

# CPS

CREATIVE PLANNING SOLUTIONS

## ARBORICULTURAL IMPACT ASSESSMENT

135 Badgerys Creek Road  
Bradfield NSW 2556

**Project No:** G656

**Date:** 29 September 2025

**Revision:** A

**CREATIVE PLANNING SOLUTIONS PTY LIMITED**

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**Accreditations**



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# 1 EXECUTIVE SUMMARY

This Arboricultural Impact Assessment (AIA) has been prepared to accompany a State Significant Development Application (SSDA) for the construction of residential flat buildings, mixed use buildings, roadways, communal open spaces and associated works at 135 Badgerys Creek Road, Bardfield (the site).

The report relates to thirty-three (33) trees located on and adjacent to the subject site and provides an evaluation of the likely impact to existing trees as a result of the proposed works.

A summary of those trees identified has been provided in **Table 1** below along with a description of their location, retention values and nominated retention/removal status under the proposal.

**Table 1** – Tree assessment summary

Tree No.	Genus & species Common Name	Location	Retention Value	Retain/Remove
1	<b>Dead tree</b> -	Subject site	Dead	Remove
2	<b>Triadica sebifera</b> Chinese Tallow	No. 125 Badgerys Creek Road	Medium	Retain
3	<b>Eucalyptus moluccana</b> Grey Box	Subject site	Low	Remove
4	<b>Eucalyptus moluccana</b> Grey Box	Subject site	Low	Remove
5	<b>Eucalyptus moluccana</b> Grey Box	Subject site	Medium	Remove
6	<b>Eucalyptus moluccana</b> Grey Box	Subject site	High	Remove
7	<b>Eucalyptus moluccana</b> Grey Box	Subject site	High	Remove
8	<b>Eucalyptus moluccana</b> Grey Box	Subject site	High	Remove
9	<b>Eucalyptus moluccana</b> Grey Box	Subject site	High	Remove
10	<b>Eucalyptus moluccana</b> Grey Box	Subject site	High	Remove
11	<b>Eucalyptus moluccana</b> Grey Box	Subject site	High	Remove
12	<b>Eucalyptus sp.</b> Eucalyptus	Subject site	Low	Remove
13	<b>Olea europaea subsp. cuspidata</b> African Olive	Subject site	Low	Remove <sup>1</sup>
14	<b>Eucalyptus moluccana</b> Grey Box	Subject site	High	Remove
15	<b>Eucalyptus moluccana</b> Grey Box	Subject site	Medium	Remove
16	<b>Eucalyptus moluccana</b> Grey Box	Subject site	Medium	Remove
17	<b>Eucalyptus moluccana</b> Grey Box	Subject site	Medium	Remove

<sup>1</sup> Tree exempt from protection under provisions of Liverpool Development Control Plan 2008 due to species classification.

Tree No.	Genus & species Common Name	Location	Retention Value	Retain/Remove
18	<i>Eucalyptus moluccana</i> Grey Box	Subject site	Medium	Remove
19	<i>Eucalyptus moluccana</i> Grey Box	Subject site	Medium	Remove
20	<i>Eucalyptus moluccana</i> Grey Box	Subject site	Medium	Remove
21	<i>Eucalyptus moluccana</i> Grey Box	Subject site	High	Remove
22	<i>Eucalyptus moluccana</i> Grey Box	Subject site	Medium	Remove
23	<i>Eucalyptus moluccana</i> Grey Box	Subject site	Low	Remove
24	<i>Eucalyptus microcorys</i> Tallowwood	No. 125 Badgerys Creek Road	High	Retain
25	<i>Eucalyptus sp.</i> Eucalyptus	No. 125 Badgerys Creek Road	High	Retain
26	<i>Eucalyptus moluccana</i> Grey Box	Subject site	Low	Remove
27	<i>Eucalyptus moluccana</i> Grey Box	Subject site	Low	Remove
28	<i>Eucalyptus moluccana</i> Grey Box	Subject site	Low	Remove
29	<i>Eucalyptus moluccana</i> Grey Box	Subject site	Low	Remove
30	<i>Eucalyptus moluccana</i> Grey Box	Subject site	High	Remove
31	<i>Eucalyptus moluccana</i> Grey Box	Subject site	Medium	Remove
32	<i>Eucalyptus moluccana</i> Grey Box	Subject site	Medium	Remove
33	<i>Eucalyptus moluccana</i> Grey Box	No. 145 Badgerys Creek Road	Medium	Retain

Based on the plans supplied and should the proposed works proceed in their current form, it is recommended that:

- Twenty-nine (29) trees (**Trees 1, 3-23 & 26-32**) be removed, and
- Four (4) trees be retained and protected (**Trees 2, 24-25 & 33**)

The proposed tree removal will result in the loss of 1,208m<sup>2</sup> of canopy.

Specific recommendations as per **Section 7** will need to be adopted to ensure root sensitive construction techniques and methodology are employed which mitigate any potential negative impacts to retained trees.

## 2 INTRODUCTION

### 2.1 Background

This Arboricultural Impact Assessment (AIA) was commissioned by Creative Vision on the 22<sup>nd</sup> of July 2024 to evaluate the potential impacts that proposed construction of residential flat buildings, mixed use buildings, roadways, communal open spaces and associated works will have on existing trees located on and adjacent to the subject site at 135 Badgerys Creek Road, Bardfield.

Accordingly, the purpose of this report is to assess the potential impact of the proposed development on the subject trees, as well as provide recommendations for further amendments to the design or construction methodology where necessary to minimise any adverse impact. The report also provides recommended tree protection measures to ensure the long-term preservation of the trees to be retained where appropriate.

### 2.2 Objectives

This report has been prepared to assess the level of impact development works are likely to cause to existing trees and make a determination as to whether trees will be adversely affected. The report will provide guidance as to those trees requiring removal, retention or protection in accordance with the provisions of *AS4970-2025 Protection of trees on development sites*. Where necessary, it will also provide recommendations for design modifications and any replacement planting. As such, the objectives of this report are as follows:

- Assess the current site and growing conditions of trees;
- Assess the current health, condition, lifespan & significance of the trees within the site;
- Identify relative retention values of trees within the site;
- Calculate anticipated encroachment levels resulting from proposed works;
- Determine the likely impact as a result of the calculated encroachments;
- Assess potential for retention and protection of trees where possible;
- Advise any design modifications necessary to retain important trees;
- Recommend tree and root sensitive design and construction methodologies to mitigate impacts to trees to be retained;
- Inform of any tree removal necessary due to unsustainable impacts;

No aerial inspection, root mapping or internal diagnostic testing have been carried out as part of this report. Additionally, no cation exchange capacity testing or plant tissue analysis has been undertaken.

### 2.3 Legislation & Regulating Documents

This Arboricultural Impact Assessment has considered the following regulatory documents:

- *State Environmental Planning Policy (Biodiversity and Conservation) 2021*
- *Liverpool Local Environmental Plan 2015 (Liverpool LEP 2008)*
- *Liverpool Development Control Plan 2015 (Liverpool DCP 2008)*
- *Liverpool Tree Management Policy 2016 (Liverpool TMP 2016)*
- *Greater Sydney Regional Strategic Weed Management Plan 2023-2027 (GSRWMP)*

## 2.4 Documentation Received

The following documents were received and have been relied upon for this Assessment:

**Table 2** – Documentation received and reviewed as part of the Arboricultural Impact Assessment

Document Description	Author	Revision No. / Date
Site Survey	SDG	A / 8 May 2024
Architectural Plans	Plus Studios	A / 22 September 2025
Civil Plans	ADP Consulting	A / 25 September 2025
Landscape Plans	Land + Form	1 / 10 September 2025

Note: care has been taken to obtain all current information from reliable sources; however, the author makes no representations, guarantees or warranties as to the accuracy of information provided by others. No other information has been reviewed, should future revisions become available impacts may be subject to change.

## 2.5 The Site

The site is known as 135 Badgerys Creek Road, Bradfield and is legally described as Lot 7 in DP 243457 (the site). The site is located to the eastern side of Badgerys Creek Road and currently presents as a vacant greenfield site (refer to **Figure 1** below).

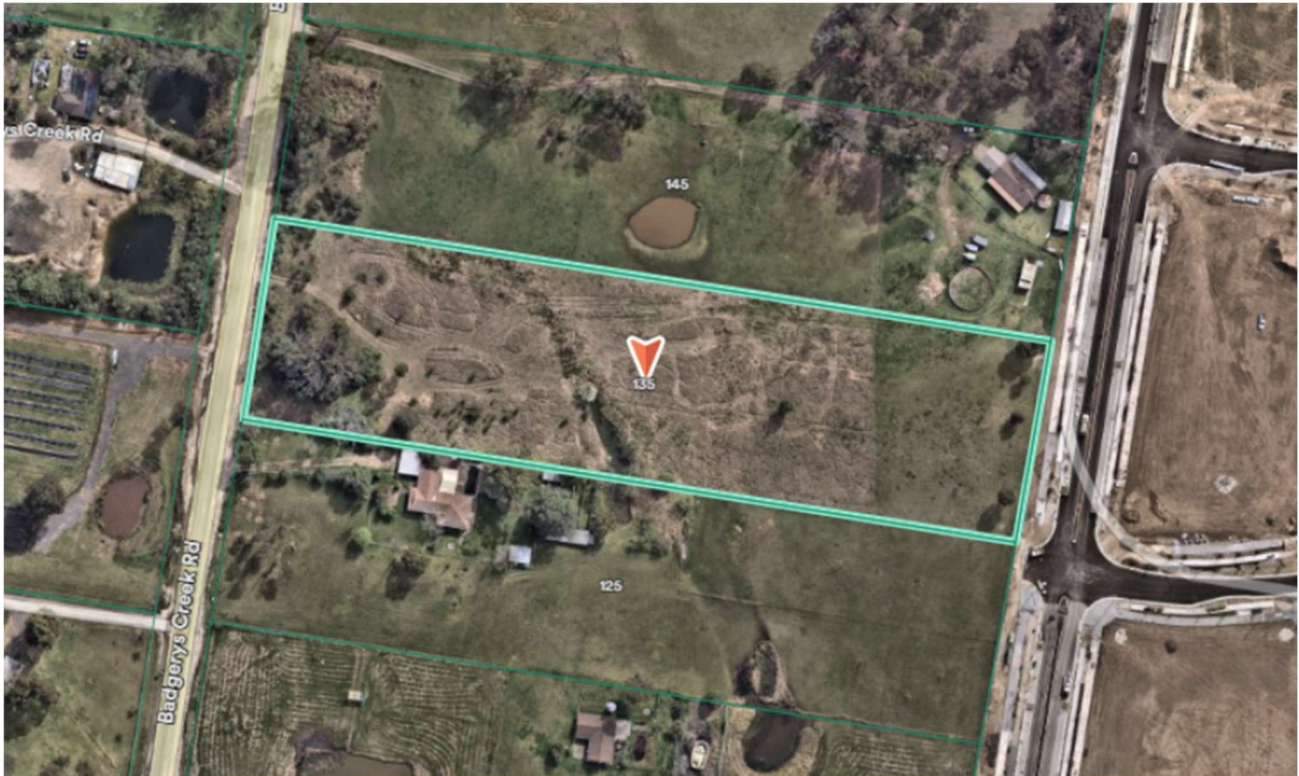


Figure 1 - Aerial image indicating subject site (outlined green)  
Source: Nearmap 4 September 2025

## 2.6 Proposed Construction Works

Redevelopment of 135 Badgerys Creek Road, Bradfield involves and construction of residential flat buildings, mixed use buildings, roadways, communal open spaces and associated works (refer to **Figure 2** below). Specifically, those works considered likely to impact the existing trees on the subject site include the building/basement footprints and future roadways.

