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McIldowie Partners
Woodleigh School
485 Golf Links Road, Langwarrin South
Arboricultural Impact Assessment

12 September 2023

Assessment and Report prepared by:

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Job number:

CIVICA

04556

12 September 2023

Frank Burridge
Graduate of Architecture
McIldowie Partners
Level 5, 185 Flinders Lane
Melbourne VIC 3000

Arboricultural Impact Assessment Report regarding fifty-nine (59) trees located within the vicinity of the proposed Year 10 Futures Studio project at Woodleigh School, 485 Golf Links Road, Langwarrin South

Dear Frank,

We are pleased to provide you with the following Arboricultural Impact Assessment Report for fifty-nine (59) trees within the grounds of Woodleigh School.

Complete use of this report is authorised under the conditions limiting its use as stated in Appendix A Item 7 of "*Arboricultural Reporting Assumptions and Limiting Conditions*".

Should you have any queries relating to this report, its recommendations, or the options considered please do not hesitate to contact us on 1300 272 671.

Regards,

Andy Clark
Consulting Arborist
Dip. Hort. (Arb.), AQF Level 5

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1 Executive Summary

1.1.1 The following Arboricultural Impact Assessment (Report) regarding fifty-nine (59) trees located within the farm precinct grounds of Woodleigh School. The subject site was identified by McIldowie Partners (the Client) as possessing trees that may be impacted upon by the construction of a new Year 10 teaching space and associated landscaping and bushfire control works.

1.1.2 In part, the project scope was to nominate subject trees that can be retained, or require removal to facilitate the proposed development, as well as identify and reduce potential conflicts between subject trees and site development. Accurate information on the area required for tree retention and methods/techniques suitable for tree protection during construction have been provided.

1.1.3 Fifty-one (51) trees would require removal based on the supplied design proposal. The trees are largely affected by direct conflict with the proposed building footprint and/or landscaping or leveling works. A number of trees situated along the eastern boundary, immediately outside the construction zone, have also been targeted for removal to achieve a satisfactory bushfire clearance from the adjacent fenced conservation area.

1.1.4 Eight (8) trees were recommended for retention and require generic protection measures, largely focused on exclusion from the construction zone, to ensure they remain viable following the completion of works.

1.1.5 Tree retention values have been determined based upon a modified version of the British Standard and which have been prescribed into one of the following four (4) categories, A, B, C and U. Refer to Appendix C for further detail. Generally, relevant consent authorities will consider:

- A retention value trees as a site constraint and may require alterations to the proposed development design and/or specific protection measures to allow retention, unless the proposed development outweighs the retention value of the tree
- B retention value trees as a site constraint consideration, lesser changes should be considered to retain such trees
- C retention value trees are not considered a site constraint
- U retention value trees are considered a site opportunity, as such trees are recommended for removal regardless of the proposed development.

1.1.6 Trees impacted by the proposed development:

Category	Description	Total	Removal		Retain	
			located within development footprint	irrespective of future development	with specific protection	with generic protection
A	High retention value trees	0				
B	Moderate retention value trees	2				416, 417
C	Low retention value trees	57	419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 430, 431, 432, 433, 434, 435, 436, 437, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475			418, 438, 439, 440, 441, 442
U	Trees to be removed irrespective of proposed development	0				

2 Introduction

2.1.1 Civica ArborSafe was engaged by Frank Burridge on behalf of the Client to complete an Arboricultural Impact Assessment Report on fifty-nine (59) trees located within the Woodleigh School property at 485 Golf Links Road, Langwarrin South.

2.1.2 The report has been requested as part of a Development Application (DA) that involves the construction of a new Year 10 teaching building within the school farm precinct, situated immediately north of the main campus.

2.1.3 The report was intended to provide information on site trees and how they may be impacted upon by the proposed development. Report findings and recommendations provided are based upon guidance provided within Australian Standard AS 4970–2009: *Protection of Trees on Development Sites*.

2.1.4 Observations and recommendations provided within this report are based upon information provided by the Client and an arborist site visit.

3 Scope

3.1.1 Carry out a visual examination of the nominated trees located within the vicinity of the proposed development.

3.1.2 Provide an objective appraisal of the subject trees in relation to their species, estimated age, health, structural condition, useful life expectancy (ULE) and viability within the landscape.

3.1.3 Based on the findings of this investigation, provide independent recommendations on the retention value of the trees.

3.1.4 Nominate subject trees that can be retained or require removal to facilitate the development.

3.1.5 Identify and reduce potential conflicts between subject trees and site development by providing accurate information on the area required for tree retention and methods/techniques suitable for tree protection during construction.

3.1.6 Provide information on restricted activities within the area nominated for tree protection, as well as suitable construction methods to be adopted during demolition and/or construction.

4 Methodology

4.1 Data Collection

4.1.1 James Mackenzie of Civica ArborSafe carried out a site inspection of the subject trees on 12 July 2023.

4.1.2 Trees that are the subject of this report (Figure 1) were identified during discussions with the Client and gauging relevant trees during the site visit.

4.1.3 Pursuant with the Frankston City Council Tree Protection Local Law No. 22 (Frankston City Council, 2018), all site trees with a trunk circumference equal to or greater then 110cm measured at the base have been included within this report. Small trees/shrubs within the site may or may not have been omitted from the report based on their species, current size and/or potential future size and contribution to local amenity.

4.1.4 The subject trees were inspected from the ground using the initial component of Visual Tree Assessment (VTA) (Mattheck, 1994). No foliage or soil samples were taken and no aerial, underground or internal investigations were undertaken.

4.1.5 Tree height and canopy width were estimated and have been provided in a variety of ranges with 5m increments. Trunk diameter at breast height (DBH) and trunk diameter at the root crown (DRB) were measured with a diameter tape and provided to the nearest centimetre.

4.1.6 TPZ encroachment calculations are based upon measurements obtained from using PDF measuring tools and/or scale ruler and/or measurement descriptions from the assessing arborists against plans showing surveyed tree locations (which have individual CAD drawn TPZ displayed) calculated within a dedicated TPZ calculator.

4.1.7 Environmental and Heritage information has been sourced from Vic Plan. The source of all information has been referenced accordingly.

4.1.8 Data collected on site was analysed by Andy Clark, collated into report format, and relevant recommendations were formulated.

4.1.9 Tree protection zones (TPZ) and structural root zones (SRZ) were calculated in accordance with the Australian Standard AS 4970–2009: *Protection of Trees on Development Sites* (refer to Section 7.6).

4.1.10 Retention values have been determined based upon a modified version of the British Standard BS 5837–2012: *Trees in Relation to Design, Demolition and Construction* (refer to Appendix C).

4.1.11 All photographs were taken at the time of the site inspections by the author and have not been altered for brightness or contrast, nor have they been cropped.

4.1.12 Plans of the existing site and of the proposed development were provided to Civica ArborSafe in August 2023.

4.1.13 No proposed underground service locations have been reviewed in the preparation of this report.

5 Observations

5.1 Location

5.1.1 The site was located within the grounds of Woodleigh School (Figure 2). Specifically, the area designated in this report, was located within the school farm precinct situated immediately north of the main campus and delineated by an existing gravel driveway.

5.1.2 The site is an existing grassed paddock area, with rows/groups of self-sown young to semi-mature endemic trees. The site is situated adjacent to the schools fenced conservation area.

5.1.3 The site was located within the Frankston City Council Local Government Area (LGA) and zoned as low density residential (LDRZ) (Victoria State Government, 2023).

5.1.4 The site possessed a slightly sloping aspect, characterised by the high point along the southern boundary.

5.1.5 Site soils were not sampled or tested for the purpose of this report. Site soils are unlikely to be disturbed given the sites rural setting and assumed to be close to their natural soil profiles.

5.1.6 The site is situated within a designated Bushfire Prone Area (Victoria State Government, 2023).

Figure 1. Whole site image (location). Red lines delineate the site and area containing the subject trees that may be impacted by the proposed development. (Nearmap, 2023).

5.2 Site Trees

5.2.1 Trees can be identified on site using white tree tags which are typically located at approximately 2m from ground level on the trunk.

5.2.2 Six (6) species were identified across the site with the most prevalent being *Eucalyptus ovata* (Swamp Gum), *Acacia mearnsii* (Black Wattle) and *Eucalyptus radiata* (Narrow-leaved Peppermint).

5.2.3 The trees are all self-sown stock of local provenance. The treescape is relatively young with 48 (82%) of the 59 existing surveyed trees rated as young or juvenile. The remaining 11 trees (18%) were rated as semi-mature specimens.

Figure 2. Site map showing subject trees. Tree attributes are to be obtained from Appendix E – Tree Assessment Data. (ArborPlan, July 2023).

