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16 November 2017

LINDFIELD LEARNING VILLAGE

ETON ROAD - LINDFIELD, NSW

ARBORICULTURAL ASSESSMENT & DEVELOPMENT IMPACT REPORT

Report Ref No: RTC-15717

Prepared for
School Infrastructure NSW
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INTRODUCTION

This report has been commissioned by School Infrastructure NSW C/- DesignInc Sydney Pty Limited to assess the remaining Useful Life Expectancy (ULE) and potential impacts that may occur to significant trees in relation to a new development proposal. The new development proposal consists of upgrading the existing University of Technology Campus to provide an Early Learning Village located at Eton Road Lindfield NSW 2070.

Recommendations for retention or removal of trees is based on their accorded ULE category, the current design proposal and potential impacts to trees under this development application.

Trees located near works have been accorded a temporary identification number, have been tagged at the base and are referred to by number throughout this report. The trees assessed may be referenced within the Tree Assessment Schedule and estimated location within the Tree Location Plan Appendices C & D. Several smaller trees not surveyed and scattered throughout proposed construction areas have not been individually assessed and are addressed as Group A, B or C trees. Only those trees specified and located near proposed development activities were assessed as part of this development application.

Given the amount of trees and size of the project a full size copy of the Site Plan Drawing No: AR-1000 is recommended to be used in conjunction with this report.

Care has been taken to obtain information from reliable sources. All data has been verified as far as possible, however, I can neither guarantee nor be responsible for the accuracy of information provided by others.

DISCLAIMER & LIMITATION ON THE USE OF THIS REPORT

This report is to be utilized in its entirety only. Any written or verbal submission, report or presentation that includes statements taken from the findings, discussions, conclusions or recommendations made in this report, may only be used where the whole of the original report (or copy) is referenced in, and directly to that submission, report or presentation. Unless stated otherwise: Information contained in this report covers only the tree/s that were examined and reflects the condition of the trees at the time of inspection: and the inspection was limited to visual examination of the subject tree without dissection, excavation, probing or coring. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the subject tree/s may not arise in the future. Arborist cannot guarantee that a tree will be healthy or safe under all circumstances, or for a specific period of time. Trees are a living entity and change continuously, they can be managed but not controlled and to be associated near one involves some degree of risk.

METHODOLOGY

- i In preparation for this report a basic and limited site and ground level Visual Tree Assessment (VTA) commenced 31st October 2017 by the author of this report. The principles of VTA are primarily adopted from components of Mattheck & Breloer 1994 '*The Body Language of Trees*' with estimate risk values determined by criteria noted within the ISA TRAQ manual 2013. The inspection included assessment of the overall health and vigour of the trees, tree form, structure and structural condition commencing from near the lower trunk to the upper first order branch division as best as site conditions would allow. On completion of the VTA the retention value of the tree was summarised utilizing the tree assessment Checklist (Appendix- B).
- ii The inspection was limited to a ground level visual assessment only. No aerial (climbing) inspections, woody tissue testing or tree root investigation was undertaken as part of this tree assessment. Tree height and canopy spread was estimated and expressed in metres with trunk diameters measured at approximately 1.4 metres above ground level, rounded off to the nearest 50mm and expressed as DBH (Diameter at Breast Height).
- iii This report acknowledges and utilizes the current Australian Standards 'Protection of Trees on Development Sites' AS 4970 – 2009 as explained within Notes of Appendix- A. Unless specified otherwise all distances and development offsets within this report are taken from the centre of the tree. To retain specific trees and ensure their viability development must take into consideration protection of the Tree Protection Zone (TPZ) radius as identified within Notes: *acceptable incursions* Appendix- A. As a guide to determining impacts the Structural Root Zone (SRZ) & Tree Protection Zone (TPZ) setbacks have been provided within Appendix- C the SRZ & TPZ distance column.
- iv Plans and/or documentation received to assist in preparation of this assessment include:
DesignInc Sydney design drawings
 - Site Plan Dwg No: AR-1000 rev 11 dated 15.11.17
 - Level 2 – Proposed Floor Plan Dwg No DA-202 rev F dated 27.10.17
 - Level 3 – Proposed Floor Plan Dwg No DA-203 rev F dated 27.10.17
 - Level 4 – Proposed Floor Plan Dwg No DA-204 rev F dated 27.10.17
 - Level 5 – Proposed Floor Plan Dwg No DA-205 rev F dated 27.10.17

1. SUMMARY OF ASSESSMENT

1.1 General tree assessment

- 1.1.1 Of the trees assessed to accommodate this development proposal nineteen (19) trees have been identified as containing structural faults, may be dead trees or are at risk trees of failure and have been accorded low retention values.

Low retention values discussed within the report have taken into consideration areas where the tree will become exposed to increased targets by the new proposal, where failure may result in damages due to increased person occupancy. Unless specified otherwise, within the existing natural environments these trees are expected to pose minimal risk to person. Those trees identified as containing low retention values are identified as trees:

- 5, 14, 15, 19, 20, 35, 41, 42, 46, 50, 59, 60, 64, 65, 72, 76, 81, 87 & 88

The above trees are considered trees which should not restrict this development application due to their short remaining safe site usefulness.

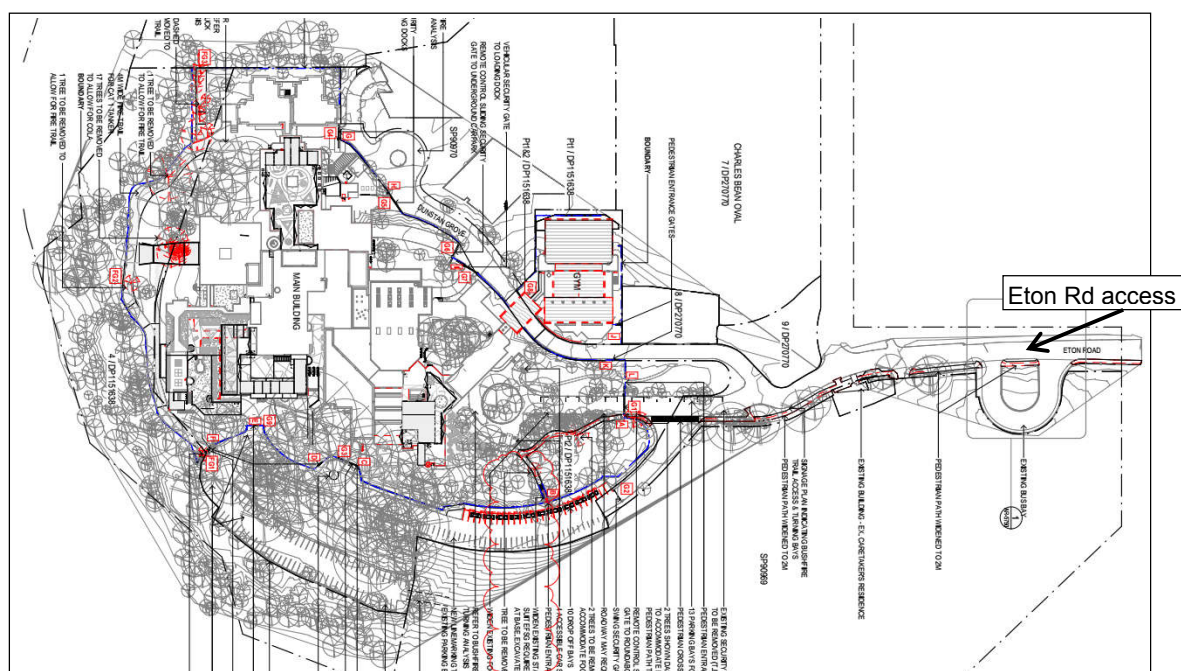
- 1.1.2 Remaining trees on site are considered retainable within the existing environment and without change within Tree Protection Zone (TPZ) radiuses, see SRZ & TPZ distance column Appendix- C.

1.2 The development proposal

- 1.2.1 The development proposal consists of upgrading the existing UTS Campus to provide additional site access pathways, parking spaces, COLA and fire trail access with associated infrastructure to accommodate the design.

Design proposes works near trees resulting in a small proportion of tree removal compared to the extent of trees located throughout the site.

Figure 1, showing proposed site & modification areas [Site Plan AR-1000]



1.3 Tree removal to accommodate proposal

1.3.1 Based on the current design plans and potential impacts received by the proposal the removal of the following trees has been identified to accommodate design works.

Trees 19, 20, 21, 22, 23, 24, 25, 27, 27a, 35, 45, 46, 47, 50, 55, 56, Group 'E', 63, 64, 65, 72, 73, 74, 75, 78, 82, 83, 84 & 87.

Trees not affected by the development proposal which should be considered for removal due to containing low retention values are identified Trees 5, 14, 15, 41, 42, 59, 60, 76, 81 and 88.

Provided within the following sections discussions relating to development impacts, removal by design and recommendations for the minimizing of impacts to trees have been provided.