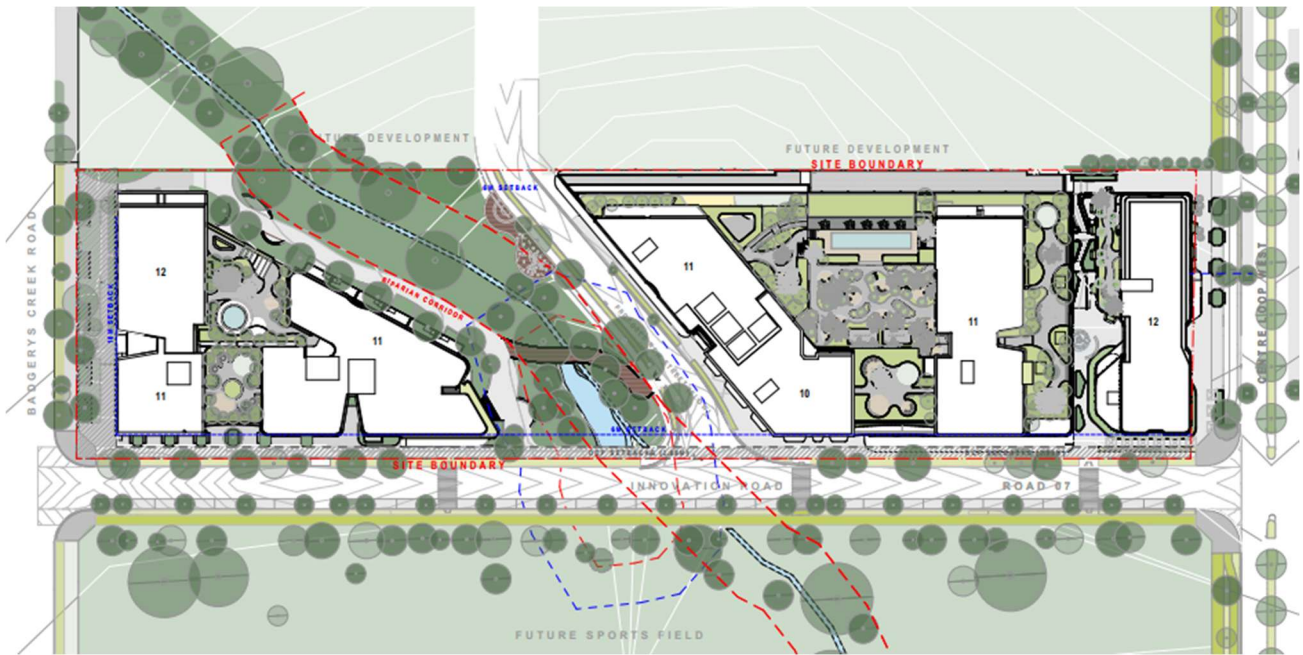


Figure 2 – Proposed Site Plan extract showing the layout of the development  
 Source: Plus Studio – 22 September 2025

## 2.7 Limitations

Trees are living organisms whose health and condition can change rapidly. The conclusions and recommendations in this report are valid for one (1) year only from the date of the report, unless otherwise stated. Any changes to the site as it stands at present, for example building extensions, excavation works, importing of soils, extreme weather events etc. will invalidate this report. Any reproduction of this report must be in full colour using the report in its entirety.

## 3 METHOD

### 3.1 Method

#### 3.1.1 Site Inspection

A site inspection was carried out by the author with the subject trees and the general growing environment evaluated on the 26<sup>th</sup> of July 2024. The weather at the time of inspection was sunny and dry with good visibility.

Trees were inspected from ground level utilising an adaptation of the Visual Tree Assessment (VTA) methods described by Mattheck and Breloer (Mattheck & Breloer, 1994) with the following information recorded and provided in tabulated form at **Appendix 1**:

- Tree Species (Botanical & Common Name);
- Approximate height;
- Approximate canopy spread;
- Trunk Diameter (measured at 1.4 metres from ground level);
- Trunk Diameter at base (above root crown);
- Age class;
- Health & vigour; using foliage size, colour, extension growth, presence of disease or pest infestation, canopy density, presence of deadwood, dieback and epicormic growth as indicators;
- Condition; using visible evidence of structural defects, instability, evidence of previous pruning and physical damage as indicators;
- Suitability of the tree to the site and its existing location;
- Useful Life Expectancy (ULE).

#### 3.1.2 Tree Location and Identification

Where provided, the location of assessed trees has been informed by the Site Survey prepared by SDG dated 8<sup>th</sup> May 2024. Where trees were not formally surveyed, their locations have been triangulated onsite utilising a measuring tape from known locations.

#### 3.1.3 Useful Life Expectancy (ULE)

The remaining Useful Life Expectancy of a tree is an estimate of the sustainability of the tree in the landscape, calculated based on an estimate of the average age of the species in an urban area, less its estimated current age. The life expectancy of each tree has been further modified where necessary in consideration of its current health, vigour, condition and suitability to the site. The estimated ULE of each tree is shown in **Appendix 1**.

The following ranges have been allocated to each tree:

- Long ULE: Trees that appear to be retainable with an acceptable level of risk for > 40 years.
- Medium ULE: Trees that appear to be retainable with an acceptable level of risk for 15 to 40 years.
- Short ULE: Trees that appear to be retainable with an acceptable level of risk for 5–15 years.
- Remove: Trees with a high level of risk that would need removing within the next 5 years.
- Small, Young or Regularly Pruned.

### 3.1.4 Landscape Significance

The landscape significance of a tree is an essential criterion to establish the importance that a particular tree may have on a site. Several factors contribute towards the assessment of a tree's significance including but not limited to condition and vigour, form, visual prominence, heritage status, indigeneity, legislative protection, cultural sentiment and future growth potential.

For the purposes of this report the Australian Institute of Consulting Arborists (IACA) Significance of a Tree, Assessment Rating System (STARS)<sup>®</sup> has been utilised. The system uses a scale of High, Medium and Low significance in the landscape. Once the landscape significance of an individual tree has been defined, the retention value can be determined.

**Appendix 3** provides a full outline of assessment criteria for each significance rating as per IACA STARS (2010).

### 3.1.5 Retention Value

Retention values have been determined for each tree on site to establish a hierarchy for tree retention. Retention values are based on estimated life spans and their associated landscape significance rating in accordance with the Tree Retention Value Priority Matrix. This matrix established the following retention values and can be found at **Appendix 3** with attributed retention values found within **Appendix 1**:

- Priority for Retention (High)
- Consider for Retention (Medium)
- Consider for Removal (Low)
- Priority for Removal

### 3.1.6 AS 4970-2025 Protection of Trees on Development Sites

The Australian Standard, AS 4970:2025 – Protection of trees on development sites, has been used as a guide to provide recommendations for the assessed trees. The Standard provides guidance on the principles for protecting trees on land subject to development as well as principles for determining viability of tree retention. Terminology and recommended methods are consistent with AS 4970:2025.

### 3.1.7 Notional Root Zone

The assessed trees have been allocated a Notional Root Zone (NRZ). The Australian Standard, AS4970-2025- 'Protection of trees on development sites', has been used as a guide in the allocation of NRZs for the assessed trees. The NRZ is calculated based on trunk (stem) diameter at standard height (DSH), measured at 1.4 metres above ground level. The radius of the NRZ is calculated by multiplying the trees DSH by 12. The method provides a NRZ that addresses health and growing requirements of a tree as well as the trees stability. NRZ distances are measured as a radius from the centre of the trunk at (or near) ground level. The maximum NRZ should be no more than 15m radius and the minimum NRZ should be no less than 2m radius.

An extract of the AS4970-2025 for calculating NRZ has been provided at **Appendix 6** for reference.

### 3.1.8 Structural Root Zone

The assessed trees have been allocated a Structural Root Zone (SRZ). The Australian Standard, AS4970-2025 - 'Protection of trees on development sites', has been used as a guide in the allocation of SRZ's for the assessed trees. The SRZ is a radial area extending outwards from the centre of the trunk and is calculated as follows:

$$\text{SRZ (Radius)} = (D \times 50)^{0.42} \times 0.64$$

### 3.1.9 Tree Protection Zones

Using the NRZ as a starting point, a Tree Protection Zone (TPZ) is a specified area located both above and below ground that is required for the protection of trees during development works. The purpose of a TPZ is to protect of a tree's roots and crown throughout the development process via the installation of tree protection measures and appropriate site management.

The location and alignment of specified TPZs are shown in the Tree Location Plans held at **Appendix 2**.

## 4 OBSERVATIONS

### 4.1 General

The site area subject to this assessment was observed as highly disturbed with historical clearing, introduction of exotic grasses and vegetation and minimal understorey present. Species observed varied including exotic, Australian native and locally indigenous species. Health, vigour and condition was also highly varied across the trees forming part of the assessment. Root zones of assessed trees were generally observed as modified groundcover within deep soil areas.

### 4.2 Tree Preservation Order

Part 1, Chapter 2 Tree Preservation of the Liverpool DCP 2008 applies to all land within the Liverpool LGA except where overridden by legislation. The provisions included within the DCP generally protect any tree that corresponds with the following criteria:

- a) Height greater than 3.5 metres; or
- b) Canopy spread greater than 4.0 metres; or
- c) Primary trunk diameter greater than 400mm when measured 1.0 metre above existing ground level.

**Note:** Any dead trees that form a component of any species, populations or communities listed under the provisions of the Threatened Species Conservation Act (TSCA) 1995; or their habitats are not to be removed without gaining the necessary approvals under the Act.

