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# ARBORICULTURAL IMPACT ASSESSMENT TREE PROTECTION SPECIFICATION

**Opal Residential Aged Care Facility**  
**94-100 Explorers Way**  
**St Clair**

Prepared for: PACT PM

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Revision A

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## 1.0 INTRODUCTION

### 1.1 Background

1.1.1 This Arboricultural Impact Assessment and Tree Protection Specification Report was prepared for Pact PM in relation to the proposed development works at 94-100 Explorers Way, St Clair. The purpose of this Report is to undertake a Visual Tree Assessment<sup>1</sup> (VTA), determine the impact of the proposed works on the trees, and where appropriate, recommend the use of sensitive construction methods and tree protection methods to minimise adverse impacts.

1.1.2 In preparing this Report, the authors have considered the objectives of the following:

- *State Environmental Planning Policy Vegetation in Non-Rural Areas (2017)*
- *Penrith Local Environmental Plan (2010)*
- *Penrith City Council Tree & Vegetation Removal Fact Sheet (not dated)*
- *Australian Standard 4970 Protection of Trees on Development Sites (2009)*
- *Australian Standard 4373 Pruning of Amenity Trees (2007)*
- *Australian Standard 2303 Tree Stock for Landscape Use (2015)*
- *Safe Work Australia Guide for Managing Risks of Tree Trimming and Removal Work (2016)*

Refer to Methodology (**Appendix 1**)

1.1.3 This impact assessment is based on an assessment of the following supplied documentation/plans only:

- Landscape Plans (LA000 – LA400 - Rev P2) – prepared by Taylor Brammer, dated 26.03.21

Refer to Plans (**Appendix 2**)

### 1.2 The Proposal

1.2.1 The supplied plans show the proposed works include:

- Demolition of an existing two-storey residential dwelling in the south-eastern corner of the site
- Construction of a two storey Residential Age Care Facility (RACF) building
- Construction of ground level carparking spaces and internal road
- Landscaping and associated works

Refer to Plans (**Appendix 2**)

## 2.0 RESULTS

### 2.1 The Site

2.1.1 The site is described as Lot 36, DP 239502, 94-100 Explorers way, St Clair. The site is bound by the Western M4 Motorway to the north, the carriage way of Explorers Way to the south, residential allotments and a council reserve to the east, and residential allotments to the west.

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<sup>1</sup> Mattheck & Breloer (2003)

- 2.1.2 The site is gently sloping with a northerly aspect. A wide, shallow swale runs in a north-easterly direction through the northern section of the site. The site has been cleared of understory trees and shrubs and comprises predominantly of rough grass which is periodically mown.

## 2.2 The Trees

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- 2.2.1 Ninety-eight (98) trees were assessed using the Visual Tree Assessment<sup>2</sup> (VTA) criteria and notes. The trees comprise of a mix of locally indigenous and exotic species. Four (4) trees (Trees 18, 54, 61 and 110) are dead. An additional nine (9) trees (Trees 8-16) have been addressed within this Report however a full VTA of these trees could not be undertaken due to restricted access. The species and trunk diameter measurements of these trees were recorded for the purposes of determining Tree Protection Zones (TPZ) calculations only. *Melaleuca decora* (White Feather Honey Myrtle) is the dominant species on site and accounts for 80% of the tree population.
- 2.2.2 None of the trees are listed within Schedule 5 (Environmental Heritage) of the *Penrith Local Environmental Plan (2010)*.<sup>3</sup> Penrith City Council has confirmed that no Significant Tree Register is currently available for the Local Government Area.<sup>4</sup>
- 2.2.3 Trees 71 and 82 *Eucalyptus fibrosa* (Red Ironbark), Trees 73, 74, 100 and 101 *Eucalyptus globoidea* (White Stringybark), Trees 19, 22, 56, and 72 *Eucalyptus longifolia* (Woollybutt), and Trees 1-16, 20, 21, 23, 24, 26-52, 55, 57, 58, 62-70, 75-81, 83-99 and 102-109 *Melaleuca decora* (White Feather Honey Myrtle) are a locally indigenous and representative tree species of the Cumberland Plain Shale Woodlands/Shale-Gravel Transition Forest. Cumberland Plain Shale Woodlands/Shale-Gravel Transition Forest is listed as a *Critically Endangered* ecological community under the NSW *Biodiversity Conservation Act (2016)* and the Commonwealth *Environment Protection and Biodiversity Conservation Act (1999)*. The Ecology Report for the site outlines that the vegetation community is disturbed but appears to best match Shale Gravel Transition Forest in the Sydney Basin Bioregion. It does not meet any thresholds to be regarded as a community.<sup>5</sup>
- 2.2.4 As required by Clause 2.3.2 of *Australian Standard 4970 Protection of Trees on Development Sites (2009)*, each tree (and tree group) has been allocated a Retention Value. TreeIQ allocates one of four Retention Value categories based on a combination of Landscape Significance and Useful Life Expectancy (ULE). The assessment of Landscape Significance and ULE involves a degree of subjectivity and there will be a range of tree quality and value within each of the Retention Value categories. The Retention Values do not consider any proposed development works and are not a schedule for tree retention or removal. The trees have been allocated one of the following Retention Values:
- Priority for Retention
  - Consider for Retention
  - Consider for Removal
  - Priority for Removal

Refer to Tree Assessment Schedule (**Appendix 3**)

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<sup>2</sup> Mattheck & Breloer (2003)

<sup>3</sup> Penrith City Council (2010)

<sup>4</sup> Penrith City Council (2019)

<sup>5</sup> Abel Ecology (2015)

## 3.0 ARBORICULTURAL IMPACT ASSESSMENT

### 3.1 Tree Removal

#### 3.1.1 Trees 7-16

Trees 7-16 were identified as *Melaleuca decora* (White Feather Honey Myrtle) and are located at the front (southern boundary) of the site.

3.1.2 The supplied plans show Trees 7-16 are to be removed to accommodate the proposed driveway footprint or service utilities.

#### 3.1.3 Tree 17

Tree 17 was identified as *Cupressocyparis leylandii* (Leyland Cypress) and is located at the front of the site.

3.1.4 The supplied plans show Tree 17 is to be removed to accommodate the proposed substation.

#### 3.1.5 Trees 19 & 22

Trees 19 and 22 were identified as *Eucalyptus longifolia* (Woollybutt) and are located at the front of the site. The trees are of fair health as evidenced by a reduced crown density of 50-75%. Trees 19 and 22 are of moderate Landscape Significance and have been allocated a Retention Value of *Consider for Retention*.

3.1.6 The supplied plans show Trees 19 and 22 are to be removed to accommodate the proposed driveway footprint.

#### 3.1.7 Trees 20 & 21

Trees 20 and 21 were identified as *Melaleuca decora* (White Feather Honey Myrtle) and are located at the front of the site. The trees are of moderate Landscape Significance and have been allocated a Retention Value of *Consider for Retention*.

3.1.8 The supplied plans show Trees 20 and 21 are to be removed to accommodate the proposed driveway footprint.

#### 3.1.9 Trees 23, 24, 28, 34-36, 41, 43-48, 62, 64-69, 99 & 102-107

Trees 23, 24, 28, 34-36, 41, 43-48, 62-69, 99 and 102-107 were identified as *Melaleuca decora* (White Feather Honey Myrtle) and are located across the site. The trees are of moderate Landscape Significance and have been allocated a Retention Value of *Consider for Retention*.

3.1.10 The supplied plans show Trees 23, 24, 28, 34-36, 41, 43-48, 62-69, 99 and 102-107 are to be removed to accommodate the proposed building footprint.

#### 3.1.11 Trees 25 & 100

Trees 25 and 100 were identified as *Pinus contorta* (Shore Pine) and *Eucalyptus globoides* (White Stringybark) respectively. The trees are of fair health as evidenced by a reduced crown density of 50-75%. Trees 25 and 100 are of moderate Landscape Significance and have been allocated a Retention Value of *Consider for Retention*.

3.1.12 The supplied plans show Trees 25 and 100 are to be removed to accommodate the proposed building footprint.

### 3.1.13 Trees 27 & 101

Trees 27 and 101 were identified as *Melaleuca decora* (White Feather Honey Myrtle) and *Eucalyptus globoides* (White Stringybark) respectively. The trees are of poor health as evidenced by the presence of high volumes of deadwood within their crowns. Trees 27 and 101 are of low Landscape Significance and have been allocated a Retention Value of *Priority for Removal*.

3.1.14 The supplied plans show Trees 27 and 101 are to be removed to accommodate the proposed building footprint.

### 3.1.15 Trees 29, 30, 32, 33, 37, 40, 63, 70 & 93-96

Trees 29, 30, 32, 33, 37, 40, 63, 70 and 93-96 were identified as *Melaleuca decora* (White Feather Honey Myrtle) and are located across the site. The trees are of moderate Landscape Significance and have been allocated a Retention Value of *Consider for Retention*.

3.1.16 The supplied plans show Trees 29, 30, 32, 33, 37, 40, 63, 70 and 93-96 are to be removed to accommodate the proposed landscape treatment.

### 3.1.17 Trees 31 & 98

Trees 31 and 98 were identified as *Melaleuca decora* (White Feather Honey Myrtle) and are located across the site. The trees are of low Landscape Significance and have been allocated a Retention Value of *Consider for Removal*.

3.1.18 The supplied plans show Trees 31 and 98 are to be removed to accommodate the proposed landscape treatment.

### 3.1.19 Trees 108 & 109

Trees 108 and 109 were identified as *Melaleuca decora* (White Feather Honey Myrtle) and are located across the site. The trees are of moderate Landscape Significance and have been allocated a Retention Value of *Consider for Retention*.

3.1.20 The supplied plans show Trees 108 and 109 will need to be removed to accommodate the proposed carpark.

### 3.1.21 Tree 42

Tree 42 was identified as *Melaleuca decora* (White Feather Honey Myrtle) and is located towards the north-eastern corner of the site. The tree is of fair health as evidenced by a reduced crown density of 50-75%. Tree 42 is of low Landscape Significance and has been allocated a Retention Value of *Consider for Removal*.

3.1.22 The supplied plans show Tree 42 is to be removed to accommodate the proposed building footprint.

### 3.1.23 Trees 50, 58, 75-78, 83, 84 & 97

Trees 50, 58, 75-78, 83, 84 and 97 were identified as *Melaleuca decora* (White Feather Honey Myrtle) and are located at the rear of the site. The trees are of moderate Landscape Significance and have been allocated a Retention Value of *Consider for Retention*.

3.1.24 The supplied plans show Trees 50, 58, 75-78, 83, 84 and 97 are proposed for removed to create wider tree spacing as part of the bushfire mitigation strategy for the site.

### 3.1.25 Tree 72

Tree 72 was identified as *Eucalyptus longifolia* (Woollybutt) and is located on the rear boundary. The tree is of fair health and structural condition as evidenced by a reduced crown density of 50-75%, moderate volumes of deadwood and the presence of a major bark inclusion at the junction of co-dominant stems. Tree 72 is of low Landscape Significance and has been allocated a Retention Value of *Consider for Removal*.