5.3 Tree Retention Values

5.3.1 Retention values were determined based upon a modified version of the British Standard BS 5837–2012: *Trees in Relation to Design, Demolition and Construction*. This standard categorises tree retention value based upon assessment of the tree's quality (health and structure), and life expectancy. Other criteria such as its physical dimensions, age class, location and its Amenity, Heritage and Environmental significance are also considered. A breakdown of attributes required for each category can be obtained from Appendix C – Tree Retention Values.

Category	Tree numbers
A	
B	416, 417
C	418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475
U	

5.4 Proposed Construction

5.4.1 The proposed development has been reviewed and in summary consists of the construction of a new Year 10 teaching space in the form of three single storey buildings connected by a central courtyard, along with associated landscaping and bushfire control works.

5.4.2 Due to the sloping nature of the site, a significant amount of leveling work would be required in the creation of a level building platform. This would be in the form of a benched cut along the southern aspect and filled to the north.

5.4.3 Although no civil or service locations have been reviewed in the preparation of this report, it is assumed they will be connected in some form from the main campus area to the south requiring trenching or overhead infrastructure to be installed.

Figure 3. Excerpt from Demolition Plan (Dwg. No. TP015, Rev. E). (McIldowie Partners, 5 September 2023).

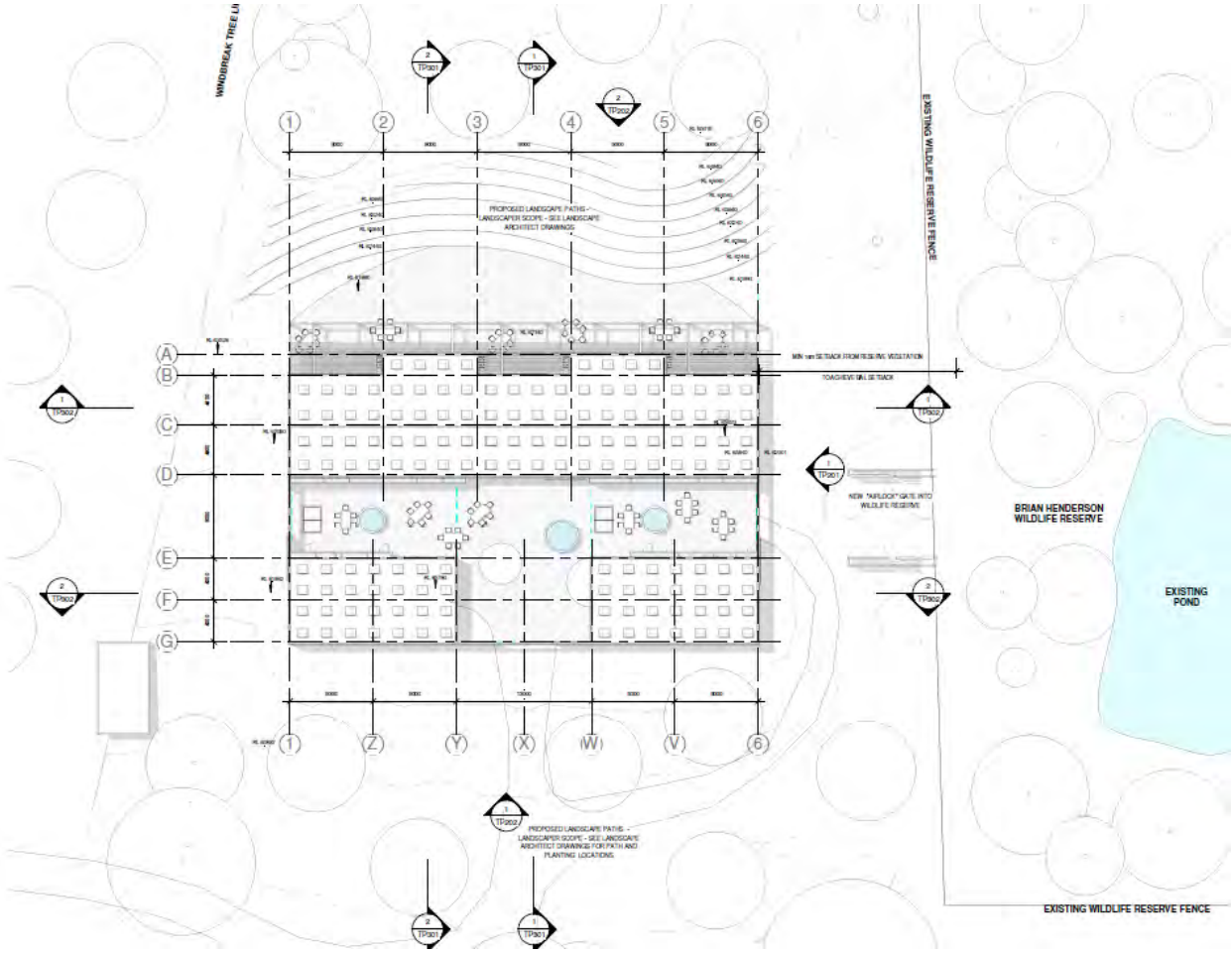


Figure 4. Excerpt from proposed Site Plan (Dwg. No. TP050, Rev. G). (McIldowie Partners, 5 September 2023).

5.5 Heritage Status

5.5.1 The proposed development site has no trees identified as being of national, state or local heritage significance (Victoria State Government, 2023).

5.6 Botanical and Environmental Status

5.6.1 The site trees were considered common species in the local area and as such hold limited botanical significance.

5.6.2 The trees are all self-sown endemic species, albeit largely young to juvenile stock, and as such would be subject to the Native Vegetation (clause 52.17) of the local planning scheme (Victoria Planning Provisions, 2022).

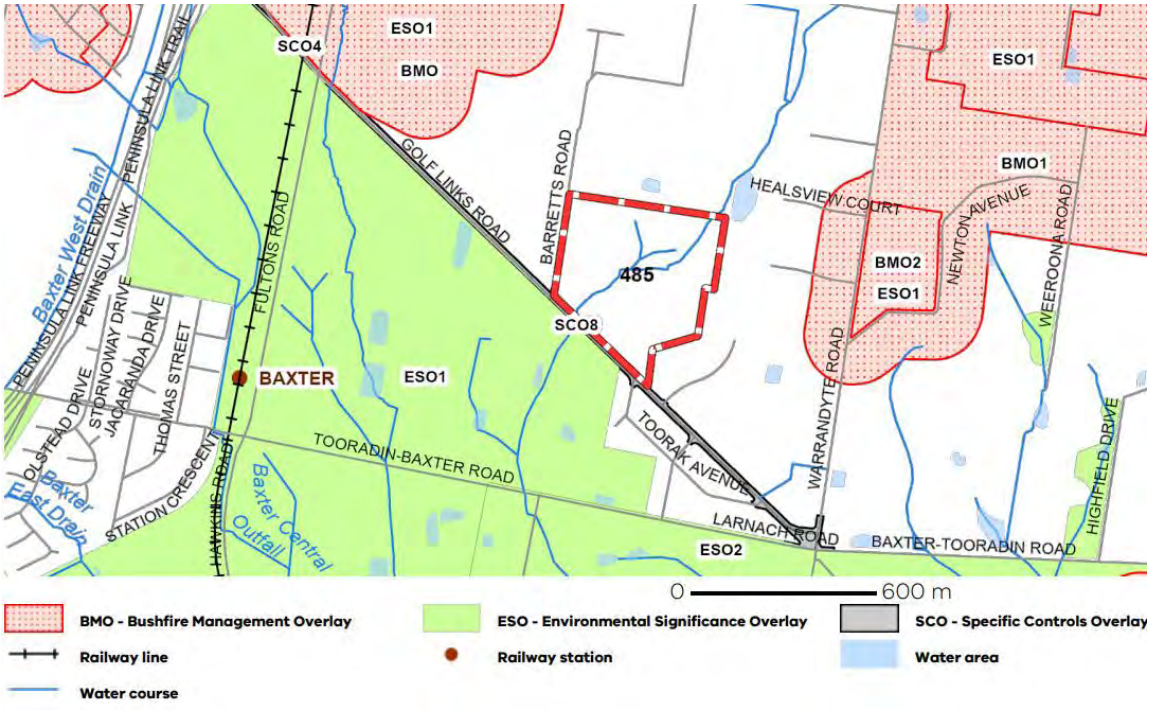


Figure 5. Image of environmental and bushfire overlays. (Victoria State Government, 2023).

6 Discussion

6.1 Determining TPZ Encroachment

6.1.1 Major encroachment. As per the Australian Standard AS 4970–2009: *Protection of Trees on Development Sites*, a major encroachment into the TPZ of any tree is considered to occur when it is beyond 10% of the total TPZ area. Trees with major encroachment may require removal or, in certain instances, be retained with specific protection requirements throughout the construction stage.