### 4.3 Biodiversity

A number of those trees identified are of a species consistent with the Endangered/Critically Endangered Ecological Communities: *Cumberland Plain Woodland in the Sydney Basin Bioregion and River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions*. The preservation of these communities is outlined under the provisions of the both the NSW *Biodiversity Conservation (BC) Act 2016* and the Commonwealth *Environment Protection and Biodiversity Conservation (EPBC) Act 1999*. It is noted that several Plant Community Types (PCTs) associated with each of these communities are indicated to occur on site under the NSW State Vegetation Type Map (SVTM)– refer to **Figure 3**.

Despite this, a review of the Biodiversity Values map & Threshold Tool which identifies land with high biodiversity value indicates the subject site is not mapped.



Figure 3 – State Vegetation Type Map extract showing the existing plant community types (PCT:4025 - Cumberland Red Gum Riverflat Forest and PCT:3320 - Cumberland Shale Plains Woodland) occurring on site  
**Source:** NSW Government SEED Portal – Accessed 29 September 2025

#### 4.4 Bushfire Prone Land

The site has been identified as designated bush fire prone area and is located in a designated 10/50 vegetation entitlement clearing area. However, this land is excluded from the operation of the 10/50 code as it has been identified as being wholly or partially within land mapped as a Critically Endangered Ecological Community and provided by the Office of Environment and Heritage.

#### 4.5 The Trees

A total of thirty-three (33) trees observed within and adjacent to the subject site have been included in this assessment.

Where provided, the location of assessed trees has been informed by the Site Survey prepared by SDG dated 8<sup>th</sup> May 2024. Where trees were not formally surveyed, their locations have been triangulated onsite utilising a measuring tape from known locations.

All tree data recorded on site has been tabulated and is contained at **Appendix 1**. Each tree has been provided with an identification number for reference purposes and is denoted on the attached Tree Location Plan at **Appendix 2**.

## 5 DISCUSSION

### 5.1 Impact Assessment

The impact assessment is to calculate the incursions to the root zones and canopies as a result of the proposed construction works and evaluate the likely impact of the proposed works on the subject trees. A summary of the impacts anticipated is contained within the Tree Schedule at **Appendix 1**. Additionally, plans demonstrating the level of incursion and conflict to NRZ's and SRZ's can be found at **Appendix 2**. As part of the assessment the following criteria have been considered:

- Existing Relative Levels (R.L.);
- Proposed Relative Levels;
- Notional Root Zones (NRZ);
- Structural Root Zones (SRZ);
- Footprint of the proposed development;
- Encroachment to the NRZ & SRZ;
- Encroachment to the tree canopy from vehicles and equipment;
- Pruning necessary for clearance;
- Remediation works for soil contaminants;
- Species tolerance to disturbance; and
- Assessment of the likely impact of the works on existing trees.

### 5.2 Trees Recommended for Removal

Should the proposed works proceed in their current form, it is recommended that twenty-nine (29) trees (**Trees 1, 3-23 & 26-32**) be removed. Removals have been recommended based upon;

- Trees being located within the proposed building/basement footprints (**Trees 1, 3-5, 7-12, 14-23, 26-30 & 32**); or
- Tree subject to unsustainable and 'major' encroachment, as per AS4970:2025 *Protection of trees on development sites*, from a proposed planter (**Tree 6**); or
- Tree being located within the proposed roadway (**Tree 13**); or
- Trees proposed for removal to facilitate construction and implement future landscape scheme (**Tree 31**)

Refer to **Appendix 2** for a plan indicating the location of trees that will require removal (dashed red).

**Table 3** – Trees recommended for removal

Tree No.	Genus & Species	Retention Value	Works within TPZ / Reason for Removal
1	<b>Dead tree</b> -	Dead	Full encroachment. Within proposed basement footprint.
3	<b><i>Eucalyptus moluccana</i></b> Grey Box	Low	Full encroachment. Within proposed building/basement footprint.
4	<b><i>Eucalyptus moluccana</i></b> Grey Box	Low	
5	<b><i>Eucalyptus moluccana</i></b> Grey Box	Medium	

Tree No.	Genus & Species	Retention Value	Works within TPZ / Reason for Removal
6	<i>Eucalyptus moluccana</i> Grey Box	High	'Major' 42% TPZ & 42% SRZ incursion from proposed planter. Loss of structural and fine feeder roots with decline to health, condition, longevity and viability likely.
7	<i>Eucalyptus moluccana</i> Grey Box	High	Full encroachment. Within proposed building/basement footprint.
8	<i>Eucalyptus moluccana</i> Grey Box	High	
9	<i>Eucalyptus moluccana</i> Grey Box	High	
10	<i>Eucalyptus moluccana</i> Grey Box	High	
11	<i>Eucalyptus moluccana</i> Grey Box	High	
12	<i>Eucalyptus sp.</i> Eucalyptus	Low	
13	<i>Olea europaea subsp. cuspidata</i> African Olive	Low	Full encroachment. Within proposed roadway.
14	<i>Eucalyptus moluccana</i> Grey Box	High	Full encroachment. Within proposed basement footprint.
15	<i>Eucalyptus moluccana</i> Grey Box	Medium	Full encroachment. Within proposed building/basement footprint.
16	<i>Eucalyptus moluccana</i> Grey Box	Medium	
17	<i>Eucalyptus moluccana</i> Grey Box	Medium	
18	<i>Eucalyptus moluccana</i> Grey Box	Medium	
19	<i>Eucalyptus moluccana</i> Grey Box	Medium	Full encroachment. Within proposed basement footprint.
20	<i>Eucalyptus moluccana</i> Grey Box	Medium	Full encroachment. Within proposed building/basement footprint.
21	<i>Eucalyptus moluccana</i> Grey Box	High	
22	<i>Eucalyptus moluccana</i> Grey Box	Medium	

Tree No.	Genus & Species	Retention Value	Works within TPZ / Reason for Removal
23	<i>Eucalyptus moluccana</i> Grey Box	Low	Full encroachment. Within proposed building/basement footprint.
26	<i>Eucalyptus moluccana</i> Grey Box	Low	
27	<i>Eucalyptus moluccana</i> Grey Box	Low	
28	<i>Eucalyptus moluccana</i> Grey Box	Low	
29	<i>Eucalyptus moluccana</i> Grey Box	Low	
30	<i>Eucalyptus moluccana</i> Grey Box	High	No works proposed within NRZ. Removal proposed to facilitate construction and implement landscape scheme.
31	<i>Eucalyptus moluccana</i> Grey Box	Medium	
32	<i>Eucalyptus moluccana</i> Grey Box	Medium	

### 5.3 Recommended for Retention & Protection

Should the proposed works proceed in their current form, it is recommended that four (4) neighbouring trees (**Trees 2, 24-25 & 33**) be retained and protected.

It is noted that three (3) of these trees (**Trees 2 & 24-25**) are located to the south, outside of the site boundaries and within the future Innovation South Roadway. Impacts from construction of the proposed mixed use development are likely to be sustainable with minimal impact to health and condition subject to the implementation of tree protection measures as per **Section 7**. Removal of these trees should be considered as part of the future Innovation South Road development application.

Refer to **Appendix 2** for a plan indicating the location of trees that are to be retained and protected (shaded green).

**Table 4** – Trees recommended for retention & protection

Tree No.	Genus & Species	Retention Value	Works within the Tree Protection Zone (TPZ)
2	<i>Triadica sebifera</i> Chinese Tallow	Medium	Within future roadway. Retain and protect as per <b>Section 7</b> . Removal to be considered as part of Innovation South Road development.
24	<i>Eucalyptus microcorys</i> Tallowwood	High	
25	<i>Eucalyptus sp.</i> Eucalyptus	High	
33	<i>Eucalyptus moluccana</i> Grey Box	Medium	Major 32% NRZ + 27% SRZ encroachment from proposed temporary retaining wall. Sustainable impact to health and condition likely due to semi-mature age class of specimen capable of tolerating moderate construction related disturbance.  Retain and protect as per <b>Section 7</b> .

### 5.4 Ancillary Construction Related Impacts

Vehicles, machinery and equipment requiring access to the site have potential to result in inadvertent impacts to those trees being retained including compaction of the root zone, soil disturbance, physical damage to roots, trunk damage etc. and as such will require management.

Furthermore, storage and stockpiling of material may result in similar impacts and will require management. In this regard, protection for those trees to be retained is to be carried out in accordance with **Appendix 5**.

## 6 CONCLUSION

### 6.1 Proposed Development Impact

Based on the plans and information supplied, the proposal would result in the following impacts to existing trees on site:

**Removal** of twenty-nine (29) site trees, including:

- Twenty-six (26) site trees (**Trees 1, 3-5, 7-12, 14-23, 26-30 & 32**) due to falling directly within the footprint of the proposed building/basements; and
- One (1) site tree (**Tree 6**) due to being subject to unsustainable and 'major' encroachment, as per AS4970:2025 *Protection of trees on development sites*, from a proposed planter; and
- One (1) site tree (**Tree 13**) due to falling directly within the footprint of a proposed roadway; and
- One (1) site tree (**Tree 31**) to facilitate construction and implement future landscape scheme

**Retention and protection** of four (4) trees, including:

- Three (3) trees (**Trees 2, 24 & 25**) located to the south, outside of the site boundaries and within the future Innovation South Roadway. Impacts from construction of the proposed mixed use development are likely to be sustainable.
- One (1) tree (**Tree 33**) subject to 'major' (32% NRZ + 27% SRZ) encroachment due to a proposed temporary retaining wall. Impacts from construction of the temporary retaining wall are likely to be sustainable due to the semi-mature age class of the specimen that is capable of tolerating moderate construction related disturbance.

Impacts are unlikely to result in decline to health and viability pending implementation of tree protection measures and Project Arborist supervision. Any significant departures from the protection measures may result in a reduced Useful Life Expectancy and/or tree removal.

Specific recommendations as per **Section 7** will need to be adopted to ensure potential negative impacts to trees nominated for retention are mitigated.

## 7 RECOMMENDATIONS

### 7.1 Tree Removal

Remove **Trees 1, 3-23 & 26-32** (29 trees) to facilitate the proposed development works.

Development consent and relevant approvals must be obtained prior to the removal or pruning of any tree.

All tree removal work is to be carried out by an experienced Arborist with minimum AQF Level 3 qualifications in accordance with AS4373-2007 - *Pruning of Amenity Trees*, Safe Work Australia Guide for Managing Risks of Tree Trimming and Removal Work (2016) and other applicable legislation.

