L&Co
CONSULTANCY
ARBORICULTURE
PLANT PATHOLOGY

ARBORICULTURAL IMPACT ASSESSMENT

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TREE PROTECTION SPECIFICATION

REF: L&Co22032 | 16 December 2024 | v4
SITE ADDRESS | 113 Orchard Street, Warriewood
PREPARED FOR | Jill Hunter
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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. The site is subject to fire Asset Protection Zone.

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 3, 7, 9, 26, 28, 36-38, 43-47, 48, 50-57, 62, 63, 72-75, 77, 78, 80, 82, 90, 92, 93, 94, 98, 99-105, 107, 108, 109, 112, 113, 121, 137, 141, 145, 152, 154, 155, 160, & 162. 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 2, 10, 24, 25, 39, 40, 59, 76, 111, 114, 140 & 163. 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 2, 10, 24, 25, 40, 59, 76, 111, 140 & 163.

1.5 The proposed effluent management area is within the SRZs of Trees 126, 128, 132, 135, 136, 139, 142 & 151. 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. The proposed effluent area must be installed above grade as per the Martens Consulting Engineer's Report. If trenching is required, the impact assessment on the trees in this area must be reassessed as this will likely require the removal of further trees. The area should be planted with ground cover to absorb the excess nutrients and designed by a contractor with experience installing effluent areas in the TPZ.

1.6 The proposed clean water diversion mounds are within the TPZs of Trees 61, & 116. The proposed driveway is within the TPZ of Tree 16. the proposed effluent management area is within the TPZ of Tree 133. The TPZ encroachments were 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 TPZ of Tree 5 and represents a *Major Encroachment* (as defined by AS4970). However, Tree 5 will need to be removed as the TPZ encroachment is too large for its long-term viability, based on a consideration of its health, structure and the size of the encroachment. Tree 5 was assigned a Moderate Landscape Significance Value.

1.8 The proposed works are also within the TPZ/SRZs of Trees 5, 8, 16, 19, 20, 27, 29, 31, 34, 49, 58, 64, 65, 69, 70, 79, 81, 83, 88, 91, 95, 96, 97, 117, 119, 120, 124, 159 & 161 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 16, 58, 69, 79 & 97, which were assigned High Landscape Significance Values.

1.9 Trees 1, 4, 6, 11, 12, 13, 14, 15, 17, 18, 21, 22, 23, 32, 35, 41, 42, 60, 66, 67, 68, 71, 84, 85, 86, 87, 89, 110, 115, 144, 146, 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, 60, 71, 110, 115, 118, 125, 129, 130 & 131 which were assigned High Landscape Significance Values.

1.10 Trees 118, 122, 123, 125, 127, 129, 130, 131, 134, 138, 143, 149, 150 & 153 are within the proposed effluent management area. 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.

1.11 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.

1.12 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.

2.0 INTRODUCTION |

2.1 Background

2.1.1 This Arboricultural Impact Assessment and Tree Protection Specification Report was prepared for Jill Hunter 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 (7) zones according to the main impact from the proposal and the tree locations. The seven (7) zones were designated *Entrance, Driveway and Float parking, Surrounding Bushland and Diversion Mound, Tullipan Project Home, Driveway and Retaining wall, Paddocks and Horse Path, Horse Arena and Stables and Effluent Management Area.*

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):

- Land Capability and Wastewater Management Options Assessment. Prepared by Martens Consulting Engineers. Dated December 2024.
- Development Application Assessment Report Application Number DA2024/0262. Prepared by Anne-Marie Young of Northen Beaches Council. Dated n.d.
- Pre-Development Application Asset Protection Zone/ Landscaping Report. Prepared by CBAA Bushfire Experts. Dated 20th July 2024.
- Site Plan Rev. N. Prepared by Tony McLain Architect. Dated 06.12.2024.

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 in addition to an effluent management area and clean water diversion mounds 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, Driveway and Horse Float Parking

4.2 Trees 3, 7 & 9

4.2.1 Tree 3 was identified as *Callistemon viminalis* (Weeping Bottlebrush), and Trees 7 & 9 as *Angophora floribunda* (Rough Barked Apple) and were allocated Low to Moderate Landscape Significance Values and Retention Values of *Consider for Removal* or *Priority for Removal*. The Retention value for Tree 3 was adjusted to Priority for Retention, given it was located outside of the site.

4.2.2 The supplied plans show no works are proposed within the TPZs of Trees 3, 7 & 9. 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.

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

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

4.3 Trees 2 & 10

4.3.1 Trees 2 & 10 were identified as *Prunus* sp. and *Glochidion ferdinandi* (Cheese Tree). Tree 2 was assigned a Low Landscape Significance Value, and Retention Value of *Consider for Removal*. Tree 10 was assigned an adjusted Retention Value of *Priority for Retention*, given it was located outside of the site. Tree 2 is not prescribed based on dimensions and species and can be removed without Council Consent.

4.3.2 The supplied plans show the proposed driveway is within the TPZ of Trees 2 & 10. The proposed TPZ encroachment is approximately 6.0%, and 7.2%, respectively, which represents *Minor Encroachments* 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. Given the good physiological condition of the trees and the size of the encroachments, the proposed development can be accommodated without affecting the long term structural and physiological viability of Trees 2 & 10 if the following tree sensitive construction methods and protection measures are carefully implemented under the supervision of the Project Arborist.

4.3.3 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.

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

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

4.4 **Trees 4, 11, 12, 13, 14, 15, 17, 21, 22 & 23**

4.4.1 Trees 11, 12, 13 & 21 were identified as *Angophora floribunda* (Rough Barked Apple) and Trees 14, 15, 22 & 23 as *Syncarpia glomulifera* (Turpentine), Tree 17 as *Allocasurina littoralis*, and Tree 4 as Citrus sp. respectively and were allocated Low and Moderate Landscape Significance Values and Retention Values of *Priority for Removal* and *Consider for Retention*, respectively. Tree 4 is not prescribed based on species and can be removed without Council Consent.

4.4.2 The supplied plans show that Trees 4, 11, 12, 13, 14, 15, 17, 21, 22 & 23 are within the footprint of the proposed driveway and float parking 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 **Trees 5, 8, 19 & 20**

4.5.1 Trees 5, 8, 19 & 20 were identified as *Macadamia integrifolia* (Macadamia), *Glochidion ferdinandi* (Cheese Tree), *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.

4.5.2 The supplied plans show the proposed driveway is within the SRZs of Trees 5, 8, 19 & 20. 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 was estimated to be 32.6%, 43.7%, 25.2% and 22.2%, respectively, and also represents a *Major Encroachment* as defined by AS-4970.

4.5.3 Given the size and location of the encroachments, the long term structural and physiological viability of Trees 5, 8, 19 & 20 are highly likely to be compromised by the proposed encroachment and the tree will need to be removed to accommodate the works.

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

4.5.5 Refer to Appendix 5 for further detail.

4.6 **Tree 16**

4.6.1 Tree 16 was identified as *Eucalyptus botryoides* (Bangalay) and was allocated a High Landscape Significance Value and Retention Value of *Priority for Retention.*

4.6.2 The supplied plans show the proposed driveway is within the SRZs of Tree 16. 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 35.6% and also represents a *Major Encroachment* as defined by AS-4970.

4.6.3 Given the size and location of the encroachment, the long term structural and physiological viability of Tree 16, is highly likely to be compromised by the proposed encroachment and the tree will need to be removed to accommodate the works.

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

4.6.5 Refer to Appendix 5 for further detail.

4.7 **Zone 2: Surrounding Bushland**

4.8 **Trees 26, 28, 36, 37, 38, 43, 44, 45, 46, 47, 48, 50, 51, 52, 53, 54, 55 & 56.**

4.8.1 Trees 26, 28, 36, 37, 38, 43, 44, 45, 46, 47, 48, 50, 51, 52, 53, 54, 55 & 56 were identified as those species listed in Appendix 2. They were allocated Low to Moderate Landscape Significance Values, excepting Trees 26 & 48 which were allocated High Landscape Significance Values. The Trees were assigned Retention Values of *Consider for Removal* or *Priority for Removal*, excepting Trees 48, 55 & 56 which were allocated *Consider for Retention*, and Trees 26, 28 & 46 were allocated *Priority for Retention.* Trees 28 & 46 were located outside of the site.

4.8.2 Tree 106 had been removed.

4.8.3 The supplied plans show no works are proposed within the TPZs of the Trees 26, 28, 36, 37, 38, 43, 44, 45, 46, 47, 48, 50, 51, 52, 53, 54, 55 & 56. 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.

4.8.4 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 **Trees 24, 25 & 39**

4.9.1 Trees 24, 25 & 39 were identified as *Syncarpia glomulifera (Turpentine)*, *Eucalyptus botryoides (Bangalay),* and *Eucalyptus piperita* (Sydney Peppermint) respectively, and were assigned Moderate Landscape Significance Values, and Retention Values of *Consider for Retention* and *Priority for Removal*, respectively.

4.9.2 The supplied plans show the proposed driveway and clean water diversion mound is within the TPZs of Trees 24, 25 & 39. The proposed TPZ encroachments are approximately 4.0%, 3.5% and 9.8%, respectively, which represent *Minor Encroachments* 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 cases. Given the good physiological condition of the trees and the size of the encroachments, the proposed development can be accommodated without affecting the long term structural and physiological viability of Trees 24, 25 & 39 if the following tree sensitive construction methods and protection measures are carefully implemented under the supervision of the Project Arborist.

4.9.3 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.

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

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

4.10 **Trees 41 & 42**

4.10.1 Trees 41 & 42 were identified as *Angophora floribunda* (Rough Barked Apple) and Trees 14, 15, 22 & 23 as *Syncarpia glomulifera* (Turpentine), Tree 17 as *Allocasurina littoralis*, and Tree 4 as Citrus sp. respectively and were allocated Low and Moderate Landscape Significance Values and Retention Values of *Priority for Removal* and *Consider for Retention*, respectively.

4.10.2 The supplied plans show that Trees 41 & 42 are within the footprint of the proposed clean water diversion mound and will need to be removed.

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

4.10.4 Refer to Appendix 5 for further detail.

4.11 **Tree 27**

4.11.1 Tree 27 was identified as *Syncarpia glomulifera* (Turpentine) and was allocated a Moderate Landscape Significance Value and Retention Value of *Consider for Retention.*

4.11.2 The supplied plans show the proposed float parking is within the SRZ of Tree 27. 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 18.0% and also represents a *Major Encroachment* as defined by AS-4970.

4.11.3 Given the size and location of the encroachment, the long term structural and physiological viability of Tree 27, is highly likely to be compromised by the proposed encroachment and the tree will need to be removed to accommodate the works.

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

4.11.5 Refer to Appendix 5 for further detail.

4.12 **Tree 49**

4.12.1 Tree 49 was identified as *Eucalyptus piperita* (Sydney Peppermint) and was allocated a Moderate Landscape Significance Value and Retention Value of *Priority for Removal.*

4.12.2 The supplied plans show the proposed clean water diversion mound is within the SRZ of Tree 49. 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 20.7% and also represents a *Major Encroachment* as defined by AS-4970.