- 3.1.26 The supplied plans show Tree 72 is proposed for removed to create wider tree spacing as part of the bushfire mitigation strategy for the site.

### 3.1.27 Trees 111-113

Trees 111-113 were identified as *Acacia* sp. (Wattle) and are late mature to senescent specimens located on the rear site boundary. The trees are in poor health and structural condition with a reduced crown density of 0-25% and the presence of borers. Trees 111-113 are of low Landscape Significance and have been allocated a Retention Value of *Priority for Removal*.

- 3.1.28 The supplied plans show Trees 111-113 are proposed for removed to create wider tree spacing as part of the bushfire mitigation strategy for the site.

## 3.2 Tree Retention

- 3.2.1 The supplied plans show that thirty-one (31) trees within the site are to be retained as part of the proposed development. This includes one (1) tree with a Retention Value of *Priority for Retention*, twenty-four (24) trees with a Retention Value of *Consider for Retention*, six (6) trees with a Retention Value of *Consider for Removal*.

### 3.2.2 Table 1: Tree Retention

Priority for Retention	Consider for Retention	Consider for Removal	Priority for Removal
82	1, 2, 3, 4, 5, 6, 26, 38, 39, 49, 52, 56, 57, 71, 73, 74, 79, 81, 86, 87, 88, 90, 91 & 114	51, 55, 80, 85, 89 & 92	

## 3.3 Minor Encroachment

- 3.3.1 The supplied plans show that works are proposed within the TPZ areas of Trees 6, 26, 49, 71, 73, 74, 79, 82, 85, 91, 92 and 114. As the encroachment into the TPZ is less than 10% and outside of the Structural Root Zone (SRZ), the extent of work represents *Minor Encroachments* as defined by *Australian Standard 4970-2009 Protection of Trees on Development Sites* (AS-4970). A *Minor Encroachment* is considered acceptable by AS-4970 when it is compensated for elsewhere and contiguous within the TPZ. The encroachment into TPZ should be compensated for by extending the TPZ in areas not subject to an encroachment.

### 3.4 Major Encroachment

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- 3.4.1 The supplied plans show that works are proposed within the TPZ areas of Trees 1-6, 38, 39, 52, 56, 82 and 85-92. The extent of work represents *Major Encroachments* as defined by AS-4970.
- 3.4.2 Tree sensitive design and construction methods can be used to minimise impacts of development on tree health and reduce conflict between trees and built structures. Much of the information published in this field has been incorporated into best practice guidelines and standards (i.e. *British Standard 5837 Trees in Relation to Design, Demolition and Construction 2012* & *Australian Standard 4970-2009 Protection of Trees on Development Sites*). Specifically, Clause 3.3.4 of AS-4970 notes that design factors and tree sensitive methods can be used to minimize the impact of the encroachment. These methods should be confirmed as feasible by the relevant project consultants (i.e. architect, landscape architect, engineer etc) and may require flexibility at the time of construction.
- 3.4.3 Pavement Areas**  
The pavement areas within the TPZ areas of Trees 38, 39, 52 and 56 should be designed and installed above existing grade (including any sub-base layers where required) to minimise the potential for root damage. Compaction of the sub-grade should be undertaken with a pedestrian plate compactor only.
- 3.4.4 Ground levels may need to be locally raised and regraded along the edges of the pavement. However, any filling or retaining wall installation should be limited to less than 10% of the TPZ.
- 3.4.5 The path should be rerouted around the trunk of Tree 52 and graded back to natural ground levels at the root collar. No fill materials should contact the tree's trunk.
- 3.4.6 Wall**  
The installation of an informal wall within the TPZ of Tree 56 should comprise of large rocks to limit the spread of fill/batter and excavation within TPZ. Rocks should be placed at existing ground level without either compaction of the subgrade or the installation of a footing.
- 3.4.7 Fencing**  
Fencing post locations within the TPZ areas of Trees 1, 2, 3, 4, 5, 6, 82, 85, 86, 87, 88, 89, 90, 91 and 92 should be determined by preliminary hand excavation to a depth of 600mm to enable the retention of roots (>25mmØ) as required by the Project Arborist. In excavated areas where roots (>25mmØ) are present and are to be retained, the location of the post should be adjusted. Where required, the post hole should be sleeved to prevent concrete from contacting tree roots.
- 3.4.8 Garden Edging**  
Garden edging within the TPZ of Tree 1 should be installed using hand excavation with the edging modified (cut away) as required to bridge over and enable the retention of roots (>25mmØ) as determined by the Project Arborist. Pegs/pins to which the edging is affixed should be located as to avoid roots (>25mmØ).
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### 3.5 Other Works within TPZ Areas

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#### 3.5.1 Demolition Works

Demolition works within TPZ areas should be supervised by the Project Arborist and utilise tree sensitive methods. Structures should be demolished in small sections ensuring demolition machinery/equipment does not contact with any part of the tree. Existing structures within an SRZ can contribute to tree stability by providing ballast to the rootplate or act as a stop to the overturning of the rootball and should be retained in-situ if possible.

#### 3.5.2 Underground Services

Underground services should be located outside of the TPZ areas. Where this is not possible, services should be installed using tree sensitive excavation (hand/hydrovac/air spade) methods with the services located around/below roots (>25mmØ) as required by the Project Arborist. Excavation using compact machinery fitted with a flat bladed bucket is permissible where approved by the Project Arborist. Excavation using compact machinery should be undertaken in small increments, guided by a spotter who is to look for and prevent damage to roots (>25mmØ).

3.5.3 Alternatively, boring methods may be used for underground service installation where the obvert level (highest interior level of pipe) is greater than 1200mm below existing grade. Excavations for starting and receiving pits for boring equipment should be located outside of the TPZ areas or located to avoid roots (>25mmØ) as deemed necessary by the Project Arborist.

#### 3.5.4 Landscaping

The installation of plants/turf within the TPZ areas should be undertaken using hand tools and roots (>25mmØ) should be protected. No mechanical cultivation/ripping of soils should be undertaken within the TPZ areas. Excavation and installation of imported soil mixes should be excluded from the TPZ areas other than the installation of soil conditioners to a maximum depth of 50mm above the existing soil profile.

### 3.6 Replacement Tree Planting

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3.6.1 The supplied plans show extensive tree planting is proposed across the site. New trees should be grown in accordance with *Australian Standard 2303 Tree Stock for Landscape Use (2015)*.

## 4.0 CONCLUSION

4.1 One hundred and eleven (111) trees were addressed within this Report and comprise of a mix of locally indigenous and exotic species. Trees 18, 54, 61 and 110 are dead.

4.2 The supplied plans show the proposed works include demolition of an existing two storey residential dwelling and construction of a two storey Residential Age Care Facility building and carparking, landscaping and associated works.

4.3 The supplied plans show that seventy-six (76) trees (Trees 7-17, 19-25, 27-37, 40-48, 50, 58, 62, 63-70, 72, 75-78, 83, 84, 93-109 and 111-113) are to be removed as part of the proposed development. This includes:

- Fifty-seven (57) trees with a Retention Value of *Consider for Retention*
- Five (5) trees with a Retention Value of *Consider for Removal*
- Five (5) trees with a Retention Value of *Priority for Removal*
- Nine (9) trees which have not been allocated a Retention Value

- 4.4 The supplied plans show that thirty-one (31) trees (Trees 1-6, 26, 38, 39, 49, 51, 52, 55-57, 71, 73, 74, 79-82, 85-92 & 114) are to be retained as part of the proposed development. Tree sensitive design and construction methods (as outlined within Sections 3.4 and 3.5) should be used within the TPZ areas of Trees 1-6, 38, 39, 52, 56, 82 and 85-92 to minimize adverse impacts. The trees should be protected in accordance with the Tree Protection Specification **(Appendix 5)**.
- 4.5 The supplied landscape plan shows that extensive tree planting is proposed across the site to help off-set the loss of canopy cover and amenity resultant from the removal. Replacement planting should be supplied in accordance with *Australian Standard 2303 (2015) Tree Stock for Landscape Use*.

## 5.0 LIMITATIONS & DISCLAIMER

TreeiQ takes care to obtain information from reliable sources. However, TreeiQ can neither guarantee nor be responsible for the accuracy of information provided by others. Plans, diagrams, graphs and photographs in this Arboricultural Report are visual aids only and are not necessarily to scale. This Report provides recommendations relating to tree management only. Advice should be sought from appropriately qualified consultants regarding design/construction/ecological/heritage etc issues.

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Many factors may contribute to tree failure and cannot always be predicted. TreeiQ takes care to accurately assess tree health and structural condition. However, a tree's internal structural condition may not always correlate to visible external indicators. There is no warranty or guarantee, expressed or implied that problems or deficiencies regarding the trees or site may not arise in the future. Information contained in this report covers only the trees assessed and reflects the condition of the trees at the time of inspection. Additional information regarding the methodology used in the preparation of this Report is attached as Appendix 1. A comprehensive tree risk assessment and management plan for the trees is beyond the scope of this Report.

Reference should be made to any relevant legislation including Tree Management Controls. All recommendations contained within this Report are subject to approval from the relevant Consent Authority.

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Standards Australia (2007) *Pruning of Amenity Trees AS-4373*

Standards Australia (2015) *Tree Stock for Landscape Use (AS-2303)*



## Appendix 1: Methodology

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- 1.1 Site Inspection:** This report was determined as a result of a comprehensive site inspection during November 2020.
- 1.2 Visual Tree Assessment (VTA):** The subject tree(s) was assessed using the Visual Tree Assessment criteria and notes as described in *The Body Language of Trees – A Handbook for Failure Analysis*.<sup>6</sup> The inspection was limited to a visual examination of the subject tree(s) from ground level only. No internal diagnostic or tissue testing was undertaken as part of this assessment. Trees outside the subject site were assessed from the property boundaries only.
- 1.3 Tree Dimensions:** The dimensions of the subject tree(s) are approximate only.
- 1.4 Tree Locations:** The location of the subject tree(s) was determined from the supplied plans. Trees not shown on the supplied plans have been plotted in their **approximate location only**.
- 1.5 Trees & Development:** Tree Protection Zones, Tree Protection Measures and Sensitive Construction Methods for the subject tree were based on methods outlined in *Australian Standard 4970-2009 Protection of Trees on Development Sites*.

The *Tree Protection Zone* (TPZ) is described in AS-4970 as a combination of the root area and crown area requiring protection. It is an area isolated from construction disturbance, so that the tree remains viable.

The *Structural Root Zone* (SRZ) is described in AS-4970 as the area around the base of a tree required for the tree's stability in the ground. Severance of structural roots within the SRZ is not recommended as it may lead to the destabilisation and/or demise of the tree.

In some cases it may be possible to encroach into or make variations to the theoretical TPZ. A *Minor Encroachment* is less than 10% of the area of the TPZ and is outside the SRZ. The area lost to this encroachment should be compensated for elsewhere and contiguous with the TPZ. A *Major Encroachment* is greater than 10% of the TPZ or inside the SRZ. In this situation the Project Arborist must demonstrate that the tree would remain viable. This may require root investigation by non-destructive methods or the use of sensitive construction methods.

