



Project No: TAFE/KINGS/20 Report No: TAFE/KINGS/AIA/A

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# ARBORICULTURAL IMPACT ASSESSMENT

## Western Sydney Construction Hub TAFE NSW, Kingswood Campus

Prepared for: CADENCE AUSTRALIA

10<sup>th</sup> December 2020

Revision A

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## 1.0 INTRODUCTION

### 1.1 Background

1.1.1 This Arboricultural Impact Assessment Report has been prepared to accompany a detailed State Significant Development Application (SSDA) SSD\_ 8571481 for the development of an educational facility at the TAFE Nepean Kingswood Campus, located at 2-44 O'Connell Street, Kingswood. 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. The ecological and heritage significance of the trees has not been assessed and is beyond the scope of this Report.

1.1.2 Specifically, the SSDA seeks development consent for the construction and operation of the TAFE NSW Construction Centre of Excellence (TAFE CCoE), a multi-level, integrated educational facility designed to accommodate specialised training and education for construction-related TAFE NSW courses. The TAFE CCoE will be a new learning environment with an emphasis on flexibility and adaptability, to encourage cross-disciplinary collaboration, industry engagement and educational excellence.

1.1.3 This report has been prepared in response to the requirements contained within the Secretary's Environmental Assessment Requirements (SEARs) issued for the project and considers the objectives of the following documents:

- *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**)

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

- Plan showing Details & Levels – prepared by Rygate Surveyors, dated 6<sup>th</sup> November 2020
- Site Plan (Proposed) – prepared by Gray Puksand, dated 3<sup>rd</sup> December 2020
- Demolition Plan (Proposed) – prepared by Gray Puksand, dated 10th December 2020

Refer to Plans (**Appendix 2**)

### 1.2 The Proposal

1.2.1 The proposed TAFE CCoE building is for 3,500 students and will facilitate an active learning environment collocating building, construction, engineering and manufacturing disciplines.

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

1.2.2 The proposed scope of works is as follows:

- Site preparation works including tree removal and excavation
- Construction of a 2-3 storey Construction Hub accommodating approximately 9,200m<sup>2</sup> of Gross Floor Area
- Provision of additional car parking
- Landscaping works

## 2.0 RESULTS

### 2.1 The Site

2.1.1 The TAFE NSW Nepean Kingswood campus is located at 2–44 O’Connell Street, Kingswood within the Penrith Local Government Area (LGA). The campus is located approximately 5km east of the Penrith CBD and 2km east of Nepean Hospital.

2.1.2 For the purpose of this Report, the site is located in the north-eastern part of the campus and consists of an open grassed area which is moderately sloping with a predominantly westerly aspect. Four main groups of trees are distributed across the site plus a row of trees bordering the western side of the internal access road which forms the eastern boundary of the site.

### 2.2 The Trees

2.2.1 Eighty-eight (88) trees (and tree groups) were assessed using the Visual Tree Assessment<sup>2</sup> (VTA) criteria and notes. The trees comprise of a mix of locally indigenous, Australian-native and exotic species. Nineteen (19) species are represented by *Ficus microcarpa* var. ‘Hillii’ (Hills Weeping Fig) the dominant species on site. Tree 48 is dead.

2.2.2 Ten (10) trees (and tree groups) listed in Table 1 are locally indigenous and representative tree species of the Cumberland Plain Woodland. Cumberland Plain Woodland 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)*.

2.2.3 Table 1: Cumberland Plain Woodland Species

Species	Tree Number
<i>Corymbia maculata</i> (Spotted Gum)	51, 63, 79, 84
<i>Eucalyptus crebra</i> (Narrow Leaf Ironbark)	58
<i>Eucalyptus moluccana</i>	18, 19 & 20
<i>Eucalyptus tereticornis</i>	15 & 77

2.2.4 Irrespective of the above, the Biodiversity Development Assessment Report Waiver Request notes that due to the modified soil landscape, the vegetation within the proposed footprint is not consistent with any remnant native vegetation communities and did not conform to any listed Plant Community Types (PCTs).<sup>3</sup> Furthermore, a waiver for the requirement for a Biodiversity Development Assessment Report (BDAR) was issued by the NSW Planning, Industry & Environment was issued on the 2<sup>nd</sup> September 2020.<sup>4</sup>

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

<sup>3</sup> Ecological (2020)

<sup>4</sup> City of Parramatta (2019)



- 2.2.5 The trees are not listed within Schedule 5 Environmental Heritage of the *Penrith Local Environmental Plan (2010)*.
- 2.2.6 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.
- 2.2.7 The trees within the site 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 2**)

### 3.0 ARBORICULTURAL IMPACT ASSESSMENT

#### 3.1 Tree Removal

- 3.1.1 The supplied plans show that Trees 29, 30, 34-36, 53-66, 77-85, 87 and 88 will need to be removed to accommodate the proposed works.
- 3.1.2 **Trees 29, 30, 34, 35 & 36**  
Trees 29, 30, 34, 35 and 36 were identified as *Ficus microcarpa* var. 'Hillii' (Hills Weeping Fig) and are small, semi-mature specimens located adjacent to the existing road at the southern end of the site. The trees are of low Landscape Significance and have been allocated a Retention Value of *Consider for Removal*.
- 3.1.3 Trees 29, 30, 34, 35 and 36 are proposed for removal to provide construction access into and out of the site. New tree plantings using advanced size specimens could replace the loss of amenity within a short timeframe.
- 3.1.4 **Trees 53, 56 & 60**  
Trees 53, 56 and 60 were identified as *Schinus molle* var. *areira* (Peppercorn Tree), *Quercus robur* (English Oak) and *Grevillea robusta* (Silky Oak) respectively and are located at the southern end of the site. Trees 53 and 56 are in fair health due to a reduced crown density of 50-75% and the presence of small (<25mmØ) epicormic growth. Tree 60 is in fair structural condition due to the presence of a major trunk cavity. The trees are of low Landscape Significance and have been allocated a Retention Value of *Consider for Removal*.
- 3.1.5 The supplied plan shows Tree 53 and 60 will need to be removed to accommodate the building footprint. New tree plantings using advanced size specimens could replace the loss of amenity within a short timeframe.
- 3.1.6 **Trees 54, 55, 58 & 59**  
Trees 54, 55, 58 and 59 are a mix of species located at the southern end of the site. Trees 54 and 58 are in fair structural condition due to the presence of bark inclusions at the junction of the co-dominant stems. The trees are of moderate Landscape Significance and have been allocated a Retention Value of *Consider for Retention*.