### 7.2 Tree Retention & Protection

Retain and protect **Trees 2, 24-25 & 33** (4 trees) in accordance with the Tree Location Plan & Tree Protection Specifications held at **Appendices 2 & 5**, AS497-2025 *Protection of trees on development sites* and the specific recommendations below:

#### 7.2.1 Project Arborist Engagement

A Project Arborist experienced in tree protection on construction sites should be engaged prior to the commencement of any works on site. The Project Arborist shall monitor and report regularly to the Principal Certifying Authority (PCA) and the Applicant on the condition and protection of the retained trees during the works. The Project Arborist is to supervise and monitor any excavation, machine trenching or compacted fill placement within the TPZ of retained trees throughout construction.

## 8 REFERENCES

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- NSW Government – SEED – *Sharing and Enabling Environmental Data in NSW. NSW State Vegetation Type Map* [Current Release – November 2024]

APPENDIX 1: TREE ASSESSMENT SCHEDULE

Tree No.	Genus & species	Common Name	Height (m)	Crown Spread (m)	DSH (mm)	DGL (mm)	NRZ Radius (m)	SRZ Radius (m)	Age Class	Health / Vitality	Structure / Condition	ULE Rating	Landscape Significance	Retention Value	Development Impact	Retain / Remove	Comments
1	Dead tree	-	18	16	700, 350	900	-	-	-	-	-	Dead	Low	Dead	Within proposed basement footprint	Remove	Dead tree. Stand of African olive growing adjacent.
2	<i>Triadica sebifera</i>	Chinese Tallow	8	6	250, 250	450	4.24	2.37	M	Average	Fair	Medium 15-40 years	Medium	Medium	Within future roadway	Retain	Neighbouring tree. Pruned - crown lift and boundary clearance.
3	<i>Eucalyptus moluccana</i>	Grey Box	18	14	450, 350, 150	600	7.07	2.67	OM	Poor	Poor	Short 5-15 years	Low	Low	Within proposed building/basement footprint	Remove	Several crown dieback. Branch failures. Moderate mistletoe infestation. Stand of African olive growing adjacent.
4	<i>Eucalyptus moluccana</i>	Grey Box	16	15	600, 400	800	8.65	3.01	OM	Poor	Fair	Short 5-15 years	Low	Low	Within proposed building/basement footprint	Remove	Severe crown dieback. Moderate mistletoe infestation. Only minor Epicormic growth present in canopy. Stand of African olive growing adjacent.
5	<i>Eucalyptus moluccana</i>	Grey Box	13	8	200, 150, 150	300	3.50	2.00	M	Fair	Fair	Medium 15-40 years	Medium	Medium	Within proposed building/basement footprint	Remove	Lean and canopy bias to west. Stand of African olive growing adjacent.
6	<i>Eucalyptus moluccana</i>	Grey Box	9	4	150	200	2.00	1.68	SM	Good	Average	Long 40 years +	Medium	High	Major 42% NRZ + 42% SRZ encroachment from proposed planter	Remove	Bursaria spinosa and African olive growing adjacent.
7	<i>Eucalyptus moluccana</i>	Grey Box	12	5	300	350	3.60	2.13	M	Good	Average	Long 40 years +	Medium	High	Within proposed building/basement footprint	Remove	Nil
8	<i>Eucalyptus moluccana</i>	Grey Box	11	6	300, 150	400	4.02	2.25	M	Average	Average	Long 40 years +	Medium	High	Within proposed building/basement footprint	Remove	Minor mistletoe infestation.
9	<i>Eucalyptus moluccana</i>	Grey Box	6	4	100, 100, 50	150	2.00	1.50	SM	Average	Average	Long 40 years +	Medium	High	Within proposed building/basement footprint	Remove	Nil
10	<i>Eucalyptus moluccana</i>	Grey Box	7	4	200, 50, 50	250	2.55	1.85	SM	Good	Average	Long 40 years +	Medium	High	Within proposed building/basement footprint	Remove	Nil
11	<i>Eucalyptus moluccana</i>	Grey Box	13	6	300	350	3.65	2.13	M	Average	Average	Long 40 years +	Medium	High	Within proposed building/basement footprint	Remove	Nil
12	<i>Eucalyptus sp.</i>	Eucalyptus	12	5	300, 250	400	4.69	2.25	OM	Poor	Poor	Short 5-15 years	Low	Low	Within proposed building/basement footprint	Remove	Several crown dieback. Branch failures. Canopy consists of Epicormic growth.
13	<i>Olea europaea subsp. cuspidata</i>	African Olive	4	4	50, 50, 50, 50	100	2.00	1.50	M	Average	Average	Medium 15-40 years	Low	Low	Within proposed roadway	Remove	Exempt weed species
14	<i>Eucalyptus moluccana</i>	Grey Box	12	8	300, 150	400	4.02	2.25	M	Average	Fair	Long 40 years +	Medium	High	Within proposed basement footprint	Remove	Moderate mistletoe infestation. African olive growing adjacent.
15	<i>Eucalyptus moluccana</i>	Grey Box	8	4	150	200	2.00	1.68	SM	Good	Average	Long 40 years +	Low	Medium	Within proposed building/basement footprint	Remove	Included branch union.
16	<i>Eucalyptus moluccana</i>	Grey Box	9	4	100, 100	200	2.00	1.68	SM	Good	Average	Long 40 years +	Low	Medium	Within proposed building/basement footprint	Remove	Twin trunks.
17	<i>Eucalyptus moluccana</i>	Grey Box	7	3	50, 100	150	2.00	1.50	SM	Average	Average	Long 40 years +	Low	Medium	Within proposed building/basement footprint	Remove	Twin trunks.
18	<i>Eucalyptus moluccana</i>	Grey Box	9	4	150	150	2.00	1.50	SM	Average	Average	Long 40 years +	Low	Medium	Within proposed building/basement footprint	Remove	Nil
19	<i>Eucalyptus moluccana</i>	Grey Box	10	4	100	150	2.00	1.50	SM	Average	Average	Long 40 years +	Low	Medium	Within proposed basement footprint	Remove	Nil
20	<i>Eucalyptus moluccana</i>	Grey Box	10	4	100, 100	200	2.00	1.68	SM	Average	Average	Long 40 years +	Low	Medium	Within proposed building/basement footprint	Remove	Twin trunks
21	<i>Eucalyptus moluccana</i>	Grey Box	11	6	150, 150	250	2.55	1.85	SM	Average	Average	Long 40 years +	Medium	High	Within proposed building/basement footprint	Remove	Minor mistletoe infestation.

Tree No.	Genus & species	Common Name	Height (m)	Crown Spread (m)	DSH (mm)	DGL (mm)	NRZ Radius (m)	SRZ Radius (m)	Age Class	Health / Vitality	Structure / Condition	ULE Rating	Landscape Significance	Retention Value	Development Impact	Retain / Remove	Comments
22	<i>Eucalyptus moluccana</i>	Grey Box	10	5	150	200	2.00	1.68	SM	Fair	Fair	Medium 15-40 years	Medium	Medium	Within proposed building/basement footprint	Remove	Moderate mistletoe infestation.
23	<i>Eucalyptus moluccana</i>	Grey Box	17	11	700, 400	900	9.67	3.17	OM	Poor	Poor	Short 5-15 years	Low	Low	Within proposed building/basement footprint	Remove	Severe crown dieback. Major mistletoe infestation. Stand of African olive growing adjacent.
24	<i>Eucalyptus microcorys</i>	Tallowwood	17	17	700	800	8.40	3.01	M	Average	Average	Long 40 years +	Medium	High	Within future roadway	Retain	Neighbouring tree.
25	<i>Eucalyptus sp.</i>	Eucalyptus	13	9	300, 150	400	4.02	2.25	M	Average	Average	Long 40 years +	Medium	High	Within future roadway	Retain	Neighbouring tree. Not surveyed. Approx 1m from fence.
26	<i>Eucalyptus moluccana</i>	Grey Box	19	14	750	800	9.00	3.01	OM	Poor	Poor	Short 5-15 years	Low	Low	Within proposed building/basement footprint	Remove	Severe crown dieback. Moderate mistletoe infestation. Stand of African olive growing adjacent. Not surveyed.
27	<i>Eucalyptus moluccana</i>	Grey Box	19	15	650	700	7.80	2.85	OM	Poor	Poor	Short 5-15 years	Low	Low	Within proposed building/basement footprint	Remove	Severe crown dieback. Moderate mistletoe infestation. Stand of African olive growing adjacent. Not surveyed.
28	<i>Eucalyptus moluccana</i>	Grey Box	18	12	350	400	4.20	2.25	OM	Poor	Poor	Short 5-15 years	Low	Low	Within proposed building/basement footprint	Remove	Severe crown dieback. Moderate mistletoe infestation. Stand of African olive growing adjacent. Not surveyed.
29	<i>Eucalyptus moluccana</i>	Grey Box	18	12	400, 150	500	5.13	2.47	OM	Poor	Poor	Short 5-15 years	Low	Low	Within proposed building/basement footprint	Remove	Severe crown dieback. Moderate mistletoe infestation. Stand of African olive growing adjacent. Not surveyed.
30	<i>Eucalyptus moluccana</i>	Grey Box	10	5	200	250	2.40	1.85	SM	Good	Average	Long 40 years +	Medium	High	Within proposed building/basement footprint	Remove	Not surveyed
31	<i>Eucalyptus moluccana</i>	Grey Box	9	4	150	200	2.00	1.68	SM	Fair	Average	Medium 15-40 years	Medium	Medium	No works proposed within NRZ	Remove	Not surveyed. Past failure of leading branch.
32	<i>Eucalyptus moluccana</i>	Grey Box	7	3	50	100	2.00	1.50	SM	Average	Average	Long 40 years +	Low	Medium	Within proposed building/basement footprint	Remove	Not surveyed. Group of 3x saplings.
33	<i>Eucalyptus moluccana</i>	Grey Box	9	3	50	100	2.00	1.50	SM	Average	Average	Medium 15-40 years	Medium	Medium	Major 32% NRZ + 27% SRZ encroachment from proposed temporary retaining wall	Retain	Not surveyed. Neighbouring tree. 0.5m from fence.

**Tree Inspection Data Notes & Terminology****Tree No. (Tree Number)**

The tree number associated to each tree located on or adjacent to the subject site.

**Botanical Name and Common Name**

The botanical and common name of each tree is identified and recorded. Occasionally the exact species name is unknown; sp. is recorded to indicate this.

