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ARBORICULTURAL IMPACT ASSESSMENT

Proposed Residential Flat Building

1-13 Coleridge Street, Riverwood NSW 2210

Project No: E784
Date: 30 June 2025
Revision: B

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Disclaimer

The Client acknowledges this Report, and any opinions, advice or recommendations expressed or given in it, are based on the information supplied by the Client and on the data, inspections, measurements and analysis carried out or obtained by CPS and referred to in the Report. No guarantee is implied with respect to future tree safety. The Client should rely on the Report and its contents, only to that extent.

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1 EXECUTIVE SUMMARY

This Arboricultural Impact Assessment (AIA) was commissioned by WMK Architecture on the 29th of August 2024. The report relates to thirty-four (34) trees located on and adjacent to the site at 1-13 Coleridge Street, Riverwood within the Georges River Council Local Government Area (LGA).

The report provides an evaluation of the likely impact to existing trees as a result of a proposed residential flat building development including associated basement carparking, civil works, hard paving areas, landscaping and services infrastructure.

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	***Lophostemon confertus*** Brush Box	Council street verge	High	Retain & Protect
2	***Lophostemon confertus*** Brush Box	Council street verge	High	Retain & Protect
3	***Lophostemon confertus*** Brush Box	Council street verge	High	Remove
4	***Lophostemon confertus*** Brush Box	Council street verge	High	Retain & Protect
5	***Lophostemon confertus*** Brush Box	Council street verge	Medium	Retain & Protect
6	***Lophostemon confertus*** Brush Box	Council street verge	High	Retain & Protect
7	***Lophostemon confertus*** Brush Box	Council street verge	High	Retain & Protect
8	***Lophostemon confertus*** Brush Box	Council street verge	High	Retain & Protect
9	***Lophostemon confertus*** Brush Box	Council street verge	High	Retain & Protect
10	***Lophostemon confertus*** Brush Box	Council street verge	High	Retain & Protect
11	***Morus sp.*** Mulberry	Rail easement	Low	Retain & Protect
12	***Ligustrum sinense*** Small-leaved Privet	Rail easement	Low	Retain & Protect
13	***Photinia robusta*** Photinia	Subject site	Low	Remove
14	***Pittosporum undulatum*** Sweet Pittosporum	Subject site	Low	Remove
15	***Ligustrum lucidum*** Broad-leaved Privet	Subject site	Low	Remove[1]
16	***Ligustrum lucidum*** Broad-leaved Privet	Subject site	Low	Remove[1]
17	***Ligustrum lucidum*** Broad-leaved Privet	Subject site	Low	Remove[1]

[1] Tree noted to be listed as "exempt species" under provisions of Georges River Council Tree Management Policy 2024.

Tree No.	*Genus & species* Common Name	Location	Retention Value	Retain / Remove
18	***Ficus benjamina*** Weeping Fig	Subject site	Medium	Remove
19	***Cupressus sempervirens*** Mediterranean Cypress	Subject site	Low	Remove
20	***Cupressus sempervirens*** Mediterranean Cypress	Subject site	Low	Remove
21	***Cupressus sempervirens*** Mediterranean Cypress	Subject site	Low	Remove
22	***Cupressus sempervirens*** Mediterranean Cypress	Council street verge	Low	Remove
23	***Syagrus romanzoffiana*** Cocos Palm	Subject site	Low	Remove[1]
24	***Melaleuca quinquenervia*** Broad-leaved Paperbark	Subject site	Medium	Remove
25	***Syagrus romanzoffiana*** Cocos Palm	Subject site	Low	Remove[1]
26	***Eucalyptus microcorys*** Tallowwood	Council reserve	High	Retain & Protect
27	***Eucalyptus microcorys*** Tallowwood	Council reserve	High	Retain & Protect
28	***Eucalyptus microcorys*** Tallowwood	Council reserve	High	Retain & Protect
29	***Schefflera actinophylla*** Umbrella Tree	Subject site	Low	Remove[1]
30	***Murraya paniculata*** Orange Jessamine	Neighbouring allotment – No. 15 Coleridge Street	Low	Retain & Protect
31	***Camellia japonica*** Camellia	Neighbouring allotment – No. 15 Coleridge Street	Low	Retain & Protect
32	***Murraya paniculata*** Orange Jessamine	Neighbouring allotment – No. 15 Coleridge Street	Low	Retain & Protect
33	***Pittosporum undulatum*** Sweet Pittosporum	Subject site	Low	Remove
34	***Ligustrum sinense*** Small-leaved Privet	Subject site	Low	Remove[1]

Based on the plans supplied, and should the proposed works proceed in their current form, it is recommended that seventeen (17) trees be removed (**Trees 3, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 29, 33** & **34**) and seventeen (17) trees be retained an protected (**Trees 1, 2, 4, 5, 6, 7, 8, 9, 10, 11, 12, 26, 27, 28, 30, 31** & **32**).

Specific recommendations as per ***Section 7*** will need to be adopted to ensure tree 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 WMK Architecture on the 29th of August 2024 to evaluate the potential impacts that proposed development works will have on existing trees located on and adjacent to the subject site at 1-13 Coleridge Street, Riverwood (refer to ***Figure 1***).

This report represents Revision B of the original AIA prepared by CPS dated 21 November 2024 which has been updated to address comments within a Request for Information (RFI) letter issued by Georges River Council as well as to achieve consistency with the new Australian Standard (AS4970-2025 *Protection of trees on development sites*). The report has also been updated to provide an updated assessment of revised Architectural, Landscape and Stormwater Plans prepared as part of the proposal.

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 aim to 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;
- Provide guidance and recommendations for any replacement planting necessary.

No aerial inspection or internal diagnostic testing has 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*
- *Georges River Local Environmental Plan 2021 (GRLEP 2021)*
- *Georges River Development Control Plan 2021 (GRDCP 2021)*
- *Georges River Tree Management Policy 2024 (GRTMP 2024)*
- *Greater Sydney Regional Strategic Weed Management Plan 2023-2027 (GSRSWMP)*

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
Architectural Plans	WMK Architecture	B / 27 June 2025
Stormwater Plans	BG&E	G / 26 June 2025
Landscape Plans	Umbaco Landscape Architects	J / June 2025
Detail Survey	Total Survey Solutions	1 / 29 September 2021

Note: care has been taken to obtain all 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 this become available impacts may be subject to change.

2.5 The Site

The site is known as 1-13 Coleridge Street, Riverwood and is legally described as Lots 7, 8, 9, 10, 11 & 12 in DP 35640 (the site). Bounded by Coleridge Street to the north, a rail easement and Council reserve to the east and south and a two-storey townhouse development to the west; the combined allotment currently presents as a contiguous greenfield site following the recent demolition of six (6) single-storey brick dwellings including associated outbuildings and hard paved curtilage areas (refer to ***Figure 1*** below).

The site is 2,911m² in size (survey) and features a generally even and consistent grade, falling approximately 4.15m as measured from the south-eastern to north-western corners (RL 27.24 – RL 23.09)

2.6 Proposed Development

The proposed development is for the construction of 4-storey residential flat building including basement car park which is to contain forty-two (42) dwellings (refer to ***Figure 2*** below). The works are also to include new driveway, stormwater infrastructure and landscaping. Specifically, those works considered likely to impact the existing trees adjoining the subject site include the new building footprints, hard paving and associated infrastructure works.