- 3.1.7 The supplied plan shows that Trees 54, 55, 58 and 59 will need to be removed to accommodate the building footprint.
- 3.1.8 Tree 57**  
Trees was identified as *Gleditsia triacanthos* (Honey Locust) and is located at the southern end of the site. The tree is in poor structural condition due to the presence of wounds with advanced stages of decay. The tree is of low Landscape Significance and have been allocated a Retention Value of *Priority for Removal*.
- 3.1.9 The supplied plan shows Tree 57 will need to be removed to accommodate the building footprint. A new tree planting using an advanced size specimen could replace the loss of amenity within a short timeframe.
- 3.1.10 Trees 61-63**  
Trees 61 and 62 were identified as *Casuarina cunninghamiana* (River She Oak) and Tree 63 was identified as *Corymbia maculata* (Spotted Gum) and are at the southern end of the site. The trees are of moderate Landscape Significance and have been allocated a Retention Value of *Consider for Retention*.
- 3.1.11 The supplied plans show Trees 61-63 are proposed for removal to provide construction access into and out of the site.
- 3.1.12 Trees 64-66**  
Trees 64-66 were identified as *Fraxinus americana* (American Ash) and are at the southern end of the site. The trees are of low Landscape Significance and have been allocated a Retention Value of *Consider for Removal*.
- 3.1.13 The supplied plans show Trees 64-66 are proposed for removal to provide construction access into and out of the site. New tree plantings using advanced size specimens could replace the loss of amenity within a short timeframe.
- 3.1.14 Trees 77, 79 & 84**  
Tree 77 was identified as *Eucalyptus tereticornis* (Forest Red Gum) and Trees 79 and 84 were identified as *Corymbia maculata* (Spotted Gum) and are located at the northern end of the site. Trees 77 and 84 are in fair health due to a reduced crown density of 50-75%. The trees are of moderate Landscape Significance and have been allocated a Retention Value of *Consider for Retention*.
- 3.1.15 The supplied plan shows that Trees 77, 79 and 84 will need to be removed to accommodate the building footprint.
- 3.1.16 Trees 78, 80, 82 & 85**  
Trees 78, 80, 82 and 85 were identified as *Melaleuca stypheloides* (Prickly Leaf Paperbark) and are located at the southern end of the site. The trees are in fair structural condition due to the presence of bark inclusions at the junction of co-dominant stems. The trees are of low Landscape Significance and have been allocated a Retention Value of *Consider for Removal*.
- 3.1.17 The supplied plan shows Trees 78, 80, 82 and 85 will need to be removed to accommodate the building footprint. New tree plantings using advanced size specimens could replace the loss of amenity within a short timeframe.
- 3.1.18 Trees 81 & 83**  
Tree 81 and 83 were identified as *Eucalyptus microcorys* (Tallowwood) and are senescent specimens located at the northern end of the site. The trees are of moderate Landscape Significance and have been allocated a Retention Value of *Priority for Removal*.
- 3.1.19 The supplied plan shows that Trees 81 and 83 will need to be removed to accommodate the building footprint. These trees are recommended for removal irrespective of future development works.

### 3.1.20 Trees 87 & 88

Trees 87 and 88 were identified as *Fraxinus* spp. (Ash) and are located at the southern end of the site. The trees are of low Landscape Significance and have been allocated a Retention Value of *Consider for Removal*.

3.1.21 The supplied plan shows that Trees 87 and 88 will need to be removed to accommodate the building footprint.

## 3.2 Tree Retention

3.2.1 The supplied plans show that fifty-seven (57) trees are to be retained as part of the proposed works. This includes twenty-nine (29) trees with a Retention Value of *Consider for Retention*, twenty-six (26) trees with a Retention Value of *Consider for Removal* and two (2) trees with a Retention Value of *Priority for Removal*.

3.2.2 Table 2: Trees to be retained

Priority for Retention	Consider for Retention	Consider for Removal	Priority for Removal
	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 15, 16, 17, 18, 19, 20, 49, 52, 67, 68, 69, 70, 71, 72, 76 & 90	21, 22, 23, 24, 25, 26, 27, 28, 31, 32, 33, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 50, 51, 86 & 89	14 & 91

### 3.2.3 Minor Encroachment

The supplied plans show that the access road is proposed within the Tree Protection Zone (TPZ) areas of Trees 67 and 72. As the encroachment into the individual TPZ is less than 10% and outside of the Structural Root Zone (SRZ), the extent of work represents *Minor Encroachments* as defined by AS-4970. A *Minor Encroachment* is considered acceptable by AS-4970 when it is compensated for elsewhere and contiguous within the TPZ. The encroachments into TPZ areas should be compensated for by extending the TPZ in areas not subject to encroachment.

## 3.3 Other Works

### 3.3.1 Mulch & Turf Removal

The removal of mulch and turf within TPZ areas should be undertaken using hand tools. For larger areas, mulch and turf may be carefully removed using a compact excavator (<2T) fitted with a flat bladed bucket. The mulch and turf layer should be removed ensuring the underlying soil profile remains undisturbed. The excavator operator should be guided by a spotter at all times to identify and expose tree roots. Exposed roots (>25mmØ) should be protected from damage. Mulch and turf removal in areas where there are exposed surface or buttress roots should be moved by hand.

### 3.3.2 Demolition Works

Demolition works within TPZ areas should be supervised by the Project Arborist and utilise tree sensitive methods, ensuring demolition machinery/equipment does not contact any part of a tree. Structures within an SRZ can contribute to tree stability by providing ballast to the rootplate or acting as a stop to the overturning of the rootplate. If possible, existing underground structures and sub-base materials should be left in situ and reused.

### 3.3.3 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 etc) methods with the services located around/below roots (>25mmØ) 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).

3.3.4 Alternatively, boring methods may be used for underground service installation where the obvert level (highest interior level of pipe) is greater than 1000mm 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 required by the Project Arborist. The relocated stormwater harvesting infrastructure should be installed outside of the TPZ areas.

### 3.3.5 Landscaping

The installation of plants within the TPZ areas should be undertaken using hand tools and roots (>25mmØ) should be protected.

## 3.4 New Tree Planting

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3.4.1 Replacement trees should be planted to help off-set the loss of amenity and canopy cover from the tree removal.

3.4.2 New trees should be grown in accordance with *Australian Standard 2303 Tree Stock for Landscape Use (2015)*.

## 4.0 CONCLUSION

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4.1.1 Eighty-eight (88) trees were addressed within this report and comprise of a mix of locally indigenous, Australian-native and exotic species. Tree 48 is dead. The BDAR Waiver Request notes that due to the modified soil landscape, vegetation within the proposed footprint is not consistent with any remnant native vegetation community and did not conform to any listed Plant Community Types (PCTs).

4.1.2 In general, the trees are low to moderate value. In this regard, forty-eight (48) trees were allocated a Retention Value of *Consider for Removal* or *Priority for Removal*. Thirty-nine (39) trees were allocated a Retention Value of *Consider for Retention*. None of the trees were allocated a Retention Value of *Priority for Retention*.

4.1.3 The supplied plans show the proposed works include the construction a 2-3 storey Hub building and carparking, site preparation works and landscaping.