1.4 Eton Road pedestrian footpath modification

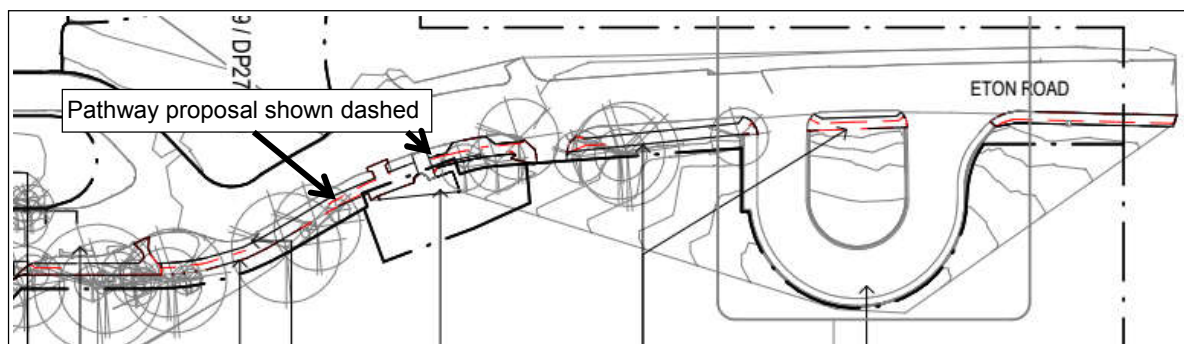
Trees 1 - 17

1.4.1 *Trees of low retention value.* Of the seventeen trees located adjacent footpath widening works three (3) trees have been identified with low retention values. They contain some form of structural fault indicating a potential risk of failure exists. Due to a proposed increased person usage area trees 5, 14 & 15 should be considered for removal.

1.4.2 *Minimising impacts to trees.* The new pathway proposal is located on the majority of an existing pathway footprint where new works are unavoidable within the Structural Root Zone (SRZ), the area required for tree stability (AS4970). To ensure tree anchorage is not disrupted and trees remain viable the following recommendations are provided:

1. The pathway is to be constructed on top of ground level. No demolition, root severing, site grading (cut) or excavation within SRZ setbacks is to occur without onsite project arborist advice and supervision, see SRZ & TPZ distance column Appendix- C.
2. Prior to works the extent of the pathway proposal is to be clearly marked out for review by the project arborist. The arborist is recommended to review & endorse final engineered drawings and construction methodology providing additional tree protection advice such that tree anchorage is not disrupted.
3. *General* - All trees are to be protected during works in accordance with Attachment- A, the generic Tree Management Plan (TMP), specific to Section 1 Tree Protection Fencing and S/- 3 Hold Points.

Figure 2, showing Eton Road pathway modification proposal



1.5 Site pedestrian footpath modification & Gates at [G1 & G2]

Trees 18 – 44

1.5.1 *Trees of low retention value.* Of the trees assessed within this area of proposed footpath widening five (5) trees have been identified with low retention values. They contain some form of structural fault indicating a potential risk of failure exists and should be considered for removal. The trees are identified as trees:

- 19, 20, 35, 41 & 42

1.5.2 *Trees specified for removal to accommodate design.* Impacts in design are similar to section 1.4 where new works are unavoidable within the SRZ. To accommodate the design, and in specific, those trees requiring removal due to likely impacts affecting tree anchorage and are recommended for removal for safety reasons are identified as trees:

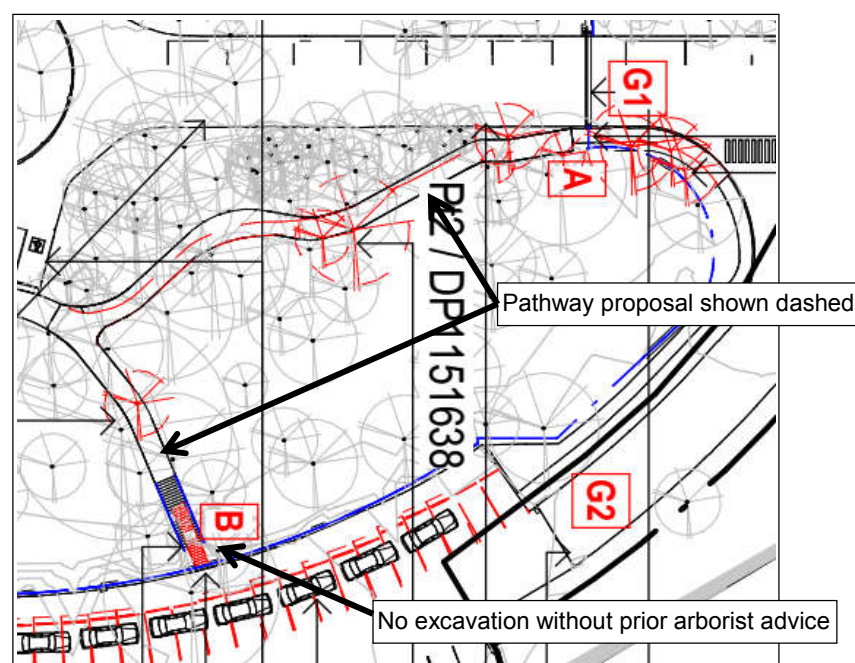
- 19, 20, 21, 22, 23, 24, 25, 27, 27a & 35.

Small trees within Group 'B' may also be affected by the footprint where an appointed project arborist is to determined conflicts with design layout at the initial pathway setout stage.

1.5.3 *Security gate* Plan ref: [G1 & G2]. To ensure adjacent trees remain viable there is to be no excavation within 2m of any tree without prior project arborist advice.

1.5.4 *Minimising impacts to trees.* To ensure the trees remain viable those recommendations provided within section 1.4.2 p6 are to be adopted, specific to *General* - all trees are to be protected during works in accordance with Attachment- A the generic Tree Management Plan. There should be no excavation to accommodate the proposed 2m wide stairs within or near the existing stairway access without prior arborist advice to ensure adjacent trees are not compromised by works.

Figure 3, showing site pathway modification proposal



1.6 Vehicle drop off bay upgrade

Tree Group 'C' & 94G

- 1.6.1 The proposal has no impact on adjacent trees given that works are proposed on existing hard surfaces. To ensure the trees remain viable standard tree protection is required. There should also be no over excavation or demolition of the adjacent embankment to accommodate design.

1.7 New traffic island & security gates

Trees 88 - 93

- 1.7.1 The proposal indicates no tree removal with kerb modification to allow for vehicle turning. Minor impacts are likely to allow for kerb adjustment adjacent tree 88. The tree is structurally defective and should be considered for removal for safety reasons.
- 1.7.2 *Minimising impacts to trees.* To ensure trees located adjacent to works remain viable the following recommendations are provided:
1. There is to be no existing site, kerb demolition and modification adjacent trees 89 – 93 without prior project arborist advice to ensure the anchorage of trees is not affected by works.
 2. Tree 88 – no works for road modification is to occur within the tree 2.8m SRZ with tree protection fencing installed prior to works.
 3. *New pedestrian & vehicle gate proposal.* To ensure adjacent trees remain viable and anchorage is not disrupted there is to be no excavation within the SRZ setback as identified within Appendix- C, the SRZ & TPZ distance column.
 4. *General* - All trees are to be protected during works in accordance with Attachment- A, the generic Tree Management Plan (TMP), specific to Section 1 Tree Protection Fencing and S/- 3 Hold Points.

1.8 Proposed fire trail upgrade

Trees 45 – 52, 63 – 87 & Groups 'D' & 'F'

- 1.8.1 *Trees of low retention value.* Of the trees assessed within the proposed fire trail upgrade area the following trees have been identified with low retention values. They may be in significant decline, are dead or contain some form of structural fault indicating a potential risk of failure exists and should be considered for removal. The trees are identified as trees:
- 46, 50, 64, 65, 72, 76, 81, 83, 84 & 87
- 1.8.2 *Trees specified for removal to accommodate design.* To accommodate design, and in specific, those trees requiring removal due to likely impacts affecting tree anchorage and are recommended for removal for safety reasons are identified as trees:
- 45, 46, 47, 50, 63, 64, 65, 72, 73, 74, 75, 78, 82, 83, 84 & 87
- Trees which are recommended for removal due to poor condition, are dead or receive development impacts likely to affect tree anchorage are trees:
- 64, 75 & 84. Select small trees within Group 'F' may also be affected by the Bushfire truck turning area. Tree protection or removal is to be specified by the arborist at the time of the access road setout.

1.8.3 Minimising construction impacts.

Fire trail specific. To ensure trees located directly adjacent the line of the proposed fire trail are unaffected by track upgrade works tree protection should consist of the following:

1. Group 'D' extending from Site Plan ref: FG1, FG2 to FG3. There is to be no soil disturbance beyond the existing stone retaining wall located on the southern side of the track proposal. All works to accommodate the fire track are to occur on the upper terraced area with cut & fill limited to 1m outside of the line of the proposed fire trail on the northern side.
2. To ensure adjacent trees remain viable and anchorage is not disrupted there is to be no works or excavation within SRZ setbacks (specific to T50 & 68), see SRZ & TPZ distance column Appendix- C.
3. *General* - All trees are to be protected during works in accordance with Attachment- A, the generic Tree Management Plan (TMP), specific to Section 1 Tree Protection Fencing and S/- 3 Hold Points.

