L&Co
CONSULTANCY
ARBORICULTURE
PLANT PATHOLOGY

ARBORICULTURAL IMPACT ASSESSMENT

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TREE PROTECTION SPECIFICATION

REF: L&Co22032 | 07 April 2023 | v3
SITE ADDRESS | 113 Orchard Street, Warriewood
PREPARED FOR | Tony Mclain
PREPARED BY |

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1.0 EXECUTIVE SUMMARY |

1.1 The proposal, outlined in the supplied plans, show the construction of a residential dwelling with driveway, pool and landscaping, a horse arena, paddocks, horse paths and associated stables and yards at 113 Orchard Street, Warriewood.

1.2 A total of one-hundred and sixty-three (163) trees were assessed that were a mix of Australian native and exotic species.

1.3 The supplied plans show no works are proposed within the TPZs of Trees 2, 3, 4, 9, 10, 12, 13, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 34, 36, 37, 38, 39, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 67, 68, 73, 74, 75, 76, 77, 78, 80, 81, 82, 83, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 107, 108, 109, 110, 112, 113, 114, 115, 116, 118, 119, 120, 121, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 135, 136, 137, 139, 140, 141, 144, 145, 149, 150, 151, 152, 153, 154, 155, 159, 160, 161, 162 & 163. However, the tree protection measures outlined in this report should be implemented to avoid indirect impacts.

1.4 The proposed works represent a *Minor Encroachment* (as defined by AS4970) on Trees 31, 40, 62, 70. However, a minor encroachment is considered acceptable by the standard when it is compensated for elsewhere and contiguous within the TPZ, as in the current cases. Further, the tree protection measures outlined in this report will reduce the likelihood of negative impacts on Trees 40 & 62.

1.5 The proposed engineering works are within the SRZs of Trees 29 & 30. The proposed horse path is within the SRZ of Tree 79. Works within the SRZ represent a *Major Encroachment* (as defined by AS4970). However, negative impacts can be minimised and the trees retained if the tree sensitive construction methods and protection measures outlined in this report are implemented. The proposed works are considered acceptable under the Australian Standard AS4970, Clause 3.3.4.

1.6 The proposed engineering works are within the TPZs of Trees 32 & 69. The proposed parking is within the TPZ of Tree 7. The proposed driveway is within the TPZ of Tree 16. The proposed horse path is within the TPZ of Tree 117 and the proposed manure store and horse rink is within the TPZ of Tree 142. The TPZ encroachment was greater than 10% of the TPZ and represents a *Major Encroachment* (as defined by AS4970). However, negative impacts can be minimised if the tree sensitive construction methods and protection measures outlined in this report are implemented and be acceptable under the Australian Standard AS4970, Clause 3.3.4.

1.7 The proposed works are also within the SRZs of Trees 1, 14, 15, 17, 63, 65, 71, 72, 88 & 111, 143 and represent a *Major Encroachment* (as defined by AS4970). However, these trees will need to be removed as the TPZ encroachment is too large for their long-term viability, based on a consideration of their health, structure and the size of the encroachment. These trees were all assigned Low to Moderate Landscape Significance Values except for Trees 65 & 71, which were assigned High Landscape Significance Values.

1.8 Trees 5, 6, 8, 11, 18, 33, 35, 64, 66, 84, 85, 86, 87, 89, 122, 123, 134, 138, 146, 147, 148, 156, 157 & 158 are within the proposed development footprint and will need to be removed. These trees were mostly assigned Low to Moderate Landscape Significance Values except for Trees 35 & 69 which were assigned High Landscape Significance Values.

1.9 All trees located within the proposed horse paddocks should have permanent trunk protection installed in the form of wooden fencing to prevent mechanical damage from horse activities.

1.10 The location of the underground services was not detailed in the supplied plans. The installation of underground services should be located outside of the TPZs detailed in this report. Where this is not possible, they should be installed around or below roots (>25mm∅) using either hydrovac or hand excavation and supervised by the Project Arborist.

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2.0 INTRODUCTION |

2.1 Background

2.1.1 This Arboricultural Impact Assessment and Tree Protection Specification Report was prepared for Tony Mclain in relation to the proposed development of 113 Orchard Street, Warriewood. This report has determined the impact of the proposed works on the trees at 113 Orchard Street, Warriewood and neighbouring properties and where appropriate, has provided tree sensitive construction methods to minimise negative impacts to the trees.

2.1.2 The tree data was divided into six (6) zones according to the main impact from the proposal and the tree locations. The six (6) zones were designated *Entrance and Driveway, Surrounding Bushland, Tullipan Project Home, Driveway and Retaining wall, Paddocks and Horse Path, Horse Arena and Stables.*

2.1.3 In preparing this report, the author is aware of and has considered the objectives of the Northern Beaches Council (Warringah)'s *Warringah Development Control Plan Part E1: Preservation of Trees or Bushland Vegetation (2011), Warringah Local Environment Plan (2011), Australian Standard 4970 Protection of Trees on Development Sites (2009), Australian Standard 4373 Pruning of Amenity Trees (2007) and Safe Work Australia Guide for Managing Risks of Tree Trimming and Removal Work (2016).*

2.1.4 Further methodology used in the preparation of this report is detailed in Appendix 1.

2.1.5 This Arboricultural Impact Assessment was based on an assessment of the following supplied documentation/plans only (Appendix 4):

- Wastewater Rev. G. (Dwg. No. 16). Prepared by Tony McLain Architect. Dated July 2022.
- Site Plan Rev. H. (Dwg. No. 01). Prepared by Tony McLain Architect. Dated November 2022.
- Paths Rev. G. (Dwg. No. 15). Prepared by Tony McLain Architect. Dated July 2022.
- Excavation Rev. G. (Dwg. No. 17). Prepared by Tony McLain Architect. Dated July 2022.

2.2 The Proposal

2.2.1 The supplied plans show the construction of a residential dwelling with driveway, pool and landscaping, a horse arena, paddocks, horse paths and associated stables and yards at 113 Orchard Street, Warriewood.

3.0 RESULTS |

3.1 The Site

3.1.1 The site is a square block consisting of a large area of bushland. The site has a total area stated in the plans as 9766m^2. The site has a fall from west to east.

3.1.2 The site is bounded by Ingleside Chase Nature Reserve to the west, south and north with Orchard Road to the east.

3.2 The Trees

3.2.1 A Visual Tree Assessment (VTA) (Mattheck & Breloer, 2003) has been undertaken on trees growing within the site to determine their health and structural condition (Appendix 2). A full VTA of trees located outside of the site boundaries was not undertaken due to limited access. The species and trunk diameter were recorded for the purposes of determining Tree Protection Zone (TPZ) and Structural Root Zone (SRZ) calculations only. The distance of each tree from the site boundary is an approximation due to limited access.

3.2.2 The Australian Standard 4970: *Protection of Trees on Development Sites* (2009) Clause 2.3.2, requires the allocation of a Tree Retention Value. This value is based on the Useful Life Expectancy (ULE) and Landscape Significance, which considers the tree's health, structural condition and site suitability. The Retention Value does not consider any proposed development works and is 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

3.2.3 The Australian Standard 4970: *Protection of Trees on Development Sites* (2009) also requires the calculation of the Tree Protection Zone (TPZ) and Structural Root Zone (SRZ) for each tree (Appendix 1).

3.2.4 A total of one-hundred and sixty-three (163) trees and group trees were assessed which were a mix of Australian native and exotic species.

3.2.5 The ecological significance and habitat value of the trees has not been assessed and is beyond the scope of this report.

3.2.6 Trees 1, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157 & 158 were within the site boundary and are covered by the Council's tree management controls.

3.2.7 Trees 2, 3, 4, 81, 159, 160, 161, 162 & 163 are exempt from the Council's tree management controls.

3.2.8 Trees 3, 10, 28 & 46 were located on adjacent properties. All trees on adjacent properties were allocated a Retention Value of *Priority for Retention*.

4.0 ARBORICULTURAL IMPACT ASSESSMENT |

4.1 Zone 1: Entrance and Driveway

4.2 Trees 2, 3, 4, 9, 10, 12, 13, 19, 20, 21, 22 & 23

4.2.1 Trees 2, 3, 4, 9, 10, 12, 13, 19, 20, 21, 22 & 23 were identified as a *Prunus* sp., *Callistemon viminalis* (Weeping Bottlebrush), *Angophora floribunda* (Rough Barked Apple), *Glochidion ferdinandi* (Cheese Tree), *Angophora floribunda* (Rough Barked Apple), *Syncarpia glomulifera* (Turpentine), *Angophora floribunda* (Rough Barked Apple), and *Syncarpia glomulifera* (Turpentine), respectively, and were allocated Low to Moderate Landscape Significance Values and Retention Values of *Consider for Removal* or *Priority for Removal*, excepting Trees 12, 13, 20, and 22 which were allocated *Consider for Retention.*

4.2.2 Tree 2 is exempt from the Council's Tree Management based on dimensions and Tree 3 & 4 based on dimensions and species, respectively, and they can be removed without Council consent.

4.2.3 The supplied plans show no works are proposed within the TPZs of Trees 2, 3, 4, 9, 10, 12, 13, 19, 20, 21, 22 & 23. However, TPZ fencing should be installed prior to any site works (including demolition) and remain in place for the duration of the construction. Materials, waste storage and temporary services should not be located within the TPZ fenced area. If works are required within the TPZ fenced area, then they should be supervised by the Project Arborist.

4.2.4 The tree protection measures must be inspected by the Project Arborist prior to the start of site works, including demolition.

4.2.5 Refer to AS4970 and Appendices 5, 6 & 7 for further details.

4.3 Tree 5, 6, 8 & 11

4.3.1 Trees 5, 6, 8 & 11 were identified as *Macadamia integrifolia* (Macadamia), *Callistemon viminalis* (Weeping Bottlebrush), *Glochidion ferdinandi* (Cheese Tree), and *Angophora floribunda* (Rough Barked Apple), respectively, and were allocated Low to moderate Landscape Significance Values and Retention Values of *Priority for Removal*, excepting Tree 8 which was allocated *Consider for Retention.*

4.3.2 The supplied plans show that Trees 5, 6, 8 & 11 are within the footprint of the proposed driveway and associated parking and will need to be removed.

4.3.3 Removal and replacement with healthy advanced size specimens would replace the loss of amenity within a short to medium timeframe.

4.3.4 Refer to Appendix 5 for further detail.

4.4 **Trees 1, 14, 15 & 17**

4.4.1 Trees 1, 14, 15 & 17 were identified as *Jacaranda mimmosifolia* (Jacaranda), *Syncarpia glomulifera* (Turpentine) and *Allocasuarina littoralis* (Black She Oak), respectively, and were allocated Low to Moderate Landscape Significance Values and a Retention Values of *Consider for Removal* or *Priority for Removal*, excepting Tree 14 which was allocated *Consider for Retention.*

4.4.2 The supplied plans show that Trees 5, 6, 8 & 11 are within the footprint of the proposed driveway and will need to be removed.

4.4.3 Removal and replacement with healthy advanced size specimens would replace the loss of amenity within a short to medium timeframe.

4.4.4 Refer to Appendix 5 for further detail.

4.5 **Tree 7 & 16**

4.5.1 Trees 7 & 16 were identified as *Angophora floribunda* (Rough Barked Apple) and *Eucalyptus botryoides* (Bangalay), respectively and were allocated Low and High Landscape Significance Values, respectively and Retention Values of *Consider for Removal* and Priority for Retention, respectively.

4.5.2 The supplied plans show the proposed development is within the TPZs of Trees 7 & 16. The overall TPZ encroachment was estimated to be 10.2% and 10.7%, respectively, which represents a *Major Encroachment* as defined by AS-4970. However, Clause 3.3.4 of AS-4970 does allow for major encroachments if design factors (e.g. tree sensitive construction methods) are used to minimise negative impacts.

4.5.3 Refer to Appendix 5 for further detail.

4.5.4 Given the good physiological condition of the trees the proposed development can be accommodated. However, given the size of encroachment the proposal represents a significant risk to the tree's long term structural and physiological viability and therefore the following tree sensitive construction methods and protection measures must be carefully implemented under the supervision of the Project Arborist. Significant departures from the detailed tree sensitive construction methods and protection measures are likely to result in a shortened ULE and/or tree removal.

4.5.5 The tree sensitive construction methods and protection measures will require a staged approach.

4.5.6 **Stage 1**

4.5.7 TPZ fencing should be installed prior to any site works (including demolition) and remain in place for the duration of the construction and excavation works required for the new dwelling, stables and horse arena. Materials, waste storage and temporary services should not be located within the TPZ fenced area. If works are required within the TPZ fenced area, then they should be supervised by the Project Arborist.

4.5.8 The tree protection measures must be inspected by the Project Arborist prior to the start of site works, including demolition.

4.5.9 **Stage 2**

4.5.10 Demolition, construction, and excavation works can be carried out.

4.5.11 **Stage 3**

4.5.12 On completion of the demolition, construction and excavation works, the TPZ fencing can be removed for the driveway works.

4.5.13 All new driveway pavement and landscaping should be installed at or above the existing grade.

4.5.14 Refer to AS4970 and Appendices 5, 6 & 7 for further details.

4.6 **Zone 2: Surrounding Bushland**

4.7 **Trees 24, 25, 26, 27, 28, 34, 36, 37, 38, 39, 41, 42, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 74, 91, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 116, 118, 119, 120, 125, 127, 131, 137, 139, 140, 141, 151, 152, 153, 154, 155 & 159.**

4.7.1 Trees 24, 25, 26, 27, 28, 34, 36, 37, 38, 39, 41, 42, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 74, 91, 97, 98, 99, 100, 101, 102, 103, 104, 105, 107, 108, 109, 116, 118, 119, 120, 125, 127, 131, 137, 139, 140, 141, 151, 152, 153, 154, 155 & 159 were identified as those listed in Appendix 2. They were allocated Low to Moderate Landscape Significance Values, excepting Trees 26, 48, 58, 59, 60, 61, 97, 105, 107, 118, 119, 125, 131 & 152 which were allocated High Landscape Significance Values. The Trees were assigned Retention Values of *Consider for Removal* or *Priority for Removal*, excepting Trees 24, 27, 39, 48, 55, 56, 97, 101, 107, 108, 116, 120, 140, 141, 152, 153,154 & 155 which were allocated *Consider for Retention*, and Trees 26, 58, 59, 60, 61, 105, 118, 119, 125 & 131 were allocated *Priority for Retention.*

4.7.2 Tree 106 had been removed.

4.7.3 The supplied plans show no works are proposed within the TPZs of the Trees. However, TPZ fencing should be installed prior to any site works (including demolition) and remain in place for the duration of the construction. Materials, waste storage and temporary services should not be located within the TPZ fenced area. If works are required within the TPZ fenced area, then they should be supervised by the Project Arborist.

4.7.4 The tree protection measures must be inspected by the Project Arborist prior to the start of site works, including demolition.

4.7.5 Refer to AS4970 and Appendices 5, 6 & 7 for further details.

4.8 **Tree 62**

4.8.1 Tree 62 was identified as *Allocasuarina torulosa* (Forest Oak) and was allocated a Moderate Landscape Significance Value and a Retention Value of *Consider for Retention*.

4.8.2 The supplied plans show that the proposed retaining wall and pool is within the TPZ of Tree 62. The TPZ encroachment is approximately 5.5% and represents a *Minor Encroachment* as defined by AS-4970. A *Minor Encroachment* is considered acceptable by the standard when it is compensated for elsewhere and contiguous within the TPZ, as is in the current case. Given the good physiological condition of the tree and the size of the encroachment, the proposed development can be accommodated without affecting the long term structural and physiological viability of Tree 62 if the following tree sensitive construction methods and protection measures are carefully implemented under the supervision of the Project Arborist.

4.8.3 TPZ fencing should be installed prior to any site works (including demolition) and remain in place for the duration of the construction. Materials, waste storage and temporary services should not be located within the TPZ fenced area. If works are required within the TPZ fenced area, then they should be supervised by the Project Arborist.

4.8.4 The tree protection measures must be inspected by the Project Arborist prior to the start of site works, including demolition.

4.8.5 Refer to AS4970 and Appendices 5, 6 & 7 for further details.

4.9 **Tree 142**

4.9.1 Tree 142 was identified as *Eucalyptus piperita* (Sydney Peppermint) and was allocated a High Landscape Significance Value and a Retention Value of *Priority for Retention*.

4.9.2 The supplied plans show the proposed manure store and horse arena retaining wall are within the TPZ of Tree 142. The overall TPZ encroachment was estimated to be 17.5% which represents a *Major Encroachment* as defined by AS-4970. However, Clause 3.3.4 of AS-4970 does allow for major encroachments if design factors (e.g. tree sensitive construction methods) are used to minimise negative impacts.

4.9.3 Refer to Appendix 5 for further detail.

4.9.4 Given the good physiological condition of the tree, the proposed development can be accommodated. However, given the size of encroachment the proposal represents a significant risk to the tree's long term structural and physiological viability and therefore the following tree sensitive construction methods and protection measures must be carefully implemented under the supervision of the Project Arborist. Significant departures from the detailed tree sensitive construction methods and protection measures are likely to result in a shortened ULE and/or tree removal.

4.9.5 The tree sensitive construction methods and protection measures will require a staged approach.

4.9.6 **Stage 1**

4.9.7 TPZ fencing should be installed prior to any site works (including demolition) and remain in place for the duration of the construction and excavation works required for the new dwelling, stables and horse arena. Materials, waste storage and temporary services should not be located within the TPZ fenced area. If works are required within the TPZ fenced area, then they should be supervised by the Project Arborist.

4.9.8 The tree protection measures must be inspected by the Project Arborist prior to the start of site works, including demolition.

4.9.9 **Stage 2**

4.9.10 Demolition, construction and excavation works can be carried out.

4.9.11 The proposed manure store should be relocated outside of the TPZ where possible or constructed above grade, including sub-base materials.

4.9.12 **Stage 3**

4.9.13 On completion of the demolition, construction and excavation works, the TPZ fencing can be removed for the installation of the manure store.

4.9.14 Refer to AS4970 and Appendices 5, 6 & 7 for further details.

4.10 **Tree 143**

4.10.1 Tree 143 was identified as *Angophora costata* (Sydney Red Gum) and was allocated a Moderate Landscape Significance Value and a Retention Value of *Consider for Removal*.

4.10.2 The supplied plans show the proposed retaining wall and manure store is within the SRZ of Tree 143. Works within the SRZ represent a Major Encroachment as defined by AS-4970 as root severance within the SRZ can lead to the destabilisation of the tree. The overall TPZ encroachment was estimated to be 23.5% and also represents a Major Encroachment as defined by AS-4970.

4.10.3 Given the size and location of the encroachment, the long term structural and physiological viability of Tree 143 is highly likely to be compromised by the proposed encroachment and the tree will need to be removed to accommodate the works.

4.10.4 Removal and replacement with a healthy advanced size specimen would replace the loss of amenity within a medium, to long timeframe.

4.10.5 Refer to Appendix 5 for further detail.

4.11 Zone 3: Tullipan Project Home

4.12 Trees 64 & 66

4.12.1 Trees 64 & 66 were identified as *Angophora floribunda* (Rough Barked Apple) and *Syncarpia glomulifera* (Turpentine), respectively and were allocated Low and Moderate Landscape Significance Values and Retention Values of *Priority for Removal* and *Consider for Retention*, respectively.

