EARTHSCAPE HORTICULTURAL SERVICES
Arboricultural, Horticultural and Landscape Consultants

ABN 36 082 126 027

ARBORICULTURAL IMPACT ASSESSMENT REPORT

PROPOSED MULTI-UNIT RESIDENTIAL DEVELOPMENT (FLAT BUILDINGS)

116-120 FRENCHS FOREST ROAD WEST and 11 GLADYS AVENUE, FRENCHS FOREST

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1 INTRODUCTION

1.1.1 This report was commissioned by Truslan Group on behalf of Mr Kevin Wang to assess the health and condition of one-hundred and thirteen (113) trees located within or immediately adjacent to 116 – 120 Frenchs Forest Road West and 11 Gladys Avenue, Frenchs Forest. The report has been prepared to aid in the assessment of a Development Application (DA) for the demolition of the existing residential dwellings and associated outbuildings and construction of a new multi-unit residential development (residential flat buildings) within the property, together with associated landscape works.

1.1.2 The purpose of this report is to assess the potential impact of the proposed development on the subject trees, together with recommendations for amendments to the design or construction methodology where necessary to minimise any adverse impact. The report also provides recommended tree protection measures (Tree Protection Plan and Specification) to ensure the long-term preservation of the trees to be retained where appropriate.

1.1.3 This report has been prepared in accordance with the Northern Beaches Council's guidelines for preparation of Arborists Reports as outlined in Part E and Part H (Appendices 9, 11 & 12) of the *Warringah Development Control Plan 2011* (WDCP) and Sections 2.3.2-2.3.5 of the Australian Standard for *Protection of Trees on Development Sites* (AS 4970:2009).

2 THE SITE

2.1.1 The subject property is comprised of four (4) conjoining residential allotments known as Lot 24 in DP 25713, Lot 2 in DP 213608, Lot 1 in DP 213608 and Lot 14 in DP 25713, being 116, 118 & 120 Frenchs Forest Road West and 11 Gladys Avenue, Frenchs Forest. For the purposes of this report, the subject allotments will be referred to as 'the site'. The total area of the site is approximately 5740.40 m². The site is zoned Medium Density Residential [R3] under the *Warringah Local Environmental Plan 2011* (WLEP).

2.1.2 Each of the allotments contains an existing dwelling located centrally within the lot, together with a number of out buildings. 118 Frenchs Forest Road also contains an in-ground swimming pool in the rear yard. The site has a moderate north-easterly gradient with dilapidated lawns and gardens. The site contains a number of mature and semi-mature trees and palms. These include a variety of locally-indigenous, non-local native and exotic (introduced) species.

2.1.3 The soils of this area are typical of the Lucas Heights Soil Landscape Group (as classified in the *Soil Landscapes of the Sydney 1:100,000 Sheet*), consisting of "moderately deep (500-1500 mm) hardsetting *Yellow Podzolic and Yellow Soloth soils and Yellow Earths"* on the outer edges of crests.[1] The landscape of the area consists of gently undulating terrain with level to gently inclined slopes of less than 10% grade.

2.1.4 The original vegetation of this area consisted of open forest typical of shale/sandstone transitional areas.[2] The dominant locally-indigenous tree species occurring in this area include *Angophora costata* (Sydney Red Gum), *Eucalyptus punctata* (Grey Gum) and *Corymbia gummifera* (Red Bloodwood). Other species found in this vegetation community may include *Eucalyptus racemosa* (Scribbly Gum), *Eucalyptus pilularis* (Blackbutt), *Syncarpia glomulifera* (Turpentine), *Eucalyptus paniculata* (Grey Ironbark), *Eucalyptus resinifera* (Red Mahogany), *Eucalyptus globoidea* (White Stringybark) and *Allocasuarina torulosa* (Forest Oak).

3 SUBJECT TREES

3.1.1 The subject trees were inspected by Earthscape Horticultural Services (EHS) on the 2nd February 2023. Each tree has been provided with an identification number for reference purposes denoted

on the attached Tree Location Plan (**Appendix 5**), based on the survey prepared by Innovative Surveying Associates, Dwg. Ref No. 700144_A dated 16/01/2023. The numbers used on this plan correlate with the Tree Assessment Schedule (**Appendix 3**). Tree No.s T1a, T2a, T15a, T21a & T90 were not shown on the original survey and have been plotted on the drawing in their approximate positions by taking offsets from existing features.

4 HEALTH AND CONDITION ASSESSMENT

4.1 Methodology

4.1.1 An assessment of each tree was made using the Visual Tree Assessment (VTA) procedure.[3] All of the trees were assessed in view from the ground. No aerial inspection or diagnostic testing has been undertaken as part of this assessment.

4.1.2 The following information was collected for each tree:-

- **Tree Species** (Botanical & Common Name);
- **Approximate height**;
- **Canopy spread** (measured using laser distance measurer in four directions and an average taken);
- **Trunk diameter** (measured with a diameter tape at 1.4 metres from ground level);
- **Live Crown Size** (measured by subtracting the total height of the tree from the lowest point of the crown and multiplying by the average crown spread to give a value in square metres);
- **Maturity Class -** the Maturity Class for each tree has been divided into the following categories:-
  - **OM** Over-mature – greater than 80% of the life expectancy for the species;
  - **M** Mature – 50-80% of the life expectancy for the species;
  - **SM** Semi-mature – 20-50% of the life expectancy for the species;
  - **I** Immature – less than 20% of the life expectancy for the species.
- **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); and
- **Suitability** of the tree to the site and its existing location (in consideration of damage or potential damage to services or structures, available space for future development and nuisance issues).

4.1.3 This information is presented in a tabulated form in **Appendix 3**.

4.2 Safe Useful Life Expectancy (SULE)

4.2.1 The remaining Safe Useful Life Expectancy[4] of the 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 the tree has been further modified where necessary in consideration of its current health and vigour, condition and suitability to the site. The estimated SULE of each tree is shown in **Appendix 3.**

4.2.2 The following ranges have been allocated to each tree:-

- Greater than 40 years (Long)
- Between 15 and 40 years (Medium)
- Between 5 and 15 years (Short)
- Less than 5 years (Transient)
- Dead or immediately hazardous (defective or unstable)

4.2.3 SULE ratings are intended to provide a general overview of the long-term sustainability of the trees within the site in consideration of these factors. The allocated ranges are not intended to be absolute. This information is useful in guiding future planning by highlighting the probable lifespan of individual trees, for which a clear pattern may emerge. This information may be helpful in forecasting likely tree senescence and planning for replacement planting to ensure continuity in tree canopy across the site. It should be noted that SULEs *may* be extended or reduced depending on the way trees are managed. Intervention and remedial works may extend the SULE of some trees.

5 LANDSCAPE SIGNIFICANCE

5.1 Methodology for Determining Landscape Significance

5.1.1 The significance of a tree in the landscape is a combination of its environmental, heritage and amenity values. Whilst these values may be fairly subjective and difficult to assess consistently, some measure is necessary to assist in determining the retention value of each tree. To ensure a consistent approach, the assessment criteria shown in **Appendix 1** have been used in this assessment.

5.1.2 A rating has been applied to each tree to give an understanding of the relative significance of each tree in the landscape and to assist in determining priorities for retention, in accordance with the following categories:-

1. **Significant**
2. **Very High**
3. **High**
4. **Moderate**
5. **Low**
6. **Very Low**
7. **Insignificant**

5.2 Environmental Significance

5.2.1 Tree Management Controls

Prescribed Trees within the Northern Beaches (former Warringah) Local Government Area (LGA) are protected under the provisions of Part E1 of the *Warringah Development Control Plan* 2011 (WDCP), made pursuant to Chapter 2, Part 2.3 of the *State Environmental Planning Policy (Biodiversity and Conservation) 2017* (Biodiversity SEPP).

The WDCP generally protects all trees with a height of greater than five (5) metres, all trees that are or form part of Heritage Items, all trees within designated Heritage Conservation Areas (regardless of dimensions) and other Prescribed Vegetation (mapped on the DCP as Threatened and High Conservation Habitat, Wildlife Corridors or Native Vegetation) or within areas known or having potential habitat for threatened species, populations or ecological communities. Some exemptions apply. The following trees are exempt (not protected) under the provisions of the WDCP 2011:-

Tree No.	Species	Exemption
T15a & T19	*Ficus benjamina* (Weeping Fig)	Undesirable Species
T35	*Ficus carica* (Common Fig)	Undesirable Species. Non-native fruit producing tree
T31 & T91	*Citharexylum spinosum* (Fiddlewood)	Undesirable Species

T33	*Malus sp.* (Apple tree)	Non-native fruit producing tree
T34 & T83	*Prunus sp.* (Peach tree)	Non-native fruit producing tree
T86	*Fraxinus griffithii* (Evergreen Ash)	Undesirable species
T21a & T27	*Gleditsia triacanthos* (Honey Locust)	Undesirable species
T89#	*Liquidambar styraciflua* (Liquidambar)	Undesirable species
T17, T20, T28, T56 & T57	*Archontophoenix cunninghamii* (Bangalow Palm)	Palm tree other than *Livistona* spp.
T39	*Washingtonia robusta* (Washington Palm)	Palm tree other than *Livistona* spp.
T70, T71, T72 & T100	*Howea forsteriana* (Kentia Palm)	Palm tree other than *Livistona* spp.
T25, T33a, T38 & T40	*Schefflera actinophylla* (Umbrella Tree)	Environmental Weed Species
T18, T29, T30, T37b, T41, T42, T55, T60, T61, T63, T64, T65, T66, T67, T68, T69 & T73	*Syagrus romanzoffianum* (Cocos Palm)	Undesirable species
T21	*Ulmus parvifolia* (Chinese Elm)	Undesirable species
T73A	*Plumeria rubra* (Red Frangipani)	Less than the Prescribed Dimensions
T77	*Dicksonia antarctica* (Soft Tree Fern)	Less than the Prescribed Dimensions
T77a	*Duranta erecta* 'Variegata' (Variegated Pigeonberry)	Less than the Prescribed Dimensions
T78	*Camellia sasanqua* (Sasanqua Camellia)	Less than the Prescribed Dimensions
T80	*Murraya paniculata* (Murraya)	Less than the Prescribed Dimensions
T85	*Juniperus sp.* (Juniper)	Less than the Prescribed Dimensions
T93	*Tibouchina granulosa* (Lasiandra)	Less than the Prescribed Dimensions
T98 & T99	*Cyathea cooperi* (Rough Tree Fern)	Less than the Prescribed Dimensions

* Note that these trees are located within an adjoining property.

\# Note that whilst exempt from Council's Tree Management Controls, these trees may be afforded some protection under Section 138 (c) of the *Roads Act* (NSW) 1993 and Section 629 of the *Local Government Act* (NSW) 1993, being located within the adjoining Road Reserve.

The remainder of the trees are protected under Council's Tree Management Controls.

5.2.1 Wildlife Habitat

Angophora costata (Sydney Red Gum*)* [T2a, T6, T9, T11, T13, T15, T16, T23 & T32], *Corymbia gummifera* (Red Bloodwood) [T2, T4, T5, T7, T8, T10 & T14], *Eucalyptus sp.* (Stringybark) [T3 & T12] and *Eucalyptus resinifera* (Red Mahogany) [T24, T26, T33a & T36] are all locally-indigenous species, representative of the original vegetation of the area and would be of benefit to native wildlife. T9 (Sydney Red Gum) has a suspected cavity at 12 metres from ground level that may be suitable as a nesting hollow for arboreal mammals or birds. Several trees exhibited evidence of foraging by Brushtail or Ringtail Possums [including T33 (Apple tree) and T45 (Willow Bottlebrush)]. T26 (Red Mahogany) also exhibited evidence of bark harvesting (for nesting material) by Ringtail Possums. There were no other visible signs of wildlife habitation.

The southern portion of 116, 118 & 120 Frenchs Forest Road (alongside the Frenchs Forest Road frontage of the site) is located within a defined 'Wildlife Corridor' as indicated on Council's *Wildlife Corridors Map*.

5.2.2 Noxious Plants & Environmental Weeds

None of the subject trees are scheduled as a potential 'Biosecurity Risk' ('Priority Weed' – formerly 'Noxious Weed') within NSW under the provisions of the *Biosecurity Act 2015*.

5.2.3 Threatened Species & Ecological Communities

None of the subject trees are listed as Threatened or Vulnerable Species or form part of Endangered Ecological Communities (EECs) under the provisions of the *Biodiversity Conservation Act 2016* (NSW) or the *Environment Protection and Biodiversity Conservation Act 1999*.

The site is *not* identified as containing any 'Threatened High Conservation Habitat' as indicated on Council's *Threatened High Conservation Habitat Map*.

5.2.4 Biodiversity, Bushfire & Riparian Lands

The site does *not* contain any 'Biodiversity Certified Land' as indicated on Council's *Biodiversity Certified Land Map*.

The NSW Office of Environment and Heritage (OEH) *Biodiversity Values Map and Threshold Tool* (refer https://www.lmbc.nsw.gov.au/Maps/index.html?viewer=BOSETMap), indicates that there is no vegetation on or near the site that is subject to the Biodiversity Offset Scheme (BOS).

The site does *not* contain any Bushfire Prone Land as indicated on Council's Bush Fire Prone Land Map (2016).

The site does *not* within a 'Designated Bush Fire Prone Area' as defined by the NSW Rural Fire Service (RFS). The site is *not* within a 'Designated 10/50 Vegetation Clearing Entitlement Area' as defined by the NSW RFS.

The site does *not* contain any 'Riparian Land' as indicated on Council's *Waterways and Riparian Lands Map* forming part of the WDCP.

5.3 Heritage Significance

5.3.1 Heritage Items

The subject property is *not* listed as an item of Environmental Heritage under Schedule 5, Part 1 of the *Warringah Local Environmental Plan 2011* (WLEP).

5.3.2 Heritage Conservation Area

The site is *not* located within a Heritage Conservation Area under Schedule 5, Part 2 of the WLEP 2011.

5.3.3 Significant Tree Register

Northern Beaches Council does *not* currently maintain a Register of Significant Trees.

5.3.4 General

The 1943 Aerial Photograph of Sydney (SIX Maps) indicates that site was un-cleared at this time and contained native bushland, intersected by a number of unmade trails. The area to the south-west of the site (in what is now Frenchs Forest High School) had been cleared and developed as an orchard.

Based on analysis of Historical Imagery of the site (NSW Spatial Services), by 1971 the site and immediately surrounding areas had been partially cleared, subdivided and developed for residential housing and were probably constructed c. 1955-1965. The present dwellings at 116 Frenchs Forest Road West and 11 Gladys Avenue were extant at this time. The dwelling within 118 Frenchs Forest Road West was constructed by 1975, The present dwelling within 120 Frenchs Forest Road West was constructed c. 2000.

During the successive development of the site, the vegetation within the front setback of 116 & 118 Frenchs Forest Road West has been preserved and its therefore likely to be remnant of the original vegetation community. T43 (Forest Red Gum) is visible as a small tree in the 1982 aerial image. This tree is likely to have been planted contemporary with the dwelling at No. 118 (c.1970). The larger exotic and non-local native species such as T89 (Liquidambar) and trees T74, T75 & T76 (Brushbox) appear to have been planted c. 1960-1970. Aside from the remnant vegetation, none of the trees within the site have any known or suspected heritage significance.

5.4 Amenity Value

5.4.1 Criteria for the assessment of amenity values are incorporated into **Appendix 1**. The amenity value of a tree is a measure of its live crown size, visual appearance (form, habit, crown density), visibility and position in the landscape and contribution to the visual character of an area. Generally the larger and more prominently located the tree, and the better its form and habit, the higher its amenity value.

6 TREE RETENTION VALUES

6.1.1 The Retention Values shown in **Appendix 3** and **Appendix 5** have been determined on the basis of the estimated longevity of the trees and their landscape significance rating, in accordance with **Table 1**. Together with guidelines contained in **Section 7** (Tree Protection Zones) this information should be used to determine the most appropriate position of building footprints and other infrastructure within the site, with due consideration to other site constraints, to minimise the impact on trees considered worthy of preservation.

TABLE 1 – TREE RETENTION VALUES – ASSESSMENT METHODOLOGY

	Landscape Significance Rating						
Estimated Life Expectancy	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Long - Greater than 40 Years	High Retention Value						
Medium- 15 to 40 Years			Moderate Retention Value				
Short - 5 to 15 years				Low Ret. Value			
Transient - Less than 5 Years				Very Low Retention Value			
Dead or Potentially Hazardous							

6.1.2 The following table describes the implications of the retention values on site layout and design.

TABLE 2 – TREE RETENTION PRIORITES.

RETENTION VALUE	RECOMMENDED ACTION
"High"	These trees considered worthy of preservation; as such careful consideration should be given to their retention as a priority. Proposed site design and placement of buildings and infrastructure should consider the recommended setbacks as discussed in the following section (refer also **Appendix 2**) to avoid any adverse impact on these trees. In addition to Tree Protection Zones, the extent of the canopy (canopy drip-line) should also be considered, particularly in relation to high rise developments. Significant pruning of the trees to accommodate the building envelope or temporary scaffolding is generally not acceptable.
"Moderate"	The retention of these trees is desirable, but not essential. These trees should be retained as part of any proposed development if possible. However, these trees are considered less critical for retention. If these trees must be removed, replacement planting should be considered in accordance with Council's Tree Replenishment Policy to compensate for loss of amenity (refer also **Section 9**).
"Low"	These trees are not considered to worthy of any special measures to ensure their preservation, due to current health, condition or suitability. They do not have any special ecological, heritage or amenity value, or these values are substantially diminished due to their SULE. These trees should not be considered as a constraint to the future development of the site.
"Very Low"	These trees are considered potentially hazardous or very poor specimens, or may be environmental or noxious weeds. The removal of these trees is therefore recommended regardless of the implications of any proposed development.

7 TREE PROTECTION ZONES

7.1.1 The Tree Protection Zone (TPZ) is a radial distance measured from the centre of the trunk of the tree as specified in **Appendix 4**. These have been calculated in accordance with AS 4970-2009 (Protection of Trees on Development Sites).[5]

7.1.2 The intention of the TPZ is to ensure protection of the root system and canopy from the potential damage from construction works and ensure the long-term health and stability of each tree to be retained. Incursions to the root zone may occur due to excavations, changes in ground levels, (either lowering or raising the grade), trenching or other forms or soil disturbance such as ripping, grading or inverting the soil profile. Such works may cause damage or loss of part of the root system, leading to an adverse impact on the tree.

7.2 Structural Root Zone (SRZ)

7.2.1 The Structural Root Zone (SRZ) provides the bulk of mechanical support and anchorage for a tree. This is also a radial distance measured from the centre of the trunk as specified in **Appendix 4**. The SRZ has been calculated in accordance with AS 4970-2009 (Protection of Trees on Development Sites).

7.2.2 Incursions within the SRZ are not recommended as they are likely to result in the severance of woody roots which may compromise the stability of the tree or lead to its decline and demise.

7.3 Acceptable Encroachments to the Tree Protection Zone.

7.3.1 Where encroachment to the TPZ is unavoidable, an incursion to the TPZ of not exceeding 10% of the area of the TPZ and outside the SRZ may be acceptable. Examples of acceptable incursions are shown in **Appendix 2**. Greater incursions to the TPZ may result in an adverse impact on the tree.

7.3.2 Where incursions greater than 10% of the TPZ are unavoidable, exploratory excavation using non-destructive methods may be required to evaluate the extent of the root system affected and determine whether or not the tree can remain viable

7.4 Acceptable Encroachments to the Canopy

7.4.1 The removal of a small portion of the crown (foliage and branches) is generally tolerable provided that the extent of pruning required is less than 10% of the total foliage volume of the tree and the removal of branches does not create large wounds or disfigure the natural form and habit of the tree. All pruning cuts must be undertaken in accordance with AS 4373:2007. This generally involves reduction of the affected branches back to the nearest branch collar at the junction with the parent branch, rather than at an intermediate point. The latter is referred to as “lopping” and is no longer an acceptable arboricultural practice. Generally speaking, the minimum pruning as required to accommodate any proposed works is desirable. Extensive pruning can result in a detrimental impact on tree health and may lead to exposure of remaining branches to wind forces that they were previously sheltered from, leading to a greater risk of branch failure.

7.4.2 Clearance to between the building line and canopy should take into account any projecting structures, such as balconies, awnings and the roofline and any requirement for temporary scaffolding to be erected during construction (typically 1-1.5 metres wide). High structures should preferably be located outside the canopy dripline (as shown indicatively on the attached plans) in order to avoid or minimise canopy pruning.

