	-	2.6	1.8

The allocation of a Retention Category is a requirement of AS4970 and provides an overview of the quality and value of trees on site. Retention Categories are a guide only and do not take into account design considerations/constraints relating to the development proposal.

It should be noted that Retention Category column in the table above is not a schedule for tree removal/retention

7.0 Observations

7.1 The trees growing within the site have been assessed in accordance with *Australian Standard AS4970 (2009) Protection of trees on development sites (AS4970)* to determine their; condition, quality and value(s), Useful Life Expectancy and to allocate a Retention Category. Full details of the trees assessment are listed in 6.1 Results - Tree Assessment Schedule.

Typically, trees growing outside of the site are to be retained regardless of their condition (where possible). Therefore, only the trunk diameter (DHB) is recorded for the purpose of calculating the tree's Notional Root Zone (NRZ) and Structural Root Zone (SRZ) areas, and to determining the extent of NRZ encroachments from development. On this project a number of trees growing outside of the site will be impacted by development works to the extent that they cannot be retained. Details on these trees and the nature of the impacts are discussed below.

7.2 Trees Proposed for Retention (within the site)

Trees 48, 49, 52, 53, 55, 56 and 58 are proposed for retention. The table below provides a summary of the trees' quality and value and Retention Category:

Quality & Value	Retention Category	Tree no.
A - High	Priority for Retention	-
B - Moderate	Consider for Retention	48, 49, 52, 55, 56, 58,
C - Low	Consider for Removal	53
D – Not suitable for Retention	Priority for Removal	-

These trees will be subject to varying degrees of encroachment (as defined by AS4970) within their NRZ areas from elements of the development proposal (refer 8.0 Discussion).

7.3 Trees Proposed for Removal (within the site)

Trees 1-30, 45-47, 50, 51, 54, 57 and 59-T61 are proposed for removal. The table below provides a summary of the trees' quality and value and Retention Category:

Quality & Value	Retention Category	Tree no.
A - High	Priority for Retention	14, 23, 25
B - Moderate	Consider for Retention	9, 13, 15, 17, 18, 19, 20, 26, 27, 28, 30, 45, 46, 51
C - Low	Consider for Removal	2, 4, 5, 6, 8, 11, 12, 22, 24, 45A, 47, 50, 54, 57, 59, 60, 61
D – Not suitable for Retention	Priority for Removal	1, 3, 7, 10, 16, 21, 29

The trees proposed for removal predominantly fall within the proposed building footprint or will be subject to a Major Encroachment within the TPZ area to the extent that the tree is

not viable for retention. In addition, a low number of trees that are either of poor quality and value or have short Useful Life Expectancies are proposed for removal to provide space for new, healthy plantings.

7.4 Trees Outside of The Site

Trees 31–44 and 64 are located outside of the site within the street, Council reserve and the neighbouring property.

Street trees 33 and 37 and park trees 40, 42, 43 and 62 will be subject to varying degrees of encroachment within their NRZ areas from elements of the development proposal. However, the extent of the encroachments are not sufficiently large as to require tree removal (refer 8.0 Discussion).

Street trees 31, 32, 34 and 35 will need to be removed due to either direct conflict with, or a Major Encroachment (>20%) within their NRZ areas from the proposed driveway crossovers.

Park trees 38, 39, 41 and neighbours tree 44 will need to be removed due to either direct conflict with, or a Major Encroachment within their NRZ areas from the proposed basement.

Street tree 64 will need to be removed to improve sight lines to the proposed bus stop.

Street trees 36 and 63 will not be subject to an NRZ encroachment from the proposed development.

8.0 Discussion

8.1 As indicated above the majority of the trees proposed for retention will be subject to encroachment from development works within their NRZ areas. Under AS4970 (2025) encroachments are classified into one of the following three categories:

1. Minor Encroachment

- Defined as encroachment of no more than 10% of the NRZ
- Must be outside the Structural Root Zone (SRZ)
- A minor encroachment is unlikely to adversely affect tree health or stability
- No further investigation is typically required

2. Moderate Encroachment

- Defined as encroachment of between 10% and 20% of the NRZ
- Must still be outside the SRZ
- A moderate encroachment may impact tree health, depending on factors such as tree species, age, site conditions, and root distribution
- Further investigation/assessment is required to determine potential impacts and appropriate mitigation measures

3. Major Encroachment

- Defined as encroachment of greater than 20% of the NRZ, and/or any encroachment within the SRZ, regardless of area
- A major encroachment presents a significant risk to the tree's structural stability and long-term viability

- Requires detailed arboricultural assessment and may necessitate design modifications or alternative construction methods

Details of the nature of the encroachment within each NRZ area, and design/construction methods that will be utilised to minimise the impact of the encroachment (where required) are detailed below.