4.12.2 The supplied plans show that Trees 64 & 66 are within the footprint of the proposed residential dwelling and will need to be removed.

4.12.3 Removal and replacement with healthy advanced size specimens would replace the loss of amenity within a short to medium timeframe.

4.12.4 Refer to Appendix 5 for further detail.

4.13 Tree 40

4.13.1 Tree 40 was identified as *Eucalyptus resinifera* (Red Mahogany) and was allocated a Moderate Landscape Significance Value and a Retention Value of *Priority for Removal*. Tree 40 was in poor physiological condition with a ULE estimated to be less than 5 years.

4.13.2 The supplied plans show that the proposed retaining wall associated with the drying court is within the TPZ of Tree 40. The TPZ encroachment is approximately 1.8% and represents a *Minor Encroachment* as defined by AS-4970. A *Minor Encroachment* is considered acceptable by the standard when it is compensated for elsewhere and contiguous within the TPZ, as is in the current case.

4.13.3 Given the size of the encroachment, the proposed development can be accommodated without affecting the long term structural and physiological viability of Tree 40 if the following tree sensitive construction methods and protection measures are carefully implemented under the supervision of the Project Arborist.

4.13.4 TPZ fencing should be installed prior to any site works (including demolition) and remain in place for the duration of the construction. Materials, waste storage and temporary services should not be located within the TPZ fenced area. If works are required within the TPZ fenced area, then they should be supervised by the Project Arborist.

4.13.5 The tree protection measures must be inspected by the Project Arborist prior to the start of site works, including demolition.

4.13.6 Refer to AS4970 and Appendices 5, 6 & 7 for further details.

4.14 Trees 63 & 65

4.14.1 Trees 63 & 65 were identified as *Banksia serrata* (Old Man Banksia) and *Eucalyptus umbra* (Broad Leaved White Mahogany), respectively, and were allocated Low and High Landscape Significance Values and Retention Values of *Consider for Removal* and *Priority for Retention*, respectively.

4.14.2 The supplied plans show the proposed residential dwelling and associated drying area retaining wall are within the SRZs of Trees 63 & 65. Works within the SRZ represent a *Major Encroachment* as defined by AS-4970 as root severance within the SRZ can lead to the destabilisation of the tree. The overall TPZ encroachment was estimated to be 41.6% and 29.9%, respectively, which also represents a *Major Encroachment* as defined by AS-4970.

4.14.3 Given the size and location of the encroachment, the long term structural and physiological viability of Trees 63 & 65 is highly likely to be compromised by the proposed encroachment and the trees will need to be removed to accommodate the works.

4.14.4 Removal and replacement with healthy advanced size specimens would replace the loss of amenity within a medium to long timeframe.

4.14.5 Refer to Appendix 5 for further detail.

4.15 Zone 4: Driveway and Retaining Wall (Engineering Works)

4.16 Trees 29 & 30

4.16.1 Trees 29 & 30 were identified as *Allocasuarina torulosa* (Forest Oak*)* and *Syncarpia glomulifera* (Turpentine), respectively, and were allocated Moderate Landscape Significance Values and Retention Values of *Consider for Retention.*

4.16.2 The supplied plans show the proposed retaining wall is within the SRZs of Trees 29 & 30. Works within the SRZ represent a *Major Encroachment* as defined by AS-4970 as root severance within the SRZ can lead to the destabilisation of the tree. The overall TPZ encroachment was estimated to be 9.9% and 19.6%, respectively, which also represents a *Major Encroachment* as defined by AS-4970. However, Clause 3.3.4 of AS-4970 does

allow for major encroachments if design factors (e.g. tree sensitive construction methods) are used to minimise negative impacts and/or the presence of existing or past structures are likely to have been obstacles to root growth into the area of encroachment.

4.16.3 Refer to Appendix 5 for further detail.

4.16.4 Given the good physiological condition of the tree and the presence of existing structures, the proposed development can be accommodated. **However, given the size of encroachment the proposal represents a significant risk to the tree's long term structural and physiological viability and therefore the following tree sensitive construction methods and protection measures must be carefully implemented under the supervision of the Project Arborist. Significant departures from the detailed tree sensitive construction methods and protection measures are likely to result in a shortened ULE and/or tree removal.**

4.16.5 TPZ fencing should be installed prior to any site works (including demolition) and remain in place for the duration of the construction. Materials, waste storage and temporary services should not be located within the TPZ fenced area. If works are required within the TPZ fenced area, then they should be supervised by the Project Arborist.

4.16.6 The tree protection measures must be inspected by the Project Arborist prior to the start of site works, including demolition.

4.16.7 Refer to AS4970 and Appendices 5, 6 & 7 for further details.

4.17 **Trees 18 & 33**

4.17.1 Trees 18 & 33 were identified as *Syncarpia glomulifera* (Turpentine) and were allocated Low Landscape Significance Values and Retention Values of *Consider for Removal*.

4.17.2 The supplied plans show that Trees 18 & 33 are within the footprint of the proposed driveway and will need to be removed.

4.17.3 Removal and replacement with healthy advanced size specimens would replace the loss of amenity within a medium to long timeframe.

4.17.4 Refer to Appendix 5 for further detail.

4.18 **Trees 67 & 68**

4.18.1 Trees 67 & 68 were identified as *Angophora floribunda* (Rough Barked Apple) and Allocasuarina *littoralis* (Black She Oak), respectively, and were allocated Low Landscape Significance Values and Retention Values of *Priority for Removal.* A full VTA was not performed on Tree 68 due to access.

4.18.2 The supplied plans show no works are proposed within the TPZs of Trees 67 & 68. However, TPZ fencing should be installed prior to any site works (including demolition) and remain in place for the duration of the construction. Materials, waste storage and temporary services should not be located within the TPZ fenced area. If works are required within the TPZ fenced area, then they should be supervised by the Project Arborist.

4.18.3 The tree protection measures must be inspected by the Project Arborist prior to the start of site works, including demolition.

4.18.4 Refer to AS4970 and Appendices 5, 6 & 7 for further details.

4.19 **Tree 35**

4.19.1 Tree 35 was identified as *Eucalyptus piperita* (Sydney Peppermint) and was allocated a High Landscape Significance Value and a Retention Value of *Priority for Retention.*

4.19.2 The supplied plans show that Tree 35 is within the footprint of the proposed driveway and will need to be removed.

4.19.3 Removal and replacement with a healthy advanced size specimen would replace the loss of amenity within a medium to long timeframe.

4.19.4 Refer to Appendix 5 for further detail.

4.20 **Trees 31 & 70**

4.20.1 Trees 31 & 70 were identified as *Syncarpia glomulifera* (Turpentine) *and Angophora floribunda* (Rough Barked Apple)*,* respectively and were allocated Moderate and Low Landscape Significance Values and Retention Values of *Consider for Retention,* and *Priority for Removal,* respectively.

4.20.2 The supplied plans show the proposed landscaping is within the TPZ of Trees 31 & 70. The proposed TPZ encroachment is approximately 4.2% and 5.0% respectively, which represents a *Minor Encroachment* as defined by AS4970 and is considered acceptable by the standard when it is compensated for elsewhere and contiguous within the TPZ, as in the current case.

4.20.3 Given the good physiological condition of the tree and the size of the encroachment, the proposed development can be accommodated without affecting the long term structural and physiological viability of Trees 31 & 70 if the following tree sensitive construction methods and protection measures are carefully implemented under the supervision of the Project Arborist.

4.20.4 TPZ fencing should be installed prior to any site works (including demolition) and remain in place for the duration of the construction. Materials, waste storage and temporary services should not be located within the TPZ fenced area. If works are required within the TPZ fenced area, then they should be supervised by the Project Arborist.

4.20.5 The tree protection measures must be inspected by the Project Arborist prior to the start of site works, including demolition.

4.20.6 Refer to AS4970 and Appendices 5, 6 & 7 for further details.

4.21 **Trees 32 & 69**

4.21.1 Trees 32 & 69 were identified as *Syncarpia glomulifera* (Turpentine) and *Eucalyptus robusta* (Swamp Mahogany) respectively and were allocated Moderate and High Landscape Significance Values and Retention Values of *Consider for Retention,* and *Priority for Retention,* respectively.

4.21.2 The supplied plans show the proposed retaining wall and horse path and are within the TPZs of Trees 32 & 69. The TPZ encroachments are approximately 16.8% and 18.7%, respectively, which represents a *Major Encroachment* as defined by AS-4970. However, Clause 3.3.4 of AS-4970 does allow for Major Encroachments if design factors (e.g. tree sensitive construction methods) are used to minimise negative impacts.

4.21.3 Refer to Appendix 5 for further detail.

4.21.4 Given the good physiological condition of the trees, the proposed development can be accommodated. However, given the size of encroachment the proposal represents a significant risk to the tree's long term structural and physiological viability and therefore the following tree sensitive construction methods and protection measures must be carefully implemented under the supervision of the Project Arborist. Significant departures from the detailed tree sensitive construction methods and protection measures are likely to result in a shortened ULE and/or tree removal.

4.21.5 The proposed horse path should be constructed above existing grade (<100mm), including subbase materials, and be constructed of a permeable material to allow for water infiltration to the roots of Tree 69.

4.21.6 TPZ fencing should be installed prior to any site works (including demolition) and remain in place for the duration of the construction. This will help to prevent soil compaction from building processes.

4.21.7 Materials, waste storage and temporary services should not be located within the TPZ fenced area. If works are required within the TPZ fenced area, then they should be supervised by the Project Arborist.

4.21.8 The tree protection measures must be inspected by the Project Arborist prior to the start of site works, including demolition.

4.21.9 Refer to AS4970 and Appendices 5, 6 & 7 for further details.

4.22 **Zone 5: Paddocks and Horse Path**

4.23 **Trees 73, 75, 76, 77, 78, 80, 81, 82, 83, 90, 92, 93, 94, 95, 96, 110, 112, 113, 114, 115, 121, 124, 132, 133 & 145.**

4.23.1 Trees 73, 75, 76, 77, 78, 80, 81, 82, 83, 90, 92, 93, 94, 95, 96, 110, 112, 113, 114, 115, 121, 124, 132, 133 & 145 were identified as the species listed in Appendix 2 and were allocated Low to Moderate Landscape Significance Values, excepting Trees 76, 90, 110, , 112 & 115, which were allocated High Landscape Significance Values and Retention Values of *Priority for Removal* or *Consider for Removal,* excepting Trees 76, 82, 83, 90, 92, 93, 94, 96, 110, 112, 113, 114, 115 & 121, which were allocated Retention Values of *Consider for Retention* or *Priority for Retention.*

4.23.2 The supplied plans show no works are proposed within the TPZs of Trees 73, 75, 76, 77, 78, 80, 81, 82, 83, 90, 92, 93, 94, 95, 96, 110, 112, 113, 114, 115, 121, 124, 132, 133 & 145. However, TPZ fencing should be installed prior to any site works (including demolition) and remain in place for the duration of the construction. Materials, waste storage and temporary services should not be located within the TPZ fenced area. If works are required within the TPZ fenced area, then they should be supervised by the Project Arborist.

4.23.3 The tree protection measures must be inspected by the Project Arborist prior to the start of site works, including demolition.

4.23.4 Refer to AS4970 and Appendices 5, 6 & 7 for further details.

4.24 **Tree 79**

4.24.1 Tree 79 was identified as *Allocasuarina littoralis* (Black She Oak) and was allocated a Moderate Landscape Significance Value and Retention Value of *Consider for Retention.*

4.24.2 The supplied plans show the proposed horse path is within the SRZ of Tree 79. Works within the SRZ represent a Major Encroachment as defined by AS-4970 as root severance within the SRZ can lead to the destabilisation of the tree. The overall TPZ encroachment was estimated to be 33.2% and also represents a *Major Encroachment* as defined by AS-4970. However, Clause 3.3.4 of AS-4970 does allow for major encroachments if design factors (e.g. tree sensitive construction methods) are used to minimise negative impacts and/or the presence of existing or past structures are likely to have been obstacles to root growth into the area of encroachment.

4.24.3 Refer to Appendix 5 for further detail.

4.24.4 Given the potential for tree sensitive design, the proposed development can be accommodated. However, given the size of encroachment the proposal represents a significant risk to the tree's long term structural and physiological viability and therefore the following tree sensitive construction methods and protection measures must be carefully implemented under the supervision of the Project Arborist. Significant departures from the detailed tree sensitive construction methods and protection measures are likely to result in a shortened ULE and/or tree removal.

4.24.5 The proposed horse path should be constructed above existing grade (<100mm), including subbase materials, and be constructed of a permeable material to allow for water infiltration to the roots of Tree 79.

4.24.6 TPZ fencing should be installed prior to any site works (including demolition) and remain in place for the duration of the construction. This will help to prevent soil compaction from building processes.

4.24.7 Materials, waste storage and temporary services should not be located within the TPZ fenced area. If works are required within the TPZ fenced area, then they should be supervised by the Project Arborist.

4.24.8 The tree protection measures must be inspected by the Project Arborist prior to the start of site works, including demolition.

4.24.9 Refer to AS4970 and Appendices 5, 6 & 7 for further details.

4.25 **Tree 84**

4.25.1 Tree 84 was identified as *Allocasuarina littoralis* (Black She Oak) and was allocated a Moderate Landscape Significance Value and Retention Value of *Consider for Retention.*

4.25.2 The supplied plans show that Tree 84 is within the footprint of the proposed Stable A and Horse Path and will need to be removed.

4.25.3 Removal and replacement with a healthy advanced size specimen would replace the loss of amenity within a medium to long timeframe.

4.25.4 Refer to Appendix 5 for further detail.

4.26 **Tree 71, 72 & 88 & 111**

4.26.1 Trees 71, 72, 88 & 111 were identified as *Eucalyptus umbra* (Broad Leaved White Mahogany), *Angophora floribunda* (Rough Barked Apple) and *Syncarpia glomulifera* (Turpentine) and *Angophora costata* (Sydney Red Gum), respectively and were allocated Moderate Landscape Significance Values, excepting Trees 71 and 111 which were allocated High Landscape Significance Values. Trees 71, 72, 88 & 111 were assigned Retention Values of *Consider for Retention* or *Priority for Retention* (Tree 71). Tree 111 was assigned *Priority for Removal.*

4.26.2 The supplied plans show the proposed retaining wall and horse yard, horse path, and horse path, yard and ramp are within the SRZs of Trees 71, 72, 88 & 111, respectively. Works within the SRZ represent a *Major Encroachment* as defined by AS-4970 as root severance within the SRZ can lead to the destabilisation of the tree. The overall TPZ encroachments were estimated to be 33.5%, 47.4%, 32.6% and 26.5%, respectively, and represents a *Major Encroachment* as defined by AS-4970.

4.26.3 Given the size and location of the encroachments, the long term structural and physiological viability of Trees 71, 72, 88 & 111 are highly likely to be compromised by the proposed encroachment and the trees will need to be removed to accommodate the works.

4.26.4 Removal and replacement with healthy advanced size specimens would replace the loss of amenity within a medium to long timeframe.

4.26.5 Refer to Appendix 5 for further detail.

4.27 **Tree 117**

4.27.1 Tree 117 was identified as *Eucalyptus piperita* (Sydney Peppermint) and was allocated a High Landscape Significance Value and a Retention Value of *Priority for Retention*.

4.27.2 The supplied plans show the proposed horse path and yard are within the TPZ of Tree 117. The TPZ encroachment is approximately 13.7% and represents a *Major Encroachment* as defined by AS-4970. However, Clause 3.3.4 of AS-4970 does allow for Major Encroachments if design factors (e.g. tree sensitive construction methods) are used to minimise negative impacts.

4.27.3 Refer to Appendix 5 for further detail.

4.27.4 Given the good physiological condition of the tree and the presence of existing structures, the proposed development can be accommodated. However, given the size of encroachment the proposal represents a significant risk to the tree's long term structural and physiological viability and therefore the following tree sensitive construction methods and protection measures must be carefully implemented under the supervision of the Project Arborist. Significant departures from the detailed tree sensitive construction methods and protection measures are likely to result in a shortened ULE and/or tree removal.

4.27.5 The tree sensitive construction methods and protection measures will require a staged approach.

4.27.6 **Stage 1**

4.27.7 TPZ fencing should be installed prior to any site works (including demolition) and remain in place for the duration of the construction and excavation works required for the new dwelling, stables and horse arena. Materials, waste storage and temporary services should not be located within the TPZ fenced area. If works are required within the TPZ fenced area, then they should be supervised by the Project Arborist.

4.27.8 The tree protection measures must be inspected by the Project Arborist prior to the start of site works, including demolition.

4.27.9 **Stage 2**

4.27.10 Demolition, construction, and excavation works associated with the main house and driveway can be carried out.

4.27.11 **Stage 3**

4.27.12 On completion of the demolition, construction and excavation works, the TPZ fencing can be removed for the horse yard excavations and fill.

4.27.13 Refer to AS4970 and Appendices 5, 6 & 7 for further details.

4.28 **Zone 6: Horse Arena and Stables**

4.29 **Trees 126, 128, 129, 130, 135, 136, 144, 149, 150, 160, 161, 162 & 163.**

4.29.1 Trees 126, 128, 129, 130, 135, 136, 144, 149, 150, 160, 161, 162 & 163 were identified as *Allocasuarina littoralis* (Black She Oak), *Angophora floribunda* (Rough Barked Apple), *Corymbia gummifera* (Red Bloodwood), *Eucalyptus piperita* (Sydney Peppermint), *Banksia integrifolia* (Coastal Banksia), *Angophora costata* (Sydney Red Gum), *Angophora floribunda* (Rough Barked Apple), *Allocasuarina torulosa* (Forest Oak), *Callistemon citrinus* (Lemon Scented Bottlebrush), and *Callistemon viminalis* (Weeping Bottlebrush), respectively, and were allocated Low to Moderate Landscape Significance Values, excepting Trees 129 & 130, which were allocated High Landscape Significance Values and Retention Values of *Consider for Removal* or *Priority for Removal*, excepting Trees 126, 128, 129, 130, 136 & 150 which were allocated Retention Values of *Consider for Retention* or *Priority for Retention.*

4.29.2 Tree 144 was dead and had been removed.

4.29.3 The supplied plans show no works are proposed within the TPZs of Trees 126, 128, 129, 130, 135, 136, 144, 149, 150, 160, 161, 162 & 163. However, TPZ fencing should be installed prior to any site works (including demolition) and remain in place for the duration of the construction. Materials, waste storage and temporary services should not be located within the TPZ fenced area. If works are required within the TPZ fenced area, then they should be supervised by the Project Arborist.

4.29.4 The tree protection measures must be inspected by the Project Arborist prior to the start of site works, including demolition.