**Height, Crown Width and DSH**

- The trees height and crown spread is recorded in metres (m);
- The tree DSH is recorded in millimetres (mm). DSH is an abbreviation of Diameter (of the trunk) measured at Standard Height (or 1.4m from the base of the trunk). If more than one trunk is present the DSH is calculated in accordance with AS4970:2025 Protection of Trees on Development Sites

**Age Class**

The age class of each tree is estimated as either:

- J – Juvenile refers to a well established but young tree
- SM – Semi Mature, a tree that has not grown to mature size
- M – Mature, a tree that has reached mature size and will slowly increase in size over time
- OM – Over Mature, a tree that has been mature for a long period and is beginning to display signs of decline, e.g. large dead branches
- S – Senescent, an over mature tree that is now in decline

**Health & Condition**

The trees health and vigour is recorded as a measurement of:

**Good** - the tree does not appear to appear stressed with no excessive dieback, insect infestation, decay, deadwood or epicormic shoots

**Average** - the tree appears stressed and has some crown dieback, and /or a few epicormic shoots, and/or some deadwood in the crown and some new growth at branch tips. These trees may benefit from remediation of the growing environment to reduce stress and return it to good health

**Fair** - the tree may have areas of crown dieback, and/or epicormic shoots, and/or areas of decay, and/or reduced new growth at branch tips. These trees have been stressed for a short period of time, remediation of the growing environment may improve trees health

**Poor** - the tree may have large areas of crown dieback, and/or many epicormic shoots, and/or reduced new growth at branch tips. These trees have been stressed for a long period of time, remediation of the growing environment would not return the tree to good health.

**SRZ (Structural Root Zone)**

The SRZ is a radial area extending outwards from the centre of the trunk. This area contains the majority of the structural woody roots. This area is responsible primarily for stability. Root damage or root loss within this zone greatly increases the opportunity for decay fungi to ingress into the heartwood, causing internal decay in addition to destabilising the trees structural integrity. The SRZ is calculated as follows [This calculation is taken from the Australian Standard 4970 – 2025 Protection of Trees on Development Sites]:  $(D \times 50) / 0.42 \times 0.64$

**NRZ (Notional Root Zone)**

The NRZ is a radial area measured by multiplying the DSH by twelve (12) or a circular area the size of the trees drip line, whichever is greater. This area contains the majority of the structural and feeder roots responsible for stability, gaseous exchange and water and nutrient uptake. Excavation, back filling, compaction or other disturbance should not occur in this area. The NRZ is used to identify the minimum area required for the safe retention of a given tree. This calculation is derived from the Australian Standard 4970:2025 Protection of Trees in Development Sites. NRZ encroachment is potentially acceptable if no other option is available and is classified under AS4970:2025 as Minor (<10%), Moderate (10-20%) or Major (>20%). A major encroachment (in excess of 20%) is required to be clearly justified by the project works and compensated for elsewhere. Justification methodology may vary depending on site or individual tree's health, vigour and ability to withstand disturbance and may require root investigation.

**Landscape Significance**

The landscape significance of a tree or group of trees is determined using a combination of health/vigour/condition, amenity, heritage and ecological values in accordance with IACA Significance of a Tree, Assessment Rating System (STARS)© (IACA 2010)©.

1. High Significance in Landscape
2. Medium Significance in Landscape
3. Low Significance in Landscape

**Retention Value (RV)**

Determined by [1] tree free of visual defects and viable for retention, [2] viable for retention with minor faults which may reduce ULE, [3] trees which should not restrict development applications containing faults that are likely to become problematic in the short term, [4] trees to be considered for removal due to average condition.

**High Retention** - These trees are considered important for retention and should be retained and protected. Design modification or re-location of building/s should be considered to accommodate the setbacks as prescribed by the Australian Standard AS4970 Protection of trees on development sites.

Tree sensitive construction measures must be implemented e.g. pier and beam etc. if works are to proceed within the Tree Protection Zone.

**Medium Retention** - These trees may be retained and protected. These are considered less critical; however their retention should remain priority with removal considered only if adversely affecting the proposed building/works and all other alternatives have been considered and exhausted.

**Low Retention** - These trees are not considered important for retention, nor require special works or design modification to be implemented for their retention.

**Priority for Removal** - These trees are considered hazardous, or in irreversible decline, or weeds and should be removed irrespective of development.

**U.L.E. Categories**

Useful Life Expectancy (after *Barrell* 1996, modified by the author). A trees U.L.E. category is the life expectancy of the tree modified first by its age, health, condition and location. U.L.E. assessments may be modified as dictated by changes in trees health and environment.

**Long** - Appear retainable at the time of assessment for over 40 years assuming reasonable maintenance.

**Medium** - Appear to be retainable at the time of assessment for 15 to 40 years assuming reasonable maintenance.

**Short** - Trees appear to be retainable at the time of assessment for 5 to 15 years assuming reasonable maintenance.

**Very Short** - Removal - Trees which should be scheduled for removal within the very short term or as specified within this report.

**Small, Young or Regularly Pruned** - Trees under 5m in height that can be easily moved or replaced, includes screen plantings or hedge lines.

**Development Impact**

Brief outline of the impact of the proposed development works or ancillary construction related activities likely to impact the tree.

**Retain/Remove**

The proposed removal or retention recommendation in light of the proposed development related impacts.

**NOTES:** This report acknowledges the current Australian Standard 'Protection of Trees on Development Sites' AS 4970 – 2025 with reference to the Notional Root Zone (NRZ): being a combination of the root and crown area requiring protection. The NRZ takes into consideration the Structural Root Zone (SRZ): The area required for tree stability. The standard states where a greater than 20% encroachment occurs the arborist is to take into consideration the schedule of determining impacts as set within AS4970 s. 3.3.2.

Encroachments are referred to within this report as major or minor encroachments (AS4970 s. 3.3.2 & 3.3.3). To retain specific trees and ensure their viability, development must take into consideration protection of the NRZ radius.

# APPENDIX 2 - TREE LOCATION PLAN

NOTE: MUST BE READ IN CONJUNCTION WITH ARBORICULTURAL IMPACT ASSESSMENT

# CPS

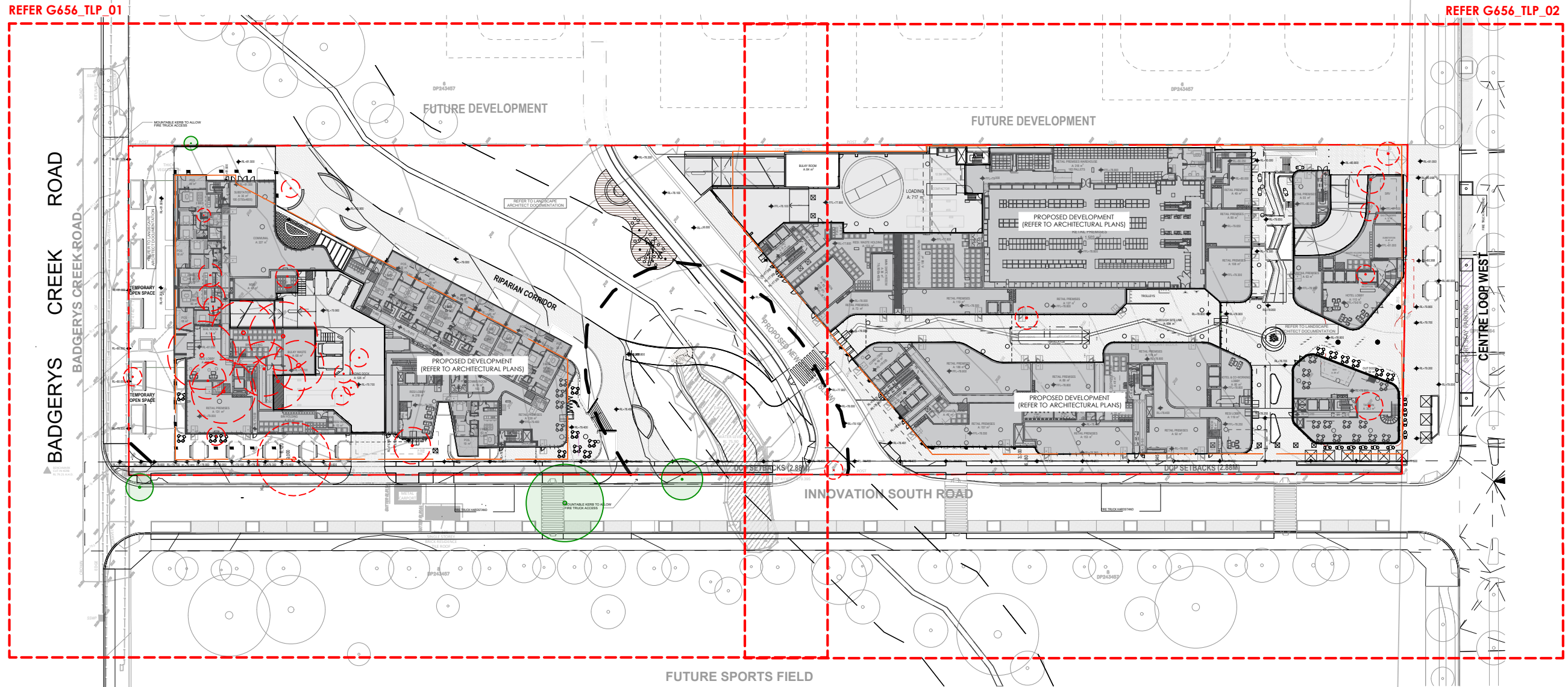
CREATIVE PLANNING SOLUTIONS  
 LEVEL 3  
 397 RILEY STREET  
 SURRY HILLS NSW 2010  
 PO BOX 1074 BROADWAY NSW 2007  
 TEL: + (61) 2 8039 7461  
 INFO@CPSPLANNING.COM.AU  
 CPSPLANNING.COM.AU

**DIMENSIONS :**  
 All dimensions are in millimetres unless otherwise noted. Do not scale from this drawing.

Verify all dimensions on site prior to construction.

**CIVIL, STRUCTURAL, HYDRAULIC, ELECTRICAL AND SPECIALIST WATER FEATURE WORKS :**

Refer to specialist and consultant's drawings for all information contained within these documents relating to and nominated as specialist and consultant work. Specialist and consultant drawing information contained in the landscape documents are indicative only and not for construction or certification purposes.



Issue Code	Issue Description	By	Chk	Date
B CA	FOR APPROVAL	SZ	GT	30.09.25
A CA	FOR APPROVAL	SZ	GT	25.03.25

PRE - Preliminary CA - Council Approval T - Tender CON - Construction

PROJECT

135 BADGERYS CREEK ROAD, BRADFIELD

DRAWING TITLE

TREE LOCATION PLAN - SITE CONTEXT

CLIENT

CREATIVE VISION

Drawn : SZ  
 Designed : GT  
 Project No. : G656  
 Bar Scale

1:1000 @ A3





SHEET NUMBER G656\_TLP\_00 REVISION B

**DIMENSIONS :**  
 All dimensions are in millimetres unless otherwise noted. Do not scale from this drawing.

Verify all dimensions on site prior to construction.