- 8.2 Street tree 33 will be subject to a Minor Encroachment from the proposed driveway crossover and access ramp. The tree should not be significantly impacted by their installation; however, root pruning will be required prior to mechanical excavation to prevent the tearing/shattering of roots.
- 8.3 Street tree 37 will be subject to a Minor Encroachment from demolition of the existing driveway crossover. With the use of tree sensitive methods, demolition works should not impact the tree. Reinstatement of the turfed nature strip within the previous driveway footprint should ameliorate the growing environment to the benefit of the tree.
- 8.4 Trees 48 and 49 will be subject to a Major Encroachment (including SRZ encroachment) from the proposed boundary wall. However, the wall can be installed on piered footings rather than a strip footing to minimise root impacts. The proposed stairs and pavement to the south of the trees encroach only marginally into the NRZ areas and should not significantly impact the trees. An inground WSUD tank is also proposed within the trees' NRZ areas. The extent of excavation represents a Minor Encroachment only; however, to minimise tree impacts, over excavation (benching or battering) should be avoided when installing the WSUD tank.
- 8.5 Tree 52 will all be subject to a Major Encroachment (including SRZ encroachment) from a combination of the proposed boundary wall, stairs, paving and decking. The stairs will be constructed partially above existing grade and only a small section at the perimeter of the SRZ will be subject to excavation. Furthermore, the tree has developed an asymmetric crown resulting in the tension side of the root plate being located on the southern side of the tree, where the proposed paving and decking will be installed above existing grade. Based on the above, the root plate stability of the tree should not be significantly impacted by a small amount of excavation in the SRZ. In this instance root mapping investigations to determine the extent of root impacts is not feasible as the adjacent tree 51, which is proposed for removal is of the same species and it will not be possible to determine from which tree impacted roots originate.
- 8.6 Trees 53, 55, 56 and 58 will be subject to a Major Encroachment (including SRZ encroachment) from a combination of the proposed boundary wall, stairs, ramps, paving and decking. As discussed above, the boundary wall can be installed in piered footings to minimise root impacts and the paving and decking is to be installed predominantly above existing grade (including sub base layer and sub frame) which will reduce any excavation requirements to that of a Minor Encroachment.
- 8.7 Trees 40 and 62 will be subject to a Moderate Encroachment (10-20%) from the proposed basement and sandstone boundary wall. As the works are located on one side of the trees root plates only a Moderate Encroachment should not significantly impact the long-term viability of the trees.

- 8.8 Trees 42 and 43 will be subject to a Major Encroachment (including SRZ encroachment) from the proposed basement and sandstone boundary wall. However, the sandstone wall within the SRZ areas aligns with the narrow strip of deep soil that runs between the outer face of the basement wall and the boundary. The base of the sandstone wall sits at existing ground level therefore the sandstone wall can be installed on a piered footing to minimise excavation and avoid impacting significant roots in the SRZ. A very small amount of excavation will still be required in the SRZ of both trees; however, as the trees are relatively small specimens with a limited crown sail area the stability of the trees' root plates should not be significantly compromised.
- 8.9 To protect the retained trees (including street and park trees) during the construction stage of the project, the establishment of TPZ areas will be required. To provide for demolition and construction access a combination of TPZ fencing and trunk and ground protection will be required.
- 8.10 To offset tree removals the development proposal includes the planting of a total of forty-two (42) trees, comprising twenty-nine (29) trees on-structure and thirteen (13) site/street trees.

9.0 Recommendations

- 9.1 Trees 1-47, 50, 51, 54, 57, 59-T61 and 64 are proposed for removal. Approved tree removals shall be undertaken by a qualified Arborist (minimum AQF level 3) covered by adequate third party, public liability insurance. Arborists and ground staff shall comply with the *Work Cover Code of Practice for the Amenity Tree Industry*.
- 9.2 Prior to the commencement of demolition works Tree Protection Zone (TPZ) areas shall be established for all trees specified for retention within the Conditions of Development Approval. The TPZ area required for each tree is detailed in column 12 of the Tree Assessment Schedule (refer section 6.0 Results) and is a radial distance measured from the center of the trunk at ground level.

TPZ areas shall comprise of weld mesh fencing, or trunk and ground protection. Fencing may be set back to allow for demolition/construction access only where appropriate ground protection (as determined by the Project Arborist) is installed to unfenced sections of the TPZ (refer: Appendix C – Establishment of TPZ Areas).

For street trees 33, 36 and 37 TPZ fencing shall be installed within the nature strip only to maintain footpath access.

To retain soil moisture and support tree health drip irrigation and a 75mm thick layer of composted leaf litter mulch shall be installed in fenced TPZ areas within the site.