Figure 1 *- Aerial image indicating the area subject site outlined in red*

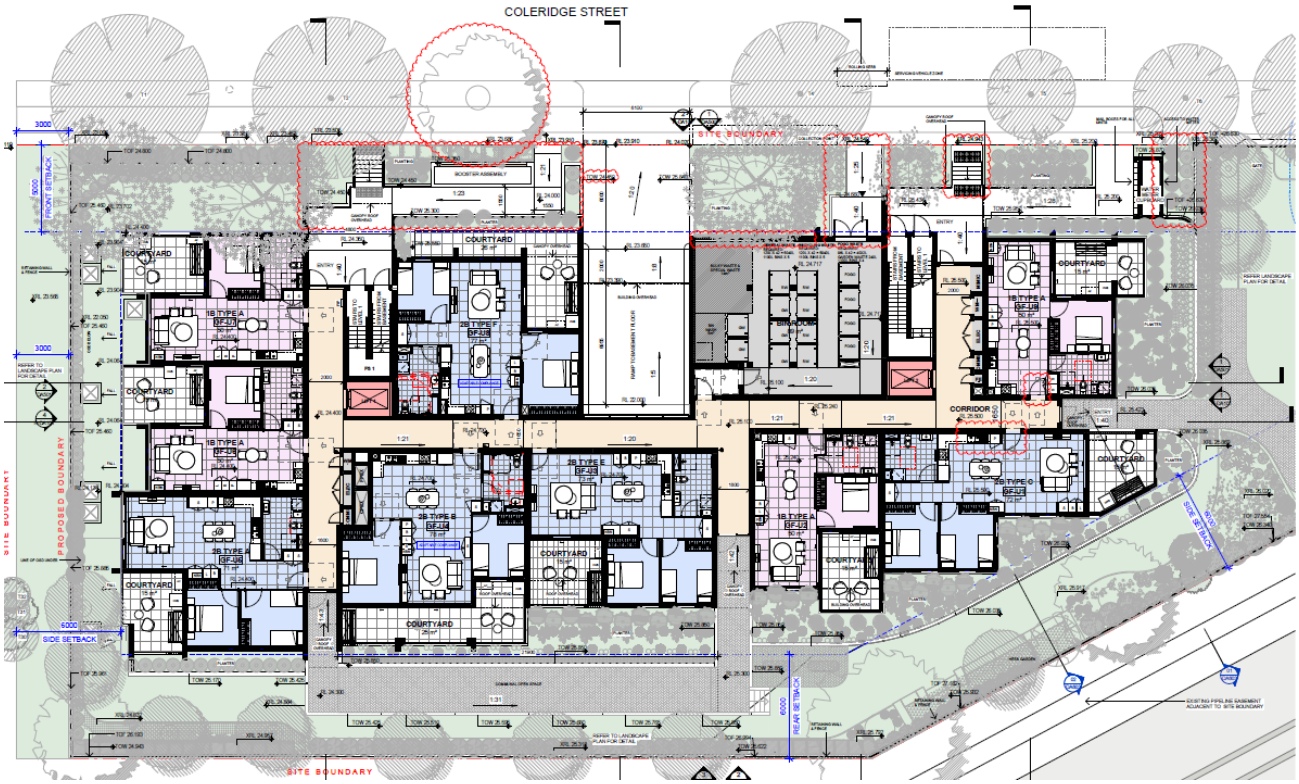

Figure 2 – *Landscape Plan extract showing the proposed layout of the development.*
Source: WMK Architecture – June 2025

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 28th of August 2024. The weather at the time of the inspection was dry and sunny with clear visibility.

The subject trees were inspected visually from ground level with the following information recorded and provided in tabulated form at ***Appendix 1***:

- Tree Species (Botanical & Common Name);
- Approximate tree height;
- Height of branches assessed for pruning (measured using a Senshin Digital Reading Measure Pole);
- 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;
- Safe Useful Life Expectancy (SULE).

3.1.2 Visual Tree Assessment (VTA)

The modified Level 1 limited Visual Tree Assessment (VTA) was undertaken for all trees during the site inspection. The VTA consists of a detailed inspection of the subject tree from ground level to the upper canopy. This method of tree evaluation is adapted from Mattheck & Breloer, 1994 and is recognised by The International Society of Arboriculture (ISA), Arboriculture Australia and The Institute Australian of Consulting Arborists (IACA). No aerial inspections or major root excavations were undertaken.

3.1.3 Safe Useful Life Expectancy (SULE)

The remaining Safe 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 SULE of each tree is shown in ***Appendix 1***.

The following ranges have been allocated to each tree:

- Long SULE: Trees that appear to be retainable with an acceptable level of risk for > 40 years.
- Medium SULE: Trees that appear to be retainable with an acceptable level of risk for 15 to 40 years.
- Short SULE: 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)© 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 4 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 4*** 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 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.

3.1.7 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:

SRZ (Radius) = (D x 50)0.42 x 0.64

3.1.8 Tree Protection Zone

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 no understorey present and no remnant vegetation. Demolition works recently undertaken have removed all formerly existing structures whilst associated ground plane disturbances appear to have imposed mechanical damage upon surface roots of those trees assessed.

Species observed varied including exotic and Australian native 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.

No heritage listed trees were identified on site and no endangered or critically endangered ecological communities were observed.

4.2 Tree Preservation Order

Part 3.2.1 – *Trees & Vegetation* of the Georges River Development Control Plan 2021 applies to all land within the Georges River Council Local Government Area. This section of the DCP endorses the Georges River Tree Management Policy 2019 which includes provisions that generally protect any tree which has a:

- Height of three (3) metres or more, or;
- Circumference of 300mm (or greater) when measured 450mm above the ground, or;
- Branch spread of three (3) metres or more.

4.3 The Trees

A total of thirty-four (34) trees were observed within and adjoining the subject site which have been surveyed as part of this assessment. All tree data recorded on site has been tabulated and is contained ***Appendix 1***. Each tree has been provided with an identification number for reference purposes and is denoted on the attached Tree Plans at ***Appendix 2-4***.

Trees 1-10 (*Lophostemon confertus*) are Council street trees located within the adjoining verge which runs along Coleridge Street. These trees are mature and significant within the streetscape despite being subjected to multiple past pruning events to provide clearance for powerlines which run overhead. Despite this, the majority of these trees remain in good health and are expected to remain viable in the long term.

Trees 11 & **12** (*Morus sp. & Ligustrum sinense)* are semi-mature to mature trees located within the adjoining rail reserve to the south-east of the subject site. Each of these trees are weed species of low landscape significance however must be protected given their location outside the site boundaries.

Tree 13 (*Photinia robusta*) is a site tree located within a former garden area which existed along the fence line between Lots 11 & 12. This tree was observed to be in severe decline as evidenced by substantial basal decay and high levels of epicormic growth. As such, it is not expected that this tree will remain viable beyond the short term.

Trees 14 & **33** (*Pittosporum undulatum*) are semi-mature to mature site trees located to the perimeter of the subject site. Whilst in fair to good health and condition, these trees are likely self-seeded and are not significant within the surrounding landscape.

Tree 18 (*Ficus benjamina*) is a mature site tree located adjacent to the south-eastern boundary of the subject site. Significant ground level disturbance imposed by heavy machinery as part of demolition works has resulted in substantial mechanical damage to a number of large surface roots which extend to the north. Notwithstanding, this species is generally highly resilient root severance/damage, remains in good health and is expected to remain viable in the medium term.

Trees 19, 20 & **21** (*Cupressus sempervirens*) are mature site trees closely adjacent to the front boundary of the subject site. These trees are in good health and condition and exhibit a form typical for the species. Whilst this is noted, these trees are generally of low landscape significance.

Tree 22 (*Cupressus sempervirens*) is a mature tree which straddles the front boundary of the subject site. As shown on the site survey, greater than 50% of the trunk of this tree is positioned within the adjacent street verge and therefore it falls under Council ownership. Similar to **Trees 19, 20** & **21** outlined above, this tree is of low landscape significance despite being in good health and condition.