6.1.2 Minor encroachment. Under the aforementioned standard, a minor encroachment is determined as being less than 10% of the total TPZ area. Trees with minor encroachment may be retained with specific, generic or no protection requirements throughout the construction stage.

6.1.3 No encroachment. Trees with no encroachment may be retained with generic or no protection requirements throughout the construction stage.

6.1.4 For the purposes of this report, trees to be removed or retained have been identified as those:

- Requiring removal due to a level of encroachment into their TPZ that would likely result in a detrimental impact upon their future health and/or stability
- Retainable and requiring specific protection requirements throughout construction (i.e. generic requirements plus arborist supervision and careful construction methods within their TPZ)
- Retainable and requiring generic tree protection measures only (i.e. protective fencing and restriction of activities within the TPZ).

6.2 Impact of Proposed Development

6.2.1 Review of the proposed design has been undertaken in the context of tree retention and removal across the site.

6.2.2 The trees affected by direct conflict with the proposed building footprint and/or landscaping or leveling works would require removal under the current design. A number of trees situated along the eastern boundary, immediately outside the construction zone, have also been targeted to achieve a satisfactory bushfire clearance with the adjacent conservation area. To retain these trees a redesign or relocation of the development would be required but given their largely young/juvenile age and ease of replacement they should not be considered a constraint on the development. Refer to Appendix E for full detail.

6.2.3 The other main development impact which affects trees, but not necessarily to the point of requiring immediate removal, is through significant root damage due to major TPZ encroachment. Root damage largely occurs due to two (2) main impacts – soil compaction (compacting existing site soil to build on or installing additional fill to raise soil levels) and/or direct root severance (excavation for service installation or lowering surface levels).

6.2.4 Negative tree impacts can manifest as either a reduction in health and/or vigour due to root loss (absorption and/or transport roots) resulting in a reduction in water and nutrient absorption capability or on tree stability if larger roots are impacted. Ultimately, the outcome for the trees depends on a number of variable factors including species, age, current health, TPZ encroachment percentage, soil type, topography, previous site use and the proposed design and construction methodology.

6.2.5 Compacted soils, especially artificially compacted soils such as those found under driveways or building platforms, have a higher bulk density down to a deeper level of subsoil. Bulk density is the term used for describing the weight of soil per unit volume. The broad engineering thinking is that the higher the density the more stable the road surface due to less soil movement in expansion, contraction, or compression. A higher bulk density is produced by compacting the soil to reduce available pore space between the soil particles.

6.2.6 The effect of compacted soils on plants is somewhat influenced by the soil type but generally a reduction in available pore space reduces the available area for oxygen and water within the soil. A reduction in available soil water and oxygen inhibits root activity within the soil, as they are essential for root elongation and growth, and the lack of these properties is considered a major limiting factor. The impact of significant soil level rises across the TPZ generally occurs over a longer time frame, as the stored energy can still be utilised and shifted within the tree even if the long-term use of the affected root is limited, than if the roots were directly severed. This generally allows the tree more time to react to the changed growing environment. Root severance has the same effect, reduction in root function and capability, but on an instantaneous time scale where there is no time for the tree to adjust.

6.2.7 The assumption of allowable encroachment and minimal long-term health or structural impacts to the trees rely on a combination of the following being used - root sensitive construction methods being adhered to within the TPZ, minimal excavation within the TPZ to limit root severance (i.e. construction placed outside the TPZ where possible), fill rather than excavation utilised to affect level changes where possible (i.e. to minimise root severance and allow the trees root system time to adjust), no construction occurring within the SRZ, compensatory area being available around the unimpacted aspects of the trees and the enhancement of the existing TPZ area (i.e. mulched, soil conditioning and irrigation when required).

6.2.8 The remaining trees are unaffected by the potential issues described above, as they are situated outside the construction zone, so are recommended for retention.

7 Tree Protection and Management Recommendations

7.1 Tree Removal

7.1.1 Fifty-one (51) trees would require removal as follows, based on the supplied design proposal.

Recommendation	Category A High retention value		Category B Moderate retention value		Category C Low Retention value		Category U No retention value	
	Qty	Tree numbers	Qty	Tree numbers	Qty	Tree numbers	Qty	Tree numbers
Remove for development	0		0		51	419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 430, 431, 432, 433, 434, 435, 436, 437, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475	0	

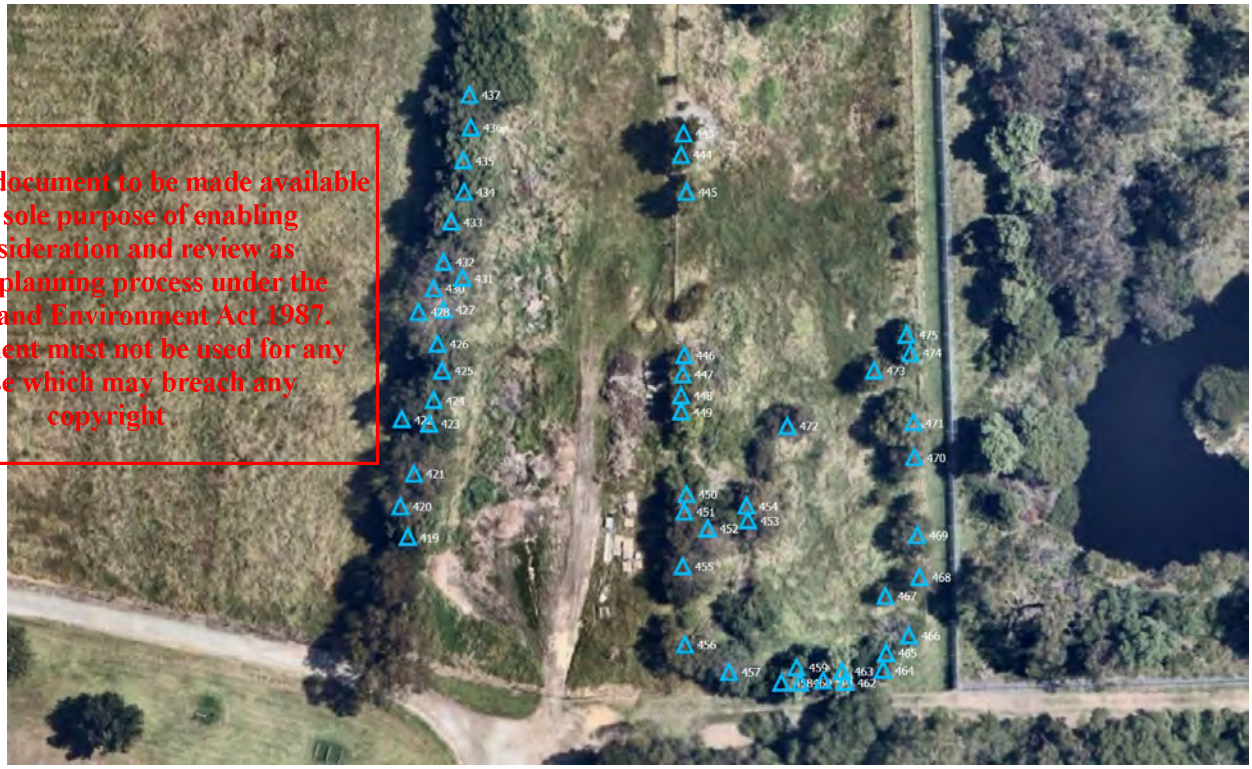


Figure 6. Site map showing tree requiring removal to facilitate the proposed development. (ArborPlan, July 2023).

7.2 Tree Retention

7.2.1 Eight (8) trees were recommended for retention and require generic protection measures, largely focused on exclusion from the construction zone, to ensure they remain viable following the completion of works.

Recommendation (Refer Section 7.5–7.9)	Category A High retention value		Category B Moderate retention value		Category C Low Retention value	
	Qty	Tree numbers	Qty	Tree numbers	Qty	Tree numbers
Retain with generic protection requirements	0		2	416, 417	6	418, 438, 439, 440, 441, 442

Figure 7. Site map showing tree requiring generic protection measures during construction. (ArborPlan, July 2023).