1.9 Proposed new COLA & Group 'G'

Trees 53 - 62 & Group 'E' & 'G'

1.9.1 *Trees of low retention value.* Of the trees assessed within the proposed COLA location the following trees have been identified with low retention values: trees 59 & 60

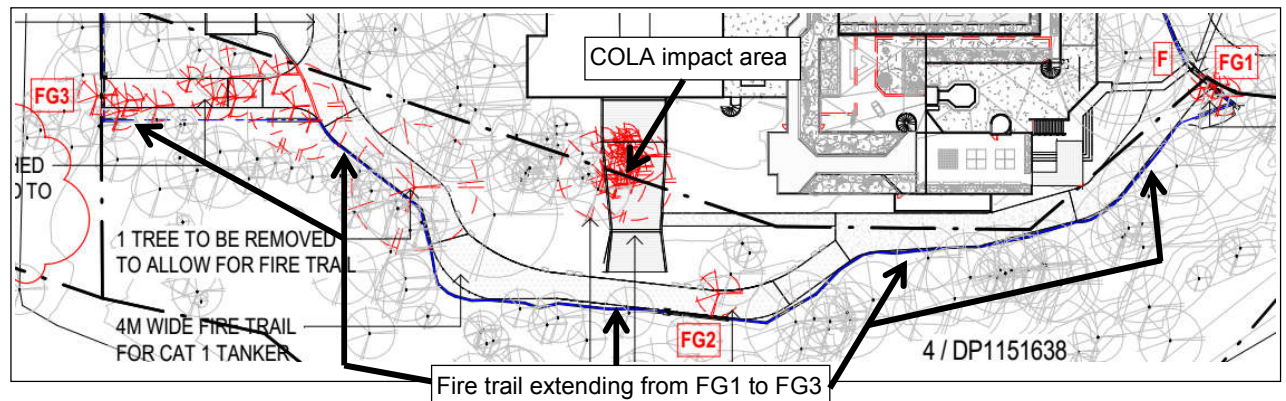
1.9.2 *Trees specified for removal to accommodate design.* To accommodate design the following trees or groups of have been identified:

- T55, 56 and Group 'E'

Tree 53 has been identified as containing minor faults that are likely to become problematic in time and/or will also receive development impacts that are likely to affect the trees retention value. Under tree retention more detailed construction plans, design methodology and advice from an appointed project arborist is required.

Group 'G' is not affected by works and consists of declining vegetation within a contained brick garden bed.

Figure 4, showing fire trail & COLA impact area



1.10 Security gates - Site Plan AR-1000 ref G5 & G6

Trees 95 - 101

1.10.1 The proposal indicates no tree removal with excavation likely required to construct the security gate proposals. To ensure trees located adjacent works remain viable the following recommendations are provided:

1. To ensure adjacent trees remain viable and anchorage is not disrupted there is to be no excavation within the SRZ setback as identified within Appendix- C, the SRZ & TPZ distance column.
2. Should excavations be required the project arborist is to be consulted prior to works occurring to provide additional tree protection advice.
3. *General* - All trees are to be protected during works in accordance with Attachment- A, the generic Tree Management Plan (TMP), specific to Section 1 Tree Protection Fencing and S/- 3 Hold Points.

2. CONCLUSIONS & RECOMMENDATIONS

2.1 Tree removal

2.1.1 Those trees proposed for removal to accommodate design are identified as trees:

- 19, 20, 21, 22, 23, 24, 25, 27, 27a, 35, 45, 46, 47, 50, 55, 56, Group 'E', 63, 64, 65, 72, 73, 74, 75, 78, 82, 83, 84 & 87.

Trees not affected by the development proposal which should be considered for removal due to containing low retention values are identified as:

- 5, 14, 15, 41, 42, 59, 60, 76, 81 and 88

2.2 Recommended tree management & protection principles

Recommendations in minimising tree impacts

2.2.1 In addition to the recommendations provided within this report the following summary and/or additional recommendations are provided as a guide to tree protection during works:

1. *General*. Tree Protection Fencing (TPF) as identified within Section 1 of Attachment- A is recommended to be located under the guidance of an appointed site arborist. Unless specified otherwise the location of the TPF is to be positioned to allow for adequate work access and/or be located at the extremity of the TPZ radius, see SRZ & TPZ distance column Appendix- C.

Where construction access may be restricted by protective fencing timber beam trunk protection is recommended to be installed, see TMP Figure B - *timber beam trunk & branch protection requirements*.

To protect underlying tree roots ground mats or similar ground protection is to be used to avoid soil compaction and root damage during construction activities.

2. Unless specified otherwise within this report in accordance with AS4970 - 2009 (1.4.4) a Project Arborist is to be engaged to monitor, supervise excavation within TPZ setbacks and provide certification of protection works conducted. Final certification is to outline tree protection methodology conducted with photographic evidence of ongoing works retained for final certification purposes (AS4970 S/5.5.2 *Final certification*).
 3. The project arborist is to be familiar with all protection measures as stated within this report and specific to Australian Standard AS4970 'Protection of Trees on Development Sites' – 2009 ensuring any modification in Tree Protection Fencing (TPF) or Zones (Z) is compliant to AS4970 Section 4.5 *Other Tree Protection Measures*.
 4. Unless specified otherwise there shall be no excavation or soil disturbance within SRZ setbacks (the area required for tree stability AS4970) of any tree without prior arborist advice, see SRZ & TPZ distance column within Appendix- C.
 5. All existing soil levels are to remain unchanged within TPZ areas. The placement of fill is also an activity restricted within the TPZ (AS4970) and should be avoided to ensure the vitality of trees remains.
 6. Should there be any uncertainty in tree protection requirements or areas of unidentified conflict the appointed arborist is to be consulted prior to work any activities commencing.
 7. During approved excavation activities within TPZ setbacks root pruning is to be conducted by an appointed arborist. Root pruning is to be conducted in accordance with AS4970 – 2009 Section 4.5.4 and AS4373 - 2007 Section 9 'Root pruning', such that tree roots are not damaged or ripped beyond the point of excavation. There is to be no root pruning within the radial SRZ of any tree without arborist advice.
 8. *Additional inground services within TPZ's* which may include sewer, stormwater, water and electrical services, final design and impact to trees shall be reviewed and endorsed by the project arborist prior to their installment.
 9. Attachment- A, the generic Tree Management Plan (TMP) outlines general tree protection methodology which is to be adopted with any tree specific recommendation provided within this report.
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Should you require further liaisons in this matter please contact me direct on
0419 250 248

Yours sincerely



Mark A Kokot

AQF Level 5 consulting arborist

Diploma of Hort/Arboriculture (AQF5), Associate Diploma Parks Management (AQF4)
Certified Arborist / Tree Surgeon (AQF3), ISA Tree Risk Assessment Qualified 6/2014
Member: Arboriculture Australia No.1292, Working With Children No: WWC01446

ATTACHMENT- A: Generic Tree Management Plan

1. **Tree Protection Fencing (TPF)** unless specified otherwise TPF is to be constructed prior to any works commencing to ensure no impact occurs to trees requiring retention. If required TPZ fencing is to consist of 1.8m high chain link fencing secured to the ground by 50 x 50mm steel posts. Generally the location of the TPZ is to be constructed outside of the canopy drip line or extent of the TPZ, refer Appendix- C, SRZ & TPZ distance column.

If development site constraints exist the location of the TPZ fence may be reduced or altered to timber beam trunk protection (TMP Figure B).