4.29.5 Refer to AS4970 and Appendices 5, 6 & 7 for further details.

4.30 **Trees 85, 86, 87, 89, 122, 123, 134, 138, 146, 147, 148, 156, 157 & 158**

4.30.1 Trees 85, 86, 87, 89, 122, 123, 134, 138, 146, 147, 148, 156, 157 & 158 were identified as *Syncarpia glomulifera* (Turpentine) *Angophora costata* (Sydney Red Gum) *Allocasuarina littoralis* (Black She Oak) *Melicope elleryana* (Doughwood) *Angophora floribunda* (Rough Barked Apple), *Glochidion ferdinandi* (Cheese Tree), *Eucalyptus robusta* (Swamp Mahogany) *Angophora floribunda* (Rough Barked Apple) *Glochidion ferdinandi* (Cheese Tree) and *Syzygium australe* (Brush Cherry Lilly Pilly), respectively, and were allocated Low to Moderate Landscape Significance Values and Retention Values of *Consider for Removal* or *Priority for Removal,* excepting Trees 85, 86, 87, 89, 122, 134, 147 & 148, which were allocated Retention Values of *Consider for Retention.*

4.30.2 Tree 123 was dead and had been removed.

4.30.3 The supplied plans show that Trees 85, 86, 87, 89, 122, 123, 134, 138, 146, 147, 148, 156, 157 & 158 are within the footprint of the proposed horse stables and yards and horse arena with retaining wall and will need to be removed.

4.30.4 Removal and replacement with healthy advanced size specimens would replace the loss of amenity within a medium to long timeframe.

4.30.5 Refer to Appendix 5 for further detail.

4.31 **Removal & Replacement Planting**

4.31.1 Removal works should be carried out by a practising arborist. The practising arborist should hold a minimum qualification equivalent (using Australian Qualifications Framework) of Level 3 or above in arboriculture or its recognised equivalent. The practising arborist should have a minimum of 3 years of practical experience. Pruning/removal works should be undertaken in accordance with the Australian Standard 4373: Pruning of Amenity Trees (2007), Safe Work Australia Guide for Managing Risks of Tree Trimming and Removal Work (2016) and other applicable legislation and codes.

4.31.2 Replacement tree planting should be provided when trees are removed. Replacement trees should be supplied as advanced size stock to help offset the loss of amenity resultant from the tree removals.

4.31.3 Replacement planting should be supplied in accordance with Australian Standard 2303: Tree Stock for Landscape Use (2015).

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5.0 REFERENCES |

Mattheck & Breloer (2003), *The Body Language of Trees – A Handbook for Failure Analysis*.

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

Standards Australia (2009) Protection of Trees on Development Sites AS4970.

Standards Australia (2007) Pruning of Amenity Trees AS4373.

Standards Australia (2015) Tree Stock for Landscape Use AS2303.

6.0 APPENDIX 1 | METHODOLOGY

6.1 This report was based on data from a site inspection conducted on the 18.11.21 & 4.8.22. The recommendations in this report are based on and limited to observations from these site inspections.

6.2 The subject tree(s) was assessed using the Visual Tree Assessment methodology described in *The Body Language of Trees – A Handbook for Failure Analysis* (Mattheck et al., 2003). Subject trees were assessed from the ground only to provide an Arboricultural Impact Assessment and Tree Protection Specification report. No internal diagnostic testing was undertaken as part of this assessment. Trees outside the subject site were assessed from the property boundaries only.

6.3 The dimensions of the subject tree(s) are an approximation only.

6.4 The location of the subject tree(s) was determined from the location plan provided. Trees not shown on this plan have been plotted in their approximate location only.

6.5 Tree Protection Zones & Structural Root Zones for the subject tree(s) was based on methods outlined in Australian Standard 4970: *Protection of Trees on Development Sites* (2009).

6.6 The health of the subject tree(s) was determined by assessing:

- Foliage size and colour
- Pest and disease infestation
- Extension growth
- Crown density
- Deadwood size and volume
- Presence of epicormic growth

6.7 The structural condition of the subject tree(s) was assessed by:

- Visible evidence of structural defects or instability
- Evidence of previous pruning or physical damage

6.8 The Useful Life Expectancy (ULE) is used to estimate a tree's longevity in its growing environment. The ULE is based on a tree's species, health, structural condition and site suitability. The tree(s) has been allocated one of the following ULE categories (modified from Barrell, 2001):

- 40 years +
- 15-40 years
- 5-15 years
- Less than 5 years

6.9 The Landscape Significance is based on a qualitative assessment of a tree's cultural, environmental and aesthetic value. This provides a relative measure of a tree's Landscape Significance and can be used to determine its Retention Value. Trees are rated under the following categories:

- Very High
- High
- Moderate
- Low
- Insignificant

LANDSCAPE SIGNIFICANCE	DESCRIPTION
VERY HIGH	The subject tree is listed as a Heritage Item under the Local Environmental Plan with a local or state level of significance.
	The subject tree is listed on Council's Significant Tree Register.
	The subject tree is a remnant tree.
HIGH	The subject tree creates a 'sense of place' or is considered 'landmark' tree.
	The subject tree is of local, cultural or historical importance or is widely known.
	The subject tree has been identified by a suitably qualified professional as a species scheduled as a Threatened or Vulnerable Species or forms part of an Endangered Ecological Community associated with the subject site, as defined under the provisions of the Threatened Species Conservation Act 1995 (NSW) or the Environmental Protection and Biodiversity Conservation Act 1999.
	The subject tree is known to provide habitat to a threatened species.
	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.
	The subject tree forms part of the curtilage of a heritage item with a known or documented association with that item.
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 has a known habitat value.
	The subject tree is a good representative of the species in terms of aesthetic value.
LOW	The subject tree is an environmental pest 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.
INSIGNIFICANT	The subject tree is declared a Noxious Weed under the Noxious Weeds Act.

The above table was provided by Anna Hopwood of TreeIQ™ and was modified from the Earthscape Criteria for Assessment of Landscape Significance.

6.10 The Retention Value is based on a tree's ULE and Landscape Significance. The subject tree(s) has been allocated one of the following Retention Values:

- Priority for Retention
- Consider for Retention
- Consider for Removal
- 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 was provided by Anna Hopwood of TreeIQ™

6.11 The Tree Protection Zone (TPZ) is the area above and below ground required to preserve the vigour and long-term viability of the tree. The TPZ is based on scientific research and is generally considered by the arboricultural industry as the area required to provide adequate tree protection during construction. The TPZ is the primary means of protecting trees on development sites (Australian Standard 4970:*Protection of Trees on Development Sites*, 2009).

6.12 Works within the TPZ should be avoided. However, *Minor Encroachments,* defined in AS4970 as less than 10% of the TPZ area, are considered acceptable when it is compensated for elsewhere and contiguous within the TPZ. A *Major Encroachment*, defined in AS4970 as greater than 10% of the TPZ area or within the Structural Root Zone (SRZ), may require root investigations by non-destructive methods and tree sensitive construction methods.

6.13 The TPZ is the area within a circle that is centred on the trunk. The radius of the TPZ is calculated by the following formula:

TPZ= DBH x 12

where

DBH= Diameter at Breast Height (1.4m)

6.14 The SRZ is the minimum area around the base of the tree required for the tree's stability. The SRZ only relates to tree stability and not the vigour and long-term viability of the tree.

6.15 The SRZ is the area within a circle that is centred on the trunk. The radius of the SRZ is calculated by the following formula:

$$SRZ = (Dx50)^{0.42} \times 0.64$$

where

D= Trunk diameter (m) above the root buttress

6.16 Encroachment into SRZ (i.e. severance of structural roots >25mmØ) may lead to the destabilisation of the tree and the long-term viability must be demonstrated in such cases. This may require root investigations by non-destructive methods.

6.17 For further details on the TPZ and SRZ please refer to Australian Standard 4970: *Protection of Trees on Development Sites* (2009).

7.0 APPENDIX 2 | TREE ASSESSMENT SCHEDULE

Tree No.	Species	Height (m)	Radial Crown Spread (m)	DBH comb. (mm)	Radial TPZ (m)	TPZ Area (m^2)	Radial SRZ (m)	Health Rating	Structural Rating	Age Class	ULE (years)	L/Sign	Retention Value	Comments	TPZ Encroachment (%)
1	*Jacaranda mimosifolia* (Jacaranda)	7	4	283	3	36	2.0	Good	Fair	Mature	5-15	Low	*Consider for Removal*	Seam of compressed cambium. Crown density 75-95%. Small (<25mmø) & medium (25-75mmø) epicormic growth in moderate volumes. Wound(s), early signs of decay.	51.1% (Within SRZ)
2	*Prunus sp.*	4	4	173	2	14	1.6	Good	Good	Late Mature	5-15	Low	*Consider for Removal*	Small (<25mmø) deadwood in high volumes. Adaptive growth.	No Encroachment
3	*Callistemon viminalis* (Weeping Bottlebrush)	4	3	146	2	13	1.5								No Encroachment
4	*Citrus sp.* (Citrus Tree)	4	3	200	2	18	1.8	Fair	Poor	Senescent	<5	Low	*Priority for Removal*	Not full VTA.	No Encroachment
5	*Macadamia integrifolia* (Macadamia)	8	4	195	2	17	1.7	Fair	Poor	Late Mature	<5	Low	*Priority for Removal*	Partially failed co dominant inclusion. Crown density 75-95%. Small (<25mmø) deadwood in high volumes. Small (<25mmø) epicormic growth in high volumes. Co-dominant inclusions, major. Borer. Chlorotic foliage.	Within Development Footprint
6	*Callistemon viminalis* (Weeping Bottlebrush)	8	2	125	2	13	1.5	Fair	Fair	Late Mature	<5	Low	*Priority for Removal*	Crown density 0-25%. Previously crown lifted. Wound(s), no visible sign of decay. Trunk cavity(s), minor.	Within Development Footprint
7	*Angophora floribunda* (Rough Barked Apple)	14	4	250	3	28	1.9	Poor	Fair	Semi-mature	5-15	Low	*Consider for Removal*	Localised crown death. Crown density 0-25%. Small (<25mmø), medium (25-75mmø) & large (>75mmø) deadwood in high volumes. Small (<25mmø) epicormic growth in high volumes. Structures within SRZ.	10.2%
8	*Glochidion ferdinandi* (Cheese Tree)	10	4	175	2	14	1.7	Good	Good	Mature	15-40	Moderate	*Consider for Retention*	Structures within SRZ.	Within Development Footprint

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Tree No.	Species	Height (m)	Radial Crown Spread (m)	DBH comb. (mm)	Radial TPZ (m)	TPZ Area (m^2)	Radial SRZ (m)	Health Rating	Structural Rating	Age Class	ULE (years)	L/Sign	Retention Value	Comments	TPZ Encroachment (%)
9	*Angophora floribunda* (Rough Barked Apple)	12	4	200	2	18	1.8	Poor	Fair	Senescent	<5	Moderate	*Priority for Removal*	Crown density 0-25%. Small (<25mmø) & medium (25-75mmø) deadwood in high volumes. Crown consists mainly of epicormic growth. Co-dominant inclusions, minor.	No Encroachment
10	*Glochidion ferdinandi* (Cheese Tree)	9	5	214	3	21	1.8							Set back 200 mm.	No Encroachment
11	*Angophora floribunda* (Rough Barked Apple)	12	7	400	5	72	2.3	Poor	Fair	Mature	<5	Moderate	*Priority for Removal*	Crown density 25-50%. Small (<25mmø) & medium (25-75mmø) deadwood in high volumes. Crown consists mainly of epicormic growth. Wound(s), no visible sign of decay. Adaptive growth. Borer.	Within Development Footprint
12	*Angophora floribunda* (Rough Barked Apple)	11	3	125	2	13	1.5	Fair	Fair	Semi-mature	5-15	Moderate	*Consider for Retention*	Crossing branches. Crown density 50-75%. Small (<25mmø) deadwood in moderate volumes. Small (<25mmø) epicormic growth in moderate volumes.	No Encroachment
13	*Angophora floribunda* (Rough Barked Apple)	12	5	300	4	41	2.1	Fair	Good	Mature	15-40	Moderate	*Consider for Retention*	Crown density 75-95%. Small (<25mmø), medium (25-75mmø) & large (>75mmø) deadwood in moderate volumes. Wound(s), early signs of decay.	No Encroachment
14	*Syncarpia glomulifera* (Turpentine)	12	5	262	3	31	2.0	Fair	Fair	Mature	5-15	Moderate	*Consider for Retention*	Small (<25mmø) & medium (25-75mmø) epicormic growth in high volumes. Co-dominant inclusions, minor.	45.1% (Within SRZ)
15	*Syncarpia glomulifera* (Turpentine)	12	4	180	2	15	1.7	Poor	Fair	Senescent	<5	Moderate	*Priority for Removal*	Crown density 0-25%. Small (<25mmø) & medium (25-75mmø) deadwood in high volumes. Crown consists mainly of epicormic growth. Co-dominant inclusions, minor.	34.4% (Within SRZ)
16	*Eucalyptus botryoides* (Bangalay)	23	7	425	5	82	2.4	Good	Good	Mature	40+	High	*Priority for Retention*	Previously crown lifted.	10.7%

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Tree No.	Species	Height (m)	Radial Crown Spread (m)	DBH comb. (mm)	Radial TPZ (m)	TPZ Area (m^2)	Radial SRZ (m)	Health Rating	Structural Rating	Age Class	ULE (years)	L/Sign	Retention Value	Comments	TPZ Encroachment (%)
17	*Allocasuarina littoralis* (Black She Oak)	10	3	202	2	18	1.8	Poor	Poor	Senescent	<5	Low	*Priority for Removal*	Crown density 0-25%. Small (<25mmø) & medium (25-75mmø) deadwood in high volumes. Co-dominant inclusions, major. Wound(s) with fungal brackets.	25.3% (Within SRZ)
18	*Syncarpia glomulifera* (Turpentine)	9	3	150	2	13	1.6	Fair	Good	Semi-mature	5-15	Low	*Consider for Removal*	Crown density 50-75%. Small (<25mmø) epicormic growth in high volumes. Partially suppressed.	Within Development Footprint
19	*Angophora floribunda* (Rough Barked Apple)	11	3	150	2	13	1.6	Poor	Poor	Senescent	<5	Low	*Priority for Removal*	Localised crown death. Crown density 0-25%. Crown consists mainly of epicormic growth. Trunk cavity(s), minor.	No Encroachment
20	*Syncarpia glomulifera* (Turpentine)	12	4	0	0	0	1.5	Good	Good	Semi-mature	15-40	Moderate	*Consider for Retention*	Small (<25mmø) epicormic growth in moderate volumes.	No Encroachment
21	*Angophora floribunda* (Rough Barked Apple)	11	3	180	2	15	1.7	Poor	Good	Semi-mature	5-15	Low	*Consider for Removal*	Group of 2 trees. Tags 132 and 133. Crown density 0-25%. Small (<25mmø), medium (25-75mmø) & large (>75mmø) deadwood in high volumes. Crown consists mainly of epicormic growth.	No Encroachment
22	*Syncarpia glomulifera* (Turpentine)	12	4	283	3	36	2.0	Fair	Poor	Mature	5-15	Moderate	*Consider for Retention*	Group of 2 trees. Crown density 50-75%. Small (<25mmø) & medium (25-75mmø) deadwood in moderate volumes. Co-dominant inclusions, major. Trunk cavity(s), minor.	No Encroachment
23	*Syncarpia glomulifera* (Turpentine)	6	2	100	2	13	1.5	Fair	Poor	Semi-mature	<5	Low	*Priority for Removal*	Loss of central leader. Crown density 50-75%. Trunk cavity(s), major.	No Encroachment
24	*Syncarpia glomulifera* (Turpentine)	12	6	300	4	41	2.1	Fair	Poor	Mature	5-15	Moderate	*Consider for Retention*	Crown conflict with adjacent. Crown density 50-75%. Small (<25mmø), medium (25-75mmø) & large (>75mmø) deadwood in high volumes. Co-dominant inclusions, major. Bark inclusion(s), minor.	No Encroachment

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Tree No.	Species	Height (m)	Radial Crown Spread (m)	DBH comb. (mm)	Radial TPZ (m)	TPZ Area (m^2)	Radial SRZ (m)	Health Rating	Structural Rating	Age Class	ULE (years)	L/Sign	Retention Value	Comments	TPZ Encroachment (%)
25	*Eucalyptus botryoides* (Bangalay)	14	4	400	5	72	2.3	Poor	Poor	Senescent	<5	Moderate	*Priority for Removal*	Crown density 0-25%. Small (<25mmø), medium (25-75mmø) & large (>75mmø) deadwood in high volumes. Small (<25mmø) epicormic growth in moderate volumes. Wound(s), advanced stages of decay. Trunk cavity(s), major. Order branch cavity, major. Adaptive growth.	No Encroachment
26	*Eucalyptus resinifera* (Red Mahogany)	24	7	559	7	141	2.7	Fair	Fair	Mature	15-40	High	*Priority for Retention*	Lcd Crown density 50-75%. Small (<25mmø), medium (25-75mmø) & large (>75mmø) deadwood in high volumes. Co-dominant inclusions, minor. Wound(s), advanced stages of decay.	No Encroachment
27	*Syncarpia glomulifera* (Turpentine)	12	6	320	4	46	2.1	Fair	Fair	Mature	5-15	Moderate	*Consider for Retention*	Crown density 50-75%. Medium (25-75mmø) deadwood in high volumes. Co-dominant inclusions, minor. Wound(s), advanced stages of decay.	No Encroachment
28	*Syncarpia glomulifera* (Turpentine)	11	4	200	2	18	1.8							Not full VTA.	No Encroachment
29	*Allocasuarina torulosa* (Forest Oak)	12	6	275	3	34	2.0	Good	No access to base. No rating.	Mature	5-15	Moderate	*Consider for Retention*	Not full VTA. Crown density 75-95%. Small (<25mmø) deadwood in low volumes. Small (<25mmø) & medium (25-75mmø) epicormic growth in low volumes.	9.9% (Within SRZ)
30	*Syncarpia glomulifera* (Turpentine)	14	4	275	3	34	2.0	Good	No access to base. No rating.	Mature	5-15	Moderate	*Consider for Retention*	Not full VTA.	19.6% (Within SRZ)
31	*Syncarpia glomulifera* (Turpentine)	14	4	275	3	34	2.0	Good	Good	Mature	5-15	Moderate	*Consider for Retention*	Not full VTA.	4.2%
32	*Syncarpia glomulifera* (Turpentine)	14	4	375	5	64	2.3	Good	Good	Mature	5-15	Moderate	*Consider for Retention*	Not full VTA.	16.8%