TPZ areas shall be maintained for the duration of the project and shall not be modified or used for the storage of demolition waste or construction materials. Ground protection may only be removed to provide for construction access following approval from the Project Arborist.

Prior to the commencement of development works the Project Arborist shall meet on site with the Project Manager to determine tree specific protection requirements prior to TPZ installation.

TPZ areas shall be inspected by the Project Arborist on a quarterly basis throughout the construction stage of the project, or as specified within the Conditions of Development Approval.

- 9.3 The existing pavements and structures in TPZ areas shall be carefully demolished in small sections, ensuring that the surrounding soil profile remains undisturbed. Where possible, redundant footings and services should be left in situ. Machinery operators shall be guided by a spotter at all times to prevent tree damage (including roots).

Ground cover vegetation in TPZ areas shall be removed using hand tools and tree stumps shall be ground out rather than excavated to minimise disturbance of the surrounding soil profile.

Where demolition within TPZ areas exposes the underlying sub grade, appropriate ground protection (as determined by the Project Arborist) shall be installed.

- 9.4 Excavation for basement construction, driveway ramp shall and WSUD installation shall avoid over excavation (benching or battering) within TPZ areas.

- 9.5 To prevent the tearing/shattering of roots any mechanical excavation, piling etc. within a TPZ area requires preliminary root pruning to a depth of 600mm along the line of proposed excavation. Preliminary excavation and root pruning shall be undertaken under the supervision of the Project Arborist.

- 9.6 Stairs and landscape wall within the TPZ areas shall be installed predominantly above existing grade on piered footings. Minor excavation (where required) shall be undertaken using hand tools only.

When installing piers/posts for walls, stairs and decking the upper 600mm of each piers/posts location shall be excavated by hand, and where roots greater than 25mm diameter are encountered the pier/post location shall be adjusted (unless root pruning is approved by the Project Arborist). Where required, pier/post holes shall be sleeved to prevent contact between roots and freshly poured concrete.

- 9.7 Permeable paving (including sub base layer/slab) within the TPZ areas shall be installed above existing grade. Sub base layers shall comprise a 20mm no fines aggregate, or permeable concrete slab. Compaction of the sub grade prior to sub base/slab installation shall be limited to light compaction using pedestrian operated plate compactors only.

- 9.8 Where possible, inground services shall be routed outside of TPZ areas. Where this cannot be achieved, trenches shall be excavated using the following tree sensitive methods:

- Hand excavation – trenches shall be excavated using hand tools only
- Hydrovac excavation - trenches shall be excavated using low water pressures and the lance shall not be pointed directly at roots to avoid bark damage
- A combination of compact excavator/hand excavation – trenches shall be excavated using a compact excavator (<2T) fitted with a flat bladed bucket. Soil levels shall be lowered in small increments. The excavator operator shall be guided by a spotter at all times to identify and carefully expose roots

All roots >25mm diameter shall be retained and protected from sun damage and desiccation with a covering of geotextile fabric, pending assessment by the Project Arborist.

Pipework/conduits shall be installed under or around roots >25mm diameter, unless root pruning is approved by the Project Arborist.

Stormwater pit locations shall be excavated by hand and where roots >25mm diameter are encountered, the pit location shall be adjusted, unless root pruning is approved by the Project Arborist.

- 9.9 Within on structure planters/garden beds a dual horizon soil profile shall be installed. The upper A Horizon shall comprise of a 300mm deep layer of a proprietary, planter box soil blend. At depths below 300mm the B Horizon shall comprise of an 80/20 washed river sand/screened topsoil blend. Soils shall be consolidated in 200mm layers at the time of installation to prevent settlement. A minimum drained depth of 600mm shall be provided in all planters/garden beds.
- 9.10 New trees shall be grown and supplied in accordance with *AS:2303 2018 Tree stock for landscape use*. The planting and aftercare of the trees shall be undertaken by a qualified horticulturalist (minimum AQF level 3).
- 9.11 The recommendations of this report are subject to approval by the Consent Authority.