**CIVIL, STRUCTURAL, HYDRAULIC, ELECTRICAL AND SPECIALIST WATER FEATURE WORKS :**  
 Refer to specialist and consultant's drawings for all information contained within these documents relating to and nominated as specialist and consultant work. Specialist and consultant drawing information contained in the landscape documents are indicative only and not for construction or certification purposes.

**LEGEND**

-  EXISTING TREE TO BE RETAINED
-  NOTIONAL ROOT ZONE
-  STRUCTURAL ROOT ZONE
-  EXISTING TREE TO BE REMOVED

Issue Code	Issue Description	By	Chk	Date
B CA	FOR APPROVAL	SZ	GT	30.09.25
A CA	FOR APPROVAL	SZ	GT	25.03.25

PRE - Preliminary CA - Council Approval T - Tender CON - Construction PROJECT


135 BADGERYS CREEK ROAD, BRADFIELD

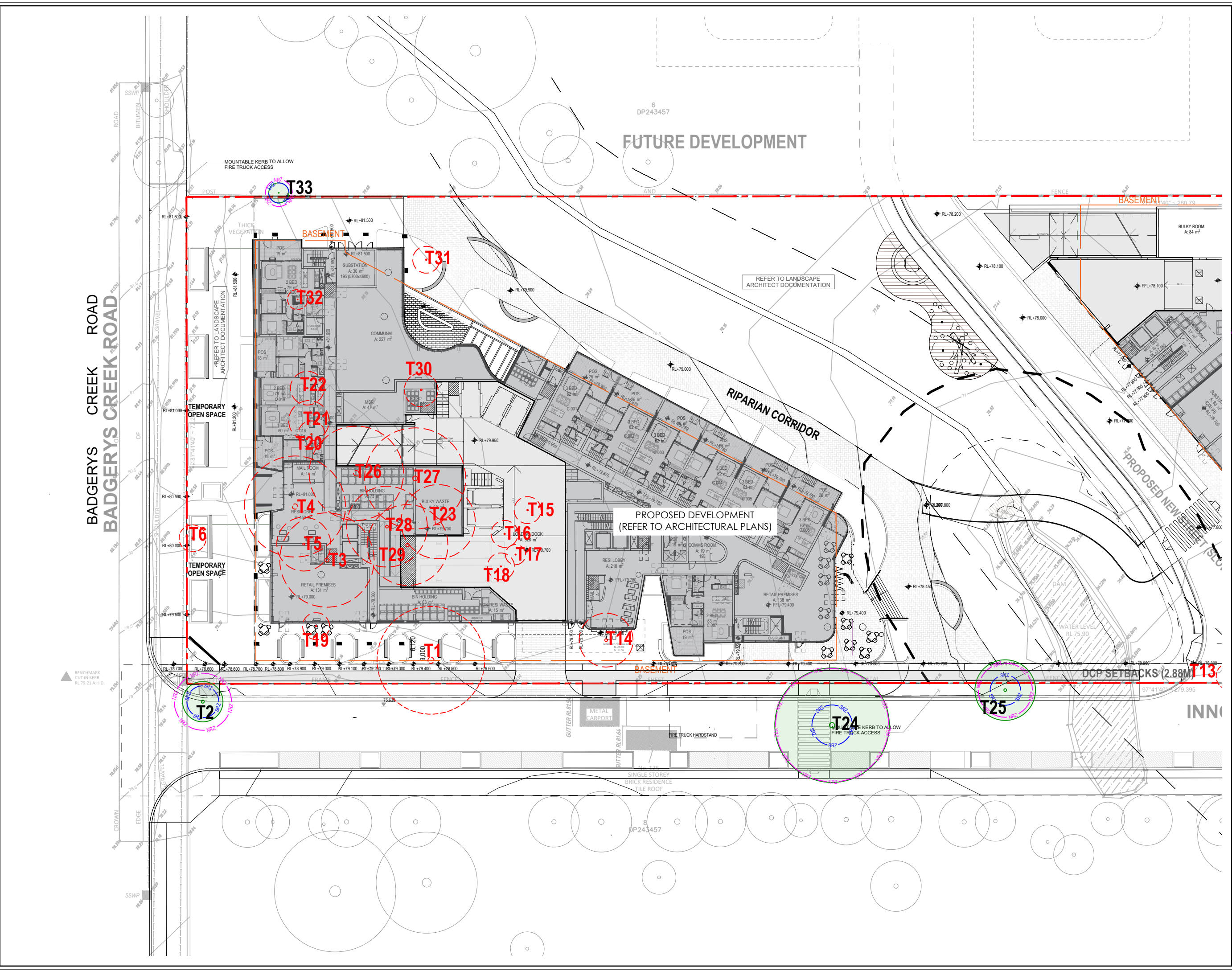
DRAWING TITLE

TREE LOCATION PLAN - DETAIL (PAGE 1 OF 2)

CLIENT

**CREATIVE VISION**

Drawn : SZ  
 Designed : GT  
 Project No. : G656  
 Bar Scale  
  
 1:500 @ A3  
 SHEET NUMBER : G656\_TLP\_01  
 REVISION : B







**DIMENSIONS :**  
 All dimensions are in millimetres unless otherwise noted. Do not scale from this drawing.

Verify all dimensions on site prior to construction.

**CIVIL, STRUCTURAL, HYDRAULIC, ELECTRICAL AND SPECIALIST WATER FEATURE WORKS :**  
 Refer to specialist and consultant's drawings for all information contained within these documents relating to and nominated as specialist and consultant work. Specialist and consultant drawing information contained in the landscape documents are indicative only and not for construction or certification purposes.

**LEGEND**

-  EXISTING TREE TO BE RETAINED
-  NOTIONAL ROOT ZONE
-  EXISTING TREE TO BE REMOVED
-  STRUCTURAL ROOT ZONE

Issue Code	Issue Description	By	Chk	Date
B CA	FOR APPROVAL	SZ	GT	30.09.25
A CA	FOR APPROVAL	SZ	GT	25.03.25

PRE - Preliminary CA - Council Approval T - Tender CON - Construction PROJECT

135 BADGERYS CREEK ROAD, BRADFIELD

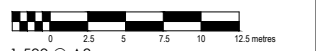
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TREE LOCATION PLAN - DETAIL (PAGE 2 OF 2)

CLIENT

**CREATIVE VISION**

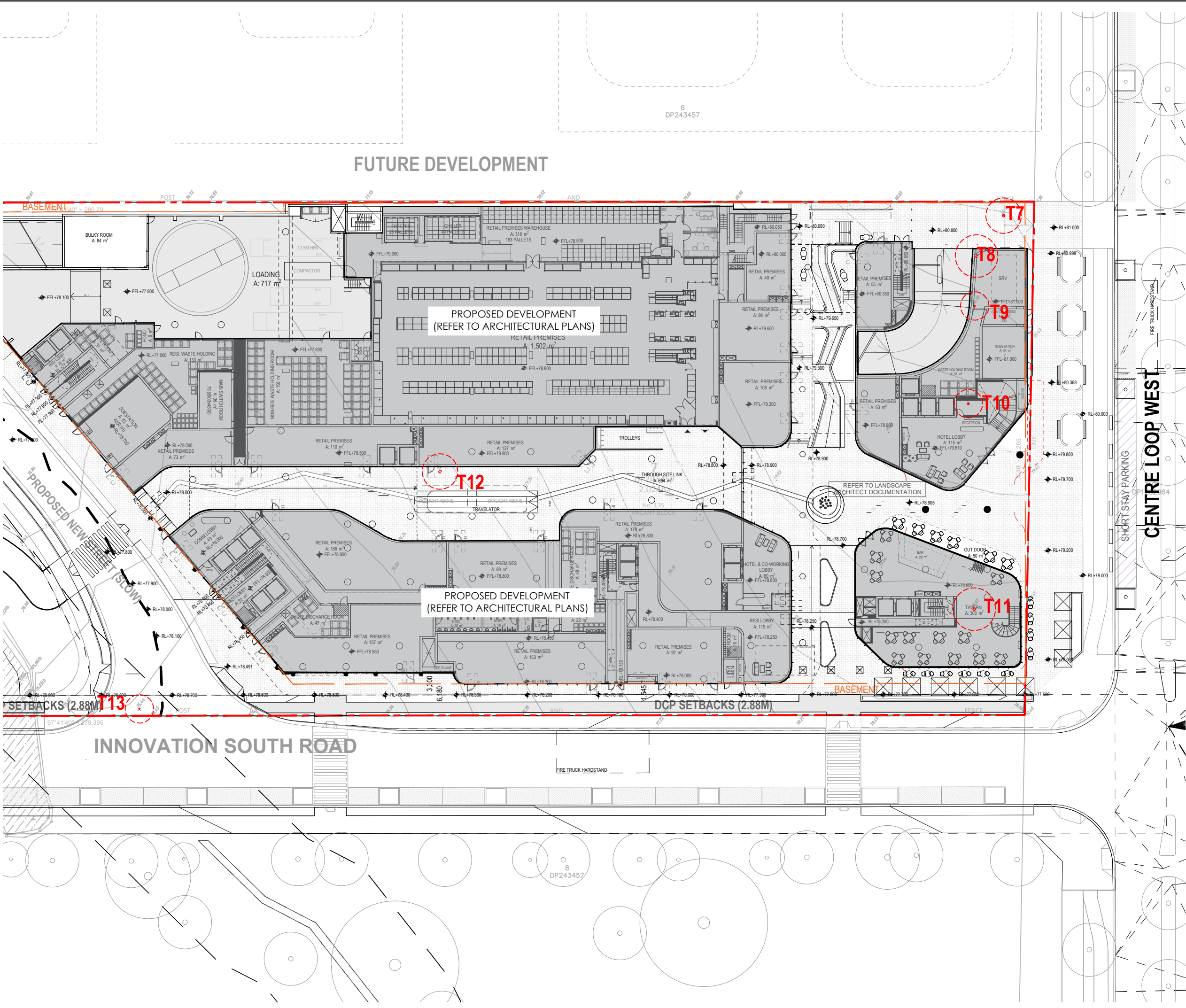
Drawn : SZ  
 Designed : GT  
 Project No. : G656  
 Bar Scale



1:500 @ A3

SHEET NUMBER G656\_TLP\_02 REVISION B

**FUTURE DEVELOPMENT**



6 DP243457

6 DP243457



## APPENDIX 3

# IACA Significance of a Tree, Assessment Rating System (STARS)© (IACA 2010)©

In the development of this document IACA acknowledges the contribution and original concept of the Footprint Green Tree Significance & Retention Value Matrix, developed by Footprint Green Pty Ltd in June 2001.

