



**Armstrong Collective  
Kelmscott Senior High School  
Third Avenue, Kelmscott WA  
Arboricultural Impact Assessment**

Assessment and Report prepared by:

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16 August 2022

## 1 Introduction

- 1.1.1 ArborSafe Australia Pty Ltd was engaged by Nicole Francois on behalf of the Armstrong Collective (the Client) to complete an Arboricultural Impact Assessment (report) on sixty (60) trees located within or adjacent to the Kelmscott Senior High School at 50 Third Avenue, Kelmscott.
- 1.1.2 This report has been requested as part of a Development Application (DA) that involves the demolition of an existing hard surface court/play area and the proposed construction of a new sports hall building within a similar location.
- 1.1.3 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*.
- 1.1.4 Observations and recommendations provided within this report are based upon information provided by the Client and an arborist site visit.

## 2 Scope

- 2.1.1 Carry out a visual examination of nominated trees located within the vicinity of the proposed development area.
- 2.1.2 Inspect the nominated trees and their growing environment in the context of the proposed development.
- 2.1.3 Provide an objective appraisal of the subject trees in relation to their species, estimated age, health, structural condition and viability within the landscape.
- 2.1.4 Based on the findings of this investigation, provide independent recommendations on the retention value of the trees.
- 2.1.5 Nominate subject trees that can be retained or require removal to facilitate this development.
- 2.1.6 Review the proposed development in the context of City of Armadale online mapping (Intramaps) (City of Armadale, n.d.) and *Clearing Permit System Mapping for Dept. of Water and Environmental Regulation (Environmentally Sensitive Areas)* (Government of Western Australia, 2022).
- 2.1.7 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.
- 2.1.8 Provide information on restricted activities within the area nominated for tree protection, as well as suitable construction methods to be adopted during construction.

## 3 Methodology

### 3.1 Data Collection

- 3.1.1 Nick Arnold of Civica ArborSafe Australia Pty Ltd carried out a site inspection of the subject trees on 11 August 2022.
- 3.1.2 Trees that are the subject of this report were identified during discussions/correspondence with the Client.
- 3.1.3 The subject trees were inspected from ground level. No foliage or soil samples were taken. No aerial or internal investigations were undertaken.
- 3.1.4 Tree height and crown width were estimated and have been provided to the nearest whole metre. Trunk Diameter at Breast Height (DBH) was measured for A and B retention status trees with a diameter tape and provided to the nearest centimetre.
- 3.1.5 Data collected on site was analysed by Nick Arnold, collated into report format, and relevant recommendations were formulated.

### 3.2 Tree Protection Zones

- 3.2.1 The Tree Protection Zone (TPZ) and Structural Root Zone (SRZ) methods have been derived from the Australian Standard AS 4970–2009: *Protection of Trees on Development Sites*.
- 3.2.2 The TPZ is defined as 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).
- 3.2.3 The SRZ is the area around the base of a tree required for the tree's 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 =  $(D \times 50)^{0.42 \times 0.64}$ .
- 3.2.4 Retention values are determined based upon 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 B – Explanation of Tree Assessment Terms.

### 3.3 Images and Site Photographs

- 3.3.1 All photographs were taken at the time of the site inspection by the inspecting arborist. Photographs have been altered for brightness and/or cropped only. Other images used within this report have been sourced from ArborSafe or via the internet. The source of all images has been referenced accordingly.

### 3.4 Determining Tree Retention Values

- 3.4.1 Collectively tree attributes are reviewed and used to categorise tree value in a development context. Additional information explaining Tree Retention Value can be found in Appendix C – Tree Retention Values.

## 4 Observations

### 4.1 Site Details

4.1.1 The site is located within the City of Armadale Local Government Area (LGA).

### 4.2 Site Assessment Data

4.2.1 Refer to Appendix E – Tree Assessment Data of this report for data relating to the specific trees covered within this report.

### 4.3 Tree / Site Images



Figure 1. Trees 1 and 2 (Author, August 2022).



Figure 2. Tree 3 (Author, August 2022).



Figure 3. Trees 5 and 6 (Author, August 2022).



Figure 4. Tree 7 (Author, August 2022).



Figure 5. Trees 8 and 11 (Author, August 2022).



Figure 6. Trees 14 and 15 (Author, August 2022).



Figure 7. Tree 17 (Author, August 2022).



Figure 8. Tree 24 (Author, August 2022).



Figure 9. Tree 30 (Author, August 2022).



Figure 10. Tree 33 (Author, August 2022).