Martin Peacock

BSc (hons.) Arboriculture (UK)
Higher National Diploma Arboriculture (UK)
National Diploma Horticulture (Arb.) (UK)
Diploma Horticulture (Landscape Design) (AUS)

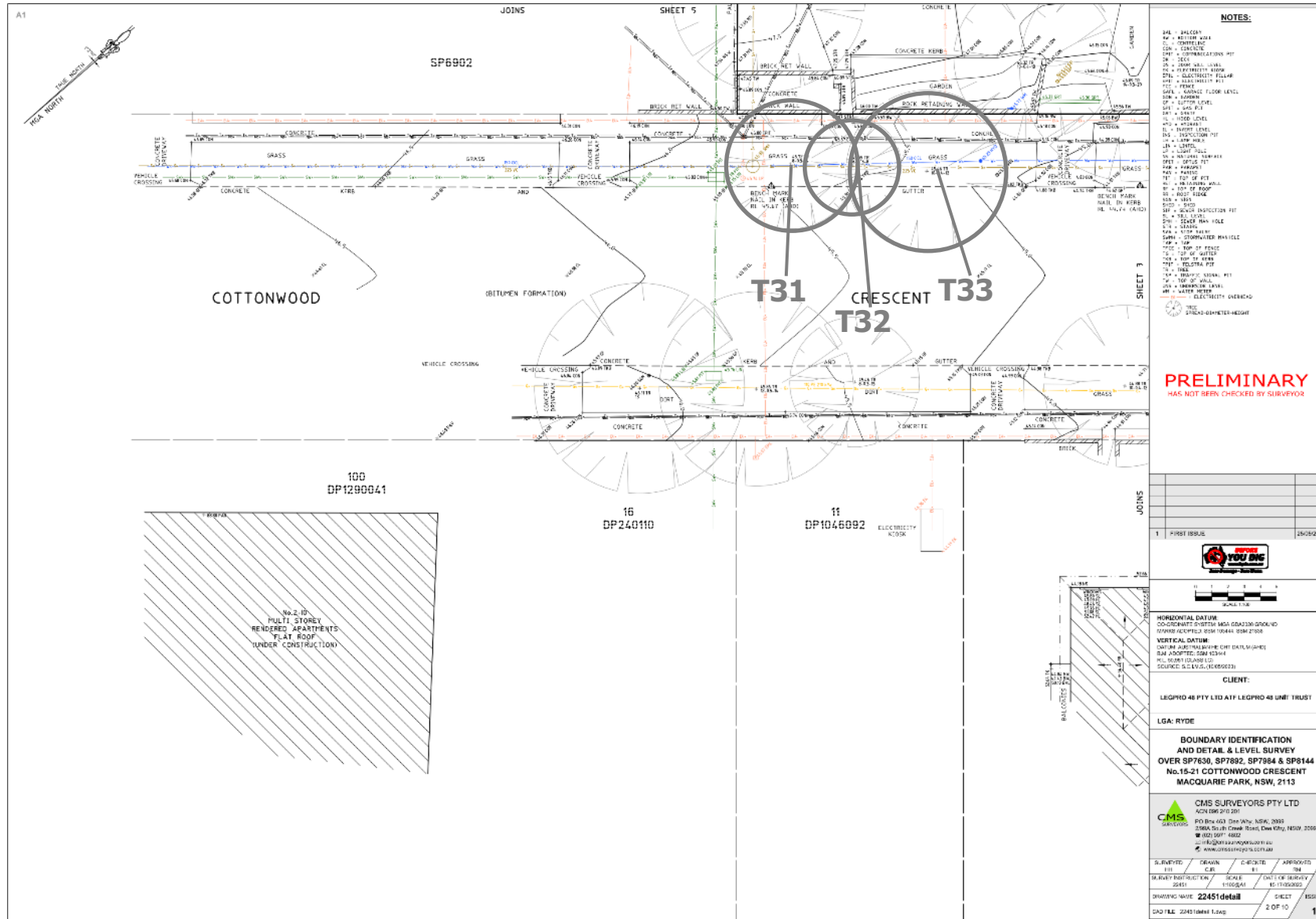


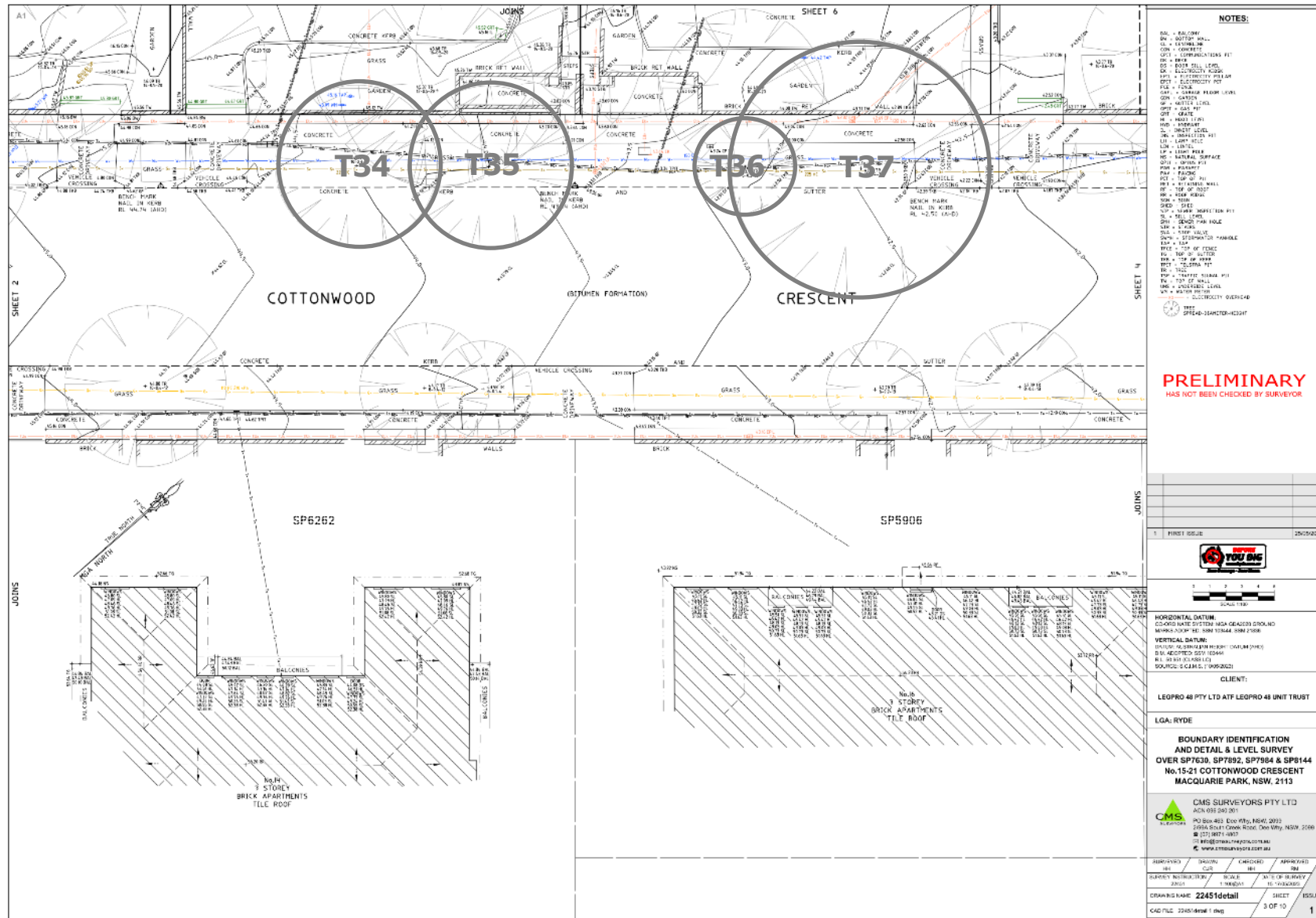
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