7.3 Generic Protection and Reporting Measures

7.3.1 All trees to be retained require protection during the construction stage. Tree protection measures include a range of:

- Activities restricted within the TPZ
- Protective fencing
- Trunk and ground protection
- Tree protection signage
- Involvement from the project arborist
- Project milestones
- Compliance reporting

7.4 Activities Prohibited within the TPZ

- Machine excavation including trenching
- Storage
- Preparation of chemicals, including cement products
- Parking of vehicles and plant
- Refuelling
- Dumping of waste
- Wash down and cleaning of equipment
- Placement of fill
- Lighting of fires
- Soil level changes
- Temporary or permanent installation of utilities and signs
- Physical damage to the tree

7.5 Protective Fencing Specification

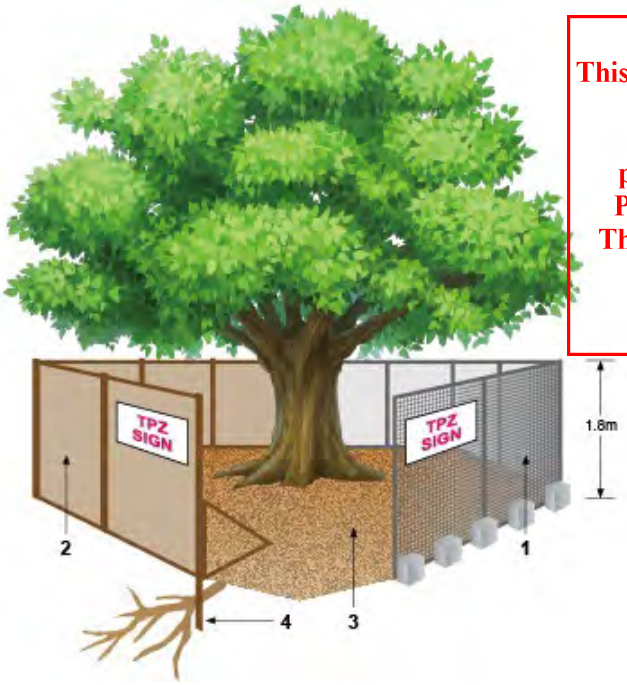
7.5.1 Protective fencing (Figure 8) is to be installed at the outer TPZ measurements for all retained trees. Fencing should be erected as per the image below before any machinery or materials are brought to site and before commencement of works (including demolition).

7.5.2 Once erected, protective fencing must not be removed or altered without approval from the project arborist. The TPZ fencing should be secured to restrict access.

7.5.3 TPZ fencing is to be a minimum of 1.8m high and mesh or wire between posts must be highly visible. Fence posts and supports should have a diameter greater than 20mm and should ideally be freestanding, otherwise be located clear of the roots. See image below.

7.5.4 Tree protection fencing must remain intact throughout all proposed construction works and must only be dismantled after their conclusion. The temporary dismantling of tree protection fencing must only be done with the authorisation of a consulting arborist and/or the responsible authority.

7.5.5 The subject trees themselves must also not to be used as a billboard to support advertising material. Affixing nails or screws into the trunks of trees to display signs of any type is not a recommended practice in the successful retention of trees.



Legend:
1. Chain wire mesh panels with shade cloth attached (if required), held in place with concrete feet
2. Alternative plywood or wooden paling fence panels. This fencing material also prevents building materials or soil entering the TPZ
3. Mulch installation across surface of TPZ (at discretion of the project arborist). No excavation, construction activity, grade changes, surface treatment or storage materials of any kind are permitted within the TPZ
4. Bracing is permissible within the TPZ. Installation of supports should avoid damaging roots.

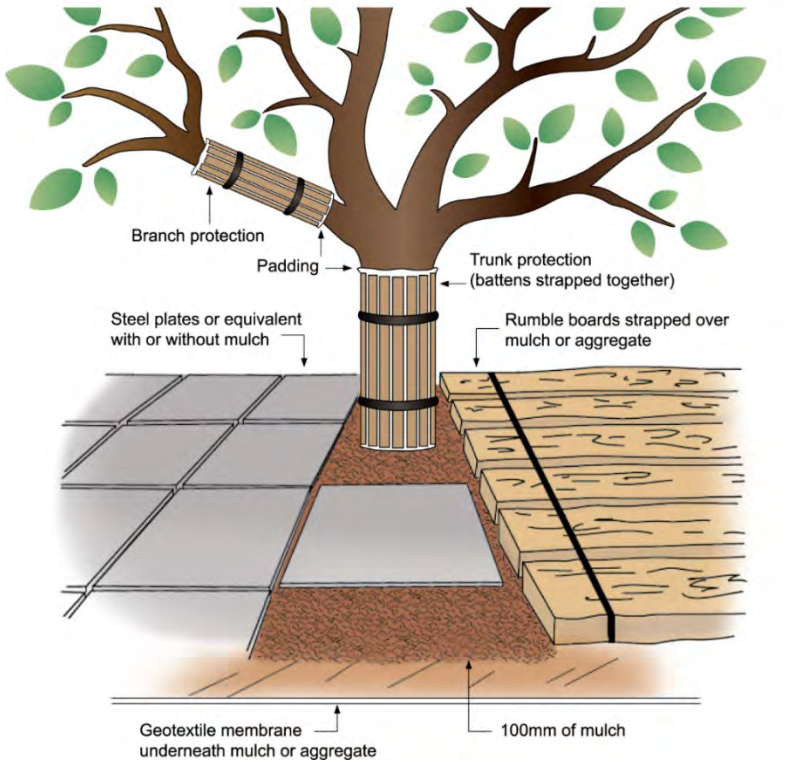
Figure 8. Depicts standard fencing techniques. (AS 4970–2009).

7.6 Trunk and Ground Protection

7.6.1 Given that proposed works are sometimes required within the TPZs of retained trees, standard protective fencing may not always be a viable method of protection. In these areas trunk protection and ground protection should be installed prior to the commencement of works and remain in place until after construction works have been completed.

7.6.2 Where construction access into the TPZ of retained trees cannot be avoided, the root zone of each tree must be protected using either steel plates or rumble board strapped over mulch/aggregate until such a time as permanent above ground surfacing (cellular confinement system or similar) is to be installed.

7.6.3 Trunk and ground protection (Figure 9) should be undertaken in line with the Australian Standard AS 4790–2009: *Protection of Trees on Development Sites* as per the image below:



Notes:

1. For trunk and branch protection use boards and padding that will prevent damage to bark. Boards are to be strapped to trees, not nailed or screwed.
2. Rumble boards should be of a suitable thickness to prevent soil compaction and root damage.

Figure 9. Depicts trunk and ground protection techniques. (AS 4970–2009).

7.7 Tree Protection Signs

7.7.1 Signs identifying the TPZ should be placed at 10m intervals around the edge of the TPZ and should be visible from within the development site.

Figure 10. Depicts an example of standard TPZ signage. (AS 4970–2009).

7.8 Project Arborist

7.8.1 An official "project arborist" must be commissioned to oversee the tree protection, any works within the TPZ's and complete regular monitoring compliance certification.

7.8.2 The project arborist must have minimum five (5) years industry experience in the field of arboriculture, horticulture with relevant demonstrated experience in tree management on construction sites, and Diploma level qualifications in arboriculture – AQF Level 5.

7.8.3 Inspections are to be conducted by the project arborist at several key points during the construction in order to ensure that protection measures are being adhered to during construction stages and decline in tree health or additional remediation measures can be identified.

7.9 Project Milestones

7.9.1 The following visits and milestones were recommended as to when on-site tree inspection by the project arborist is required:

Item	Purpose of Visit	Timing of Visit(s)	Prerequisites
1	Pre-start induction	Following sign off from Item 1. Contractor to provide a minimum of five days advance notice for this visit.	Prior to commencement of works. All parties involved in the project to attend.
2	Supervision of works in TPZ's including all regrading and excavations	Whenever there is work planned to be performed within the TPZ's. Contractor to provide a minimum of five days advance notice for such visits.	
3	Regular site inspections	Minimum frequency monthly for the duration of the project.	The checklist must be completed by the project arborist at each site inspection and signed by both parties.
4	Final sign off	Following completion of works.	Practical completion of works and prior to tree protection removal.

7.10 Compliance Reporting

7.10.1 Following each inspection, the project arborist shall prepare a report detailing the condition of the trees. These reports should certify whether or not the works have been completed in compliance with the consent relating to tree protection.

7.10.2 These reports should contain photographic evidence where required to demonstrate that the work has been carried out as specified.

7.10.3 Matters to be monitored and included in these reports should include tree condition, tree protection measures and impact of site works which may arise from changes to the approved plans.

7.10.4 The reports and compliance statements shall be submitted to the project manager (as well as the Clients' nominated representative) following each inspection.

7.10.5 The reports and any non-compliance statements shall be submitted to the project manager (as well as the Clients' nominated representative) if tree protection conditions have been breached. Reports should contain clear remedial action specifications to minimise any adverse impact on any subject tree.

7.11 Proposed Pruning

7.11.1 It is anticipated that minimal pruning only may be required, largely centred on reduction or crown lifting to facilitate site access during construction, of no greater than 10% of any one trees total crown area. Such pruning is considered to have minimal long term health impact to the tree.

7.11.2 All pruning is recommended to be completed in accordance with the Australian Standard AS 4373–2007: *Pruning of Amenity Trees* (Standards Australia, 2007) and undertaken by a suitably qualified arborist (minimum AQF 3 arborist).