Tree 24 (*Melaleuca quinquenervia*) is a semi-mature tree located within the front setback of the subject site. Despite competing for crown space with the adjacent **Tree 23**, this tree was in fair-average health and condition and is expected to remain viable in the medium term.

Trees 26, 27 & **28** (*Eucalyptus microcorys*) are mature and significant trees located within the Council reserve to the south of the subject site. These trees were generally in good health and condition, were observed to be providing a high level of amenity to the surrounding landscape setting and are expected to remain viable in the long term.

Trees 30, 31 & **32** (*Murraya paniculata & Camellia japonica*) are mature trees/shrubs located within the neighbouring allotment at No. 15 Coleridge Street. Whilst not significant in the surrounding landscape setting, these trees must be protected given their location outside the site boundaries.

Trees 15, 16, 17, 23, 25, 29 & **34** (*Ligustrum lucidum, Ligustrum sinense, Schefflera actinophylla & Syagrus romanzoffiana*) are semi-mature to mature site trees located within former open garden areas associated with the now-demolished site dwellings. These trees are weed species of low landscape significance.

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 demolition and construction works and evaluate the likely impact of the proposed works on the subject trees. A summary of the impacts anticipated are 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 (incl. stormwater and services) and temporary structures (scaffolding, hoardings etc.);
- Incursions to the NRZ & SRZ, including estimated cut & fill beyond the building footprint;
- Incursions to the tree canopy from the building envelope and temporary structures;
- Pruning necessary for building 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 seventeen (17) trees be removed (**Trees 3, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 29, 33** & **34**). Removals have been recommended based upon:

- Trees subject to 'Major' and unsustainable encroachment from the proposed works: **Trees 3, 25** & **29** (3 trees)
- Trees which are proposed for removal to provide an improved long-term landscape outcome: **Trees 13, 14, 15, 16, 17, 18, 19, 20, 21, 33** & **34** (11 trees)
- Trees being located within the footprint of proposed driveway, pathway or booster assembly: **Trees 22, 23** & **24** (3 trees)

It is noted that seven (7) of those trees (**Trees 15, 16, 17, 23, 25, 29 & 34**) recommended for removal are listed as "exempt species" under provisions of Georges River Council Tree Management Policy 2024.

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

***Table 3** – Trees recommended for removal*

Tree No.	Genus & Species	Retention Value	Reason for Removal
3	***Lophostemon confertus*** Brush Box	High	Major encroachment (37% NRZ + 26% SRZ) from proposed building footprint, external areas and stormwater infrastructure. Significant loss of structural and fine roots – likely to result in decline to health, longevity and viability of tree.
13	***Photinia robusta*** Photinia	Low	Moderate encroachment (14% NRZ) incursion from proposed retaining walls and external hard paving. Removal proposed to facilitate new landscape scheme.
14	***Pittosporum undulatum*** Sweet Pittosporum	Low	Removal proposed to facilitate new landscape scheme.
15	***Ligustrum lucidum*** Broad-leaved Privet	Low	Removal proposed to facilitate new landscape scheme. ***Exempt from protection under Georges River Tree Management Policy 2024 due to species classification.***
16	***Ligustrum lucidum*** Broad-leaved Privet	Low	Minor encroachment (1% NRZ) incursion from retaining walls and hard paving. Removal proposed to facilitate new landscape scheme. ***Exempt from protection under Georges River Tree Management Policy 2024 due to species classification.***
17	***Ligustrum lucidum*** Broad-leaved Privet	Low	Removal proposed to facilitate new landscape scheme. ***Exempt from protection under Georges River Tree Management Policy 2024 due to species classification.***
18	***Ficus benjamina*** Weeping Fig	Medium	Minor encroachment (6% NRZ) incursion from retaining wall. Removal proposed to facilitate new landscape scheme.
19	***Cupressus sempervirens*** Mediterranean Cypress	Low	Removal proposed to facilitate new landscape scheme.
20	***Cupressus sempervirens*** Mediterranean Cypress	Low	
21	***Cupressus sempervirens*** Mediterranean Cypress	Low	
22	***Cupressus sempervirens*** Mediterranean Cypress	Low	Within footprint of proposed pathway. Removal proposed to facilitate construction.
23	***Syagrus romanzoffiana*** Cocos Palm	Low	Within footprint of proposed driveway. Removal proposed to facilitate construction. ***Exempt from protection under Georges River Tree Management Policy 2024 due to species classification.***
24	***Melaleuca quinquenervia*** Broad-leaved Paperbark	Medium	Within footprint of proposed driveway. Removal proposed to facilitate construction.

Tree No.	Genus & Species	Retention Value	Reason for Removal
25	***Syagrus romanzoffiana*** Cocos Palm	Low	Major encroachment (60% NRZ + 26% SRZ) from proposed retaining walls and hard paving. Significant root loss – likely to result in decline to health, longevity and viability of tree. ***Exempt from protection under Georges River Tree Management Policy 2024 due to species classification.***
29	***Schefflera actinophylla*** Umbrella Tree	Low	Major encroachment (14% NRZ + 4% SRZ) from proposed retaining wall. Significant root loss – likely to result in decline to health, longevity and viability of tree. ***Exempt from protection under Georges River Tree Management Policy 2024 due to species classification.***
33	***Pittosporum undulatum*** Sweet Pittosporum	Low	Removal proposed to facilitate new landscape scheme.
34	***Ligustrum sinense*** Small-leaved Privet	Low	Minor encroachment (2% NRZ) incursion from retaining wall. Removal proposed to facilitate new landscape scheme. ***Exempt from protection under Georges River Tree Management Policy 2024 due to species classification.***

5.2.1 Trees Recommended for Removal - Retention Values

The proposed development works will necessitate the removal of one (1) tree of '***High***' retention value, two (2) trees of '***Medium***' retention value, and fourteen (14) trees of '***Low***' retention value.

With regard to the removal of the '***High***' retention value tree (**Tree 3**), this is expected to have a moderate impact on the established character of the streetscape. Notwithstanding, it is noted that this tree has been heavily pruned for overhead powerlines and has lost much of its natural form as a result. For this reason, it is considered that the above impact to the streetscape is capable of being ameliorated in the short-medium term provided appropriate replacement planting is catered for as part of the proposed development.

5.3 Trees Recommended for Retention & Protection

Should the proposed works proceed in their current form, it is recommended that seventeen (17) trees be retained and protected (**Trees 1, 2, 4, 5, 6, 7, 8, 9, 10, 11, 12, 26, 27, 28, 30, 31** & **32**). Generally, the proposed works are unlikely to result in any significant negative impacts to the long-term health and viability of these trees pending implementation of required tree protection measures. ***Table 3*** below provides a summary of impacts to be sustained as part of the proposed works and rationale for why impacts are considered tolerable and the trees capable of retention.

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

Table 3 *– Trees recommended for retention & protection*

Tree No.	Genus & Species	Retention Value	Works within the Notional Root Zone (NRZ)
1	***Lophostemon confertus*** Brush Box	High	Minor encroachment (8% NRZ) from proposed stormwater infrastructure. Impacts considered tolerable due to anticipated minimal root loss and subject to implementation of general tree protection measures and Project Arborist supervision as detailed within ***Section 7*** below.
2	***Lophostemon confertus*** Brush Box	High	Moderate encroachment (17% NRZ) from proposed building footprint, external areas and stormwater infrastructure. Impacts considered tolerable due to species known tolerance for moderate root disturbance and root loss. Retention subject to implementation of general tree protection measures and Project Arborist supervision as detailed within ***Section 7*** below.
4	***Lophostemon confertus*** Brush Box	High	Moderate encroachment (19% NRZ) from proposed building footprint, external areas and stormwater infrastructure. Impacts considered tolerable due to species known tolerance for moderate root disturbance and root loss. Retention subject to implementation of general tree protection measures and Project Arborist supervision as detailed within ***Section 7*** below.
5	***Lophostemon confertus*** Brush Box	Medium	Moderate encroachment (14% NRZ) from proposed external areas and stormwater infrastructure. Impacts considered tolerable due to species known tolerance for moderate root disturbance and root loss. Retention subject to implementation of general tree protection measures and Project Arborist supervision as detailed within ***Section 7*** below.