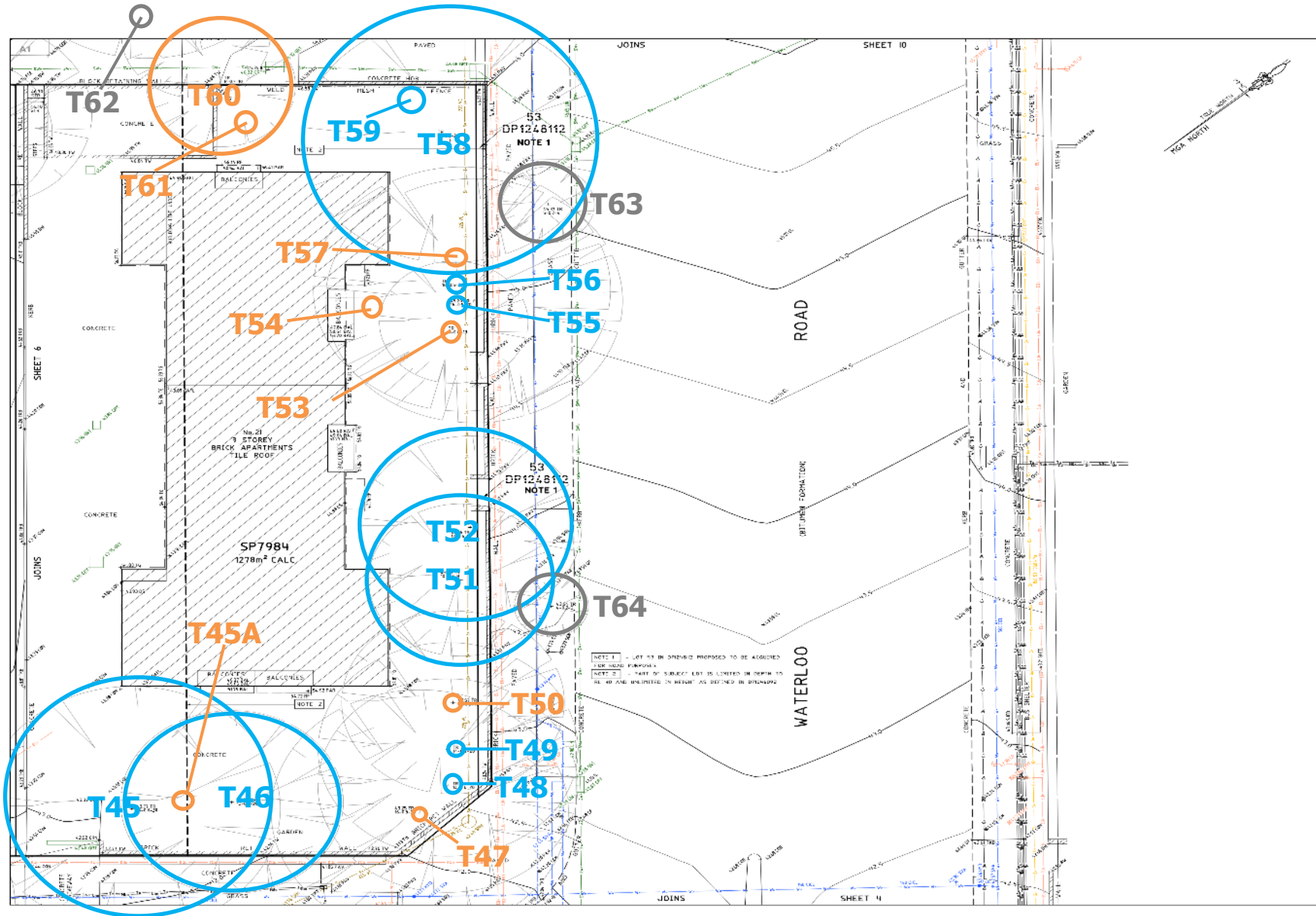
Australian Standard: *AS 4970 - 2009 Protection of trees on development sites*. Standards Australia GPO Box 476, Sydney, NSW, 2001.