4.12.3 Given the size and location of the encroachment, the long term structural and physiological viability of Tree 49, is highly likely to be compromised by the proposed encroachment and the tree will need to be removed to accommodate the works.

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

4.12.5 Refer to Appendix 5 for further detail.

4.13 Zone 3: Tullipan Project Home

4.14 Tree 40

4.14.1 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.

4.14.2 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 7.7% 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.

4.14.3 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.

4.14.4 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.

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

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

4.15 Trees 32, 33, 35, 66, 67 & 68

4.15.1 Trees 32, 33 & 66 were identified as *Syncarpia glomulifera* (Turpentine), *Angophora floribunda* (Rough Barked Apple), Tree 35 as *Eucalyptus piperita* (Sydney Peppermint), Tree 67 as Angophora floribunda (Rough Barked Apple) and Tree 68 as *Allocasuarina littoralis* (Black She Oak), respectively and were allocated Low and Moderate Landscape Significance Values, excepting Tree 35 which was assigned High, and Retention Values of *Consider for Retention*, excepting Trees 33, 35 and 67 which were assigned *Consider for Removal*, *Priority for Retention* and *Priority for Removal*, respectively.

4.15.2 The supplied plans show that Trees 32, 33, 35, 66, 67 & 68 are within the footprint of the proposed residential dwelling and will need to be removed.

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

4.15.4 Refer to Appendix 5 for further detail.

4.16 Trees 34 & 64

4.16.1 Trees 34 & 64 were identified as *Angophora floribunda* (Rough Barked Apple) and were allocated Low Landscape Significance Values and Retention Values of *Consider for Removal* and *Priority for Removal*, respectively.

4.16.2 The supplied plans show the proposed residential dwelling, hay and manure store and associated drying area retaining wall are within the SRZs of Trees 34 & 64. 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 30.9% and 44.1%, respectively, which also represents a *Major Encroachment* as defined by AS-4970.

4.16.3 Given the size and location of the encroachment, the long term structural and physiological viability of Trees 34 & 64 is highly likely to be compromised by the proposed encroachment and the trees will need to be removed to accommodate the works.

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

4.16.5 Refer to Appendix 5 for further detail.

4.17 Tree 65

4.17.1 Tree 65 was identified as *Eucalyptus umbra* (Broad Leaved White Mahogany*)* and was allocated a High Landscape Significance Value and Retention Value of *Priority for Retention.*

4.17.2 The supplied plans show the proposed pool and residential dwelling are within the TPZ of Tree 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 22.2%, which also represents a *Major Encroachment* as defined by AS-4970.

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

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

4.17.5 Refer to Appendix 5 for further detail.

4.18 **Tree 69**

4.18.1 Tree 69 was identified as *Eucalyptus robusta* (Swamp Mahogany) and was allocated a High Landscape Significance Value and Retention Value of *Priority for Retention.*

4.18.2 The supplied plans show the proposed residential dwelling is within the SRZ of Tree 69. 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 29.9%, which also represents a *Major Encroachment* as defined by AS-4970.

4.18.3 Given the size and location of the encroachment, the long term structural and physiological viability of Tree 69 is highly likely to be compromised by the proposed encroachment and the trees will need to be removed to accommodate the works.

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

4.18.5 Refer to Appendix 5 for further detail.

4.19 **Zone 4: Driveway and Retaining Wall (Engineering Works)**

4.20 **Trees 29 & 31**

4.20.1 Trees 29 & 31 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.*

4.20.2 The supplied plans show the proposed residential development and retaining wall is within the SRZs of Trees 29 & 31. 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 was estimated to be 27.2% and 37.0%, respectively, which also represents a *Major Encroachment* as defined by AS-4970. Given the size and location of the encroachment, the long term structural and physiological viability of Trees 29 & 31 is highly likely to be compromised by the proposed encroachment and the trees will need to be removed to accommodate the works.

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

4.20.4 Refer to Appendix 5 for further detail.

4.21 **Tree 30**

4.21.1 Tree 30 was identified as *Syncarpia glomulifera* (Turpentine), and was allocated a Moderate Landscape Significance Value and Retention Value of *Consider for Retention.*

4.21.2 The supplied plans show the proposed residential development and retaining wall is within the TPZ of Tree 30. The overall TPZ encroachments was estimated to be 49.2%, which also represents a *Major Encroachment* as defined by AS-4970. Given the size and location of the encroachment, the long term structural and physiological viability of Tree 30 is highly likely to be compromised by the proposed encroachment and the tree will need to be removed to accommodate the works.

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

4.21.4 Refer to Appendix 5 for further detail.

4.22 **Tree 18**

4.22.1 Tree 18 was identified as *Syncarpia glomulifera* (Turpentine) and was allocated a Low Landscape Significance Value, and Retention Value *Consider for Removal*.

4.22.2 The supplied plans show that Tree 18 is within the footprint of the proposed driveway and will need to be removed.

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

4.22.4 Refer to Appendix 5 for further detail.

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

4.24 **Trees 57, 62, 63, 72, 73, 74, 75, 77, 78, 80, 82, 90, 92, 93, 94, 108, 109, 112, 113, 121 & 145**

4.24.1 Trees 57, 62, 63, 72, 73, 74, 75, 77, 78, 80, 82, 90, 92, 93, 94, 108, 109, 112, 113, 121 & 145 were identified as the species listed in Appendix 2 and were allocated Low to Moderate Landscape Significance Values, excepting Trees90 & 112, which were allocated High Landscape Significance Values, and Retention Values of *Priority for Removal* or *Consider for Removal,* excepting Trees 62, 72, 82, 90, 92, 93, 94, 108, 112, 113, & 121, which were allocated Retention Values of *Consider for Retention* or *Priority for Retention.*

4.24.2 The supplied plans show no works are proposed within the TPZs of Trees 57, 62, 63, 72, 73, 74, 75, 77, 78, 80, 82, 90, 92, 93, 94, 108, 109, 112, 113, 121 & 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.

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

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

4.25 **Trees 59, 76, 111 & 114**

4.25.1 Trees 59 & 76 were identified as *Eucalyptus piperita* (Sydney Peppermint), Tree 114 as *Angophora floribunda* (Rough Barked Apple) and Tree 111 as *Angophora costata* (Sydney Red Gum), and were allocated High Landscape Significance Values, excepting Tree 114 which was allocated Moderate, and Retention Values of *Consider for Retention* and *Priority for Retention*, excepting Tree 111, which was allocated *Priority for Removal*.

4.25.2 The supplied plans show that the proposed clean water diversion mound is within the TPZ of Trees 59 & 76, and the horse path is in the TPZ of Trees 111 & 114. The TPZ encroachments are approximately 3.1%, 9.0%, 9.1% and 2.3%, respectively, and represent *Minor Encroachments* 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 cases.

4.25.3 Given the size of the encroachments, the proposed development can be accommodated without affecting the long term structural and physiological viability of Trees 59, 76, 111 & 114 if the following tree sensitive construction methods and protection measures are carefully implemented under the supervision of the Project Arborist.

4.25.4 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.

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

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

4.26 **Trees 60, 71, 84, 110 & 115**

4.26.1 Trees 60 & 115 were identified as *Eucalyptus piperita* (Sydney Peppermint) , Tree 110 as *Angophora floribunda* (Rough Barked Apple), Tree 71 as *Eucalyptus umbra* (Broad Leaved White Mahogany), and Tree 84 as *Allocasuarina littoralis* (Black She Oak) and were allocated High Landscape Significance Values, excepting Tree 84, which was allocated Moderate, and Retention Values of *Priority for Retention, and Consider for Retention*.

4.26.2 The supplied plans show Tree 60 is within the footprint of the clean water diversion mound and Trees 71, 84, 110 and 115 are in the footprint of the horse path and feed rooms, and Trees 60, 71, 84, 110 & 115 will need to be removed.

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

4.26.4 Refer to Appendix 5 for further detail.

4.26.5 **Trees 58, 79, 83, 88, 96, 97 & 120**

4.26.6 Trees 79, 96 & 97 were identified as *Angophora floribunda* (Rough Barked Apple), Tree 83 as *Allocasuarina littoralis (Black She Oak),* Tree 88 as *Syncarpia glomulifera* (Turpentine), and Tree 120 as *Corymbia gummifera* (Red Bloodwood), and were allocated Moderate Landscape Significance Values, excepting Trees 58, 79 & 97 which were assigned High Values, and Retention Values of *Consider for Retention* or *Priority for Retention.*

4.26.7 The supplied plans show the proposed clean water diversion mounds are within the SRZs of Trees 58, 97 & 120, and the proposed horse path is in the SRZ of Trees 79, 83, 88, & 96. 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 was estimated to be 37.6%, 49.4%, 67.5%, 24.8%, 12.4%, 18.8% & 25.7% respectively, which also represents a *Major Encroachment* as defined by AS-4970. Given the size and location of the encroachments, the long term structural and physiological viability of Trees 58, 79, 83, 88, 96, 97 & 120 is highly likely to be compromised by the proposed encroachment and the trees will need to be removed to accommodate the works.

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

4.26.9 Refer to Appendix 5 for further detail.

4.27 **Trees 70, 81, 91 & 95**

4.27.1 Trees 70, 81, & 91 were identified as *Angophora floribunda* (Rough Barked Apple), and Tree 95 as *Allocasuarina torulosa* (Forest Oak) and were allocated Low Landscape Significance Values, and Retention Values of *Consider for Removal* or *Priority for Removal.*

4.27.2 The supplied plans show the proposed clean water diversion mounds are within the SRZs of Trees 91 & 95, and the proposed horse path is in the SRZ of Trees 70 & 81. 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 was estimated to be 28.6%, 12.7%, 11.0% and 12.5%, respectively, which also represents a *Major Encroachment* as defined by AS-4970. Given the size and location of the encroachments, the long term structural and physiological viability of Trees 70, 81, 91 & 95 is highly likely to be compromised by the proposed encroachment and the trees will need to be removed to accommodate the works.

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

4.27.4 Refer to Appendix 5 for further detail.

4.28 **Tree 119**

4.28.1 Tree 119 was identified as *Corymbia gummifera (Red Bloodwood)* and was allocated a High Landscape Significance Value and Retention Value of *Priority for Retention.*

4.28.2 The supplied plans show the proposed clean water diversion mound, and the effluent management area are within the SRZ of Tree 119. 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 40.1%, which also represents a *Major Encroachment* as defined by AS-4970.

4.28.3 Given the size and location of the encroachment, the long term structural and physiological viability of Tree 119 is highly likely to be compromised by the proposed encroachment and the tree will need to be removed to accommodate the works.

4.28.4 Removal and replacement with A healthy advanced size specimens would replace the loss of amenity within a long timeframe.