Tree No.	Genus & Species	Retention Value	Works within the Notional Root Zone (NRZ)
6	***Lophostemon confertus*** Brush Box	High	Moderate encroachment (13% NRZ) from proposed building footprint, external areas and stormwater infrastructure. Impacts considered tolerable due to species known tolerance for moderate root disturbance and root loss. Retention subject to implementation of general tree protection measures and Project Arborist supervision as detailed within ***Section 7*** below.
7	***Lophostemon confertus*** Brush Box	High	Minor encroachment (6% NRZ) from proposed substation. Impacts considered tolerable due to anticipated minimal root loss and subject to implementation of general tree protection measures and Project Arborist supervision as detailed within ***Section 7*** below.
8	***Lophostemon confertus*** Brush Box	High	Minor encroachment (6% NRZ) from proposed substation.. Impacts considered tolerable due to anticipated minimal root loss and subject to implementation of general tree protection measures and Project Arborist supervision as detailed within ***Section 7*** below.
9	***Lophostemon confertus*** Brush Box	High	No works proposed within the NRZ Unlikely to be impacted subject to implementation of general tree protection measures and Project Arborist supervision as detailed within ***Section 7*** below.
10	***Lophostemon confertus*** Brush Box	High	No works proposed within the NRZ Unlikely to be impacted subject to implementation of general tree protection measures and Project Arborist supervision as detailed within ***Section 7*** below.
11	***Morus sp.*** Mulberry	Low	Major encroachment (30% NRZ + 24% SRZ) from proposed boundary retaining wall. Impacts considered acceptable due to species known tolerance for high level of root disturbance and loss. Retention subject to implementation of general tree protection measures and Project Arborist supervision as detailed within ***Section 7*** below.
12	***Ligustrum sinense*** Small-leaved Privet	Low	Major encroachment (18% NRZ + 14% SRZ) from proposed boundary retaining wall. Impacts considered acceptable due to weed species known tolerance for high level of root disturbance and loss. Retention subject to implementation of general tree protection measures and Project Arborist supervision as detailed within ***Section 7*** below.

Tree No.	Genus & Species	Retention Value	Works within the Notional Root Zone (NRZ)
26	***Eucalyptus microcorys*** Tallowwood	High	No works proposed within the NRZ Unlikely to be impacted subject to implementation of general tree protection measures and Project Arborist supervision as detailed within ***Section 7*** below.
27	***Eucalyptus microcorys*** Tallowwood	High	
28	***Eucalyptus microcorys*** Tallowwood	High	
30	***Murraya paniculata*** Orange Jessamine	Low	
31	***Camellia japonica*** Camellia	Low	
32	***Murraya paniculata*** Orange Jessamine	Low	

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 6***.

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:

Removal of seventeen (17) trees, including:

- Three (3) trees subject to 'Major' and unsustainable encroachment, as per AS4970:2025 *Protection of trees on development sites*: **Trees 3, 25** & **29**
- Eleven (11) trees proposed for removal to provide an improved long-term landscape outcome: **Trees 13, 14, 15, 16, 17, 18, 19, 20, 21, 33** & **34**
- Three (3) trees located within the footprint of proposed driveway or pathways: **Trees 22, 23** & **24**

Retention and protection of seventeen (17) trees, including:

- Nine (9) Council Street trees (**Trees 1, 2, 4, 5, 6, 7, 8, 9** & **10**), and eight (8) neighbouring trees (**Trees 11, 12, 26, 27, 28, 30, 31** & **32**) which are subjected to nil or sustainable encroachment to their respective NRZs. Impacts being considered tolerable and unlikely to impact long term health and viability pending implementation of detailed tree protection measures and Project Arborist supervision.;

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

7 RECOMMENDATIONS

7.1 Tree Removal

Remove **Trees 3, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 29, 33** & **34** (17 trees) to facilitate the proposed development works.

Development consent and relevant approvals must be obtained from Georges River Council prior to the removal or pruning of any tree protected under Part 3.2.1 – *Trees & Vegetation* of the Georges River Development Control Plan 2021.

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 1, 2, 4, 5, 6, 7, 8, 9, 10, 11, 12, 26, 27, 28, 30, 31** & **32**) (17 trees) in accordance with the Tree Location Plan & Tree Protection Specification held at ***Appendices 2*** *&* **6**, and *AS4970-2025 Protection of Trees on Development Sites*.

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.

7.3 Replacement Planting

Replacement planting should be considered to compensate and replenish any loss of amenity or impact to landscape character resulting from the proposed tree removal. Replacement planting should be at the direction of Council and is capable of forming part of any conditional approval.

8 REFERENCES

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APPENDIX 1: TREE ASSESSMENT SCHEDULE