British Standard Institution (2005). *Guide for Trees in relation to construction*. BSI, 2 Park Street, London W1A 2BS.

Draper B.D. and Richards P.A. (2009), *Dictionary for Managing Trees in Urban Environments*, Institute of Australian Consulting Arboriculturists (IACA), CSIRO Publishing, Collingwood, Victoria, Australia.







Appendix B – Photographs



1: Tree T1



2: Trees T4 & T5



3: Trees T8-T11



4: Trees T20-T21



5: Tree T26



6: Trees T28-T30



7: Trees T45-T46

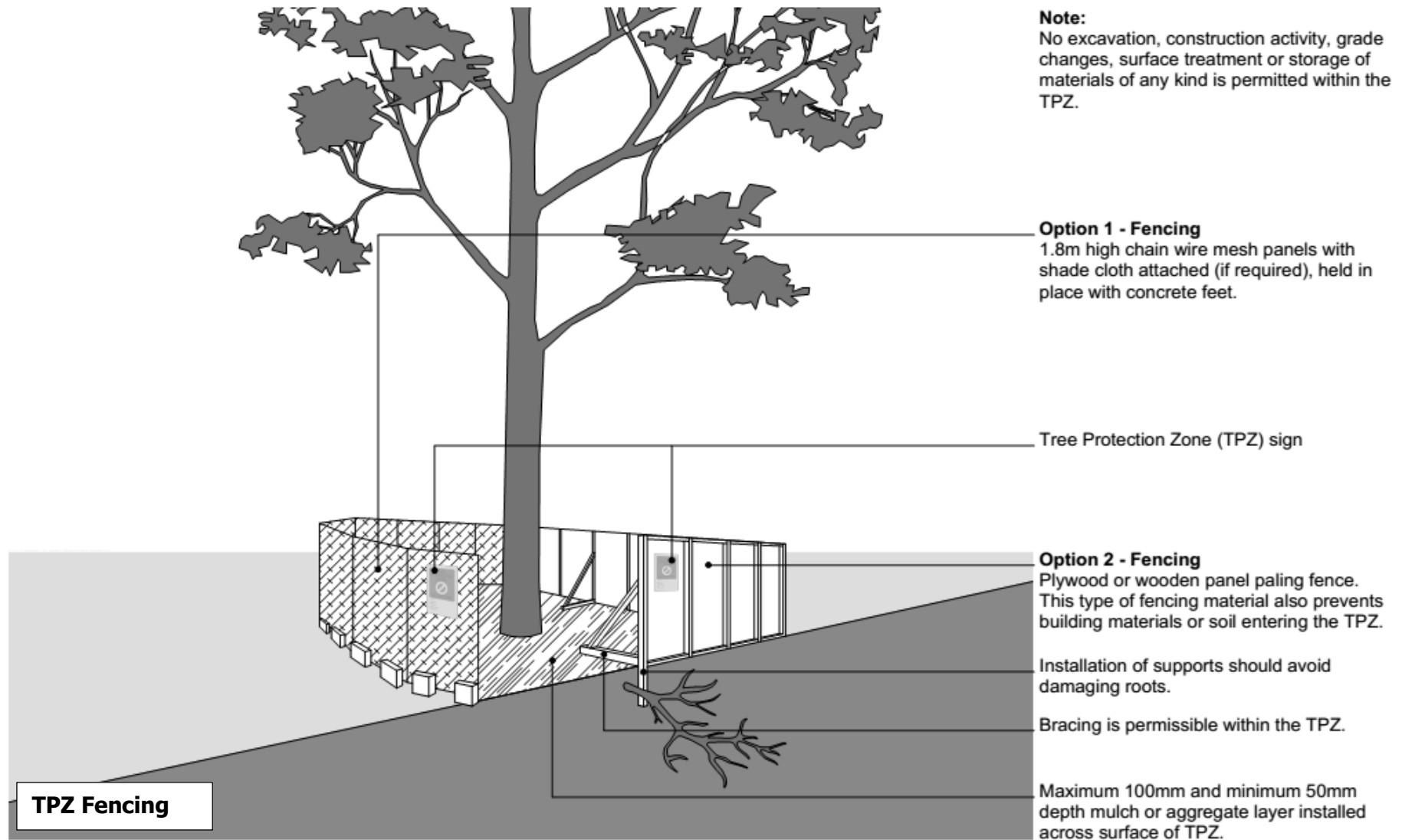


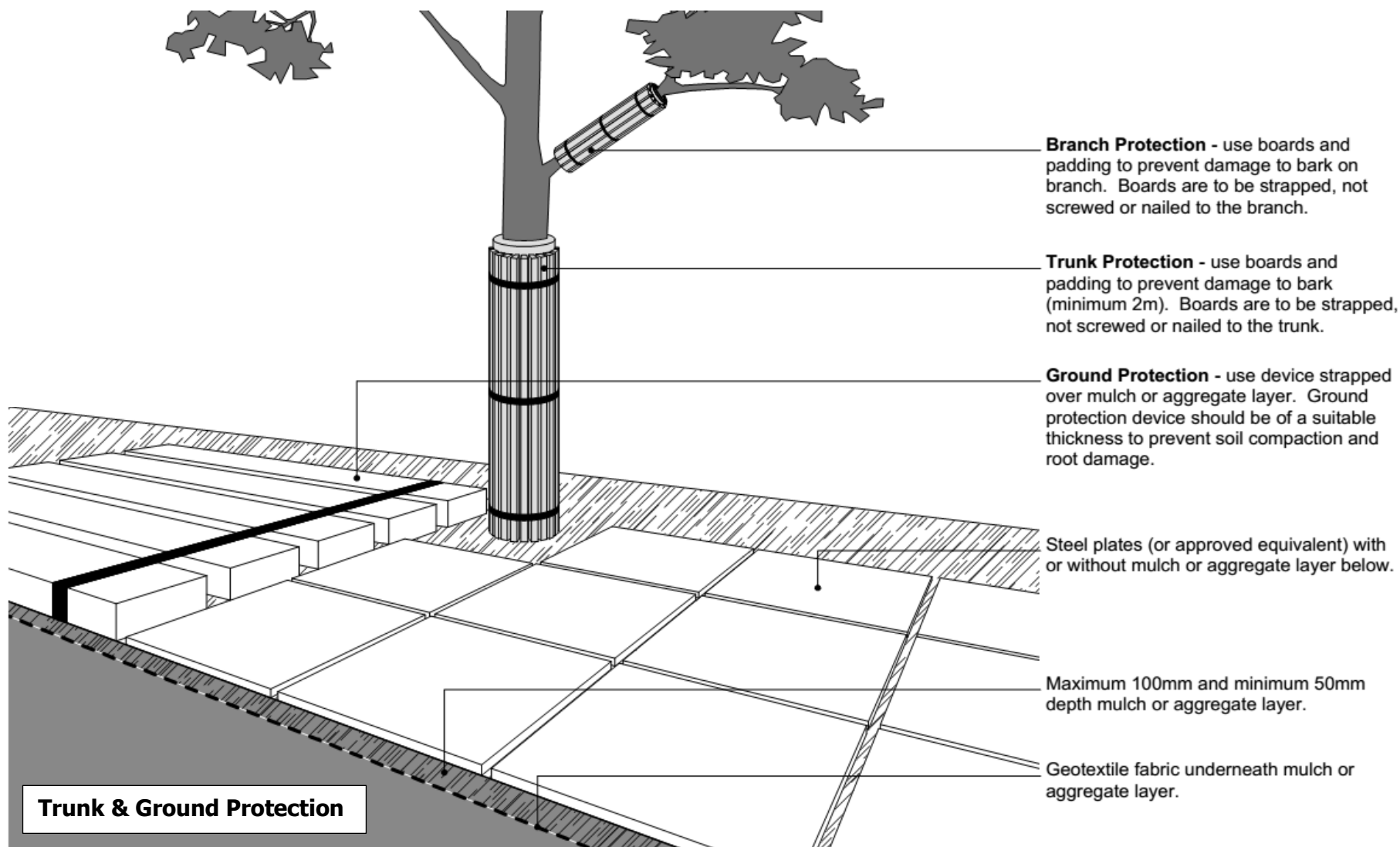
8: Trees T53-T55



9: Trees T57-T59

Appendix C – Establishment of TPZ Areas





Appendix D - Cascade Chart for Assessment of Tree Quality & Value

(Adapted from British Standard Institution (2005). Guide for Trees in Relation to Construction)

RETENTION CATEGORY & DEFINITION	CRITERIA - SUBCATEGORIES			IDENTIFICATION IF SHOWN ON A PLAN
	1. Mainly arboricultural values	2. Mainly landscape values	3. Mainly cultural values, including conservation	
<p>Category A High Quality & Value: Those in such a condition as to be able to make a substantial contribution for a minimum of 40 years. Highly significant trees or trees listed on a significant tree register regardless of life expectancy (excluding hazardous trees). Priority for retention.</p>	<p>Trees that are particularly good examples of their species, especially if rare or unusual or essential components of groups or of formal or semi-formal Arboricultural features (e.g. The dominant and / or principal trees within an avenue). Trees that provide a definite contribution to the amenity of the locality.</p>	<p>Trees, groups or woodlands which provide a definite screening or softening effect to the locality in relation to views into or out of the site, or those of particular visual importance (e.g. Avenues or other Arboricultural features assessed as groups).</p>	<p>Trees, groups, remnant bushland or forest of significant conservation, historical, Aboriginal, commemorative or other value. Note: independent ecological/aboriginal/heritage assessment may be required.</p>	GREEN