4.1.4 The supplied plans show that thirty (30) trees (Trees 29, 30, 34-36, 53-66, 77-85 & 87-88) will need to be removed to accommodate the proposed works. Of these, eighteen (18) trees (Trees 29, 30, 34-36, 53, 56, 57, 60, 64-66, 78, 80, 82, 85, 87 & 88) are of low Landscape Significance and new tree plantings using advanced size specimens could replace the loss of amenity within a short timeframe.

4.1.5 The supplied plans show that fifty-seven (57) trees (Trees 1-28, 31-33, 37-47, 49-52, 67-72, 76, 86 & 89-91) are proposed for retention. These trees should be protected as outlined within the Tree Protection Specification (**Appendix 5**).

4.1.6 An updated Arboricultural Impact Assessment Report should be prepared at the 80% and 100% design development stage with a Tree Protection Specification and Plan prepared based on the final design.

4.1.7 Replacement trees should be planted to help off-set the loss of amenity and canopy cover from the tree removal. New trees should be grown in accordance with *Australian Standard 2303 Tree Stock for Landscape Use (2015)*.

## 5.0 LIMITATIONS & DISCLAIMER

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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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## 6.0 BIBLIOGRAPHY & REFERENCES

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Mattheck & Breloer (2003), *The Body Language of Trees: A Handbook for Failure Analysis*, The Stationary Office, London

NSW Office of Environment and Heritage's Atlas of NSW Wildlife (2011), *BioNet Atlas of NSW Wildlife*

Safe Work Australia (2016), *Guide for Managing Risks of Tree Trimming and Removal Work*.

Standards Australia (2009), *Protection of Trees on Development Sites AS-4970*

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 several comprehensive site inspection during November 2020. The comments and recommendations in this report are based on findings from these site inspections.
- 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>5</sup> The inspection was limited to a visual examination of the subject tree(s) from ground level only. No internal diagnostic testing was undertaken as part of this assessment.
- 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.
- 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>5</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 or low 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

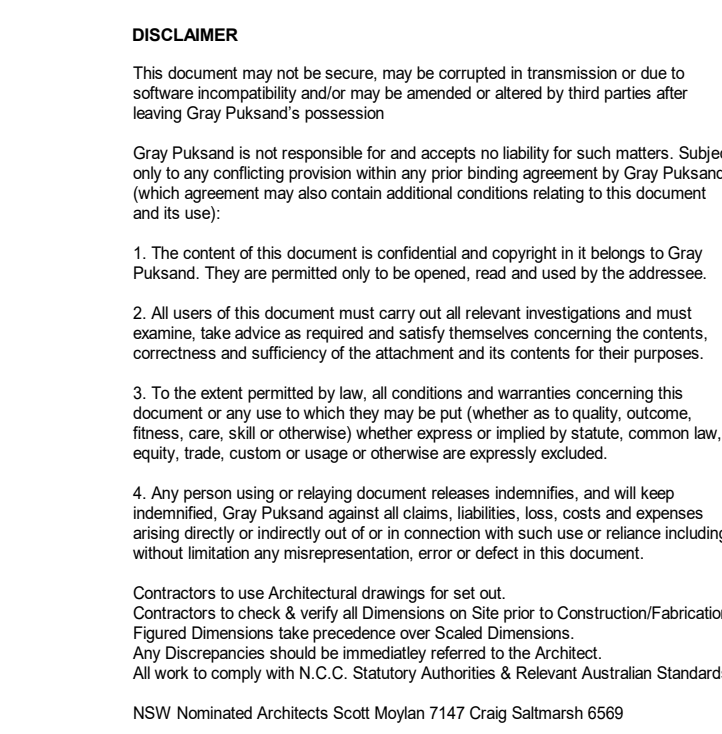
ULE		Landscape Significance		
	Very High	High	Moderate	Low
40 years +	Priority for Retention	Priority for Retention		Consider for Removal
15-40 years		Priority for Retention	Consider for Retention	
5-15 years		Consider for Retention		
Less than 5 years	Consider for Removal	Priority for Removal		

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



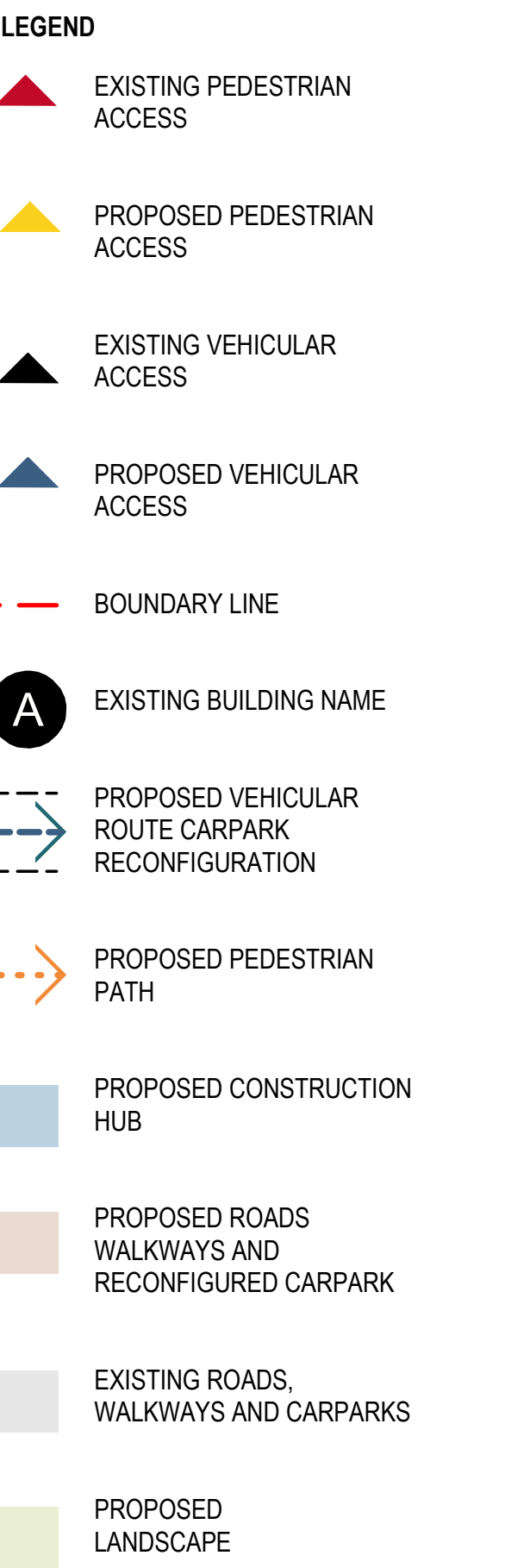






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Consent to check and certify the drawings for use to Construction/Fabrication Factory Dimensions take precedence over Sectional Drawings.  
The Contractor shall be responsible for the accuracy of the drawings.  
All work to comply with N.C.C. Statutory Authority & Relevant Australian Standards.