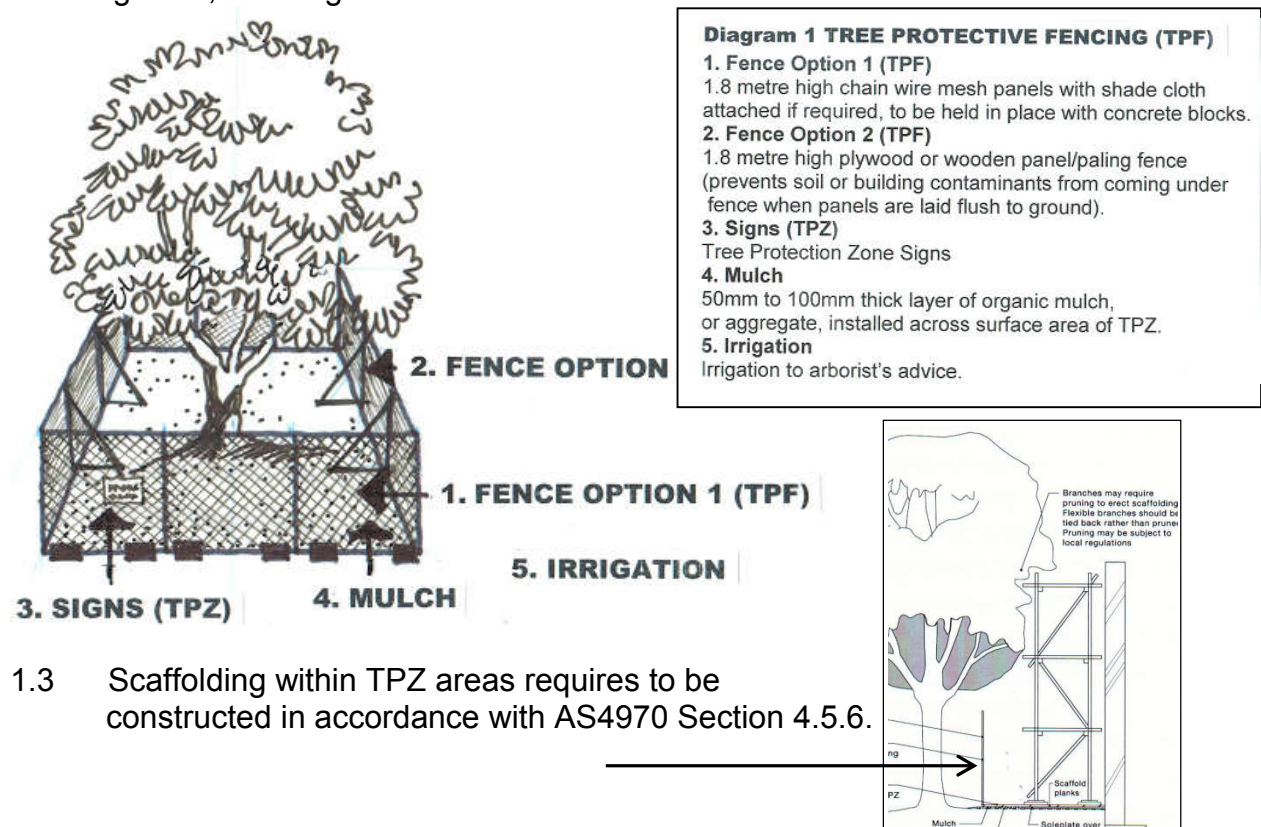
If reduced TPZ fencing or timber beam protection is required the arborist may request that the extent of the TPZ / root zone be protected by ground mats and native leaf mulch during site works.

The location of the TPZ is to be constructed as to allow for best tree management practices while providing adequate development work access to finalise the development proposal.

- 1.2 The TPZ is a development exclusion zone, it is an area isolated from construction disturbance so that the tree remains viable. No works or storage of materials are permitted within the TPZ without prior consultation and written approval from the appointed site arborist.

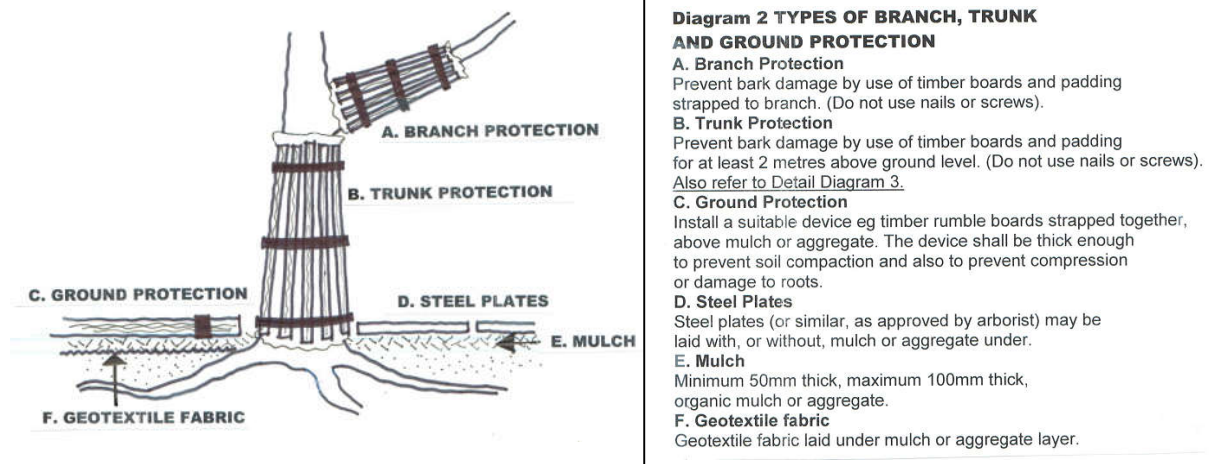
Appropriate signage shall be erected on TPZ fencing identifying the prevention of any unauthorised activity and/or access. Certification of TPZ modifications are to be provided by the site arborist to the development site superintendent for Principal Certifying Authority (PCA) compliance matters.

TMP Figure A, showing fence construction detail



- 1.3 Scaffolding within TPZ areas requires to be constructed in accordance with AS4970 Section 4.5.6.

TMP Figure B, showing trunk & root protection detail



2. **Appointing a Site Arborist.** Prior to works commencing a qualified arborist with a minimum AQF Level 5 qualification is to be appointed as the Site Arborist to address any development impacts that may occur to trees that require retention including any neighbouring tree.
The development site superintendent is responsible for enforcing all tree protection methodology, contacting and liaising with the appoint site arborist. The appointed site arborist must be consulted at all times when working within the TPZ and specifically be on site if development activities are required within the SRZ to discuss root impact management techniques, refer Appendix C for SRZ & TPZ setbacks. The appointed Site Arborist is to certify to the Principal Certifying Authority (PCA) that all tree protection methodology has been conducted accordingly as specified within this report.
3. **Hold Points,** unless specified otherwise no works are permitted within the SRZ radius of any tree without prior onsite arborist consultation or direct site involvement. The SRZ setback is a development exclusion zone. Where works are proposed within the SRZ an air spade or water jetting root investigation is required to identify the potential impact which is to be assessed by the site arborist.
Hand tools are to be used when working within both the SRZ & TPZ with cantilevering or bridging over the SRZ under pier & beam construction recommended.
4. **Demolition within the Tree Protection Zone (TPZ)** is to be supervised by the site arborist. Rubber tracked excavators are recommended to work within the footprint of any hard surface such as pathways and pavements to minimise the radial impact to the TPZ and/or SRZ. No tree roots at or exceeding 30mm(Ø) are to be damaged during works. Where larger woody roots are located the appointed site arborist is to be notified.
5. **Excavation within the TPZ,** is to be avoided where possible. Any excavation for footings, foundations or grading (site leveling) is to be approved and supervised by the appointed arborist. There is to be no over excavation beyond the line of the proposed excavation cut footprint as identified within construction drawings to avoid additional incursion and impact within Tree Protection Zone (TPZ).

- 5.2 To appropriately protect the root zone air spade or water jetting excavation is recommended to locate and expose any tree roots which may be affected and to avoid ripping by site machinery. Tree roots <30mm(Ø) in diameter shall be clean cut with sharp clean root pruning tools. Further advice from the site arborist is required where larger woody tree roots have been located.
6. **Landscaping or development within the TPZ** is to complement the long term needs to retain the subject trees. Pervious paving materials are recommended within the TPZ to maintain soil moisture availability.
Unless approved within this report no grade changes being cut or fill is to occur within 10% of the TPZ radius. Greater than ten (10%) percent of the TPZ may be affected by development encroachment given prior arborist consultation and appropriate tree management.
Maintaining the existing soil levels, moisture and aeration is the key to significant tree preservation. All efforts are to be made in maintaining the TPZ, soil moisture content and soil microorganism activity essential for maintaining good tree vigour.
7. **Fill material within the Tree Protection Zone**, fill material within the Tree Protection Zone shall be avoided.
8. **Site machinery**, demolition, excavations and site construction machinery must ensure that no direct conflicts occur to protected trees which may include canopy overhang towards development areas.
- 8.2 In the event of tree damage the appointed site arborist is to be notified immediately. The site arborist is to provide advice for appropriate action to make good any tree damaged sustained by works.
9. **Underground services**, no trenching for underground services is permitted within the radial SRZ setback without prior arborist approval. Where underground services are required within the SRZ or in line cutting through the TPZ, underboring or directional drilling is recommended.
10. **Root pruning**, tree roots are to be correctly treated, clean cut by the appointed arborist abiding to the Australian Standards Pruning of Amenity Trees AS 4373 2007 section 9 *Root pruning* at all times.
At no stage are tree roots greater than 30mm(Ø) (in diameter) allowed to be cut by site contractors without prior arborist consultation. Where significant woody tree roots are located they are to be referred to the arborist for advice. Bridging over or tunneling beneath the root system may be required to ensure the vigour of the tree is not adversely affected by proposed works.
11. **Canopy pruning / tree removal**, where required tree removal and canopy reductions are to be approved by the Local Government Authority and conducted by a suitably qualified AQF Level 3 arborist to AS4373 Pruning Standards, and specifically be conducted in accordance with Safe Work Australia – Guide to managing risks of tree trimming and removal works 2016 (www.swa.gov.au)

12. **Regular site inspections**, the appointed site arborist shall undertake regular site inspections of Tree Protection Zones (TPZ) & Tree Protection Fencing (TPF). Unless specified otherwise within this report site inspections are recommended at the following stages.
- Prior to commencement of demolition activities
 - At eight (8) week intervals for the inspection of council verge trees
 - At completion of works prior to handover - Occupation Certificate (OC) to ensure no detrimental impact to trees has occurred
13. **Certifications**, obtaining relevant arborist certifications is the responsibility of the development site superintendent. Certifications are to be provided to the Principal Certifying Authority (PCA) stating that all tree protection fencing and/or methodology has been installed to adequately protect any tree requiring retention which includes neighbouring trees.
- Arborist Certification is to consist of timing of events, discussions of attendance, tree roots encountered and mitigation works conducted to minimise development impacts on protected trees during the course of development activities.