Tree No.	*Genus & species* Common Name	Height (m)	Crown Spread (m)	DSH #1 (mm)	DSH #2 (mm)	DSH #3 (mm)	DSH #4 (mm)	DGL (mm)	NRZ Radius (m)	SRZ Radius (m)	Age Class	Health / Vitality	Structure/ Condition	SULE Rating	Landscape Significance	Retention Value	Development Impact	Retain / Remove	Comments
1	***Lophostemon confertus*** Brush Box	8	9	550				650	6.60	2.76	M	Average	Fair	Long 40yrs +	Medium	High	Minor encroachment (8% NRZ) from proposed stormwater	Retain	Council street tree. Lopped for powerlines. Substantial epicormic regrowth
2	***Lophostemon confertus*** Brush Box	8	9	750				700	9.00	2.85	M	Average	Fair	Long 40yrs +	Medium	High	Moderate encroachment (17% NRZ) from proposed building footprint, external areas and stormwater	Retain	Council street tree. Lopped for powerlines. Substantial epicormic regrowth. Mechanical damage to surface roots extending to south
3	***Lophostemon confertus*** Brush Box	8	8	700				600	8.40	2.67	M	Average	Fair	Long 40yrs +	Medium	High	Major encroachment (37% NRZ + 26% SRZ) from proposed building footprint, external areas and stormwater	Remove	Council street tree. Lopped for powerlines. Substantial epicormic regrowth
4	***Lophostemon confertus*** Brush Box	8	8	800				700	9.60	2.85	M	Average	Fair	Long 40yrs +	Medium	High	Moderate encroachment (19% NRZ) from proposed building footprint, external areas and stormwater	Retain	Council street tree. Included, co-dominant stems from 1.5m. Lopped for powerlines. Substantial epicormic regrowth. Large mechanical wound to eastern side of lower trunk - occluding
5	***Lophostemon confertus*** Brush Box	8	5	600				500	7.20	2.47	M	Fair	Fair	Medium 15-40yrs	Medium	Medium	Moderate encroachment (14% NRZ) from proposed external areas and stormwater	Retain	Council street tree. Lopped for powerlines. Substantial epicormic regrowth. Poor form affected by pruning. Crown bias to east
6	***Lophostemon confertus*** Brush Box	8	6	850				700	10.20	2.85	M	Average	Fair	Long 40yrs +	Medium	High	Moderate encroachment (13% NRZ) from proposed building footprint, external areas and stormwater	Retain	Council street tree. Lopped for powerlines. Substantial epicormic regrowth. Branch bark inclusion @ 1.5m on north-western side
7	***Lophostemon confertus*** Brush Box	8	8	650				600	7.80	2.67	M	Average	Fair	Long 40yrs +	Medium	High	Minor encroachment (6% NRZ) from proposed substation	Retain	Council street tree. Lopped for powerlines. Substantial epicormic regrowth. Mechanical damage to surface roots extending to south
8	***Lophostemon confertus*** Brush Box	8	7	700				650	8.40	2.76	M	Fair	Fair	Long 40yrs +	Medium	High	Minor encroachment (7% NRZ) from proposed substation	Retain	Council street tree. Lopped for powerlines. Substantial epicormic regrowth. Sparse
9	***Lophostemon confertus*** Brush Box	8	9	400	250	250		550	6.41	2.57	M	Average	Fair	Long 40yrs +	Medium	High	No works propsoed within NRZ	Retain	Council street tree. Bifurcated from 1.2m. Lopped for powerlines. Substantial epicormic regrowth
10	***Lophostemon confertus*** Brush Box	13	10	1050				850	12.60	3.09	M	Average	Fair	Long 40yrs +	High	High	No works propsoed within NRZ	Retain	Council street tree. Bifurcated from 1.8m. Lopped for powerlines. Substantial epicormic regrowth
11	***Morus sp.*** Mulberry	3	4	50	50	50	50	200	2.00	1.68	SM	Poor	Fair	Short 5-15yrs	Low	Low	Major encroachment (30% NRZ + 24% SRZ) from proposed retaining wall	Retain	Located within rail easement. Multi-stemmed from ground level. Moderate dieback
12	***Ligustrum sinense*** Small-leaved Privet	4	4	50	50	50	50	250	2.00	1.85	M	Good	Average	Medium 15-40yrs	Low	Low	Major encroachment (18% NRZ + 14% SRZ) from proposed retaining wall	Retain	Located within rail easement. Multi-stemmed from ground level.
13	***Photinia robusta*** Photinia	6	6	200	150	150		450	3.50	2.37	S	Poor	Poor	Very Short <5yrs	Low	Low	Moderate encroachment (14% NRZ) from proposed retaining walls and external hard paving. Remove to facilitate future landscaping	Remove	Significant basal decay. High level of epicormic growth. In decline
14	***Pittosporum undulatum*** Sweet Pittosporum	5	3	100	50			200	2.00	1.68	SM	Fair	Fair	Medium 15-40yrs	Low	Low	Remove to facilitate future landscaping	Remove	Bifurcated from base. Assume self-seeded
15	***Ligustrum lucidum*** Broad-leaved Privet	6	2	50	50			100	2.00	1.50	SM	Good	Fair	Medium 15-40yrs	Low	Low	Remove to facilitate future landscaping	Remove	Slender form. Assume self-seeded
16	***Ligustrum lucidum*** Broad-leaved Privet	7	7	250	200	200		400	4.53	2.25	M	Good	Average	Medium 15-40yrs	Low	Low	Minor encroachment (1% NRZ) from proposed retaining walls and external hard paving. Remove to facilitate future landscaping	Remove	Multiple past pruning events
17	***Ligustrum lucidum*** Broad-leaved Privet	4	3	50	50	50	50	150	2.00	1.50	SM	Good	Average	Medium 15-40yrs	Low	Low	Remove to facilitate future landscaping	Remove	Slender form. Assume self-seeded
18	***Ficus benjamina*** Weeping Fig	8	8	300	200	200	150	450	5.26	2.37	M	Good	Fair	Medium 15-40yrs	Medium	Medium	Minor encroachment (5% NRZ) from proposed retaining wall. Remove to facilitate future landscaping	Remove	Multiple included, co-dominant stems from 0.5m. Significant mechanical damage to surface roots extending to south
19	***Cupressus sempervirens*** Mediterranean Cypress	8	2	200	100			250	2.68	1.85	M	Average	Average	Medium 15-40yrs	Low	Low	Remove to facilitate future landscaping	Remove	Previously topped @ 2.5m. Suppressed by Tree 6
20	***Cupressus sempervirens*** Mediterranean Cypress	11	2	350				200	4.20	1.68	M	Average	Average	Medium 15-40yrs	Low	Low	Remove to facilitate future landscaping	Remove	Reduced crown density. Minor deadwood

Tree No.	*Genus & species* Common Name	Height (m)	Crown Spread (m)	DSH #1 (mm)	DSH #2 (mm)	DSH #3 (mm)	DSH #4 (mm)	DGL (mm)	NRZ Radius (m)	SRZ Radius (m)	Age Class	Health / Vitality	Structure/ Condition	SULE Rating	Landscape Significance	Retention Value	Development Impact	Retain / Remove	Comments
21	***Cupressus sempervirens*** Mediterranean Cypress	6	2	150	100	100	100	300	2.75	2.00	M	Average	Average	Medium 15-40yrs	Low	Low	Remove to facilitate future landscaping	Remove	Reduced crown density. Suppressed by Tree 5
22	***Cupressus sempervirens*** Mediterranean Cypress	9	3	400	100	50	50	450	5.02	2.37	M	Average	Good	Medium 15-40yrs	Low	Low	Within footprint of proposed pathway	Remove	Crown lifted
23	***Syagrus romanzoffiana*** Cocos Palm	8	4	250				250	3.00	N/A	M	Average	Average	Medium 15-40yrs	Low	Low	Within footprint of proposed driveway	Remove	Co-dominant crown
24	***Melaleuca quinquenervia*** Broad-leaved Paperbark	7	5	250				350	3.00	2.13	SM	Fair	Average	Medium 15-40yrs	Medium	Medium	Within footprint of proposed driveway	Remove	Bifurcated from 2m. Co-dominant crown
25	***Syagrus romanzoffiana*** Cocos Palm	10	5	250				250	3.50	N/A	M	Average	Good	Medium 15-40yrs	Low	Low	Major encroachment (60% NRZ) from proposed retaining walls and hard paving	Remove	Power cord attached to stem @ 1.4m. Frond dieback
26	***Eucalyptus microcorys*** Tallowwood	12	9	500				600	6.00	2.67	M	Average	Fair	Long 40yrs +	Medium	High	No works propsoed within NRZ	Retain	Located within adjacent reserve. Branch bark inclusions @ 2m and 4m. Crown bias to north. Moderately reduced foliage density
27	***Eucalyptus microcorys*** Tallowwood	15	11	850				900	10.20	3.17	M	Good	Good	Long 40yrs +	High	High	No works propsoed within NRZ	Retain	Located within adjacent reserve. Minor crown bias to north
28	***Eucalyptus microcorys*** Tallowwood	17	12	700				900	8.40	3.17	M	Good	Good	Long 40yrs +	High	High	No works propsoed within NRZ	Retain	Located within adjacent reserve. Minor crown bias to north
29	***Schefflera actinophylla*** Umbrella Tree	7	5	350	100	100		550	4.53	2.57	M	Good	Fair	Medium 15-40yrs	Low	Low	Major encroachment (14% NRZ + 4% SRZ) from proposed retaining wall	Remove	Included, co-dominant stems from base. Multiple past pruning events
30	***Murraya paniculata*** Orange Jessamine	5	3	50	50	50		100	2.00	1.50	M	Fair	Fair	Short 5-15yrs	Low	Low	No works propsoed within NRZ	Retain	Neighbouring tree (No. 15 Coleridge Street). Reduced foliage density
31	***Camellia japonica*** Camellia	4	2	50	50	50		100	2.00	1.50	M	Average	Average	Medium 15-40yrs	Low	Low	No works propsoed within NRZ	Retain	Neighbouring tree (No. 15 Coleridge Street). Crown lifted to 2m
32	***Murraya paniculata*** Orange Jessamine	4	2	50	50	50		100	2.00	1.50	M	Average	Average	Medium 15-40yrs	Low	Low	No works propsoed within NRZ	Retain	Neighbouring tree (No. 15 Coleridge Street). Crown lifted to 2m
33	***Pittosporum undulatum*** Sweet Pittosporum	5	4	100	50			150	2.00	1.50	M	Good	Average	Medium 15-40yrs	Low	Low	Remove to facilitate future landscaping	Remove	Crown lifted to 2m
34	***Ligustrum sinense*** Small-leaved Privet	5	4	100	100	100	100	300	2.40	2.00	M	Good	Average	Medium 15-40yrs	Low	Low	Minor encroachment (2% NRZ) from proposed retaining wall. Remove to facilitate future landscaping	Remove	Multi-stemmed from ground level

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 x 50)0.42 x 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 Arborist and compensated for elsewhere. Justification methodology may vary depending on site or individual tree's health, vigou 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 SULE, [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.