N0018 Notarized Architects Master No7 1747 Cagney St Sydney 6069

**TAFE NSW Western Sydney  
Construction Hub**  
12-44 O'connell St, Kingswood  
NSW 2747

## SITE PLAN - PROPOSED

DWG #	<b>A0102</b>	REV	<b>A</b>
SCALE $\phi$ A0	As indicated		



### Appendix 3: Tree Assessment Schedule

Tree No.	Species	DBH comb. (mm)	Height (m)	Radial Crown Spread (m)	Health Rating	Structural Condition Rating	Comments	Age Class	ULE (years)	L/Significance	Retention Value	Radial TPZ (m)	Radial SRZ (m)	Implication
1	<i>Casuarina glauca</i> (Swamp She Oak)	500	14	5	Good	Good	Crown density 75-95%. Co-dominant inclusions, minor.	Mature	15-40	Moderate	Consider for Retention	6.0	2.6	Retain. No works within TPZ.
2	<i>Casuarina glauca</i> (Swamp She Oak)	500	14	6	Good	Good	Crown density 75-95%.	Mature	15-40	Moderate	Consider for Retention	6.0	2.6	Retain. No works within TPZ.
3	<i>Casuarina glauca</i> (Swamp She Oak)	513	14	4	Good	Fair	Crown density 75-95%. Co-dominant inclusions, major.	Mature	15-40	Moderate	Consider for Retention	6.2	2.6	Retain. No works within TPZ.
4	<i>Casuarina glauca</i> (Swamp She Oak)	425	12	5	Fair	Good	Crown density 50-75%.	Mature	15-40	Moderate	Consider for Retention	5.1	2.4	Retain. No works within TPZ.
5	<i>Casuarina glauca</i> (Swamp She Oak)	400	14	4	Good	Good	Crown density 75-95%.	Mature	15-40	Moderate	Consider for Retention	4.8	2.3	Retain. No works within TPZ.
6	<i>Casuarina glauca</i> (Swamp She Oak)	450	14	4	Fair	Good	Crown density 50-75%.	Mature	15-40	Moderate	Consider for Retention	5.4	2.5	Retain. No works within TPZ.
7	<i>Casuarina glauca</i> (Swamp She Oak)	475	16	6	Fair	Good	Crown density 50-75%.	Mature	15-40	Moderate	Consider for Retention	5.7	2.5	Retain. No works within TPZ.
8	<i>Casuarina glauca</i> (Swamp She Oak)	424	16	4	Good	Fair	Crown density 75-95%. Co-dominant inclusions, major.	Mature	15-40	Moderate	Consider for Retention	5.1	2.4	Retain. No works within TPZ.

Tree No.	Species	DBH comb. (mm)	Height (m)	Radial Crown Spread (m)	Health Rating	Structural Condition Rating	Comments	Age Class	ULE (years)	L/Significance	Retention Value	Radial TPZ (m)	Radial SRZ (m)	Implication
9	<i>Casuarina glauca</i> (Swamp She Oak)	400	15	5	Fair	Fair	Crown density 50-75%.	Mature	15-40	Moderate	Consider for Retention	4.8	2.3	Retain. No works within TPZ.
10	<i>Casuarina glauca</i> (Swamp She Oak)	450	14	6	Good	Good	Crown density 75-95%.	Mature	15-40	Moderate	Consider for Retention	5.4	2.5	Retain. No works within TPZ.
11	<i>Casuarina glauca</i> (Swamp She Oak)	450	10	4	Fair	Good	Crown density 50-75%. Wound(s), no visible sign of decay. Previous branch failure(s).	Mature	15-40	Moderate	Consider for Retention	5.4	2.5	Retain. No works within TPZ.
12	<i>Casuarina glauca</i> (Swamp She Oak)	575	14	5	Fair	Fair	Crown density 75-95%. Co-dominant inclusions, minor.	Mature	15-40	Moderate	Consider for Retention	6.9	2.7	Retain. No works within TPZ.
13	<i>Casuarina glauca</i> (Swamp She Oak)	500	15	5	Good	Good	Crown density 75-95%.	Mature	15-40	Moderate	Consider for Retention	6.0	2.6	Retain. No works within TPZ.
14	<i>Casuarina glauca</i> (Swamp She Oak)	400	3	1	Good	Fair	Coppice stool	Young	<5	Low	Priority for Removal	4.8	2.3	Retain. No works within TPZ.
15	<i>Eucalyptus tereticornis</i> (Forest Red Gum)	425	12	5	Good	Good	Crown density 75-95%. Bark inclusion(s), minor. Wound(s), early signs of decay.	Mature	15-40	Moderate	Consider for Retention	5.1	2.4	Retain. No works within TPZ.
16	<i>Eucalyptus amplifolia</i> (Cabbage Gum)	350	13	5	Good	Good	Bark inclusion(s), minor.	Mature	15-40	Moderate	Consider for Retention	4.2	2.2	Retain. No works within TPZ.
17	<i>Eucalyptus pilularis</i> (Blackbutt)	400	9	4	Good	Good	Partially suppressed. Phototrophic lean, slight.	Mature	15-40	Moderate	Consider for Retention	4.8	2.3	Retain. No works within TPZ.
18	<i>Eucalyptus moluccana</i> (Grey Box)		13	5	Good	Good		Mature	15-40	Moderate	Consider for Retention			Retain. No works within TPZ.