7.5 Legal Protection

7.5.1 Notwithstanding the above recommendations, Council may require a greater setback from certain types of structures to ensure the on-going legal protection of the tree (i.e. its legal status under Council’s Tree Management Controls). In the Northern Beaches LGA, a tree located within two (2) metres of the wall of an approved building (*not* including decks, pergolas, sheds, patios or the like, even if they are attached to an approved building) is *not* protected Council’s Tree Management Controls (i.e. may be removed without consent). The measurement is taken from the

building [wall] to the face of the trunk at ground level. As such, if a tree is considered worthy of preservation, Council is unlikely to approve the construction of a dwelling or other habitable building (Flat building, townhouse, secondary dwelling etc) within two (2) metres of the tree (regardless of whether this can be undertaken without having an adverse impact on its health or longevity). It should be noted that this does not apply to other types of ancillary structures (for example, decks, pergolas, sheds, patios etc).

8 PROPOSED DEVELOPMENT

8.1.1 The proposed development includes the demolition of the existing residential dwellings and associated outbuildings and construction of a new multi-unit residential development (residential flat buildings) within the property, together with associated landscape works.

9 IMPACT ASSESSMENT

9.1.1 The intention of this assessment is to determine the incursions to the root zones and canopies created by the proposed development and evaluate the likely impact of the proposed works on the subject trees. Details shown on the following plans were used in this assessment:-

Title	Author	Dwg No. [Rev.]	Date
Site Analysis	Brewster Murray	23_6514 A004 [-]	12/03/2024
Demolition Plan	Brewster Murray	23_6514 A008 [-]	12/03/2024
Excavation Plan	Brewster Murray	23_6514 A009 [-]	12/03/2024
Basement 1 Plan	Brewster Murray	23_6514 A101 [-]	12/03/2024
Mezzanine	Brewster Murray	23_6514 A102 [-]	12/03/2024
Lower Ground	Brewster Murray	23_6514 A103 [-]	12/03/2024
Ground Floor Plan	Brewster Murray	23_6514 A104 [-]	12/03/2024
Level 1 Floor Plan	Brewster Murray	23_6514 A105 [-]	12/03/2024
Levels 2-3 Floor Plan	Brewster Murray	23_6514 A106 [-]	12/03/2024
Level 4 Floor Plan	Brewster Murray	23_6514 A107 [-]	12/03/2024
Roof Plan	Brewster Murray	23_6514 A108 [-]	12/03/2024
Elevations (Sheet 1)	Brewster Murray	23_6514 A201 [-]	12/03/2024
Elevations (Sheet 2)	Brewster Murray	23_6514 A202 [-]	12/03/2024
Elevations (Sheet 3-5)	Brewster Murray	23_6514 A203-A208 [-]	12/03/2024
Sections (Sheet 1)	Brewster Murray	23_6514 A301 [-]	12/03/2024
Sections (Sheet 2)	Brewster Murray	23_6514 A302 [-]	12/03/2024
Hardscape Plan	Conzept	LPDA 24 – 44 s2 [I]	04/04/2024
Landscape Plan 1	Conzept	LPDA 24 – 44 s3 [I]	04/04/2024
Landscape Plan 2	Conzept	LPDA 24 – 44 s4 [I]	04/04/2024
Details & Specifications	Conzept	LPDA 24 – 44 s5 [I]	04/04/2024

Details 2	Conzept	LPDA 24 – 44 s5 [I]	04/04/2024
Stormwater Management Plans	ACOR Consultants (CC)	CC230124 C1 to C15 [C]	28/03/2024

9.1.2 A summary of the impact of the proposed development on each tree within the site is shown in **Appendix 4**. The following criteria have been examined as part of this assessment:-

- Existing Relative Levels (R.L.);
- Tree Protection Zone (TPZ);
- Structural Root Zone (SRZ);
- Footprint and envelope of the proposed development and temporary structures (scaffolding, hoardings etc);
- Incursions to the TPZ & SRZ, including estimated cut & fill beyond the building footprint;
- Incursions to the tree canopy from the building envelope and temporary structures; and
- Assessment of the likely impact of the works on existing trees.

9.1.3 The proposed development will necessitate the removal of sixty-seven (67) trees of low and very low retention value. These include Tree No.s T32 (Sydney Red Gum), T20, T28, T56 & T57 (Bangalow Palm), T45 (Willow Bottlebrush), T37 & T82 (Weeping Bottlebrush), T22 (Swamp Oak), T31 & T91 (Fiddlewood), T5 & T10 (Red Bloodwood), T98 & T99 (Rough Tree Fern), T77 (Soft Tree Fern), T77a (Pigeonberry), T94, T96 & T97 (River Peppermint), T1 (Peppermint), T19 (Weeping Fig), T35 (Common Fig), T86 (Evergreen Ash), T21a & T27 (Honey Locust), T70, T71, T72 & T100 (Kentia Palm), T85 (Juniper), T76 (Brushbox), T33 (Apple tree), T80 (Murraya), T53a (Banana palm), T73a (Red Frangipani), T34 & T83 (Peach tree), T25, T33b & T40 (Umbrella tree), T18, T29, T30, T38, T41, T42, T55, T60, T61, T63, T64, T65, T66, T67, T68, T69 & T73 (Cocos Palm), T90 (Lilly Pilly), T48, T88 & T93 (Lasiandra), T21 (Chinese Elm), T39 (Washington Palm) and T58, T59 & T62 (Shiny Xylosma). None of these trees are considered significant or worthy of special measures to ensure their preservation. The removal of these trees to accommodate the proposed development is therefore considered warranted in this instance. It should be noted that with exception of tree numbers T1, T5, T10, T22, T32, T37, T45, T48, T58, T59, T76, T82, T88, T90, T94 & T97, all of these trees are exempt from Council's Tree Management Controls.

9.1.4 The proposed development will also necessitate the removal of eighteen (18) trees of moderate retention value. These include Tree No.s T46 (Old Man Banksia), T95 (River Peppermint), T26 & T36 (Red Mahogany), T43 & T44 (Forest Red Gum), T54 (Peppercorn Tree), T84 (Crabapple) T101 & T102 (Giant White Bird of Paradise), T47, T49, T50, T51, T52 & T53 (Lilly Pilly) and T43a & T43b (Small-leaf Lillypilly). These trees are not considered significant, but are in good health and condition and make a fair contribution to the amenity of the site and surrounding properties. In order to compensate for loss of amenity resulting from the removal of these trees to accommodate the proposed development, consideration should be given to replacement planting with new trees elsewhere within the site in accordance with **Section 11**.

9.1.5 The proposed development will also necessitate the removal of one (1) tree of high retention value, being T89 (a Liquidambar on Council's nature strip). This tree is not considered significant, but is in good health and condition and makes a positive contribution to the amenity of the site and surrounding properties. There are no feasible alternatives that can be recommended that would permit this tree to be retained in this instance given the exclusion of vehicular access from Frenchs Forest Road and the limited width of the frontage to Gladys Avenue. In order to compensate for loss of amenity resulting from the removal of this tree to accommodate the proposed development, consideration should be given to replacement planting with a new tree elsewhere within the site with a new tree in accordance with **Section 11**.

9.1.6 The proposed building and basement are located within the TPZs of trees T11 & T16 (Sydney Red Gum), T33a & T24 (Red Mahogany), T74 & T75 (Brushbox) and T92 (Bangalay). Assuming a basement construction methodology with minimal over-excavation/temporary batter to facilitate construction (such as a soldier pile shotcrete panel wall), in all instances, the extent of encroachment to the root zones is less than 10% of the TPZ, which is considered within acceptable limits under AS 4970:2009. The proposed works will not result in any adverse impact on these trees, provided that all excavation for the basement and building foundations are undertaken in accordance with **Section 10.9** and any required over-excavation (to facilitate construction, drainage and waterproofing of the basement walls) is limited to no greater than 300mm beyond the basement footprint as indicated.

9.1.7 Some canopy pruning of trees T6, T11 & T16 (Sydney Red Gum), T33a & T24 (Red Mahogany), T74 & T75 (Brushbox) and T92 (Bangalay) may also be required to clear the building envelope and temporary scaffolding. In the case of T6, T33a, T74, T75 & T76, the percentage crown loss incurred is estimated at less than 10% of the overall crown volume, which is considered to be within acceptable limits under AS4373:2007. As such, the proposed works will not result in any adverse impact on these trees. In the case of trees T11, T16 & T24, the percentage crown loss incurred is estimated at between 15% and 20% of the overall crown volume, which exceeds acceptable limits under AS4373:2007. This degree of crown loss has the potential to result in some adverse impact on these trees. In the case of T92, the percentage crown loss incurred is estimated at between 20% and 30% of the overall crown volume, which exceeds acceptable limits under AS4373:2007. This degree of crown loss is likely to result in an adverse impact on this tree. Any adverse impact can be *minimised* by erecting the temporary scaffolding within the TPZs in accordance with **Section 10.15** and undertaking any required canopy pruning (that essential to clear the building envelope and temporary scaffolding) in accordance with **Section 10.14**. The extent of canopy pruning should be minimised wherever possible by temporarily tying back any conflicting branches and locally reducing the scaffold width.

9.1.8 Proposed new pedestrian pathways are located within the TPZs of trees T9 & T16 (Sydney Red Gum), T17 (Bangalow Palm), T24 (Red Mahogany), T74 & T75 (Brushbox) and T87 (Lasiandra). In order to minimise the encroachments to the TPZs of these trees, the paths have been positioned within the footprint of former driveways or other pavements and follow existing grade. Provided that the pathways are constructed slightly above grade 100 to 150mm where no pavement presently exists) and are constructed in accordance with **Section 10.12 & 10.13**, and any required excavation for the pavement sub-grade is undertaken in accordance with **Section 10.9**, the proposed works will not result in any adverse impact on these trees.

9.1.9 No other trees will be adversely affected by the proposed development.

10 RECOMMENDED TREE PROTECTION MEASURES

10.1 Tree Protection Plan

10.1.1 The following Tree Protection Measures should be read in accordance with the Tree Protection Plan (**Appendix 6**). The Tree Protection Plan (TPP) indicates the position of tree protection devices and other recommended measures to ensure the protection of trees within the site to be retained as part of the proposed development.

10.2 Prohibited Activities

10.2.1 The following activities should be avoided within specified Tree Protection Zones (refer **Appendix 4 & 6** for extent of the TPZ for each tree):-

- Excavations and trenching (with exception of the approved remediation works, underground services, building foundations or pavement sub-grade);

- Soil disturbance, surface grading, compaction, tyning, ripping or cultivation of soil;
- Mechanical removal of vegetation, including extraction of tree stumps;
- Soil level changes including the placement of fill material (excluding imported validated fill for remediation works or placement of fill for approved works)
- Movement and storage of plant, equipment & vehicles (except within defined temporary haul roads, where ground protection has been installed, or within the footprint of existing floor slabs or paved areas);
- Erection of site sheds (except where approved by the site arborist);
- Affixing of signage, barricades or hoardings to trees;
- Storage of building materials, waste and waste receptacles;
- Stockpiling of spoil or fill;
- Stockpiling of bulk materials, such as soil, sand, gravel, roadbase or the like;
- Stockpiling of demolition waste;
- Disposal of waste materials and chemicals including paint, solvents, cement slurry, fuel, oil and other toxic liquids;
- Other physical damage to the trunk or root system; and
- Any other activity likely to cause damage to the tree.

10.3 Tree Damage

10.3.1 Care shall be taken when operating cranes, drilling rigs and similar equipment near trees to avoid damage to tree canopies (foliage and branches). Under no circumstances shall branches be torn-off by construction equipment. Where there is potential conflict between tree canopy and construction activities, the advice of the Site Arborist must be sought.

10.3.2 In the event of any tree becoming damaged for any reason during the construction period a consulting arborist [Australian Qualification Framework Level 5] shall be engaged to inspect and provide advice on any remedial action to minimise any adverse impact. Such remedial action shall be implemented as soon as practicable and certified by the arborist.

10.4 Tree Removal

10.4.1 The removal of Trees [**all trees nominated for removal on the Tree Protection Plan with a red dashed line**] shall be carried out by an experienced tree surgeon in accordance with the NSW WorkCover Code of Practice for the Amenity Tree Industry (1998). Care shall be taken to avoid damage to other trees during the felling operation.

10.4.2 Stumps located within the TPZs of trees to be retained shall be grubbed-out where required using a mechanical stump grinder (or by hand where less than 150mm in diameter) without damage to the root system of other trees. Where trees to be removed are within the SRZ of any trees to be retained, consideration should be given to cutting the stump close to ground level and retaining the root crown intact. Stumps within the Tree Protection Zone of other trees to be retained shall **not** be pulled out using excavation equipment or similar.

10.5 Tree Protection Fencing

10.5.1 Trees [**T1a, T2, T3, T4, T6, T7, T8, T9, T11, T12, T13, T14, T15, T15a, T16, T17, T23, T24, T74, T75 & T92**] shall be protected prior to and during construction from all activities that may result in detrimental impact by erecting a suitable protective fence in the positions as indicated on the Tree Protection Plan (**Appendix 6**). As a minimum, the fence shall consist of temporary chain wire panels of 1.8 metres in height, supported by steel stakes as required and fastened together and supported to prevent sideways movement using corner braces where required. The fence shall be erected prior to the commencement of any work on-site and shall be maintained in good condition for the duration of construction. Where tree protection zones merge together a single fence

encompassing the area is deemed to be adequate. Existing site boundary fences may form part of the enclosure.

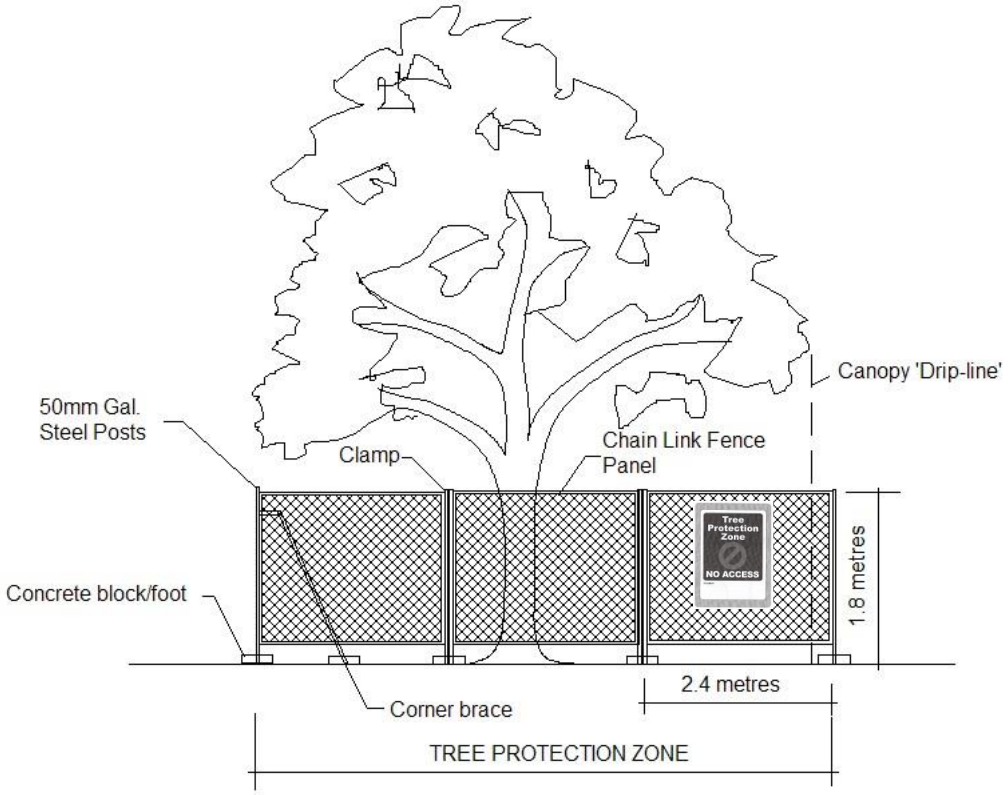


Figure 1 – Detail of Tree Protection Fence

10.6 Tree Protection Signs

10.6.1 Signs shall be installed on the Tree Protection Fence to prevent unauthorised movement of plant and equipment or entry to the Tree Protection Zone. The signs shall be securely attached to the fence using cable ties or equivalent. Signs shall be placed at minimum 10 metre intervals. The wording and layout of the sign shall comply with AS 4970-2009 as shown in **Figure 2**.

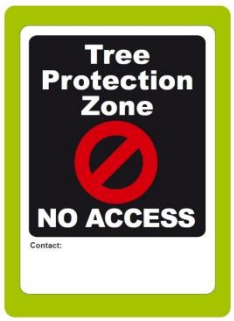


Figure 2 – Detail of Tree Protection Sign

10.7 Ground Protection

10.7.1 Construction haul routes shall be confined to existing paved areas wherever possible. Where this is not feasible and construction haul routes or access for plant and equipment must traverse soft landscape areas within TPZs of [**any tree nominated for retention**], 20mm thick marine ply sheets or truck mats (such as Envirex Versadeck® access mats) (refer **Figure 4** shall be placed over the top of the ground surface to minimise compaction and disturbance of the underlying soil profile and root zone.

Figure 4 – Showing typical detail for truck mats.

10.7.2 Ground protection shall be installed prior to any site works and maintained in good condition for the duration of the construction period. On completion of the works, ground protection shall be removed without damage or disturbance to the underlying soil profile.

10.8 Demolition Works within Tree Protection Zones

10.8.1 Existing Turfgrass

No mechanical soil cultivation (using ripping tynes, rotary hoes or the like) is permitted within Tree Protection Zones (TPZs). Where existing turfgrass is proposed to be removed (demolished) within the TPZs of Trees [**any tree nominated for retention**], the turfgrass shall be first treated with a non-selective herbicide with the active constituent Glyphosate (Round-up ® or equivalent) at the manufacturers recommended rate and allowed to dehisce. Once the turfgrass in the effected area is completely dead, any high grass may be slashed/mown close to ground level.

Any residual vegetation (dead grass etc) may then be carefully scraped-off the surface using a small rubber tracked excavator with a broad sand bucket (i.e. without tynes/teeth), taking care to remove the minimum topsoil necessary (no more than 20mm deep) (refer to **Figure 5**). An observer shall be used to ensure that no woody surface roots of any trees are damaged during this process.

Figure 5 – Showing method for removal of residual surface vegetation from Tree Protection Zones following herbicide treatment and slashing.

10.8.2 Paved Areas

Demolition of paved areas within the Tree Protection Zones (TPZs) of trees [**T2, T3, T4, T6, T7, T8, T9, T11, T12, T13, T14, T15, T16, T17, T23 & T24**] shall be undertaken under the supervision of a qualified Arborist [Australian Qualification Framework (AQF) Level 5].

Concrete pavements shall be demolished by breaking the slab into manageable sections (using a rock hammer or similar) and asphalt pavements shall be removed by breaking the topcoat into manageable pieces. The broken sections shall be carefully lifted and folded over the remaining paved surface to minimise disturbance and compaction of the underlying soil profile (refer to **Figure 6**). Special care shall be taken where underlying woody roots have lifted or displaced the pavement. Any plant or equipment used in demolition work shall operate within the footprint of existing paved areas and avoid traversing soft landscape areas. Where this is unavoidable, suitable ground protection shall first be installed in accordance with **Section 10.7**.

Figure 6 – Showing method for removal of concrete pavement, by carefully lifting sections and folding over the remaining paved surface.

The pavement sub-base within the TPZ shall be gradually removed (where required) in layers of no greater than 50mm thick using a small rubber tracked excavator or alternative approved method to avoid excessive disturbance and compaction of the underlying soil profile and damage to underlying roots and minimise. The machine shall work within the footprint of the existing path footprint to avoid compaction of the underlying soil. The final layer of sub-base material shall be removed using hand tools were required to avoid compaction of the underlying soil profile and avoid damage to any underlying woody roots.

Following removal of the pavement surface and sub-base, clean, friable topsoil shall be used to fill in the excavated area and bring flush with surrounding levels within new landscape areas. Soil shall only be imported and spread when the underlying soil conditions are dry to avoid compaction of the soil profile. Where there is insufficient recovered site topsoil for this purpose, any imported material shall be free of rocks, vegetation, heavy clay or other extraneous matter and supplied and spread in accordance with **Section 10.9**. Any imported soil material should be similar in texture to the existing site topsoil.

10.8.3 Structures & Retaining Walls

Demolition of existing buildings, walls, kerbs and other structures within the TPZ of trees [**T6, T11, T23, T24, T33a & T92**] shall be undertaken under the supervision of a qualified Arborist [AQF level 5]. The structures shall be demolished using equipment on stationed outside the TPZ where possible or within the footprint of existing hardstand areas.

Care shall be taken to avoid the root systems, trunks and lower branches of trees in the vicinity of the structures during demolition works, with special attention required during demolition of the footings and other sub-surface members to avoid damage to woody roots. An observer ('spotter') shall be employed to assist the plant operator in order to detect and avoid damage to underlying woody roots during demolition. Trunk and/or branch protection shall be installed where there is a potential risk of damage to trees in proximity or overhead of the work.