S.U.L.E. Categories

Safe Useful Life Expectancy (after *Barrell* 1996, modified by the author). A trees S.U.L.E. category is the life expectancy of the tree modified first by its age, health, condition, safety and location. S.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 with an acceptable degree of risk assuming reasonable maintenance.

Medium - Appear to be retainable at the time of assessment for 15 to 40 years with an acceptable degree of risk assuming reasonable maintenance.

Short - Trees appear to be retainable at the time of assessment for 5 to15 years with an acceptable degree of risk 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

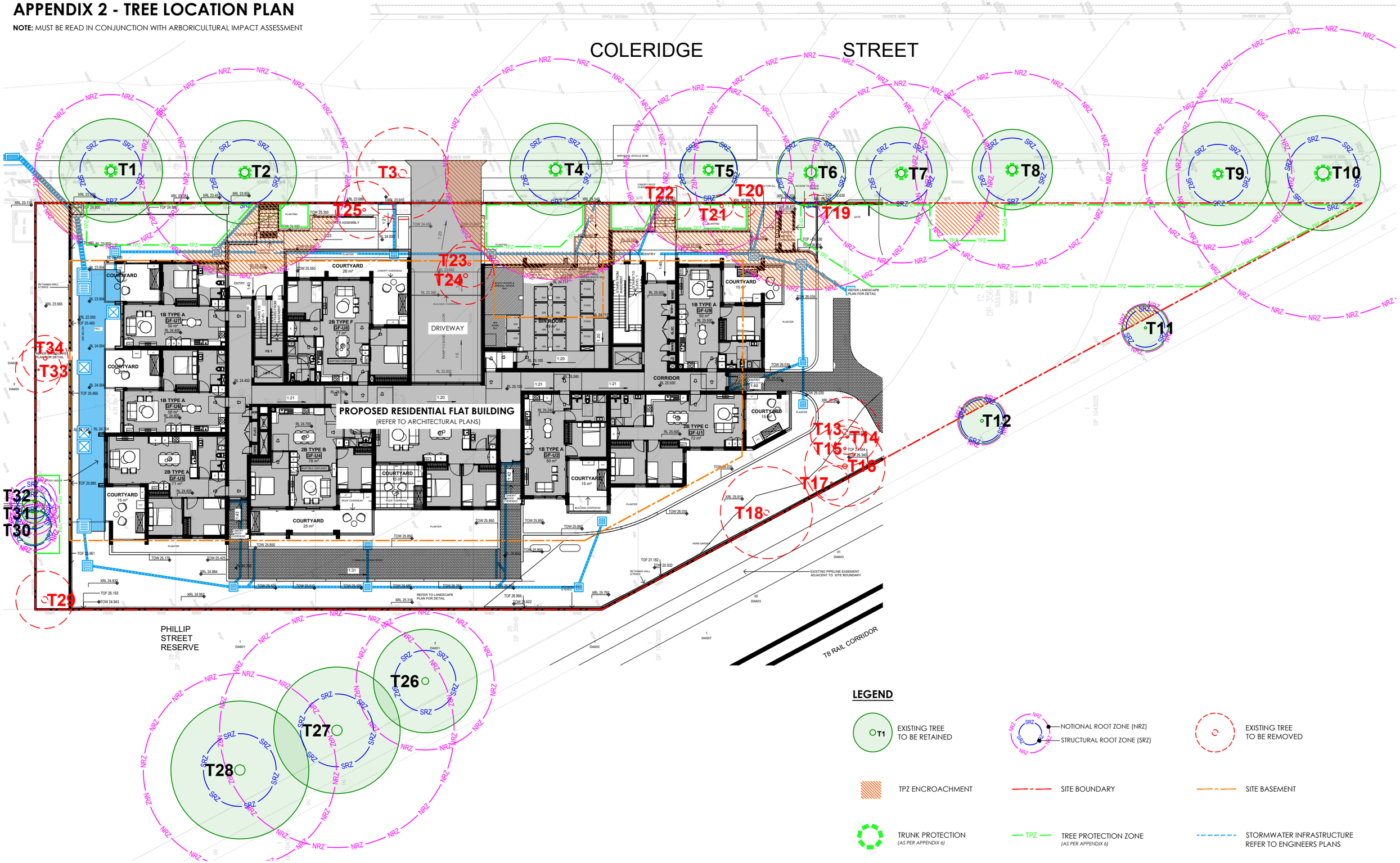
The proposed removal or retention recommendation in light of the proposed development related impacts.

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 occur,s 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



LEGEND

- EXISTING TREE TO BE RETAINED (T1)
- NOTIONAL ROOT ZONE (NRZ) / STRUCTURAL ROOT ZONE (SRZ)
- EXISTING TREE TO BE REMOVED
- TPZ ENCROACHMENT
- SITE BOUNDARY
- SITE BASEMENT
- TRUNK PROTECTION *(AS PER APPENDIX 6)*
- TPZ — TREE PROTECTION ZONE *(AS PER APPENDIX 6)*
- STORMWATER INFRASTRUCTURE REFER TO ENGINEERS PLANS

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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	TP	GT	27.06.25
A	CA	FOR APPROVAL	NZ	TP	01.11.24
P1	PRE	FOR COORDINATION	SZ	TP	04.09.24

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

PROJECT
PROPOSED RESIDENTIAL FLAT BUILDING
1-13 COLERIDGE STREET
RIVERWOOD

DRAWING TITLE
TREE LOCATION PLAN

CLIENT
WMK

Drawn : SZ
Designed : SZ
Project No. : E784
Bar Scale
1:300 @ A3

SHEET NUMBER E784_TLP_01
REVISION B

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.