Tree No.	Species	DBH comb. (mm)	Height (m)	Radial Crown Spread (m)	Health Rating	Structural Condition Rating	Comments	Age Class	ULE (years)	L/Significance	Retention Value	Radial TPZ (m)	Radial SRZ (m)	Implication
19	<i>Eucalyptus moluccana</i> (Grey Box)	425	15	6	Good	Fair	Co-dominant inclusions, major. Wound(s), advanced stages of decay. Phototrophic lean, slight. Aerial inspection & internal diagnostic testing recommended.	Mature	5-15	Moderate	Consider for Retention	5.1	2.4	Retain. No works within TPZ.
20	<i>Eucalyptus moluccana</i> (Grey Box)	400	15	5	Good	Fair	Co-dominant inclusions, minor. Wound(s), advanced stages of decay. Internal diagnostic testing recommended.	Mature	5-15	Moderate	Consider for Retention	4.8	2.3	Retain. No works within TPZ.
21	<i>Ficus microcarpa</i> var. 'Hillii' (Hills Weeping Fig)	250	6	4	Good	Good	Mechanical damage to exposed surface roots.	Semi-mature	15-40	Low	Consider for Removal	3.0	1.9	Retain. No works within TPZ.
22	<i>Ficus microcarpa</i> var. 'Hillii' (Hills Weeping Fig)	275	6	4	Good	Good	Mechanical damage to exposed surface roots.	Semi-mature	15-40	Low	Consider for Removal	3.3	2.0	Retain. No works within TPZ.
23	<i>Ficus microcarpa</i> var. 'Hillii' (Hills Weeping Fig)	275	5	3	Good	Good	Mechanical damage to exposed surface roots.	Semi-mature	15-40	Low	Consider for Removal	3.3	2.0	Retain. No works within TPZ.
24	<i>Ficus microcarpa</i> var. 'Hillii' (Hills Weeping Fig)	225	5	3	Good	Good	Mechanical damage to exposed surface roots.	Semi-mature	15-40	Low	Consider for Removal	2.7	1.8	Retain. No works within TPZ.
25	<i>Ficus microcarpa</i> var. 'Hillii' (Hills Weeping Fig)	200	5	3	Good	Good	Mechanical damage to exposed surface roots.	Semi-mature	15-40	Low	Consider for Removal	2.4	1.8	Retain. No works within TPZ.
26	<i>Ficus microcarpa</i> var. 'Hillii' (Hills Weeping Fig)	225	5	3	Good	Good	Mechanical damage to exposed surface roots.	Semi-mature	15-40	Low	Consider for Removal	2.7	1.8	Retain. No works within TPZ.
27	<i>Ficus microcarpa</i> var. 'Hillii' (Hills Weeping Fig)	275	5	3	Good	Good	Mechanical damage to exposed surface roots.	Semi-mature	15-40	Low	Consider for Removal	3.3	2.0	Retain. No works within TPZ.

Tree No.	Species	DBH comb. (mm)	Height (m)	Radial Crown Spread (m)	Health Rating	Structural Condition Rating	Comments	Age Class	ULE (years)	L/Significance	Retention Value	Radial TPZ (m)	Radial SRZ (m)	Implication
28	<i>Ficus microcarpa</i> var. 'Hillii' (Hills Weeping Fig)	250	5	3	Good	Good	Mechanical damage to exposed surface roots.	Semi-mature	15-40	Low	Consider for Removal	3.0	1.9	Retain. No works within TPZ.
29	<i>Ficus microcarpa</i> var. 'Hillii' (Hills Weeping Fig)	250	5	3	Good	Good	Mechanical damage to exposed surface roots.	Semi-mature	15-40	Low	Consider for Removal	3.0	1.9	Remove. Construction access.
30	<i>Ficus microcarpa</i> var. 'Hillii' (Hills Weeping Fig)	200	5	2	Good	Good	Crown density 75-95%. Mechanical damage to exposed surface roots.	Semi-mature	15-40	Low	Consider for Removal	2.4	1.8	Remove. Construction access.
31	<i>Ficus microcarpa</i> var. 'Hillii' (Hills Weeping Fig)	300	5	3	Good	Good	Mechanical damage to exposed surface roots.	Semi-mature	15-40	Low	Consider for Removal	3.6	2.1	Retain. No works within TPZ.
32	<i>Ficus microcarpa</i> var. 'Hillii' (Hills Weeping Fig)	300	5	3	Good	Good	Remove crossing second order branch (50mm) Mechanical damage to exposed surface roots.	Semi-mature	15-40	Low	Consider for Removal	3.6	2.1	Retain. No works within TPZ.
33	<i>Ficus microcarpa</i> var. 'Hillii' (Hills Weeping Fig)	250	4	2	Good	Good		Semi-mature	15-40	Low	Consider for Removal	3.0	1.9	Retain. No works within TPZ.
34	<i>Ficus microcarpa</i> var. 'Hillii' (Hills Weeping Fig)	225	4	3	Good	Good	Mechanical damage to exposed surface roots.	Semi-mature	15-40	Low	Consider for Removal	2.7	1.8	Remove. Construction access.
35	<i>Ficus microcarpa</i> var. 'Hillii' (Hills Weeping Fig)	175	4	2	Good	Good	Mechanical damage to exposed surface roots.	Semi-mature	15-40	Low	Consider for Removal	2.1	1.7	Remove. Construction access.
36	<i>Ficus microcarpa</i> var. 'Hillii' (Hills Weeping Fig)	250	5	3	Good	Good	Mechanical damage to exposed surface roots.	Semi-mature	15-40	Low	Consider for Removal	3.0	1.9	Remove. Construction access.
37	<i>Ficus microcarpa</i> var. 'Hillii' (Hills Weeping Fig)	300	5	3	Good	Fair	Mechanical damage to exposed surface roots. Bark inclusion(s), minor.	Semi-mature	15-40	Low	Consider for Removal	3.6	2.1	Retain. No works within TPZ.

Tree No.	Species	DBH comb. (mm)	Height (m)	Radial Crown Spread (m)	Health Rating	Structural Condition Rating	Comments	Age Class	ULE (years)	L/Significance	Retention Value	Radial TPZ (m)	Radial SRZ (m)	Implication
38	<i>Ficus microcarpa</i> var. 'Hillii' (Hills Weeping Fig)	325	5	3	Good	Good	Roots damaging adjacent pit. Mechanical damage to exposed surface roots.	Semi-mature	15-40	Low	Consider for Removal	3.9	2.1	Retain. No works within TPZ.
39	<i>Ficus microcarpa</i> var. 'Hillii' (Hills Weeping Fig)	250	5	3	Good	Good	Mechanical damage to exposed surface roots.	Semi-mature	15-40	Low	Consider for Removal	3.0	1.9	Retain. No works within TPZ.
40	<i>Ficus microcarpa</i> var. 'Hillii' (Hills Weeping Fig)	250	6	3	Good	Good	Mechanical damage to exposed surface roots. Bark inclusion(s), minor.	Semi-mature	15-40	Low	Consider for Removal	3.0	1.9	Retain. No works within TPZ.
41	<i>Ficus microcarpa</i> var. 'Hillii' (Hills Weeping Fig)	250	5	3	Good	Good	Mechanical damage to exposed surface roots.	Semi-mature	15-40	Low	Consider for Removal	3.0	1.9	Retain. No works within TPZ.
42	<i>Ficus microcarpa</i> var. 'Hillii' (Hills Weeping Fig)	225	5	3	Good	Good	Mechanical damage to exposed surface roots.	Semi-mature	15-40	Low	Consider for Removal	2.7	1.8	Retain. No works within TPZ.
43	<i>Ficus microcarpa</i> var. 'Hillii' (Hills Weeping Fig)	250	5	2	Good	Fair	Mechanical damage to exposed surface roots. Co-dominant inclusions, minor.	Semi-mature	15-40	Low	Consider for Removal	3.0	1.9	Retain. No works within TPZ.
44	<i>Ficus microcarpa</i> var. 'Hillii' (Hills Weeping Fig)	200	4	2	Good	Good	Mechanical damage to exposed surface roots.	Semi-mature	15-40	Low	Consider for Removal	2.4	1.8	Retain. No works within TPZ.
45	<i>Ficus microcarpa</i> var. 'Hillii' (Hills Weeping Fig)	175	3	1	Good	Good	Mechanical damage to exposed surface roots.	Semi-mature	15-40	Low	Consider for Removal	2.1	1.7	Retain. No works within TPZ.
46	<i>Ficus microcarpa</i> var. 'Hillii' (Hills Weeping Fig)	175	3	1	Good	Good	Mechanical damage to exposed surface roots.	Semi-mature	15-40	Low	Consider for Removal	2.1	1.7	Retain. No works within TPZ.
47	<i>Ficus microcarpa</i> var. 'Hillii' (Hills Weeping Fig)	150	4	2	Good	Good	Mechanical damage to exposed surface roots.	Semi-mature	15-40	Low	Consider for Removal	2.0	1.6	Retain. No works within TPZ.