Yours sincerely

Mark A Kokot - 0419 250 248

Level 5 consulting arborist

APPENDICES

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APPENDIX- A: Terminology & references

Acceptable Risk: Exposure to or reject risk of varying degrees. The acceptable risk is defined as 'The person who accepts some degree of risk in return for a benefit being exposed to some risk of varying degree.'

Age classes: (I) Immature refers to a well established but juvenile tree. (ESM) refers to an early semi mature tree not of juvenile appearance. (SM) Semi-mature refers to a tree at growth stages advancing into maturity and full size. (LSM) Late Semi- Mature, refers to a tree between semi-mature and close to mature. (EM) refers to a tree at the first stages of maturity. (M) Mature refers to a full size tree with some capacity for future growth. **Health:** Refers to a trees vigor exhibited by the crown density, leaf colour, presence of epicormic shoots, ability to withstand disease invasion and the degree of dieback.

Condition: Refers to the tree's form and growth habit, as modified by its environment (aspect, suppression by other trees, soils) and the state of the scaffold (i.e. Trunk and major branches), including structural defects such as cavities, crooked trunks or weak trunk / branch junctions. These are not directly connected with health and it is possible for a tree to be healthy but in poor condition. **Decay:** (N) – an area of wood that is undergoing decomposition. (V) – decomposition of an area of wood by fungi or bacteria. **Decline:** Is the response of a tree to a reduction of energy levels resulting from stress. Recovery from decline is difficult and slow; is usually irreversible. **Defect:** A identifiable fault in a tree. **Epicormic Shoots:** Shoots that arise from latent or adventitious buds that occur on stems and branches and on suckers produced from the base of the tree. A symptom / result of stress related factors. **Footprint:** The area occupied by site structures, including the dwelling driveways and hard surfaces.

Included Bark: (Inclusion) a genetic weak fault, pattern of development at branch junctions where the bark is turned inwards rather than pushed out, can pose a potential hazard. **Order of branches:** First order being those that are the first to extend from the main trunk or codominant limbs, second order branches extend from the first order and third order branches extend from the second order. **Probability:** The likelihood of some event happening. **Risk:** Is the probability of something adverse happening. **Suppression:** Restrained growth pattern from competition of other trees or structures. **Wound:** Damage inflicted upon a tree through injury to its living cells, may continue to develop further weakening of the structure compromising structural integrity.

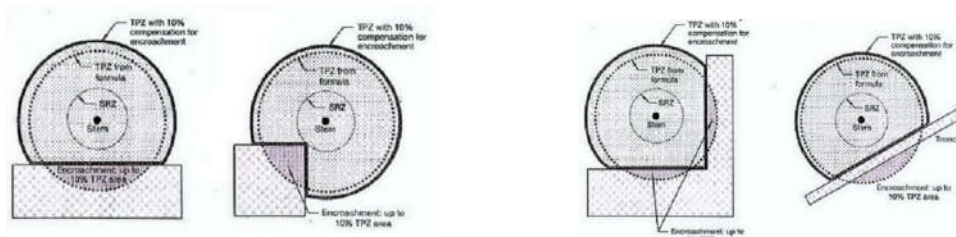
NOTES: No aerial (climbing) inspections, woody tissue testing or tree root investigation was undertaken as part of this tree assessment

This report acknowledges the current **Australian Standards 'Protection of Trees on Development Sites'** AS 4970 – 2009 with reference to the Tree Protection Zone (TPZ): being a combination of the root and crown area requiring protection. The TPZ takes into consideration the Structural Root Zone (SRZ): The area required for tree stability. Determined by AS4970 - 2009 Figure 1, Table of determining the SRZ, section 3.3.5 of the standards. The standard states where a greater than 10% encroachment occurs the arborist is to take into consideration the schedule of determining impacts as set within AS4970 s. 3.3.4. Encroachments are referred to within this report as major or minor encroachments (AS4970 s. 3.3.2 & 3.3.3). Below is the terminology used for estimated percentage of development incursion used within this report. To retain specific trees and ensure their viability development must take into consideration protection of the TPZ radius.

The extent of inclusion within the TPZ radius has been categorised as follows:

<10% = negligible incursion, >10 - <15% = low to moderate level of incursion, >15 - <20% = moderate level of incursion, >20 - <25% = moderate to high level of incursion, >25 - <35% = high level of incursion, >35% = significant inclusion within the TPZ

Showing acceptable incursion within the TPZ (AS4970)



SELECTED REFERENCES:

Barrell J. 1993, 'Preplanning Tree Surveys: Safe useful Life expectancy (SULE) is the Natural Progression', *Arboricultural Journal* 17: 1, February 1993, pp. 33-46.

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Mattheck, C. & Breloer, H.(1994) *The Body Language of Trees*. Research for Amenity Trees No.4 the Stationary Office, London.

Matheny N. & Clark J. 1998, *Trees & Development 'A Technical Guide to Preservation of Trees During Land Development'* International Society of Arboriculture, Champaign USA.

Standards Australia 2009, *Australian Standards 4970 Protection of Trees on Development Sites - Standards* Australia, Sydney, Australia.

Standards Australia 2007, *Australian Standards 4373 Pruning of Amenity Trees - Standards* Australia, Sydney, Australia.

APPENDIX- B: Tree Retention Value Checklist @rainTree consulting

VTA i) Landscape Significance (LS): The significance of a tree in the landscape is a combination of its amenity, environmental and heritage values.

Values may be subjective however, offer a visual understanding of the relative importance of the tree to the environment. The Landscape Significance of a tree is described in seven categories to assist in determining the retention value of trees.

1	Significant	2	Very High	3	High	4	Moderate	5	Low	6	Very Low	7	Insignificant
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ii) Visual Tree Assessment (VTA)

0	If appropriate to VTA - *exempt trees from Local Government Authority (LGA) Tree Management or Preservation Orders (TPO)	2E	Trees location likely to be affected by infrastructure restricting root growth potential, or tree has potential to cause infrastructure damage where risk mitigation or rectification works may likely compromise tree anchorage
0A	Noxious or invasive species located within heritage conservation area		
1	Trees that are dead, significantly declining >75% volume or obviously hazardous	3	This rating incorporates trees that may require further investigation of defects such as pathogen activity, cavities or symptoms indicating internal decay of an extent that cannot be quantified under visual examination. Further inspections may be in the way of arborist climbing inspection within the canopy, root crown investigation and/or drill penetrating or Picus Sonic Tomograph ultrasound testing procedures to determine percentage of internal decay.
2	Trees that are structurally damaged. Have poor structure or weak & detrimental large stem inclusions capable of failure opposed to 2B. Tree also may be affected by extensive borer damage, fungal pathogens (wood rot) or viruses. Some symptoms may be reversible, remediated or controlled give appropriate management.		
2A	Tree damage specific to basal and/or root plate damage where condition may become problematic in near future / may include trees with included bark splits to ground level or located at edge of degrading steep embankments	4	Trees which appear specifically environmentally stressed by drought, poor soil or site conditions. Symptoms may be reversible given appropriate management
2B	Defect specific to stem inclusions development (weak branch attachments) where the condition may not be immediately detrimental however, requires annual to biannual monitoring with control to prevent stem failure by installing slings, cable or bracing. Tree may also contain multi stems or codominant twin stems	5	Trees that would benefit from crown maintenance pruning as identified within the Australian Standards AS 4373 – 2007 Pruning of Amenity Trees
		5A	Trees that require little or no maintenance at time of inspection other than close monitoring
2C	Tree may contain minor wounds, pest or minor pathogen activity, altered by minor pruning or storm damaged that is not considered immediately detrimental - may also display average form. Likely to require close annual monitoring or minor corrective pruning	6	Trees may be typical for species type, of good form and visual condition for age class May have suppressed one sided canopies or are low risk trees
2D	Trees significantly altered by recent storm or over pruning events which may reduce retention values due to average form- or tree extensively pruned for power line clearance	7	VTA restricted by canopy or plant material vine or ivy covering tree parts, or site conditions which do not allow access- fences to neighbouring sites

iii) Retention Value (RV): Determined by [1] Low risk - tree free of visual defects and viable for retention, [2] Medium – low risk - viable for retention with minor faults which may reduce ULE, [3] Medium risk - trees which contain faults that are likely to become problematic in the short term, [4] M/High risk - trees to be considered for removal due to poor condition.