4.28.5 Refer to Appendix 5 for further detail.

4.29 **Tree 61 & 116**

4.29.1 Trees 61 & 116 were identified as *Eucalyptus piperita (Syndey Peppermint)* and Allocasuarina littoralis (Black She Oak), respectively and were allocated a High and Moderate Landscape Significance Values and Retention Values of *Priority for Retention and Consider for Retention,* respectively.

4.29.2 The supplied plans show the proposed clean water diversion mounds are within the TPZs of Trees 61 & 116. The overall TPZ encroachments were estimated to be 10.9%, and 12.4% 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.

4.29.3 Refer to Appendix 5 for further detail.

4.29.4 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.

4.29.5 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.

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

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

4.30 **Tree 117**

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

4.30.2 The supplied plans show the horse path, stables and the effluent management area are within the SRZ of Tree 117. 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 40.2%, which also represents a *Major Encroachment* as defined by AS-4970.

4.30.3 Given the size and location of the encroachment, the long term structural and physiological viability of Tree 117 is highly likely to be compromised by the proposed encroachment and the tree will need to be removed to accommodate the works.

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

4.30.5 Refer to Appendix 5 for further detail.

4.31 Zone 6: Horse Arena and Stables

4.32 Trees 160, 161, 162 & 163

4.32.1 Trees 161, 162 & 163 were identified as *Callistemon viminalis* (Weeping Bottlebrush) and Tree 160 *as Callistemon citrinus* (Lemon Scented Bottlebrush) and were allocated Low Landscape Significance Values, and Retention Values of Consider for Removal

4.32.2 The supplied plans show no works are proposed within the TPZs of Trees 160 & 162. 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.

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

4.32.4 The proposed retaining wall is within the TPZ of Tree 163 and represents a *Minor Encroachment* as defined by AS-4970, which is considered acceptable by the standard when it is compensated for elsewhere and contiguous within the TPZ, as 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 163 if the tree protection measures detailed in 4.32.3 are carefully implemented under the supervision of the Project Arborist.

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

4.32.6 The proposed retaining wall is within the SRZ/TPZ of Tree 161 and represents a *Major Encroachment* as defined by AS-4970. Given the size and location of the encroachment, the long term structural and physiological viability of Tree 161 is highly likely to be compromised by the proposed encroachment and the tree will need to be removed to accommodate the works.

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

4.32.8 Refer to Appendix 5 for further detail.

4.33 Trees 1, 6, 85, 86, 87, 89, 122, 123, 134, 144, 146, 148, 156, 157 & 158

4.33.1 Trees 1, 6, 85, 86, 87, 89, 122, 123, 134, 144, 146, 148, 156, 157 & 158 were identified as *Jacaranda mimmosifolia* (Jacaranda), *Callistemon viminalis* (Weeping Bottlebrush) Trees 85 & 86 as Syncarpia glomulifera (Turpentine) Tree 87 as Angophora costata (Sydney Red Gum) Tree 89 as *Allocasuarina littoralis* (Black She Oak) Tree 134 as *Melicope elleryana* (Doughwood), Trees 146 & 156 as *Angophora floribunda* (Rough Barked Apple), Tree 157 as *Glochidion ferdinandi* (Cheese Tree), Tree 148 as *Eucalyptus robusta* (Swamp Mahogany) and Tree 158 as *Syzygium australe* (Brush Cherry Lilly Pilly), 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, 134, & 148, which were allocated Retention Values of Consider for Retention.

4.33.2 Tree 144 was dead and had been removed.

4.33.3 The supplied plans show that Trees 1, 6, 85, 86, 87, 89, 122, 123, 134, 144, 146, 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.

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

4.33.5 Refer to Appendix 5 for further detail.

4.34 Tree group 147

4.34.1 Tree group 147 was identified as *Glochidion ferdinandi* (Cheese Tree) and was allocated a Moderate Landscape Significance Value, and Retention Value of Consider for Retention.

4.34.2 The supplied plans show that the proposed effluent management area is within the TPZ of Tree 147. The TPZ encroachment is approximately 9.5%, 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.

4.34.3 Given the size of the encroachment, the proposed development can be accommodated without affecting the long term structural and physiological viability of Tree 147 if the following tree sensitive construction methods and protection measures are carefully implemented under the supervision of the Project Arborist.

4.34.4 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.

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

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

4.35 Zone 7: Effluent Management Area

4.36 The proposed effluent area must be installed above grade as per the Marten's report. If trenching is required, the impact assessment on the trees in this area must be reassessed as this will likely require the removal of further trees. The area should be planted with ground cover to absorb the excess nutrients and designed by a contractor with experience installing effluent areas in the TPZ.

4.37 **Trees 98, 99, 100, 101, 102, 103, 104, 105, 107, 137, 141, 152, 154 & 155**

4.37.1 Trees 98, 99, 100, 101, 102, 103, 104, 105, 107, 137, 141, 152, 154 & 155 were identified as those species listed in Appendix 2 and were allocated Low to Moderate Landscape Significance Values, excepting Trees 105, 107 & 152, and Retention Values of Consider for Removal or Priority for Removal, excepting Trees 101, 105, 107, 141, 152, 154 & 155, which were assigned Consider for Retention, or Priority for Retention.

4.37.2 The supplied plans show no works are proposed within the TPZs of Trees 98, 99, 100, 101, 102, 103, 104, 105, 107, 137, 141, 152, 154 & 155. 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.

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

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

4.38 **Tree 140**

4.38.1 Tree 140 was identified as *Angophora costata* (Sydney Red Gum) and was allocated a Moderate Landscape Significance Value, and Retention Value of Consider for Retention.

4.38.2 The supplied plans show that the proposed effluent management area is within the TPZ of Tree 140. The TPZ encroachment is approximately 6.7%, 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.

4.38.3 Given the size of the encroachment, the proposed development can be accommodated without affecting the long term structural and physiological viability of Tree 140 if the following tree sensitive construction methods and protection measures are carefully implemented under the supervision of the Project Arborist.

4.38.4 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.

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

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

4.39 **Trees 106, 122, 123, 127, 138, 143, 149, 150 & 153**

4.39.1 Trees 127, 138, & 149 were identified as *Angophora floribunda* (Rough Barked Apple), Tree 122 as *Allocasuarina littoralis* (Black She Oak), Tree 143 as *Angophora costata* (Sydney Red Gum) and Tree 150 as *Allocasuarina torulosa* (Forest Oak), and were allocated Low to Moderate Landscape Significance Value and Retention Values of Priority for Removal or Consider for Removal, excepting Trees 122, 150 & 153, which were assigned Consider for Retention.

4.39.2 Tree 106 was removed, and Tree 123 was dead.

4.39.3 The supplied plans show that Trees 106, 122, 123, 127, 138, 143, 149, 150 & 153 are within the footprint of the proposed effluent management area.

4.39.4 All of the encroachment is the effluent management area, which if constructed above grade represents a lightweight structure.

4.39.5 Refer to Appendix 5 for further detail.

4.39.6 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.

4.39.7 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.

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

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

4.40 **Trees 118, 125, 129, 130 & 131**

4.40.1 Trees 118, 125, 129, 130 & 131 were identified as *Eucalyptus botryoides* (Bangalay), *Allocasuarina littoralis* (Black She Oak), *Corymbia gummifera* (Red Bloodwood), *Eucalyptus piperita* (Sydney Peppermint), and *Angophora floribunda* (Rough Barked Apple), respectively, and were allocated High Landscape Significance Value and Retention Values of Priority for Retention.

4.40.2 The supplied plans show that Trees 118, 125, 129, 130 & 131 are within the footprint of the proposed effluent management area.

4.40.3 All of the encroachment is the effluent management area, which if constructed above grade represents a lightweight structure.

4.40.4 Refer to Appendix 5 for further detail.

4.40.5 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.

4.40.6 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.

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

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

4.41 **Trees 126, 128, 132, 135, 136, 139, 142, 151 & 159**

4.41.1 Trees 126, 128, 132, 135, 136, 139, 142, 151 & 159 were identified as Allocasuarina littoralis (Black She Oak), Angophora floribunda (Rough Barked Apple), Livistonia australis (Cabbage Tree Palm), Banksia integrifolia (Coastal Banksia), Angophora costata (Sydney Red Gum), Eucalyptus sp., Eucalyptus piperita (Sydney Peppermint), Syncarpia glomulifera (Turpentine) and Callistemon viminalis (Weeping Bottlebrush), respectively, and were allocated Low to Moderate Landscape Significance Values and Retention Values of Priority for Retention and Consider for Retention, excepting Trees 132, 135, 139, 151 & 159 , which were assigned Consider for Removal.

4.41.2 Tree 159 was not prescribed based on dimensions and can be removed without Council Consent.

4.41.3 The supplied plans show the effluent management area is within the SRZs of Trees 126, 128, 132, 135, 136, 139, 142, 151 & 159. 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 50.9%, 56.0%, 39.9%, 28.2%, 43.3%, 15.9%, 48.8%, 50.2%, 18.8%, 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.

4.41.4 All of the proposed TPZ encroachment is the effluent management area, which if constructed above grade represents a lightweight structure.

4.41.5 Refer to Appendix 5 for further detail.

4.41.6 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.

4.41.7 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.

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

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

4.41.10 Tree 159 is being removed due to the proposed retaining wall.

4.42 **Tree 133**

4.42.1 Tree 133 was identified as *Livistonia australis* (Cabbage Tree Palm) and was allocated a Low Landscape Significance Value and Retention Value of Consider for Removal.

4.42.2 The supplied plans show the effluent management area is within the TPZ of Tree 133. The overall TPZ encroachment was estimated to be 13.2% 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.

4.42.3 All of the proposed TPZ encroachment is the effluent management area, which if constructed above grade represents a lightweight structure.

4.42.4 Refer to Appendix 5 for further detail.

4.42.5 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.

4.42.6 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.

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

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

4.43 **Removal & Replacement Planting**

4.43.1 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.

4.43.2 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.

4.43.3 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.

4.0 APPENDIX 1 | METHODOLOGY

5.1 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.

5.2 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.

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

5.4 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.

5.5 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*).

5.6 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

5.7 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

5.8 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

5.9 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.

5.10 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

<table>
<tr><th rowspan="2">ULE</th><th colspan="5">LANDSCAPE SIGNIFICANCE</th></tr>
<tr><th>VERY HIGH</th><th>HIGH</th><th>MODERATE</th><th>LOW</th><th>INSIGNIFICANT</th></tr>
<tr><td>40 years +</td><td rowspan="2">Priority for Retention</td><td colspan="2">Priority for Retention</td><td rowspan="3">Consider for Removal</td><td rowspan="3">Priority for Removal</td></tr>
<tr><td>15-40 years</td><td>Priority for Retention</td><td>Consider for Retention</td></tr>
<tr><td>5-15 years</td><td colspan="3">Consider for Retention</td></tr>
<tr><td>Less than 5 years</td><td>Consider for Removal</td><td colspan="3">Priority for Removal</td></tr>
</table>

The above table was provided by Anna Hopwood of TreeIQ™

5.11 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).*

5.12 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.

5.13 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)

5.14 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.

5.15 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

5.16 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.