- 1.6 Tree Health:** The health of the subject tree(s) was rated as *Good, Fair* or *Poor* based on an assessment of the following factors:
- I. Foliage size and colour
  - II. Pest and disease infestation
  - III. Extension growth
  - IV. Crown density
  - V. Deadwood size and volume
  - VI. Presence of epicormic growth
- 1.7 Tree Structural Condition:** The structural condition of the subject tree(s) was rated as *Good, Fair* or *Poor* based on an assessment of the following factors:
- I. Assessment of branching structure  
(i.e. co-dominant/bark inclusions, crossing branches, branch taper, terminal loading, previous branch failures)
  - II. Visible evidence of structural defects or instability  
(i.e. root plate movement, wounds, decay, cavities, fungal brackets, adaptive growth)
  - III. Evidence of previous pruning or physical damage  
(root severance/damage, lopping, flush-cutting, lions tailing, mechanical damage)
- 1.8 Useful Life Expectancy (ULE):** The ULE is an estimate of the longevity of the subject tree(s) in its growing environment. The ULE is modified where necessary to take in consideration tree(s) health, structural condition and site suitability. The tree(s) has been allocated one of the following ULE categories (Modified from Barrell, 2001):
- I. 40 years +
  - II. 15-40 years
  - III. 5-15 years
  - IV. Less than 5 years

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<sup>6</sup> Mattheck & Breloer (2003)

- 1.9 Landscape Significance:** Landscape Significance was determined by assessing the combination of the cultural, environmental and aesthetic values of the subject tree(s). Whilst these values are subjective, a rating of high, moderate, low or insignificant has been allocated to the tree(s). This provides a relative value of the tree's Landscape Significance which may aid in determining its Retention Value. If the tree(s) can be categorized into more than one value, the higher value has been allocated.

Landscape Significance	Description
Very High	The subject tree is listed as a Heritage Item under the <i>Local Environmental Plan</i> with a local or state level of significance.
	The subject tree is listed on Council's Significant Tree Register or meets the criteria for significance assessment of trees and/or landscapes by a suitably qualified professional. The criteria are based on general principles outlines in the Burra Charter and on criteria from the Register of the National Estate.
High	The subject tree creates a 'sense of place' or is considered 'landmark' tree.
	The subject tree is of cultural or historical importance or is widely known.
	The subject tree is a prominent specimen which forms part of the curtilage of a heritage item with a known or documented association with that item.
	The subject tree has been identified by a suitably qualified professional as a species scheduled as a Threatened or Vulnerable Species for the site defined under the provisions of the NSW <i>Biodiversity Conservation Act (2016)</i> or the Commonwealth <i>Environmental Protection and Biodiversity Conservation Act (1999)</i> .
	The subject tree is known to contain nesting hollows to a species scheduled as a Threatened or Vulnerable Species for the site as defined under the provisions of the NSW <i>Biodiversity Conservation Act (2016)</i> or the Commonwealth <i>Environmental Protection and Biodiversity Conservation Act (1999)</i> .
	The subject tree is an excellent representative of the species in terms of aesthetic value.
	The subject tree is of significant size, scale or makes a significant contribution to the canopy cover of the locality.
Moderate	The subject tree makes a positive contribution to the visual character or amenity of the area.
	The subject tree provides a specific function such as screening or minimising the scale of a building.
	The subject tree is a good representative of the species in terms of aesthetic value.
Low	The subject tree is a known environmental weed species or is exempt under the provisions of the local Council's Tree Management Controls
	The subject tree makes little or no contribution to the amenity of the locality.
	The subject tree is a poor representative of the species in terms of aesthetic value.

- 1.10 Retention Value:** Retention Value was based on the subject tree's Useful Life Expectancy and Landscape Significance. The Retention Value was modified where necessary to take in consideration the subject tree's health, structural condition and site suitability. The subject tree(s) has been allocated one of the following Retention Values:

- I. Priority for Retention
- II. Consider for Retention
- III. Consider for Removal
- IV. Priority for Removal

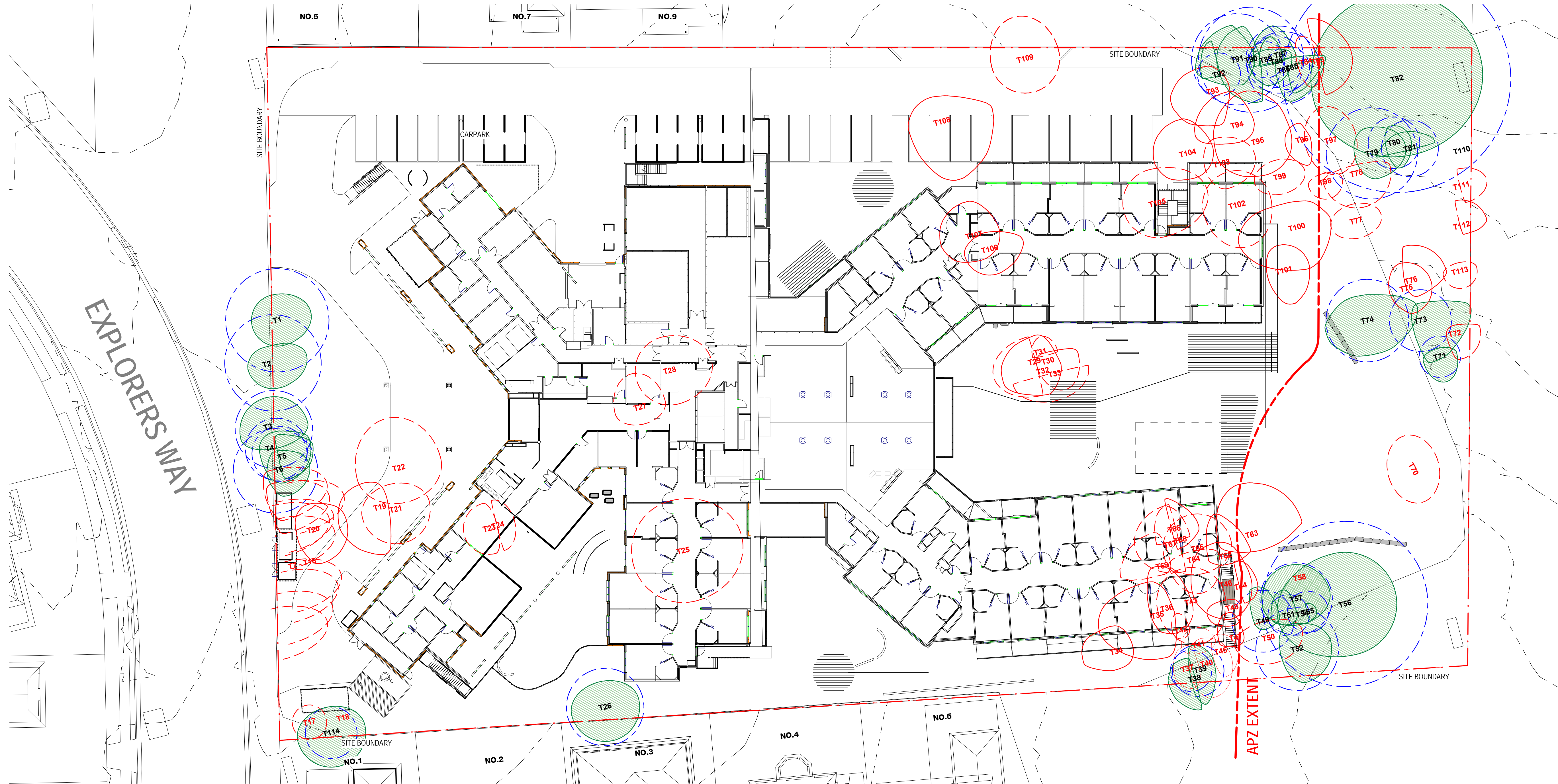
ULE		Landscape Significance			
	Very High	High	Moderate	Low	Insignificant
40 years +	Priority for Retention	Priority for Retention		Consider for Removal	Priority for Removal
15-40 years		Priority for Retention	Consider for Retention		
5-15 years		Consider for Retention			
Less than 5 years	Consider for Removal	Priority for Removal			

The above table has been modified from the Footprint Green Tree Significance and Retention Value Matrix.