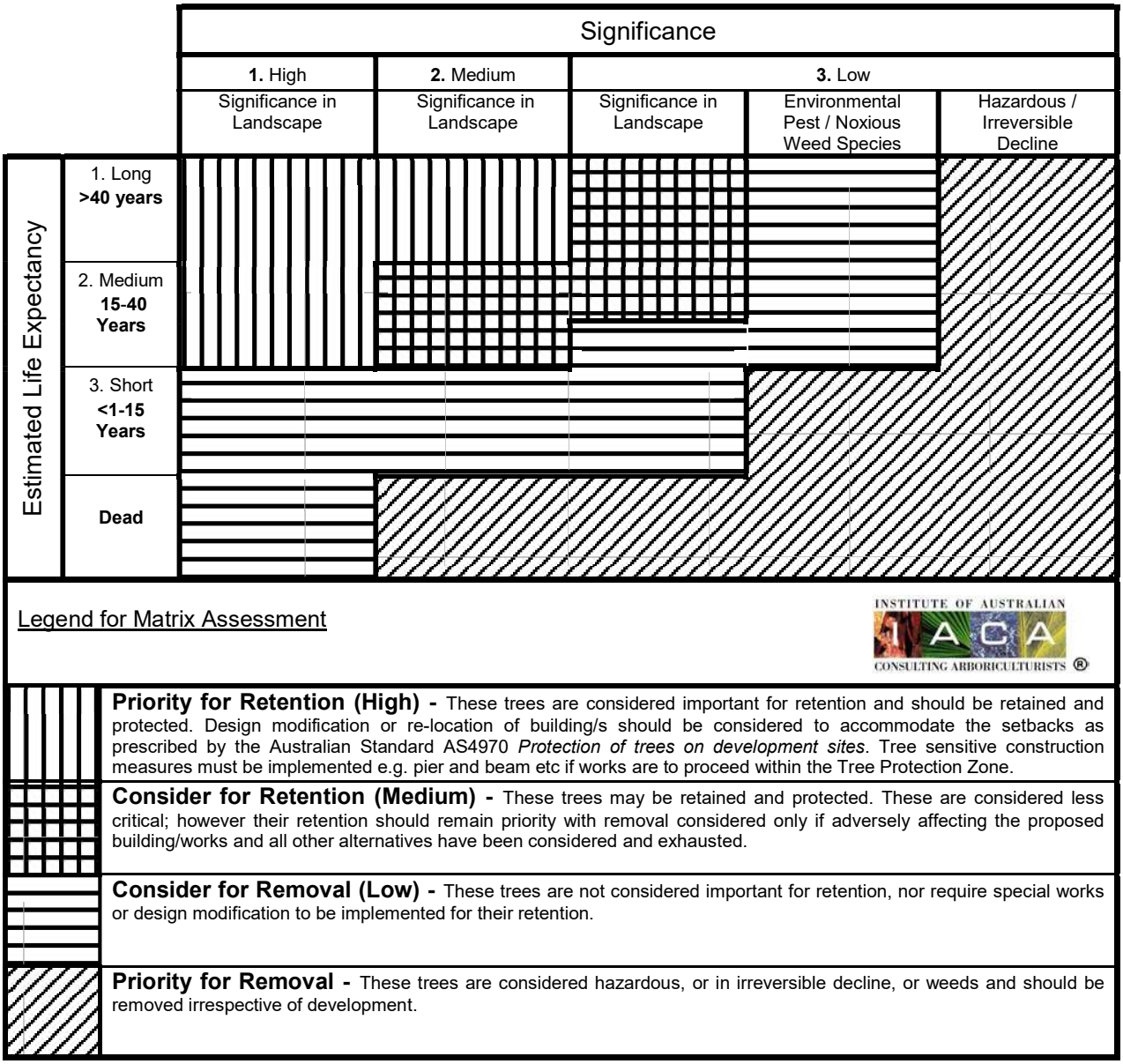
Hazardous/Irreversible Decline

- 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.



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

REFERENCES

Australia ICOMOS Inc. 1999, *The Burra Charter – The Australian ICOMOS Charter for Places of Cultural Significance*, International Council of Monuments and Sites, www.icomos.org/australia

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

Footprint Green Pty Ltd 2001, *Footprint Green Tree Significance & Retention Value Matrix*, Avalon, NSW Australia, www.footprintgreen.com.au

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 from 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.

Radius of the NRZ = DSH × 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.

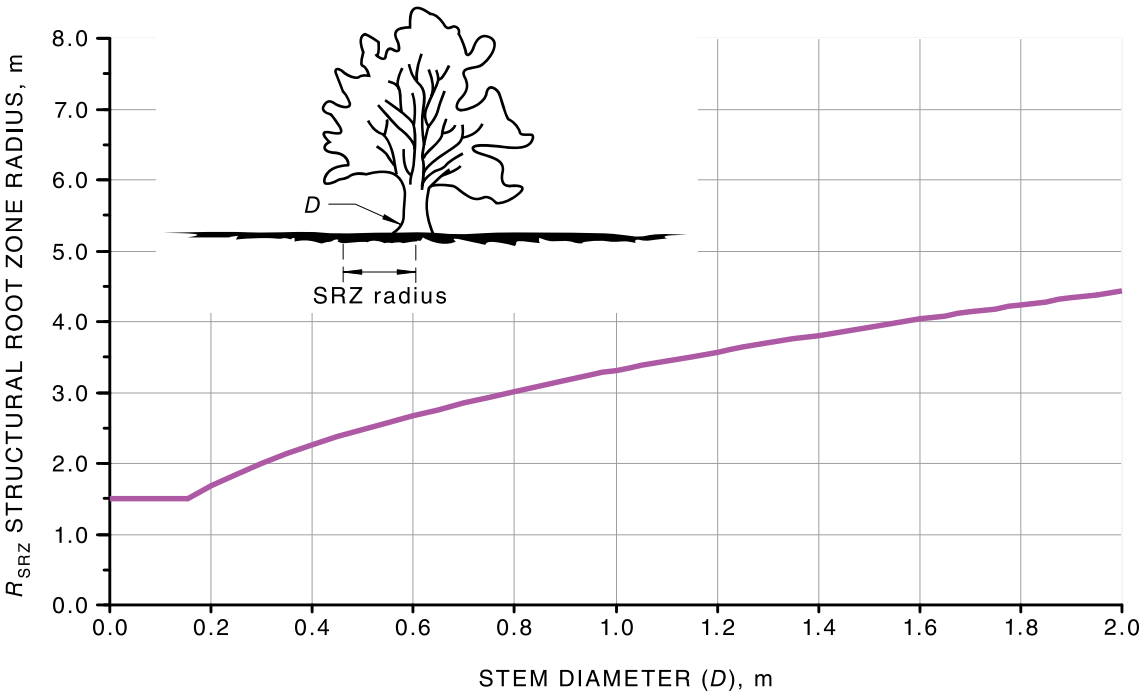
$$\text{SRZ radius} = (D \times 50)^{0.42} \times 0.64$$

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.