7.11.3 Reduction pruning should focus on the removal of smaller diameter branches where feasible and remove no greater than 10% of the total crown. Branches no greater than 50mm diameter are to be removed unless specifically approved by the project arborist.

7.12 Offset Tree Planting

7.12.1 Offset planting should reflect the number of trees removed and the initial loss of amenity and biomass. New trees should be of long-term potential and sourced from a reputable supplier.

7.12.2 Replacement tree species must suit their location on the site in terms of their potential physical size and their tolerance(s) to the surrounding environmental conditions. To avoid unethical or unprofessional tree selection and/or their placement within the landscape, replacement tree species must be selected in consultation with a consulting arborist, who can also assist in implementing successful tree establishment techniques.

7.12.3 Replacement tree species must have the genetic potential to reach a mature size potential of those trees removed to facilitate the development. As a guide, potential height will be a minimum of 10m (or more) and produce a spreading canopy so as they may provide amenity value to the property and contribute to the tree canopy of the surrounding area in the future.

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7.13 Additional Excavation/Trenching within TPZs

7.13.1 In the event additional excavation is required within the TPZs of retained trees identified within this report, or any other site trees, arborist involvement will be required to ensure works are undertaken in accordance with the Australian Standard AS 4970–2009: *Protection of Trees on Development Sites.*

7.13.2 Where excavation or trenching is required to facilitate installation of underground services within the TPZs of any site trees arborist supervision is required. Works should be undertaken using techniques that are sensitive to tree roots to avoid unnecessary damage. Such techniques include:

1. Excavation by hand
2. Excavation using a high-pressure water jet and vacuum truck
3. Excavation using an Air Spade with vacuum truck.

7.13.3 Machine excavation should be prohibited within the TPZs of retained trees unless undertaken at the direct consent from the project arborist and/or the responsible authority.

8 References

- Frankston City Council, 2018. *Tree Protection Local Law No. 22 - For removal, pruning or works near trees.* [Online]
  Available at: https://www.frankston.vic.gov.au/files/assets/public/v/1/environment-and-waste/environment/trees/pdfs/tree_protection_local_law_no._22_-_fact_sheet_-_updated_4_july_2018.pdf
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- Standards Australia, 2007. *AS 4373–2007 Pruning of Amenity Trees,* GPO Box 476 Sydney NSW 2001: Standards Australia.
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- Urban, J., 2008. *Up By Roots - Healthy Soils and Trees in the Built Environment.* Champaign (Illinois): International Society of Arboriculture.
- Victoria Planning Provisions, 2022. *Clause 52.17 Native Vegetation.* [Online]
  Available at: https://planning-schemes.app.planning.vic.gov.au/Victoria%20Planning%20Provisions/ordinance/52.17
  [Accessed July 2023].
- Victoria State Government, 2023. *VicPlan.* [Online]
  Available at: https://mapshare.vic.gov.au/vicplan/
  [Accessed June 2023].

Plans of the existing site and of the proposed development were provided to ArborSafe in August 2023 and include:

- *230905 ARCH Town Planning Final (E)* suite of drawings/Plans

Appendix A. Arboricultural Reporting Assumptions and Limiting Conditions

1. Any legal description provided to the consultant is assumed to be correct. Any titles and ownership of any property are assumed to be good. No responsibility is assumed for matters legal in character.
2. It is assumed that any property/project is not in violation of any applicable codes, ordinances, statutes or other government regulations.
3. Care has been taken to obtain all information from reliable sources. All data has been verified in so far as possible, however, the consultant can neither guarantee nor be responsible for the accuracy of the information provided by others.
4. The consultant shall not be required to give testimony or to attend court by reason of this report unless subsequent contractual arrangements are made, including payment of an additional fee for such services.
5. Loss or alteration of any part of this report invalidates the entire report.
6. Possession of this report or a copy thereof does not imply right of publication or use for any purpose by anyone but the person to whom it is addressed, without the prior written consent of the consultant.
7. Neither all nor any part of the contents of this report, nor any copy thereof, shall be used for any purpose by anyone but the person to whom it is addressed, without the written consent of the consultant. Nor shall it be conveyed by anyone, including the Client, to the public through advertising, public relations, news, sales or other media, without the written consent of the consultant.
8. This report and any values expressed herein represent the opinion of the consultant and the consultant's fee is in no way contingent upon the reporting of a specified value, a stipulated result, the occurrence of a subsequent event, nor upon any finding to be reported.
9. Sketches, diagrams, graphs and photographs in this report, being intended as visual aids, are not necessarily to scale and should not be construed as engineering or architectural reports or surveys unless expressed otherwise.
10. Information contained in this report covers only those items that were examined and reflect the condition of those items at the time of inspection.
11. Inspection is limited to visual examination of accessible components without dissection, excavation or probing. There is no warranty or guarantee expressed or implied that the problems or deficiencies of the plants or property in question may not arise in the future.

Appendix B. Explanation of Tree Assessment Terms

Tree number: Refers to the individual identification number assigned within the ArborSafe software to each assessed tree on the site and the number which appears of the tree's tag.

Tree location: Refers to the easting and northing coordinates assigned to the location of the tree as obtained from the geo-referenced aerial image within the ArborSafe software.

Tree species: Provides the botanic name (genus, species, sub-species, variety and cultivar where applicable) in accordance with the International Code of Botanical Nomenclature (ICBN), and the accepted common name.

Trees in group: The number of trees encompassing a collective assessment of more than one tree. Typically grouped trees have similar attributes that can be encompassed within one data record.

Height: The estimated range in metres attributed to the tree from its base to the highest point of the canopy. Where required height will be estimated to the nearest metre.

Diameter at Breast Height (DBH): Refers to the tree's estimated trunk diameter measured 1.4m from ground level for a single trunked tree. These estimates increase in 50mm increments. Where required DBH will be measured to give an accurate measurement for single trunked trees, trees with multiple trunks, significant root buttressing, bifurcating close to ground level or trunk defects and will be measured as per the Australian Standard AS 4970–2009: *Protection of Trees on Development Sites*.

Tree Protection Zone (TPZ): A specified area above and below ground and at a given distance measured radially away from the centre of the tree's trunk and which is set aside for the protection of its roots and crown. It is the area required to provide for the viability and stability of a tree to be retained where it is potentially subject to damage by development. The radius of the TPZ is calculated by multiplying its DBH by 12. TPZ radius = DBH × 12. (Note "Breast Height" is nominally measured as 1.4m from ground level).TPZ is a theoretical calculation and can be influenced by existing physical constraints such as buildings, drainage channels, retaining walls, etc. (Standards Australia, 2009).

Structural Root Zone (SRZ): The area close to the base of a tree required for the tree's anchorage and stability in the ground. The woody root growth and soil cohesion in this area are necessary to hold the tree upright. The SRZ is nominally circular with the trunk at its centre and is expressed by its radius in metres. SRZ radius = $(D \times 50)^{0.42 \times 0.64}$ (Standards Australia, 2009).

Canopy spread: The estimated range in metres attributed to the spread of the tree's canopy on its widest axis. Where required crown spread will be estimated to the nearest metre.

Origin: Refers to the origin of the species and its type.

Category	Description
Indigenous	Occurs naturally in the local area and is native to a given region or ecosystem.
State Native	Occurs naturally within State but is not indigenous.
Australian Native	Occurs naturally within Australia and its territories but is not a State native or indigenous.
Exotic Evergreen	Occurs naturally outside of Australia and its territories and typically retains its leaves throughout the year.
Exotic Deciduous	Occurs naturally outside of Australia and its territories and typically loses its leaves at least once a year.

Health: Refers to the health and vigour of the tree.

Category	Description
Excellent	Canopy full with even foliage density throughout, leaves are entire and are of an excellent size and colour for the species with no visible pathogen damage. Excellent growth indicators, e.g. seasonal extension growth. Exceptional specimen.
Good	Canopy full with minor variations in foliage density throughout, leaves are entire and are of good size and colour for the species with minimal or no visible pathogen damage. Good growth indicators, none or minimal deadwood.
Fair	Canopy with moderate variations in foliage density throughout, leaves not entire with reduced size and/or atypical in colour, moderate pathogen damage. Reduced growth indicators, visible amounts of deadwood, may contain epicormic growth.
Poor	Canopy density significantly reduced throughout, leaves are not entire, are significantly reduced in size and/or are discoloured, significant pathogen damage. Significant amounts of deadwood and/or epicormic growth, noticeable dieback of branch tips, possibly extensive.
Dead	No live plant material observed throughout the canopy, bark may be visibly delaminating from the trunk and/or branches.

Age: Refers to the life cycle of the tree.

Category	Description
Young	Newly planted small tree not fully established may be capable of being transplanted or easily replaced.
Juvenile	Tree is small in terms of its potential physical size and has not reached its full reproductive ability.
Semi-mature	Tree in active growth phase of life cycle and has not yet attained an expected maximum physical size for its species and/or its location.
Mature	Tree has reached an expected maximum physical size for the species and/or location and is showing a reduction in the rate of seasonal extension growth.
Senescent	Tree is approaching the end of its life cycle and is exhibiting a reduction in vigour often evidenced by natural deterioration in health and structure.