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33	*Syncarpia glomulifera* (Turpentine)	12	2	125	2	13	1.5	Fair	Good	Semi-mature	5-15	Low	*Consider for Removal*	Crown density 50-75%. Small (<25mmø) & medium (25-75mmø) deadwood in moderate volumes.	Within Development Footprint
34	*Angophora floribunda* (Rough Barked Apple)	12	2	125	2	13	1.5	Fair	Good	Semi-mature	5-15	Low	*Consider for Removal*	Crown density 50-75%. Small (<25mmø) & medium (25-75mmø) deadwood in moderate volumes.	No Encroachment
35	*Eucalyptus piperita* (Syndey Peppermint)	28	10	700	8	222	3.0	Good	Good	Mature	40+	High	*Priority for Retention*	Crown density 75-95%. Small (<25mmø) & medium (25-75mmø) deadwood in moderate volumes. Small (<25mmø) & medium (25-75mmø) epicormic growth in moderate volumes. Wound(s), no visible sign of decay.	Within Development Footprint
36	*Syncarpia glomulifera* (Turpentine)	10	3	100	2	13	1.5	Fair	Good	Semi-mature	5-15	Low	*Consider for Removal*	Crown density 50-75%. Small (<25mmø) deadwood in moderate volumes. Small (<25mmø) epicormic growth in moderate volumes.	No Encroachment
37	*Allocasuarina littoralis* (Black She Oak)	9	4	175	2	14	1.7	Poor	Good	Senescent	<5	Low	*Priority for Removal*	Crown density 0-25%. Small (<25mmø) deadwood in high volumes. Small (<25mmø) epicormic growth in high volumes.	No Encroachment
38	*Eucalyptus piperita* (Syndey Peppermint)	14	8	400	5	72	2.3	Poor	Poor	Senescent	<5	Low	*Priority for Removal*	Localised crown death. Crown density 0-25%. Small (<25mmø), medium (25-75mmø) & large (>75mmø) deadwood in high volumes. Crown consists mainly of epicormic growth.	No Encroachment
39	*Eucalyptus piperita* (Syndey Peppermint)	22	6	485	6	107	2.5	Fair	Poor	Late Mature	5-15	Moderate	*Consider for Retention*	Crown density 25-50%. Small (<25mmø), medium (25-75mmø) & large (>75mmø) deadwood in high volumes. Small (<25mmø), medium (25-75mmø) & large (>75mmø) epicormic growth in high volumes. Trunk cavity(s), major.	No Encroachment

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Tree No.	Species	Height (m)	Radial Crown Spread (m)	DBH comb. (mm)	Radial TPZ (m)	TPZ Area (m^2)	Radial SRZ (m)	Health Rating	Structural Rating	Age Class	ULE (years)	L/Sign	Retention Value	Comments	TPZ Encroachment (%)
40	*Eucalyptus resinifera* (Red Mahogany)	18	4	300	4	41	2.1	Poor	Fair	Senescent	<5	Moderate	*Priority for Removal*	Crown density 0-25%. Small (<25mmø) & medium (25-75mmø) deadwood in high volumes. Crown consists mainly of epicormic growth.	1.8%
41	*Angophora costata* (Sydney Red Gum)	20	4	300	4	41	2.1	Poor	Fair	Mature	<5	Moderate	*Priority for Removal*	Crown density 0-25%. Small (<25mmø), medium (25-75mmø) & large (>75mmø) deadwood in high volumes. Crown consists mainly of epicormic growth.	No Encroachment
42	*Syncarpia glomulifera* (Turpentine)	9	3	100	2	13	1.5	Good	Good	Semi-mature	15-40	Low	*Consider for Removal*	Not full VTA.	No Encroachment
43	*Glochidion ferdinandi* (Cheese Tree)	8	3	75	2	13	1.5	Good	Good	Young	5-15	Low	*Consider for Removal*	Partially suppressed.	No Encroachment
44	*Allocasuarina torulosa* (Forest Oak)	8	3	125	2	13	1.5	Good	Good	Young	5-15	Low	*Consider for Removal*	Not full VTA.	No Encroachment
45	*Allocasuarina torulosa* (Forest Oak)	8	3	122	2	13	1.5	Good	Good	Young	5-15	Low	*Consider for Removal*	Not full VTA.	No Encroachment
46	*Corymbia gummifera* (Red Bloodwood)	20	7	500	6	113	2.6							Crown spread 10m into site at 10m above grade.	No Encroachment
47	*Angophora floribunda* (Rough Barked Apple)	15	4	300	4	41	2.1	Poor	Good	Senescent	<5	Moderate	*Priority for Removal*	Crown density 0-25%. Small (<25mmø), medium (25-75mmø) & large (>75mmø) deadwood in high volumes. Crown consists mainly of epicormic growth.	No Encroachment
48	*Angophora costata* (Sydney Red Gum)	16	11	400	5	72	2.3	Poor	Good	Senescent	5-15	High	*Consider for Retention*	Crown density 0-25%. Large (>75mmø) deadwood in moderate volumes. Small (<25mmø) & medium (25-75mmø) epicormic growth in moderate volumes.	No Encroachment

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Tree No.	Species	Height (m)	Radial Crown Spread (m)	DBH comb. (mm)	Radial TPZ (m)	TPZ Area (m^2)	Radial SRZ (m)	Health Rating	Structural Rating	Age Class	ULE (years)	L/Sign	Retention Value	Comments	TPZ Encroachment (%)
49	*Eucalyptus piperita* (Sydney Peppermint)	12	6	700	8	222	3.0	Poor	Poor	Senescent	<5	Moderate	*Priority for Removal*	Localised crown death. Crown density 0-25%. Small (<25mmø), medium (25-75mmø) & large (>75mmø) deadwood in high volumes. Crown consists mainly of epicormic growth. Trunk cavity(s), major. Order branch cavity, major.	No Encroachment
50	*Elaeocarpus reticulatus* (Blueberry Ash)	7	3	75	2	13	1.5	Good	Good	Semi-mature	15-40	Low	*Consider for Removal*	Not full VTA.	No Encroachment
51	*Elaeocarpus reticulatus* (Blueberry Ash)	7	3	75	2	13	1.5	Good	Good	Semi-mature	15-40	Low	*Consider for Removal*	Not full VTA.	No Encroachment
52	*Banksia integrifolia* (Coastal Banksia)	7	1	50	2	13	1.5	Poor	Good	Young	<5	Low	*Priority for Removal*	Crown density 0-25%. Chlorotic foliage.	No Encroachment
53	*Angophora costata* (Sydney Red Gum)	7	1	50	2	13	1.5	Poor	Good	Young	<5	Low	*Priority for Removal*	Crown density 0-25%.	No Encroachment
54	*Angophora costata* (Sydney Red Gum)	7	1	75	2	13	1.5	Poor	Good	Young	<5	Low	*Priority for Removal*	Crown density 0-25%.	No Encroachment
55	*Angophora floribunda* (Rough Barked Apple)	16	6	250	3	28	1.9	Poor	Good	Late Mature	5-15	Moderate	*Consider for Retention*	Crown density 0-25%. Small (<25mmø) deadwood in moderate volumes. Crown consists mainly of epicormic growth. Adaptive growth.	No Encroachment
56	*Angophora floribunda* (Rough Barked Apple)	11	6	300	4	41	2.1	Fair	Good	Mature	5-15	Moderate	*Consider for Retention*	Crown density 50-75%. Small (<25mmø) & medium (25-75mmø) deadwood in moderate volumes. Small (<25mmø) epicormic growth in moderate volumes.	No Encroachment

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57	*Allocasuarina torulosa* (Forest Oak)	8	3	150	2	13	1.6	Good	Good	Semi-mature	15-40	Low	*Consider for Removal*	Growing in a rock wall.	No Encroachment
58	*Eucalyptus piperita* (Syndey Peppermint)	22	7	500	6	113	2.6	Fair	Good	Mature	15-40	High	*Priority for Retention*	Growing in rock wall. Crown density 75-95%. Small (<25mmø), medium (25-75mmø) & large (>75mmø) deadwood in moderate volumes. Small (<25mmø) epicormic growth in low volumes.	No Encroachment
59	*Eucalyptus piperita* (Syndey Peppermint)	22	7	500	6	113	2.6	Fair	Good	Mature	15-40	High	*Priority for Retention*	Crown density 75-95%. Small (<25mmø), medium (25-75mmø) & large (>75mmø) deadwood in moderate volumes. Small (<25mmø) epicormic growth in low volumes.	No Encroachment
60	*Eucalyptus piperita* (Syndey Peppermint)	22	7	575	7	150	2.7	Fair	Good	Mature	15-40	High	*Priority for Retention*	Crown density 75-95%. Small (<25mmø), medium (25-75mmø) & large (>75mmø) deadwood in moderate volumes. Small (<25mmø) epicormic growth in low volumes.	No Encroachment
61	*Eucalyptus piperita* (Syndey Peppermint)	18	7	600	7	163	2.8	Fair	Good	Mature	15-40	High	*Priority for Retention*	Localised crown death. Crown density 50-75%. Storm damage. Phototrophic lean, slight.	No Encroachment
62	*Allocasuarina torulosa* (Forest Oak)	12	4	283	3	36	2.0	Fair	Poor	Mature	5-15	Moderate	*Consider for Retention*	Crown density 50-75%. Small (<25mmø) deadwood in high volumes. Trunk cavity(s), major. Order branch cavity, major.	5.5%
63	*Banksia serrata* (Old Man Banksia)	7	3	150	2	13	1.6	Fair	Good	Semi-mature	5-15	Low	*Consider for Removal*	Leaf spot.	41.6% (Within SRZ)
64	*Angophora floribunda* (Rough Barked Apple)	11	4	200	2	18	1.8	Poor	Good	Semi-mature	<5	Low	*Priority for Removal*	Crown density 0-25%. Small (<25mmø) & medium (25-75mmø) deadwood in high volumes. Crown consists mainly of epicormic growth.	Within Development Footprint

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Tree No.	Species	Height (m)	Radial Crown Spread (m)	DBH comb. (mm)	Radial TPZ (m)	TPZ Area (m^2)	Radial SRZ (m)	Health Rating	Structural Rating	Age Class	ULE (years)	L/Sign	Retention Value	Comments	TPZ Encroachment (%)
65	*Eucalyptus umbra* (Broad Leaved White Mahogany)	22	8	566	7	145	2.7	Fair	Poor	Late Mature	15-40	High	*Priority for Retention*	Partial fail. Crown density 50-75%. Small (<25mmø), medium (25-75mmø) & large (>75mmø) deadwood in high volumes. Small (<25mmø) epicormic growth in moderate volumes. Co-dominant inclusions, major. Bark inclusion(s), major. Trunk cavity(s), major. Adaptive growth.	29.9% (Within SRZ)
66	*Syncarpia glomulifera* (Turpentine)	14	4	275	3	34	2.0	Good	No access to base. No rating.	Mature	5-15	Moderate	*Consider for Retention*	Not full VTA.	Within Development Footprint
67	*Angophora floribunda* (Rough Barked Apple)	10	2	100	2	13	1.5	Poor	No access to base. No rating.	Senescent	<5	Low	*Priority for Removal*	Localised crown death. Crown density 0-25%. Crown consists mainly of epicormic growth.	No Encroachment
68	*Allocasuarina littoralis* (Black She Oak)	10	2	100	2	13	1.5							Not full VTA.	No Encroachment
69	*Eucalyptus robusta* (Swamp Mahogany)	25	9	450	5	92	2.5	Good	Fair	Mature	40+	High	*Priority for Retention*	Small (<25mmø), medium (25-75mmø) & large (>75mmø) deadwood in moderate volumes. Co-dominant inclusions, minor. Trunk cavity(s), minor. Structures within SRZ. Adaptive growth.	18.7%
70	*Angophora floribunda* (Rough Barked Apple)	10	2	200	2	18	1.8	Poor	No access to base. No rating.	Senescent	<5	Low	*Priority for Removal*	Localised crown death. Crown density 0-25%. Crown consists mainly of epicormic growth.	5.0%
71	*Eucalyptus umbra* (Broad Leaved White Mahogany)	25	9	675	8	206	2.9	Good	Fair	Mature	40+	High	*Priority for Retention*	Small (<25mmø), medium (25-75mmø) & large (>75mmø) deadwood in moderate volumes. Structures within SRZ. Adaptive growth.	33.5% (Within SRZ)
72	*Angophora floribunda* (Rough Barked Apple)	10	3	200	2	18	1.8	Poor	No access to base. No rating.	Senescent	5-15	Moderate	*Consider for Retention*	Loss of central leader. Crown density 50-75%. Crown consists mainly of epicormic growth.	47.4% (Within SRZ)

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73	*Livistonia australis* (Cabbage Tree Palm)	7	4	250	3	28	1.9	Good	Good	Semi-mature	5-15	Low	*Consider for Removal*	Not full VTA.	No Encroachment
74	*Angophora floribunda* (Rough Barked Apple)	11	2	150	2	13	1.6	Good	Good	Semi-mature	5-15	Low	*Consider for Removal*	Not full VTA.	No Encroachment
75	*Angophora costata* (Sydney Red Gum)	10	2	75	2	13	1.5	Fair	Good	Semi-mature	5-15	Low	*Consider for Removal*	Crown density 50-75%. Small (<25mmø) deadwood in high volumes.	No Encroachment
76	*Eucalyptus piperita* (Syndey Peppermint)	24	8	700	8	222	3.0	Poor	Good	Late Mature	5-15	High	*Consider for Retention*	Localised crown death. Crown density 25-50%. Small (<25mmø), medium (25-75mmø) & large (>75mmø) deadwood in high volumes. Crown consists mainly of epicormic growth.	No Encroachment
77	*Allocasuarina torulosa* (Forest Oak)	9	4	144	2	13	1.5	Fair	Good	Semi-mature	5-15	Low	*Consider for Removal*	Crown density 50-75%. Small (<25mmø) deadwood in moderate volumes.	No Encroachment
78	*Angophora floribunda* (Rough Barked Apple)	10	3	250	3	28	1.9	Poor	Poor	Senescent	<5	Low	*Priority for Removal*	Crown density 0-25%. Crown consists mainly of epicormic growth.	No Encroachment
79	*Angophora floribunda* (Rough Barked Apple)	18	8	500	6	113	2.6	Poor	Good	Late Mature	5-15	High	*Consider for Retention*	Localised crown death. Crown density 0-25%. Small (<25mmø), medium (25-75mmø) & large (>75mmø) deadwood in high volumes. Crown consists mainly of epicormic growth. Borer.	33.2% (Within SRZ)
80	*Angophora floribunda* (Rough Barked Apple)	8	3	100	2	13	1.5	Poor	Good	Senescent	<5	Low	*Priority for Removal*	Crown consists of epicormics. Crown density 0-25%.	No Encroachment
81	*Angophora floribunda* (Rough Barked Apple)	3		0	0	0	1.5	Poor	Good	Senescent	<5	Low	*Priority for Removal*	Crown consists of epicormics. Crown density 0-25%.	No Encroachment

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82	*Allocasuarina littoralis* (Black She Oak)	12	6	318	4	46	2.1	Good	No access to base. No rating.	Mature	5-15	Moderate	*Consider for Retention*	Not full VTA.	No Encroachment
83	*Allocasuarina littoralis* (Black She Oak)	12	6	250	3	28	1.9	Good	No access to base. No rating.	Mature	5-15	Moderate	*Consider for Retention*	Not full VTA.	No Encroachment
84	*Allocasuarina littoralis* (Black She Oak)	12	6	200	2	18	1.8	Good	No access to base. No rating.	Mature	5-15	Moderate	*Consider for Retention*	Not full VTA.	Within Development Footprint
85	*Syncarpia glomulifera* (Turpentine)	12	6	300	4	41	2.1	Good	No access to base. No rating.	Mature	5-15	Moderate	*Consider for Retention*	Not full VTA.	Within Development Footprint
86	*Syncarpia glomulifera* (Turpentine)	12	6	300	4	41	2.1	Good	No access to base. No rating.	Mature	5-15	Moderate	*Consider for Retention*	Not full VTA.	Within Development Footprint
87	*Angophora costata* (Sydney Red Gum)	15	4	300	4	41	2.1	Good	Good	Mature	15-40	Moderate	*Consider for Retention*	Crown density 75-95%. Small (<25mmø) & medium (25-75mmø) deadwood in moderate volumes. Small (<25mmø) epicormic growth in moderate volumes. Wound(s), early signs of decay. Trunk cavity(s), minor. Structures within SRZ.	Within Development Footprint
88	*Syncarpia glomulifera* (Turpentine)	12	6	275	3	34	2.0	Good	No access to base. No rating.	Mature	5-15	Moderate	*Consider for Retention*	Not full VTA.	32.6% (Within SRZ)
89	*Allocasuarina littoralis* (Black She Oak)	12	6	250	3	28	1.9	Good	No access to base. No rating.	Mature	5-15	Moderate	*Consider for Retention*	Not full VTA.	Within Development Footprint
90	*Angophora floribunda* (Rough Barked Apple)	25	7	425	5	82	2.4	Good	Good	Mature	40+	High	*Priority for Retention*	Medium (25-75mmø) deadwood in low volumes. Small (<25mmø) epicormic growth in low volumes.	No Encroachment

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91	*Angophora floribunda* (Rough Barked Apple)	9	2	150	2	13	1.6	Poor	Good	Senescent	<5	Low	*Priority for Removal*	Localised crown death. Crown density 0-25%. Crown consists mainly of epicormic growth.	No Encroachment
92	*Angophora floribunda* (Rough Barked Apple)	20	4	250	3	28	1.9	Fair	No access to base. No rating.	Late Mature	5-15	Moderate	*Consider for Retention*	Localised crown death. Crown density 0-25%. Crown consists mainly of epicormic growth.	No Encroachment
93	*Angophora floribunda* (Rough Barked Apple)	16	5	400	5	72	2.3	Fair	Fair	Late Mature	5-15	Moderate	*Consider for Retention*	Crown density 50-75%. Small (<25mmø), medium (25-75mmø) & large (>75mmø) deadwood in high volumes.	No Encroachment
94	*Eucalyptus botryoides* (Bangalay)	14	4	225	3	23	1.8	Poor	Fair	Senescent	5-15	Moderate	*Consider for Retention*	Localised crown death. Crown density 0-25%. Small (<25mmø), medium (25-75mmø) & large (>75mmø) deadwood in high volumes. Small (<25mmø) epicormic growth in high volumes.	No Encroachment
95	*Allocasuarina torulosa* (Forest Oak)	7	3	100	2	13	1.5	Fair	Poor	Mature	5-15	Low	*Consider for Removal*	Group of four trees. Crown density 50-75%. Trunk cavity(s), major.	No Encroachment
96	*Angophora floribunda* (Rough Barked Apple)	10	2	200	2	18	1.8	Fair	Poor	Late Mature	5-15	Moderate	*Consider for Retention*	Loss of central leader. Trunk cavity(s), major.	No Encroachment
97	*Angophora floribunda* (Rough Barked Apple)	16	6	400	5	72	2.3	Poor	Good	Late Mature	5-15	High	*Consider for Retention*	Localised crown death. Crown density 0-25%. Small (<25mmø), medium (25-75mmø) & large (>75mmø) deadwood in high volumes. Small (<25mmø) epicormic growth in high volumes.	No Encroachment
98	*Angophora floribunda* (Rough Barked Apple)	10	2	100	2	13	1.5	Poor	No access to base. No rating.	Senescent	<5	Low	*Priority for Removal*	Localised crown death. Crown density 0-25%. Crown consists mainly of epicormic growth.	No Encroachment