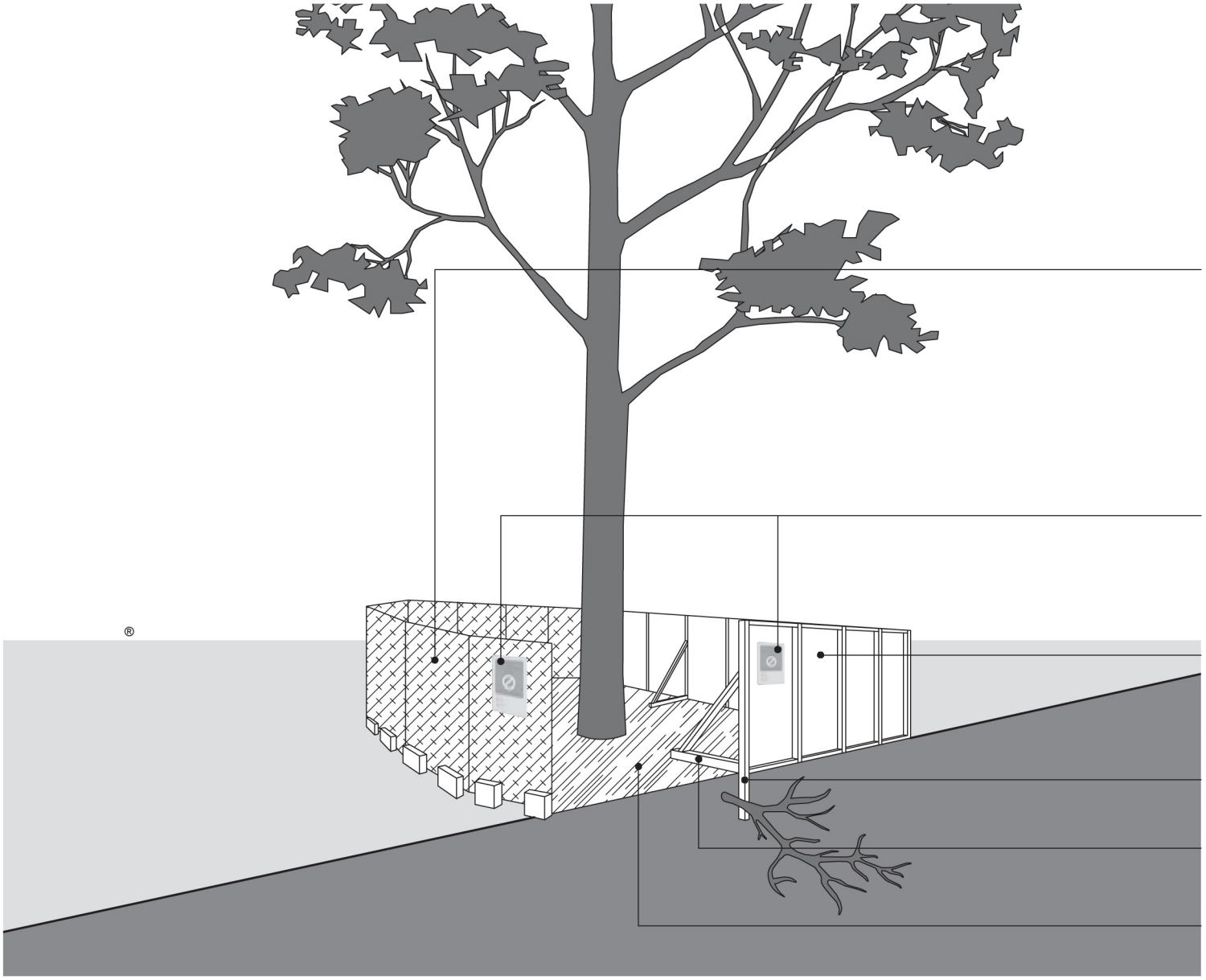
11.0 Underground Services

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



Note:
No excavation, construction activity, grade changes, surface treatment or storage of materials of any kind is permitted within the TPZ.

Option 1 - Fencing
1.8m high chain wire mesh panels with shade cloth attached (if required), held in place with concrete feet.

Tree Protection Zone (TPZ) sign

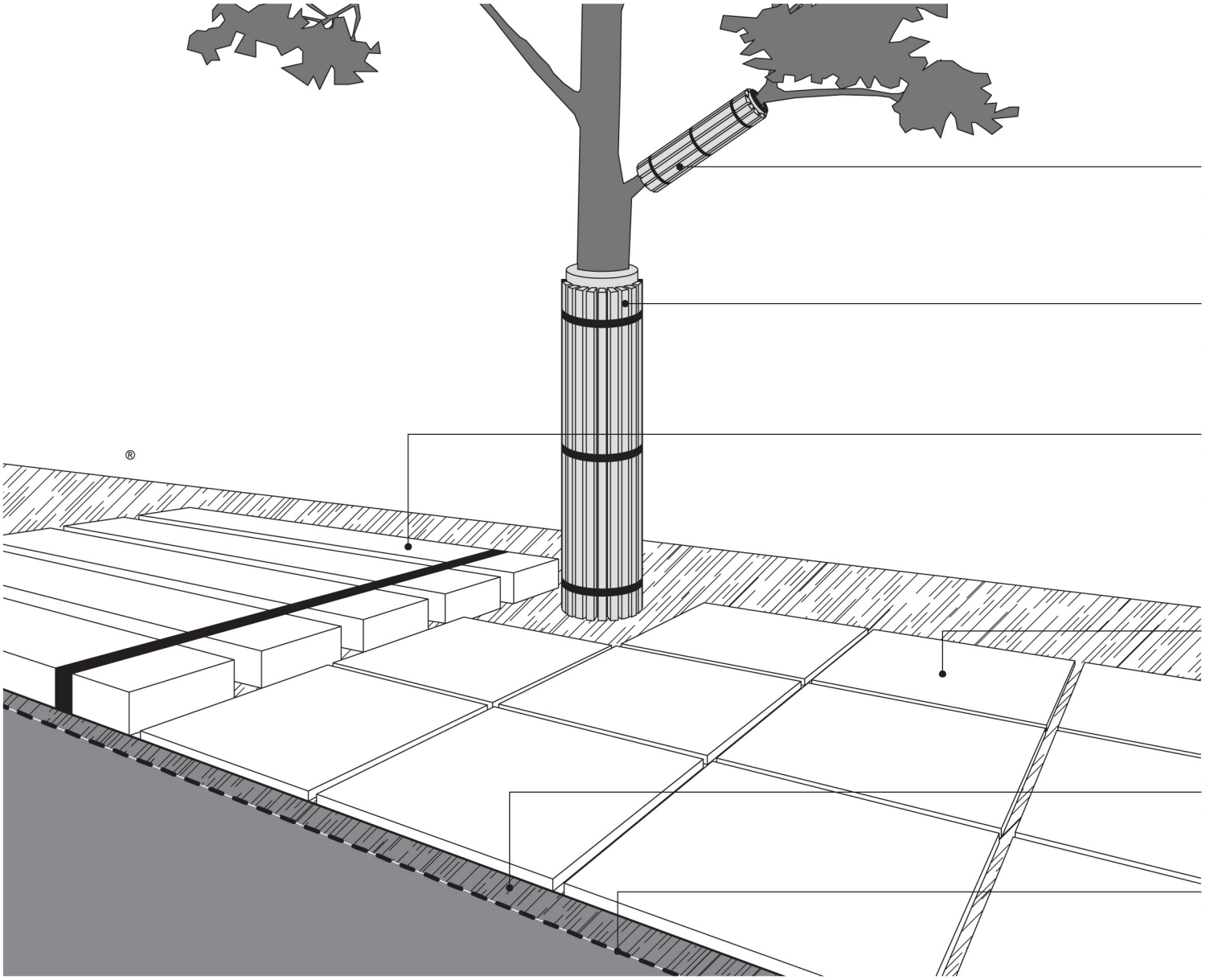
Option 2 - Fencing
Plywood or wooden panel paling fence. This type of fencing material also prevents building materials or soil entering the TPZ.

Installation of supports should avoid damaging roots.

Bracing is permissible within the TPZ.

Maximum 100mm and minimum 50mm depth mulch or aggregate layer installed across surface of TPZ.

01 Tree Protection Fencing



Branch Protection - use boards and padding to prevent damage to bark on branch. Boards are to be strapped, not screwed or nailed to the branch.

Trunk Protection - use boards and padding to prevent damage to bark (minimum 2m). Boards are to be strapped, not screwed or nailed to the trunk.

Ground Protection - use device strapped over mulch or aggregate layer. Ground protection device should be of a suitable thickness to prevent soil compaction and root damage.

Steel plates (or approved equivalent) with or without mulch or aggregate layer below.

Maximum 100mm and minimum 50mm depth mulch or aggregate layer.

Geotextile fabric underneath mulch or aggregate layer.

02

Examples of Branch, Trunk and Ground Protection

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Branches may require pruning to erect scaffolding. Pruning may be subject to local regulations. Flexible branches should be tied back in preference to pruning.

Minimum 1.8m high hoarding. Temporary fencing may be incorporated into scaffolding as either containment screening or as hoarding.

Note:
If excavation is required for installation of support post for fencing, the Project Arborist should assess any pruning of roots greater than 20mm diameter.

Scaffold planks

Boards or plywood to be installed over mulch or aggregate layer for any areas requiring access within the TPZ.

Soleplate over geotextile. No excavation for soleplate within TPZ.

Maximum 100mm and minimum 50mm depth mulch or aggregate layer within TPZ.

Geotextile fabric

03 Indicative Scaffolding within a Tree Protection Zone (TPZ)