Structure: Refers to the structure of the tree from roots to crown.

Category	Description
Good	Sound branch attachments with no visible structural defects, e.g. included bark or acute angled unions. No visible wounds to the trunk and/or root plate. No fungal pathogens present.
Fair	Minor structural defects present, e.g. apical leaders sharing common union(s). Minor damage to structural roots. Small wounds present where decay could begin. No fungal pathogens present.
Poor	Moderate structural defects present, including bifurcations with included bark with union failure likely within 0–5 years. Wounding evident with cavities and/or decay present. Damage to structural roots.
Hazardous	Significant structural defects with failure imminent (3–6 months). Defects may include active splits and/or partial branch or root plate failures. Tree requires immediate arboricultural works to alleviate the associated risk.

Useful Life Expectancy (ULE): Useful life expectancy refers to an expected period of time the tree can be retained within the landscape before its amenity value declines to a point where it may detract from the appearance of the landscape and/or presents a greater risk and/or more hazards to people and/or property. ULE values consider tree species, current age, health, structure and location. ULE values are based on the tree at the time of assessment and do not consider future changes within the tree's location and environment which may influence the ULE value.

Category
0 Years
<5 Years
5–10 Years
10–15 Years
15–25 Years
25–50 Years
>50 Years

Defects: Visual observations made of the presenting defects of the tree and its growing environment that are, or have the capacity to impact upon, the health, structural condition and/or the useful life expectancy of the tree. Defects may include adverse physical traits or conditions, signs of structural weaknesses, plant disease and/or pest damage, tree impacts to assets or soil related issues.

Tree Significance: Includes environmental, social or historical reasons why the tree is significant to the site. The tree may also be rare under cultivation or have a rare or localised natural distribution.

Arborist Actions: A list of arboricultural and/or plant health care works that are aimed at maintaining or improving the tree's health, structural condition or form. Actions may also directly or indirectly reduce the risk potential of the tree such as via the removal of a particular branch or the moving of infrastructure from under its canopy.

Appendix C. Tree Retention Values

Based upon a modified version of the British Standard BS 5837–2012: *Trees in relation to design, demolition and construction* – recommendations.

Category and definition	Criteria (including sub-categories where appropriate)		
Category U			
Trees in such a condition that they cannot realistically be retained as viable trees in the context of the current land use for longer than 5 years.	• Trees that have a severe structural defect that are not remediable such that their failure is expected within 12 months. • Trees that will become unviable after removal of other Category U trees (e.g. where for whatever reason the loss of companion shelter cannot be mitigated by pruning). • Trees that are dead or are showing signs of significant, immediate and irreversible overall decline. • Trees infected with pathogens of significance to the health and or safety of other trees nearby • Low quality trees suppressing adjacent trees of better quality. • Noxious weeds or species categorised as weeds within the local area. Note: Category U trees can have existing or potential conservation value* which might make it desirable to preserve.		
	1. Arboricultural Qualities	2. Landscape qualities	3. Cultural and environmental values
Category A			
Trees of High Quality with an estimated remaining life expectancy of at least 25 years and of dimensions and prominence that it cannot be readily replaced in <20 years.	Trees that are particularly good examples of their species, especially if rare or unusual (in the wild or under cultivation); or those that are important components of groups or avenues.	Trees or groups of significant visual importance as arboricultural and/or landscape features. (e.g. feature and landmark trees).	Trees, groups or plant communities of significant conservation, historical, commemorative or other value (e.g. remnant trees, aboriginal scar trees, critically endangered plant communities, trees listed specifically within a Heritage statement of significance).
Category B			
Trees of Moderate Quality with an estimated remaining life expectancy of 15–25 years and of dimensions and prominence that cannot be readily replaced within 10 years.	Trees that might be included within Category A but are downgraded because of diminished condition such that they are unlikely to be suitable for retention beyond 25 years.	Trees that are visible from surrounding properties and/or the street but make little visual contribution to the wider locality.	Trees with conservation or other cultural value (trees within conservation areas or landscapes described within a statement of significance, locally indigenous species).
Category C			
Trees of Low Quality with an estimated remaining life expectancy of 5–15 years, or young trees that are easily replaceable.	Trees of very limited value or such impaired condition that they do not qualify in higher categories.	Trees offering low or only temporary/transient landscape benefits.	Trees with no material conservation or other cultural value.

* Where trees would otherwise be categorised as U, B or C but have significant identifiable conservation, heritage or landscape value even though only for the short term, they may be upgraded, although they might be suitable for retention only.

Tree Quality

		Health**			
		Excellent/ Good	Fair	Poor	Dead
Structure	Good	A	B	C	U
	Fair	B	B	C	U
	Poor	C	C	U	U
	Hazard *	U	U	U	U

* Structural hazard that cannot be remediated through mitigation works to enable safe retention.

** Trees of short term reduced health that can be remediated via basic, low cost plant health care works (e.g. mulching, irrigation etc.) may be designated in a higher health rating to ensure correct retention value nomination.

Category A	Typically trees in this category are of high quality with an estimated remaining life expectancy of at least 25 years and of dimensions and prominence that it cannot be readily replaced in <20 years. The tree may make significant amenity contributions to the landscape and may make high environmental contributions. In some cases, trees within this category may not meet the above criteria, however possess significant heritage or ecological value. Trees of this retention value warrant design consideration and amendment to ensure their viable retention.
Category B	Typically trees in this category are of moderate quality with an estimated remaining life expectancy of 15–25 years and prominence of size dimensions that cannot be readily replaced within 10 years. They may make moderate amenity contributions to the landscape and make low/moderate environmental contributions. Trees with this retention value warrant lesser design consideration in an attempt to allow for their retention.
Category C	Trees in this category are of low quality with an estimated remaining life expectancy of 5–15 years, or young trees that are easily replaceable, may have poor health and/or structure, are easily replaceable, or are of undesirable species and do not warrant design consideration.
Category U	Trees in this category are found to be in such a condition that they cannot realistically be retained as viable trees in the context of the current land use for longer than five years. These trees may be dead and/or of a species recognised as a weed that resulted in them being unretainable.