1	High retention	2	Medium retention	3	Low retention	4	Consider removal
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iv) U.L.E. categories Useful Life Expectancy (after Barrell 1996, modified by the author)

A tree's U.L.E. category is the life expectancy of the tree modified first by its age, health, condition, safety and location. U.L.E. assessments are not static but may be modified as dictated by changes in tree health and environment. The five categories of U.L.E. are as follows:

1. Long U.L.E. - Appear retainable at the time of assessment for over 40 years with an acceptable degree of risk assuming reasonable maintenance.
2. Medium U.L.E. - Appear to be retainable at the time of assessment for 15 to 40 years with an acceptable degree of risk assuming reasonable maintenance.
3. Short U.L.E. - Trees appear to be retainable at the time of assessment for 5 to 15 years with an acceptable degree of risk assuming reasonable maintenance.
4. Very short - Removal- Trees which should be scheduled for removal within the very short term or as specified within this report.
5. Small, young or regularly pruned – Trees under 5m in height that can be easily moved or replaced, includes screen plantings or hedge lines.

APPENDIX- C: Tree Assessment Schedule

Refer VTA Attachment A p18

Trees requiring removal due to hazardous or dead condition - subject to Local Government Authority notification							Trees with low retention values: senescence, developing defects or being *exempt trees from the LGA Tree Preservation Order (TPO)					
Tree No	Botanical Name COMMON NAME	Height x spread (m)	DBH (mm)	SRZ	Age	Health	Condition	Significance	VTA	RV	U. L.E.	Comments
				TPZ								
1	<i>Corymbia gummifera</i> Bloodwood	20 x 15	750	3m 8	M	Good	Good	2	2C	1	2	Minor root damage at base WST, (mechanical impact?) upper branch scaffolds good, located at edge of embankment
2	<i>Eucalyptus viminalis</i> Manna Gum	20 x 12	550	2.7 6.6	ESM	Fair	Fair	3	2A/4	3	2	Environmentally stressed low foliage volume decline in canopy, located at edge of embankment = location to infrastructure may become problematic in future
3	<i>Eucalyptus racemosa</i> Snappy Gum	16 x 9	350	2.3 4.2	ESM	Good	Fair / Good	2	2B/E	2	2	Located at edge of embankment, twin stems stem inclusion development at 2.5m + slight lean STH/WST
4	<i>Angophora costata</i> Angophora	13 x 8	300	2.1 3.6	ESM	Good	Good	2	2E	2	2	Located at edge of embankment = location to infrastructure may become problematic in future
5	<i>Eucalyptus saligna</i> Sydney Blue Gum	25 x 18	750	3 8	SM	Fair / Good	Fair	2	2C/3	3	3	Open wound at 5m STH containing 3x fungal conks (wood decay pathogen) = low retention value
6	<i>Eucalyptus saligna</i> Sydney Blue Gum	16 x 8	300	2.1 3.6	ESM	Good	Fair / Good	2	6	1	2	Bowing lean STH with no significant defects noted
7	<i>Grevillea robusta</i> Silky Oak	11 x 6	200	1.8 2.4	ESM	Fair	Good	4/3	6	1	2	Tree with no significant defects noted
8	<i>Lophostemon confertus</i> Qld Brush Box	15 x 12	350, 300	2.8 7.8	ESM	Good	Fair	4/3	2B	2	2	Main twin stems with minor stem inclusion development at 0.5m + location to infrastructure may become problematic in future
9	<i>Angophora costata</i> Angophora	13 x 8	350	2.3 4.2	ESM	Good	Good	2	6	1	2	Tree with no significant defects noted
10	<i>Glochidion ferdinandi</i> Cheese Tree	9 x 6	350at base	2.1 4.2	ESM	Good	Fair / Good	3	2A/B	2	2	Minor stem inclusion development at base EST – appears not immediately detrimental
11	<i>Corymbia gummifera</i> Bloodwood	15 x 10	250, 200	2.5 5.4	ESM	Good	Fair / Good	2	2B	2	2	Twin stems at 0.5m with minor stem inclusion development MSID

Trees requiring removal due to hazardous or dead condition - subject to Local Government Authority notification							Trees with low retention values: senescence, developing defects or being *exempt trees from the LGA Tree Preservation Order (TPO)					
Tree No	Botanical Name COMMON NAME	Height x spread (m)	DBH (mm)	SRZ	Age	Health	Condition	Significance	VTA	RV	U. L.E.	Comments
				TPZ								
12	<i>Casuarina cunninghamiana</i> River Oak	23 x 14	800	3m 9.6	ESM	Good	Good	4/3	6	1	2	Tree with no significant defects noted
13	<i>Eucalyptus saligna</i> Sydney Blue Gum	22 x 14	450, 150	2.7 7.2	ESM	Good	Good	2	6	1	2	Tree with no significant defects noted
14	<i>Casuarina glauca</i> She Oak	12 x 4	250	2 3	ESM	Good	Poor	4/3	2A	4	4	Structurally damaged at base EST side = developing high risk tree of low retention value
15	<i>Angophora costata</i> Angophora	7 x 2.5	200	1.8 2.4	ESM	Good	Poor	2	2A	4	4	Significant bowing lean NTH/WST, wound at base EST with fungal conk = developing high risk tree
16	<i>Eucalyptus saligna</i> Sydney Blue Gum	24 x 16	500	2.6 6	ESM	Good	Good	2	6	1	2	Tree with no significant defects noted
17	<i>Eucalyptus saligna</i> Sydney Blue Gum	18 x 11	400	2.4 4.8	ESM	Good	Fair / Good	2	2C	2	2	Minor lower trunk seam wound splits throughout to 2.2m
Group 'A'	mixed local natives	av 9 x 4	av 200	1.8 2.4	ESM	Good	Good	3	6	1	2	Small trees at edge of rock embankment – Note: any rock excavation would warrant tree removal – arborist advice required should kerb works be required
18	<i>Eucalyptus saligna</i> Sydney Blue Gum	18 x 14	400	2.4 4.8	ESM	Good	Good	2	6	1	2	Tree with no significant defects noted
19	<i>Allocasuarina distyla</i> Scrub She Oak	6 x 5	250at base	1.8 3	ESM	Fair / Poor	Fair	4/3	2B/4	3	3	In significant decline >70%, 3x stems at base with stem inclusion development = WST stem dead = low retention value
20	<i>Angophora costata</i> Angophora	6 x 2	150	1.6 2	I	Fair	Fair	2	1/4	3	<3	In significant decline, one sided canopy biomass - + lean WST = low retention value
21	<i>Angophora costata</i> Angophora	5 x 3	150	1.6 2	I	Good	Good	2	6	1	2	Tree with no significant defects noted

Trees requiring removal due to hazardous or dead condition - subject to Local Government Authority notification							Trees with low retention values: senescence, developing defects or being *exempt trees from the LGA Tree Preservation Order (TPO)					
Tree No	Botanical Name COMMON NAME	Height x spread (m)	DBH (mm)	SRZ	Age	Health	Condition	Significance	VTA	RV	U. L.E.	Comments
				TPZ								
22	<i>Corymbia gummifera</i> Bloodwood	15 x 7	250	2m 3	ESM	Fair / Good	Good	2	4	2	2	Environmentally stressed Slightly low foliage volume
23	<i>Corymbia gummifera</i> Bloodwood	16 x 10	300, 200	2.6 6	ESM	Good	Good	2	6	1	2	Tree with no significant defects noted
24	<i>Corymbia gummifera</i> Bloodwood	13 x 5	250	2 3	ESM	Good	Good	2	6	1	2	Tree with no significant defects noted
25	<i>Corymbia gummifera</i> Bloodwood	16 x 8	300, 200	2.6 6	ESM	Fair / Good	Fair / Good	2	4	2	2	Environmentally stressed slight decline in canopy
26	<i>Corymbia gummifera</i> Bloodwood	16 x 11	350	2.3 4.2	ESM	Fair / Good	Good	2	4	2	2	Low foliage volume evident
Group 'B'	Mixed local natives mostly <i>Allocasuarina</i>	av 7 x 4	av 100	1.5 2	ESM	Good	Good	3	6	1	2	Small tree with no significant defects noted Located between T26 & T27
27	<i>Corymbia gummifera</i> Bloodwood	16 x 9	300	2.1 3.6	ESM	Good	Good	2	6	1	2	Tree with no significant defects noted
27a	<i>Allocasuarina distyla</i> Scrub She Oak	7 x 3	200	1.8 2.4	ESM	Good	Good	2	6	1	2	Tree with no significant defects noted
28	<i>Corymbia gummifera</i> Bloodwood	18 x 11	350	2.3 4.2	ESM	Good	Fair / Good	2	2B/C	2	2	Twin stems at 2.2m with minor stem inclusion development + lower trunk wounds evident
29	<i>Corymbia gummifera</i> Bloodwood	12 x 4	250	2 3	ESM	Fair / Good	Good	2	4	2	2	Slightly low foliage volume
30	<i>Corymbia gummifera</i> Bloodwood	15 x 9	400	2.4 4.8	ESM	Good	Good	2	6	1	2	Tree with no significant defects noted
31	<i>Corymbia gummifera</i> Bloodwood	16 x 7	300	2.1 3.6	ESM	Good	Good	2	6	1	2	Tree with no significant defects noted
32	<i>Corymbia gummifera</i> Bloodwood	13 x 5	250	2 3	ESM	Fair / Good	Good	2	4	2	2	Environmentally stressed with no significant defects noted
33	<i>Corymbia gummifera</i> Bloodwood	16 x 7	400	2.4 4.8	ESM	Good	Fair / Good	2	2C	2	2	Lower trunk torsion twist extending to ground level