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

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6.0 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 mimmosifolia* (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.	Within Development Footprint
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.	6.0%
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.	Within Development Footprint
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.	32.6% (Within SRZ)
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.	No Encroachment
8	*Glochidion ferdinandi* (Cheese Tree)	10	4	175	2	14	1.7	Good	Good	Mature	15-40	Moderate	*Consider for Retention*	Structures within SRZ.	43.7% (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 (%)
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.	7.2%
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.	Within Development Footprint
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.	Within Development Footprint
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.	Within Development Footprint
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.	Within Development Footprint
16	*Eucalyptus botryoides* (Bangalay)	23	7	425	5	82	2.4	Good	Good	Mature	40+	High	*Priority for Retention*	Previously crown lifted.	35.6% (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 (%)
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.	Within Development Footprint
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.	25.2% (Within SRZ)
20	*Syncarpia glomulifera* (Turpentine)	12	4	0	2	13	1.6	Good	Good	Semi-mature	15-40	Moderate	*Consider for Retention*	Small (<25mmø) epicormic growth in moderate volumes.	22.2% (Within SRZ)
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.	Within Development Footprint
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.	Within Development Footprint
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.	Within Development Footprint
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.	4.0%

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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.	3.5%
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.	18.0% (Within SRZ)
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.	27.2% (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.	49.2%
31	*Syncarpia glomulifera* (Turpentine)	14	4	275	3	34	2.0	Good	Good	Mature	5-15	Moderate	*Consider for Retention*	Not full VTA.	37.0% (Within SRZ)
32	*Syncarpia glomulifera* (Turpentine)	14	4	375	5	64	2.3	Good	Good	Mature	5-15	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 (%)
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.	30.9% (Within SRZ)
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*	Lcl lcd 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.	9.8%

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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.	7.7%
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.	Within Development Footprint
42	*Syncarpia glomulifera* (Turpentine)	9	3	100	2	13	1.5	Good	Good	Semi-mature	15-40	Low	*Consider for Removal*	Not full VTA.	Within Development Footprint
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* (Syndey 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.	20.7%
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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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 (%)
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.	37.6% (Within SRZ)
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.	3.1%
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.	Within Development Footprint
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.	10.9%
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.	No Encroachment
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 .	No Encroachment
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.	44.1% (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 (%)
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.	22.2%
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.	Within Development Footprint
68	*Allocasuarina littoralis* (Black She Oak)	10	2	100	2	13	1.5							Not full VTA.	Within Development Footprint
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.	29.9% (Within SRZ)
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.	28.6% (Within SRZ)
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.	Within Development Footprint
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.	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 (%)
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.	9.0%
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.	49.4% (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	2	13	1.5	Poor	Good	Senescent	<5	Low	*Priority for Removal*	Crown consists of epicormics. Crown density 0-25%.	12.7% (Within SRZ)

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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.	67.5% (Within SRZ)
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.	24.8% (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.	11.0% (Within SRZ)
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.	12.5% (Within SRZ)
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.	12.4% (Within SRZ)
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.	18.8% (Within SRZ)
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.	0.0%

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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 crwon death.Crown density 0-25%. Crown consists mainly of epicormic growth.	No Encroachment
103	*Eucalyptus piperita* (Syndey 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* (Syndey 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.	Within Development Footprint
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.	9.1%
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.	2.3%
115	*Eucalyptus piperita* (Syndey 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.	Within Development Footprint
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.	12.4%

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117	*Eucalyptus piperita* (Syndey 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.	40.2%
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.	Within Development Footprint
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.	40.1% (Within SRZ)
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.	25.7% (Within SRZ)
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.	10.4% (Within SRZ)
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.	Within Development Footprint

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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.	50.9% (Within SRZ)
127	*Angophora floribunda* (Rough Barked Apple)	10	3	225	3	23	1.8	Poor	Good	Senescent	<5	Low	*Priority for Removal*	Localised crwon death.Crown density 0-25%. Crown consists mainly of epicormic growth.	Within Development Footprint
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.	56.0% (Within SRZ)
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.	Within Development Footprint
130	*Eucalyptus piperita* (Syndey 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.	Within Development Footprint
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.	Within Development Footprint
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	39.9% (Within SRZ)
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.	13.2%
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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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.	28.2% (Within SRZ)
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.	43.3% (Within SRZ)
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.	15.9% (Within SRZ)
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%.	6.7%
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* (Syndey 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.	48.8% (Within SRZ)
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%.	Within Development Footprint

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144	Dead														Within Development Footprint
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.	9.5%
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.	Within Development Footprint
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.	Within Development Footprint
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.	50.2% (Within SRZ)
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.	Within Development Footprint
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.	18.8% (Within SRZ)
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.	23%

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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.	8% Minor Encroachment

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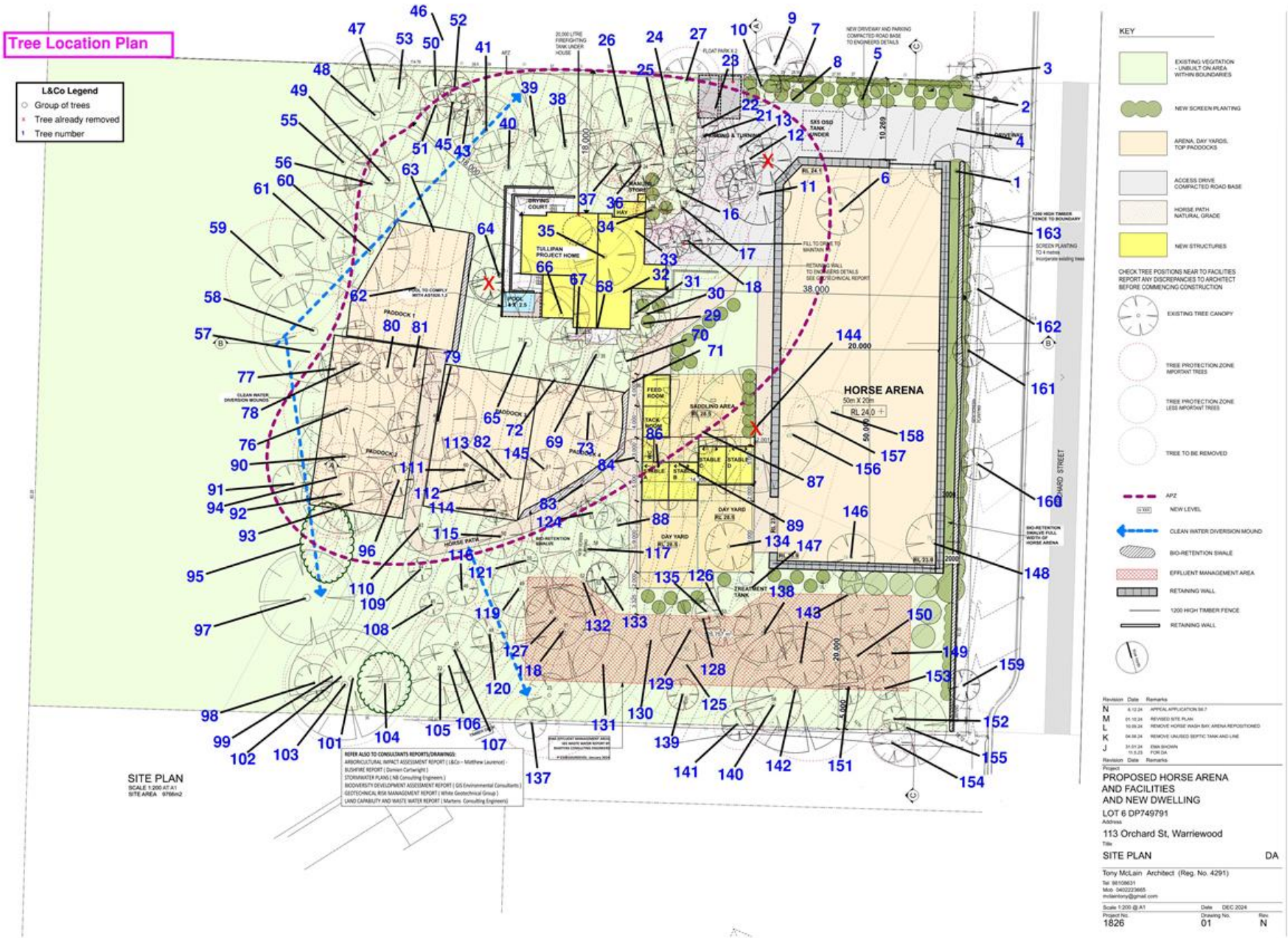
7.0 APPENDIX 3 | TREE LOCATION PLAN



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8.0 APPENDIX 4 | PROPOSED DEVELOPMENT PLANS

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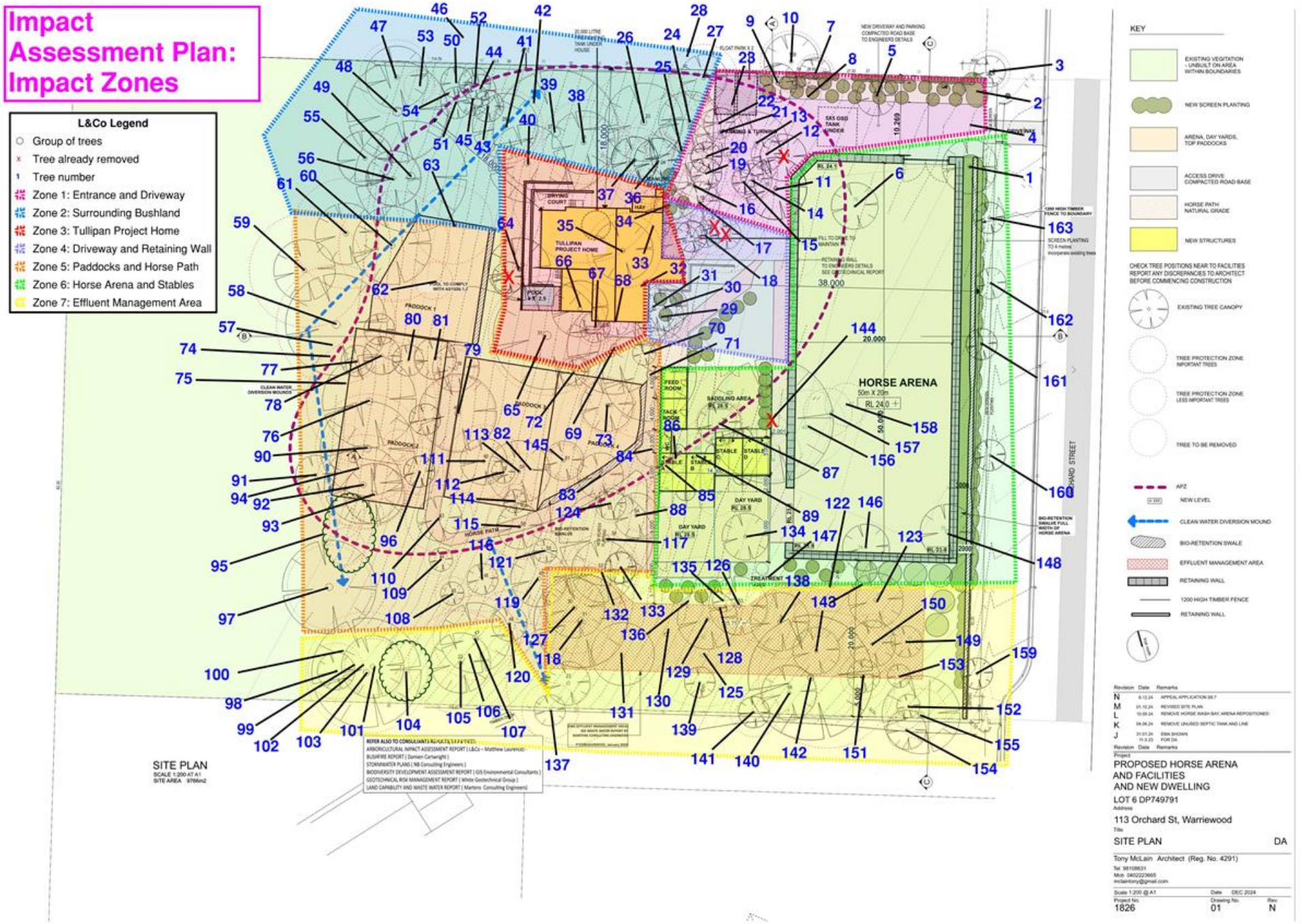
9.0 APPENDIX 5 | ARBORICULTURAL IMPACT ASSESSMENT PLANS