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Tree No.	Species	Height (m)	Radial Crown Spread (m)	DBH comb. (mm)	Radial TPZ (m)	TPZ Area (m^2)	Radial SRZ (m)	Health Rating	Structural Rating	Age Class	ULE (years)	L/Sign	Retention Value	Comments	TPZ Encroachment (%)
99	*Angophora floribunda* (Rough Barked Apple)	12	4	200	2	18	1.8	Poor	Good	Senescent	<5	Moderate	*Priority for Removal*	Localised crown death. Crown density 0-25%. Crown consists mainly of epicormic growth.	No Encroachment
100	*Allocasuarina littoralis* (Black She Oak)	7	3	71	2	13	1.5	Good	Good	Semi-mature	5-15	Low	*Consider for Removal*	Not full VTA.	No Encroachment
101	*Allocasuarina littoralis* (Black She Oak)	16	4	325	4	48	2.1	Fair	Poor	Mature	5-15	Moderate	*Consider for Retention*	Crown density 75-95%. Small (<25mmø) deadwood in moderate volumes. Trunk cavity(s), major.	No Encroachment
102	*Angophora floribunda* (Rough Barked Apple)	12	4	225	3	23	1.8	Poor	Good	Senescent	<5	Moderate	*Priority for Removal*	Localised crown death. Crown density 0-25%. Crown consists mainly of epicormic growth.	No Encroachment
103	*Eucalyptus piperita* (Sydney Peppermint)	12	5	400	5	72	2.3	Poor	No access to base. No rating.	Senescent	<5	Low	*Priority for Removal*	Crown almost entirely dead. Crown density 0-25%.	No Encroachment
104	*Banksia integrifolia* (Coastal Banksia)	6	3	0	0	0	1.5	Fair	Good	Semi-mature	5-15	Low	*Consider for Removal*	Group of six. Crown density 50-75%. Small (<25mmø) deadwood in low volumes.	No Encroachment
105	*Eucalyptus piperita* (Sydney Peppermint)	20	8	400	5	72	2.3	Fair	No access to base. No rating.	Mature	15-40	High	*Priority for Retention*	Small (<25mmø) epicormic growth in moderate volumes.	No Encroachment
106	*REMOVED*			N/A	N/A	N/A	N/A						*N/A*		No Encroachment
107	*Angophora floribunda* (Rough Barked Apple)	22	8	500	6	113	2.6	Fair	Good	Mature	5-15	High	*Consider for Retention*	Localised crown death. Crown density 50-75%. Small (<25mmø), medium (25-75mmø) & large (>75mmø) deadwood in high volumes.	No Encroachment

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Tree No.	Species	Height (m)	Radial Crown Spread (m)	DBH comb. (mm)	Radial TPZ (m)	TPZ Area (m^2)	Radial SRZ (m)	Health Rating	Structural Rating	Age Class	ULE (years)	L/Sign	Retention Value	Comments	TPZ Encroachment (%)
108	*Angophora costata* (Sydney Red Gum)	11	3	200	2	18	1.8	Poor	Good	Semi-mature	5-15	Moderate	*Consider for Retention*	Not full VTA.	No Encroachment
109	*Allocasuarina littoralis* (Black She Oak)	7	3	0	0	0	1.5	Good	Good	Semi-mature	5-15	Low	*Consider for Removal*	Not full VTA.	No Encroachment
110	*Angophora floribunda* (Rough Barked Apple)	22	8	424	5	81	2.4	Fair	Good	Mature	5-15	High	*Consider for Retention*	Co-dominant inclusions, major.	No Encroachment
111	*Angophora costata* (Sydney Red Gum)	8	6	500	6	113	2.6	Poor	Fair	Senescent	<5	High	*Priority for Removal*	Crown density 0-25%. Small (<25mmø), medium (25-75mmø) & large (>75mmø) deadwood in high volumes. Small (<25mmø) epicormic growth in high volumes.	26.5% (Within SRZ)
112	*Eucalyptus sp.*	20	8	400	5	72	2.3	Fair	No access to base. No rating.	Mature	15-40	High	*Priority for Retention*	Small (<25mmø) epicormic growth in moderate volumes.	No Encroachment
113	*Eucalyptus resinifera* (Red Mahogany)	16	4	300	4	41	2.1	Poor	Poor	Mature	5-15	Moderate	*Consider for Retention*	Crown density 50-75%. Crown consists mainly of epicormic growth.	No Encroachment
114	*Angophora floribunda* (Rough Barked Apple)	10	3	200	2	18	1.8	Fair	Good	Late Mature	5-15	Moderate	*Consider for Retention*	Crown density 50-75%. Small epicormic growth in moderate volumes.	No Encroachment
115	*Eucalyptus piperita* (Sydney Peppermint)	20	8	400	5	72	2.3	Fair	No access to base. No rating.	Mature	15-40	High	*Priority for Retention*	Small (<25mmø) epicormic growth in moderate volumes.	No Encroachment
116	*Allocasuarina littoralis* (Black She Oak)	16	4	325	4	48	2.1	Fair	Poor	Mature	5-15	Moderate	*Consider for Retention*	Crown density 75-95%. Small (<25mmø) deadwood in moderate volumes. Trunk cavity(s), major.	No Encroachment

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Tree No.	Species	Height (m)	Radial Crown Spread (m)	DBH comb. (mm)	Radial TPZ (m)	TPZ Area (m^2)	Radial SRZ (m)	Health Rating	Structural Rating	Age Class	ULE (years)	L/Sign	Retention Value	Comments	TPZ Encroachment (%)
117	*Eucalyptus piperita* (Sydney Peppermint)	20	7	700	8	222	3.0	Fair	Good	Mature	15-40	High	*Priority for Retention*	Small (<25mmø), medium (25-75mmø) & large (>75mmø) deadwood in moderate volumes.	13.7%
118	*Eucalyptus botryoides* (Bangalay)	20	7	575	7	150	2.7	Fair	Good	Mature	15-40	High	*Priority for Retention*	Small (<25mmø), medium (25-75mmø) & large (>75mmø) deadwood in moderate volumes.	No Encroachment
119	*Corymbia gummifera* (Red Bloodwood)	20	5	500	6	113	2.6	Fair	Good	Mature	15-40	High	*Priority for Retention*	Small (<25mmø), medium (25-75mmø) & large (>75mmø) deadwood in moderate volumes.	No Encroachment
120	*Corymbia gummifera* (Red Bloodwood)	18	7	300	4	41	2.1	Good	Good	Mature	15-40	Moderate	*Consider for Retention*	Small (<25mmø), medium (25-75mmø) & large (>75mmø) deadwood in moderate volumes.	No Encroachment
121	*Angophora floribunda* (Rough Barked Apple)	10	3	200	2	18	1.8	Fair	Good	Late Mature	5-15	Moderate	*Consider for Retention*	Crown density 50-75%. Small epicormic growth in moderate volumes.	No Encroachment
122	*Allocasuarina littoralis* (Black She Oak)	12	6	300	4	41	2.1	Good	No access to base. No rating.	Mature	5-15	Moderate	*Consider for Retention*	Group of two trees. Crown density 75-95%. Small (<25mmø) deadwood in low volumes. Small (<25mmø) & medium (25-75mmø) epicormic growth in low volumes.	Within Development Footprint
123	*Dead*			0	0	0	1.5								Within Development Footprint
124	*Angophora floribunda* (Rough Barked Apple)	10	3	200	2	18	1.8	Poor	Good	Senescent	<5	Low	*Priority for Removal*	Localised crown death. Crown density 0-25%. Crown consists mainly of epicormic growth.	No Encroachment
125	*Allocasuarina littoralis* (Black She Oak)	12	6	400	5	72	2.3	Good	No access to base. No rating.	Mature	5-15	High	*Priority for Retention*	Crown density 75-95%. Small (<25mmø) deadwood in low volumes. Small (<25mmø) & medium (25-75mmø) epicormic growth in low volumes.	No Encroachment

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Tree No.	Species	Height (m)	Radial Crown Spread (m)	DBH comb. (mm)	Radial TPZ (m)	TPZ Area (m^2)	Radial SRZ (m)	Health Rating	Structural Rating	Age Class	ULE (years)	L/Sign	Retention Value	Comments	TPZ Encroachment (%)
126	*Allocasuarina littoralis* (Black She Oak)	12	6	200	2	18	1.8	Good	No access to base. No rating.	Mature	5-15	Moderate	*Consider for Retention*	Crown density 75-95%. Small (<25mmø) deadwood in low volumes. Small (<25mmø) & medium (25-75mmø) epicormic growth in low volumes.	No Encroachment
127	*Angophora floribunda* (Rough Barked Apple)	10	3	225	3	23	1.8	Poor	Good	Senescent	<5	Low	*Priority for Removal*	Localised crown death. Crown density 0-25%. Crown consists mainly of epicormic growth.	No Encroachment
128	*Angophora floribunda* (Rough Barked Apple)	10	4	250	3	28	1.9	Fair	Good	Late Mature	5-15	Moderate	*Consider for Retention*	Crown density 50-75%. Small epicormic growth in moderate volumes.	No Encroachment
129	*Corymbia gummifera* (Red Bloodwood)	15	4	450	5	92	2.5	Fair	Good	Late Mature	5-15	High	*Consider for Retention*	Crown density 50-75%. Small epicormic growth in moderate volumes.	No Encroachment
130	*Eucalyptus piperita* (Sydney Peppermint)	22	4	0	0	0	1.5	Fair	Good	Mature	15-40	High	*Priority for Retention*	Small (<25mmø), medium (25-75mmø) & large (>75mmø) deadwood in moderate volumes.	No Encroachment
131	*Angophora floribunda* (Rough Barked Apple)	25	8	400	5	72	2.3	Good	No access to base. No rating.	Mature	15-40	High	*Priority for Retention*	Crown density 50-75%. Small (<25mmø) epicormic growth in low volumes. Borer.	No Encroachment
132	*Livistonia australis* (Cabbage Tree Palm)	8	4	300	4	41	2.1	Good	Good	Semi-mature	5-15	Low	*Consider for Removal*	Height 8m	No Encroachment
133	*Livistonia australis* (Cabbage Tree Palm)	10		300	4	41	2.1	Good	Good	Semi-mature	5-15	Low	*Consider for Removal*	Not full VTA.	No Encroachment
134	*Melicope elleryana* (Doughwood)	14	4	275	3	34	2.0	Good	Good	Mature	15-40	Moderate	*Consider for Retention*	Not full VTA.	Within Development Footprint

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Tree No.	Species	Height (m)	Radial Crown Spread (m)	DBH comb. (mm)	Radial TPZ (m)	TPZ Area (m^2)	Radial SRZ (m)	Health Rating	Structural Rating	Age Class	ULE (years)	L/Sign	Retention Value	Comments	TPZ Encroachment (%)
135	*Banksia integrifolia* (Coastal Banksia)	6	3	50	2	13	1.5	Fair	Good	Semi-mature	5-15	Low	*Consider for Removal*	Crown density 50-75%. Small (<25mmø) deadwood in low volumes.	No Encroachment
136	*Angophora costata* (Sydney Red Gum)	16	5	300	4	41	2.1	Fair	Good	Mature	5-15	Moderate	*Consider for Retention*	Localised crown death. Crown density 50-75%. Small (<25mmø) & medium (25-75mmø) epicormic growth in high volumes. Wound(s), early signs of decay.	No Encroachment
137	*Syncarpia glomulifera* (Turpentine)	14	5	300	4	41	2.1	Poor	Good	Senescent	<5	Moderate	*Priority for Removal*	Localised crown death. Crown consists mainly of epicormic growth.	No Encroachment
138	*Angophora floribunda* (Rough Barked Apple)	10	3	300	4	41	2.1	Fair	Good	Late Mature	5-15	Low	*Consider for Removal*	Crown density 50-75%. Small epicormic growth in moderate volumes.	Within Development Footprint
139	*Eucalyptus sp.*	5	3	50	2	13	1.5	Good	Good	Young	5-15	Low	*Consider for Removal*	Not full VTA.	No Encroachment
140	*Angophora costata* (Sydney Red Gum)	12	5	250	3	28	1.9	Fair	Good	Semi-mature	5-15	Moderate	*Consider for Retention*	Crown density 50-75%.	No Encroachment
141	*Angophora costata* (Sydney Red Gum)	12	5	250	3	28	1.9	Fair	Good	Semi-mature	5-15	Moderate	*Consider for Retention*	Crown density 50-75%.	No Encroachment
142	*Eucalyptus piperita* (Sydney Peppermint)	20	8	800	10	290	3.1	Fair	Good	Mature	15-40	High	*Priority for Retention*	Crown density 50-75%. Small (<25mmø), medium (25-75mmø) & large (>75mmø) deadwood in moderate volumes.	17.5%
143	*Angophora costata* (Sydney Red Gum)	12	5	300	4	41	2.1	Poor	Good	Semi-mature	<5	Moderate	*Consider for Removal*	Localised crown death. Crown density 0-25%.	23.5% (Within SRZ)

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Tree No.	Species	Height (m)	Radial Crown Spread (m)	DBH comb. (mm)	Radial TPZ (m)	TPZ Area (m^2)	Radial SRZ (m)	Health Rating	Structural Rating	Age Class	ULE (years)	L/Sign	Retention Value	Comments	TPZ Encroachment (%)
144	*Dead*														No Encroachment
145	*Angophora floribunda* (Rough Barked Apple)	10	3	300	4	41	2.1	Poor	Good	Senescent	<5	Low	*Priority for Removal*	Localised crown death. Lost central leader. Crown density 0-25%. Crown consists mainly of epicormic growth.	No Encroachment
146	*Angophora floribunda* (Rough Barked Apple)	10	2	100	2	13	1.5	Poor	No access to base. No rating.	Senescent	<5	Low	*Priority for Removal*	Crown density 0-25%. Crown consists mainly of epicormic growth.	Within Development Footprint
147	*Glochidion ferdinandi* (Cheese Tree)	11	4	150	2	13	1.6	Good	Good	Semi-mature	5.-15	Moderate	*Consider for Retention*	Group of three trees.	Within Development Footprint
148	*Eucalyptus robusta* (Swamp Mahogany)	16	4	400	5	72	2.3	Good	Good	Mature	15-40	Moderate	*Consider for Retention*	Small (<25mmø) & medium (25-75mmø) epicormic growth in moderate volumes.	Within Development Footprint
149	*Angophora floribunda* (Rough Barked Apple)	10	4	250	3	28	1.9	Poor	No access to base. No rating.	Senescent	<5	Low	*Priority for Removal*	Localised crown death. Crown density 0-25%. Crown consists mainly of epicormic growth.	No Encroachment
150	*Allocasuarina torulosa* (Forest Oak)	16	4	305	4	42	2.1	Fair	Poor	Mature	5-15	Moderate	*Consider for Retention*	Crown density 75-95%. Small (<25mmø) deadwood in moderate volumes. Trunk cavity(s), major.	No Encroachment
151	*Syncarpia glomulifera* (Turpentine)	11	4	275	3	34	2.0	Good	Good	Semi-mature	5-15	Low	*Consider for Removal*	Small (<25mmø) deadwood in high volumes.	No Encroachment
152	*Angophora floribunda* (Rough Barked Apple)	10	3	200	2	18	1.8	Fair	Good	Late Mature	5-15	High	*Consider for Retention*	Crown density 50-75%. Small epicormic growth in moderate volumes.	No Encroachment

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Tree No.	Species	Height (m)	Radial Crown Spread (m)	DBH comb. (mm)	Radial TPZ (m)	TPZ Area (m^2)	Radial SRZ (m)	Health Rating	Structural Rating	Age Class	ULE (years)	L/Sign	Retention Value	Comments	TPZ Encroachment (%)
153	*Glochidion ferdinandi* (Cheese Tree)	11	4	100	2	13	1.5	Good	Good	Semi-mature	5-15	Moderate	*Consider for Retention*	Not full VTA.	No Encroachment
154	*Banksia integrifolia* (Coastal Banksia)	12	4	200	2	18	1.8	Fair	Good	Late Mature	5-15	Moderate	*Consider for Retention*	Crown density 50-75%. Small (<25mmø) deadwood in low volumes.	No Encroachment
155	*Glochidion ferdinandi* (Cheese Tree)	8	6	266	3	32	2.0	Good	Poor	Mature	5-15	Moderate	*Consider for Retention*	Loss of central leader. Storm damage. Adaptive growth.	No Encroachment
156	*Angophora floribunda* (Rough Barked Apple)	9	4	320	4	46	2.1	Good	Poor	Mature	<5	Low	*Priority for Removal*	Loss of central leader. Partially failed co dominant. Lopped with resultant epicormics. Trunk cavity(s), major.	Within Development Footprint
157	*Glochidion ferdinandi* (Cheese Tree)	12	4	212	3	20	1.8	Good	Poor	Mature	5-15	Low	*Consider for Removal*	Co-dominant inclusions, major. Adaptive growth.	Within Development Footprint
158	*Syzygium australe* (Brush Cherry Lilly Pilly)	5	5	350	4	55	2.2	Good	Good	Mature	5-15	Low	*Consider for Removal*	Poor form. Lopped with resultant epicormics.	Within Development Footprint
159	*Callistemon viminalis* (Weeping Bottlebrush)	4	3	146	2	13	1.5	Good	Good	Mature	5-15	Low	*Consider for Removal*	Not full VTA.	No Encroachment
160	*Callistemon citrinus* (Lemon Scented Bottlebrush)	4	3	146	2	13	1.5	Good	Good	Mature	5-15	Low	*Consider for Removal*	Not full VTA.	No Encroachment
161	*Callistemon viminalis* (Weeping Bottlebrush)	4	3	146	2	13	1.5	Good	Good	Mature	5-15	Low	*Consider for Removal*	Not full VTA.	No Encroachment

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Tree No.	Species	Height (m)	Radial Crown Spread (m)	DBH comb. (mm)	Radial TPZ (m)	TPZ Area (m^2)	Radial SRZ (m)	Health Rating	Structural Rating	Age Class	ULE (years)	L/Sign	Retention Value	Comments	TPZ Encroachment (%)
162	*Callistemon viminalis* (Weeping Bottlebrush)	4	3	146	2	13	1.5	Good	Good	Mature	5-15	Low	*Consider for Removal*	Not full VTA.	No Encroachment
163	*Callistemon viminalis* (Weeping Bottlebrush)	4	3	146	2	13	1.5	Good	Good	Mature	5-15	Low	*Consider for Removal*	Not full VTA.	No Encroachment

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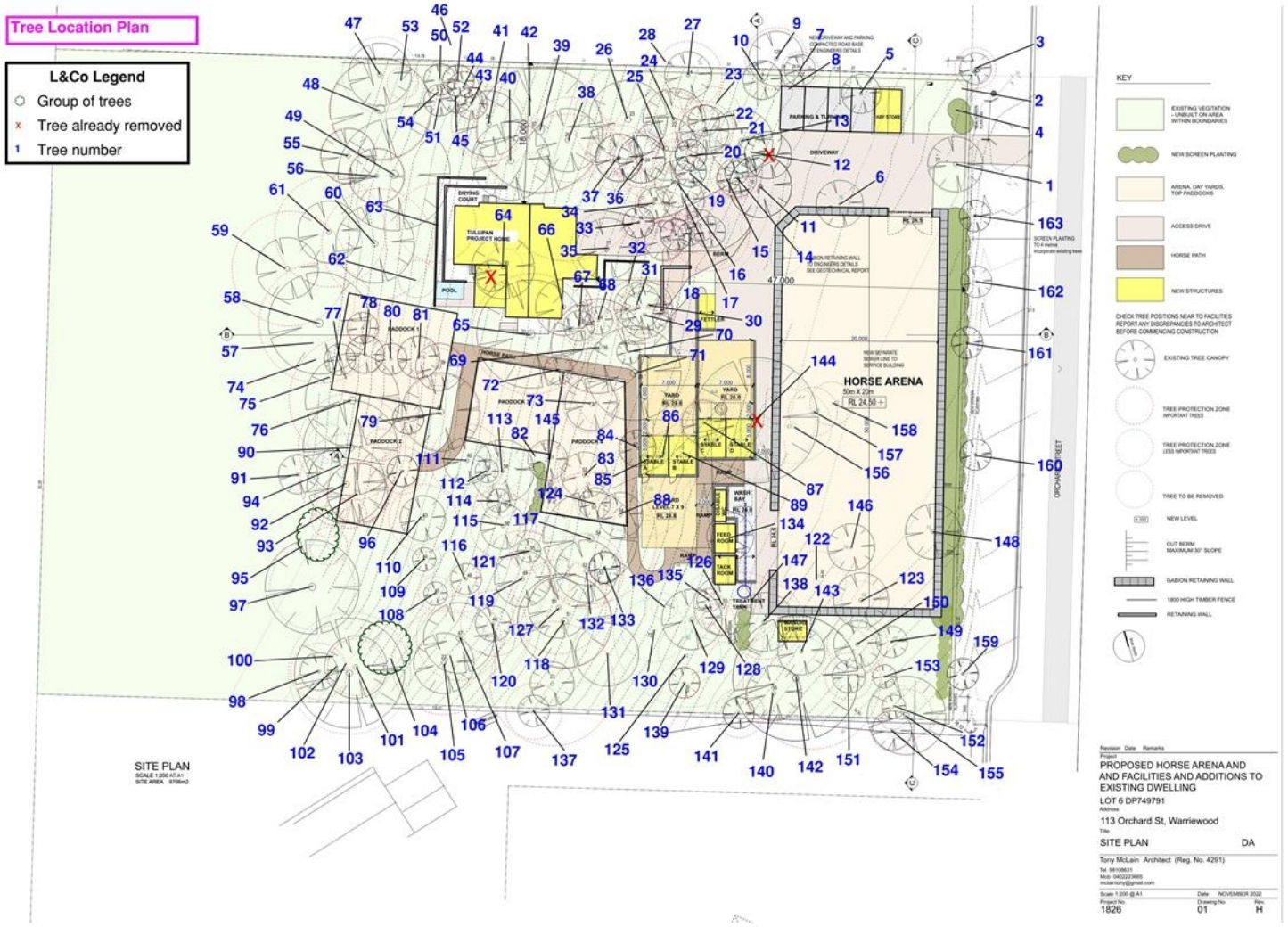
8.0 APPENDIX 3 | TREE LOCATION PLAN



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9.0 APPENDIX 4 | PROPOSED DEVELOPMENT PLANS

Commented [AM1]: Ive left some of the old plans in here, ive only updated the site plan with the newest revision H. I do not have updated revisions for the other plans.