Trees requiring removal due to hazardous or dead condition - subject to Local Government Authority notification							Trees with low retention values: senescence, developing defects or being *exempt trees from the LGA Tree Preservation Order (TPO)					
Tree No	Botanical Name COMMON NAME	Height x spread (m)	DBH (mm)	SRZ	Age	Health	Condition	Significance	VTA	RV	U. L.E.	Comments
				TPZ								
34	<i>Eucalyptus racemosa</i> Snappy Gum	14 x 14	400, 450	3.1 10.2	SM	Fair / Good	Fair / Good	2	2C/3	2	2	Slightly low foliage volume, twin stems wound at ground level on EST side
35	<i>Angophora bakeri</i> Narrow Leaf Apple	5 x 4	150	1.6m 2	ESM	Good	Fair	3	2A	3	3	Decaying at base = low retention value
36	<i>Corymbia gummifera</i> Bloodwood	15 x 8	400	2.4 4.8	ESM	Good	Fair / Good	2	2A	2	2	Slight lean EST with average anchoring root development
37	<i>Corymbia gummifera</i> Bloodwood	7 x 3	250	2 3	ESM	Fair	Fair / Good	2	2C/4	2	2	Environmentally stressed, low foliage volume minor wounds on lower trunk at 2.2m STH side
38	<i>Corymbia gummifera</i> Bloodwood	16 x 9	200, 350	2.7 6.6	ESM	Good	Fair / Good	2	2C	2	2	Decline in lower branch scaffolds EST side – located on rock
39	<i>Corymbia gummifera</i> Bloodwood	15 x 13	600	2.7 7.2	SM	Good	Good	2	2C	2	2	Located at edge of embankment with minor lean NTH
40	<i>Corymbia gummifera</i> Bloodwood	14 x 7	350	2.3 4.2	ESM	Good	Good	2	6	1	2	Located at edge of embankment, one sided canopy biomass - EST
41	<i>Banksia serrata</i> Old Man Banksia	6 x 4	200	1.8 2.4	ESM	Good	Good	2	2A	3	3	Located at edge of very steep embankment, average anchoring root development = low retention value
42	<i>Allocasuarina distyla</i> Scrub She Oak	5 x 3	200	1.8 2.4	ESM	Good	Good	2	2A	3	3	Located at edge of very steep embankment, average anchoring root development = low retention value
43	<i>Allocasuarina distyla</i> Scrub She Oak	7 x 6	250, 150	2.4 4.8	ESM	Good	Fair / Good	3	2C	2	3	G2 Gate. Minor wounds at 2.2m STH, past storm damaged limbs & pruned for light pole clearance
44	<i>Corymbia gummifera</i> Bloodwood	22 x 15	550	2.7 6.6	SM	Good	Fair / Good	2	2C	2	2	G2 Gate. Minor storm damage at 15m STH
Group 'C'	Mixed local natives	av 7 x 4	av 200	1.8 2.4	ESM	Good	Good	3	6	1	2	Tree located above rock embankment with no significant defects noted
45	<i>Eucalyptus elata</i> River Peppermint	16 x 14	850	3.1 10.2	ESM	Good	Good	2	2C	2	2	3 x stems = 850(Ø), basal junction may become problematic in time

Trees requiring removal due to hazardous or dead condition - subject to Local Government Authority notification							Trees with low retention values: senescence, developing defects or being *exempt trees from the LGA Tree Preservation Order (TPO)					
Tree No	Botanical Name COMMON NAME	Height x spread (m)	DBH (mm)	SRZ	Age	Health	Condition	Signifi- cance	VTA	RV	U. L.E.	Comments
				TPZ								
46	<i>Acacia decurrens</i> Sydney Green Wattle	14 x 6	200	1.8 2.4	SM	Fair / Good	Fair / Poor	4/3	2C/4	3	3	Typical decline in canopy, lower trunk wounds with dead acacia 2m WST = low retention value
47	<i>Angophora costata</i> Angophora	24 x 16	650	2.8m 7.8	ESM	Good	Good	2	6	1	2	Tree with no significant defects noted
Group 'D'	Mixed local natives	av 9 x 6	av 250	1.8 3	ESM	Good	Good	3	6	1	2	Trees with no significant defects noted (Located FG1 through to FG3 fire trail STH)
48	<i>Corymbia maculata</i> Spotted Gum	21 x 11	300, 400	2.8 8.4	ESM	Good	Fair / Good	2	2C	2	2	Twin stems to ground level, STH stem past damaged – appears not immediately detrimental / no works beyond stone wall
49	<i>Glochidion ferdinandi</i> Cheese Tree	8 x 7	500at base	2.6 6	ESM	Fair / Good	Fair	3	2B	2	2	Slightly low foliage volume, multi stemmed at base, stem inclusion development at 1.6m, located on shallow soils
50	<i>Allocasuarina distyla</i> Scrub She Oak	10 x 6	250	2 3	ESM	Fair / Poor	Fair / Poor	3	2/4	3	3	Main twin stem defect at 2.5m STH, minor wounds throughout with significant decline in canopy = low retention value
51 x2	<i>Glochidion ferdinandi</i> Cheese Tree	6 x 4	250at base	1.8 3	ESM	Fair / Good	Fair / Poor	3	2D	2	3	Past topped at <1m, all shoots coppice growth (epicormic stems)
52	<i>Glochidion ferdinandi</i> Cheese Tree	8 x 7	200, 200	2.4 4.8	ESM	Good	Fair / Good	3	2B	2	2	Twin stemmed at near ground level with minor stem inclusion development
53	<i>Eucalyptus fastigata</i> Brown barrel	22 x 17	550	2.7 6.6	ESM	Good	Fair / Good	2	2	2	3	Large wound seam at 9m STH, potential habitat, tree likely to become problematic in future
54	<i>Eucalyptus fastigata</i> Brown barrel	16 x 5	250	2 3	ESM	Fair / Good	Good	3	4	2	2	Environmentally stressed with no significant defects noted
55	<i>Allocasuarina distyla</i> Scrub She Oak	8 x 5	200, 100	2.1 3.6	ESM	Good	Fair / Good	3	2A	2	3	Contains minor basal faults = tree likely to become problematic in future
56	<i>Allocasuarina distyla</i> Scrub She Oak	5 x 3	150at base	1.5 2	SM	Fair / Good	Good	3	6	1	3	Slightly low vigour + lean EST
Group 'E'	Mixed local natives mostly <i>Allocasuarina</i>	av 6 x 3	av 100	1.5 2	I	Good	Good	3	6	1	2	Trees with no significant defects noted

Trees requiring removal due to hazardous or dead condition - subject to Local Government Authority notification							Trees with low retention values: senescence, developing defects or being *exempt trees from the LGA Tree Preservation Order (TPO)					
Tree No	Botanical Name COMMON NAME	Height x spread (m)	DBH (mm)	SRZ	Age	Health	Condition	Significance	VTA	RV	U. L.E.	Comments
				TPZ								
57	<i>Corymbia gummifera</i> Bloodwood	22 x 16	500	2.6 6	ESM	Good	Good	2	6	1	2	On shallow soils with no significant defects noted
58	<i>Eucalyptus haemastoma</i> Scribbly Gum	15 x 17	750	3m 8	EM	Fair / Good	Fair / Good	2	2C	2	2	Typical minor wounds for species type - appears not immediately detrimental
59	<i>Eucalyptus umbra</i> White Mahogany	8 x 6	550	2.7 6.6	EM	Good	Fair / Poor	2	2	3	3	Main stem with structural fault at 4m reducing form, cavity on lower trunk STH side = potential low retention value
60	<i>Eucalyptus haemastoma</i> Scribbly Gum	9 x 12	600	2.7 7.2	EM	Good	Fair / Poor	2	2A	3	3	Basal damage & decay on two sides + lean WST = tree likely to become problematic in future = low retention value tree
61	<i>Corymbia gummifera</i> Bloodwood	22 x 15	950	3.3 11.4	M	Good	Fair / Good	2	2B/C	2	3	3x stems = 950(Ø), wound at base with decay WST side, located on rock = tree likely to become problematic in future
62	<i>Corymbia gummifera</i> Bloodwood	21 x 14	500	2.6 6	ESM	Fair / Good	Fair / Good	2	2C/4	2	2	Slight decline in canopy, minor upper branch scaffolds damage STH + basal cavity STH side – appears not immediately detrimental
63	<i>Corymbia gummifera</i> Bloodwood	19 x 14	500	2.6 6	SM	Fair / Good	Fair / Good	2	2C	2	2	Minor main stem wounds at 4 & 6m NTH/WST, slight decline in canopy evident
64	<i>Acacia decurrens</i> Sydney Green Wattle	20 x 14	450	2.5 5.4	M	Fair	Fair / Poor	4/3	4	3	4	In significant decline = low retention value
65	<i>Acacia decurrens</i> DEAD TREE	14 x 11	450	2.5 -	-	-	-	5	1	4	4	Dead tree
66	<i>Eucalyptus saligna</i> 'x' Blue Gum	18 x 11	300	2.1 3.6	ESM	Fair / Good	Fair / Good	2	2C	2	3	Likely hybrid, branch collar fault at 10m NTH + slightly low foliage volume
67	<i>Corymbia gummifera</i> Bloodwood	9 x 6	300	2.1 3.6	ESM	Fair	Fair / Good	2	4	2	2	Environmentally stressed + slight decline in canopy
68	<i>Eucalyptus saligna</i> 'x' Blue Gum	20 x 10	350	2.3 4.2	ESM	Fair / Good	Fair / Good	2	4	2	2	Likely hybrid, with no significant defects noted
69	<i>Eucalyptus elata</i> River Peppermint	23 x 12	450	2.5 5.4	ESM	Good	Good	2	6	1	2	Tree with no significant defects noted