10.9 Excavations within Tree Protection Zones

10.9.1 Prior to any mechanical excavations for building foundations or pavement sub-grade within the TPZs of Trees [**T6, T11, T16, T23, T24, T74, T75, T87 & T92**] exploratory excavation using non-destructive techniques shall be taken along the perimeter of the structure or pavement within the TPZ. Non-destructive excavation techniques may include the use of hand-held implements, air pressure (using an Air-spade® device) or water pressure (hydro-excavation in combination with a vacuum extraction unit). The exploratory excavation shall be undertaken along the perimeter of the foundation or pavement (within the TPZ) to the depth of the foundation or to a maximum of 800mm from surface levels, to locate and expose any woody roots prior to any mechanical excavation.

10.9.2 All care shall be undertaken to preserve woody roots intact and undamaged during exploratory excavation. Any roots encountered of less than 40mm in diameter may be cleanly severed with clean sharp pruning implements at the face of the excavation. The root zone in the vicinity of the excavation shall be kept moist following excavation for the duration of construction to minimise moisture stress on the tree. Where large woody roots (greater than 40mm diameter) are encountered during exploratory excavations, further advice from a qualified arborist shall be sought prior to severance.

10.10 Alternative Construction Methods

10.10.1 Where necessary, (to avoid severing large woody roots) consideration should be given to the installation of an elevated structure (e.g. pier and beam footing, suspended slab or floor supported on piers, cantilevered slab, up-turned edge beam etc) in preference to structures requiring a deep edge beam or continuous perimeter strip footing. The beam section of any pier and beam footing should be placed **above** grade to avoid excavation within the SRZ. Pier footings intersecting large woody roots should be slightly offset where necessary to avoid root severance.

10.10.2 For masonry walls or fences it may be acceptable to delete continuous concrete strip footings and replace with suspended in-fill panels (e.g. steel or timber pickets, lattice etc) fixed to pillars. For retaining walls, consideration should be given to eliminating continuous strip footings and substituting with pier and beam footings, pier footings (using a post and caisson type wall) or mass wall such as gabions or mass stone that can be placed without a structural footing.

10.10.3 For paved areas, consideration should be given to raising the proposed pavement level and using a porous fill material in preference to excavation where large woody roots are found within the sub-base.

10.11 Underground Services

10.11.1 Trenching for underground services and stormwater pipes within the TPZs of Trees [**T11, T16, T24, T87, T92**], shall be undertaken using non-destructive excavation in accordance with **Section 10.9**. Where large woody roots are encountered during excavation or trenching (root diameter greater than 40mm), these shall be retained intact wherever possible (e.g. by tunnelling beneath roots and inserting the pipeline or conduit beneath or re-routing the service etc). Where this is not practical and root pruning is the only alternative, proposed root pruning should be assessed by a qualified arborist [AQF 5] to evaluate the potential impact on the health and stability of the subject tree.

10.11.2 Installation of underground services and stormwater pipes within the SRZs of Trees [**any tree nominated for retention**], shall only be undertaken by Horizontal Directional Drilling (HDD) (also referred to as sub-surface boring or Micro-tunnelling for large diameter pipes). The Invert

Level of the pipe, plus the pipe diameter, must be lower than the estimated root zone depth as specified. At this site a minimum depth of 1 metre to the invert level of the pipe is specified.

10.12 Pavements

10.12.1 Proposed paved areas within the TPZs of Trees [**T9, T16, T23, T24, T74, T75 & T87**] shall be placed 100-150mm above existing surface levels wherever possible to minimise excavations within the root zone for the pavement sub-grade and avoid severance and damage of woody roots. The pavement sub-base material should be supplied and installed in accordance with **Section 10.13**.

10.13 Pavement Sub-base

10.13.1 Pavement sub-base material within TPZs of trees [**T9, T16, T23, T24, T74, T75 & T87**] shall be a coarse, gap-graded material such as 20 – 50mm crushed basalt (Blue Metal) or equivalent no-fines gravel material to provide some aeration and moisture permeation to the root zone. Note that road base or crushed sandstone or other similar material containing a high percentage of fines is unacceptable for this purpose. The fill material should be consolidated using a non-vibrating roller or similar to minimise compaction of the underlying soil. A permeable geotextile may be used beneath the sub-base to prevent migration of the stone into the sub-grade and provide greater load capacity.

10.14 Canopy & Root Pruning

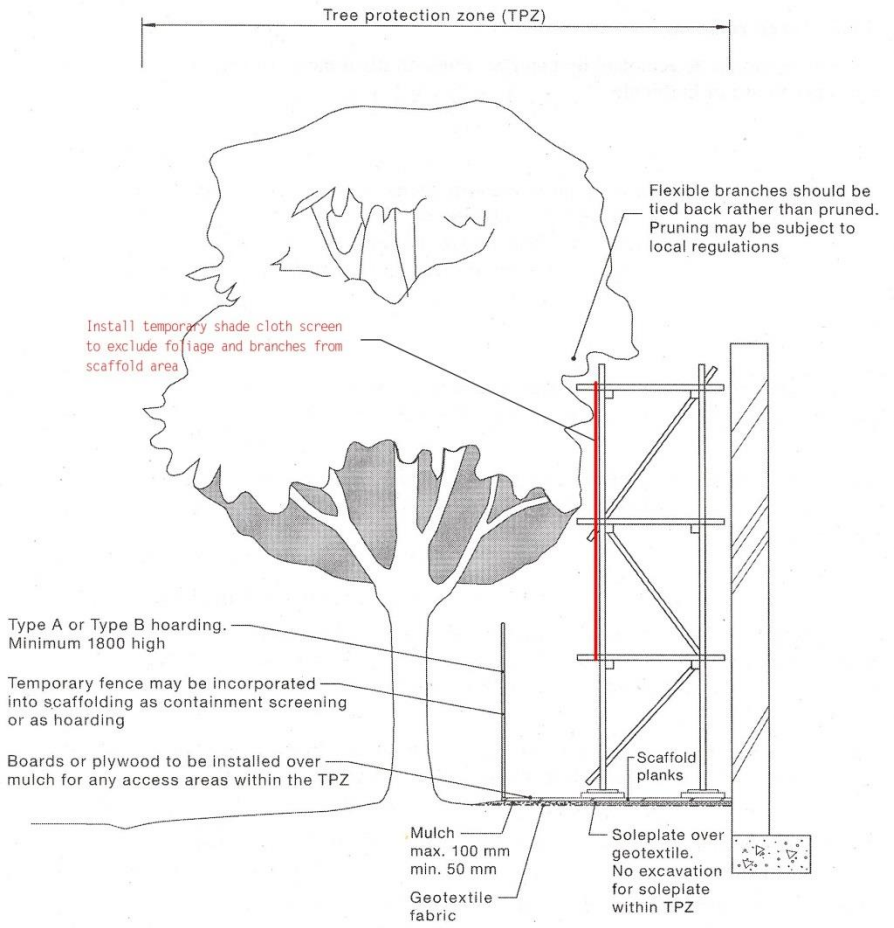
10.14.1 Canopy pruning of Trees [**T6, T11, T16, T23, T24, T33a, T74, T75 & T92**] (that essential to clear the building envelope and temporary scaffolding) shall be carried out in accordance with Australian Standard 4373-2007 – *Pruning of Amenity Trees*. All pruning work shall be carried out by a qualified and experienced arborist or tree surgeon [Australian Qualification Framework Level 3] in accordance with the NSW WorkCover Code of Practice for the Amenity Tree Industry (1998). No branches of greater than 100mm in diameter should be removed or pruned without further advice from a Consulting Arborist [Australian Qualification Framework Level 5].

10.14.2 Where root pruning of [**any tree nominated for retention**] is required to facilitate construction, roots shall be severed with clean, sharp pruning implements and retained in a moist condition during the construction phase using Hessian material or mulch where practical. Severed roots shall be treated with a suitable root growth hormone containing the active constituents Indol-3-yl-Butric Acid (IBA) and 1-Naphthylacetic Acid (NAA) to stimulate rapid regeneration of the root system.

10.14.3 Any required root pruning shall be carried out in accordance with Australian Standard 4373-2007 – *Pruning of Amenity Trees* by a qualified and experienced arborist or tree surgeon [Australian Qualification Framework Level 3] in accordance with the NSW WorkCover Code of Practice for the Amenity Tree Industry (1998). No roots of greater than 40mm in diameter should be removed or pruned without further advice from a Consulting Arborist [Australian Qualification Framework Level 5].

10.15 Temporary Scaffolding

10.15.1 Where temporary scaffolding must be erected within the TPZ of trees [**T6, T11, T16, T23, T24, T33a, T74, T75 & T92**] (as indicated in **Appendix 6**), the scaffold shall be erected in accordance with **Figure 7**. Where foliage or branches project through the scaffold and create a safety hazard, this foliage and branches shall be temporarily excluded from the inner part of the scaffold by affixing a shade cloth screen on the outside of the scaffold **(**refer to **Figure 7)**, or alternatively temporarily tying back branches where required. The pruning or removal of branches to accommodate the scaffold should be avoided wherever possible. Suitable ground protection shall be installed beneath the scaffold as shown in **Figure 5** to prevent contamination, disturbance and compaction of the soil profile within the scaffold zone during construction.



NOTE: Excavation required for the insertion of support posts for tree protection fencing should not involve the severance of any roots greater than 20 mm in diameter, without the prior approval of the project arborist.

Figure 7 - Detail of Temporary scaffolding within a Tree Protection Zone

10.15.2 Where pruning or removal of branches to accommodate temporary scaffolding is unavoidable, all such pruning work shall be undertaken in accordance with **Section 10.14**.

11 REPLACEMENT PLANTING

11.1.1 In order to compensate for loss of amenity resulting from the removal of trees to accommodate the proposed development, an equivalent number of new trees capable of attaining a height of at least ten (10) metres at maturity should be planted within the site. Replacement trees should preferably include some locally indigenous species. These will be most appropriate to the site conditions and be most valuable in terms of preserving the landscape character and wildlife habitat of the area.

The following species are appropriate to the site conditions and could be considered for replacement planting:-

Local native species:-

- *Eucalyptus haemastoma* (Scribbly Gum),
- *Angophora costata* (Sydney Red Gum)
- *Corymbia gummifera* (Red Bloodwood)
- *Eucalyptus sieberi* (Silvertop Ash)
- *Eucalyptus capitellata* (Brown Stringybark)
- *Corymbia eximia* (Yellow Bloodwood),
- *Banksia serrata* (Old Man Banksia).

Non-local native species:-

- *Acmena smithii* (Lillypilly)
- *Glochidion ferdinandi* (Cheese Tree)
- *Waterhousea floribunda* (Weeping Lillypilly).
- *Elaeocarpus reticulatus* (Blueberry Ash)
- *Syzygium paniculatum* (Magenta Cherry)
- *Syzygium luehmannii* (Small-leaf Lillypilly)
- *Melaleuca stypheliodes* (Prickly Paperbark)
- *Syncarpia glomulifera* (Turpentine)
- *Eucalyptus paniculata* (Grey Ironbark)
- *Allocasuarina torulosa* (Forest Oak)

Suitable exotic (introduced) species:-

- *Nyssa sylvatica* (Tupelo)
- *Liriodendron tulipifera* (Tulip Tree)
- *Jacaranda mimosifolia* (Jacaranda)
- *Quercus palustris* (Pin Oak)
- *Magnolia grandiflora* (Bullbay Magnolia)

Suitable ornamental conifers:-

- *Callitris columellaris* (White Cypress Pine)
- *Cupressus funebris* (Chinese Weeping Cypress)
- *Cupressus cashmeriana* (Kashmir Cypress)
- *Cryptomeria japonica* (Japanese Cedar)
- *Chamaecyparis lawsoniana* (Lawson's Cypress)
- *Cedrus deodara* (Himalayan Cedar)

Andrew Morton
EARTHSCAPE HORTICULTURAL SERVICES
8th April 2024

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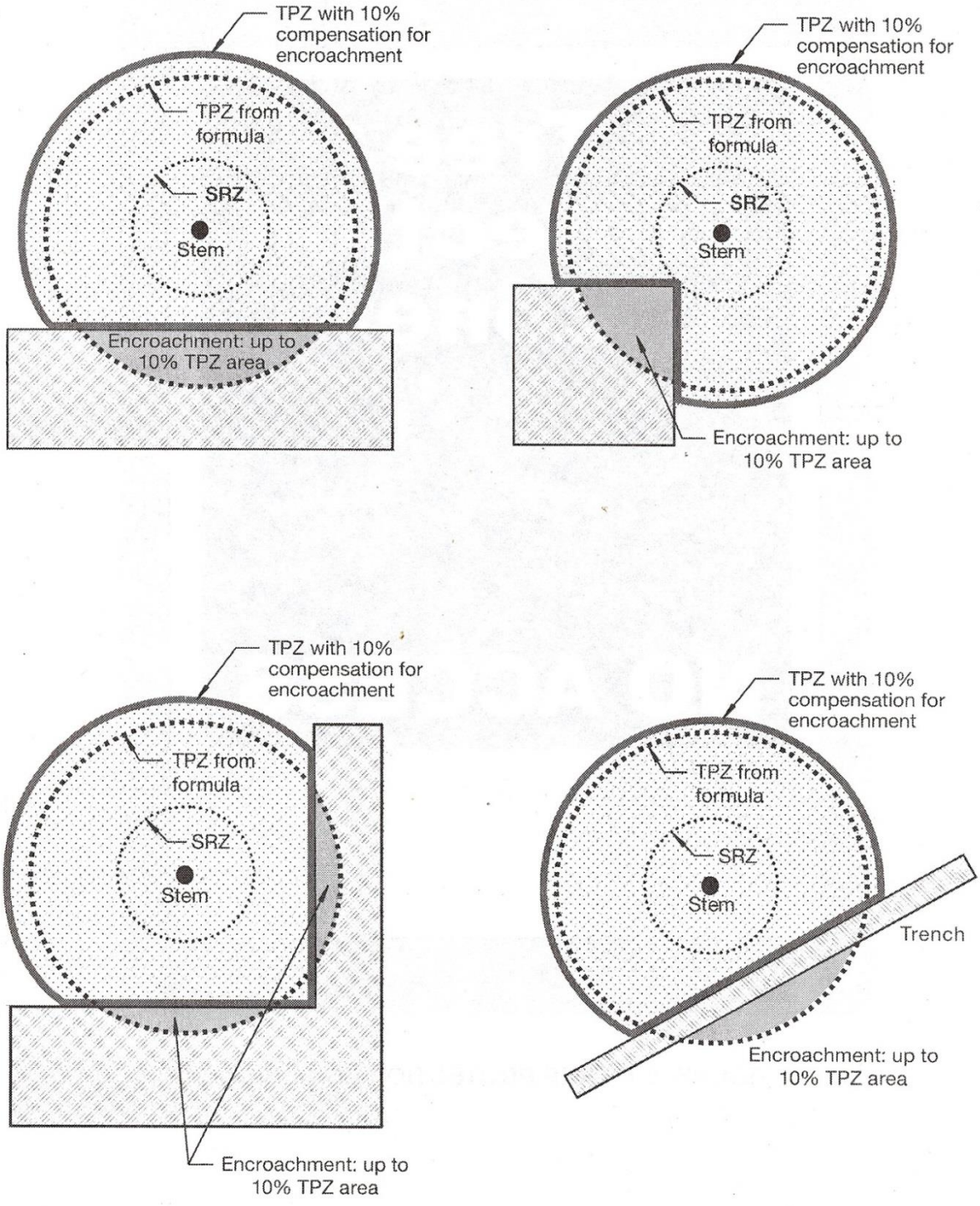
[5] Council of Standards Australia (August 2009)
AS 4970 – 2009 – Protection of Trees on Development Sites
Standards Australia, Sydney

APPENDIX 1 - CRITERIA FOR ASSESSMENT OF LANDSCAPE SIGNIFICANCE

RATING	HERITAGE VALUE	ECOLOGICAL VALUE	AMENITY VALUE
1. SIGNIFICANT	The subject tree is listed as a Heritage Item under the Local Environment Plan (LEP) with a local, state or national level of significance or is listed on Council's Significant Tree Register	The subject tree is scheduled as a Threatened or Vulnerable Species as defined under the provisions of the *Biodiversity Conservation Act 2016* (NSW) or the *Environment Protection and Biodiversity Conservation Act 1999*.	The subject tree has a very large live crown size exceeding 300m² with normal to dense foliage cover, is located in a visually prominent position in the landscape, exhibits very good form and habit typical of the species
	The subject tree forms part of the curtilage of a Heritage Item (building /structure /artefact as defined under the LEP) and has a known or documented association with that item	The tree is a locally indigenous species, representative of the original vegetation of the area and is known as an important food, shelter or nesting tree for endangered or threatened fauna species	The subject tree makes a significant contribution to the amenity and visual character of the area by creating a sense of place or creating a sense of identity
	The subject tree is a Commemorative Planting having been planted by an important historical person (s) or to commemorate an important historical event	The subject tree is a Remnant Tree, being a tree in existence prior to development of the area	The tree is visually prominent in view from surrounding areas, being a landmark or visible from a considerable distance.
2. VERY HIGH	The tree has a strong historical association with a heritage item (building/structure/artefact/garden etc) within or adjacent the property and/or exemplifies a particular era or style of landscape design associated with the original development of the site.	The tree is a locally-indigenous species, representative of the original vegetation of the area and is a dominant or associated canopy species of an Endangered Ecological Community (EEC) formerly occurring in the area occupied by the site.	The subject tree has a very large live crown size exceeding 200m²; a crown density exceeding 70% (normal-dense), is a very good representative of the species in terms of its form and branching habit or is aesthetically distinctive and makes a positive contribution to the visual character and the amenity of the area
3. HIGH	The tree has a suspected historical association with a heritage item or landscape supported by anecdotal or visual evidence	The tree is a locally-indigenous species and representative of the original vegetation of the area and the tree is located within a defined Vegetation Link / Wildlife Corridor or has known wildlife habitat value	The subject tree has a large live crown size exceeding 100m²; The tree is a good representative of the species in terms of its form and branching habit with minor deviations from normal (e.g. crown distortion/suppression) with a crown density of at least 70% (normal); The subject tree is visible from the street and surrounding properties and makes a positive contribution to the visual character and the amenity of the area
4. MODERATE	The tree has no known or suspected historical association, but does not detract or diminish the value of the item and is sympathetic to the original era of planting.	The subject tree is a non-local native or exotic species that is protected under the provisions of the local or state planning controls (Development Control Plan etc).	The subject tree has a medium live crown size exceeding 40m²; the tree is a fair representative of the species, exhibiting moderate deviations from typical form (distortion/suppression etc) with a crown density of more than 50% (thinning to normal); and
			The tree is visible from surrounding properties, but is not visually prominent – view may be partially obscured by other vegetation or built forms. The tree makes a fair contribution to the visual character and amenity of the area.
5. LOW	The subject tree detracts from heritage values or diminishes the value of a heritage item	The subject tree is scheduled as exempt (not protected) under the provisions of the local or state planning controls (DCP etc) due to its species, nuisance or position relative to buildings or other structures.	The subject tree has a small live crown size of less than 40m² and can be replaced within the short term (5-10 years) with new tree planting
6. VERY LOW	The subject tree is causing significant damage to a heritage Item.	The subject tree is listed as an Environment Weed Species in the relevant Local Government Area, being invasive, or is a known nuisance species.	The subject tree is not visible from surrounding properties (visibility obscured) and makes a negligible contribution or has a negative impact on the amenity and visual character of the area. The tree is a poor representative of the species, showing significant deviations from the typical form and branching habit with a crown density of less than 50% (sparse).
7. INSIGNIFICANT	The tree is completely dead and has no known heritage value (or any habitat value)	The tree is scheduled as a potential 'Biosecurity Risk' ('Priority Weed' – formerly 'Noxious Weed') within NSW or within the relevant Local Government Area under the provisions of the *Biosecurity Act 2015*	The tree is completely dead and represents a potential hazard.

Ref:- Morton, A (2006) **Determining the Retention Value of Trees on Development Sites**
TreeNet - Proceedings of the 7th National Street Tree Symposium 2006 Government of South Australia Department for Transport, Energy and Infrastructure

APPENDIX 2 – ACCEPTABLE INCURSIONS TO THE TREE PROTECTION ZONE (TPZ)



NOTE: Less than 10% TPZ area and outside SRZ. Any loss of TPZ compensated for elsewhere.