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SITE PLAN
SCALE 1:200 AT A1
SITE AREA 9766m2

Revision Date Remarks

Project
PROPOSED HORSE ARENA AND AND FACILITIES AND ADDITIONS TO EXISTING DWELLING
LOT 6 DP749791

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Title
SITE PLAN DA

Tony McLain Architect (Reg. No. 4291)
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Mob: 0402223665
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Scale 1:200 @ A1 Date NOVEMBER 2022
Project No. 1826 Drawing No. 01 Rev. H

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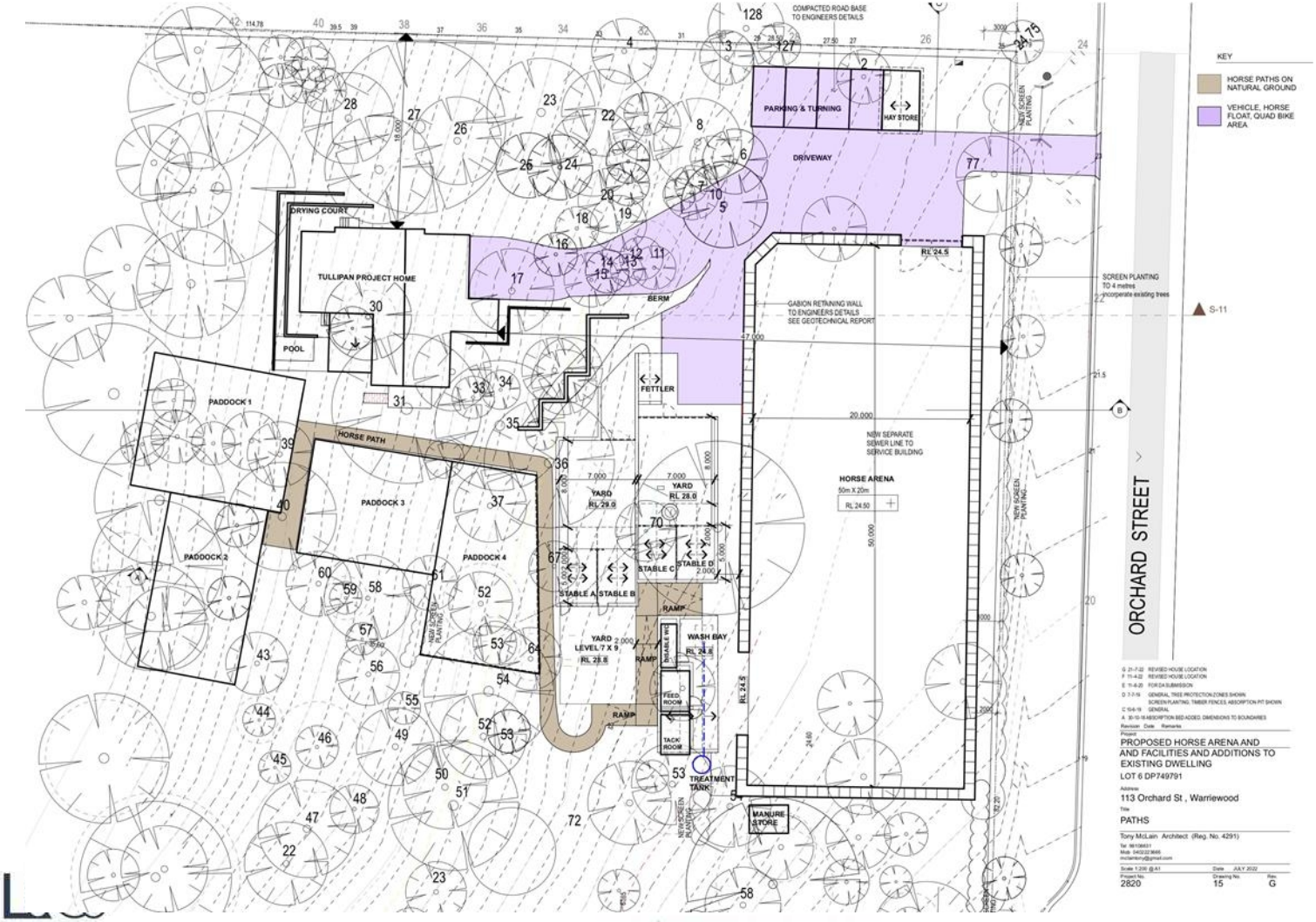

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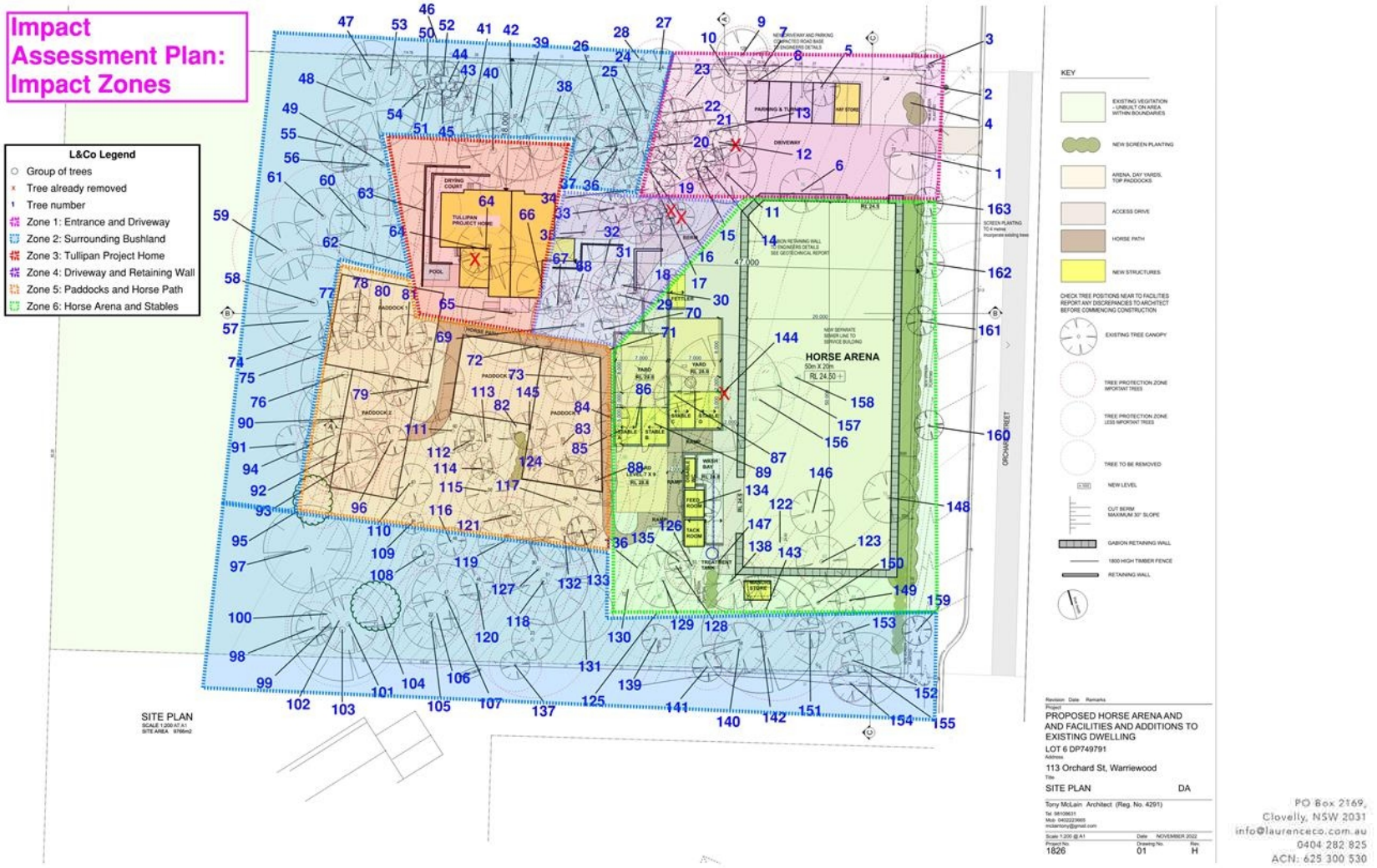
10.0 APPENDIX 5 | ARBORICULTURAL IMPACT ASSESSMENT PLANS



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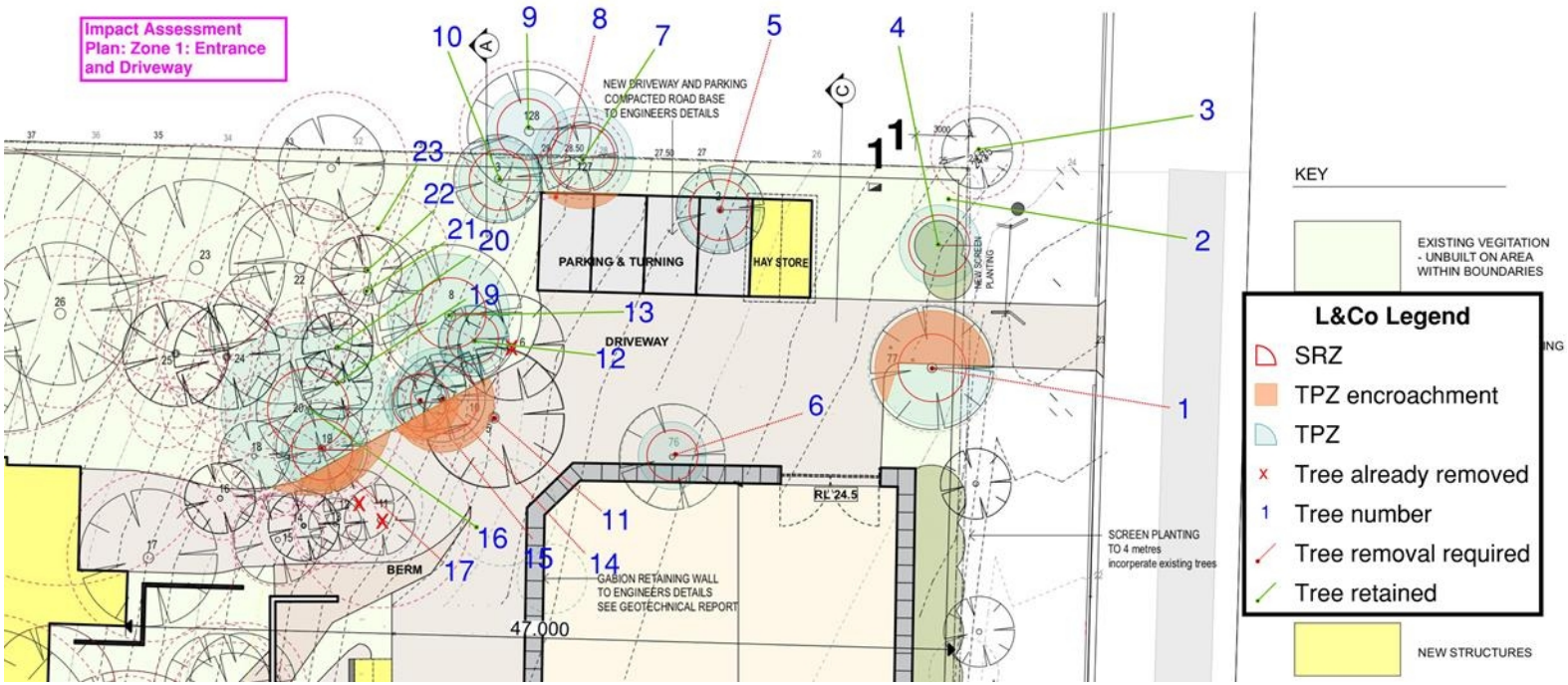

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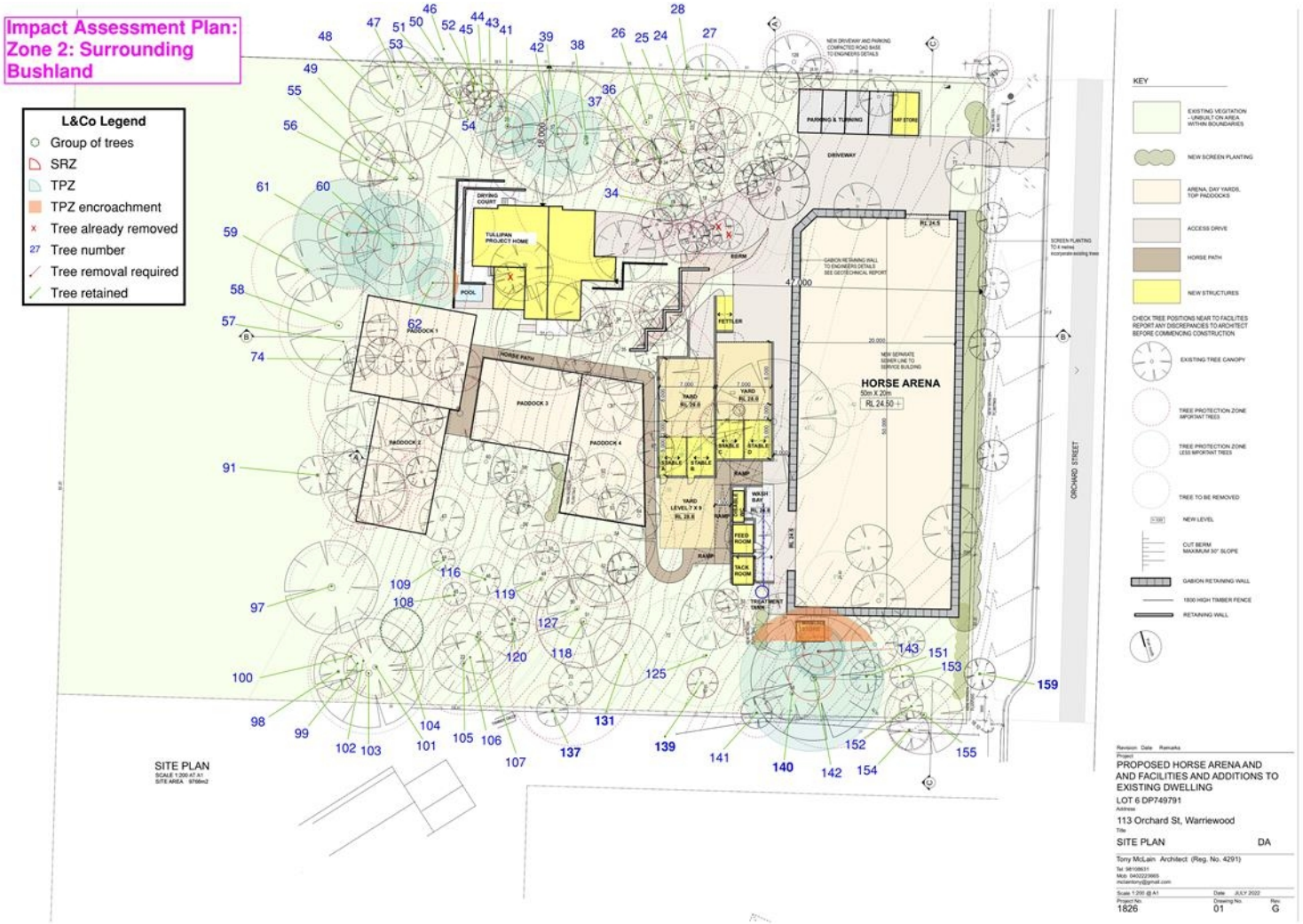
Impact Assessment Plan: Zone 2: Surrounding Bushland



Revision Date Remarks

Project
PROPOSED HORSE ARENA AND AND FACILITIES AND ADDITIONS TO EXISTING DWELLING
LOT 6 DP749791

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Title
SITE PLAN DA

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Scale 1:200 @ A1 Date JULY 2022
Project No. 1826 Drawing No. 01 Rev. G