Trees requiring removal due to hazardous or dead condition - subject to Local Government Authority notification							Trees with low retention values: senescence, developing defects or being *exempt trees from the LGA Tree Preservation Order (TPO)					
Tree No	Botanical Name COMMON NAME	Height x spread (m)	DBH (mm)	SRZ	Age	Health	Condition	Significance	VTA	RV	U. L.E.	Comments
				TPZ								
70	<i>Eucalyptus elata</i> River Peppermint	25 x 18	800	3 9.6	M	Good	Good	2	6	1	2	Slight decline in lower branch scaffolds
71	<i>Lophostemon confertus</i> Qld Brush Box	16 x 7	450at base	2.4m 5.4	ESM	Good	Fair / Good	4/3	2B	2	2	Minor stem inclusion development NTH stem
Group 'F'	Mixed local natives mostly <i>Allocasuarina</i>	av 6 x 3	av 200	1.8 2.4	ESM	Good	Good	3	6	1	2	Small trees with no significant defects noted
72	<i>Casuarina glauca</i> She Oak	10 x 4	200, 200	2.4 4.8	ESM	Good	Fair	4/3	2	3	3	Twin stems included at 0.5m + low retention value
73	<i>Allocasuarina distyla</i> Scrub She Oak	10 x 4	200	1.8 2.4	ESM	Good	Good	2	6	1	2	Tree with no significant defects noted
74	<i>Allocasuarina distyla</i> Scrub She Oak	9 x 4	200	1.8 2.4	ESM	Good	Good	2	6	1	2	Tree with no significant defects noted
75	<i>Allocasuarina distyla</i> Scrub She Oak	13 x 6	250	2 3	ESM	Good	Fair / Good	2	2B	2	2	Minor stem inclusion development at 3m
76	<i>Acacia decurrens</i> Sydney Green Wattle	15 x 8	300	2.1 3.6	ESM	Good	Fair	4/3	2A	3	3	Moderate lean WST – potential poor anchoring root development = low retention value
77	<i>Allocasuarina distyla</i> Scrub She Oak	7 x 7	250	2 3	EM	Fair / Good	Fair / Good	3	4	2	3	Typical for species type in age class
78	<i>Kunzea ambigua</i> Tick Bush	4 x 5	200at base	1.6 2.4	M	Good	Good	3	6	1	2	Tree with no significant defects noted
79	<i>Angophora bakeri</i> Narrow Leaf Apple	6 x 3	150at base	1.5 2	I	Fair	Fair / Good	3	4	2	2	3x stems, tree environmentally stressed low foliage volume
80	<i>Allocasuarina distyla</i> Scrub She Oak	8 x 5	250	2 3	ESM	Good	Good	2	6	1	2	Tree with no significant defects noted
81	DEAD STUMP	6 x 3	600at base	2.7 -	-	-	-	5	1	4	4	Dead stump – may contain habitat values
82	<i>Allocasuarina distyla</i> Scrub She Oak	9 x 6	250	2 3	ESM	Good	Good	2	6	1	2	Tree with no significant defects noted

Trees requiring removal due to hazardous or dead condition - subject to Local Government Authority notification							Trees with low retention values: senescence, developing defects or being *exempt trees from the LGA Tree Preservation Order (TPO)					
Tree No	Botanical Name COMMON NAME	Height x spread (m)	DBH (mm)	SRZ	Age	Health	Condition	Significance	VTA	RV	U. L.E.	Comments
				TPZ								
83	<i>Allocasuarina</i> DEAD TREE	6 x 3	150	1.6 2	-	-	-	4	1	4	4	Dead tree
84	DEAD STUMP	3 x 1	400at base	2.3m -	-	-	-	5	1	4	4	Dead stump – may contain habitat values
85	<i>Allocasuarina distyla</i> Scrub She Oak	8 x 4	200	1.8 2.4	ESM	Good	Good	2	6	1	2	Tree with no significant defects noted
86	<i>Allocasuarina distyla</i> Scrub She Oak	8 x 4	200	1.8 2.4	ESM	Good	Good	2	6	1	2	Tree with no significant defects noted
87	<i>Allocasuarina distyla</i> Scrub She Oak	8 x 5	250	2 3	ESM	Good	Poor	2	2	4	4	Twin stemmed at 2.2m with included stem failure / split apart = high risk tree
Group 'G'	Mixed planted natives	av 4 x 3	av 150at base	1.5 2	SM	Fair	Fair	4/3	4	2	5	Mixed natives contained in planter bed, environmentally stressed - very low vigour
88	<i>Eucalyptus saligna</i> Sydney Blue Gum	24 x 17	650	2.8 7.8	ESM	Good	Fair	2	2	3	<3	Large seam wound at 3m NTH/WST + fungal conk (pathogen) = low retention value
89	<i>Eucalyptus racemosa</i> Snappy Gum	16 x 6	300	2.1 3.6	ESM	Good	Good	2	6	1	2	Tree with no significant defects noted
90	<i>Eucalyptus racemosa</i> Snappy Gum	20 x 12	400	2.4 4.8	ESM	Good	Good	2	6	1	2	Tree with no significant defects noted
91	<i>Leptospermum petersonii</i> Tea Tree	5 x 6	250at base	1.8 3	M	Fair / Good	Fair / Good	3	4	3	3	Aging specimen with declining canopy
92	<i>Allocasuarina distyla</i> Scrub She Oak	10 x 4	200	1.8 2.4	ESM	Good	Good	2	6	1	2	Tree with no significant defects noted
93	<i>Eucalyptus racemosa</i> Snappy Gum	13 x 10	600	2.7 7.2	ESM	Good	Fair / Good	2	2C	2	2	Typical minor wounds for species type - appears not immediately detrimental
94G	Mixed native group	av 6 x 3	av 200	1.8 2.4	ESM	Good	Fair / Good	3	2C	2	3	Group of small mixed natives, Banksias Cheers tree and Acacia
95	<i>Corymbia gummifera</i> Bloodwood	15 x 12	350	2.3 4.2	ESM	Good	Good	2	2E	2	2	Location to infrastructure may become problematic in future

Trees requiring removal due to hazardous or dead condition - subject to Local Government Authority notification							Trees with low retention values: senescence, developing defects or being *exempt trees from the LGA Tree Preservation Order (TPO)					
Tree No	Botanical Name COMMON NAME	Height x spread (m)	DBH (mm)	SRZ	Age	Health	Condition	Signifi- cance	VTA	RV	U. L.E.	Comments
				TPZ								
96 x3	<i>Casuarina glauca</i> She Oak	8 x 3	150	1.6	I	Good	Good	4/3	6	1	3	Tree with no significant defects noted
				2								
97	<i>Eucalyptus saligna</i> Sydney Blue Gum	24 x 12	300	2.1m	ESM	Good	Good	2	6	1	2	Tree with no significant defects noted
				3.6								
98	<i>Eucalyptus saligna</i> Sydney Blue Gum	25 x 14	450	2.5	ESM	Good	Good	2	6	1	2	Tree with no significant defects noted
				5.4								
99	<i>Eucalyptus saligna</i> Sydney Blue Gum	11 x 4	150	1.6	ESM	Good	Good	2	2C/E	2	3	Minor wound at 0.8m WST – appears not immediately detrimental
				2								
100	<i>Eucalyptus saligna</i> Sydney Blue Gum	20 x 13	400	2.4	ESM	Good	Fair / Good	2	2E	2	3	Location to infrastructure may become problematic in future
				4.8								
101	<i>Eucalyptus saligna</i> Sydney Blue Gum	25 x 12	400	2.4	ESM	Fair / Good	Good	2	2E	2	3	Location to infrastructure may become problematic in future
				4.8								