Appendix 2: Plans

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Tree No.	Species	16	Melaleuca decora (White Feather Honey Myrtle)	30	Melaleuca decora (White Feather Honey Myrtle)	41	Melaleuca decora (White Feather Honey Myrtle)	51	Melaleuca decora (White Feather Honey Myrtle)	66	Melaleuca decora (White Feather Honey Myrtle)	75	Melaleuca decora (White Feather Honey Myrtle)	84	Melaleuca decora (White Feather Honey Myrtle)	94	Melaleuca decora (White Feather Honey Myrtle)	103	Melaleuca decora (White Feather Honey Myrtle)
1	Melaleuca decora (White Feather Honey Myrtle)	17	Cupressus nuytensis (Leyland Cypress)	31	Melaleuca decora (White Feather Honey Myrtle)	42	Melaleuca decora (White Feather Honey Myrtle)	52	Melaleuca decora (White Feather Honey Myrtle)	67	Melaleuca decora (White Feather Honey Myrtle)	76	Melaleuca decora (White Feather Honey Myrtle)	85	Melaleuca decora (White Feather Honey Myrtle)	95	Melaleuca decora (White Feather Honey Myrtle)	104	Melaleuca decora (White Feather Honey Myrtle)
2	Melaleuca decora (White Feather Honey Myrtle)	18	Dead	32	Melaleuca decora (White Feather Honey Myrtle)	43	Melaleuca decora (White Feather Honey Myrtle)	53	Melaleuca decora (White Feather Honey Myrtle)	68	Melaleuca decora (White Feather Honey Myrtle)	77	Melaleuca decora (White Feather Honey Myrtle)	86	Melaleuca decora (White Feather Honey Myrtle)	96	Melaleuca decora (White Feather Honey Myrtle)	105	Melaleuca decora (White Feather Honey Myrtle)
3	Melaleuca decora (White Feather Honey Myrtle)	19	Eucalyptus longifolia (Woollybutt)	33	Melaleuca decora (White Feather Honey Myrtle)	44	Melaleuca decora (White Feather Honey Myrtle)	54	Dead	69	Melaleuca decora (White Feather Honey Myrtle)	78	Melaleuca decora (White Feather Honey Myrtle)	87	Melaleuca decora (White Feather Honey Myrtle)	97	Melaleuca decora (White Feather Honey Myrtle)	106	Melaleuca decora (White Feather Honey Myrtle)
4	Melaleuca decora (White Feather Honey Myrtle)	20	Melaleuca decora (White Feather Honey Myrtle)	34	Melaleuca decora (White Feather Honey Myrtle)	45	Melaleuca decora (White Feather Honey Myrtle)	55	Melaleuca decora (White Feather Honey Myrtle)	70	Melaleuca decora (White Feather Honey Myrtle)	79	Melaleuca decora (White Feather Honey Myrtle)	88	Melaleuca decora (White Feather Honey Myrtle)	98	Melaleuca decora (White Feather Honey Myrtle)	107	Melaleuca decora (White Feather Honey Myrtle)
5	Melaleuca decora (White Feather Honey Myrtle)	21	Melaleuca decora (White Feather Honey Myrtle)	35	Melaleuca decora (White Feather Honey Myrtle)	46	Melaleuca decora (White Feather Honey Myrtle)	56	Eucalyptus longifolia (Woollybutt)	71	Eucalyptus fibrosa (Red Ironbark)	80	Melaleuca decora (White Feather Honey Myrtle)	89	Melaleuca decora (White Feather Honey Myrtle)	99	Melaleuca decora (White Feather Honey Myrtle)	108	Melaleuca decora (White Feather Honey Myrtle)
6	Melaleuca decora (White Feather Honey Myrtle)	22	Eucalyptus longifolia (Woollybutt)	36	Melaleuca decora (White Feather Honey Myrtle)	47	Melaleuca decora (White Feather Honey Myrtle)	57	Melaleuca decora (White Feather Honey Myrtle)	72	Eucalyptus longifolia (Woollybutt)	81	Melaleuca decora (White Feather Honey Myrtle)	90	Melaleuca decora (White Feather Honey Myrtle)	100	Eucalyptus globoides (White Stringybark)	109	Melaleuca decora (White Feather Honey Myrtle)
7	Melaleuca decora (White Feather Honey Myrtle)	23	Melaleuca decora (White Feather Honey Myrtle)	37	Melaleuca decora (White Feather Honey Myrtle)	48	Melaleuca decora (White Feather Honey Myrtle)	58	Melaleuca decora (White Feather Honey Myrtle)	73	Eucalyptus globoides (White Stringybark)	82	Eucalyptus fibrosa (Red Ironbark)	91	Melaleuca decora (White Feather Honey Myrtle)	101	Eucalyptus globoides (White Stringybark)	110	Dead
8	Melaleuca decora (White Feather Honey Myrtle)	24	Melaleuca decora (White Feather Honey Myrtle)	38	Melaleuca decora (White Feather Honey Myrtle)	49	Melaleuca decora (White Feather Honey Myrtle)	61	Dead	74	Eucalyptus globoides (White Stringybark)	83	Melaleuca decora (White Feather Honey Myrtle)	92	Melaleuca decora (White Feather Honey Myrtle)	102	Melaleuca decora (White Feather Honey Myrtle)	111	Acacia sp. (Wattle)
9	Melaleuca decora (White Feather Honey Myrtle)	25	Pinus conophora (Shore Pine)	39	Melaleuca decora (White Feather Honey Myrtle)	50	Melaleuca decora (White Feather Honey Myrtle)	62	Melaleuca decora (White Feather Honey Myrtle)					93	Melaleuca decora (White Feather Honey Myrtle)			112	Acacia sp. (Wattle)
10	Melaleuca decora (White Feather Honey Myrtle)	26	Melaleuca decora (White Feather Honey Myrtle)	40	Melaleuca decora (White Feather Honey Myrtle)			63	Melaleuca decora (White Feather Honey Myrtle)									113	Acacia sp. (Wattle)
11	Melaleuca decora (White Feather Honey Myrtle)	27	Melaleuca decora (White Feather Honey Myrtle)					64	Melaleuca decora (White Feather Honey Myrtle)									114	Melaleuca decora (White Feather Honey Myrtle)
12	Melaleuca decora (White Feather Honey Myrtle)	28	Melaleuca decora (White Feather Honey Myrtle)					65	Melaleuca decora (White Feather Honey Myrtle)										
13	Melaleuca decora (White Feather Honey Myrtle)	29	Melaleuca decora (White Feather Honey Myrtle)																
14	Melaleuca decora (White Feather Honey Myrtle)																		
15	Melaleuca decora (White Feather Honey Myrtle)																		

LEGEND:



Note:  
Survey drawings by  
Gorella Consulting  
Survey Date: 03.09.2020  
Tree Assessment and Arborists Report by  
TreeIQ dated 06.11.2020

REFER TO Tree Assessment and Arborists Report by  
TreeIQ dated 06.11.2020 FOR DETAILS OF EXISTING TREES

DRAFT

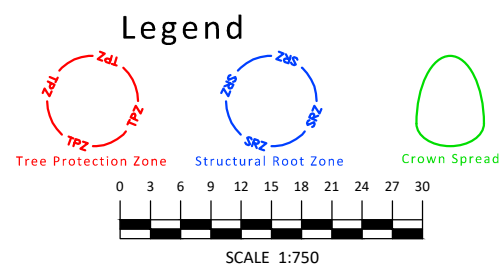
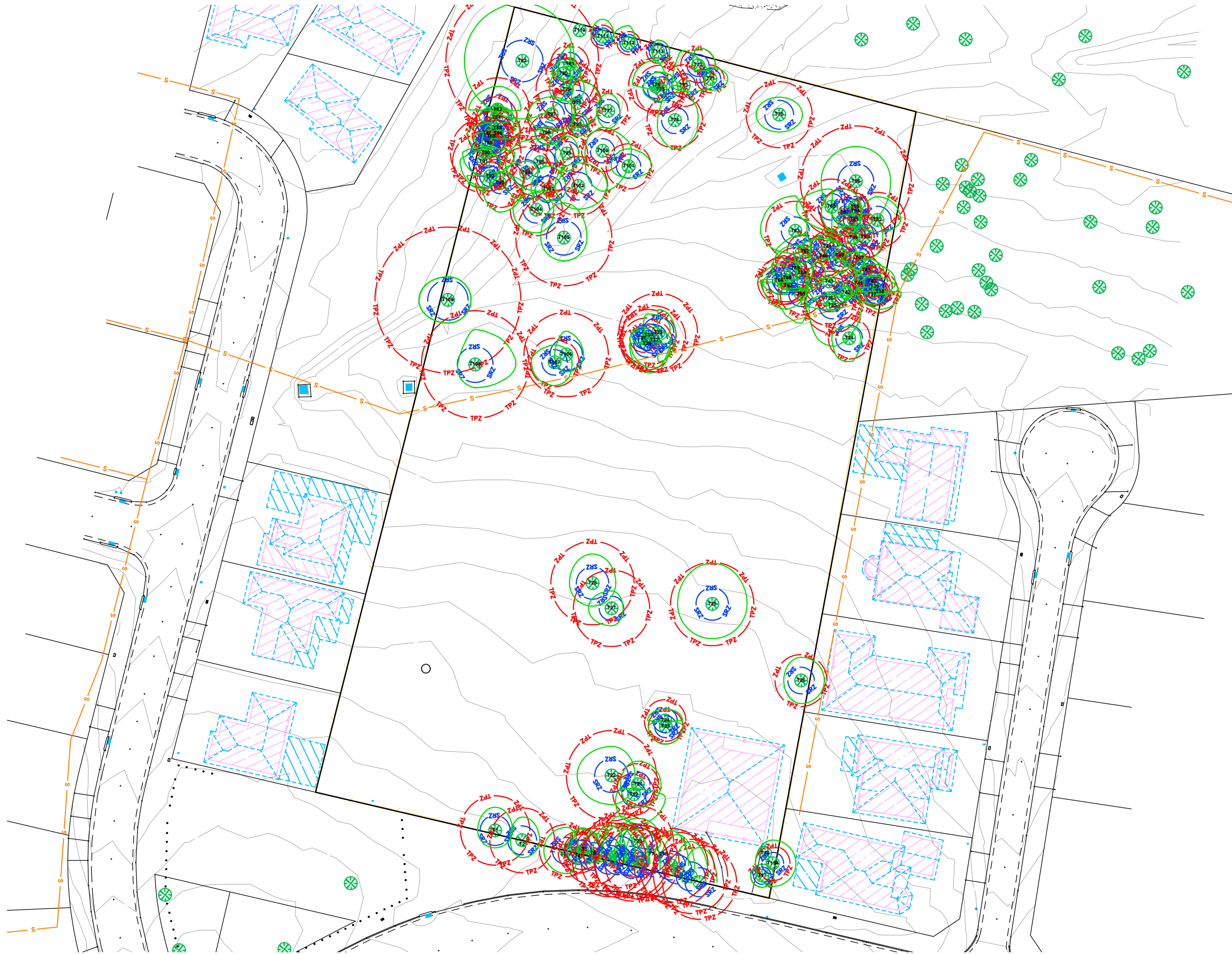
# TREE RETENTION AND REMOVAL PLAN

OPAL ST CLAIR  
DEVELOPMENT APPLICATION

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ISSUE: Final Draft DA  
CLIENT: OPAL AGED CARE  
SCALE: 1 : 250  
DATE: 26/03/2021  
DRAWN: ND  
REV: P6  
CHECKED: AL  
JOB NO.: 20-0275  
DESIGNED: ND  
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ABN 61 098 724 888





Opal St Clair  
 TPZ SRZ Plan  
 Client: PACT  
 date: 27th October 2020  
 scale: 1:750 (A3)

**treeiQ**

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### Appendix 3: Tree Assessment Schedule

Tree No.	Species	Height (m)	Radial Crown Spread n, s, e, w (m)	DBH comb. (mm)	Health Rating	Structural Condition Rating	Comments	Age Class	ULE (years)	L/Sign	Retention Value	Radial TPZ (m)	Radial SRZ (m)	Implications
1	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	7	4, 3, 3, 3	500	Good	Fair	Crown density 75-95%. Co-dominant inclusions, minor.	Mature	15-40	Moderate	Consider for Retention	6.0	2.6	Retain. Major encroachment, fencing & garden edging.
2	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	7	4,3,3,2	464	Good	Fair	Crown density 75-95%. Partially suppressed. Co-dominant inclusions, minor.	Mature	15-40	Moderate	Consider for Retention	5.6	2.5	Retain. Major encroachment, fencing.
3	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	5	4,4,2,4	375	Good	Good	Crown density 75-95%. Partially suppressed.	Mature	15-40	Moderate	Consider for Retention	4.5	2.3	Retain. Major encroachment, fencing.
4	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	7	3,2,3,2	300	Good	Good	Crown density 75-95%. Partially suppressed.	Mature	15-40	Moderate	Consider for Retention	3.6	2.1	Retain. Major encroachment, fencing.
5	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	6	4,0,3,2	269	Good	Good	Crown density 75-95%. Partially suppressed.	Mature	15-40	Moderate	Consider for Retention	3.2	2.0	Retain. Major encroachment, fencing.
6	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	8	4,1,3,2	407	Good	Fair	Crown density 75-95%. Partially suppressed. Co-dominant inclusions, major.	Mature	15-40	Moderate	Consider for Retention	4.9	2.4	Retain. Minor encroachment, utilities. Major encroachment, fencing.
7	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	8	6,2,3,3	450	Good	No access to base. No rating.	Group of trees. Crown density 75-95%. Partially suppressed.	Mature	15-40	Moderate	Consider for Retention	5.4	2.5	Remove. Utilities.
8	<i>Melaleuca decora</i> (White Feather Honey Myrtle)		n/a				No access.							Remove. Utilities.