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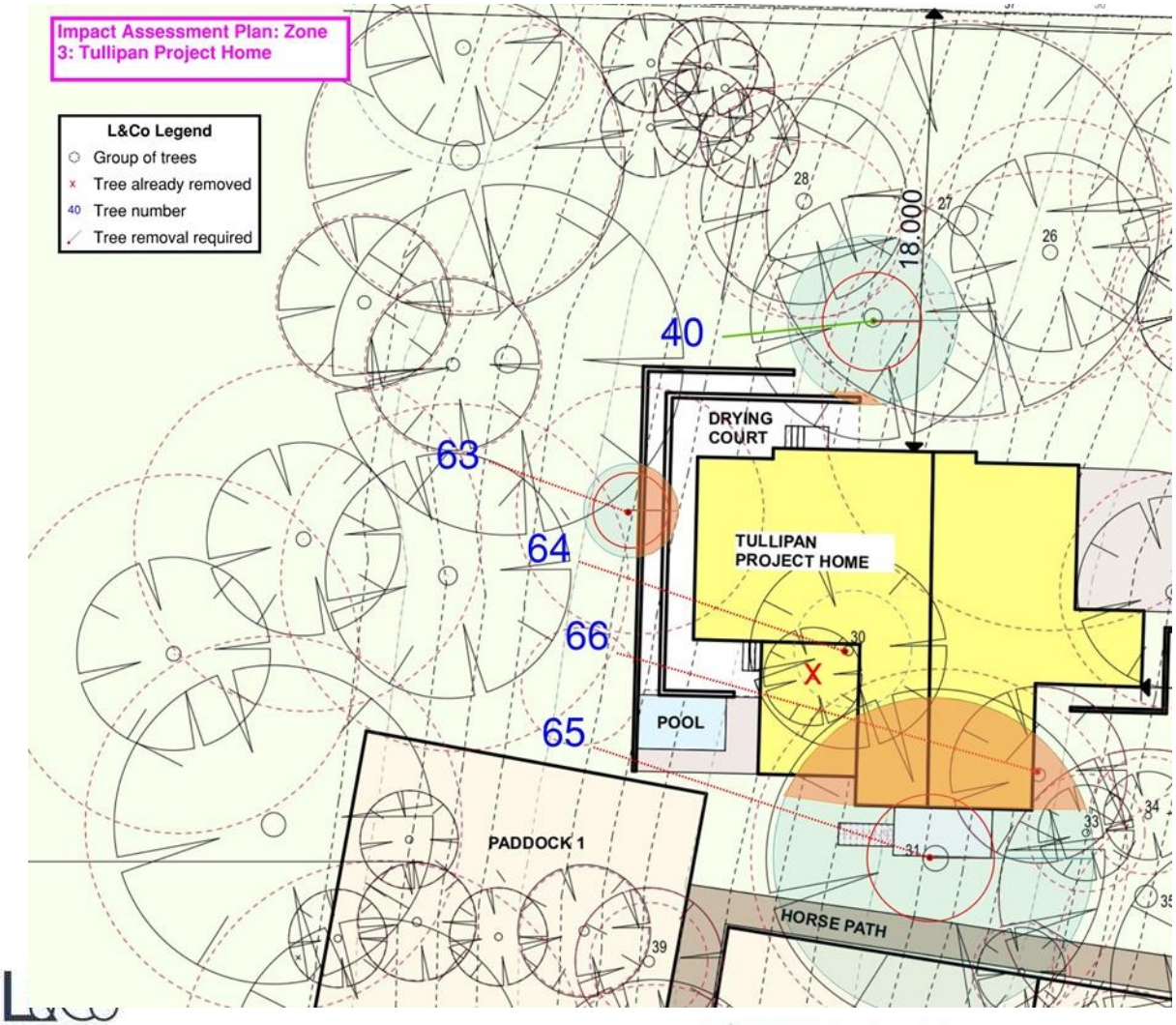

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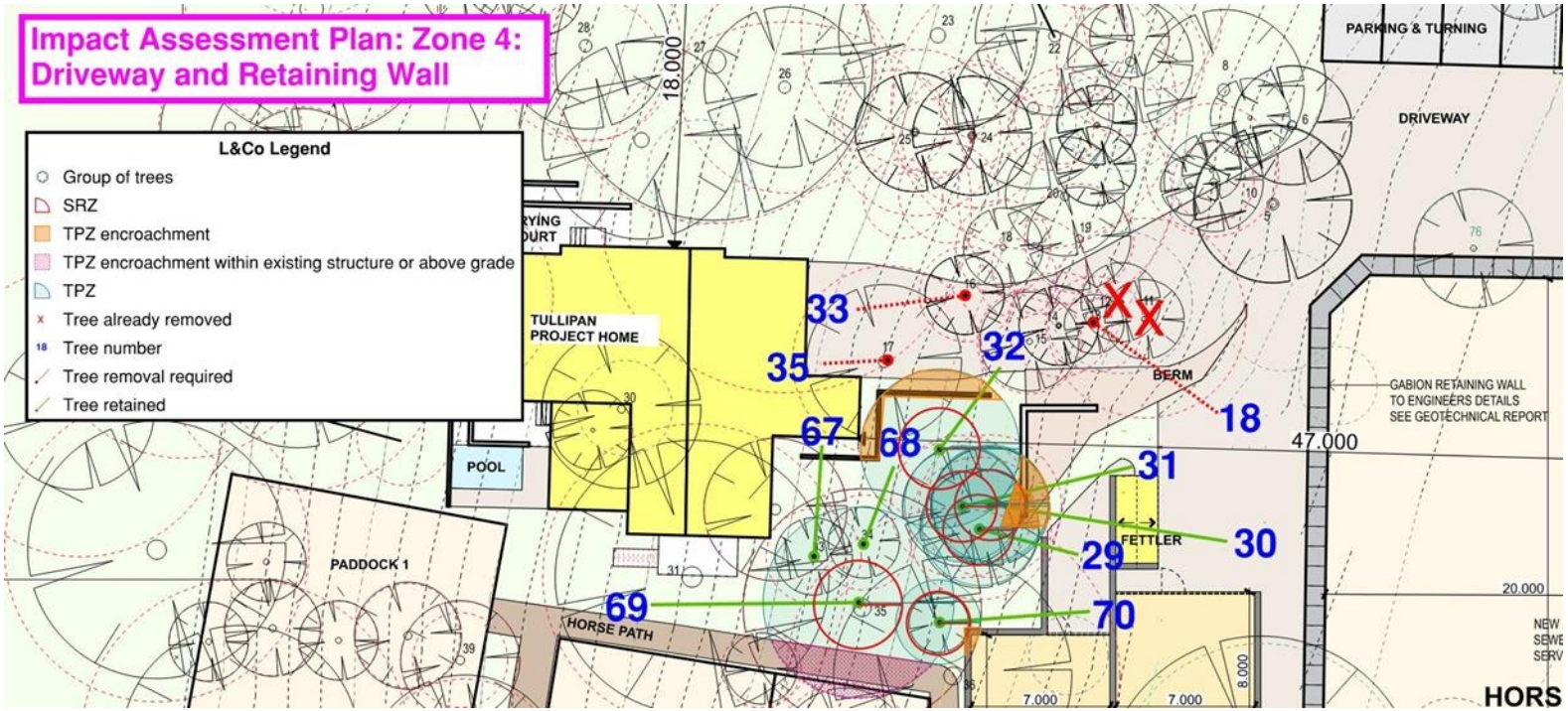

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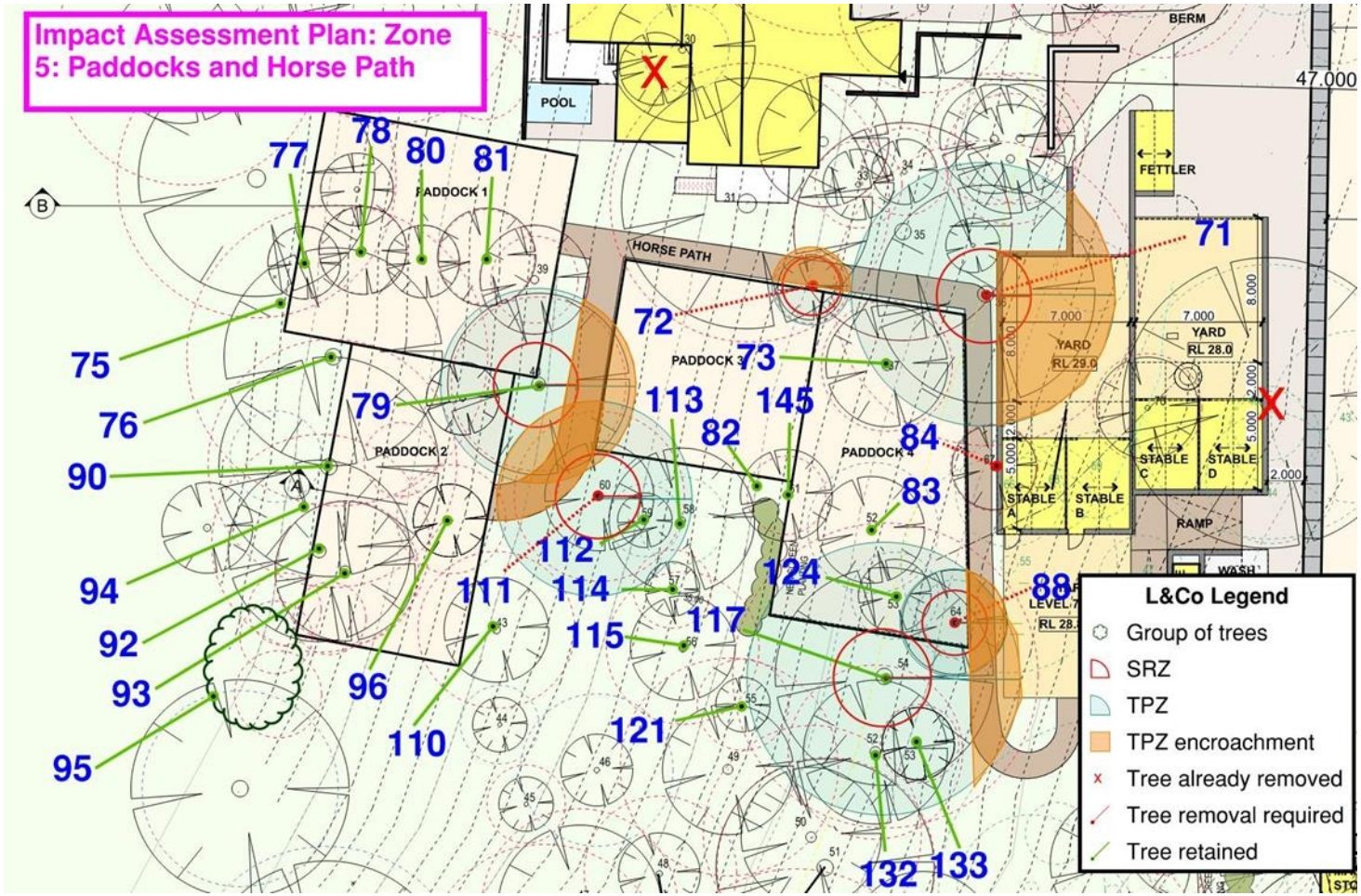

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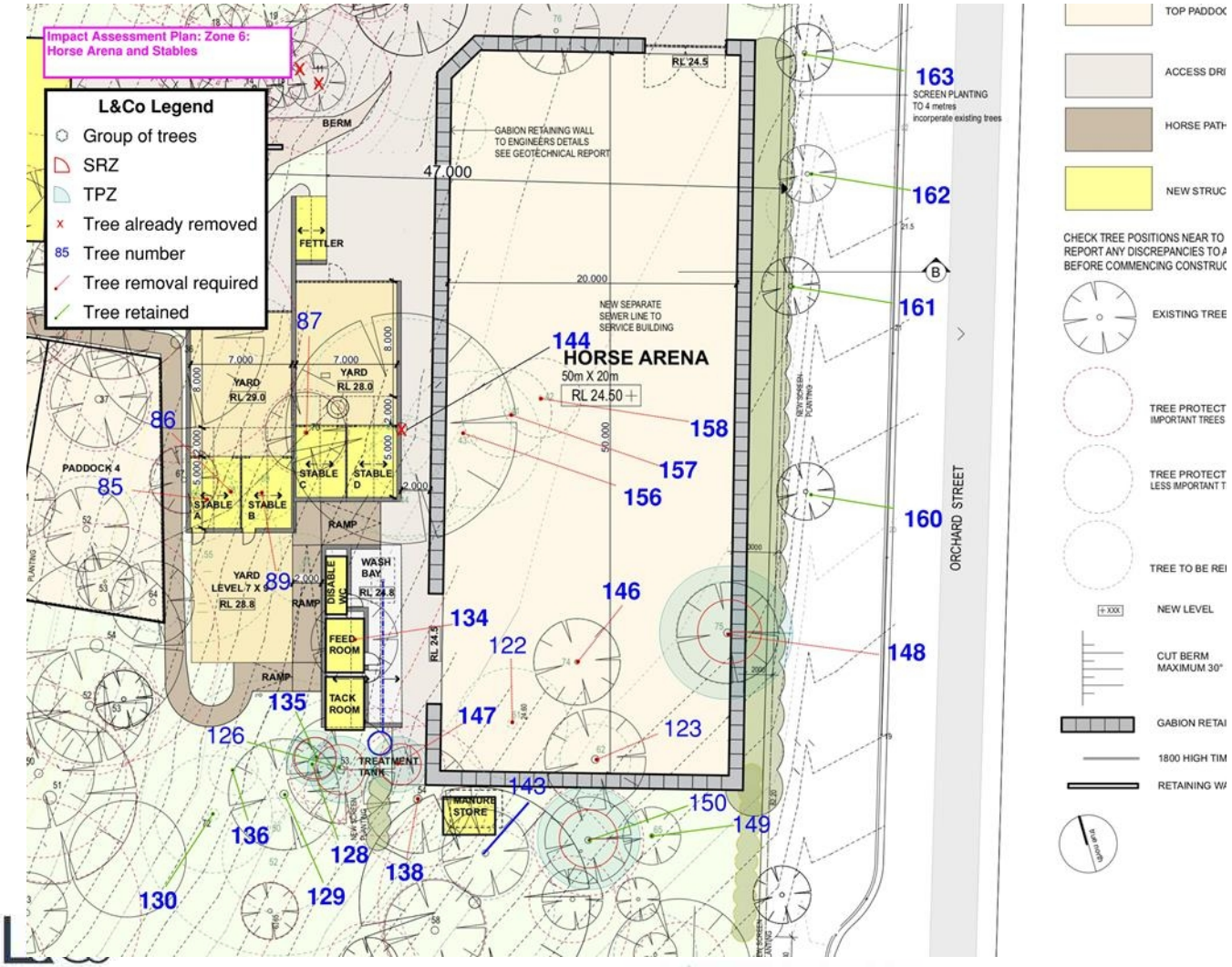

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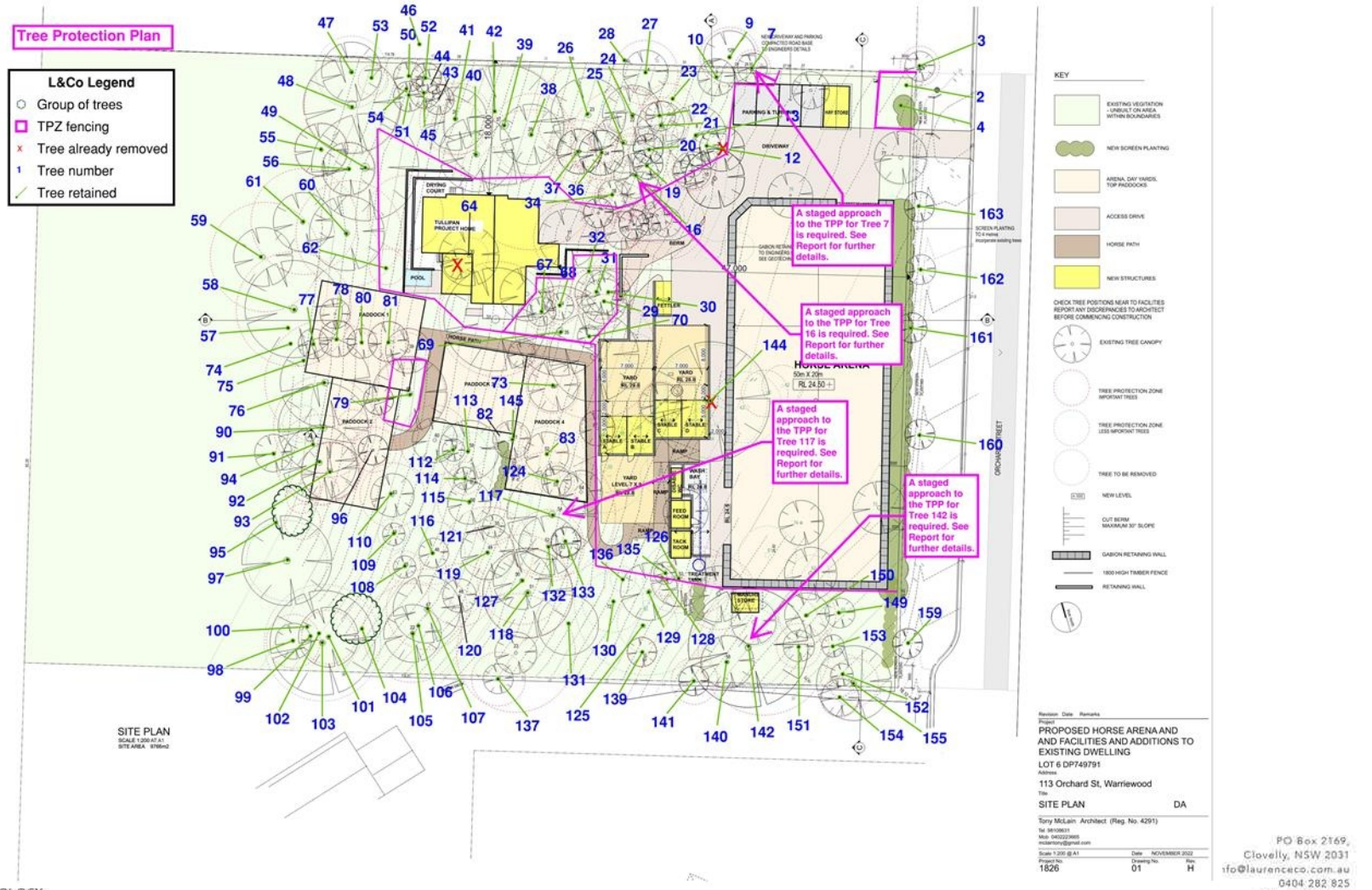
11.0 APPENDIX 6 | TREE PROTECTION PLAN