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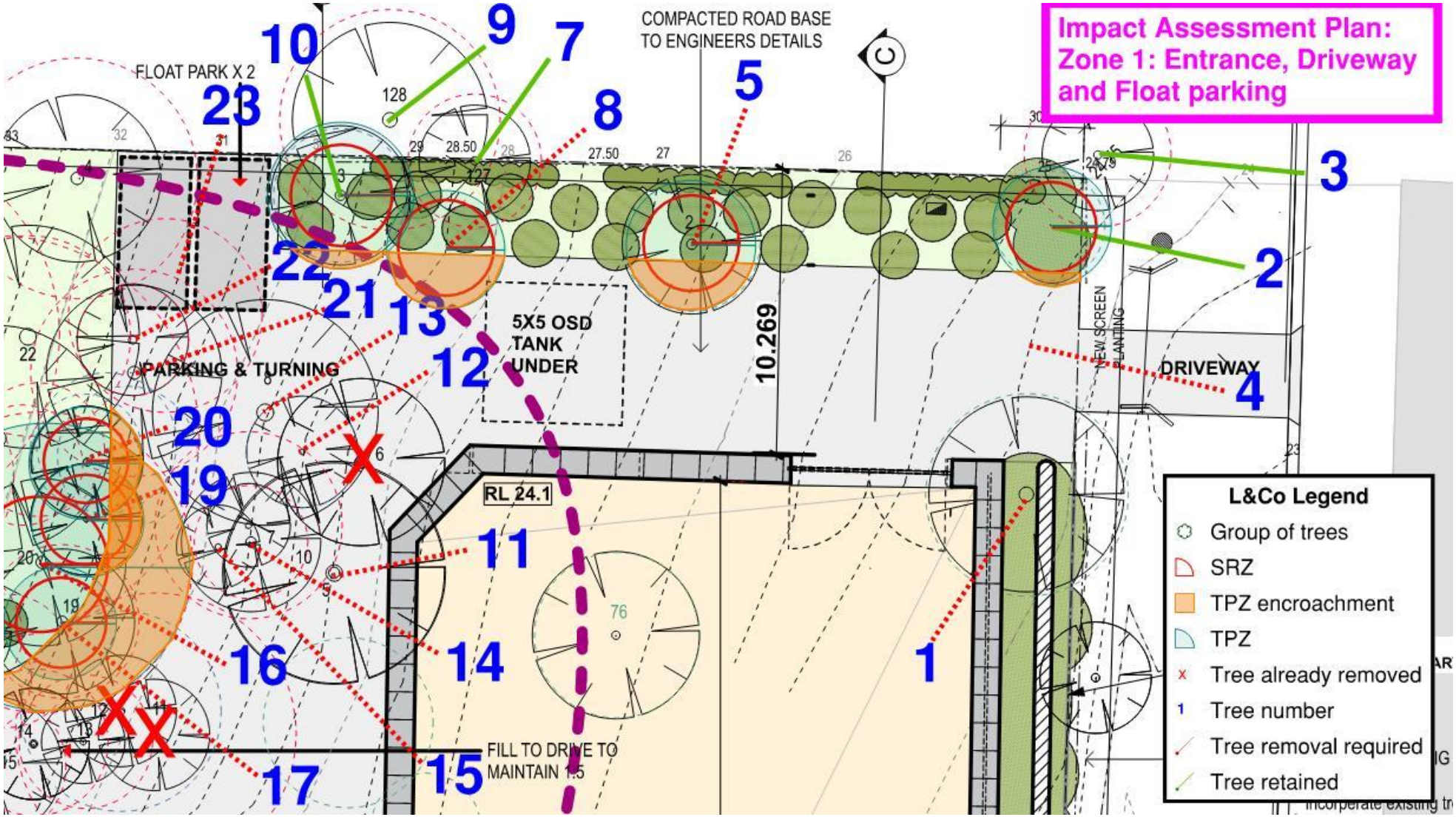

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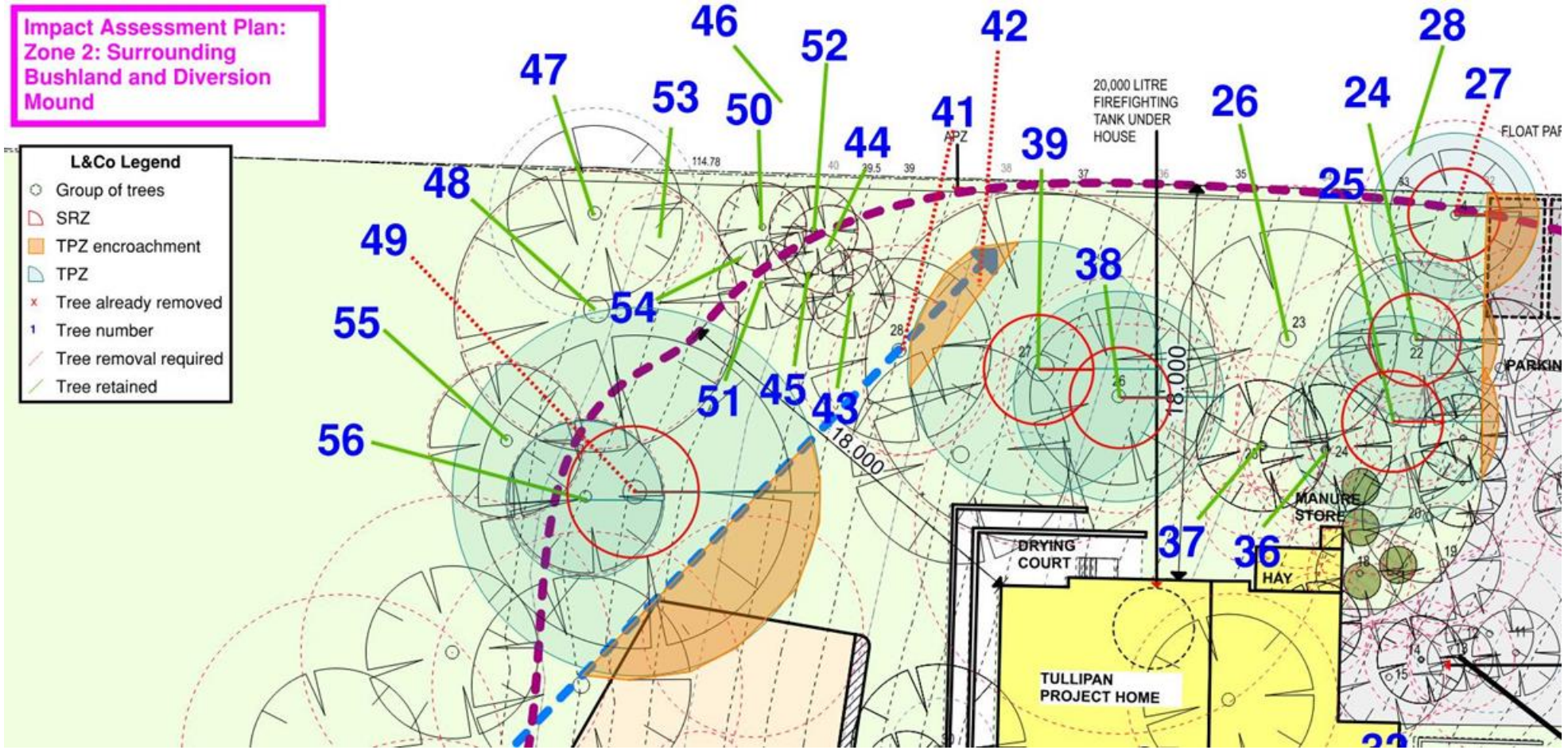