Tree No.	Species	Height (m)	Radial Crown Spread n, s, e, w (m)	DBH comb. (mm)	Health Rating	Structural Condition Rating	Comments	Age Class	ULE (years)	L/Sign	Retention Value	Radial TPZ (m)	Radial SRZ (m)	Implications
9	<i>Melaleuca decora</i> (White Feather Honey Myrtle)		n/a				No access.							Remove. Utilities.
10	<i>Melaleuca decora</i> (White Feather Honey Myrtle)		n/a				No access.							Remove. Utilities.
11	<i>Melaleuca decora</i> (White Feather Honey Myrtle)		n/a				No access.							Remove. Driveway.
12	<i>Melaleuca decora</i> (White Feather Honey Myrtle)		n/a				No access.							Remove. Driveway.
13	<i>Melaleuca decora</i> (White Feather Honey Myrtle)		n/a				No access.							Remove. Driveway.
14	<i>Melaleuca decora</i> (White Feather Honey Myrtle)		n/a				No access.							Remove. Driveway.
15	<i>Melaleuca decora</i> (White Feather Honey Myrtle)		n/a				No access.							Remove. Driveway.
16	<i>Melaleuca decora</i> (White Feather Honey Myrtle)		n/a				No access.							Remove. Driveway.
17	<i>Cupressocyparis leylandii</i> (Leyland Cypress)	5	2,2,2,2	141	Good	Fair	Co-dominant inclusions, major.	Mature	5-15	Low	Consider for Removal	2.0	1.5	Remove. Substation

Tree No.	Species	Height (m)	Radial Crown Spread n, s, e, w (m)	DBH comb. (mm)	Health Rating	Structural Condition Rating	Comments	Age Class	ULE (years)	L/Sign	Retention Value	Radial TPZ (m)	Radial SRZ (m)	Implications
18	Dead													Dead
19	<i>Eucalyptus longifolia</i> (Woollybutt)	11	1,5,5,3	300	Fair	No access to base. No rating.	Crown density 50-75%. Small (<25mmØ) & medium (25-75mmØ) deadwood in moderate volumes. Partially suppressed.	Mature	15-40	Moderate	Consider for Retention	3.6	2.1	Remove. Driveway.
20	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	10	4,2,4,3	520	Good	No access to base. No rating.	Crown density 75-95%. Partially suppressed. Co-dominant inclusions, minor.	Mature	15-40	Moderate	Consider for Retention	6.2	2.6	Remove. Driveway.
21	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	10	4,4,4,3	300	Good	No access to base. No rating.	Crown density 75-95%. Partially suppressed. Co-dominant inclusions, minor.	Mature	15-40	Moderate	Consider for Retention	3.6	2.1	Remove. Driveway.
22	<i>Eucalyptus longifolia</i> (Woollybutt)	11	5,5,4,6	650	Fair	Fair	Crown density 50-75%. Small (<25mmØ) & medium (25-75mmØ) deadwood in moderate volumes. Co-dominant inclusions, minor. Wound(s), various stages of decay.	Mature	15-40	Moderate	Consider for Retention	7.8	2.9	Remove. Driveway.
23	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	8	1,3,3,3	250	Good	No access to base. No rating.	Crown density 75-95%. Partially suppressed.	Mature	15-40	Moderate	Consider for Retention	3.0	1.9	Remove. Building footprint.
24	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	8	2,0,3,3	300	Good	No access to base. No rating.	Crown density 75-95%. Partially suppressed.	Mature	15-40	Moderate	Consider for Retention	3.6	2.1	Remove. Building footprint.
25	<i>Pinus contorta</i> (Shore Pine)	12	7,6,6,6	600	Fair	Fair	Crown density 50-75%. Co-dominant inclusions, minor.	Mature	5-15	Moderate	Consider for Retention	7.2	2.8	Remove. Building footprint.

Tree No.	Species	Height (m)	Radial Crown Spread n, s, e, w (m)	DBH comb. (mm)	Health Rating	Structural Condition Rating	Comments	Age Class	ULE (years)	L/Sign	Retention Value	Radial TPZ (m)	Radial SRZ (m)	Implications
26	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	8	4,4,4,3	375	Fair	Good	Crown density 50-75%. Co-dominant inclusions, minor.	Mature	15-40	Moderate	Consider for Retention	4.5	2.3	Retain. Minor encroachment, building & pavement.
27	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	7	3,3,2,4	548	Poor	Fair	Small (<25mmø), medium (25-75mmø) & large (>75mmø) deadwood in high volumes.	Senescent	<5	Low	Priority for Removal	6.6	2.7	Remove. Building footprint.
28	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	8	5,4,4,4	600	Good	Fair	Co-dominant inclusions, major.	Mature	15-40	Moderate	Consider for Retention	7.2	2.8	Remove. Building footprint.
29	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	9	0,5,4,3	372	Good	Good	Crown density 75-95%. Partially suppressed.	Mature	15-40	Moderate	Consider for Retention	4.5	2.3	Remove. Landscape treatment.
30	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	9	4,1,3,1	400	Good	Fair	Crown density 75-95%. Partially suppressed. Wound(s), early signs of decay.	Mature	15-40	Moderate	Consider for Retention	4.8	2.3	Remove. Landscape treatment.
31	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	5	2,1,0,2	200	Good	Good	Crown density 75-95%. Partially suppressed.	Mature	15-40	Low	Consider for Removal	2.4	1.8	Remove. Landscape treatment.
32	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	9	2,5,3,4	475	Good	Good	Crown density 75-95%. Partially suppressed. Co-dominant inclusions, minor.	Mature	15-40	Moderate	Consider for Retention	5.7	2.5	Remove. Landscape treatment.
33	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	9	4,5,3,0	566	Good	Fair	Crown density 75-95%. Partially suppressed. Co-dominant inclusions, minor. Wound(s), early signs of decay.	Mature	15-40	Moderate	Consider for Retention	6.8	2.7	Remove. Landscape treatment.
34	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	7	2,4,2,3	300	Good	Good	Crown density 75-95%. Small (<25mmø) deadwood in low volumes.	Mature	15-40	Moderate	Consider for Retention	3.6	2.1	Remove. Building footprint.

Tree No.	Species	Height (m)	Radial Crown Spread n, s, e, w (m)	DBH comb. (mm)	Health Rating	Structural Condition Rating	Comments	Age Class	ULE (years)	L/Sign	Retention Value	Radial TPZ (m)	Radial SRZ (m)	Implications
35	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	13	2,6,5,4	400	Fair	Good	Crown density 50-75%. Small (<25mmø) & medium (25-75mmø) deadwood in low volumes. Partially suppressed.	Mature	15-40	Moderate	Consider for Retention	4.8	2.3	Remove. Building footprint.
36	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	13	3,2,3,5	391	Fair	Fair	Crown density 50-75%. Small (<25mmø) & medium (25-75mmø) deadwood in moderate volumes. Partially suppressed. Co-dominant inclusions, minor.	Mature	15-40	Moderate	Consider for Retention	4.7	2.3	Remove. Building footprint.
37	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	8	1,2,2,3	200	Fair	Good	Crown density 50-75%. Partially suppressed.	Mature	15-40	Moderate	Consider for Retention	2.4	1.8	Remove. Landscape treatment.
38	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	11	0,3,4,2	300	Fair	Good	Crown density 50-75%. Partially suppressed.	Mature	15-40	Moderate	Consider for Retention	3.6	2.1	Retain. Major encroachment, pavement. Setback retaining wall/grading.
39	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	11	2,1,4,3	250	Fair	Good	Crown density 50-75%. Small (<25mmø) & medium (25-75mmø) deadwood in low volumes. Partially suppressed.	Mature	15-40	Moderate	Consider for Retention	3.0	1.9	Retain. Major encroachment, pavement. Setback retaining wall/grading.
40	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	11	3,2,4,3	225	Fair	Good	Crown density 50-75%. Small (<25mmø) & medium (25-75mmø) deadwood in low volumes. Partially suppressed. Bark inclusion(s), minor.	Mature	15-40	Moderate	Consider for Retention	2.7	1.8	Remove. Landscape treatment.
41	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	11	2,2,1,2	200	Fair	Good	2,2,1,2 Crown density 50-75%. Small (<25mmø) deadwood in moderate volumes. Partially suppressed.	Mature	15-40	Moderate	Consider for Retention	2.4	1.8	Remove. Building footprint.

Tree No.	Species	Height (m)	Radial Crown Spread n, s, e, w (m)	DBH comb. (mm)	Health Rating	Structural Condition Rating	Comments	Age Class	ULE (years)	L/Sign	Retention Value	Radial TPZ (m)	Radial SRZ (m)	Implications
42	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	8	1,1,1,2	175	Fair	Good	1,1,1,2 Crown density 50-75%. Heavily suppressed.	Mature	15-40	Low	Consider for Removal	2.1	1.7	Remove. Building footprint.
43	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	13	4,4,5,4	375	Fair	Good	Crown density 50-75%. Small (<25mmø), medium (25-75mmø) & large (>75mmø) deadwood in low volumes. Partially suppressed.	Mature	15-40	Moderate	Consider for Retention	4.5	2.3	Remove. Building footprint.
44	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	11	2,0,2,3	225	Fair	Good	Crown density 50-75%. Small (<25mmø) & medium (25-75mmø) deadwood in low volumes. Partially suppressed.	Mature	15-40	Moderate	Consider for Retention	2.7	1.8	Remove. Building footprint.
45	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	11	2,1,3,2	200	Fair	Good	Crown density 50-75%. Partially suppressed.	Mature	15-40	Moderate	Consider for Retention	2.4	1.8	Remove. Building footprint.
46	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	14	3,4, 4,5	300	Fair	Fair	Crown density 50-75%. Small (<25mmø), medium (25-75mmø) & large (>75mmø) deadwood in low volumes. Partially suppressed. Co-dominant inclusions, minor.	Mature	15-40	Moderate	Consider for Retention	3.6	2.1	Remove. Building footprint.
47	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	11	1,2,1,3	200	Fair	Good	Crown density 50-75%. Medium (25-75mmø) deadwood in low volumes. Partially suppressed.	Mature	15-40	Moderate	Consider for Retention	2.4	1.8	Remove. Building footprint.
48	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	11	1,3,2,1	224	Fair	Good	Crown density 50-75%. Small (<25mmø) & medium (25-75mmø) deadwood in low volumes. Partially suppressed.	Mature	15-40	Moderate	Consider for Retention	2.7	1.8	Remove. Building footprint.
49	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	12	2,4,1,4	302	Fair	Fair	Crown density 50-75%. Small (<25mmø) & medium (25-75mmø) deadwood in low volumes. Partially suppressed. Co-dominant inclusions, minor.	Mature	15-40	Moderate	Consider for Retention	3.6	2.1	Retain. Minor encroachment, pavement.