REF:- Council of Standards Australia (August 2009)
AS 4970 – 2009 – Protection of Trees on Development Sites
Standards Australia, Sydney

APPENDIX 3 - TREE HEALTH AND CONDITION ASSESSMENT SCHEDULE

Tree Identification No.	Species	Height (m)	Spread (m)	Trunk Diameter (mm) at 1.4 metres	Live Crown Size (m^2)	Maturity Class	Condition	Previous Pruning	Health		Remaining Safe Useful Life Expectancy (SULE)	Landscape Significance Rating	Retention Value	Location
									Vigour	Pest & Disease				
1	***Eucalyptus sp.*** (Peppermint)	7	6	223	30	SM	Appears stable with fair branching structure. Exhibits a prominent lean to the south-west. Crown suppressed on the north-east side due to overshadowing. Contorted branching habit.	TLs lopped south side to clear overhead powerlines	Fair with slightly thinning crown	No Evidence	Short 5-15 Years	5	**Low**	On-site
1a	***Syzygium luehmannii*** (Small-leaf Lillypilly)	5	5	80 + 120	25	SM	Appears stable with sound branching structure.	No evidence	Good	No Evidence	Long - more than 40 years	5	**Moderate**	On-site
2	***Corymbia gummifera*** (Red Bloodwood)	18	6	404	42	M	Appears stable with poor branching structure. Exhibits a moderate wound at 11 metres due to previous pruning.	Crown lifted to 11 metres south side and leader removed at 11 metres to clear overhead powerlines	Good	No Evidence	Medium 15-40 Years	3	**Moderate**	On-site
2a	***Angophora costata*** (Sydney Red Gum)	20	10	450	100	M	Appears stable with sound branching structure. Exhibits multiple moderate wounds due to previous pruning.	Crown lifted to 14 metres south side to clear overhead powerlines	Very Good	No Evidence	Long - more than 40 years	3	**High**	Adjoining reserve
3	***Eucalyptus sp.*** (Stringybark)	12	8	150 + 300	72	SM	Appears stable with sound branching structure.	No evidence	Good	No Evidence	Long - more than 40 years	3	**High**	On-site
4	***Corymbia gummifera*** (Red Bloodwood)	20	10	564	120	M	Appears stable with sound branching structure. Exhibits multiple small wounds and subsequent epicormics due to previous pruning. Prominent lean to the south-west.	Crown lifted to 14 metres south side to clear overhead powerlines	Good	No Evidence	Long - more than 40 years	3	**High**	On-site
5	***Corymbia gummifera*** (Red Bloodwood)	13	4	264	12	SM	Appears stable with poor branching structure. Exhibits substantial dieback with 50% deadwood and 20% epicormic growth. Upper crown suppressed due to overshadowing. Large partly occluded axial wound on trunk at 6-8 metres due borer damage with secondary termite infestation.	No evidence	Fair with thinning crown	Moderate borer infestation. Moderate termite infestation (*Nasuitermes sp* .)	Transient (less than 5 years)	3	**Low**	On-site

PL = Primary Limb; SL = Secondary Limb; TL = Tertiary Limb. GL = Ground Level

APPENDIX 3 - TREE HEALTH AND CONDITION ASSESSMENT SCHEDULE

Tree Identification No.	Species	Height (m)	Spread (m)	Trunk Diameter (mm) at 1.4 metres	Live Crown Size (m^2)	Maturity Class	Condition	Previous Pruning	Health		Remaining Safe Useful Life Expectancy (SULE)	Landscape Significance Rating	Retention Value	Location
									Vigour	Pest & Disease				
6	***Angophora costata*** (Sydney Red Gum)	18	14	557	154	M	Appears stable with sound branching structure.	No evidence	Good	No Evidence	Long - more than 40 years	2	**High**	On-site
7	***Corymbia gummifera*** (Red Bloodwood)	12	5	280	35	SM	Appears stable with poor branching structure. Exhibits some dieback with 20% deadwood and 50% epicormic growth. Multiple moderate wounds and subsequent epicormics due to previous pruning. Crown suppressed on west side due to overshadowing.	Secondary leader removed at 0.5 metres from GL. Leader removed (topped) at 8 metres.	Fair with slightly thinning crown	Low borer infestation	Short 5-15 Years	3	**Low**	On-site
8	***Corymbia gummifera*** (Red Bloodwood)	22	7	481	119	M	Appears stable with fair branching structure. Moderate wound due previous pruning.	Crown lifted to 14 metres south side to clear overhead powerlines	Good	No Evidence	Long - more than 40 years	3	**High**	On-site
9	***Angophora costata*** (Sydney Red Gum)	23	11	637	198	M	Appears stable with fair branching structure. Exhibits a moderate wound and suspected cavity at 12 metres at junction of co-dominant PLs. Moderate bark inclusion at junction of PL at 1.5 metres. Multiple basal triangular wounds (dieback in vascular tissue) at GL due to suspected fungal infection.	Crown lifted to 12 metres south side to clear overhead powerlines	Good	Suspected Root Rot or Butt Rott infection (possibly *Gymnopilus sp.*)	Short 5-15 Years	3	**moderate**	On-site
10	***Corymbia gummifera*** (Red Bloodwood)	12	6	328	30	SM	Appears stable with poor branching structure. Exhibits a prominent lean to the west. Crown suppressed on the east side due to crowding. 15% deadwood and 30% epicormic growth. Poor form and habit.	No evidence	Fair with thinning crown	No Evidence	Transient (less than 5 years)	3	**Low**	On-site
11	***Angophora costata*** (Sydney Red Gum)	25	15	675	225	M	Appears stable with sound branching structure.	Selectively pruned	Good	No Evidence	Long - more than 40 years	2	**High**	On-site

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APPENDIX 3 - TREE HEALTH AND CONDITION ASSESSMENT SCHEDULE

Tree Identification No.	Species	Height (m)	Spread (m)	Trunk Diameter (mm) at 1.4 metres	Live Crown Size (m^2)	Maturity Class	Condition	Previous Pruning	Health		Remaining Safe Useful Life Expectancy (SULE)	Landscape Significance Rating	Retention Value	Location
									Vigour	Pest & Disease				
12	***Eucalyptus sp.*** (Stringybark)	13	10	357	50	SM	Appears stable with sound branching structure. Exhibits a prominent lean to the north. Crown suppressed on the south side due to overshadowing. Located close to existing driveway.	No evidence	Good	No Evidence	Long - more than 40 years	3	**High**	On-site
13	***Angophora costata*** (Sydney Red Gum)	20	4	360	20	SM	Appears stable with fair branching structure. Exhibits an elevated crown with low Live Crown Ratio. 70% epicormic growth.	No evidence	.Fair	No Evidence	Short 5-15 Years	3	**Moderate**	On-site
14	***Corymbia gummifera*** (Red Bloodwood)	20	6	439	48	M	Appears stable with fair branching structure. Moderate dieback with 30% deadwood and 20% epicormic growth. Multiple occluded concentric wounds to trunk and PLs due Sugar Glider feeding.	No evidence	Fair with thinning crown	No Evidence	Short 5-15 Years	3	**Moderate**	On-site
15	***Angophora costata*** (Sydney Red Gum)	16	8	334	64	SM	Appears stable with fair branching structure. Crown suppressed on the east side due to overshadowing with contorted branching habit.	No evidence	Good	No Evidence	Long - more than 40 years	3	**High**	On-site
15a	***Ficus benjamina*** (Weeping Fig)	6	6	100	30	I	Appears stable with sound branching structure.	No evidence	Very Good	Low vine infestation (Climbing Fig)	Long - more than 40 years	6	**Low**	On-site
16	***Angophora costata*** (Sydney Red Gum)	18	14	600	196	M	Appears stable with sound branching structure.	No evidence	Good	No Evidence	Long - more than 40 years	3	**High**	On-site
17	***Archontophoenix cunninghamii*** (Bangalow Palm)	6	4	175	8	I	Appears stable with sound branching structure.	No evidence	Good	High vine infestation (Climbing Fig)	Long - more than 40 years	6	**Low**	On-site
18	***Syagrus romanzoffianum*** (Cocos Palm)	8	6	258	18	SM	Appears stable with sound branching structure.	No evidence	Good	No Evidence	Long - more than 40 years	6	**Low**	On-site

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APPENDIX 3 - TREE HEALTH AND CONDITION ASSESSMENT SCHEDULE

Tree Identification No.	Species	Height (m)	Spread (m)	Trunk Diameter (mm) at 1.4 metres	Live Crown Size (m^2)	Maturity Class	Condition	Previous Pruning	Health		Remaining Safe Useful Life Expectancy (SULE)	Landscape Significance Rating	Retention Value	Location
									Vigour	Pest & Disease				
19	***Ficus benjamina*** (Weeping Fig)	6	7	130+ 180	28	I	Appears stable with fair branching structure.	No evidence	Very Good	No Evidence	Long - more than 40 years	6	**Low**	On-site
20	***Archontophoenix cunninghamii*** (Bangalow Palm)	8	5	180	15	SM	Appears stable with sound branching structure.	No evidence	Good	High vine infestation (Climbing Fig)	Long - more than 40 years	6	**Low**	On-site
21	***Ulmus parvifolia*** (Chinese Elm)	8	10	200x2	60	SM	Appears stable with fair branching structure. Exhibits a very prominent lean to the west with poor form and habit.	No evidence	Very Good	High vine infestation (Climbing Fig)	Medium 15-40 Years	6	**Low**	On-site
21a	***Gleditsia triacanthos*** (Honey Locust)	6	5	134	15	I	Appears stable with fair branching structure. Exhibits multiple moderate wounds to trunk and PLs due to mechanical injury (vehicle damage).	No evidence	Fair with slightly thinning crown	No Evidence	Short 5-15 Years	5	**Low**	On-site
22	***Casuarina glauca*** (Swamp Oak)	12	4	180	28	SM	Appears stable with fair branching structure.	No evidence	Fair with slightly thinning crown	Severe vine infestation (English Ivy) to trunk and PLs	Transient (less than 5 years)	5	**Very Low**	On-site
23	***Angophora costata*** (Sydney Red Gum)	20	10	455	130	M	Appears stable with fair branching structure. Exibits a prominent lean to the south-east. Some dieback. Large axial wound at 8-12 metres extending up along PL (possibly due to previous lightning strike).	No evidence	Fair with slightly thinning crown	Low vine infestation (English Ivy).	Short 5-15 Years	3	**Moderate**	On-site
24	***Eucalyptus sp. [resinifera]*** (Red Mahogany)	18	16	500	208	M	Appears stable with sound branching structure. Prominent lean to the north. Trunk and PLs obscured by Ivy.	No evidence	Good	High vine infestation (English Ivy) to trunk and PLs	Long - more than 40 years	3	**High**	On-site
25	***Schefflera actinophylla*** (Umbrella Tree)	9	5	200	25	SM	Appears stable with far branching structure. Exhibits multiple large axial wounds on lower trunk with decay and aerial roots emanating from around wounds. Prominent lean to the north-west.	No evidence	Good	No Evidence	Short 5-15 Years	6	**Very Low**	On-site

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APPENDIX 3 - TREE HEALTH AND CONDITION ASSESSMENT SCHEDULE

Tree Identification No.	Species	Height (m)	Spread (m)	Trunk Diameter (mm) at 1.4 metres	Live Crown Size (m^2)	Maturity Class	Condition	Previous Pruning	Health		Remaining Safe Useful Life Expectancy (SULE)	Landscape Significance Rating	Retention Value	Location
									Vigour	Pest & Disease				
26	***Eucalyptus sp. [resinifera]*** (Red Mahogany)	17	11	475	121	M	Appears stable with sound branching structure. Exhibits moderate interior crown dieback with 35% deadwood and 20% epicormic growth. Crown suppressed on the south side due to overshadowing.	No evidence	Fair with thinning crown	Bark harvesting from Ringtail Possums	Short 5-15 Years	3	**Moderate**	On-site
27	***Gleditsia triacanthos*** (Honey Locust)	6	7	159	28	I	Appears stable with fair branching structure. Prominent lean to the north-west. Upper crown suppressed due to overshadowing.	Crown lifted to 3 metres.	Good	No Evidence	Short 5-15 Years	6	**Very Low**	On-site
28	***Archontophoenix cunninghamii*** (Bangalow Palm)	10	4	204	16	SM	Appears stable with sound branching structure.	No evidence	Good	Moderate vine infestation (Climbing Fig)	Long - more than 40 years	6	**Low**	On-site
29	***Syagrus romanzoffianum*** (Cocos Palm)	11	5	200	20	SM	Appears stable with fair branching structure.	No evidence	Good	Moderate vine infestation (Wisteria)	Medium 15-40 Years	6	**Low**	On-site
30	***Syagrus romanzoffianum*** (Cocos Palm)	10	4	230	12	SM	Appears stable with fair branching structure.	No evidence	Good	High vine infestation (Wisteria)	Medium 15-40 Years	6	**Low**	On-site
31	***Citharexylum spinosum*** (Fiddlewood)	9	7	200	49	I	Appears stable with sound branching structure.	No evidence	Good	No Evidence	Medium 15-40 Years	6	**Low**	On-site
32	***Angophora costata*** (Sydney Red Gum)	14	12	650	96	M	Stability suspect with fair branching structure. Exhibits a moderate wound on PL at 3 metres due borer damage. Small wound on south-west side of trunk at GL with decay evident. Some crown dieback with 10% deadwood and 10% epicormic growth.	No evidence	Fair with thinning crown	Moderate borer infestation. High Bracket Fungus (*Phellinus sp.*) infection at GL.	Transient (less than 5 years)	3	**Low**	On-site
33	***Malus sp.*** (Apple tree)	5	5	100x3	25	M	Appears stable with fair branching structure.	No evidence	Good	Low defoliation due Possum foraging	Short 5-15 Years	6	**Very Low**	On-site
33a	***Eucalyptus sp. [resinifera]*** (Red Mahogany)	18	10	420	100	M	Appears stable with fair branching structure.	Crown lifted to 12 metres south side to clear overhead powerlines	Good	No Evidence	Long - more than 40 years	3	**High**	Adjoining property

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APPENDIX 3 - TREE HEALTH AND CONDITION ASSESSMENT SCHEDULE

Tree Identification No.	Species	Height (m)	Spread (m)	Trunk Diameter (mm) at 1.4 metres	Live Crown Size (m^2)	Maturity Class	Condition	Previous Pruning	Health		Remaining Safe Useful Life Expectancy (SULE)	Landscape Significance Rating	Retention Value	Location
									Vigour	Pest & Disease				
33b	***Schefflera actinophylla*** (Umbrella Tree)	6	1	80	2	I	Appears stable with poor branching structure.	No evidence	Fair with thinning crown	No Evidence	Transient (less than 5 years)	6	**Very Low**	On-site
34	***Prunus sp.*** (Peach tree)	6	8	170x2	40	M	Appears stable with fair branching structure. Exhibits a prominent lean to the south-east. Some dieback with 15% deadwood.	Selectively pruned.	Fair with thinning crown	No Evidence	Short 5-15 Years	6	**Very Low**	On-site
35	***Ficus carica*** (Common Fig)	6	6	120 + 150x2	36	M	Appears stable with poor branching structure. Exhibits multiple sever bark inclusions at junctions of co-dominant PLs (x3) at 1 metre.	No evidence	Good	No Evidence	Medium 15-40 Years	6	**Low**	On-site
36	***Eucalyptus sp. [resinifera]*** (Red Mahogany)	17	8	417	96	SM	Appears stable with fair branching structure. Crown suppressed on north-east due to overshadowing. Some interior crown dieback with 15% deadwood.	Leader removed at 7 metres.	Fair with slightly thinning crown	Multiple Witches Brooms (fasciation) to TLs	Medium 15-40 Years	3	**Moderate**	On-site
37	***Callistemon viminalis*** (Weeping Bottlebrush)	6	5	200	20	SM	Stability suspect with fair branching structure. Located close to existing carport and associated retaining wall. Prominent lean to the north. Root plate lifted and partially exposed.	No evidence	Good	No Evidence	Short 5-15 Years	5	**Low**	On-site
38	***Syagrus romanzoffianum*** (Cocos Palm)	8	4	200	12	SM	Appears stable with sound branching structure.	No evidence	Good	No Evidence	Medium 15-40 Years	6	**Low**	On-site
39	***Washingtonia robusta*** (Washington Palm)	6	3	250	9	I	Appears stable with sound branching structure.	No evidence	Very Good	No Evidence	Long - more than 40 years	6	**Low**	On-site
40	***Schefflera actinophylla*** (Umbrella Tree)	10	6	200 + 250	42	SM	Appears stable with fair branching structure.	No evidence	Good	No Evidence	Medium 15-40 Years	6	**Low**	On-site
41	***Syagrus romanzoffianum*** (Cocos Palm)	7	3.5	140	10.5	I	Appears stable with sound branching structure.	No evidence	Good	No Evidence	Medium 15-40 Years	6	**Low**	On-site

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APPENDIX 3 - TREE HEALTH AND CONDITION ASSESSMENT SCHEDULE

Tree Identification No.	Species	Height (m)	Spread (m)	Trunk Diameter (mm) at 1.4 metres	Live Crown Size (m^2)	Maturity Class	Condition	Previous Pruning	Health		Remaining Safe Useful Life Expectancy (SULE)	Landscape Significance Rating	Retention Value	Location
									Vigour	Pest & Disease				
42	***Syagrus romanzoffianum*** (Cocos Palm)	6	3.5	160	10.5	I	Appears stable with sound branching structure.	No evidence	Good	No Evidence	Medium 15-40 Years	6	**Low**	On-site
43	***Eucalyptus tereticornis*** (Forest Red Gum)	22	18	600 + 750	216	M	Appears stable with fair branching structure. Exhibits a large axial wound on PL from 1.5 to 4 metres with decay, small axial wound to Plat 2.5 to 3 metres with decay and small axial wound on PL at 4-5 metres with decay.	No evidence	Good	Severe Bracket Fungus (Phellinus sp.) infection in PLs at 2.5 metres, 3 metres and 3.5 metres.	Short 5-15 Years	2	**Moderate**	On-site
43a	***Syzygium luehmannii*** (Small-leaf Lillypilly)	6	4	100	24	SM	Appears stable with sound branching structure.	No evidence	Very Good	No Evidence	Long - more than 40 years	5	**Moderate**	On-site
43b	***Syzygium luehmannii*** (Small-leaf Lillypilly)	6	4	100	24	SM	Appears stable with sound branching structure.	No evidence	Very Good	No Evidence	Long - more than 40 years	5	**Moderate**	On-site
44	***Eucalyptus tereticornis*** (Forest Red Gum)	13	8	274	64	SM	Appears stable with sound branching structure. Exhibits a very prominent lean to the north	Crown lifted to 4 metres	Very Good	No Evidence	Medium 15-40 Years	4	**Moderate**	On-site
45	***Callistemon salignus*** (Willow Bottlebrush)	9	5	100 + 150	35	SM	Appears stable with sound branching structure. Exhibits a prominent lean to the south.	No evidence	Poor with sparse crown	Severe defoliation due to Possum foraging.	Transient (less than 5 years)	5	**Very Low**	On-site
46	***Banksia serrata*** (Old Man Banksia)	9	3.5	194	21	SM	Appears stable with sound branching structure. Exhibits a prominent lean to the south. Crown suppressed on the north side due to overshadowing.	No evidence	Good	No Evidence	Long - more than 40 years	5	**Moderate**	On-site
47	***Syzygium australe*** (Lilly Pilly)	9	9	290	72	SM	Appears stable with sound branching structure.	No evidence	Good	Moderate foliar insect infestation.	Long - more than 40 years	4	**Moderate**	On-site

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APPENDIX 3 - TREE HEALTH AND CONDITION ASSESSMENT SCHEDULE

Tree Identification No.	Species	Height (m)	Spread (m)	Trunk Diameter (mm) at 1.4 metres	Live Crown Size (m^2)	Maturity Class	Condition	Previous Pruning	Health		Remaining Safe Useful Life Expectancy (SULE)	Landscape Significance Rating	Retention Value	Location
									Vigour	Pest & Disease				
48	***Tibouchina granulosa*** (Lasiandra)	6	7	200	35	M	Appears stable with fair branching structure. Exhibits some interior crown dieback with 10% deadwood. Crown suppressed west side due to crowding.	Previously lopped at 1-1.5 metres (crown restored)	Fair with slightly thinning crown	No Evidence	Medium 15-40 Years	5	**Low**	On-site
49	***Syzygium australe*** (Lilly Pilly)	9	6	226	54	SM	Appears stable with fair branching structure.	No evidence	Good	No Evidence	Long - more than 40 years	4	**Moderate**	On-site
50	***Syzygium australe*** (Lilly Pilly)	9	6	180	48	SM	Appears stable with sound branching structure.	No evidence	Good	No Evidence	Long - more than 40 years	4	**Moderate**	On-site
51	***Syzygium australe*** (Lilly Pilly)	9	7	180	56	SM	Appears stable with sound branching structure.	No evidence	Good	No Evidence	Long - more than 40 years	4	**Moderate**	On-site
52	***Syzygium australe*** (Lilly Pilly)	9	7	200	56	SM	Appears stable with sound branching structure.	No evidence	Good	No Evidence	Long - more than 40 years	4	**Moderate**	On-site
53	***Syzygium australe*** (Lilly Pilly)	9	7	170x2	56	SM	Appears stable with poor branching structure. Exhibits a high bark inclusion at junction of co-dominant PLs at 1.2 metres.	Selectively pruned.	Good	No Evidence	Medium 15-40 Years	4	**Moderate**	On-site
53a	***Musa sp.*** (Banana Palm)	7	7	100x15	49	M	Appears stable with sound branching structure.	No evidence	Good	No Evidence	Medium 15-40 Years	6	**Low**	On-site
54	***Schinus areira*** (Peppercorn Tree)	11	12	280	120	M	Appears stable with sound branching structure. Exhibits multiple moderate wounds on lower trunk (PL branch collars) due previous branch loss with some decay evident.	Selectively pruned.	Good	No Evidence	Long - more than 40 years	4	**Moderate**	On-site
55	***Syagrus romanzoffianum*** (Cocos Palm)	13	5	200	15	M	Appears stable with sound branching structure.	No evidence	Good	No Evidence	Medium 15-40 Years	6	**Low**	On-site