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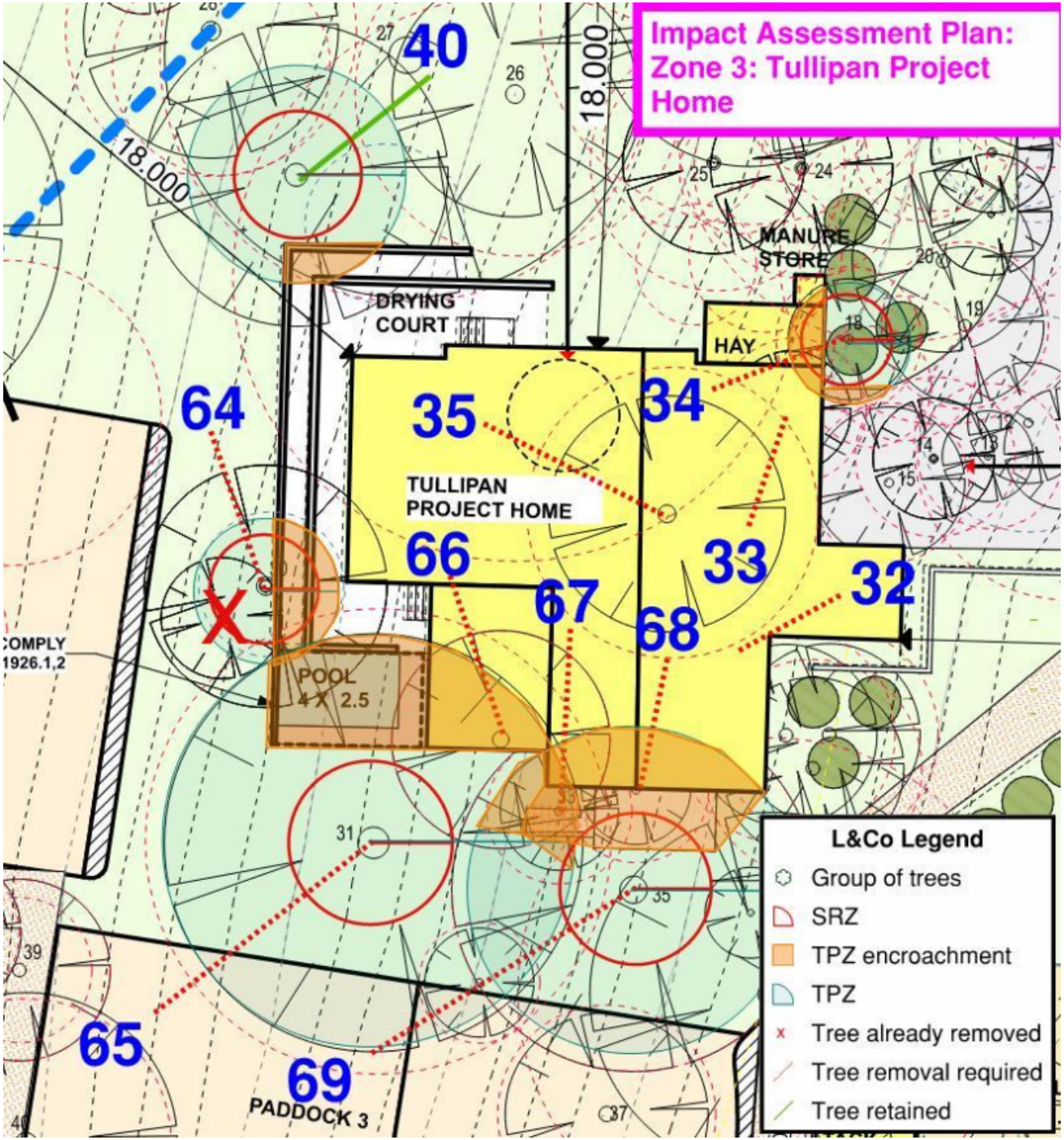

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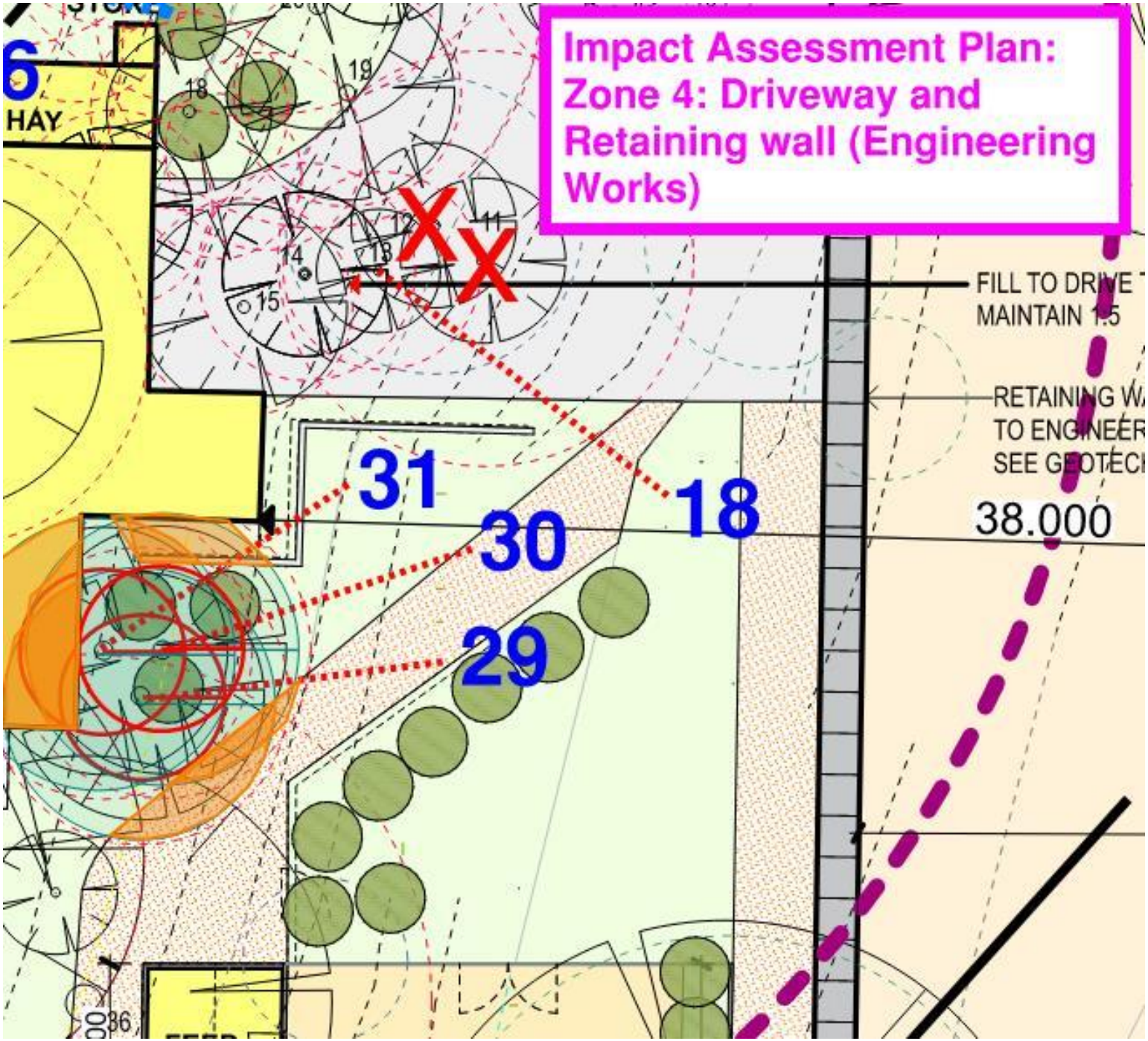

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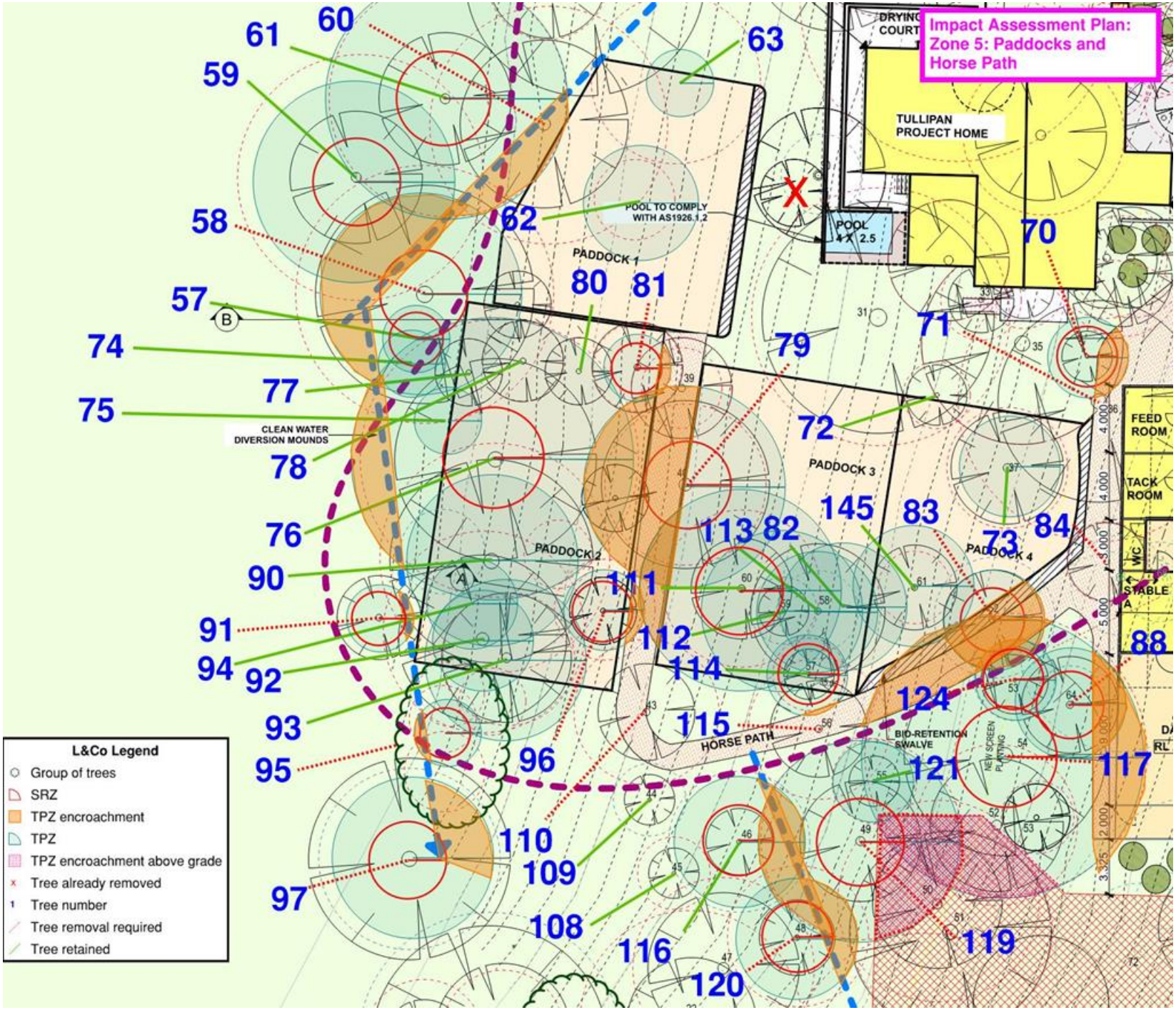