Tree No.	Species	DBH comb. (mm)	Height (m)	Radial Crown Spread (m)	Health Rating	Structural Condition Rating	Comments	Age Class	ULE (years)	L/Significance	Retention Value	Radial TPZ (m)	Radial SRZ (m)	Implication
48	DEAD										DEAD			
49	<i>Eucalyptus microcorys</i> (Tallowwood)	400	11	6	Fair	Fair	Crown density 50-75%. Small (<25mmø) epicormic growth in low volumes. Co-dominant inclusions, major.	Mature	5-15	Moderate	Consider for Retention	4.8	2.3	Retain. No works within TPZ.
50	<i>Grevillea robusta</i> (Silky Oak)	200	7	4	Good	Good	Partially suppressed.	Semi-mature	15-40	Low	Consider for Removal	2.4	1.8	Retain. No works within TPZ.
51	<i>Corymbia maculata</i> (Spotted Gum)	150	8	2	Good	Good	Crown density 75-95%. Medium (25-75mmø) deadwood in low volumes. Partially suppressed.	Semi-mature	15-40	Low	Consider for Removal	2.0	1.6	Retain. No works within TPZ.
52	<i>Eucalyptus microcorys</i> (Tallowwood)	400	13	6	Fair	Good	Crown density 75-95%. Small (<25mmø) epicormic growth in low volumes.	Mature	15-40	Moderate	Consider for Retention	4.8	2.3	Retain. No works within TPZ.
53	<i>Schinus molle</i> var. <i>areira</i> (Peppercorn Tree)	354	6	7	Fair	No access to base. No rating.	Crown density 50-75%. Small (<25mmø) deadwood in moderate volumes. Small (<25mmø) epicormic growth in moderate volumes.	Mature	5-15	Low	Consider for Removal	4.2	2.2	Remove. Building Footprint.
54	<i>Gleditsia triacanthos</i> (Honey Locust)	320	7	5	Good	Fair	Partially suppressed. Co-dominant inclusions, minor. Wound(s), early signs of decay. Borer.	Mature	5-15	Moderate	Consider for Retention	3.8	2.1	Remove. Building Footprint.
55	<i>Casuarina cunninghamiana</i> (River She Oak)	400	9	3	Good	Good	Small (<25mmø) & medium (25-75mmø) deadwood in low volumes.	Mature	15-40	Moderate	Consider for Retention	4.8	2.3	Remove. Building Footprint.
56	<i>Quercus robur</i> (English Oak)	320	5	3	Fair	Good	Crown density 75-95%. Small (<25mmø) epicormic growth in low volumes. Partially suppressed. Wound(s), no visible sign of decay.	Mature	15-40	Low	Consider for Removal	3.8	2.1	Remove. Building Footprint.

Tree No.	Species	DBH comb. (mm)	Height (m)	Radial Crown Spread (m)	Health Rating	Structural Condition Rating	Comments	Age Class	ULE (years)	L/Significance	Retention Value	Radial TPZ (m)	Radial SRZ (m)	Implication
57	<i>Gleditsia triacanthos</i> (Honey Locust)	245	6	4	Fair	Poor	Partially suppressed. Wound(s), advanced stages of decay. Borer.	Mature	<5	Low	Priority for Removal	2.9	1.9	Remove. Building Footprint.
58	<i>Eucalyptus crebra</i> (Narrow Leaf Ironbark)	525	9	5	Fair	Fair	Crown density 50-75%. Small (<25mmØ) & medium (25-75mmØ) epicormic growth in moderate volumes. Co-dominant inclusions, minor.	Mature	5-15	Moderate	Consider for Retention	6.3	2.6	Remove. Building Footprint.
59	<i>Melaleuca stypheloides</i> (Prickly Leaf Paperbark)	407	6	3	Good	No access to base. No rating.	Crown density 75-95%. Co-dominant inclusions, major.	Mature	15-40	Moderate	Consider for Retention	4.9	2.4	Remove. Building Footprint.
60	<i>Grevillea robusta</i> (Silky Oak)	200	8	3	Good	Fair	Partially suppressed. Trunk cavity(s), major.	Semi-mature	5-15	Low	Consider for Removal	2.4	1.8	Remove. Building Footprint.
61	<i>Casuarina cunninghamiana</i> (River She Oak)	900	15	7	Good	Good	Partially suppressed. Co-dominant inclusions, minor. Wound(s), various stages of decay.	Mature	15-40	Moderate	Consider for Retention	10.8	3.3	Remove. Access Rd.
62	<i>Casuarina cunninghamiana</i> (River She Oak)	750	15	5	Good	Good	Partially suppressed. Co-dominant inclusions, minor. Wound(s), no visible sign of decay.	Mature	15-40	Moderate	Consider for Retention	9.0	3.1	Remove. Access Rd.
63	<i>Corymbia maculata</i> (Spotted Gum)	575	18	4	Good	Good		Mature	15-40	Moderate	Consider for Retention	6.9	2.7	Remove. Access Rd.
64	<i>Fraxinus americana</i> (American Ash)	250	5	4	Good	Good		Mature	15-40	Low	Consider for Removal	3.0	1.9	Remove. Access Rd.
65	<i>Fraxinus americana</i> (American Ash)	350	5	3	Good	Good		Mature	15-40	Low	Consider for Removal	4.2	2.2	Remove. Access Rd.
66	<i>Fraxinus griffithii</i> (Evergreen Ash)	300	3	3	Good	Good		Mature	15-40	Low	Consider for Removal	3.6	2.1	Remove. Access Rd.