Appendix D. Tree Assessment Data

Tree no.	*Botanical Name*	Common Name	Origin	Trees in group	DBH Total (cm)	DRB (cm)	Radial TPZ (m)	TPZ area (m2)	Radial SRZ (m)	Tree Height (m)	Canopy (m)	Health	Structure	Age	TLE (Yrs.)	Defects	Significance	Arborist comments	Tree Quality Score	Tree Retention value subcategory	Recommendation
416	*Eucalyptus ovata*	Swamp Gum	Indigenous	1	40	44	**4.8**	71.30	**2.3**	5-10	5-10	Fair	Fair	Semi-Mature	25-50	Co-dominant stems; Exposed root(s); Included bark;	Suitable to site conditions;		B	2	Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
417	*Eucalyptus ovata*	Swamp Gum	Indigenous	1	29	38	**3.5**	37.64	**2.2**	5-10	5-10	Fair	Fair	Semi-Mature	25-50	Deadwood/stubs < 30mm;	Suitable to site conditions;		B	2	Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
418	*Eucalyptus ovata*	Swamp Gum	Indigenous	1	20	28	**2.4**	18.10	**1.9**	5-10	5-10	Fair	Fair	Juvenile	>50	Dieback; Pests/insects;	Suitable to site conditions;		C	2	Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
419	*Acacia melanoxylon*	Blackwood	Indigenous	1	21	32	**2.5**	19.95	**2.1**	5-10	<5	Fair	Fair	Juvenile	10-15	Co-dominant stems; Weak union(s);	Suitable to site conditions;	Removed due to leveling works and/or bushfire controls.	C	2	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
420	*Eucalyptus ovata*	Swamp Gum	Indigenous	1	18	27	**2.2**	14.66	**1.9**	5-10	<5	Fair	Fair	Juvenile	15-25	Pests/insects; Suppressed;	Suitable to site conditions;	Removed due to leveling works and/or bushfire controls.	C	2	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
421	*Eucalyptus ovata*	Swamp Gum	Indigenous	1	28	45	**3.4**	35.47	**2.4**	5-10	5-10	Fair	Fair	Semi-mature	25-50	Crossing/rubbing branches; Deadwood/stubs < 30mm; Pests/insects; Suppressed;	Suitable to site conditions;	Removed due to leveling works and/or bushfire controls.	C	2	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
422	*Acacia mearnsii*	Black Wattle	Indigenous	1	16	24	**2.0**	12.57	**1.8**	5-10	<5	Good	Fair	Juvenile	10-15	Suppressed;	Suitable to site conditions;	Removed due to leveling works and/or bushfire controls.	C	2	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
423	*Acacia mearnsii*	Black Wattle	Indigenous	1	12	18	**2.0**	12.57	**1.6**	5-10	<5	Fair	Poor	Juvenile	5-10	Deadwood/stubs < 30mm; Previous failure(s); Suppressed;	Suitable to site conditions;	Removed due to leveling works and/or bushfire controls.	C	2	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
424	*Acacia mearnsii*	Black Wattle	Indigenous	1	17	22	**2.0**	13.07	**1.8**	5-10	5-10	Good	Fair	Juvenile	10-15	Deadwood/stubs < 30mm; Suppressed;	Suitable to site conditions;	Removed due to leveling works and/or bushfire controls.	C	2	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
425	*Acacia mearnsii*	Black Wattle	Indigenous	1	24	33	**2.9**	26.06	**2.1**	5-10	5-10	Good	Good	Semi-Mature	10-15	Deadwood/stubs < 30mm;	Suitable to site conditions;	Removed due to leveling works and/or bushfire controls.	C	2	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
426	*Acacia mearnsii*	Black Wattle	Indigenous	1	13	20	**2.0**	12.57	**1.7**	5-10	<5	Good	Good	Juvenile	10-15	Suppressed;	Suitable to site conditions;	Removed due to leveling works and/or bushfire controls.	C	2	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
427	*Eucalyptus ovata*	Swamp Gum	Indigenous	1	41	51	**4.9**	76.23	**2.5**	5-10	5-10	Fair	Fair	Semi-Mature	25-50	Co-dominant stems; Deadwood/stubs > 60mm; Dieback; Included bark; Pests/insects;	Suitable to site conditions;	Removed due to leveling works and/or bushfire controls.	C	2	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
428	*Acacia mearnsii*	Black Wattle	Indigenous	1	11	14	**2.0**	12.57	**1.5**	<5	<5	Good	Fair	Juvenile	10-15	Previous failure(s); Suppressed;	Suitable to site conditions;	Removed due to leveling works and/or bushfire controls.	C	2	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
430	*Acacia mearnsii*	Black Wattle	Indigenous	1	11	13	**2.0**	12.57	**1.5**	5-10	<5	Fair	Fair	Juvenile	10-15	Suppressed;	Suitable to site conditions;	Removed due to leveling works and/or bushfire controls.	C	2	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
431	*Acacia melanoxylon*	Blackwood	Indigenous	1	12	16	**2.0**	12.57	**1.5**	5-10	<5	Good	Fair	Juvenile	10-15	Suppressed; Weak union(s);	Suitable to site conditions;	Removed due to leveling works and/or bushfire controls.	C	2	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
432	*Acacia mearnsii*	Black Wattle	Indigenous	1	13	26	**2.0**	12.57	**1.9**	5-10	5-10	Good	Fair	Juvenile	10-15	Suppressed;	Suitable to site conditions;	Removed due to leveling works and/or bushfire controls.	C	2	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
433	*Acacia mearnsii*	Black Wattle	Indigenous	1	21	30	**2.5**	19.95	**2.0**	5-10	5-10	Good	Good	Semi-Mature	10-15	Deadwood/stubs > 60mm; Previous failure(s);	Suitable to site conditions;	Removed due to leveling works and/or bushfire controls.	C	2	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
434	*Acacia melanoxylon*	Blackwood	Indigenous	1	23	26	**2.8**	24.66	**1.9**	5-10	5-10	Good	Fair	Semi-mature	10-15	Co-dominant stems; Deadwood/stubs < 30mm;	Suitable to site conditions;	Removed due to leveling works and/or bushfire controls.	C	2	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
435	*Acacia melanoxylon*	Blackwood	Indigenous	1	18	24	**2.2**	14.66	**1.8**	5-10	5-10	Good	Fair	Juvenile	10-15	Weak union(s);	Suitable to site conditions;	Removed due to leveling works and/or bushfire controls.	C	2	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
436	*Acacia mearnsii*	Black Wattle	Indigenous	1	16	25	**2.0**	12.57	**1.8**	5-10	5-10	Good	Fair	Juvenile	10-15	Weak union(s);	Suitable to site conditions;	Removed due to leveling works and/or bushfire controls.	C	2	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
437	*Acacia mearnsii*	Black Wattle	Indigenous	1	13	17	**2.0**	12.57	**1.6**	5-10	<5	Good	Fair	Juvenile	10-15	Previous failure(s); Suppressed; Wound(s);	Suitable to site conditions;	Removed due to leveling works and/or bushfire controls.	C	2	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
438	*Acacia mearnsii*	Black Wattle	Indigenous	1	32	35	**3.8**	45.83	**2.1**	5-10	5-10	Good	Fair	Semi-Mature	10-15	Co-dominant stems; Deadwood/stubs < 30mm; Included bark; Weak union(s);	Suitable to site conditions;		C	2	Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
439	*Acacia mearnsii*	Black Wattle	Indigenous	1	11	16	**2.0**	12.57	**1.5**	5-10	<5	Fair	Poor	Juvenile	10-15	Deadwood/stubs > 30mm; Suppressed;	Suitable to site conditions;		C	2	Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
440	*Acacia mearnsii*	Black Wattle	Indigenous	1	21	25	**2.6**	20.45	**1.8**	<5	5-10	Good	Fair	Juvenile	10-15	Previous failure(s); Weak union(s);	Suitable to site conditions;		C	2	Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
441	*Acacia mearnsii*	Black Wattle	Indigenous	1	19	23	**2.3**	16.33	**1.8**	<5	5-10	Good	Fair	Juvenile	10-15	Weak union(s);	Suitable to site conditions;		C	2	Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
442	*Acacia mearnsii*	Black Wattle	Indigenous	1	18	22	**2.1**	14.16	**1.8**	<5	5-10	Fair	Poor	Juvenile	10-15	Deadwood/stubs > 30mm; Previous failure(s); Weak union(s);	Suitable to site conditions;		C	2	Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
443	*Eucalyptus radiata*	Narrow-leaved Peppermint	Indigenous	1	25	26	**3.0**	28.09	**1.9**	5-10	<5	Good	Fair	Juvenile	>50	Co-dominant stems; Included bark; Resin exudation/kino;	Suitable to site conditions;	Direct conflict with proposed building.	C	2	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
444	*Eucalyptus radiata*	Narrow-leaved Peppermint	Indigenous	1	15	21	**2.0**	12.57	**1.7**	5-10	<5	Good	Fair	Juvenile	>50	Resin exudation/kino;	Suitable to site conditions;	Direct conflict with proposed building.	C	2	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
445	*Eucalyptus radiata*	Narrow-leaved Peppermint	Indigenous	1	16	23	**2.0**	12.57	**1.8**	5-10	<5	Good	Fair	Juvenile	>50	Co-dominant stems; Included bark; Resin exudation/kino;	Suitable to site conditions;	Direct conflict with proposed building.	C	2	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
446	*Allocasuarina littoralis*	Black She-oak	Indigenous	1	14	15	**2.0**	12.57	**1.5**	<5	<5	Good	Fair	Young	>50	Previous failure(s);	Suitable to site conditions;	Direct conflict with proposed building.	C	2	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
447	*Banksia marginata*	Silver Banksia	Indigenous	1	13	15	**2.0**	12.57	**1.5**	<5	<5	Good	Fair	Young	>50		Suitable to site conditions;	Direct conflict with proposed building.	C	2	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.