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APPENDIX 3 - TREE HEALTH AND CONDITION ASSESSMENT SCHEDULE

Tree Identification No.	Species	Height (m)	Spread (m)	Trunk Diameter (mm) at 1.4 metres	Live Crown Size (m^2)	Maturity Class	Condition	Previous Pruning	Health		Remaining Safe Useful Life Expectancy (SULE)	Landscape Significance Rating	Retention Value	Location
									Vigour	Pest & Disease				
56	***Archontophoenix cunninghamii*** (Bangalow Palm)	11	4	200	16	M	Appears stable with fair branching structure. Located in close proximity to T57.	No evidence	Good	No Evidence	Medium 15-40 Years	6	**Low**	On-site
57	***Archontophoenix cunninghamii*** (Bangalow Palm)	10	4	200	12	M	Appears stable with fair branching structure. Located in close proximity to T56.	No evidence	Good	No Evidence	Medium 15-40 Years	6	**Low**	On-site
58	***Xylosma senticosa*** (Shiny Xylosma)	7	7	150x2	49	M	Appears stable with fair branching structure.	Lopped at 1.5 metres (crown restored)	Good	No Evidence	Short 5-15 Years	5	**Low**	On-site
59	***Xylosma senticosa*** (Shiny Xylosma)	6	6	200 + 100	36	M	Appears stable with poor branching structure. Exhibits a prominent lean to the south-east.	Lopped at 1.5 metres (crown restored)	Good	No Evidence	Short 5-15 Years	5	**Low**	On-site
60	***Syagrus romanzoffianum*** (Cocos Palm)	11	5	270	20	M	Appears stable with sound branching structure.	No evidence	Good	No Evidence	Long - more than 40 years	6	**Low**	On-site
61	***Syagrus romanzoffianum*** (Cocos Palm)	9	4	250	8	M	Appears stable with sound branching structure.	No evidence	Good	No Evidence	Long - more than 40 years	6	**Low**	On-site
62	***Xylosma senticosa*** (Shiny Xylosma)	6	5	150	30	M	Appears stable with sound branching structure.	Lopped at 1.5 metres (crown restored)	Good	No Evidence	Short 5-15 Years	5	**Low**	On-site
63	***Syagrus romanzoffianum*** (Cocos Palm)	9	4.5	200	9	SM	Appears stable with sound branching structure. Located close to existing in-ground swimming pool.	No evidence	Good	No Evidence	Short 5-15 Years	6	**Very Low**	On-site
64	***Syagrus romanzoffianum*** (Cocos Palm)	11	4.5	230	13.5	SM	Appears stable with sound branching structure. Located close to existing in-ground swimming pool.	No evidence	Good	No Evidence	Short 5-15 Years	6	**Very Low**	On-site
65	***Syagrus romanzoffianum*** (Cocos Palm)	10	4.5	230	13.5	SM	Appears stable with sound branching structure. Located close to existing in-ground swimming pool.	No evidence	Good	No Evidence	Short 5-15 Years	6	**Very Low**	On-site
66	***Syagrus romanzoffianum*** (Cocos Palm)	9	4.5	150	9	SM	Appears stable with sound branching structure. Located close to existing in-ground swimming pool.	No evidence	Good	No Evidence	Short 5-15 Years	6	**Very Low**	On-site

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APPENDIX 3 - TREE HEALTH AND CONDITION ASSESSMENT SCHEDULE

Tree Identification No.	Species	Height (m)	Spread (m)	Trunk Diameter (mm) at 1.4 metres	Live Crown Size (m^2)	Maturity Class	Condition	Previous Pruning	Health		Remaining Safe Useful Life Expectancy (SULE)	Landscape Significance Rating	Retention Value	Location
									Vigour	Pest & Disease				
67	***Syagrus romanzoffianum*** (Cocos Palm)	10	4.5	220	13.5	SM	Appears stable with sound branching structure. Located close to existing in-ground swimming pool.	No evidence	Good	No Evidence	Short 5-15 Years	6	**Very Low**	On-site
68	***Syagrus romanzoffianum*** (Cocos Palm)	11	4.5	200	13.5	SM	Appears stable with sound branching structure.	No evidence	Good	No Evidence	Medium 15-40 Years	6	**Low**	On-site
69	***Syagrus romanzoffianum*** (Cocos Palm)	12	4.5	200	13.5	SM	Appears stable with sound branching structure.	No evidence	Good	No Evidence	Long - more than 40 years	6	**Low**	On-site
70	***Howea forsteriana*** (Kentia Palm)	9	5	150	10	M	Appears stable with sound branching structure. Located close to existing dwelling.	No evidence	Fair with slightly thinning crown	No Evidence	Medium 15-40 Years	6	**Low**	On-site
71	***Howea forsteriana*** (Kentia Palm)	7	4	150	8	M	Appears stable with sound branching structure. Located close to existing dwelling.	No evidence	Good	No Evidence	Medium 15-40 Years	6	**Low**	On-site
72	***Howea forsteriana*** (Kentia Palm)	8	4	150	12	M	Appears stable with sound branching structure. Located close to existing dwelling.	No evidence	Good	No Evidence	Medium 15-40 Years	6	**Low**	On-site
73	***Syagrus romanzoffianum*** (Cocos Palm)	14	6	318	48	M	Appears stable with sound branching structure.	No evidence	Very Good	No Evidence	Long - more than 40 years	6	**Low**	On-site
73a	***Plumeria rubra*** (Red Frangipani)	3.5	4	120	10	I	Appears stable with fair branching structure. Located within small raised planter.	Crown lifted to 2 metres	Good	No Evidence	Medium 15-40 Years	6	**Low**	On-site
74	***Lophostemon confertus*** (Brushbox)	13	9	270 + 330	90	M	Appears stable with sound branching structure. Exhibits some interior crown dieback with 15% deadwood. Crown suppressed north-west side due to crowding.	No evidence	Good	No Evidence	Long - more than 40 years	3	**High**	On-site
75	***Lophostemon confertus*** (Brushbox)	14	9	480	108	M	Appears stable with sound branching structure.	No evidence	Good	Low vine infestation (English Ivy) on trunk	Long - more than 40 years	3	**High**	On-site

PL = Primary Limb; SL = Secondary Limb; TL = Tertiary Limb. GL = Ground Level

APPENDIX 3 - TREE HEALTH AND CONDITION ASSESSMENT SCHEDULE

Tree Identification No.	Species	Height (m)	Spread (m)	Trunk Diameter (mm) at 1.4 metres	Live Crown Size (m^2)	Maturity Class	Condition	Previous Pruning	Health		Remaining Safe Useful Life Expectancy (SULE)	Landscape Significance Rating	Retention Value	Location
									Vigour	Pest & Disease				
76	***Lophostemon confertus*** (Brushbox)	10	8	430	72	M	Appears stable with poor branching structure. Exhibits a large axial wound at 1-4 metres. Main leader broken out at 4 metres with decay evident.	No evidence	.Fair	High borer infestation	Short 5-15 Years	4	**Low**	On-site
77	***Dicksonia antarctica*** (Soft Tree Fern)	2	2	220	2	M	Appears stable with sound branching structure.	No evidence	Fair with slightly thinning crown	No Evidence	Short 5-15 Years	6	**Very Low**	On-site
77a	***Duranta erecta* 'Variegata'** (Variegated Pigeonberry)	4.5	5	60x3	17.5	SM	Appears stable with sound branching structure. Located close to existing outbuilding.	No evidence	Very Good	No Evidence	Medium 15-40 Years	6	**Low**	On-site
78	***Camellia sasanqua*** (Sasanqua Camellia)	4.5	5	60x5	22.5	SM	Appears stable with fair branching structure.	Clipped to rectangular form	Very Good	No Evidence	Medium 15-40 Years	6	**Low**	On-site
79	***Tibouchina granulosa*** (Lasiandra)	5	4	70x2	16	SM	Appears stable with fair branching structure.	No evidence	Good	No Evidence	Medium 15-40 Years	5	**Low**	On-site
80	***Murraya paniculata*** (Murraya)	3	3	50x5	9	SM	Appears stable with sound branching structure.	Clipped to elliptical form	Very Good	No Evidence	Short 5-15 Years	6	**Very Low**	On-site
82	***Callistemon sp. [viminalis]*** (Weeping Bottlebrush)	6	4	170x2	20	M	Appears stable with fair branching structure. Crown suppressed on the north side due to crowding.	Crown lifted to 5 metres east side over driveway	Fair with slightly thinning crown	High vine infestation (English Ivy)	Short 5-15 Years	5	**Low**	On-site
83	***Prunus sp.*** (Peach tree)	5	4	130x2	20	M	Appears stable with fair branching structure. Crown suppressed on the north side due to overshadowing.	Selectively pruned east side over driveway	.Fair	No Evidence	Short 5-15 Years	6	**Very Low**	On-site
84	***Malus floribunda*** (Japanese Crabapple)	8	9	180 + 250	72	M	Appears stable with sound branching structure.	Crown lifted east side over driveway.	Good	No Evidence	Medium 15-40 Years	4	**Moderate**	On-site
85	***Juniperus sp.*** (Juniper)	3.5	3	40x7	10.5	SM	Appears stable with sound branching structure.	No evidence	Fair with thinning crown	No Evidence	Short 5-15 Years	6	**Very Low**	On-site

PL = Primary Limb; SL = Secondary Limb; TL = Tertiary Limb. GL = Ground Level

APPENDIX 3 - TREE HEALTH AND CONDITION ASSESSMENT SCHEDULE

Tree Identification No.	Species	Height (m)	Spread (m)	Trunk Diameter (mm) at 1.4 metres	Live Crown Size (m^2)	Maturity Class	Condition	Previous Pruning	Health		Remaining Safe Useful Life Expectancy (SULE)	Landscape Significance Rating	Retention Value	Location
									Vigour	Pest & Disease				
86	***Fraxinus griffithii*** (Evergreen Ash)	6	8	100x10	40	SM	Appears stable with poor branching structure. Multi-trunked specimen due previous pruning.	Previously lopped at 1.5 + 4 metres (crown restored).	Good	No Evidence	Short 5-15 Years	6	Very Low	On-site
87	***Tibouchina granulosa*** (Lasiandra)	5	5	90x6	15	SM	Appears stable with poor branching structure.	Previously lopped at 1-2 metres (crown restored).	Fair with slightly thinning crown	No Evidence	Short 5-15 Years	5	Low	On-site
88	***Tibouchina granulosa*** (Lasiandra)	6	6	70x4	30	SM	Appears stable with poor branching structure.	Previously lopped at 2 metres (crown restored).	.Fair	No Evidence	Short 5-15 Years	5	Low	On-site
89	***Liquidambar styraciflua*** (Liquidambar)	19	17	630	272	M	Appears stable with sound branching structure. Exhibits a prominent lean to the south-west.	Selectively pruned.	Very Good	No Evidence	Long - more than 40 years	3	High	Nature strip
90	***Syzygium australe*** (Lilly Pilly)	6	5	120	30	I	Appears stable with sound branching structure. Exhibits a prominent lean to the south-west.	No evidence	Good	No Evidence	Medium 15-40 Years	5	Low	On-site
91	***Citharexylum spinosum*** (Fiddlewood)	13	10	370 + 480	120	M	Appears stable with sound branching structure.	No evidence	Good	No Evidence	Long - more than 40 years	6	Low	On-site
92	***Eucalyptus botryoides*** (Bangalay)	20	11	500	143	M	Appears stable with fair branching structure. Exhibits a large axial wound to trunk and corresponding dieback in PL due to suspected lightning strike.	Deadwooded	Good	Low termite infestation (Nasuitermes sp.)	Long - more than 40 years	3	High	On-site
93	***Tibouchina granulosa*** (Lasiandra)	4.5	5	200	17.5	SM	Appears stable with fair branching structure.	Previously lopped at 1 + 2 metres (Crown restored)	Good	No Evidence	Medium 15-40 Years	6	Low	On-site
94	***Eucalyptus elata*** (River Peppermint)	12	7	270 + 180 + 450	56	OM	Stability suspect with fair branching structure.	Large PL removed (lopped)	Fair with slightly thinning crown	Moderate vine infestation (Wisteria)	Short 5-15 Years	4	Low	On-site
95	***Eucalyptus elata*** (River Peppermint)	13	8	220x2	64	M	Appears stable with sound branching structure.	No evidence	.Fair	No Evidence	Medium 15-40 Years	4	Moderate	On-site

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APPENDIX 3 - TREE HEALTH AND CONDITION ASSESSMENT SCHEDULE

Tree Identification No.	Species	Height (m)	Spread (m)	Trunk Diameter (mm) at 1.4 metres	Live Crown Size (m^2)	Maturity Class	Condition	Previous Pruning	Health		Remaining Safe Useful Life Expectancy (SULE)	Landscape Significance Rating	Retention Value	Location
									Vigour	Pest & Disease				
96	***Eucalyptus elata*** (River Peppermint)	15	10	350	100	M	Stability suspect with fair branching structure. Exhibits a very prominent lean to the south (self-corrected).	No evidence	.Fair	No Evidence	Transient (less than 5 years)	4	**Very Low**	On-site
97	***Eucalyptus elata*** (River Peppermint)	15	10	400	90	M	Appears stable with sound branching structure. Exhibits moderate interior crown dieback with 30% deadwood and 50% epicormic growth.	No evidence	Fair with thinning crown	No Evidence	Short 5-15 Years	4	**Low**	On-site
98	***Cyathea cooperi*** (Rough Tree Fern)	4	4	100x2	12	SM	Appears stable with sound branching structure. Located immediately adjacent masonry fence/retaining wall.	No evidence	Good	No Evidence	Short 5-15 Years	6	**Very Low**	On-site
99	***Cyathea cooperi*** (Rough Tree Fern)	4	4	120	12	SM	Appears stable with sound branching structure. Located immediately adjacent masonry fence/retaining wall.	No evidence	Good	No Evidence	Short 5-15 Years	6	**Very Low**	On-site
100	***Howea forsteriana*** (Kentia Palm)	7	3.5	156	10.5	SM	Appears stable with sound branching structure.	No evidence	Good	No Evidence	Long - more than 40 years	6	**Low**	On-site
101	***Strelitzia nicolai*** (Giant White Bird of Paradise)	7	5	100x7	35	SM	Appears stable with sound branching structure.	No evidence	Good	No Evidence	Long - more than 40 years	5	**Moderate**	On-site
102	***Strelitzia nicolai*** (Giant White Bird of Paradise)	6	5	100x6	30	SM	Appears stable with sound branching structure.	No evidence	Good	No Evidence	Long - more than 40 years	5	**Moderate**	On-site

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APPENDIX 4 - IMPACT ASSESSMENT SCHEDULE

Tree Identification No.	Species	Construction Tolerance	Tree Protection Zone (m R)	Structural Root Zone (m R)	Minimum Setback Distance (tangent to root plate)	TPZ (m^2)	Incursions To Root Zone &/or Canopy	Likely Impact	Recommendation
1	***Eucalyptus sp.*** (Peppermint)	P	3.5	1.8	2.4	38.5	Existing concrete driveway/turning area offset 2.4 metres north-west to be demolished within TPZ.	No adverse impact.	Remove tree (poor specimen, no habitat value)
1a	***Syzygium luehmannii*** (Small-leaf Lillypilly)	M	2.7	1.6	1.8	22.9	No proposed works within TPZ (soft landscape treatment/ planting only)	No adverse impact.	Retain in accordance with recommended Tree Protection Measures (Section 10). Install temporary Tree Protection Fence in accordance with Section 10.5. Maintain existing ground levels within TPZ (no surface grading or levelling permitted).
2	***Corymbia gummifera*** (Red Bloodwood)	P	4.9	2.4	3.3	74.0	Existing concrete driveway/turning area offset 2.0 metres west to be demolished within TPZ & returned to soft landscape.	No adverse impact, provided that demolition works are undertaken as recommended.	Retain in accordance with recommended Tree Protection Measures (Section 10). Install temporary Tree Protection Fence in accordance with Section 10.5. Demolish existing pavement within TPZ in accordance with Section 10.8. Maintain existing ground levels within remainder of TPZ (no surface grading or levelling permitted).
2a	***Angophora costata*** (Sydney Red Gum)	P	5.4	2.5	3.7	91.6	No proposed works within TPZ (soft landscape treatment/ planting only)	No adverse impact.	Retain in accordance with recommended Tree Protection Measures (Section 10). Install temporary Tree Protection Fence in accordance with Section 10.5. Maintain existing ground levels within TPZ (no surface grading or levelling permitted).
3	***Eucalyptus sp.*** (Stringybark)	P	5.0	2.0	3.4	78.5	Existing concrete driveway/turning area offset 1.6 metres west to be demolished within TPZ & returned to soft landscape.	No adverse impact, provided that demolition works are undertaken as recommended.	Retain in accordance with recommended Tree Protection Measures (Section 10). Install temporary Tree Protection Fence in accordance with Section 10.5. Demolish existing pavement within TPZ in accordance with Section 10.8. Maintain existing ground levels within remainder of TPZ (no surface grading or levelling permitted).

PL = Primary Limb; SL = Secondary Limb;
TL = Tertiary Limb. GL = Ground Level

APPENDIX 4 - IMPACT ASSESSMENT SCHEDULE

Tree Identification No.	Species	Construction Tolerance	Tree Protection Zone (m R)	Structural Root Zone (m R)	Minimum Setback Distance (tangent to root plate)	TPZ (m^2)	Incursions To Root Zone &/or Canopy	Likely Impact	Recommendation
4	***Corymbia gummifera*** (Red Bloodwood)	P	6.8	2.7	4.6	143.7	Existing concrete driveway/turning area offset 0.2 metres west to be demolished within TPZ/SRZ & returned to soft landscape.	No adverse impact, provided that demolition works are undertaken as recommended.	Retain in accordance with recommended Tree Protection Measures (Section 10). Install temporary Tree Protection Fence in accordance with Section 10.5. Demolish existing pavement within TPZ in accordance with Section 10.8 under the direct supervision of the Project Arborist. Maintain existing ground levels within remainder of TPZ (no surface grading or levelling permitted).
5	***Corymbia gummifera*** (Red Bloodwood)	P	3.2	2.0	2.2	31.6	No proposed works within TPZ.	No adverse impact.	Remove tree (poor specimen, no habitat value)
6	***Angophora costata*** (Sydney Red Gum)	P	8.0	2.7	5.4	201.0	Existing concrete driveway/turning area offset 6.0 metres south-west and concrete pathway offset 3.7 metres north-west to be demolished within TPZ. Minor canopy pruning may be required on the north side to clear the temporary scaffolding. This may potentially result in up to 5% crown loss. Proposed curved pergola offset 2.7 metres north-west. Excavations for post footings within TPZ. Minor incursion to root zone.	No adverse impact, provided that demolition works are undertaken as recommended. Extent of crown loss is within acceptable limits under AS 4373:2007.	Retain in accordance with recommended Tree Protection Measures (Section 10). Install temporary Tree Protection Fence in accordance with Section 10.5. Demolish existing pavement within TPZ in accordance with Section 10.8 under the direct supervision of the Project Arborist. Maintain existing ground levels within remainder of TPZ (no surface grading or levelling permitted). Undertake all excavations for the pergola post footings in accordance with Section 10.8.