Tree No.	Species	DBH comb. (mm)	Height (m)	Radial Crown Spread (m)	Health Rating	Structural Condition Rating	Comments	Age Class	ULE (years)	L/Significance	Retention Value	Radial TPZ (m)	Radial SRZ (m)	Implication
67	<i>Fraxinus americana</i> (American Ash)	300	8	4	Good	Good		Mature	15-40	Moderate	Consider for Retention	3.6	2.1	Retain. Minor encroachment, access road.
68	<i>Platanus xacerifolia</i> (London Plane Tree)	275	9	5	Fair	Good	Crown density 75-95%. Small (<25mmØ) deadwood in moderate volumes. Small (<25mmØ) epicormic growth in moderate volumes. Partially suppressed.	Mature	15-40	Moderate	Consider for Retention	3.3	2.0	Retain. No works within TPZ.
69	<i>Platanus xacerifolia</i> (London Plane Tree)	300	9	5	Fair	Good	Crown density 75-95%. Small (<25mmØ) deadwood in moderate volumes. Small (<25mmØ) & medium (25-75mmØ) epicormic growth in moderate volumes. Partially suppressed.	Mature	15-40	Moderate	Consider for Retention	3.6	2.1	Retain. No works within TPZ.
70	<i>Platanus xacerifolia</i> (London Plane Tree)	300	10	5	Fair	Good	Crown density 75-95%. Small (<25mmØ) epicormic growth in moderate volumes.	Mature	15-40	Moderate	Consider for Retention	3.6	2.1	Retain. No works within TPZ.
71	<i>Platanus xacerifolia</i> (London Plane Tree)	300	10	5	Good	Good	Small (<25mmØ) epicormic growth in low volumes.	Mature	15-40	Moderate	Consider for Retention	3.6	2.1	Retain. No works within TPZ.
72	<i>Platanus xacerifolia</i> (London Plane Tree)	300	10	5	Good	Good	Small (<25mmØ) epicormic growth in low volumes. Mechanical damage to exposed surface roots.	Mature	15-40	Moderate	Consider for Retention	3.6	2.1	Retain. Minor encroachment, access road.
76	<i>Jacaranda mimosifolia</i> (Jacaranda)	358	5	5	Good	Good	Crown density 75-95%. Wound(s), early signs of decay.	Mature	15-40	Moderate	Consider for Retention	4.3	2.2	Retain. No works within TPZ.
77	<i>Eucalyptus tereticornis</i> (Forest Red Gum)	300	6	3	Fair	Good	Crown density 50-75%.	Mature	15-40	Moderate	Consider for Retention	3.6	2.1	Remove. Building Footprint.
78	<i>Melaluca stypheloides</i> (Prickly Leaf Paperbark)	361	5	3	Good	Fair	Partially suppressed. Co-dominant inclusions, minor.	Mature	15-40	Low	Consider for Removal	4.3	2.2	Remove. Building Footprint.

Tree No.	Species	DBH comb. (mm)	Height (m)	Radial Crown Spread (m)	Health Rating	Structural Condition Rating	Comments	Age Class	ULE (years)	L/Significance	Retention Value	Radial TPZ (m)	Radial SRZ (m)	Implication
79	<i>Corymbia maculata</i> (Spotted Gum)	525	15	5	Good	Good	Small (<25mmø) & medium (25-75mmø) deadwood in low volumes. Bark inclusion(s), minor.	Mature	15-40	Moderate	Consider for Retention	6.3	2.6	Remove. Building Footprint.
80	<i>Melaleuca stypheloides</i> (Prickly Leaf Paperbark)	500	5	3	Good	Fair	Crown density 75-95%. Partially suppressed. Co-dominant inclusions, minor.	Mature	15-40	Low	Consider for Removal	6.0	2.6	Remove. Building Footprint.
81	<i>Eucalyptus microcorys</i> (Tallowwood)	475	17	6	Poor	Fair	Crown density 0-25%. Small (<25mmø) & large (>75mmø) deadwood in moderate volumes. Crown consists mainly of epicormic growth.	Senescent	<5	Moderate	Priority for Removal	5.7	2.5	Remove. Building Footprint.
82	<i>Melaleuca stypheloides</i> (Prickly Leaf Paperbark)	301	5	3	Fair	Fair	Crown density 75-95%. Partially suppressed. Co-dominant inclusions, minor.	Mature	15-40	Low	Consider for Removal	3.6	2.1	Remove. Building Footprint.
83	<i>Eucalyptus microcorys</i> (Tallowwood)	500	17	5	Poor	Fair	Crown density 0-25%. Small (<25mmø) & large (>75mmø) deadwood in high volumes. Crown consists mainly of epicormic growth.	Senescent	<5	Moderate	Priority for Removal	6.0	2.6	Remove. Building Footprint.
84	<i>Corymbia maculata</i> (Spotted Gum)	320	13	4	Fair	Good	Crown density 50-75%.	Mature	5-15	Moderate	Consider for Retention	3.8	2.1	Remove. Building Footprint.
85	<i>Melaleuca stypheloides</i> (Prickly Leaf Paperbark)	361	5	3	Good	Fair	Partially suppressed. Co-dominant inclusions, minor.	Mature	15-40	Low	Consider for Removal	4.3	2.2	Remove. Building Footprint.
86	<i>Platanus xacerifolia</i> (London Plane Tree)	200	6	3	Fair	Good	Crown density 50-75%. Small (<25mmø) deadwood in moderate volumes. Small (<25mmø) epicormic growth in high volumes. Mechanical damage to exposed surface roots.	Mature	5-15	Low	Consider for Removal	2.4	1.8	Retain. No works within TPZ.
87	<i>Fraxinus sp.</i> (Claret Ash)	168	4	2	Good	Good	Crown density 75-95%.	Mature	15-40	Low	Consider for Removal	2.0	1.6	Remove. Access Rd.

Tree No.	Species	DBH comb. (mm)	Height (m)	Radial Crown Spread (m)	Health Rating	Structural Condition Rating	Comments	Age Class	ULE (years)	L/Significance	Retention Value	Radial TPZ (m)	Radial SRZ (m)	Implication
88	<i>Fraxinus sp.</i> (Claret Ash)	283	5	3	Good	Good		Mature	15-40	Low	Consider for Removal	3.4	2.0	Remove. Access Rd.
89	<i>Fraxinus sp.</i> (Claret Ash)	276	6	3	Good	Good	Small (<25mmø) & medium (25-75mmø) deadwood in low volumes.	Mature	15-40	Low	Consider for Removal	3.3	2.0	Retain. No works within TPZ.
90	<i>Platanus xacerifolia</i> (London Plane Tree)	300	9	5	Fair	Good	Small (<25mmø) epicormic growth in moderate volumes.	Mature	15-40	Moderate	Consider for Retention	3.6	2.1	Retain. No works within TPZ.
91	<i>Platanus xacerifolia</i> (London Plane Tree)	200	6	2	Poor	Fair	Medium (25-75mmø) deadwood in high volumes. Crown consists mainly of epicormic growth.	Mature	<5	Low	Priority for Removal	2.4	1.8	Retain. No works within TPZ.