Tree no.	*Botanical Name*	Common Name	Origin	Trees in group	DBH Total (cm)	DRB (cm)	Radial TPZ (m)	TPZ area (m2)	Radial SRZ (m)	Tree Height (m)	Canopy (m)	Health	Structure	Age	TLE (Yrs.)	Defects	Significance	Arborist comments	Tree Quality Score	Tree Retention value subcategory	Recommendation
448	*Allocasuarina littoralis*	Black She-oak	Indigenous	1	11	13	**2.0**	12.57	**1.5**	<5	<5	Fair	Fair	Young	>50	Previous failure(s);	Suitable to site conditions;	Direct conflict with proposed building.	C	2	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
449	*Banksia marginata*	Silver Banksia	Indigenous	1	8	13	**2.0**	12.57	**1.5**	<5	<5	Good	Fair	Young	>50		Suitable to site conditions;	Direct conflict with proposed building.	C	2	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
450	*Eucalyptus radiata*	Narrow-leaved Peppermint	Indigenous	1	14	17	**2.0**	12.57	**1.6**	5-10	<5	Good	Fair	Juvenile	>50	Co-dominant stems; Included bark; Resin exudation/kino;	Suitable to site conditions;	Direct conflict with proposed building.	C	2	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
451	*Eucalyptus radiata*	Narrow-leaved Peppermint	Indigenous	1	20	20	**2.4**	17.46	**1.7**	5-10	<5	Good	Fair	Juvenile	>50	Co-dominant stems; Previous failure(s); Weak union(s); Wound(s);	Suitable to site conditions;	Direct conflict with proposed building.	C	2	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
452	*Eucalyptus camaldulensis*	River Red Gum	Indigenous	1	17	22	**2.0**	13.03	**1.8**	<5	<5	Good	Fair	Juvenile	>50	Co-dominant stems; Deadwood/stubs < 30mm;	Suitable to site conditions;	Direct conflict with proposed building.	C	2	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
453	*Eucalyptus camaldulensis*	River Red Gum	Indigenous	1	17	20	**2.1**	13.66	**1.7**	<5	<5	Good	Fair	Juvenile	>50	Co-dominant stems; Deadwood/stubs < 30mm;	Suitable to site conditions;	Direct conflict with proposed building.	C	2	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
454	*Eucalyptus camaldulensis*	River Red Gum	Indigenous	1	18	27	**2.1**	14.16	**1.9**	5-10	<5	Good	Fair	Juvenile	>50	Co-dominant stems; Deadwood/stubs > 30mm;	Suitable to site conditions;	Direct conflict with proposed building.	C	2	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
455	*Eucalyptus ovata*	Swamp Gum	Indigenous	1	24	28	**2.9**	25.74	**1.9**	<5	5-10	Good	Fair	Semi-mature	>50	Co-dominant stems; Crossing/rubbing branches; Deadwood/stubs < 30mm; Weak union(s);	Suitable to site conditions;	Direct conflict with proposed building.	C	2	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
456	*Eucalyptus ovata*	Swamp Gum	Indigenous	1	24	26	**2.9**	26.15	**1.9**	<5	5-10	Fair	Poor	Semi-mature	10-15	Co-dominant stems; Deadwood/stubs < 30mm; Previous failure(s); Resin exudation/kino; Weak union(s);	Suitable to site conditions;	Removed due to leveling works and/or bushfire controls.	C	2	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
457	*Eucalyptus ovata*	Swamp Gum	Indigenous	1	20	20	**2.4**	17.55	**1.7**	<5	5-10	Fair	Fair	Juvenile	15-25	Co-dominant stems; Deadwood/stubs < 30mm; Pests/insects; Weak union(s);	Suitable to site conditions;	Removed due to leveling works and/or bushfire controls.	C	2	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
458	*Acacia melanoxylon*	Blackwood	Indigenous	1	15	17	**2.0**	12.57	**1.6**	5-10	<5	Good	Fair	Juvenile	15-25	Co-dominant stems; Included bark;	Suitable to site conditions;	Removed due to leveling works and/or bushfire controls.	C	2	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
459	*Eucalyptus radiata*	Narrow-leaved Peppermint	Indigenous	1	13	19	**2.0**	12.57	**1.6**	5-10	<5	Good	Poor	Young	15-25	Co-dominant stems; Epicormic growth; Heaved root plate; Previous failure(s); Resin exudation/kino;	Suitable to site conditions;	Removed due to leveling works and/or bushfire controls.	C	2	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
460	*Allocasuarina littoralis*	Black She-oak	Indigenous	1	11	14	**2.0**	12.57	**1.5**	5-10	<5	Fair	Poor	Young	15-25	Deadwood/stubs < 30mm; Previous failure(s); Wound(s);	Suitable to site conditions;	Removed due to leveling works and/or bushfire controls.	C	2	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
461	*Banksia marginata*	Silver Banksia	Indigenous	1	8	13	**2.0**	12.57	**1.5**	<5	<5	Good	Fair	Young	>50	Co-dominant stems; Included bark;	Suitable to site conditions;	Removed due to leveling works and/or bushfire controls.	C	2	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
462	*Acacia melanoxylon*	Blackwood	Indigenous	1	10	13	**2.0**	12.57	**1.5**	<5	<5	Good	Fair	Juvenile	15-25	Deadwood/stubs < 30mm;	Suitable to site conditions;	Removed due to leveling works and/or bushfire controls.	C	2	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
463	*Acacia melanoxylon*	Blackwood	Indigenous	1	19	18	**2.2**	15.56	**1.6**	5-10	<5	Good	Fair	Juvenile	15-25	Co-dominant stems; Included bark; Weak union(s);	Suitable to site conditions;	Removed due to leveling works and/or bushfire controls.	C	2	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
464	*Eucalyptus radiata*	Narrow-leaved Peppermint	Indigenous	1	16	24	**2.0**	12.57	**1.8**	5-10	<5	Good	Fair	Juvenile	>50		Suitable to site conditions;	Removed due to leveling works and/or bushfire controls.	C	2	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
465	*Banksia marginata*	Silver Banksia	Indigenous	1	7	13	**2.0**	12.57	**1.5**	<5	<5	Good	Fair	Young	>50		Suitable to site conditions;	Removed due to leveling works and/or bushfire controls.	C	2	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
466	*Eucalyptus ovata*	Swamp Gum	Indigenous	1	20	22	**2.4**	17.91	**1.8**	<5	5-10	Poor	Fair	Juvenile	5-10	Deadwood/stubs > 60mm; Epicormic growth; Pests/insects;	Suitable to site conditions;	Removed due to leveling works and/or bushfire controls.	C	2	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
467	*Eucalyptus camaldulensis*	River Red Gum	Indigenous	1	10	12	**2.0**	12.57	**1.5**	<5	<5	Good	Poor	Young	>50	Deadwood/stubs < 30mm;	Suitable to site conditions;	Removed due to leveling works and/or bushfire controls.	C	2	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
468	*Eucalyptus radiata*	Narrow-leaved Peppermint	Indigenous	1	21	25	**2.5**	19.05	**1.8**	5-10	<5	Good	Fair	Juvenile	>50	Co-dominant stems;	Suitable to site conditions;	Removed due to leveling works and/or bushfire controls.	C	2	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
469	*Eucalyptus ovata*	Swamp Gum	Indigenous	1	21	27	**2.5**	20.36	**1.9**	<5	<5	Fair	Fair	Juvenile	15-25	Co-dominant stems; Deadwood/stubs < 30mm; Pests/insects; Previous failure(s); Wound(s);	Suitable to site conditions;	Removed due to leveling works and/or bushfire controls.	C	2	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
470	*Eucalyptus radiata*	Narrow-leaved Peppermint	Indigenous	1	16	22	**2.0**	12.57	**1.8**	5-10	<5	Good	Fair	Juvenile	>50	Weak union(s);	Suitable to site conditions;	Removed due to leveling works and/or bushfire controls.	C	2	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
471	*Eucalyptus ovata*	Swamp Gum	Indigenous	1	27	34	**3.2**	32.07	**2.1**	<5	5-10	Good	Fair	Semi-mature	25-50	Co-dominant stems; Crossing/rubbing branches; Deadwood/stubs < 30mm; Weak union(s);	Suitable to site conditions;	Removed due to leveling works and/or bushfire controls.	C	2	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
472	*Eucalyptus camaldulensis*	River Red Gum	Indigenous	1	15	24	**2.0**	12.57	**1.8**	<5	5-10	Good	Poor	Young	>50	Co-dominant stems; Deadwood/stubs > 60mm; Heaved root plate; Previous failure(s); Suckers; Wound(s);	Suitable to site conditions;	Removed due to leveling works and/or bushfire controls.	C	2	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
473	*Eucalyptus camaldulensis*	River Red Gum	Indigenous	1	17	18	**2.0**	12.57	**1.6**	5-10	<5	Good	Good	Young	>50		Suitable to site conditions;	Removed due to leveling works and/or bushfire controls.	C	2	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
474	*Acacia melanoxylon*	Blackwood	Indigenous	1	17	21	**2.0**	13.12	**1.7**	5-10	<5	Good	Fair	Juvenile	15-25	Deadwood/stubs < 30mm;	Suitable to site conditions;	Removed due to leveling works and/or bushfire controls.	C	2	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
475	*Acacia melanoxylon*	Blackwood	Indigenous	1	18	18	**2.2**	14.61	**1.6**	<5	<5	Good	Fair	Juvenile	15-25	Co-dominant stems; Included bark;	Suitable to site conditions;	Removed due to leveling works and/or bushfire controls.	C	2	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.

Appendix E. Tree Protection Plan

Tree #	Species	Risk
416	Swamp Gum	No Rating
417	Swamp Gum	No Rating
418	Swamp Gum	No Rating
438	Black Wattle	No Rating
439	Black Wattle	No Rating
440	Black Wattle	No Rating
441	Black Wattle	No Rating
442	Black Wattle	No Rating

Figure 11. Site map showing retained trees with suggested Tree Protection Fence locations which will ultimately be based on appropriate TPZ calculations detailed in Appendix D – Tree assessment data. (ArborPlan, July 2023).

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