PL = Primary Limb; SL = Secondary Limb;
TL = Tertiary Limb. GL = Ground Level

APPENDIX 4 - IMPACT ASSESSMENT SCHEDULE

Tree Identification No.	Species	Construction Tolerance	Tree Protection Zone (m R)	Structural Root Zone (m R)	Minimum Setback Distance (tangent to root plate)	TPZ (m^2)	Incursions To Root Zone &/or Canopy	Likely Impact	Recommendation
7	***Corymbia gummifera*** (Red Bloodwood)	P	3.4	2.2	2.3	35.5	Existing concrete driveway offset 0.5 metres north-east to be demolished within TPZ/SRZ & returned to soft landscape. Proposed new electrical substation (kiosk type) offset 2.7 metres south-east. Excavations for slab foundations within TPZ. Minor encroachment to TPZ (<5%).	No adverse impact, provided that demolition works are undertaken as recommended.	Retain in accordance with recommended Tree Protection Measures (Section 10). Install temporary Tree Protection Fence in accordance with Section 10.5. Demolish existing pavement within TPZ in accordance with Section 10.8 under the direct supervision of the Project Arborist. Maintain existing ground levels within remainder of TPZ (no surface grading or levelling permitted).
8	***Corymbia gummifera*** (Red Bloodwood)	P	5.8	2.5	3.9	104.6	Existing concrete driveway offset 3.3 metres north-east to be demolished within TPZ & returned to soft landscape. Proposed new electrical substation (kiosk type) offset 4.0 metres south-east. Excavations for slab foundations within TPZ. Minor encroachment to TPZ (<5%).	No adverse impact, provided that demolition works are undertaken as recommended.	Retain in accordance with recommended Tree Protection Measures (Section 10). Install temporary Tree Protection Fence in accordance with Section 10.5. Demolish existing pavement within TPZ in accordance with Section 10.8. Maintain existing ground levels within remainder of TPZ (no surface grading or levelling permitted).
9	***Angophora costata*** (Sydney Red Gum)	P	7.6	2.7	5.2	183.4	Existing concrete driveway and associated low wall offset 4.4 metres north-east to be demolished within TPZ & returned to soft landscape. Proposed new pedestrian pathway offset 6.0 metres south-west at RL? (assumed close to existing grade). Excavations for pavement sub-grade within TPZ (largely within footprint of existing driveway to be demolished). Encroachment to TPZ = 4% (no increase from present situation).	Extent of encroachment to the root zone is less than 10% of the TPZ, which is considered within acceptable limits under AS 4970:2009. No adverse impact, provided that demolition works are undertaken as recommended.	Retain in accordance with recommended Tree Protection Measures (Section 10). Install temporary Tree Protection Fence in accordance with Section 10.5. Demolish existing pavement within TPZ in accordance with Section 10.8. Maintain existing ground levels within remainder of TPZ (no surface grading or levelling permitted).
10	***Corymbia gummifera*** (Red Bloodwood)	P	3.9	2.1	2.7	48.7	Existing concrete driveway and associated low wall offset 0.2 metres north-east to be demolished within TPZ/SRZ.	No adverse impact.	Remove tree (poor specimen, no habitat value)

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APPENDIX 4 - IMPACT ASSESSMENT SCHEDULE

Tree Identification No.	Species	Construction Tolerance	Tree Protection Zone (m R)	Structural Root Zone (m R)	Minimum Setback Distance (tangent to root plate)	TPZ (m^2)	Incursions To Root Zone &/or Canopy	Likely Impact	Recommendation
11	***Angophora costata*** (Sydney Red Gum)	P	9.0	2.9	6.1	254.3	Existing concrete driveway offset 2.5 metres south-west, concrete pathway offset 3.2 metres south-east and existing dwelling offset 4 metres north to be demolished within TPZ. Proposed basement offset 9 metres north at RL151.50 (8 metres below grade). No encroachment to TPZ assuming basement constructed using a soldier pile wall system with no temporary batter/over-excavation. Some canopy pruning may be required on the north side to clear the building envelope and temporary scaffolding. This may potentially result in up to 15% crown loss. Located within footprint of proposed new lawn area at RL? (assumed close to existing grade). Proposed curved pergola offset 2.9 metres east. Excavations for post footings within TPZ. Minor incursion to root zone.	Extent of crown loss exceeds acceptable limits under AS 4373:2007. However, this tree will tolerate the extent of canopy pruning required, provide this work is undertaken as recommended.	Retain in accordance with recommended Tree Protection Measures (Section 10). Install temporary Tree Protection Fence in accordance with Section 10.5. Demolish existing pavement within TPZ in accordance with Section 10.8 under the direct supervision of the Project Arborist. Undertake any required canopy pruning (that essential to clear the building envelope, temporary scaffolding and piling rig in accordance with Section 10.14. Maintain existing ground levels within remainder of TPZ (no surface grading or levelling permitted). Undertake all excavations for the pergola post footings in accordance with Section 10.8. Limit any required over excavation to facilitate construction of the basement to no closer than 6 metres from the top of the batter to the centre of the trunk. Locally steepen batter or use temporary shoring where required to minimise encroachment to the TPZ.
12	***Eucalyptus sp.*** (Stringybark)	P	5.5	2.3	3.7	95.0	Existing concrete driveway and associated low wall offset 0.3 metres north-east to be demolished within TPZ/SRZ & returned to soft landscape (lawn area). Proposed pergola offset 4.3 metres north-east. Excavations for post footings within TPZ. Minor encroachment to TPZ (<5%).	No adverse impact, provided that demolition works are undertaken as recommended.	Retain in accordance with recommended Tree Protection Measures (Section 10). Install temporary Tree Protection Fence in accordance with Section 10.5. Demolish existing pavement within TPZ in accordance with Section 10.8 under the direct supervision of the Project Arborist. Maintain existing ground levels within remainder of TPZ (no surface grading or levelling permitted)

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APPENDIX 4 - IMPACT ASSESSMENT SCHEDULE

Tree Identification No.	Species	Construction Tolerance	Tree Protection Zone (m R)	Structural Root Zone (m R)	Minimum Setback Distance (tangent to root plate)	TPZ (m^2)	Incursions To Root Zone &/or Canopy	Likely Impact	Recommendation
13	***Angophora costata*** (Sydney Red Gum)	P	4.3	2.3	2.9	58.6	Existing concrete driveway and associated low wall offset 1.5 metres north-east to be demolished within TPZ/SRZ & returned to soft landscape (lawn area).	No adverse impact, provided that demolition works are undertaken as recommended.	Retain in accordance with recommended Tree Protection Measures (Section 10). Install temporary Tree Protection Fence in accordance with Section 10.5. Demolish existing pavement within TPZ in accordance with Section 10.8 under the direct supervision of the Project Arborist. Maintain existing ground levels within remainder of TPZ (no surface grading or levelling permitted)
14	***Corymbia gummifera*** (Red Bloodwood)	P	5.3	2.4	3.6	87.3	Existing concrete driveway and associated low wall offset 0.9 metres north-east to be demolished within TPZ/SRZ & returned to soft landscape (lawn area).	No adverse impact, provided that demolition works are undertaken as recommended.	Retain in accordance with recommended Tree Protection Measures (Section 10). Install temporary Tree Protection Fence in accordance with Section 10.5. Demolish existing pavement within TPZ in accordance with Section 10.8 under the direct supervision of the Project Arborist. Maintain existing ground levels within remainder of TPZ (no surface grading or levelling permitted)
15	***Angophora costata*** (Sydney Red Gum)	P	5.5	2.1	3.7	95.0	Existing concrete driveway and associated low wall offset 3.5 metres north-east to be demolished within TPZ & returned to soft landscape (lawn area).	No adverse impact, provided that demolition works are undertaken as recommended.	Retain in accordance with recommended Tree Protection Measures (Section 10). Install temporary Tree Protection Fence in accordance with Section 10.5. Demolish existing pavement within TPZ in accordance with Section 10.8. Maintain existing ground levels within remainder of TPZ (no surface grading or levelling permitted).
15a	***Ficus benjamina*** (Weeping Fig)	M	3.0	1.4	2.0	28.3	No proposed works within TPZ (soft landscape treatment/ planting only)	No adverse impact.	Retain in accordance with recommended Tree Protection Measures (Section 10). Install temporary Tree Protection Fence in accordance with Section 10.5.

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APPENDIX 4 - IMPACT ASSESSMENT SCHEDULE

Tree Identification No.	Species	Construction Tolerance	Tree Protection Zone (m R)	Structural Root Zone (m R)	Minimum Setback Distance (tangent to root plate)	TPZ (m^2)	Incursions To Root Zone &/or Canopy	Likely Impact	Recommendation
16	***Angophora costata*** (Sydney Red Gum)	P	8.0	2.8	5.4	201.0	Existing concrete driveway and associated low wall offset 2.2 metres south-west to be demolished within TPZ/SRZ. Proposed basement offset 7.0 metres west at RL151.50 (7 metres below grade). No encroachment to TPZ assuming basement constructed using a soldier pile type basement wall system with no temporary batter/over-excavation. Some canopy pruning may be required on the north-west side to clear the building envelope and temporary scaffolding. This may potentially result in up to 20% crown loss. Proposed pedestrian pathway offset 2.8 metres south-west at RL? (assumed close to existing grade - within footprint of existing driveway to be demolished). No increase in present encroachment	Extent of crown loss exceeds acceptable limits under AS 4373:2007. However, this tree will tolerate the extent of canopy pruning required, provided this work is undertaken as recommended.	Retain in accordance with recommended Tree Protection Measures (Section 10). Install temporary Tree Protection Fence in accordance with Section 10.5. Demolish existing pavement within TPZ in accordance with Section 10.8 under the direct supervision of the Project Arborist. Undertake any required canopy pruning (that essential to clear the building envelope, temporary scaffolding and piling rig in accordance with Section 10.14.
17	***Archontophoenix cunninghamii*** (Bangalow Palm)	G	2.5	1.7	1.7	19.6	Existing concrete driveway and associated low wall offset 1.2 metres south-west to be demolished within TPZ/SRZ. Proposed pedestrian pathway offset 1.9 metres south-west at RL? (assumed close to existing grade - within footprint of existing driveway to be demolished).	No adverse impact, provided that demolition works are undertaken as recommended.	Retain in accordance with recommended Tree Protection Measures (Section 10). Install temporary Tree Protection Fence in accordance with Section 10.5. Demolish existing pavement within TPZ in accordance with Section 10.8.
18	***Syagrus romanzoffianum*** (Cocos Palm)	G	3.5	2.0	2.4	38.5	Located within footprint of proposed building.	Proposed works will necessitate removal.	Remove tree (exempt from Council's Tree Management Controls).
19	***Ficus benjamina*** (Weeping Fig)	M	4.0	1.8	2.7	50.2	Located within footprint of proposed building.	Proposed works will necessitate removal.	Remove tree (exempt from Council's Tree Management Controls).

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APPENDIX 4 - IMPACT ASSESSMENT SCHEDULE

Tree Identification No.	Species	Construction Tolerance	Tree Protection Zone (m R)	Structural Root Zone (m R)	Minimum Setback Distance (tangent to root plate)	TPZ (m^2)	Incursions To Root Zone &/or Canopy	Likely Impact	Recommendation
20	***Archontophoenix cunninghamii*** (Bangalow Palm)	G	3.0	1.8	2.0	28.3	Located within footprint of proposed building.	Proposed works will necessitate removal.	Remove tree (exempt from Council's Tree Management Controls).
21	***Ulmus parvifolia*** (Chinese Elm)	M	5.0	2.0	3.4	78.5	Located within footprint of proposed building.	Proposed works will necessitate removal.	Remove tree (exempt from Council's Tree Management Controls).
21a	***Gleditsia triacanthos*** (Honey Locust)	M	3.0	1.5	2.0	28.3	Located within footprint of proposed pedestrian pathway.	Proposed works will necessitate removal.	Remove tree (exempt from Council's Tree Management Controls).
22	***Casuarina glauca*** (Swamp Oak)	M	2.5	1.8	1.7	19.6	Existing concrete driveway and associated low wall offset 1.6 metres east to be demolished within TPZ/SRZ. Located within footprint of proposed new lawn area.	No adverse impact.	Remove tree (poor specimen, no habitat value)
23	***Angophora costata*** (Sydney Red Gum)	P	5.5	2.4	3.7	93.8	Existing concrete driveway and associated low wall offset 1.7 metres east to be demolished within TPZ/SRZ. Minor canopy pruning may be required on the north side to clear the temporary scaffolding and projecting balcony This may potentially result in up to 5% crown loss.	No adverse impact, provided that demolition works are undertaken as recommended. Extent of crown loss is within acceptable limits under AS 4373:2007.	Retain in accordance with recommended Tree Protection Measures (Section 10). Install temporary Tree Protection Fence in accordance with Section 10.5. Demolish existing pavement within TPZ in accordance with Section 10.8 under the direct supervision of the Project Arborist. Undertake any required canopy pruning (that essential to clear the building envelope, temporary scaffolding and piling rig in accordance with Section 10.14.

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APPENDIX 4 - IMPACT ASSESSMENT SCHEDULE

Tree Identification No.	Species	Construction Tolerance	Tree Protection Zone (m R)	Structural Root Zone (m R)	Minimum Setback Distance (tangent to root plate)	TPZ (m^2)	Incursions To Root Zone &/or Canopy	Likely Impact	Recommendation
24	***Eucalyptus sp. [resinifera]*** (Red Mahogany)	P	7.5	2.6	5.1	176.6	Existing concrete driveway and associated low retaining wall offset 2.1 metres east to be demolished within TPZ/SRZ. Proposed building & basement offset 4.8 metres north-east and 6.7 metres west at RL151.50 (7 metres below grade). Encroachment to TPZ = 9% (assuming basement constructed using a soldier pile wall). Some canopy pruning may be required on the north-east and west side to clear the building envelope and temporary scaffolding. This may potentially result in up to 20% crown loss. Proposed pedestrian pathway offset 5.2 metres west at RL157.46 (close to existing grade). Cumulative encroachment = 19%	Extent of encroachment to the TPZ exceeds acceptable limits under AS 4970:2009. However, this tree will tolerate the degree of encroachment proposed, provided that all proposed works within the TPZ are undertaken as recommended. Extent of crown loss exceeds acceptable limits under AS 4373:2007. However, this tree will tolerate the extent of canopy pruning required, provide this work is undertaken as recommended.	Retain in accordance with recommended Tree Protection Measures (Section 10). Install temporary Tree Protection Fence in accordance with Section 10.5. Demolish existing pavement within TPZ in accordance with Section 10.8 under the direct supervision of the Project Arborist. Undertake any required canopy pruning (that essential to clear the building envelope, temporary scaffolding and piling rig in accordance with Section 10.14. Undertake all excavation for the basement & building foundations within the TPZ in accordance with Section 10.9. Install pedestrian pathway in accordance with Section 10.12 & 10.13.
25	***Schefflera actinophylla*** (Umbrella Tree)	M	3.0	1.8	2.0	28.3	Existing concrete driveway and associated low wall offset 2.2 metres east to be demolished within TPZ/SRZ. Proposed building (balcony) offset 2.3 metres north-east at RL 156.90 (close to existing grade) excavations for building foundations within TPZ. Encroachment to TPZ = 5%.	Extent of encroachment to the root zone is less than 10% of the TPZ, which is considered within acceptable limits under AS 4970:2009. No adverse impact.	Remove tree (Environmental Weed Species).

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Tree Identification No.	Species	Construction Tolerance	Tree Protection Zone (m R)	Structural Root Zone (m R)	Minimum Setback Distance (tangent to root plate)	TPZ (m^2)	Incursions To Root Zone &/or Canopy	Likely Impact	Recommendation
26	***Eucalyptus sp. [resinifera]*** (Red Mahogany)	P	6.5	2.5	4.4	132.7	Existing concrete driveway and associated low retaining wall offset 2.2 metres east and 2.9 metres west to be demolished within TPZ/SRZ. Proposed building & basement offset 4.0 metres north and 6.3 metres west and 5 metres east at RL151.50 (7 metres below grade). Encroachment to TPZ = 32% (assuming basement constructed using a soldier pile wall). substantial canopy pruning will be required on the north and east side to clear the building envelope, temporary scaffolding and piling rig. This may potentially result in up to 40% crown loss.	Extent of encroachment to the TPZ exceeds acceptable limits under AS 4970:2009. Excavations for the basement and building foundations are likely to result in a significant adverse impact. Extent of crown loss exceeds acceptable limits under AS 4373:2007. Extent of crown loss incurred will result in a significant adverse impact, necessitating removal.	Undertake replacement planting with a new tree elsewhere within the site to compensate for loss of amenity in accordance with Section 11.
27	***Gleditsia triacanthos*** (Honey Locust)	M	4.0	1.6	2.7	50.2	Located within footprint of proposed basement & pedestrian ramp.	Proposed works will necessitate removal.	Remove tree (exempt from Council's Tree Management Controls).
28	***Archontophoenix cunninghamii*** (Bangalow Palm)	G	3.0	1.9	2.0	28.3	Located within footprint of proposed building & basement.	Proposed works will necessitate removal.	Remove tree (exempt from Council's Tree Management Controls).
29	***Syagrus romanzoffianum*** (Cocos Palm)	G	3.0	1.8	2.0	28.3	Located within footprint of proposed building & basement.	Proposed works will necessitate removal.	Remove tree (exempt from Council's Tree Management Controls).
30	***Syagrus romanzoffianum*** (Cocos Palm)	G	3.0	1.9	2.0	28.3	Located within footprint of proposed building & basement.	Proposed works will necessitate removal.	Remove tree (exempt from Council's Tree Management Controls).
31	***Citharexylum spinosum*** (Fiddlewood)	M	4.0	1.8	2.7	50.2	Located within footprint of proposed building & basement.	Proposed works will necessitate removal.	Remove tree (exempt from Council's Tree Management Controls).

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Tree Identification No.	Species	Construction Tolerance	Tree Protection Zone (m R)	Structural Root Zone (m R)	Minimum Setback Distance (tangent to root plate)	TPZ (m^2)	Incursions To Root Zone &/or Canopy	Likely Impact	Recommendation
32	***Angophora costata*** (Sydney Red Gum)	P	7.8	2.9	5.3	190.9	Located within footprint of proposed building & basement.	Proposed works will necessitate removal.	Remove tree.
33	***Malus sp.*** (Apple tree)	M	3.0	1.7	2.0	28.3	Proposed building & basement located < 1.5 metres east and new pathway 0.5 metres east. Excavations for basement and pathway subgrade within SRZ.	Proposed works will necessitate removal.	Remove tree (exempt from Council's Tree Management Controls).
33a	***Eucalyptus sp. [resinifera]*** (Red Mahogany)	P	5.5	2.5	3.7	95.0	Existing brick wall/fence offset 0.4 metres east to be demolished within TPZ/SRZ. Proposed basement offset 4.6 metres north-east at RL151.50 (8 metres below grade). Encroachment to TPZ = 2% (assuming basement constructed using a soldier pile wall). Minor canopy pruning may be required on the north-east side to clear the piling rig. This may potentially result in up to 5% crown loss. Proposed egress pathway offset 2 metres east. Excavations for pavement sub-grade within TPZ/SRZ. Cumulative encroachment to TPZ = 7%	Extent of encroachment to the root zone is less than 10% of the TPZ, which is considered within acceptable limits under AS 4970:2009. No adverse impact, provided that all proposed works within the TPZ are undertaken as recommended.	Retain in accordance with recommended Tree Protection Measures (Section 10). Install temporary Tree Protection Fence in accordance with Section 10.5. Demolish existing fence/wall within TPZ in accordance with Section 10.8 under the direct supervision of the Project Arborist. Undertake any required canopy pruning (that essential to clear the piling rig in accordance with Section 10.14. Install pathway 100mm above grade within SRZ to minimise encroachment in accordance with Section 10.12
33b	***Schefflera actinophylla*** (Umbrella Tree)	M	2.0	1.3	1.4	12.6	Existing brick wall/fence offset 0.2 metres north to be demolished within TPZ/SRZ.	Proposed works will necessitate removal.	Remove tree (Environmental Weed Species).
34	***Prunus sp.*** (Peach tree)	M	4.0	1.8	2.7	50.2	Proposed building & basement located < 1.5 metres east and new pathway 0.5 metres east. Excavations for basement and pathway subgrade within SRZ.	Proposed works will necessitate removal.	Remove tree (exempt from Council's Tree Management Controls).