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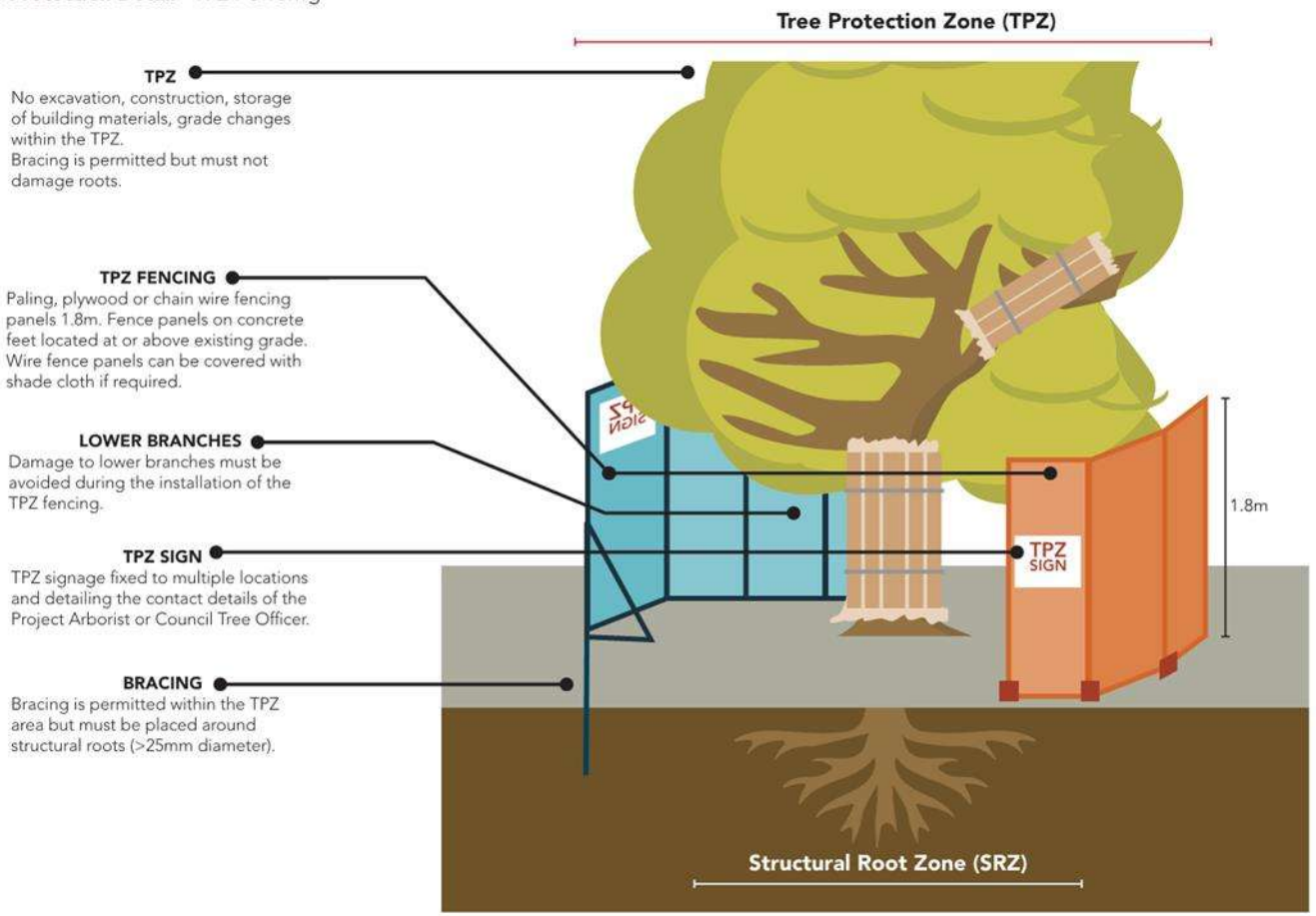
12.0 APPENDIX 7 | TYPICAL TREE PROTECTION DETAIL

Tree Protection Detail - TPZ Fencing



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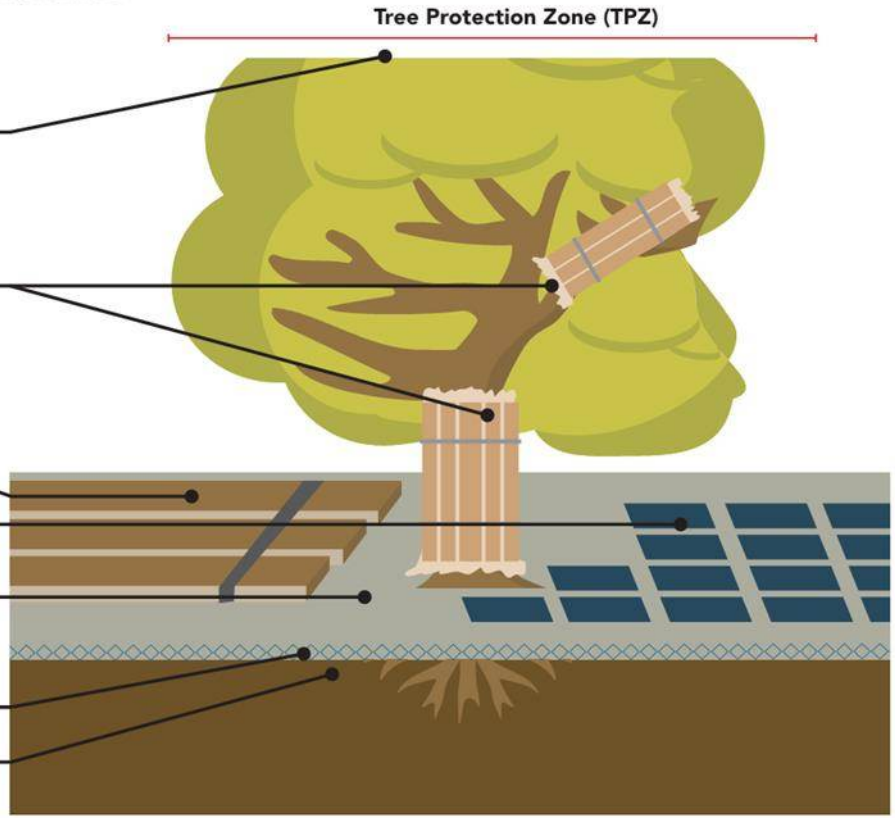
Tree Protection Detail - Ground Protection

Required if temporary access for machinery is required within the TPZ to protect roots and prevent soil compaction.



TPZ
No excavation, construction, storage of building materials, grade changes within the TPZ.

TRUNK AND BRANCH PROTECTION
Padding must extend beyond battens
Battens must be strapped together, not nailed or screwed to branch/trunk.

RUMBLE BOARDS
Over mulch/aggregate.

STEEL PLATES
With or without mulch.

MULCH/AGGREGATE
The TPZ should be mulched to a depth of 100mm with a non-toxic product (i.e. wood chips) with no fines.

GEOTEXTILE

IRRIGATION
Ground protection can reduce natural water infiltration and irrigation may be specified in certain situations. Irrigation must be installed by licensed irrigator and soil moisture levels monitored by the Project Arborist.

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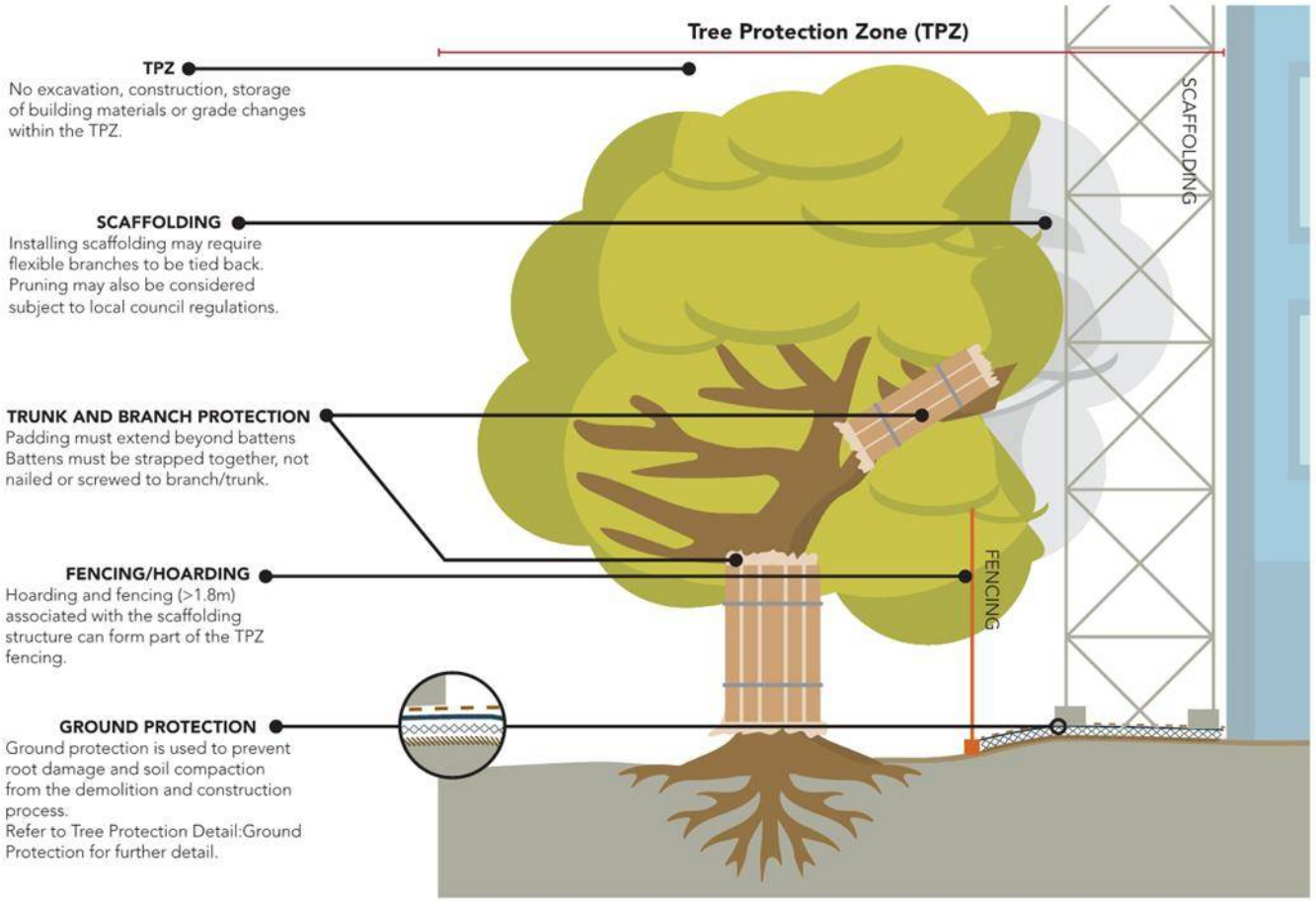
Tree Protection Detail - Scaffolding within TPZ



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13.0 APPENDIX 8 | TREE PROTECTION SPECIFICATION

13.1 **Appointment of Project Arborist**

13.1.1 Prior to commencement of works a Project Arborist should be engaged to monitor compliance with the protection measures. The Project Arborist will inspect tree protection measures and prepare a compliance certification for the principal certifying authority prior to the release of compliance certification. Contractors and site workers are to receive these specifications at least 3 days prior to commencing works. Contractors and site workers working within the TPZ should sign the site log confirming they have read and understood these specifications prior to commencing works.

13.2 **Compliance**

13.2.1 The Project Arborist will conduct regular site visits to certify the works are compliant with this specification. A compliance document will be prepared by the Project Arborist following each site inspection. The compliance document will include evidence of compliance with the tree protection measures detailed in this specification.

13.3 **Tree & Vegetation Removal**

13.3.1 Tree and vegetation removal will be undertaken prior to installation of tree protection measures. Tree removal works should be undertaken in accordance with the *Safe Work Australia Guide for Managing Risks of Tree Trimming and Removal Work* (2016).

13.3.2 Tree and vegetation removal must not damage trees to be retained.

13.4 **Tree Protection Zone**

13.4.1 Trees that are to be retained must be protected prior to and during construction from works that could negatively impact their health and structural integrity. The following works should not occur within the TPZ unless authorised by the Project Arborist:

- Modification of existing soil levels, excavations and trenching
- Mechanical removal of vegetation
- Movement of naturally occurring rock
- Storage of materials, plant/equipment and building of sheds
- No signage or hoarding shall be fixed to the trees
- Preparation of building materials, refuelling or disposal of waste materials and chemicals
- No lighting of fires
- No pedestrian or vehicular traffic
- Temporary or permanent location of services, or works required for their installation
- Any other activities that may damage the tree

13.6 **Tree Protection Fencing**

13.6.1 The TPZ fencing must be positioned at the perimeter of the TPZ and may be combined to form a single area where the TPZs of multiple trees overlap. The approximate location of the TPZ fencing is outlined in the Arboricultural Impact Assessment with the exact location determined by consultation between the Principal 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. The TPZ fencing must be at least 1.8m above grade and made of wire mesh panels that are supported by concrete feet and fastened together to prevent sideways movement. Tree damage, including any low branches, must be avoided during the installation of the tree protection fencing. The TPZ fencing must include signage to identify the TPZ fencing and include the Project Arborist contact details.

13.7 **Site Management**

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

13.8 **Works within the Tree Protection Zones**

13.8.1 In certain situations, works within the TPZ may be authorised by the determining authority. These works must be supervised by the Project Arborist. When working within the TPZ, special care should be taken to avoid damage to the tree's root system, trunks and lower branches.

13.8.2 If roots (>25mm∅) are encountered during excavation, demolition and construction works, these roots must be retained undamaged and advice sought from the Project Arborist. The design and final levels must remain flexible to enable the retention of roots >25mm∅ where deemed necessary by the Project Arborist.

13.9 **Ground Protection**

13.9.1 The movement of machinery should be restricted to existing paved areas or in areas with temporary ground protection (i.e. steel road plates, ground mats) when deemed necessary by the Project Arborist.

13.9.2 Ground protection should be installed as per AS4970 and Appendix 7- *Typical Tree Protection Detail*.

13.9.3 If irrigation is considered necessary, it should be installed first and by a licensed irrigator under the supervision of the Project Arborist with no trenching.

13.9.4 The irrigation should be covered with a layer of geotextile and mulched to a depth of 100mm with a non-toxic product (i.e. woodchips) with no fines.

13.9.5 Once the irrigation, geotextile and mulch are in place then the ground protection boards (steel plates or rumble boards) can in be installed.

13.9.6 Boards should remain in place for the entire build.

13.10 **Trunk & Branch Protection**

13.10.1 If trunk protection is required it should be installed by wrapping the trunk and first order branching with padding (i.e. carpet underlay or 10mm thick geotextile) to a minimum height of 2m. Timber battens (90 x 45mm), spaced at 150mm centres should be strapped together and placed over the padding (Refer to AS4970 for further details).

13.10.2 Branch protection should be installed when considered necessary by the Project Arborist.

13.10.3 Branches should be wrapped with padding (i.e. Ableflex) to provide protection. Where possible, branches should be tied back and construction works to take place around branches (with appropriate branch protection installed as required). If pruning is unavoidable it should be in accordance with AS4373 and supervised by the Project Arborist.

13.11 **Structure & Pavement Demolition**

13.11.1 The Project Arborist should supervise the demolition of existing structures/pavement within the TPZ. Machinery is to be excluded from the TPZ unless operating from existing slabs, pavements or areas of ground protection. Machinery should not contact the tree's roots, trunks, branches and crown.

13.11.2 Existing pavement should be hand lifted to minimise disturbance to the existing sub-base and to prevent damage to tree roots. Wherever possible, the existing sub-base material should remain in situ.

13.11.3 When removing slab sections within the TPZ, machinery must work from the tree outwards to ensure the machinery always remains on the un-demolished section of slab. Wherever possible, footings or elements below grade should be retained to minimise disturbance to the tree's roots.

13.11.4 Structures must be shattered with hand-operated pneumatic/electric breaker before removal when considered necessary by the Project Arborist.

13.11.5 If roots (>25mm∅) are encountered during excavation, demolition and construction works these roots must be retained undamaged and advice sought from the Project Arborist. Exposed roots must be protected from direct sunlight, drying out and extremes of temperature by using 10mm thick jute geotextile fabric. This fabric should be kept moist at all times.

13.11.6 Where the Project Arborist determines that the tree is using underground elements (i.e. footings, pipes, rocks etc.) for support, these elements should be left *in situ*.

13.12 **Pavement/Kerb Installation**

13.12.1 Installation of pavements and sub-base within the TPZ must be supervised by the Project Arborist. New surfaces and sub-base materials should be placed above grade to minimise excavations and retain roots (unless prior root mapping has determined that there are no roots within the area of construction).

13.12.2 If roots (>25mm∅) are encountered during the installation of the new sub-base and surfaces these roots must be retained undamaged and advice sought from the Project Arborist. The design and final levels must remain flexible to enable the retention of roots >25mm∅ where deemed necessary by the Project Arborist.

13.12.3 Compaction of the ground prior to the installation of fill is not permitted.

13.12.4 New sub-base material should be a 20mm no-fines road base (i.e. Benedict Sand & Gravel- Product Code 20NF/RB or similar). Recycled concrete aggregates should not be used to avoid raising soil pH levels.

13.12.5 If required, bedding sand should be washed river sand (no crushed paving blends). The bedding sand should be consolidated with a pedestrian operated plate compactor only. If possible, pavement material should be permeable.

13.12.6 Kerbs within the TPZ should be modified to bridge roots (>25mm∅) unless root pruning is approved and undertaken by the Project Arborist.

13.13 **Underground Services**

13.13.1 The installation of underground services should be located outside of the TPZ. Where this is not possible they should be installed around or below roots (>25mm∅) using either hydrovac or hand excavation and supervised by the Project Arborist.

13.13.2 Boring methods may be used for the installation of services 800mm below grade. Excavations for starting and receiving pits for the boring equipment should be located outside of the TPZ or located to avoid roots (>25mm∅, or determined by the Project Arborist).

13.13.3 Excavations, Root Protection & Root Pruning

13.13.4 Excavations and root pruning within the TPZ must be supervised by the Project Arborist and should be avoided where possible.

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

13.13.6 Roots >25mm∅ should be pruned by the Project Arborist only. Roots <25mm∅ may be pruned by the Principal Contractor. Root pruning should be undertaken with clean, sharp secateurs or a pruning saw to ensure a smooth wound face, free from tears.

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

14.0 APPENDIX 9 | PLATES

a) Showing Tree 11. b) Showing Trees 29, 30, 31, 65 & 71. c) Showing Tree 65 in conflict with fencing. d) Showing Tree 35. e) Showing Trees 29, 30, 31, 66, 67 & 68. f) Showing Trees 147 & 148.

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15.0 APPENDIX 10 | LIMITATIONS & DISCLAIMERS

15.1 Subject trees were assessed from the ground only and for providing an Arboricultural Impact Assessment and Tree Protection Specification.

15.2 All recommendations in this Arboricultural Impact Assessment and Tree Protection Specification report are based on the observations made on the days of inspection (18.11.21 & 4.8.22). There is no warranty, expressed or implied, that problems or deficiencies relating to the subject trees, or the subject site may not arise in the future.

15.3 Laurence & Co Consultancy takes care to obtain information from reliable sources. However, Laurence & Co Consultancy can neither guarantee nor be responsible for the accuracy of information provided by others. Plans, diagrams, graphs and photographs in this Arboricultural Impact Assessment and Tree Protection Specification 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.

15.4 This report has been prepared for exclusive use by the client. This report should not be viewed by others or for any other reason outside its intended target or without the prior written consent of Laurence & Co Consultancy. Unauthorised alteration or separate use of any section of the report invalidates the report.

15.5 Many factors may contribute to tree failure and cannot always be predicted. Laurence & Co Consultancy 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.

15.6 **Limitation of Liability**. Laurence & Co Consultancy shall be liable only for direct damages that result from negligence or wilful misconduct in the performance of its services. Under no circumstances shall Laurence & Co Consultancy be liable for indirect, consequential, special, or punitive damages, or for damages caused by the client's failure to perform its obligations under law or contract. Laurence & Co Consultancy shall not be liable for and Client shall indemnify Laurence & Co Consultancy from and against all claims, demands, liabilities and costs (including attorneys' and expert fees) arising out of or in any way related to our performance or non-performance of services, including all on-site activities except to the extent caused by Laurence & Co Consultancy's negligence or wilful misconduct. In no event shall Laurence & Co Consultancy's liability exceed the amount paid to Laurence & Co Consultancy by the Client for our professional services (net of reimbursable expenses) and Client specifically releases Laurence & Co Consultancy for any damages, claims, liabilities and costs in excess of that amount.

15.7 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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