Tree No.	Species	Height (m)	Radial Crown Spread n, s, e, w (m)	DBH comb. (mm)	Health Rating	Structural Condition Rating	Comments	Age Class	ULE (years)	L/Sign	Retention Value	Radial TPZ (m)	Radial SRZ (m)	Implications
50	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	13	4,4,3,2	300	Fair	Good	Crown density 50-75%. Small (<25mmø), medium (25-75mmø) & large (>75mmø) deadwood in moderate volumes. Partially suppressed.	Mature	15-40	Moderate	Consider for Retention	3.6	2.1	Remove. Bushfire clearances.
51	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	8	1,2,1,3	200	Fair	Good	Crown density 50-75%. Heavily suppressed.	Mature	5-15	Low	Consider for Removal	2.4	1.8	Retain. No works within TPZ.
52	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	12	4,2,4,3	403	Fair	Good	Crown density 50-75%. Small (<25mmø) & medium (25-75mmø) deadwood in low volumes. Partially suppressed. Bark inclusion(s), major.	Mature	15-40	Moderate	Consider for Retention	4.8	2.4	Retain. Major encroachment, pavement. Setback from trunk.
54	Dead													Dead
55	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	10	n/a	200	Fair	Fair	Crown density 25-50%. Heavily suppressed. Poor form.	Mature	5-15	Low	Consider for Removal	n/a	n/a	Retain. No works within TPZ.
56	<i>Eucalyptus longifolia</i> (Woollybutt)	14	1,0,1,1	800	Fair	Good	Crown density 50-75%. Small (<25mmø), medium (25-75mmø) & large (>75mmø) deadwood in moderate volumes. Wound(s), various stages of decay.	Mature	15-40	Moderate	Consider for Retention	2.4	1.8	Retain. Major encroachment, pavement & wall.
57	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	13	6,8,6,6	350	Fair	Good	Crown density 50-75%. Small (<25mmø) & medium (25-75mmø) deadwood in low volumes. Partially suppressed.	Mature	15-40	Moderate	Consider for Retention	9.6	3.1	Retain. No works within TPZ.
58	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	10	4,4,3,4	400	Fair	Good	Small (<25mmø), medium (25-75mmø) & large (>75mmø) deadwood in low volumes. Partially suppressed. Bark inclusion(s), minor.	Mature	15-40	Moderate	Consider for Retention	4.2	2.2	Remove. Bushfire clearances.



Tree No.	Species	Height (m)	Radial Crown Spread n, s, e, w (m)	DBH comb. (mm)	Health Rating	Structural Condition Rating	Comments	Age Class	ULE (years)	L/Sign	Retention Value	Radial TPZ (m)	Radial SRZ (m)	Implications
61	Dead													Dead
62	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	9	n/a	300	Fair	Good	Crown density 50-75%. Small (<25mmø) & medium (25-75mmø) deadwood in low volumes. Partially suppressed.	Mature	15-40	Moderate	Consider for Retention	n/a	n/a	Remove. Building footprint.
63	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	9	3,2,1,5	425	Good	Good	Crown density 75-95%. Small (<25mmø) & medium (25-75mmø) deadwood in low volumes. Partially suppressed.	Mature	15-40	Moderate	Consider for Retention	3.6	2.1	Remove. Landscape treatment.
64	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	10	6,2,4,6	300	Fair	Good	Crown density 50-75%. Partially suppressed.	Mature	15-40	Moderate	Consider for Retention	5.1	2.4	Remove. Building footprint.
65	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	12	3,3,4,1 .	300	Fair	Good	Crown density 50-75%. Small (<25mmø) & medium (25-75mmø) deadwood in low volumes. Partially suppressed.	Mature	15-40	Moderate	Consider for Retention	3.6	2.1	Remove. Building footprint.
66	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	12	4,4,3,4	375	Fair	Good	Crown density 50-75%. Small (<25mmø) & medium (25-75mmø) deadwood in low volumes. Partially suppressed.	Mature	15-40	Moderate	Consider for Retention	3.6	2.1	Remove. Building footprint.
67	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	8	3,2,1,4	275	Fair	Good	Crown density 50-75%. Small (<25mmø) deadwood in low volumes. Partially suppressed.	Mature	15-40	Moderate	Consider for Retention	4.5	2.3	Remove. Building footprint.
68	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	10	2,2,0,4	350	Fair	Good	Crown density 50-75%. Small (<25mmø) & medium (25-75mmø) deadwood in low volumes. Partially suppressed.	Mature	15-40	Moderate	Consider for Retention	3.3	2.0	Remove. Building footprint.
69	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	8	0,5,4,4	300	Fair	Good	Crown density 50-75%. Small (<25mmø) & medium (25-75mmø) deadwood in low volumes. Partially suppressed.	Mature	15-40	Moderate	Consider for Retention	4.2	2.2	Remove. Building footprint.

Tree No.	Species	Height (m)	Radial Crown Spread n, s, e, w (m)	DBH comb. (mm)	Health Rating	Structural Condition Rating	Comments	Age Class	ULE (years)	L/Sign	Retention Value	Radial TPZ (m)	Radial SRZ (m)	Implications
70	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	9	1,5,1,4	475	Good	Fair	Crown density 75-95%. Small (<25mmø) & medium (25-75mmø) deadwood in low volumes. Co-dominant inclusions, major.	Mature	15-40	Moderate	Consider for Retention	3.6	2.1	Remove. Landscape treatment.
71	<i>Eucalyptus fibrosa</i> (Red Ironbark)	7	3,3,4,4	200	Good	Good	Partially suppressed. Bark inclusion(s), minor.	Mature	15-40	Moderate	Consider for Retention	5.7	2.5	Retain. Minor encroachment, pavement.
72	<i>Eucalyptus longifolia</i> (Woollybutt)	5	2,2,3,1	250	Fair	Fair	Crown density 50-75%. Small (<25mmø) & medium (25-75mmø) deadwood in moderate volumes. Partially suppressed. Co-dominant inclusions, major.	Mature	5-15	Low	Consider for Removal	2.4	1.8	Remove. Bushfire clearances.
73	<i>Eucalyptus globoidea</i> (White Stringybark)	9	3,1,3,1	300	Good	Good	Crown density 75-95%. Small (<25mmø), medium (25-75mmø) & large (>75mmø) deadwood in low volumes. Small (<25mmø) epicormic growth in low volumes.	Mature	15-40	Moderate	Consider for Retention	3.0	1.9	Retain. Minor encroachment, pavement.
74	<i>Eucalyptus globoidea</i> (White Stringybark)	12	6,1,5,2	400	Fair	Good	Crown density 50-75%. Small (<25mmø), medium (25-75mmø) & large (>75mmø) deadwood in moderate volumes. Small (<25mmø) epicormic growth in low volumes. Adaptive growth.	Mature	5-15	Moderate	Consider for Retention	3.6	2.1	Retain. Minor encroachment, swale & wall.
75	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	9	6,5,4,3	354	Fair	Fair	Crown density 50-75%. Small (<25mmø) & medium (25-75mmø) deadwood in low volumes. Partially suppressed. Co-dominant inclusions, major.	Mature	15-40	Moderate	Consider for Retention	4.8	2.3	Remove. Bushfire clearances.
76	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	9	3,2,2,3	391	Fair	Good	Crown density 50-75%. Small (<25mmø) & medium (25-75mmø) deadwood in low volumes. Partially suppressed.	Mature	15-40	Moderate	Consider for Retention	4.2	2.2	Remove. Bushfire clearances.

Tree No.	Species	Height (m)	Radial Crown Spread n, s, e, w (m)	DBH comb. (mm)	Health Rating	Structural Condition Rating	Comments	Age Class	ULE (years)	L/Sign	Retention Value	Radial TPZ (m)	Radial SRZ (m)	Implications
77	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	7	4,2,1,4	283	Fair	Fair	Crown density 50-75%. Co-dominant inclusions, major.	Mature	15-40	Moderate	Consider for Retention	4.7	2.3	Remove. Bushfire clearances.
78	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	9	3,2,3,2	350	Fair	Good	Crown density 50-75%. Small (<25mmØ) & medium (25-75mmØ) deadwood in low volumes. Partially suppressed.	Mature	15-40	Moderate	Consider for Retention	3.4	2.0	Remove. Bushfire clearances.
79	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	7	4,4,4,1	439	Fair	Fair	Crown density 50-75%. Small (<25mmØ) & large (>75mmØ) deadwood in low volumes. Partially suppressed. Co-dominant inclusions, major.	Mature	15-40	Moderate	Consider for Retention	4.2	2.2	Retain. Minor encroachment, swale & pavement.
80	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	6	4,2,3,3	250	Fair	Good	Crown density 50-75%. Small (<25mmØ) & medium (25-75mmØ) deadwood in low volumes. Partially suppressed. Co-dominant inclusions, minor.	Mature	15-40	Low	Consider for Removal	5.3	2.4	Retain. No works within TPZ.
81	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	6	2,1,3,2	275	Fair	Good	Crown density 50-75%. Small (<25mmØ) & medium (25-75mmØ) deadwood in low volumes. Partially suppressed.	Mature	15-40	Moderate	Consider for Retention	3.0	1.9	Retain. No works within TPZ.
82	<i>Eucalyptus fibrosa</i> (Red Ironbark)	21	3,0,4,2	1101	Good	Fair	Crown density 75-95%. Small (<25mmØ), medium (25-75mmØ) & large (>75mmØ) deadwood in low volumes. Co-dominant inclusions, minor. Wound(s), various stages of decay.	Mature	15-40	High	Priority for Retention	3.3	2.0	Retain. Minor encroachment, swale & pavement. Major encroachment, fencing.
83	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	11	10,9,10,10	461	Fair	Fair	Crown density 50-75%. Small (<25mmØ) & medium (25-75mmØ) deadwood in low volumes. Partially suppressed. Co-dominant inclusions, minor.	Mature	15-40	Moderate	Consider for Retention	13.2	3.6	Remove. Bushfire clearances.

Tree No.	Species	Height (m)	Radial Crown Spread n, s, e, w (m)	DBH comb. (mm)	Health Rating	Structural Condition Rating	Comments	Age Class	ULE (years)	L/Sign	Retention Value	Radial TPZ (m)	Radial SRZ (m)	Implications
84	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	12	4,0,4,5	300	Fair	Good	Crown density 50-75%. Small (<25mmø) & medium (25-75mmø) deadwood in low volumes. Partially suppressed.	Mature	15-40	Moderate	Consider for Retention	5.5	2.5	Remove. Bushfire clearances.
85	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	5	2,1,3,3	212	Fair	Fair	Crown density 50-75%. Small (<25mmø) & medium (25-75mmø) deadwood in low volumes. Heavily suppressed. Co-dominant inclusions, minor.	Mature	5-15	Low	Consider for Removal	3.6	2.1	Retain. Minor encroachment, pavement. Major encroachment, fencing.
86	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	12	4,0,3,0	350	Fair	Good	Crown density 50-75%. Small (<25mmø) & medium (25-75mmø) deadwood in low volumes. Partially suppressed.	Mature	15-40	Moderate	Consider for Retention	2.5	1.8	Retain. Major encroachment, fencing.
87	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	12	5,1,4,1	325	Fair	Good	Crown density 50-75%. Small (<25mmø) & medium (25-75mmø) deadwood in low volumes. Partially suppressed.	Mature	15-40	Moderate	Consider for Retention	4.2	2.2	Retain. Major encroachment, fencing.
88	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	12	2,3,0,4	250	Fair	Good	Crown density 50-75%. Small (<25mmø) & medium (25-75mmø) deadwood in low volumes. Partially suppressed.	Mature	15-40	Moderate	Consider for Retention	3.9	2.1	Retain. Major encroachment, fencing.
89	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	7	1,2,0,3	175	Fair	Good	Crown density 50-75%. Heavily suppressed.	Mature	5-15	Low	Consider for Removal	3.0	1.9	Retain. Major encroachment, fencing.
90	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	12	3,2,3,0	511	Fair	Fair	Crown density 50-75%. Small (<25mmø) & medium (25-75mmø) deadwood in low volumes. Partially suppressed. Co-dominant inclusions, major.	Mature	15-40	Moderate	Consider for Retention	2.1	1.7	Retain. Major encroachment, fencing.