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Tree Identification No.	Species	Construction Tolerance	Tree Protection Zone (m R)	Structural Root Zone (m R)	Minimum Setback Distance (tangent to root plate)	TPZ (m^2)	Incursions To Root Zone &/or Canopy	Likely Impact	Recommendation
35	***Ficus carica*** (Common Fig)	M	3.2	1.9	2.2	32.2	Proposed building & basement located < 1.5 metres east and new pathway 0.5 metres east. Excavations for basement and pathway subgrade within SRZ.	Proposed works will necessitate removal.	Remove tree (exempt from Council's Tree Management Controls).
36	***Eucalyptus sp. [resinifera]*** (Red Mahogany)	P	5.0	2.3	3.4	78.7	Located within footprint of proposed building & basement.	Proposed works will necessitate removal.	Undertake replacement planting with a new tree elsewhere within the site to compensate for loss of amenity in accordance with Section 11.
37	***Callistemon viminalis*** (Weeping Bottlebrush)	M	2.6	1.8	1.8	21.2	Located within footprint of proposed building & basement.	Proposed works will necessitate removal.	Remove tree.
38	***Syagrus romanzoffianum*** (Cocos Palm)	G	2.4	1.8	1.6	18.1	Located within footprint of proposed building & basement.	Proposed works will necessitate removal.	Remove tree (exempt from Council's Tree Management Controls).
39	***Washingtonia robusta*** (Washington Palm)	G	3.0	2.0	2.0	28.3	Located within footprint of proposed building & basement.	Proposed works will necessitate removal.	Remove tree (exempt from Council's Tree Management Controls).
40	***Schefflera actinophylla*** (Umbrella Tree)	M	3.6	2.1	2.4	40.7	Located within footprint of proposed building & basement.	Proposed works will necessitate removal.	Remove tree (Environmental Weed Species).
41	***Syagrus romanzoffianum*** (Cocos Palm)	G	2.5	1.5	1.7	19.6	Located within footprint of proposed building & basement.	Proposed works will necessitate removal.	Remove tree (exempt from Council's Tree Management Controls).
42	***Syagrus romanzoffianum*** (Cocos Palm)	G	2.5	1.6	1.7	19.6	Located within footprint of proposed building & basement.	Proposed works will necessitate removal.	Remove tree (exempt from Council's Tree Management Controls).

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Tree Identification No.	Species	Construction Tolerance	Tree Protection Zone (m R)	Structural Root Zone (m R)	Minimum Setback Distance (tangent to root plate)	TPZ (m^2)	Incursions To Root Zone &/or Canopy	Likely Impact	Recommendation
43	***Eucalyptus tereticornis*** (Forest Red Gum)	P	12.0	3.6	8.2	452.2	Located within footprint of proposed building & basement.	Proposed works will necessitate removal.	Undertake replacement planting with a new tree elsewhere within the site to compensate for loss of amenity in accordance with Section 11.
43a	***Syzygium luehmannii*** (Small-leaf Lillypilly)	M	2.2	1.4	1.5	15.2	Located within footprint of proposed building & basement.	Proposed works will necessitate removal.	Undertake replacement planting with a new tree elsewhere within the site to compensate for loss of amenity in accordance with Section 11.
43b	***Syzygium luehmannii*** (Small-leaf Lillypilly)	M	2.2	1.4	1.5	15.2	Located within footprint of proposed building & basement.	Proposed works will necessitate removal.	Undertake replacement planting with a new tree elsewhere within the site to compensate for loss of amenity in accordance with Section 11.
44	***Eucalyptus tereticornis*** (Forest Red Gum)	P	4.5	2.0	3.1	63.6	Located within footprint of proposed building & basement.	Proposed works will necessitate removal.	Undertake replacement planting with a new tree elsewhere within the site to compensate for loss of amenity in accordance with Section 11.
45	***Callistemon salignus*** (Willow Bottlebrush)	M	3.0	1.7	2.0	28.3	Proposed building & basement located < 1.5 metres east and new pathway 0.5 metres east. Excavations for basement and pathway subgrade within SRZ.	Proposed works will necessitate removal.	Remove tree.
46	***Banksia serrata*** (Old Man Banksia)	P	2.5	1.8	1.7	19.6	Located within footprint of proposed basement.	Proposed works will necessitate removal.	Undertake replacement planting with a new tree elsewhere within the site to compensate for loss of amenity in accordance with Section 11.
47	***Syzygium australe*** (Lilly Pilly)	M	5.0	2.0	3.4	78.5	Proposed basement located < 1.5 metres east. Excavations for basement within SRZ. Substantial canopy pruning required to clear building envelope and temporary scaffolding.	Proposed works will necessitate removal.	Undertake replacement planting with a new tree elsewhere within the site to compensate for loss of amenity in accordance with Section 11.

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Tree Identification No.	Species	Construction Tolerance	Tree Protection Zone (m R)	Structural Root Zone (m R)	Minimum Setback Distance (tangent to root plate)	TPZ (m^2)	Incursions To Root Zone &/or Canopy	Likely Impact	Recommendation
48	***Tibouchina granulosa*** (Lasiandra)	M	4.0	1.9	2.7	50.2	Located within footprint of proposed basement.	Proposed works will necessitate removal.	Remove tree.
49	***Syzygium australe*** (Lilly Pilly)	M	4.0	1.6	2.7	50.2	Proposed basement located < 1.5 metres east. Excavations for basement within SRZ. Substantial canopy pruning required to clear piling rig.	Proposed works will necessitate removal.	Undertake replacement planting with a new tree elsewhere within the site to compensate for loss of amenity in accordance with Section 11.
50	***Syzygium australe*** (Lilly Pilly)	M	4.0	1.8	2.7	50.2	Proposed basement located < 1.5 metres east. Excavations for basement within SRZ. Substantial canopy pruning required to clear piling rig.	Proposed works will necessitate removal.	Undertake replacement planting with a new tree elsewhere within the site to compensate for loss of amenity in accordance with Section 11.
51	***Syzygium australe*** (Lilly Pilly)	M	4.0	1.8	2.7	50.2	Proposed basement located < 1.5 metres east. Excavations for basement within SRZ. Substantial canopy pruning required to clear piling rig.	Proposed works will necessitate removal.	Undertake replacement planting with a new tree elsewhere within the site to compensate for loss of amenity in accordance with Section 11.
52	***Syzygium australe*** (Lilly Pilly)	M	4.0	1.8	2.7	50.2	Proposed basement located < 1.5 metres east. Excavations for basement within SRZ. Substantial canopy pruning required to clear piling rig.	Proposed works will necessitate removal.	Undertake replacement planting with a new tree elsewhere within the site to compensate for loss of amenity in accordance with Section 11.
53	***Syzygium australe*** (Lilly Pilly)	M	4.0	1.8	2.7	50.2	Proposed basement located < 1.5 metres east. Excavations for basement within SRZ. Substantial canopy pruning required to clear piling rig.	Proposed works will necessitate removal.	Undertake replacement planting with a new tree elsewhere within the site to compensate for loss of amenity in accordance with Section 11.
53a	***Musa sp.*** (Banana Palm)	G	5.4	2.5	3.7	91.6	Proposed basement offset 3.0 metres south-east at RL151.50 (6 metres below grade). Encroachment to TPZ = 7% (assuming basement constructed using a soldier pile wall).	Extent of encroachment to the root zone is less than 10% of the TPZ, which is considered within acceptable limits under AS 4970:2009. No adverse impact.	Remove tree (exempt from Council's Tree Management Controls).
54	***Schinus areira*** (Peppercorn Tree)	M	6.3	2.1	4.3	124.6	Located within footprint of proposed building & basement.	Proposed works will necessitate removal.	Undertake replacement planting with a new tree elsewhere within the site to compensate for loss of amenity in accordance with Section 11.

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Tree Identification No.	Species	Construction Tolerance	Tree Protection Zone (m R)	Structural Root Zone (m R)	Minimum Setback Distance (tangent to root plate)	TPZ (m^2)	Incursions To Root Zone &/or Canopy	Likely Impact	Recommendation
55	***Syagrus romanzoffianum*** (Cocos Palm)	G	3.0	1.8	2.0	28.3	Located within footprint of proposed garden terrace and associated retaining walls.	Proposed works will necessitate removal.	Remove tree (exempt from Council's Tree Management Controls).
56	***Archontophoenix cunninghamii*** (Bangalow Palm)	G	3.0	1.8	2.0	28.3	Located within footprint of proposed garden terrace and associated retaining walls.	Proposed works will necessitate removal.	Remove tree (exempt from Council's Tree Management Controls).
57	***Archontophoenix cunninghamii*** (Bangalow Palm)	G	3.0	1.8	2.0	28.3	Located within footprint of proposed garden terrace and associated retaining walls.	Proposed works will necessitate removal.	Remove tree (exempt from Council's Tree Management Controls).
58	***Xylosma senticosa*** (Shiny Xylosma)	M	4.0	1.7	2.7	50.2	Located within footprint of proposed garden terrace and associated retaining walls.	Proposed works will necessitate removal.	Remove tree.
59	***Xylosma senticosa*** (Shiny Xylosma)	M	3.5	1.8	2.4	38.5	Existing paved area offset 0.1 metres south to be demolished within TPZ. Proposed basement offset 2.0 metres south at RL151.50 (5 metres below grade). Encroachment to TPZ = 16% (assuming basement constructed using a soldier pile wall). Located within footprint of proposed garden terrace and associated retaining walls.	Proposed works will necessitate removal.	Remove tree.
60	***Syagrus romanzoffianum*** (Cocos Palm)	G	3.2	2.0	2.2	33.0	Existing paved area offset 0.6 metres south to be demolished within TPZ. Proposed basement offset 2.5 metres south at RL151.50 (5 metres below grade). Encroachment to TPZ = 5% (assuming basement constructed using a soldier pile wall). Located within footprint of proposed garden terrace and associated retaining walls.	Proposed works will necessitate removal.	Remove tree (exempt from Council's Tree Management Controls).

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Tree Identification No.	Species	Construction Tolerance	Tree Protection Zone (m R)	Structural Root Zone (m R)	Minimum Setback Distance (tangent to root plate)	TPZ (m^2)	Incursions To Root Zone &/or Canopy	Likely Impact	Recommendation
61	***Syagrus romanzoffianum*** (Cocos Palm)	G	3.0	1.9	2.0	28.3	Existing paved area offset 0.6 metres south to be demolished within TPZ. Proposed basement offset 2.6 metres south at RL151.50 (5 metres below grade). Encroachment to TPZ = 5% (assuming basement constructed using a soldier pile wall). Located within footprint of proposed garden terrace and associated retaining walls.	Proposed works will necessitate removal.	Remove tree (exempt from Council's Tree Management Controls).
62	***Xylosma senticosa*** (Shiny Xylosma)	M	3.0	1.6	2.0	28.3	Existing paved area offset 0.1 metres south to be demolished within TPZ. Proposed basement offset 2.0 metres south at RL151.50 (5 metres below grade). Encroachment to TPZ = 11% (assuming basement constructed using a soldier pile wall). Located within footprint of proposed garden terrace and associated retaining walls.	Proposed works will necessitate removal.	Remove tree (exempt from Council's Tree Management Controls).
63	***Syagrus romanzoffianum*** (Cocos Palm)	G	3.0	1.8	2.0	28.3	Existing pool shell and associated pool coping offset < 1 metre south to be demolished within TPZ. Located within footprint of proposed garden terrace and associated retaining walls.	Proposed works will necessitate removal.	Remove tree (exempt from Council's Tree Management Controls).
64	***Syagrus romanzoffianum*** (Cocos Palm)	G	3.0	1.8	2.0	28.3	Existing pool shell and associated pool coping offset < 1 metre south to be demolished within TPZ. Located within footprint of proposed garden terrace and associated retaining walls.	Proposed works will necessitate removal.	Remove tree (exempt from Council's Tree Management Controls).
65	***Syagrus romanzoffianum*** (Cocos Palm)	G	3.0	1.8	2.0	28.3	Existing pool shell and associated pool coping offset < 1 metre south to be demolished within TPZ. Located within footprint of proposed garden terrace and associated retaining walls.	Proposed works will necessitate removal.	Remove tree (exempt from Council's Tree Management Controls).

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Tree Identification No.	Species	Construction Tolerance	Tree Protection Zone (m R)	Structural Root Zone (m R)	Minimum Setback Distance (tangent to root plate)	TPZ (m^2)	Incursions To Root Zone &/or Canopy	Likely Impact	Recommendation
66	***Syagrus romanzoffianum*** (Cocos Palm)	G	3.0	1.7	2.0	28.3	Existing pool shell and associated pool coping offset < 1 metre south to be demolished within TPZ. Located within footprint of proposed garden terrace and associated retaining walls.	Proposed works will necessitate removal.	Remove tree (exempt from Council's Tree Management Controls).
67	***Syagrus romanzoffianum*** (Cocos Palm)	G	3.0	1.8	2.0	28.3	Existing pool shell and associated pool coping offset < 1 metre south to be demolished within TPZ. Located within footprint of proposed garden terrace and associated retaining walls.	Proposed works will necessitate removal.	Remove tree (exempt from Council's Tree Management Controls).
68	***Syagrus romanzoffianum*** (Cocos Palm)	G	3.0	1.8	2.0	28.3	Existing pool shell and associated pool coping offset < 1 metre south to be demolished within TPZ. Located within footprint of proposed paved area.	Proposed works will necessitate removal.	Remove tree (exempt from Council's Tree Management Controls).
69	***Syagrus romanzoffianum*** (Cocos Palm)	G	3.0	1.8	2.0	28.3	Existing pool shell and associated pool coping offset < 1 metre south to be demolished within TPZ.	Demolition works will necessitate removal.	Remove tree (exempt from Council's Tree Management Controls).
70	***Howea forsteriana*** (Kentia Palm)	G	3.0	1.6	2.0	28.3	Located within footprint of proposed basement & building.	Proposed works will necessitate removal.	Remove tree (exempt from Council's Tree Management Controls).
71	***Howea forsteriana*** (Kentia Palm)	G	2.5	1.6	1.7	19.6	Located within footprint of proposed basement & building.	Proposed works will necessitate removal.	Remove tree (exempt from Council's Tree Management Controls).
72	***Howea forsteriana*** (Kentia Palm)	G	2.5	1.6	1.7	19.6	Located within footprint of proposed basement & building.	Proposed works will necessitate removal.	Remove tree (exempt from Council's Tree Management Controls).
73	***Syagrus romanzoffianum*** (Cocos Palm)	G	3.8	2.1	2.6	45.9	Located within footprint of proposed basement.	Proposed works will necessitate removal.	Remove tree (exempt from Council's Tree Management Controls).
73a	***Plumeria rubra*** (Red Frangipani)	M	2.2	1.4	1.5	15.2	Located within footprint of proposed basement.	Proposed works will necessitate removal.	Remove tree (exempt from Council's Tree Management Controls).

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Tree Identification No.	Species	Construction Tolerance	Tree Protection Zone (m R)	Structural Root Zone (m R)	Minimum Setback Distance (tangent to root plate)	TPZ (m^2)	Incursions To Root Zone &/or Canopy	Likely Impact	Recommendation
74	***Lophostemon confertus*** (Brushbox)	M	6.6	2.7	4.5	136.8	Proposed basement offset 6.5 metres east and north-east at RL151.50 (4 metres below grade). Excavations for basement retaining walls within TPZ. Encroachment to TPZ < 5% (assuming basement constructed using a soldier pile wall). Proposed building offset 5.2 metres north at FFL154.10 (1 metre below grade). Cumulative encroachment = 3%. Proposed footpath offset 4.3 metres south-east at RL155.99 (close to existing grade) and 5.3 metres west at RL156.20 - 155.00. Cumulative encroachment to TPZ = 15%.	Extent of encroachment to the TPZ exceeds acceptable limits under AS 4970:2009. However, this tree will tolerate the degree of encroachment proposed, provided that the pathway is constructed as recommended. Extent of crown loss is within acceptable limits under AS 4373:2007. No adverse impact.	Retain in accordance with recommended Tree Protection Measures (Section 10). Install temporary Tree Protection Fence in accordance with Section 10.5. Undertake any required canopy pruning (that essential to clear the temporary scaffolding) in accordance with Section 10.14. Install the pathway to the south-east in accordance with Sections 10.12 & 10.13.
75	***Lophostemon confertus*** (Brushbox)	M	5.8	2.6	3.9	104.2	Proposed building offset 5.1metres north at RL154.10 (1.0 metres below grade). Excavations for building foundations within TPZ. Encroachment to TPZ = 5% (excluding any required temporary batter to facilitate construction). Some canopy pruning may be required on the north-east side to clear the building (balcony) and temporary scaffold. This may potentially result in up to 10% crown loss. Proposed pathway offset 3.0 metres west at RL 155.00-156.20 (graded to existing surface levels). Encroachment to TPZ = 18%. Some canopy pruning may be required on the north-east side to clear the building (balcony) and temporary scaffold. This may potentially result in up to 10% crown loss.	Extent of encroachment to the TPZ exceeds acceptable limits under AS 4970:2009. However, this tree will tolerate the degree of encroachment proposed, provided that the pathway is constructed as recommended. Extent of crown loss is within acceptable limits under AS 4373:2007. No adverse impact.	Retain in accordance with recommended Tree Protection Measures (Section 10). Install temporary Tree Protection Fence in accordance with Section 10.5. Undertake all excavations for the building foundations and pavement sub-grade within the TPZ in accordance with Section 10.9. Undertake any required canopy pruning (that essential to clear the temporary scaffolding) in accordance with Section 10.14. Install the pathway in accordance with Sections 10.12 & 10.13.

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Tree Identification No.	Species	Construction Tolerance	Tree Protection Zone (m R)	Structural Root Zone (m R)	Minimum Setback Distance (tangent to root plate)	TPZ (m^2)	Incursions To Root Zone &/or Canopy	Likely Impact	Recommendation
76	***Lophostemon confertus*** (Brushbox)	M	5.2	2.5	3.5	83.6	Proposed building (balcony) offset 4.6 metres north-east at RL154.10 (1.0 metres below grade). Excavations for building foundations within TPZ. Encroachment to TPZ = 6% (excluding any required temporary batter to facilitate construction). Some canopy pruning may be required on the north-east side to clear the building (balcony) and temporary scaffold. This may potentially result in up to 10% crown loss. Proposed pathway offset 1.2 metres west at RL 155.00-156.00 (graded to existing surface levels). Cumulative encroachment to TPZ = 22%	Extent of encroachment to the TPZ exceeds acceptable limits under AS 4970:2009. Excaavtions for pavement sub-grade within the SRZ are likely to result in an adverse impact on this tree. Extent of crown loss is within acceptable limits under AS 4373:2007. No adverse impact.	Remove tree
77	***Dicksonia antarctica*** (Soft Tree Fern)	G	2.6	1.8	1.8	21.9	Located within footprint of proposed basement & building.	Proposed works will necessitate removal.	Remove tree (exempt from Council's Tree Management Controls).
77a	***Duranta erecta* 'Variegata'** (Variegated Pigeonberry)	M	2.5	1.3	1.7	19.6	Located within footprint of proposed basement & building.	Proposed works will necessitate removal.	Remove tree (exempt from Council's Tree Management Controls).
78	***Camellia sasanqua*** (Sasanqua Camellia)	M	2.5	1.5	1.7	19.6	Proposed basement offset 2 metres east at RL151.50 (3.5 metres below grade). Excavations for basement retaining walls within TPZ. Encroachment to TPZ = 6% (assuming basement constructed using a soldier pile wall).	Extent of encroachment to the root zone is less than 10% of the TPZ, which is considered within acceptable limits under AS 4970:2009. No adverse impact.	Retain in accordance with recommended Tree Protection Measures (Section 10). Install temporary Tree Protection Fence in accordance with Section 10.5.
79	***Tibouchina granulosa*** (Lasiandra)	M	2.2	1.5	1.5	15.2	Proposed basement offset 2 metres east at RL151.50 (3.5 metres below grade). Excavations for basement retaining walls within TPZ. Encroachment to TPZ <5% (assuming basement constructed using a soldier pile wall).	Extent of encroachment to the root zone is less than 10% of the TPZ, which is considered within acceptable limits under AS 4970:2009. No adverse impact.	Retain in accordance with recommended Tree Protection Measures (Section 10). Install temporary Tree Protection Fence in accordance with Section 10.5.