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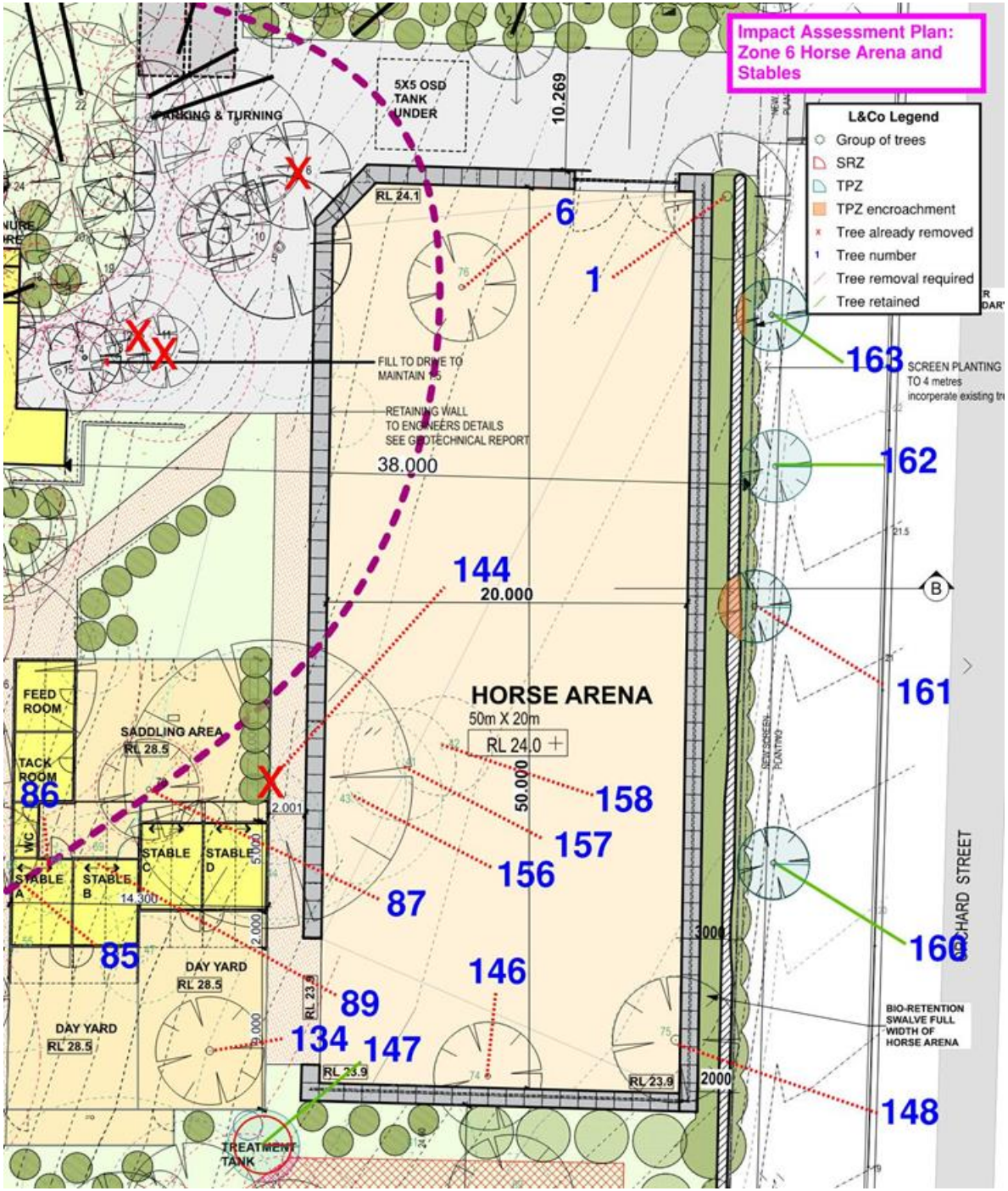

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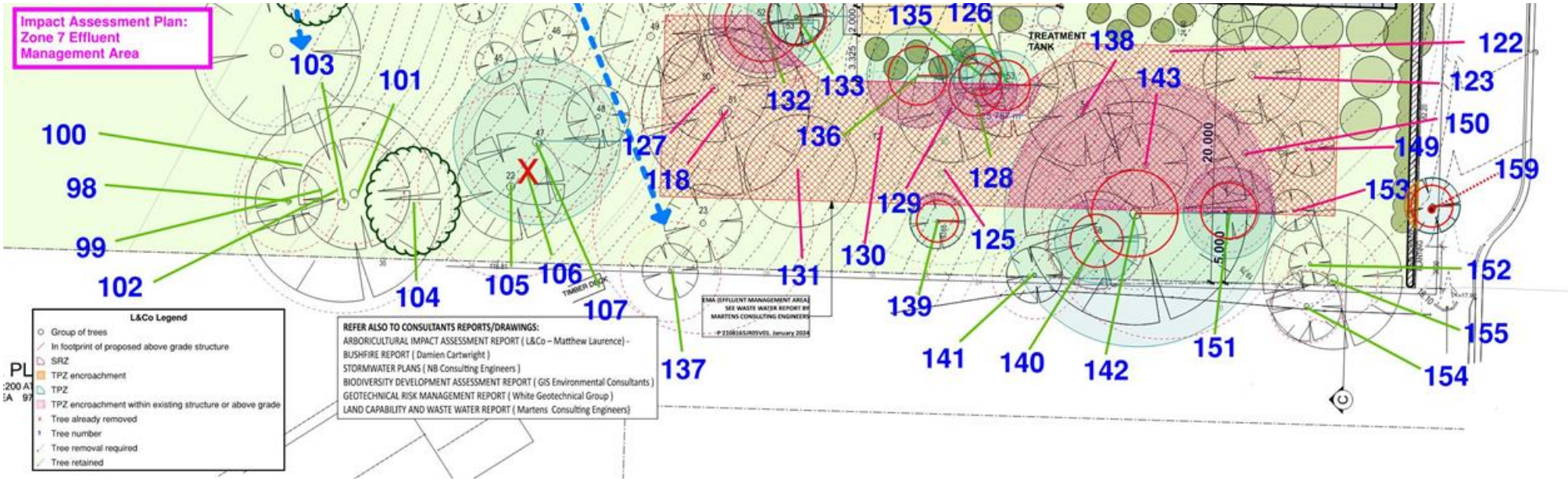

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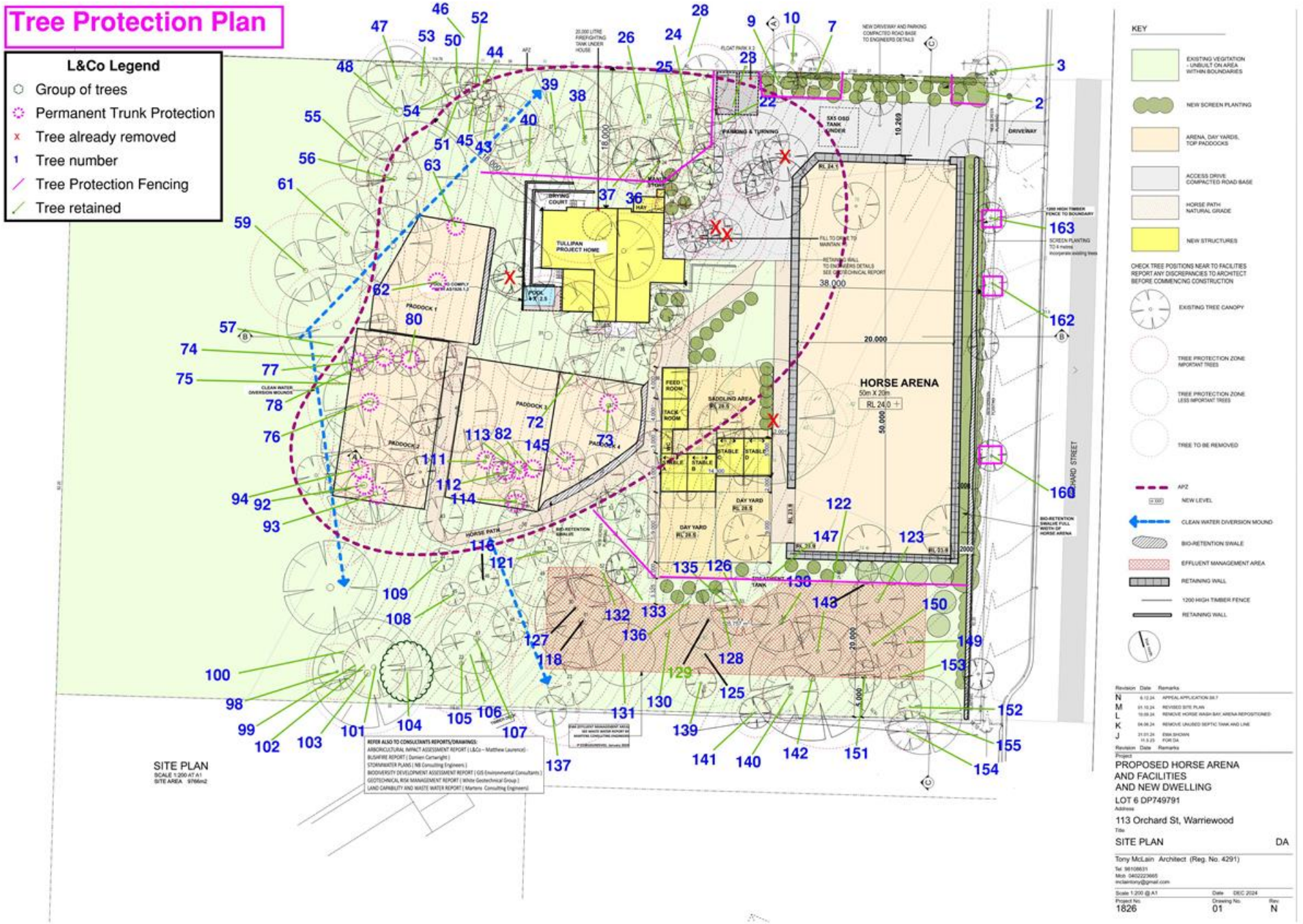
10.0 APPENDIX 6 | TREE PROTECTION PLAN



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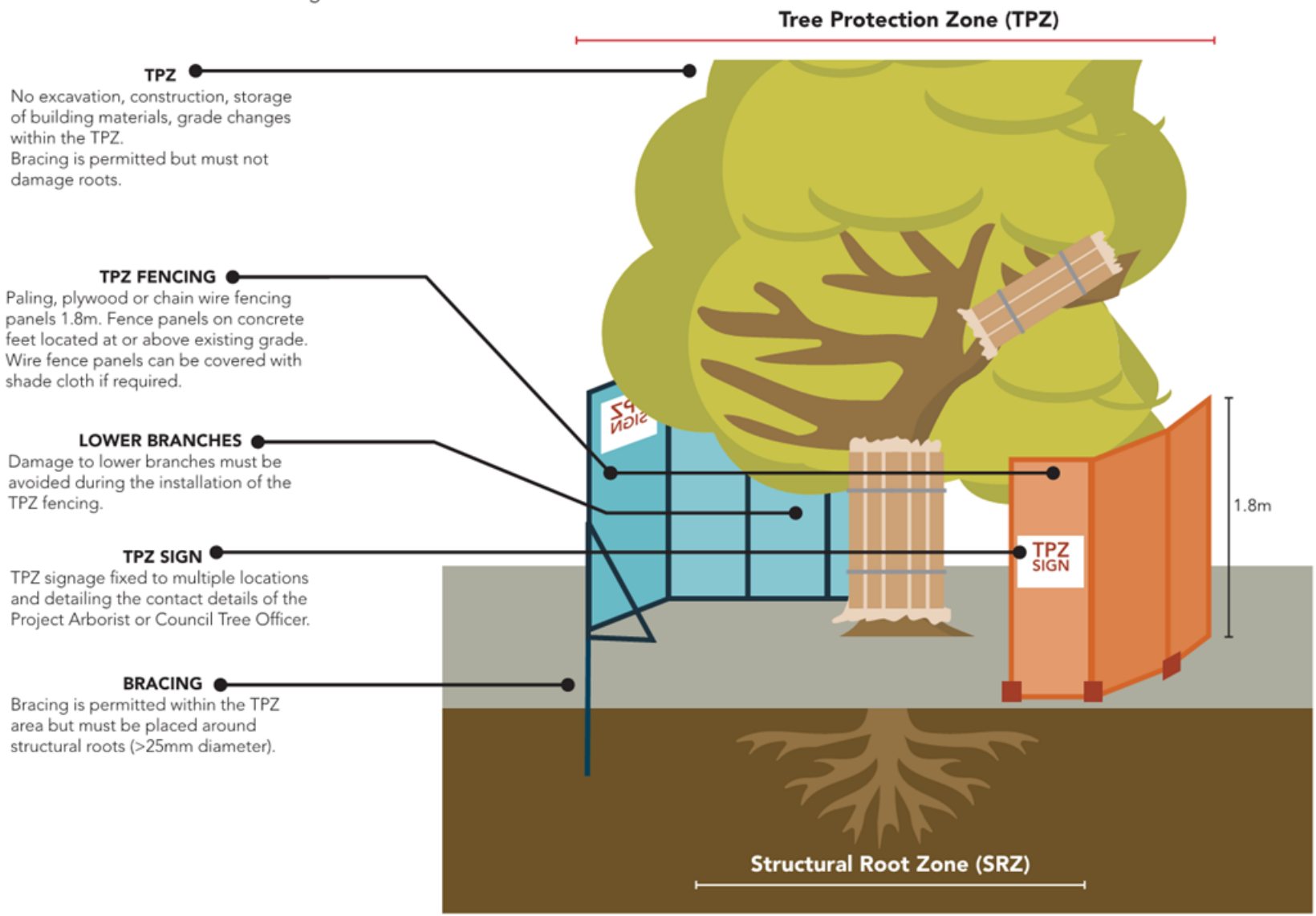
11.0 APPENDIX 7 | TYPICAL TREE PROTECTION DETAIL