The landscape significance of a tree is an essential criterion to establish the importance that a particular tree may have on a site. However, rating the significance of a tree becomes subjective and difficult to ascertain in a consistent and repetitive fashion due to assessor bias. It is therefore necessary to have a rating system utilising structured qualitative criteria to assist in determining the retention value for a tree. To assist this process all definitions for terms used in the *Tree Significance - Assessment Criteria and Tree Retention Value - Priority Matrix*, are taken from the IACA Dictionary for Managing Trees in Urban Environments 2009.

This rating system will assist in the planning processes for proposed works, above and below ground where trees are to be retained on or adjacent a development site. The system uses a scale of *High*, *Medium* and *Low* significance in the landscape. Once the landscape significance of an individual tree has been defined, the retention value can be determined. An example of its use in an Arboricultural report is shown as Appendix A.

### **Tree Significance - Assessment Criteria**



#### **1. High Significance in landscape**

- The tree is in good condition and good vigour;
- The tree has a form typical for the species;
- The tree is a remnant or is a planted locally indigenous specimen and/or is rare or uncommon in the local area or of botanical interest or of substantial age;
- The tree is listed as a Heritage Item, Threatened Species or part of an Endangered ecological community or listed on Councils significant Tree Register;
- The tree is visually prominent and visible from a considerable distance when viewed from most directions within the landscape due to its size and scale and makes a positive contribution to the local amenity;
- The tree supports social and cultural sentiments or spiritual associations, reflected by the broader population or community group or has commemorative values;
- The tree's growth is unrestricted by above and below ground influences, supporting its ability to reach dimensions typical for the taxa *in situ* - tree is appropriate to the site conditions.

#### **2. Medium Significance in landscape**

- The tree is in fair-good condition and good or low vigour;
- The tree has form typical or atypical of the species;
- The tree is a planted locally indigenous or a common species with its taxa commonly planted in the local area
- The tree is visible from surrounding properties, although not visually prominent as partially obstructed by other vegetation or buildings when viewed from the street,
- The tree provides a fair contribution to the visual character and amenity of the local area,
- The tree's growth is moderately restricted by above or below ground influences, reducing its ability to reach dimensions typical for the taxa *in situ*.

#### **3. Low Significance in landscape**

- The tree is in fair-poor condition and good or low vigour;
- The tree has form atypical of the species;
- The tree is not visible or is partly visible from surrounding properties as obstructed by other vegetation or buildings,
- The tree provides a minor contribution or has a negative impact on the visual character and amenity of the local area,
- The tree is a young specimen which may or may not have reached dimension to be protected by local Tree Preservation orders or similar protection mechanisms and can easily be replaced with a suitable specimen,
- The tree's growth is severely restricted by above or below ground influences, unlikely to reach dimensions typical for the taxa *in situ* - tree is inappropriate to the site conditions,
- The tree is listed as exempt under the provisions of the local Council Tree Preservation Order or similar protection mechanisms,
- The tree has a wound or defect that has potential to become structurally unsound.

#### **Environmental Pest / Noxious Weed Species**

- The tree is an Environmental Pest Species due to its invasiveness or poisonous/ allergenic properties,
- The tree is a declared noxious weed by legislation.

#### **Hazardous/Irreversible Decline**

- The tree is structurally unsound and/or unstable and is considered potentially dangerous,
- The tree is dead, or is in irreversible decline, or has the potential to fail or collapse in full or part in the immediate to short term.

**The tree is to have a minimum of three (3) criteria in a category to be classified in that group.**

Note: The assessment criteria are for individual trees only, however, can be applied to a monocultural stand in its entirety e.g. hedge.

**Table 1.0 Tree Retention Value - Priority Matrix.**

		Significance				
		1. High	2. Medium	3. Low		
		Significance in Landscape	Significance in Landscape	Significance in Landscape	Environmental Pest / Noxious Weed Species	Hazardous / Irreversible Decline
Estimated Life Expectancy	1. Long >40 years					
	2. Medium 15-40 Years					
	3. Short <1-15 Years					
	Dead					

Legend for Matrix Assessment



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

**USE OF THIS DOCUMENT AND REFERENCING**

The IACA Significance of a Tree, Assessment Rating System (STARS) is free to use, but only in its entirety and must be cited as follows:

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

**REFERENCES**

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Footprint Green Pty Ltd 2001, *Footprint Green Tree Significance & Retention Value Matrix*, Avalon, NSW Australia, [www.footprintgreen.com.au](http://www.footprintgreen.com.au)

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The following example shows the IACA **Significance** of a **Tree, Assessment Rating System (STARS)** used in an Arboricultural report.

Tree Significance

Determined by using the Tree Significance - Assessment Criteria of the *IACA Significance of a Tree, Assessment Rating System (STARS)©* (IACA, 2010), Appendix B.

Trees 14, 16, 17/3, 19 and 20/4 are of high significance with the remaining majority of medium significance and a few of low significance. Tree 14 is significant as a prominent specimen and a food source for indigenous avian fauna. Tree 16 as a non-locally indigenous planting is of good form and prominent *in situ*; Tree 17/3 as a stand of 6 street trees along the Davey Street frontage screening views to and from the site and contiguous with trees in Victoria Park extending the aesthetic influence of the urban canopy to the site. Similarly for Trees 20/4 as street trees in Long Road and Tree 19 as an extant exotic planting as a senescent component of the original landscaping. The trees of low significance are recent plantings as fruit trees – Avocados, and 1 Cootamundra Wattle as a non-locally indigenous tree in irreversible decline and potentially structurally unsound.

**Significance Scale**

- 1 – High
- 2 – Medium
- 3 – Low

Significance Scale	1	2	3
Tree No. / Stand No.	14, 16, 17/3, 19, 20/4	1/1, 2, 4, 5, 6, 7, 8, 9, 10, 11, 12/2, 15, 18, 21/5	3, 13, 22

Tree Retention Value

Determined by using the Retention Value - Priority Matrix of the *IACA Significance of a Tree, Assessment Rating System (STARS)©* (IACA, 2010), Appendix B.

**Retention Value**

- High** – Priority for Retention
- Medium** – Consider for Retention
- Low** – Consider for Removal
- Remove** - Priority for Removal

Retention Value	High Priority for Retention	Medium Consider for Retention	Low Consider for Removal	Remove Priority for Removal
Tree No. / Stand No.	1/1, 5, 17/3*, 19	2, 4, 6, 7, 8, 9, 10, 11, 14, 15, 16, 18, 20/4*, 21/5	3, 12/2, 13,	22

\* Trees located within the neighbouring property and should be retained and protected.

# APPENDIX 4 - EXTRACT FROM AS4970-2025: PROTECTION OF TREES ON DEVELOPMENT SITES

## Section 3 Determining protection zones

### 3.1 Tree Protection Zone (TPZ)

Establishing and maintaining a TPZ is the most important part of protecting trees during the onsite stages of work (e.g. site establishment, demolition, construction). The TPZ is the zone determined by the project arborist using the process set out below. It shall be shown on the TPP to be isolated or managed so that the tree remains viable.

The NRZ is the starting point for determining the TPZ, along with the considerations in [Clause 3.3.2](#). Alternatively, the TPZ may be specified by the consent authority.

### 3.2 Calculating the Notional Root Zone (NRZ)

The radius of the NRZ is calculated for each tree by multiplying its diameter at standard height (DSH) by 12.

$$\text{Radius of the NRZ} = \text{DSH} \times 12$$

where

DSH = trunk diameter measured at 1.4 m above ground

The radius of the NRZ is measured from the centre of the stem.

The NRZ for palms, cycads, tree ferns and the like, is not calculated but shall not be less than 2 m.

Any NRZ radius shall not be less than 2 m nor greater than 15 m. [Clause 3.3](#) details the methods to produce the TPZ based on the NRZ.

### 3.4 Structural Root Zone (SRZ)

The SRZ is a notional area required for tree stability. A larger area is required to maintain a viable tree.

The SRZ shall be calculated when major encroachment (greater than 20 %) into an NRZ is proposed. SRZ locations and dimensions may be included on arboriculture documentation.

Many factors affect the size of the SRZ (e.g. tree height, crown area, soil type, soil moisture). Natural or built structures, such as rocks and footings, can also influence the SRZ. An indicative SRZ radius can be determined from the trunk diameter measured immediately above the root buttress using the following formula or [Figure 2](#). Root investigation can provide more information on the extent of these roots.

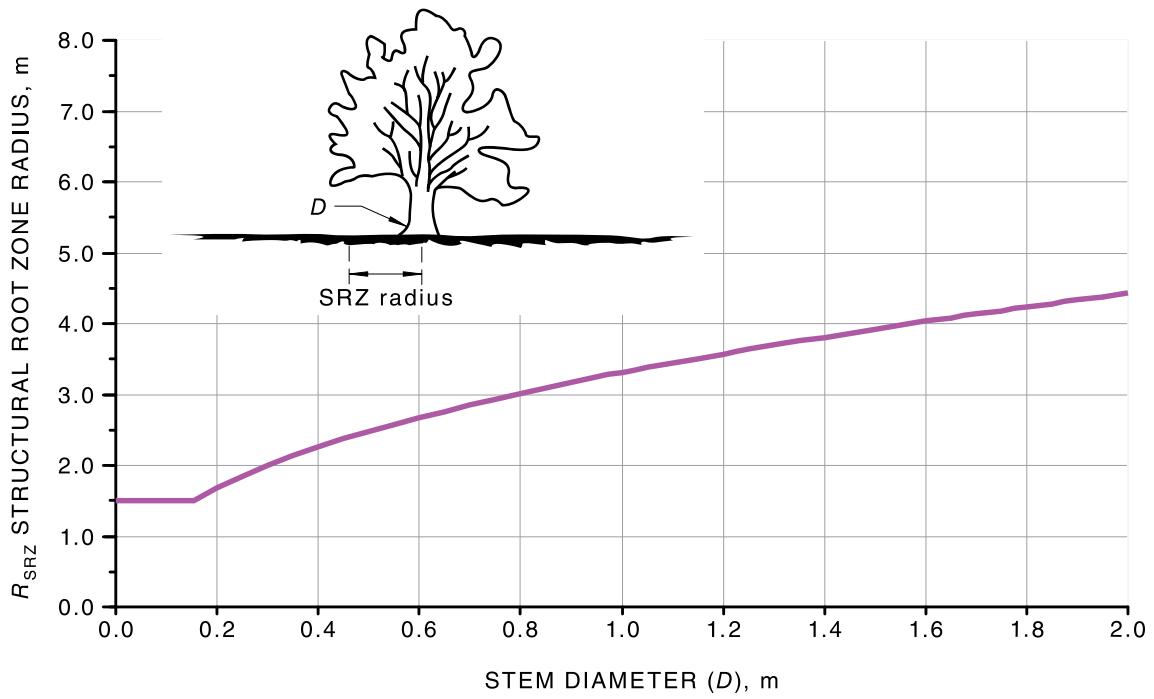
$$\text{SRZ radius} = (D \times 50)^{0.42} \times 0.64$$

where

D = trunk diameter, in m, measured above the root buttress flare.