**Plate 1:** Showing Trees 1-5



**Plate 2:** Showing Trees 18-20



**Plate 3:** Showing Trees 32-460



**Plate 4:** Showing Trees 48-51





**Plate 5:** Showing Trees 56 & 57



**Plate 6:** Showing Trees 58-60



**Plate 7:** Showing Trees 70 & 71



**Plate 8:** Showing Trees 81-83

## 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.

### 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.

The Project Arborist shall undertake regular site inspections and certify that the works are being undertaken in accordance with this specification.

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

### 1.2 Tree & Vegetation Removal

Tree removal works shall be undertaken in accordance with the *Safe Work Australia Guide for Managing Risks of Tree Trimming and Removal Work (2016)* and other applicable codes and legislation.

Tree removal shall not damage the trees to be retained. Other vegetation to be removed within a TPZ shall be carefully lifted by hand/hand tools to avoid damaging roots (>25mmØ) within the surrounding soil profile.

### 1.3 Tree Protection Zone

The trees 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.

### 1.4 Tree Protection Fencing

TPZ fencing shall be installed at the perimeter of the TPZ. 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**).



### 1.5 Site Management

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

### 1.6 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.

### 1.7 Trunk Protection

Trunk protection shall be installed as required by the Project Arborist 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 5**).

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

### 1.8 Ground Protection

Where deemed necessary by the Project Arborist, machinery movements 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 5**).

### 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 1.8). Machinery should not contact the tree's roots, trunk, branches and crown.

The existing pavement shall be carefully lifted to minimise damage to the underlying soil profile (or sub-base materials) and to prevent damage to tree roots. Wherever possible, existing sub-base materials shall remain in-situ.

When removing slab sections within TPZ, machinery shall work backwards out of the TPZ to ensure machinery remains on undemolished sections of slab at all times. Wherever possible, footings or elements below grade shall be retained to minimise disturbance to the tree's roots.

Where deemed necessary by the Project Arborist, the structures shall be shattered prior to removal with a hand-operated pneumatic/electric breaker.

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 Underground Services

Underground service installation within the TPZ shall be supervised by the Project Arborist.

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 (>25mm $\phi$ , or as determined 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 (>25mm $\phi$ ).

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 (>25mm $\phi$ ) as deemed necessary by the Project Arborist. OSD tanks (where required) should be located outside of the TPZ areas.

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

The 160mm root to the shall of the tree shall be protected with a 25mm (minimum) of cover (compressible board or sand) to allow for future root expansion beneath the paving of the covered way. Excavations and root pruning within the TPZ shall be supervised by the Project Arborist. Excavations within the TPZ shall be avoided wherever possible.

Excavations within the TPZ shall be undertaken by hand or using hydro vacuum excavation methods (or similar approved device) to protect tree roots. If there is any delay between excavation works and backfilling, exposed roots shall be protected from direct sunlight, drying out and extremes of temperature by covering with a 10mm thick jute mat. 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.

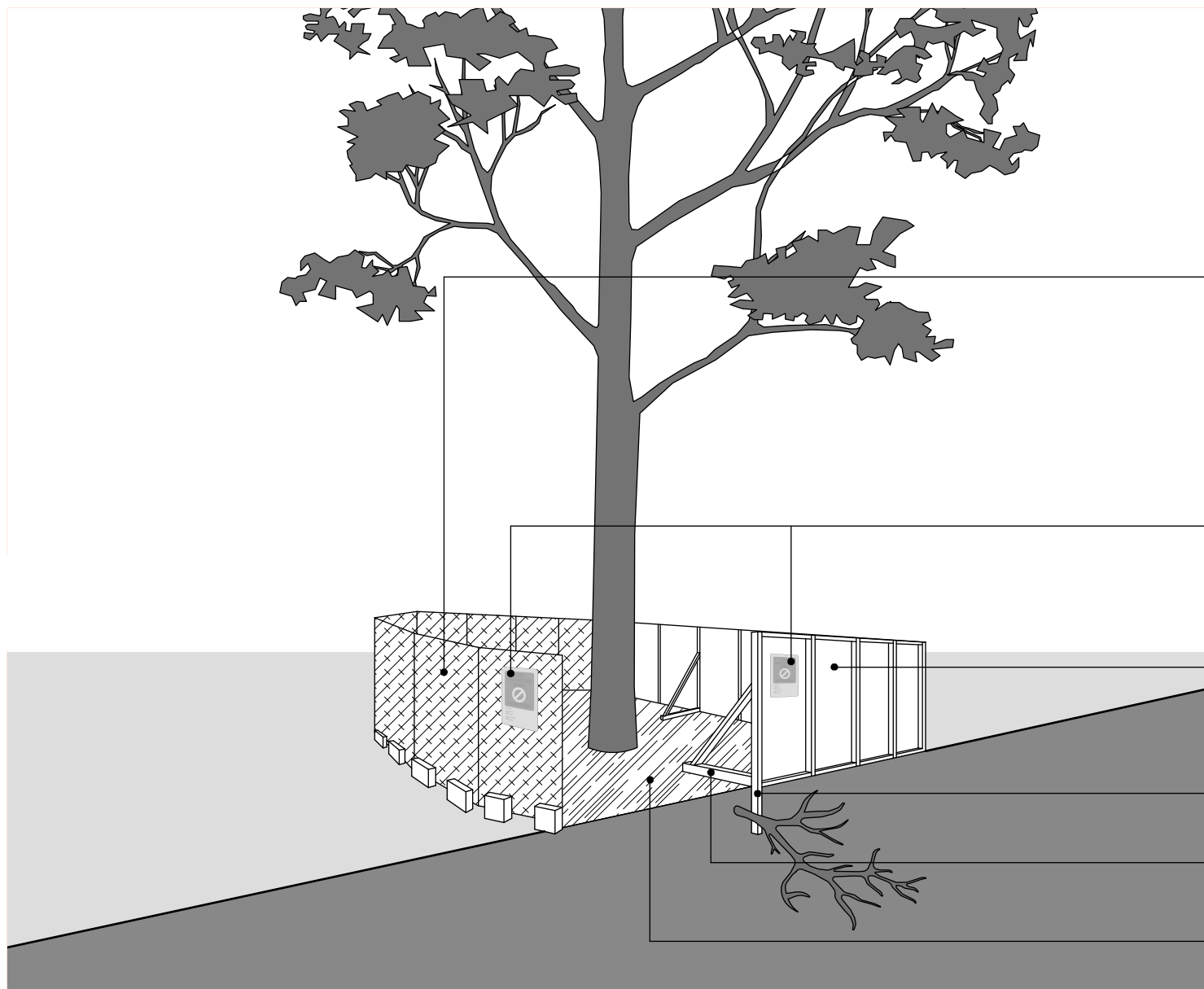
Damaged roots shall be pruned behind the damaged tissues with the final cut made to an undamaged part of the root.

#### **1.12 Landscape Planting**

The imported soil mix to be used within the terraced gardens within the TPZ areas shall have a high level of porosity. A sample of the import soil and component specification shall be provided to the Project Arborist for approval prior to procurement. 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.





**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.