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APPENDIX 4 - IMPACT ASSESSMENT SCHEDULE

Tree Identification No.	Species	Construction Tolerance	Tree Protection Zone (m R)	Structural Root Zone (m R)	Minimum Setback Distance (tangent to root plate)	TPZ (m^2)	Incursions To Root Zone &/or Canopy	Likely Impact	Recommendation
80	***Murraya paniculata*** (Murraya)	M	2.0	1.5	1.4	12.6	Located within footprint of proposed basement & building.	Proposed works will necessitate removal.	Remove tree (exempt from Council's Tree Management Controls).
82	***Callistemon sp. [viminalis]*** (Weeping Bottlebrush)	M	3.6	2.1	2.4	40.7	Proposed basement offset 3 metres east at RL151.50 (3.0 metres below grade). Excavations for basement retaining walls within TPZ. Encroachment to TPZ = 16% (assuming basement constructed using a soldier pile wall).	Extent of encroachment to the TPZ exceeds acceptable limits under AS 4970:2009. Excavations for the basement are likely to result in an adverse impact on this tree.	Remove tree.
83	***Prunus sp.*** (Peach tree)	M	2.6	1.8	1.8	21.9	Proposed basement offset 3 metres east at RL151.50 (3.0 metres below grade). Excavations for basement retaining walls within TPZ. Encroachment to TPZ = 16% (assuming basement constructed using a soldier pile wall).	Extent of encroachment to the root zone is less than 10% of the TPZ, which is considered within acceptable limits under AS 4970:2009. No adverse impact.	Remove tree (exempt from Council's Tree Management Controls).
84	***Malus floribunda*** (Japanese Crabapple)	M	4.5	2.1	3.1	63.6	Proposed basement offset 2.1 metres east at RL151.50 (3.0 metres below grade). Excavations for basement retaining walls within TPZ. Encroachment to TPZ = 22% (assuming basement constructed using a soldier pile wall). Substantial canopy pruning will be required to facilitate construction, resulting in an estimated 25% crown loss. Proposed pathway offset 1.7 metres east. Excavations for pavement sub-grade within TPZ.	Extent of encroachment to the TPZ exceeds acceptable limits under AS 4970:2009. Excavations for the basement are likely to result in an adverse impact on this tree.	Undertake replacement planting with a new tree elsewhere within the site to compensate for loss of amenity in accordance with Section 11.
85	***Juniperus sp.*** (Juniper)	M	2.0	1.7	1.4	12.6	Located within footprint of proposed driveway ramp.	Proposed works will necessitate removal.	Remove tree (exempt from Council's Tree Management Controls).
86	***Fraxinus griffithii*** (Evergreen Ash)	M	4.8	2.4	3.3	72.3	Located within footprint of proposed driveway ramp.	Proposed works will necessitate removal.	Remove tree (exempt from Council's Tree Management Controls).

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APPENDIX 4 - IMPACT ASSESSMENT SCHEDULE

Tree Identification No.	Species	Construction Tolerance	Tree Protection Zone (m R)	Structural Root Zone (m R)	Minimum Setback Distance (tangent to root plate)	TPZ (m^2)	Incursions To Root Zone &/or Canopy	Likely Impact	Recommendation
87	***Tibouchina granulosa*** (Lasiandra)	M	3.0	1.6	2.0	28.3	Existing concrete wheel strips offset 0.8 metres east to be demolished within TPZ. Proposed new driveway ramp and associated retaining wall offset 2.7 metres east at RL? (assumed 500-800mm below grade). Excavations for wall foundations within TPZ. Encroachment to TPZ = 1%. Proposed pathway offset 1.5 metres east at RL? (assumed close to existing grade). Excavations for pavement sub-grade within TPZ. Encroachment to TPZ = 19%.	Extent of encroachment to the TPZ exceeds acceptable limits under AS 4970:2009. However, this tree will tolerate the degree of encroachment proposed, provided that the pathway is constructed as recommended. Extent of crown loss is within acceptable limits under AS 4373:2007. No adverse impact.	Retain in accordance with recommended Tree Protection Measures (Section 10). Install temporary Tree Protection Fence in accordance with Section 10.5. Undertake all excavations for the pavement sub-grade within the TPZ in accordance with Section 10.9. Install the pathway in accordance with Sections 10.12 & 10.13.
88	***Tibouchina granulosa*** (Lasiandra)	M	3.2	1.6	2.2	32.2	Located within footprint of proposed driveway ramp.	Proposed works will necessitate removal.	Remove tree.
89	***Liquidambar styraciflua*** (Liquidambar)	M	7.6	2.8	5.1	179.5	Located within footprint of proposed driveway crossover.	Proposed works will necessitate removal (High Retention Value). There are no feasible alternatives that can be recommended that would permit this tree to be retained in this instance given the exclusion of vehicular access from Frenchs Forest Road and the limited width of the frontage to Gladys Avenue.	Undertake replacement planting with a new tree elsewhere within the site to compensate for loss of amenity in accordance with Section 11.
90	***Syzygium australe*** (Lilly Pilly)	M	2.6	1.5	1.8	21.2	Located within footprint of proposed driveway ramp.	Proposed works will necessitate removal.	Remove tree.

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APPENDIX 4 - IMPACT ASSESSMENT SCHEDULE

Tree Identification No.	Species	Construction Tolerance	Tree Protection Zone (m R)	Structural Root Zone (m R)	Minimum Setback Distance (tangent to root plate)	TPZ (m^2)	Incursions To Root Zone &/or Canopy	Likely Impact	Recommendation
91	***Citharexylum spinosum*** (Fiddlewood)	M	6.6	2.7	4.5	136.8	Proposed new driveway ramp and associated retaining wall offset 2.6 metres west at RL? (assumed 500-800mm below grade). Excavations for wall foundations within TPZ. Encroachment to TPZ = 26%. Proposed building & balcony (first floor level) offset 2.2 metres south at RL? Substantial canopy pruning required to clear building envelope and temporary scaffolding , resulting in an estimated 20% crown loss. Located within proposed bin storage area.	Proposed works will necessitate removal.	Remove tree (exempt from Council's Tree Management Controls).
92	***Eucalyptus botryoides*** (Bangalay)	P	7.0	2.5	4.8	153.9	Proposed building (first floor level) offset 4.5 metres south-west at RL? (assumed suspended). Excavations for building foundations within TPZ. Proposed basement offset 4.6 metres south-west at RL151.50 (2.0 metres below grade). Excavations for basement retaining walls within TPZ. Cumulative encroachment to TPZ = 8%. Substantial canopy pruning required to clear building envelope and temporary scaffolding, resulting in an estimated at 20-30% crown loss.	Extent of encroachment to the root zone is less than 10% of the TPZ, which is considered within acceptable limits under AS 4970:2009. Extent of crown loss exceeds acceptable limits under AS 4373:2007. Extent of crown loss incurred is likely to result in an adverse impact.	Retain in accordance with recommended Tree Protection Measures (Section 10). Install temporary Tree Protection Fence in accordance with Section 10.5. Undertake all excavations for the pavement sub-grade within the TPZ in accordance with Section 10.9. Undertake any required canopy pruning (that essential to clear the temporary scaffolding) in accordance with Section 10.14. Erect temporary scaffolding in accordance with Section 10.15.
93	***Tibouchina granulosa*** (Lasiandra)	M	2.6	2.0	1.8	21.2	Proposed basement located < 1.5 metres south-west	Proposed works will necessitate removal.	Remove tree (exempt from Council's Tree Management Controls).
94	***Eucalyptus elata*** (River Peppermint)	P	6.0	2.7	4.1	113.0	Proposed basement located < 1.5 metres south-west	Proposed works will necessitate removal.	Remove tree.
95	***Eucalyptus elata*** (River Peppermint)	P	5.6	2.7	3.8	99.9	Located within footprint of proposed basement.	Proposed works will necessitate removal.	Undertake replacement planting with a new tree elsewhere within the site to compensate for loss of amenity in accordance with Section 11.

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APPENDIX 4 - IMPACT ASSESSMENT SCHEDULE

Tree Identification No.	Species	Construction Tolerance	Tree Protection Zone (m R)	Structural Root Zone (m R)	Minimum Setback Distance (tangent to root plate)	TPZ (m^2)	Incursions To Root Zone &/or Canopy	Likely Impact	Recommendation
96	***Eucalyptus elata*** (River Peppermint)	P	5.0	2.4	3.4	78.5	Located within footprint of proposed basement & building.	Proposed works will necessitate removal.	Remove tree (poor specimen, no habitat value)
97	***Eucalyptus elata*** (River Peppermint)	P	6.0	2.4	4.1	113.0	Located within footprint of proposed basement.	Proposed works will necessitate removal.	Remove tree.
98	***Cyathea cooperi*** (Rough Tree Fern)	G	2.2	1.5	1.5	15.2	Located within footprint of proposed basement & building.	Proposed works will necessitate removal.	Remove tree (exempt from Council's Tree Management Controls).
99	***Cyathea cooperi*** (Rough Tree Fern)	G	2.2	1.5	1.5	15.2	Located within footprint of proposed basement & building.	Proposed works will necessitate removal.	Remove tree (exempt from Council's Tree Management Controls).
100	***Howea forsteriana*** (Kentia Palm)	G	2.5	1.6	1.7	19.6	Proposed basement offset 2.2 metres west at RL151.50 (4 metres below grade). Excavations for basement retaining walls within TPZ. Encroachment to TPZ = 20% (assuming basement constructed using a soldier pile wall). Proposed pathway offset 1.1 metres west at RL? (assumed close to existing grade). Excavations for pavement sub-grade within TPZ.	Extent of encroachment to the TPZ exceeds acceptable limits under AS 4970:2009. Excavation for the basement is likely to result in an adverse impact on this tree.	Remove tree (exempt from Council's Tree Management Controls).
101	***Strelitzia nicolai*** (Giant White Bird of Paradise)	G	3.4	2.0	2.3	35.4	Proposed basement located < 1.5 metres west.	Proposed works will necessitate removal.	Undertake replacement planting with a new tree elsewhere within the site to compensate for loss of amenity in accordance with Section 11.
102	***Strelitzia nicolai*** (Giant White Bird of Paradise)	G	3.4	2.0	2.3	35.4	Proposed basement located < 1.5 metres west.	Proposed works will necessitate removal.	Undertake replacement planting with a new tree elsewhere within the site to compensate for loss of amenity in accordance with Section 11.

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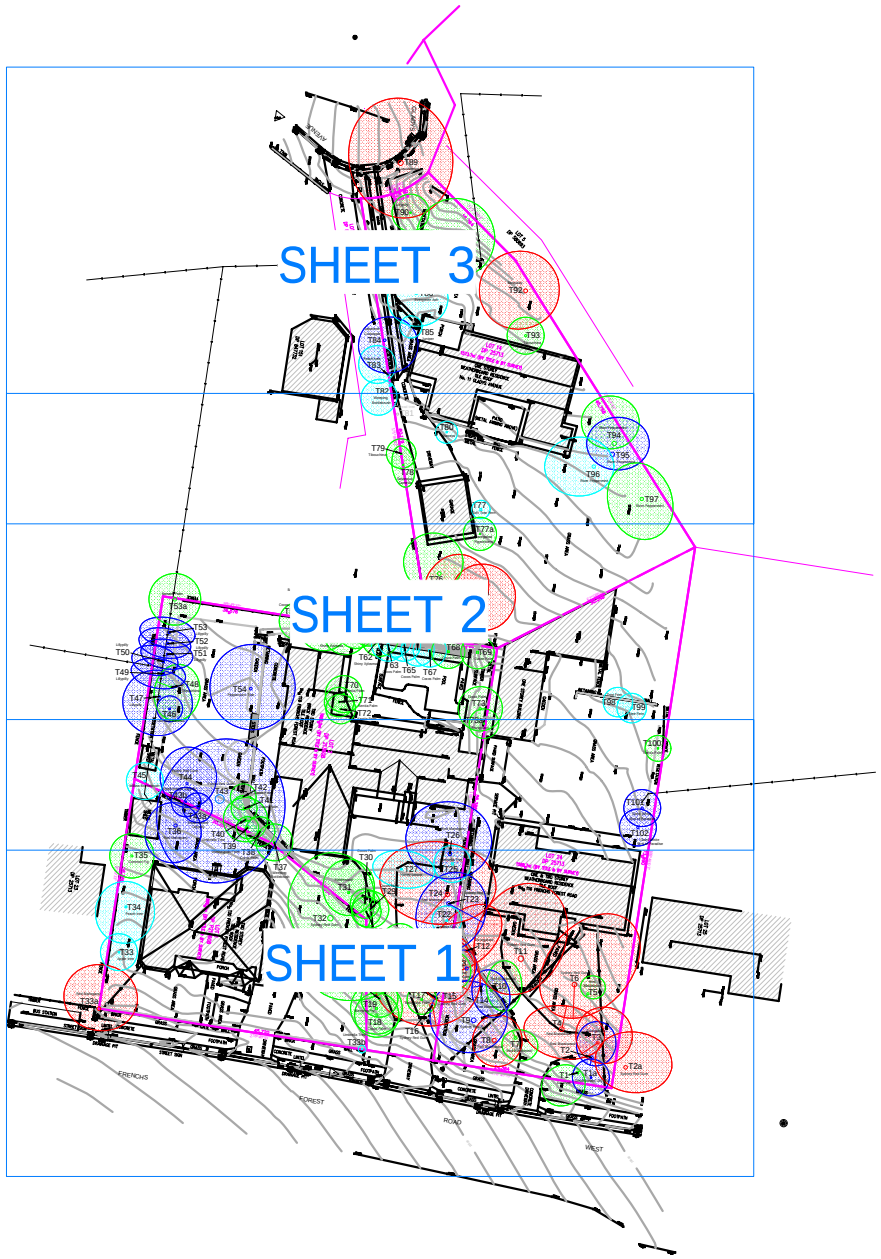

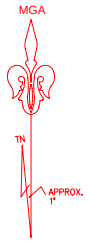

LEGEND
TREE RETENTION VALUES

- HIGH
- MODERATE
- LOW
- VERY LOW

TREE LOCATION PLAN SHOWING
TREE RETENTION VALUES

116-120 Frenchs Forest Road
& 11 Gladys Avenue, FRENCHS FOREST

Earthscape Horticultural Services
Arboricultural and Horticultural Consultants
PO Box 364
BEROWRA NSW 2081
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Based on the Survey Drawing
prepared by Innovative Surveying Associates
Dwg Ref No. 500631 [A]
Dated 11.11.2022

DWG No. T22-1121/01 [B]

KEY PLAN

DATE: 16/02/2023

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SHEET 2

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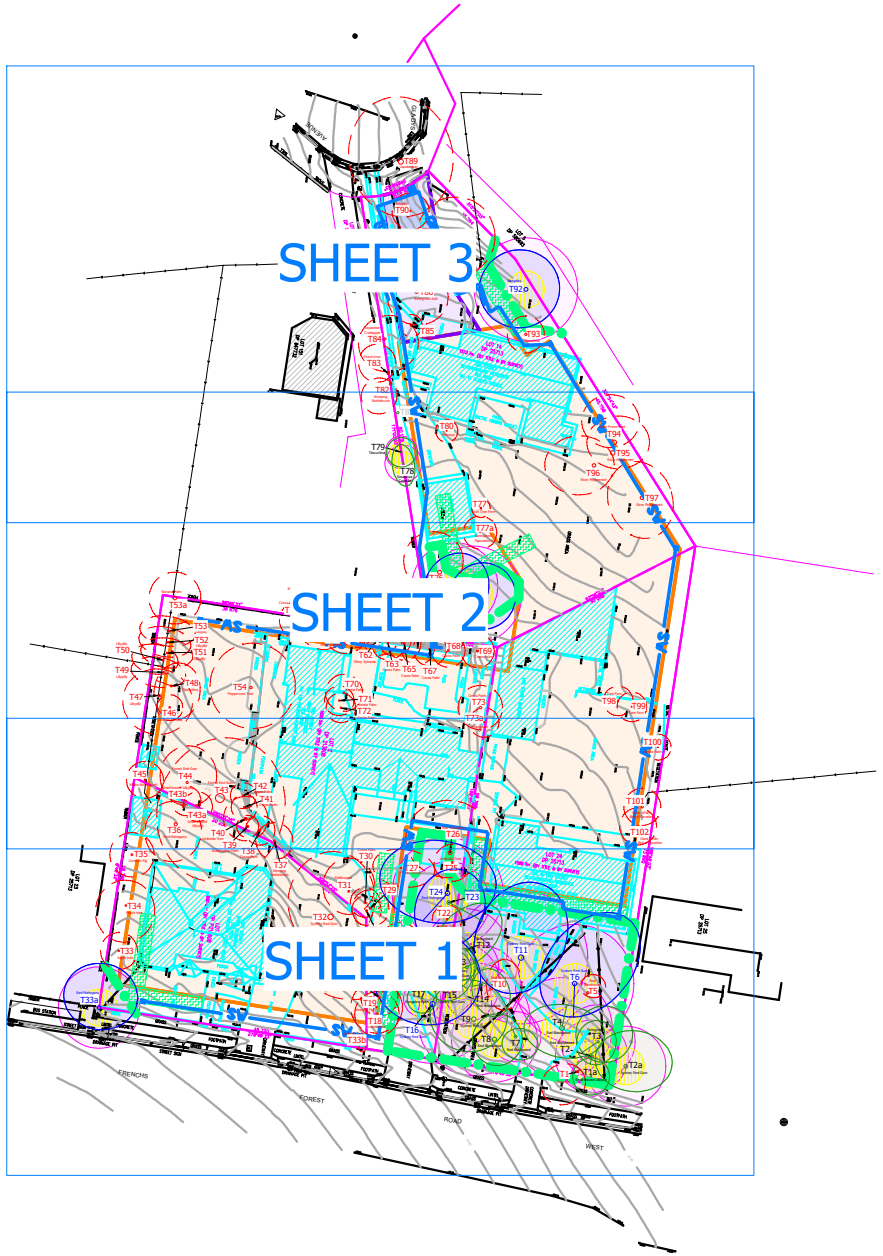
SHEET 3

DATE: 16/02/2023



APPENDIX 6

TREE PROTECTION PLAN

116-120 Frenchs Forest Road
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KEY PLAN

DATE: 06/12/2023

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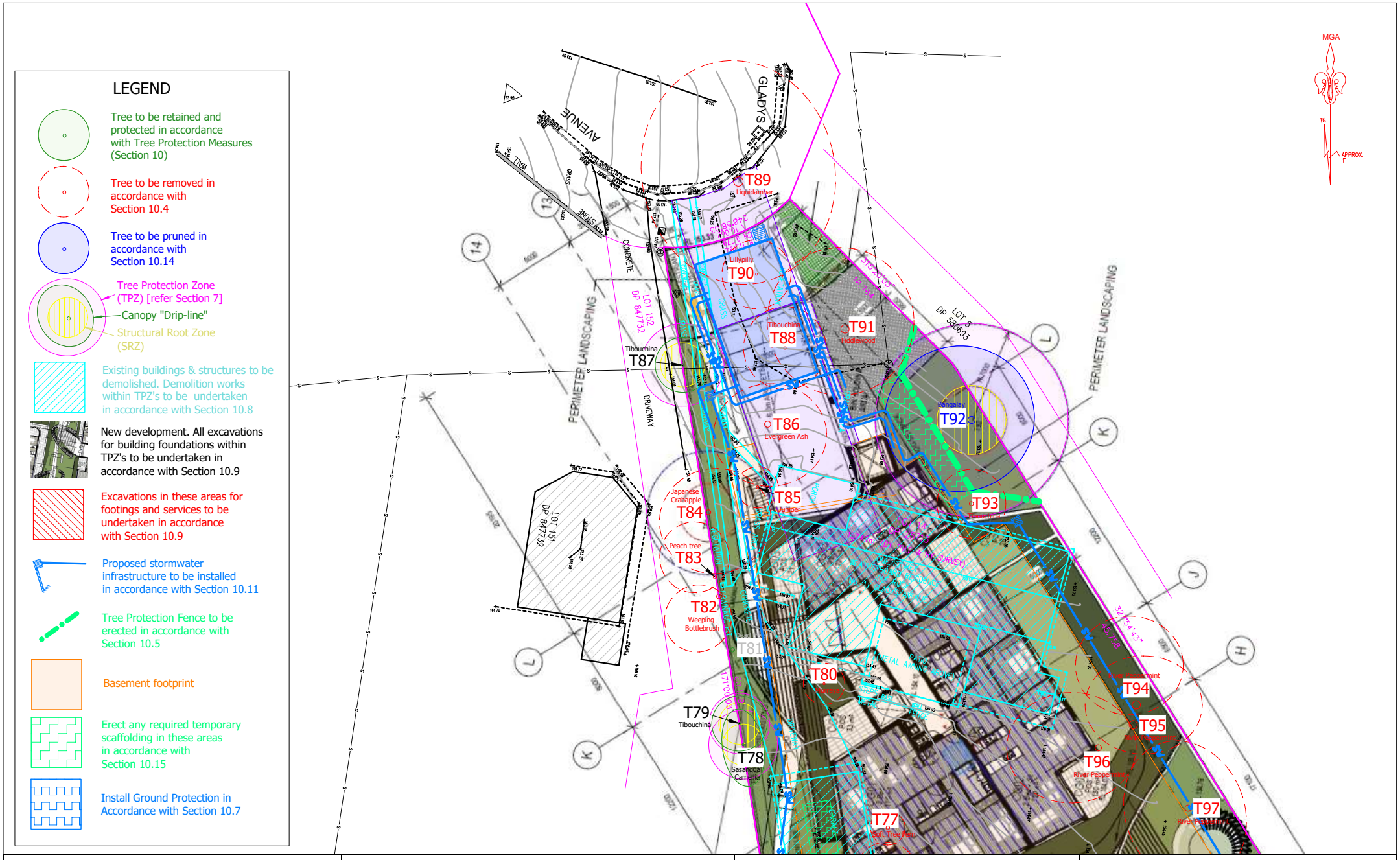

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