Where the tree is multi-stemmed, the project arborist should determine if they will measure around all stems or work out the cross-sectional area, as noted in [Figure A.1](#), and provide their reasons for the method selected. The SRZ calculation does not apply to palms, cycads, tree ferns and the like.

NOTE The SRZ for trees with trunk diameters less than 0.15 m is 1.5 m, as shown in [Figure 2](#).



The curve can be expressed by the following formula:

$$R_{SRZ} = (D \times 50)^{0.42} \times 0.64$$

**Figure 2 — Structural Root Zone (SRZ) calculation**

# APPENDIX 5 – GENERAL TREE PROTECTION SPECIFICATION

## 1.0 Project Arborist

A Project Arborist with AQF Level 5 qualifications may be appointed prior to works commencing to ensure trees to be retained are appropriately monitored and protected throughout the proposed works. The Project Arborist shall review all tree protection measures, ensure compliance with requirements set out by the Principal Certifying Authority and provide compliance reports as per the schedule of works and responsibilities below.

**Table 5 - Schedule of Works and Responsibilities**

HOLD POINT	TASK	RESPONSIBILITY	CERTIFICATION	TIMING OF INSPECTION
1	Review & certification of all tree protection measures	Principal Contractor	Project Arborist (AQF5)	Prior to demolition or site establishment
2	Supervise all excavation works proposed within the TPZ	Principal Contractor	Project Arborist (AQF5)	As required prior to works proceeding within TPZ
3	Inspection of trees by Project Arborist	Principal Contractor	Project Arborist (AQF5)	Quarterly during construction
4	Final Inspection of trees by Project Arborist	Principal Contractor	Project Arborist (AQF5)	Following removal of tree protection measures prior to Occupation Certificate

## 2.0 Compliance

Compliance Documentation shall be prepared by the Project Arborist following each site inspection. The Compliance Documentation shall include documentary evidence of compliance with the tree protection measures and methods as outlined within this Specification. Upon the completion of the works, a final assessment of the trees shall be undertaken by the Project Arborist and future management strategies recommended.

## 3.0 Tree Removal

The trees to be removed shall be removed prior to the establishment of the tree protection measures. Tree removal works shall be undertaken in accordance with the *Workcover Code of Practice for the Amenity Tree Industry (1998)*. All tree removal work is to be carried out by an experienced Arborist with minimum AQF Level 3 qualifications in accordance with AS4373-2007 - Pruning of Amenity Trees, Safe Work Australia Guide for Managing Risks of Tree Trimming and Removal Work (2016) and other applicable legislation. Care should be taken to avoid damaging trees to be retained.

## 4.0 Tree Protection Zone

The Tree Protection Zone (TPZ) is a specified area above and below ground set aside for the protection of a tree. The TPZ should be protected to ensure development activities do not have an adverse effect on the viability and stability of trees to be retained. Activities restricted within the TPZ include:

- Soil cutting or filling, including excavation and trenching
- Soil compaction and modification
- Storage of materials and waste
- Parking of vehicles and plant
- Temporary or permanent installation of sheds, utilities and signs
- Cement or chemical preparation
- Refuelling
- Any other action leading to damage of the tree

## 5.0 Tree Protection Fencing

TPZ fencing shall be located at the perimeter of the TPZ. Where TPZ areas overlap, TPZ fencing may be combined to form a single larger TPZ area. The exact location of the fencing shall be confirmed through consultation between the Head Contractor/Project Manager and the Project Arborist prior to the commencement of works.

Fencing may be setback to allow for demolition/construction access only where appropriate ground protection is installed and approved by the Project Arborist.

Tree Protection Fencing shall consist of galvanised steel temporary fencing panels supported by concrete feet with panels coupled together. Care should be taken to avoid damaging the tree during the installation of the Tree Protection Fencing. Refer to Typical Tree Protection Details (**Appendix 2**).

### **6.0 Scaffolding**

Scaffolding shall be erected outside of the TPZ. If scaffolding is deemed essential within the TPZ, the ground shall be protected, and branch removal minimised. Ground below scaffolding shall be protected by boarding placed over a layer of mulch to prevent soil compaction. Scaffolding shall be designed to avoid branches or branches tied back. Refer to Typical Tree Protection Details (**Appendix 2**).

### **7.0 Ground Protection**

Where deemed necessary by the Project Arborist, temporary ground protection, such as ground mats or steel road plates placed over a mulch layer with geotextile fabric underneath, shall be utilised to prevent damage to tree roots during construction. Refer to Typical Tree Protection Details (**Appendix 2**).

### **8.0 Trunk Protection**

Trunk protection shall be installed by wrapping padding around the trunk and first order branches to a minimum height of 2m. Timber battens (90 x 45mm) spaced at 150mm centres shall be strapped together and placed over the padding. Timber battens must not be fixed to the trees. Refer to Typical Tree Protection Details (**Appendix 2**).

### **9.0 Works within the Tree Protection Zones**

The Principal Certifying Authority may approve works within Tree Protection Zones. The Project Arborist shall ensure compliance with the prescribed requirements as set out by the Principal Certifying Authority to ensure trees nominated for retention are adequately retained and protected throughout the works.

### **10.0 Structure & Pavement Demolition**

Demolition of existing structures/pavement within the TPZ shall be supervised by the Project Arborist. Machinery is to be excluded from the TPZ unless operating from the existing slabs, pavements or areas of ground protection.

Pavement is to be shattered with a hand-operated pneumatic/electric breaker prior to removal taking place and carefully lifted to minimise damage to the underlying soil profile and tree roots. The underlying soil profile and existing sub-base materials shall remain in-situ.

When removing slab sections within TPZ, machinery shall work backwards out of the TPZ to ensure machinery remains on un-demolished sections of slab at all times. Machinery should not contact the tree's roots, trunk, branches and crown.

Exposed roots shall be irrigated by hand and covered with a 75-100mm layer of mulch as soon as possible after being exposed. The mulch must remain in place until new surfaces are put into place.

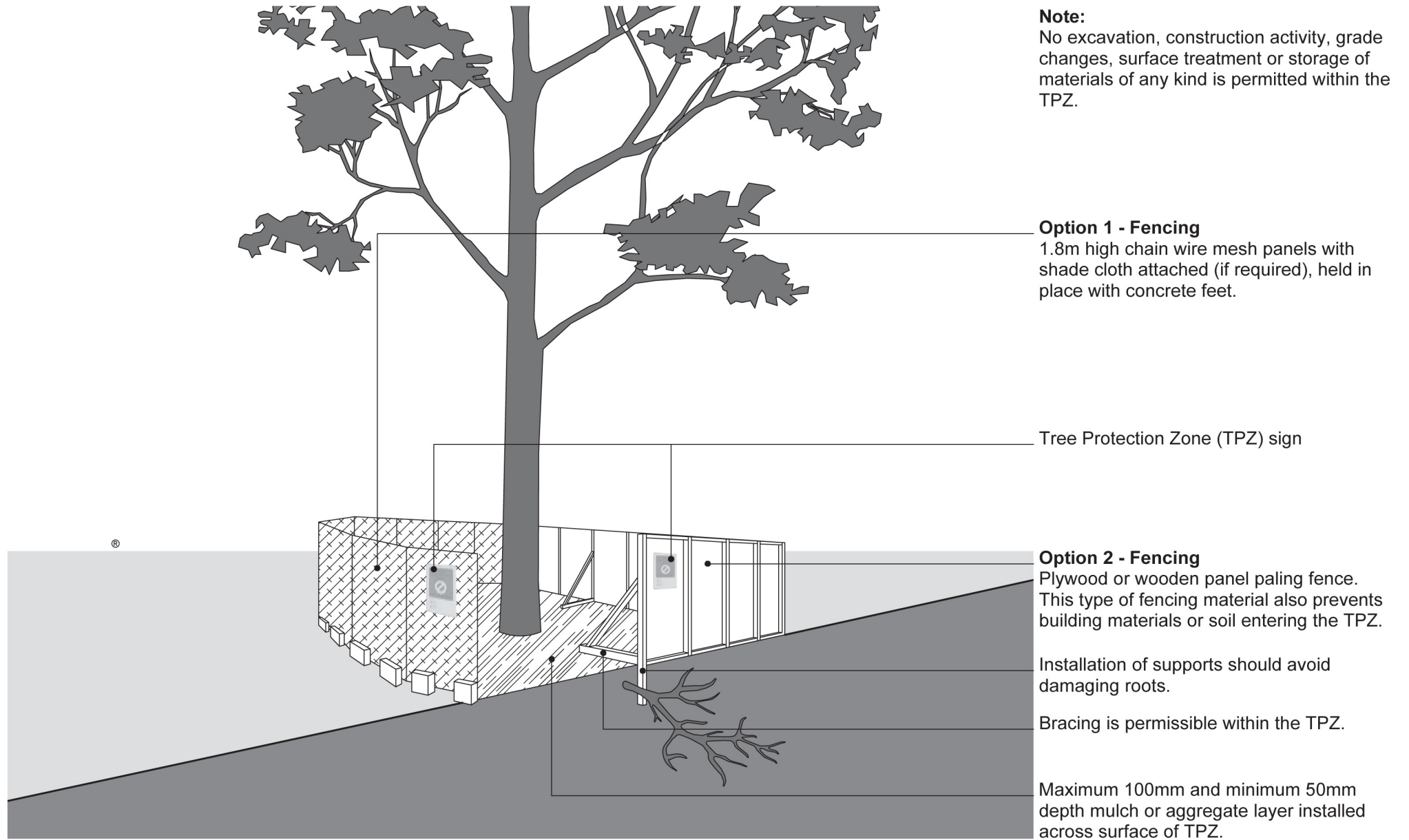
### **11.0 Underground Services**

The installation of underground services shall be located outside of the TPZ. Where this is not possible, they shall be installed using in a root-sensitive manner utilising manual hand excavation methods or employ a pneumatic excavation device to ensure roots are maintained and undamaged under supervision of the Project Arborist. Services are to be threaded in between and/or under to preserve existing roots.

### **13.0 Excavations, Root Protection & Root Pruning**

Excavation required within the TPZ shall be undertaken using non-motorised hand tools or a pneumatic excavation device under supervision of the Project Arborist. Excavation must be undertaken in a root sensitive manner to ensure roots are maintained and un-damaged. Should significant roots be identified (>25mmØ) during construction, works are to cease and direction sought from the Project Arborist with regards to root pruning, modification of construction methodology or design alteration.

## APPENDIX 6 - TYPICAL TREE PROTECTION DETAILS



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### Tree Protection Fencing

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