Tree No.	Species	Height (m)	Radial Crown Spread n, s, e, w (m)	DBH comb. (mm)	Health Rating	Structural Condition Rating	Comments	Age Class	ULE (years)	L/Sign	Retention Value	Radial TPZ (m)	Radial SRZ (m)	Implications
91	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	10	1,4,5,4	445	Fair	Fair	Crown density 50-75%. Small (<25mmø) & medium (25-75mmø) deadwood in low volumes. Partially suppressed. Co-dominant inclusions, major.	Mature	15-40	Moderate	Consider for Retention	6.1	2.6	Retain. Minor encroachment, swale & pavement. Major encroachment, fencing.
92	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	7	2,5,3,4	212	Good	Good	Crown density 75-95%. Partially suppressed.	Mature	15-40	Low	Consider for Removal	5.3	2.5	Retain. Minor encroachment, pavement. Major encroachment, fencing.
93	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	9	0,2,0,4	350	Fair	Good	Crown density 50-75%. Small (<25mmø) & medium (25-75mmø) deadwood in low volumes. Partially suppressed.	Mature	15-40	Moderate	Consider for Retention	2.5	1.8	Remove. Landscape treatment.
94	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	12	2,5,4,3	378	Fair	Fair	Crown density 50-75%. Small (<25mmø) & medium (25-75mmø) deadwood in low volumes. Partially suppressed. Co-dominant inclusions, minor.	Mature	15-40	Moderate	Consider for Retention	4.2	2.2	Remove. Landscape treatment.
95	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	12	2,5,2,4	496	Fair	Fair	Crown density 50-75%. Small (<25mmø), medium (25-75mmø) & large (>75mmø) deadwood in low volumes. Partially suppressed. Co-dominant inclusions, major.	Mature	15-40	Moderate	Consider for Retention	4.5	2.3	Remove. Landscape treatment.
96	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	9	4,5,4,6	250	Fair	Good	Crown density 50-75%. Small (<25mmø) & medium (25-75mmø) deadwood in low volumes. Partially suppressed.	Mature	15-40	Moderate	Consider for Retention	6.0	2.6	Remove. Landscape treatment.
97	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	9	1,2,3,2	350	Fair	Good	Crown density 50-75%. Small (<25mmø) & medium (25-75mmø) deadwood in low volumes. Partially suppressed.	Mature	15-40	Moderate	Consider for Retention	3.0	1.9	Remove. Bushfire clearances.

Tree No.	Species	Height (m)	Radial Crown Spread n, s, e, w (m)	DBH comb. (mm)	Health Rating	Structural Condition Rating	Comments	Age Class	ULE (years)	L/Sign	Retention Value	Radial TPZ (m)	Radial SRZ (m)	Implications
98	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	7	3,3,4,4	158	Fair	Good	Crown density 50-75%. Partially suppressed.	Mature	15-40	Low	Consider for Removal	4.2	2.2	Remove. Landscape treatment.
99	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	11	2,2,2,1	300	Fair	Good	Crown density 50-75%. Small (<25mmø) & medium (25-75mmø) deadwood in low volumes. Partially suppressed.	Mature	15-40	Moderate	Consider for Retention	2.0	1.6	Remove. Building footprint.
100	<i>Eucalyptus globoidea</i> (White Stringybark)	9	3,3,2,2	300	Fair	Fair	Crown density 50-75%. Small (<25mmø) & medium (25-75mmø) deadwood in moderate volumes. Bark inclusion(s), minor.	Mature	15-40	Moderate	Consider for Retention	3.6	2.1	Remove. Building footprint.
101	<i>Eucalyptus globoidea</i> (White Stringybark)	8	4,7,5,3	325	Poor	Fair	Crown density 25-50%. Small (<25mmø), medium (25-75mmø) & large (>75mmø) deadwood in high volumes. Wound(s), various stages of decay.	Mature	<5	Low	Priority for Removal	3.6	2.1	Remove. Building footprint.
102	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	10	3,2,4,3 .	425	Fair	Good	Crown density 50-75%. Small (<25mmø) & medium (25-75mmø) deadwood in low volumes. Partially suppressed.	Mature	15-40	Moderate	Consider for Retention	3.9	2.1	Remove. Building footprint.
103	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	12	4,4,5,4	381	Fair	Good	Crown density 50-75%. Small (<25mmø), medium (25-75mmø) & large (>75mmø) deadwood in low volumes. Partially suppressed.	Mature	15-40	Moderate	Consider for Retention	5.1	2.4	Remove. Building footprint.
104	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	11	4,2,3,3	375	Fair	Fair	Crown density 75-95%. Small (<25mmø) & medium (25-75mmø) deadwood in low volumes. Partially suppressed. Wound(s), advanced stages of decay. Adaptive growth.	Mature	5-15	Moderate	Consider for Retention	4.6	2.3	Remove. Building footprint.
105	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	11	3,4,3,4	695	Good	Good	Crown density 75-95%. Small (<25mmø) & medium (25-75mmø) deadwood in low volumes.	Mature	15-40	Moderate	Consider for Retention	4.5	2.3	Remove. Building footprint.

Tree No.	Species	Height (m)	Radial Crown Spread n, s, e, w (m)	DBH comb. (mm)	Health Rating	Structural Condition Rating	Comments	Age Class	ULE (years)	L/Sign	Retention Value	Radial TPZ (m)	Radial SRZ (m)	Implications
106	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	9	6,4,4,4	610	Good	Fair	Crown density 75-95%. Partially suppressed. Co-dominant inclusions, major.	Mature	15-40	Moderate	Consider for Retention	8.3	3.0	Remove. Building footprint.
107	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	9	4,3,3,2	350	Good	Good	Crown density 75-95%. Partially suppressed.	Mature	15-40	Moderate	Consider for Retention	7.3	2.8	Remove. Building footprint.
108	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	12	3,4,3,4	775	Good	Fair	Co-dominant inclusions, major.	Mature	15-40	Moderate	Consider for Retention	4.2	2.2	Remove. Carpark.
109	<i>Melaleuca decora</i> (White Feather Honey Myrtle)	13	6,4,7,3	1050	Good	Fair	Co-dominant inclusions, minor.	Mature	15-40	Moderate	Consider for Retention	9.3	3.1	Remove. Carpark.
110	Dead													Dead
111	<i>Acacia</i> sp. (Wattle)	3	3,0,2,2	100	Poor	Poor	Crown density 0-25%. Borer.	Senescent	<5	Low	Priority for Removal	2.0	1.5	Remove. Bushfire clearances.
112	<i>Acacia</i> sp. (Wattle)	3	3,0,1,3	125	Poor	Poor	Crown density 0-25%. Borer.	Senescent	<5	Low	Priority for Removal	2.0	1.5	Remove. Bushfire clearances.
113	<i>Acacia</i> sp. (Wattle)	5	2,2,2,1	100	Poor	Poor	Crown density 0-25%. Borer.	Late Mature	<5	Low	Priority for Removal	2.0	1.5	Remove. Bushfire clearances.
114	<i>Melia azedarach</i> (White Cedar)	8	4, 4, 4, 3	250	Good	No access to base. No rating.	. Power lines through crown. Partially suppressed.	Mature	15-40	Moderate	Consider for Retention	3.0	1.9	Retain. Minor encroachment, substation.



#### Appendix 4: Plates

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**Plate 1:** Showing the northern section of the site



**Plate 2:** Showing Trees 3-16



**Plate 3:** Showing Trees 29-33



**Plate 4:** Showing Trees 34-69



**Plate 5:** Showing Tree 82



**Plate 6:** Showing Trees 83-93



**Plate 7:** Showing Trees 110-112



## Appendix 5: Tree Protection Specification

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### 1.0 Appointment of Project Arborist

A Project Arborist shall be engaged prior the commencement of work on-site and monitor compliance with the protection measures. The Project Arborist shall inspect the tree protection measures and Compliance Certification shall be prepared by the Project Arborist for review by the Principal Certifying Authority prior to the release of the Compliance Certificate.

The Project Arborist shall have a minimum qualification equivalent (using the Australian Qualifications Framework) of NSW TAFE Certificate Level 5 or above in Arboriculture.

The site-specific requirement for mulching, irrigation, the location of tree protection fencing and temporary access, and other specific tree protection measures shall be confirmed through consultation between the Head Contractor/Project Manager and the Project Arborist prior to the commencement of works.

### 1.1 Compliance

Contractors and site workers shall receive a copy of these specifications a minimum of 3 working days prior to commencing work on-site. Contractors and site workers undertaking works within the Tree Protection Zone shall sign the site log confirming they have read and understand these specifications, prior to undertaking works on-site.

### 1.2 Tree Protection Zone

The tree to be retained shall be protected prior and during construction from activities that may result in an adverse effect on their health or structural condition. The area within the Tree Protection Zone (TPZ) shall exclude the following activities, unless otherwise stated:

- Modification of existing soil levels, excavations and trenching
- Mechanical removal of vegetation
- Movement of natural rock
- Storage of materials, plant or equipment or erection of site sheds
- Affixing of signage or hoarding to the trees
- Preparation of building materials, refueling or disposal of waste materials and chemicals
- Lighting fires
- Movement of pedestrian or vehicular traffic
- Temporary or permanent location of services, or the works required for their installation
- Any other activities that may cause damage to the tree

NOTE: If access, encroachment or incursion into the TPZ is deemed essential, prior authorisation is required by the Project Arborist.

### 1.3 Tree Protection Fencing

TPZ fencing shall be installed at the perimeter of the TPZ. Refer to Plans (**Appendix 2**). The exact location of the fencing shall be confirmed through consultation between the Head Contractor/Project Manager and the Project Arborist prior to the commencement of works. Fencing may be setback to allow for demolition/construction access and for the installation of pavements only where appropriate ground protection is installed and approved by the Project Arborist.

As a minimum, the Tree Protection Fence shall consist of 1.8m high wire mesh panels supported by concrete feet. Panels shall be fastened together and supported to prevent sideways movement. The tree shall not be damaged during the installation of the Tree Protection Fencing. Refer to Typical Tree Protection Details (3) (**Appendix 5**).