<p>Category B Moderate Quality & Value: Those in such a condition as to make a significant contribution for a minimum of 15 years. Consider for retention.</p>	<p>Trees that might be included in the high category, but are downgraded because of impaired condition (e.g. presence of remediable defects including unsympathetic past management and minor storm damage).</p>	<p>Trees situated mainly internally to the site, therefore individually having little visual impact on the wider locality or, trees present in numbers, usually as groups or woodlands, such that they from distinct landscape features, thereby attracting higher collective rating than they might as individuals but which are not, individually essential components of formal or semi formal Arboricultural features (e.g. trees or moderate quality within an avenue that includes better A category specimens).</p>	<p>Trees with clearly identifiable conservation or other cultural benefits.</p>	BLUE
<p>Category C Low Quality & Value: Those in such a condition as to make a contribution for a minimum of 5 years. Consider for removal.</p>	<p>Trees not qualifying in higher categories. Juvenile, semi mature or small tree species which are considered easily replaceable.</p>	<p>Trees present in groups or woodlands, but without this conferring on them significantly greater landscape value, and / or trees offering low or only temporary screening benefit.</p>	<p>Trees with very limited conservation or other cultural benefits.</p>	ORANGE
<p>Category D Not suitable for retention: Those in such a condition that any existing value would be lost within 5 years, and which should in current context, be removed for reasons of sound Arboricultural management. Priority for removal.</p>	<p>Trees that have a serious, irremediable structural defect, such that their early loss is expected due to failure, including those that will become unviable after removal of other trees (i.e. where, for whatever reason the loss of companion shelter cannot be mitigated by pruning). Trees that are dead or are showing signs of significant, immediate and irreversible overall decline. Trees infected with a pathogen of significance to the health and/or safety of other trees nearby, or very low-quality trees suppressing adjacent trees of better quality. Trees causing significant damage to structures, where no viable alternatives exist for remedial tree management / modification of structures to enable tree retention. Trees considered a weed species or those listed as noxious weeds. NOTE: Dead or dying trees with hollows or cavities may be of ecological importance. These trees are to be identified and assessed independently of the criteria in this cascade chart. Where category D trees are removed habitat reinstatement may be appropriate.</p>			RED