Tree Protection Detail - TPZ Fencing



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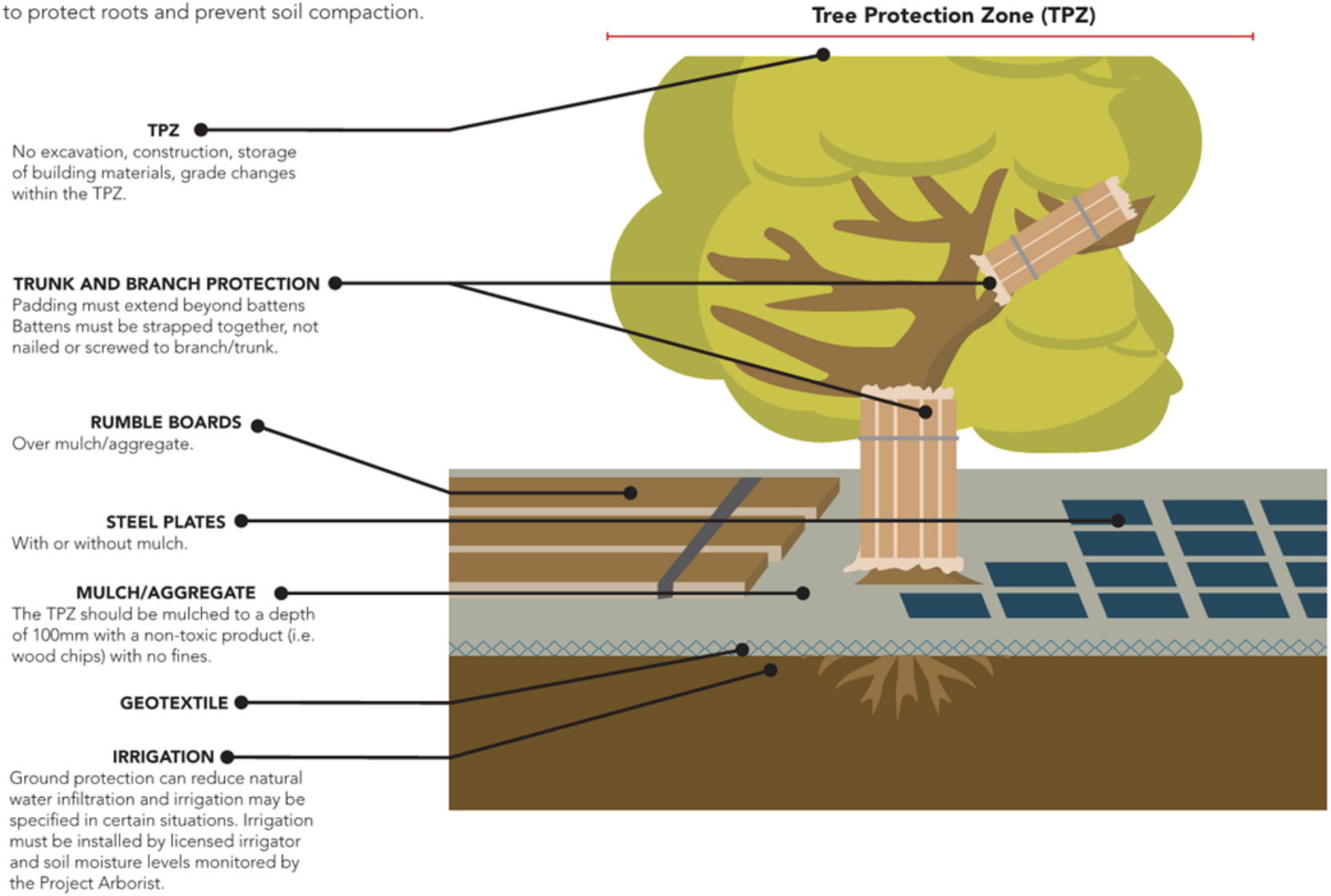
Tree Protection Detail - Ground Protection

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



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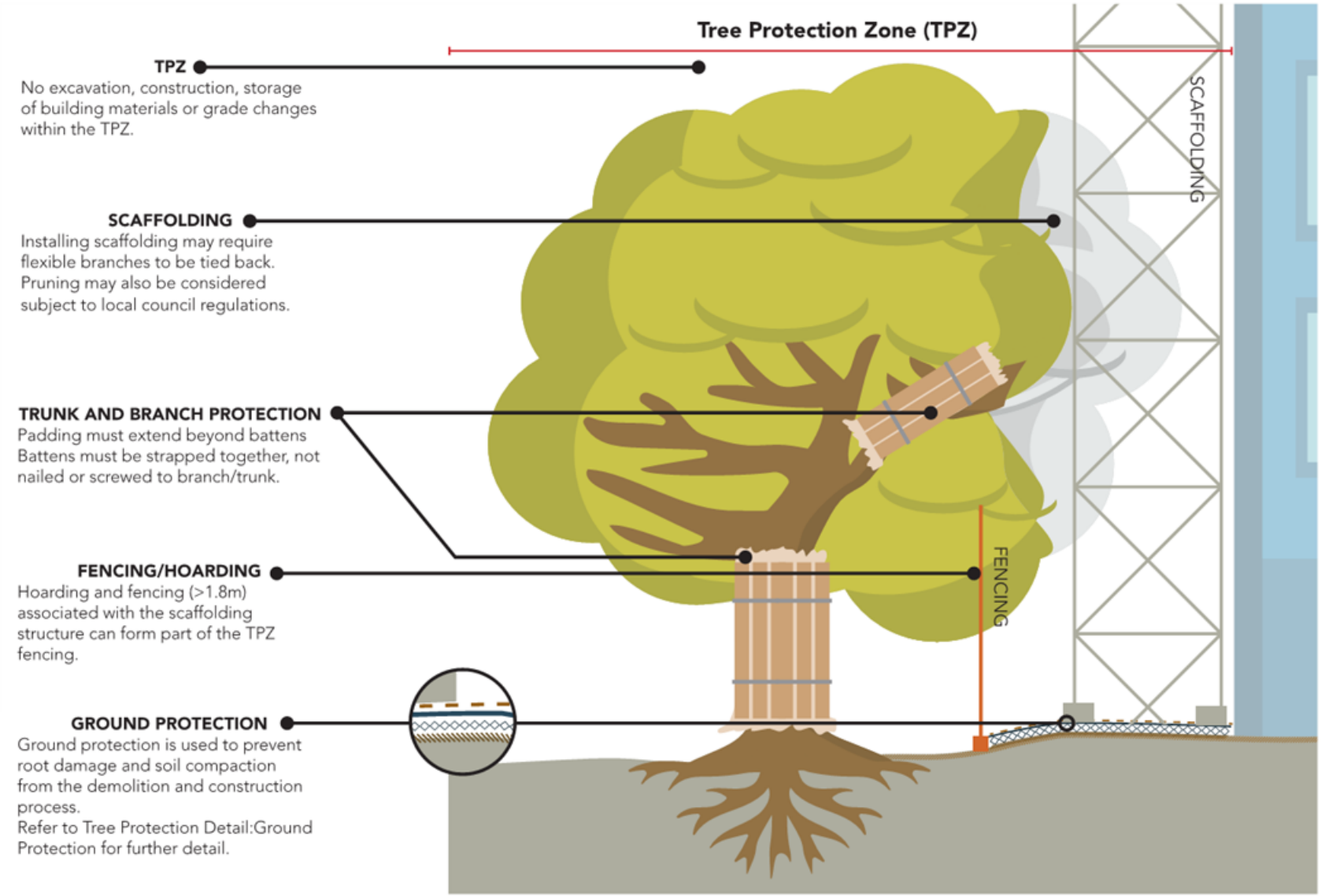
Tree Protection Detail - Scaffolding within TPZ



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12.0 APPENDIX 8 | TREE PROTECTION SPECIFICATION

12.1 Appointment of Project Arborist

12.1.1 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.

12.2 Compliance

12.2.1 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.

12.3 Tree & Vegetation Removal

12.3.1 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).*

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

12.4 Tree Protection Zone

12.4.1 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

12.6 **Tree Protection Fencing**

12.6.1 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.

12.7 **Site Management**

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

12.8 **Works within the Tree Protection Zones**

12.8.1 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.

12.8.2 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.

12.9 **Ground Protection**

12.9.1 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.

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

12.9.3 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.

12.9.4 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.

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

12.9.6 Boards should remain in place for the entire build.

12.10 **Trunk & Branch Protection**

12.10.1 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).

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

12.10.3 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.

12.11 **Structure & Pavement Demolition**

12.11.1 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.

12.11.2 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.

12.11.3 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.

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

12.11.5 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.

12.11.6 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.

12.12 **Pavement/Kerb Installation**

12.12.1 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).

12.12.2 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.

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

12.12.4 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.

12.12.5 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.

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

12.13 Underground Services

12.13.1 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.

12.13.2 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).

12.13.3 Excavations, Root Protection & Root Pruning

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

12.13.5 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.

12.13.6 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.

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

13.0 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.

14.0 APPENDIX 10 | LIMITATIONS & DISCLAIMERS

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

14.2 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.

14.3 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.

14.4 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.

14.5 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.

14.6 **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.

14.7 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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