### 1.4 Site Management

Materials, waste storage, and temporary services shall not be located within the TPZ.

### 1.5 Trunk Protection

Trunk protection shall be installed as required by the Project Arborist. Trunk protection shall be installed by wrapping padding (either carpet underlay or 10mm thick jute geotextile mat) around the trunk and first order branches to a minimum height of 2m. Timber battens (90 x 45mm) spaced at 150mm centres shall be strapped together and placed over the padding. Timber battens must not be fixed to the trees. Refer to Typical Tree Protection Details (3) (**Appendix 6**).

Branch protection shall be installed as deemed necessary by the Project Arborist.

#### 1.6 Ground Protection

Pedestrian, vehicular and machinery access within a TPZ shall be restricted to areas of existing pavement or from areas of temporary ground protection such as ground mats or steel road plates. Refer to Typical Tree Protection Details (3) (**Appendix 6**).

#### 1.7 Scaffolding

Where possible, scaffolding shall not be located within the TPZ. Scaffolding shall not be in contact with the tree. As necessary, this shall be achieved by erecting scaffolding around branches. Branches shall be tied back and protected as deemed necessary by the Project Arborist. Refer to Typical Tree Protection Details (5) (**Appendix 6**).

#### 1.8 Works within the Tree Protection Zones

In some cases works within the TPZ may be authorized by the determining authority. **These works shall be supervised by the Project Arborist.** When undertaking works within the TPZ, care should be taken to avoid damage to the tree's root system, trunks and lower branches.

If roots (>25mm $\phi$ ) are encountered during the demolition, excavation and construction works, these roots must be retained in an undamaged condition and advice sought from the Project Arborist. Adjustment of final levels and design shall remain flexible to enable the retention of roots (>25mm $\phi$ ) where deemed necessary by the Project Arborist.

#### 1.9 Structure & Pavement Demolition

Demolition of existing structures/pavement within the TPZ shall be supervised by the Project Arborist. Machinery is to be excluded from the TPZ unless operating from the existing slabs, pavements or areas of ground protection (refer to Section 1.6). Machinery shall work in conjunction with a spotter to guide the machinery operator and ensure that the ground surface/tree roots beneath the structure/pavement are not disturbed/damaged by demolition works. Machinery should not contact any part of a tree. Wherever possible, footings or elements below grade shall be retained to minimise disturbance to roots.

When removing slab/pavement sections within TPZ, machinery shall work backwards out of the TPZ to ensure machinery remains on un-demolished sections of slab at all times. Existing sub-base materials within a TPZ shall remain in-situ and (and reused) where possible. If the existing sub-base is to be removed, these works shall be undertaken by hand/hand tools ensuring that tree roots are retained and protected.

If roots (>25mm $\phi$ ) are encountered during the demolition works, these roots must be retained in an undamaged condition and advice sought from the Project Arborist. Exposed roots shall be protected from direct sunlight, drying out and extremes of temperature by covering with a 10mm thick jute geotextile fabric. The geotextile fabric shall be kept in a damp condition at all times. Where the Project Arborist determines that the tree is using underground elements (i.e footings, pipes, rocks etc.) for support, these elements shall be left in-situ.

#### 1.10 Pavement/Kerb Installation

Installation of the pavements and sub-base within the TPZ shall be supervised by the Project Arborist. The new surfaces and sub-base materials shall be above grade to minimise excavations and retain roots (unless prior root mapping results show above sensitive construction to be unnecessary).

If roots (>25mm $\phi$ ) are encountered during the installation of the new sub-base and surfaces, these roots must be retained in an undamaged condition and advice sought from the Project Arborist. Adjustment of final levels and design shall remain flexible to enable the retention of structural roots (>25mm $\phi$ ) where deemed necessary by the Project Arborist. If required, bedding sand shall be a washed river sand (recycled crushed paving blends shall not be used). The bedding sand shall be consolidated with a pedestrian-operated plate compactor only. Where required, new kerbs within the TPZ should be modified to bridge tree roots (>25mm $\phi$ ) unless root pruning is approved and undertaken by the Project Arborist.

#### 1.11 Footings within the TPZ

Footings installation within TPZ areas shall be supervised by the Project Arborist. Other than for the isolated piers, all other parts of the structure shall be installed above grade.

Drilling/piling machinery shall be excluded from the TPZ unless operating from an area where ground protection has been installed (refer to Section 1.6) or from the existing slabs or pavements. Drilling/piling machinery shall be of a suitable size to not damage the trees' roots, trunk, branches and crown. No clearance pruning is permitted to allow for machinery access. Machinery shall work in conjunction with an observer to ensure that adequate clearance from trees is maintained at all times.

#### **1.12 Underground Services**

The installation of underground services shall be located outside of the TPZ. Where this is not possible, they shall be installed using tree sensitive excavation methods (hand/hydrovac/airspade) with the services installed around/below roots (>25mmØ) or as required by the Project Arborist. Excavation using compact machinery (<2t) fitted with a flat bladed bucket is permissible where approved by the Project Arborist. Excavation using compact machinery should be undertaken in small increments, guided by a spotter who is to look for and prevent damage to roots (>25mmØ).

Alternatively, boring methods may be used for underground service installation where the obvert level (highest interior level of pipe) is greater than 1200mm below existing grade. Excavations for starting and receiving pits for boring equipment shall be located outside of the TPZ areas or located to avoid roots (>25mmØ) as deemed necessary by the Project Arborist.

#### **1.13 Landscape Planting**

Planting of new trees, shrubs and ground covers and the installation of turf within the TPZ areas shall be undertaken using hand tools and roots (>25mmØ) shall be protected. No mechanical cultivation/ripping of soils shall be undertaken within TPZ areas.

Landscape planting shall be completed in the final stage of the development works and tree protection fencing and trunk protection shall remain in place until these works are due to commence.

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

All excavation works (including root investigations) within TPZ areas shall supervised by the Project Arborist and utilise tree sensitive methods. These methods include hand, airspade or hydrovac excavation. Where approved by the Project Arborist, excavation using compact machinery fitted with a flat bladed bucket is permissible. Unless specified otherwise, excavation using compact machinery (<2t) shall be undertaken in small increments, guided by a spotter who is to look for and prevent damage to roots (>25mmØ).

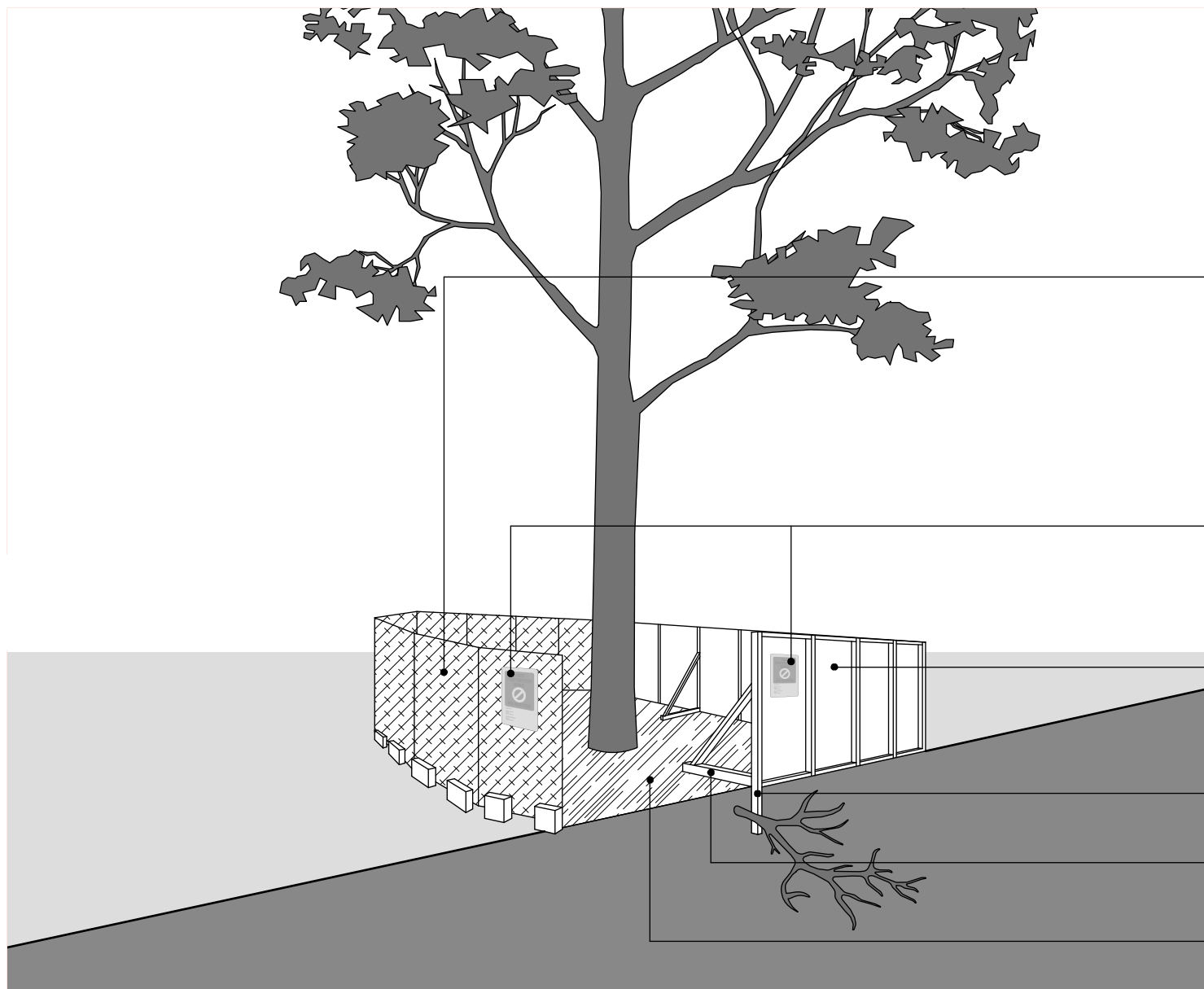
Exposed roots shall be protected from direct sunlight, drying out and extremes of temperature by covering with a 10mm thick jute mat, followed by a layer of plastic membrane. Coverings shall be weighted to secure them in place. The mat shall be kept in a damp condition at all times.

No over-excavation, battering or benching shall be undertaken beyond the footprint of any structure unless approved by the Project Arborist. Hand excavation and root pruning shall be undertaken along the excavation line prior to the commencement of mechanical excavation to prevent tearing and shattering damage to the roots from excavation equipment.

Roots (>25mmØ) shall be pruned by the Project Arborist only. Roots (<25mmØ) may be pruned by the Principal Contractor. Root pruning shall be undertaken with clean, sharp secateurs or a pruning saw to ensure a smooth wound face, free from tears. Damaged roots shall be pruned behind the damaged tissues with the final cut made to an undamaged part of the root.

## Appendix 6: Typical Tree Protection Details

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**Note:**

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

**Option 1 - Fencing**

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

Tree Protection Zone (TPZ) sign

**Option 2 - Fencing**

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

Installation of supports should avoid damaging roots.

Bracing is permissible within the TPZ.

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