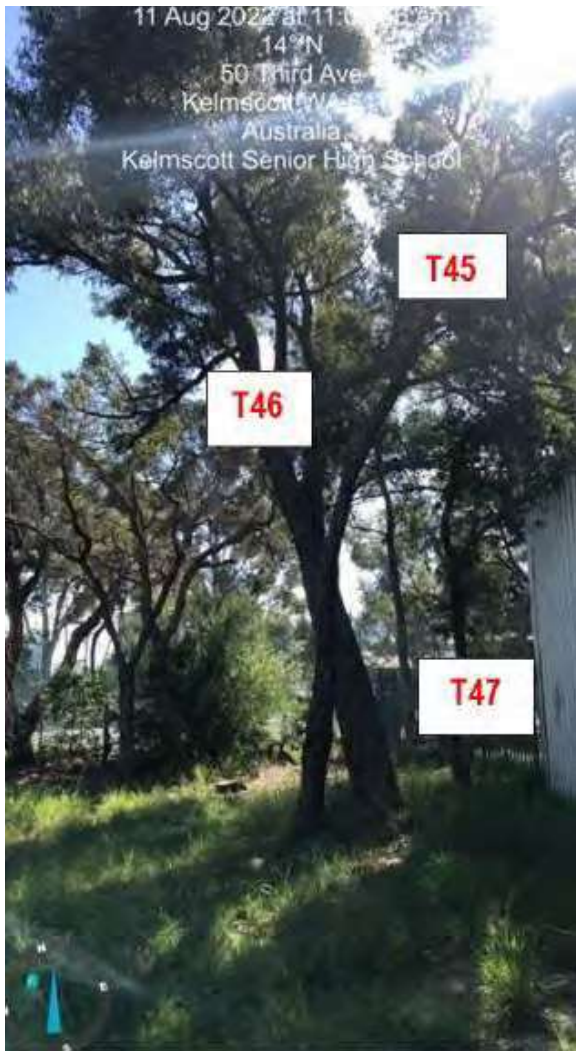


Figure 11. Trees 45-47 (Author, August 2022).



Figure 12. Trees 51, 53 and 54 (Author, August 2022).

## 4.4 Heritage Status

4.4.1 The heritage status of the site was not reviewed as part of this report.

## 4.5 Tree Preservation Orders

4.5.1 A search of City of Armadale (CoA) online mapping (Intramap) returned no results for Tree Preservation (Orders) within the subject site (City of Armadale, n.d.).

## 4.6 Environmentally Sensitive Areas

4.6.1 A search of the subject site within (WA) *Department of Water and Environmental Regulation Mapping* returned an overlay for *Environmentally Sensitive Areas* (ESA) to which clearing regulations apply (Government of Western Australia, 2022).

4.6.2 The ESA listing pertaining to the subject site includes one (1) Threatened Ecological Community (TEC). A *threatened ecological community (TEC) is one that has been endorsed by Western Australia's Environment Minister as being subject to processes that threaten to destroy or significantly modify it across much of its range.* (Department of Environment and Conservation, n.d.)(Dept. of Environment and Conservation – n.d.).

## 4.6.3 Where tree/native vegetation is proposed for removal within ESAs a clearance permit will be required.

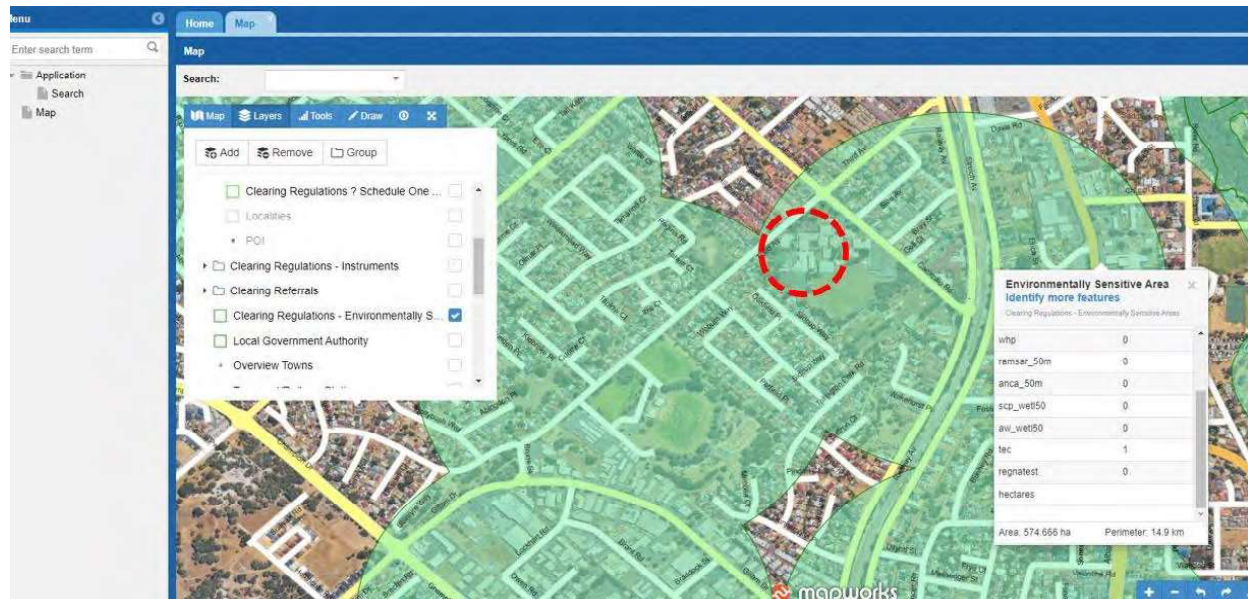


Figure 13. Excerpt from *Clearing Permit System Mapping for Dept. of Water and Environmental Regulation*. Area in red indicates approximate location of subject trees (added by Author, August 2022). (DWER, 2022).

## 4.7 Proposed Construction

4.7.1 Plans of the existing site and of the proposed development were provided to ArborSafe in August 2022 and include:

- *KELM\_22\_A1.02\_220812 dwg. Armstrong Collective (August 2022).*
- *KELM\_22.A1.02. Part Site Plan with SURVEY – Option E rev D. Armstrong Collective (July 2022).*
- *KELM\_22.A2.05. New Sports Hall Option E. REDUCED AREA. rev F. Armstrong Collective (July 2022).*
- *KELM\_22.A4.01. New Sports Hall Option E. Elevs 01.rev D. Armstrong Collective (July 2022).*
- *KELM\_22.A4.02. New Sports Hall Option E. Elevs 02.rev D. Armstrong Collective (July 2022).*
- *Kelmscott Senior High School – Land and site investigation.*

4.7.2 Whilst there are several areas of staged/proposed development across the school grounds, this report relates specifically to the proposed construction of a new sports hall where a hard surface court/play currently exists (see Figure 14).



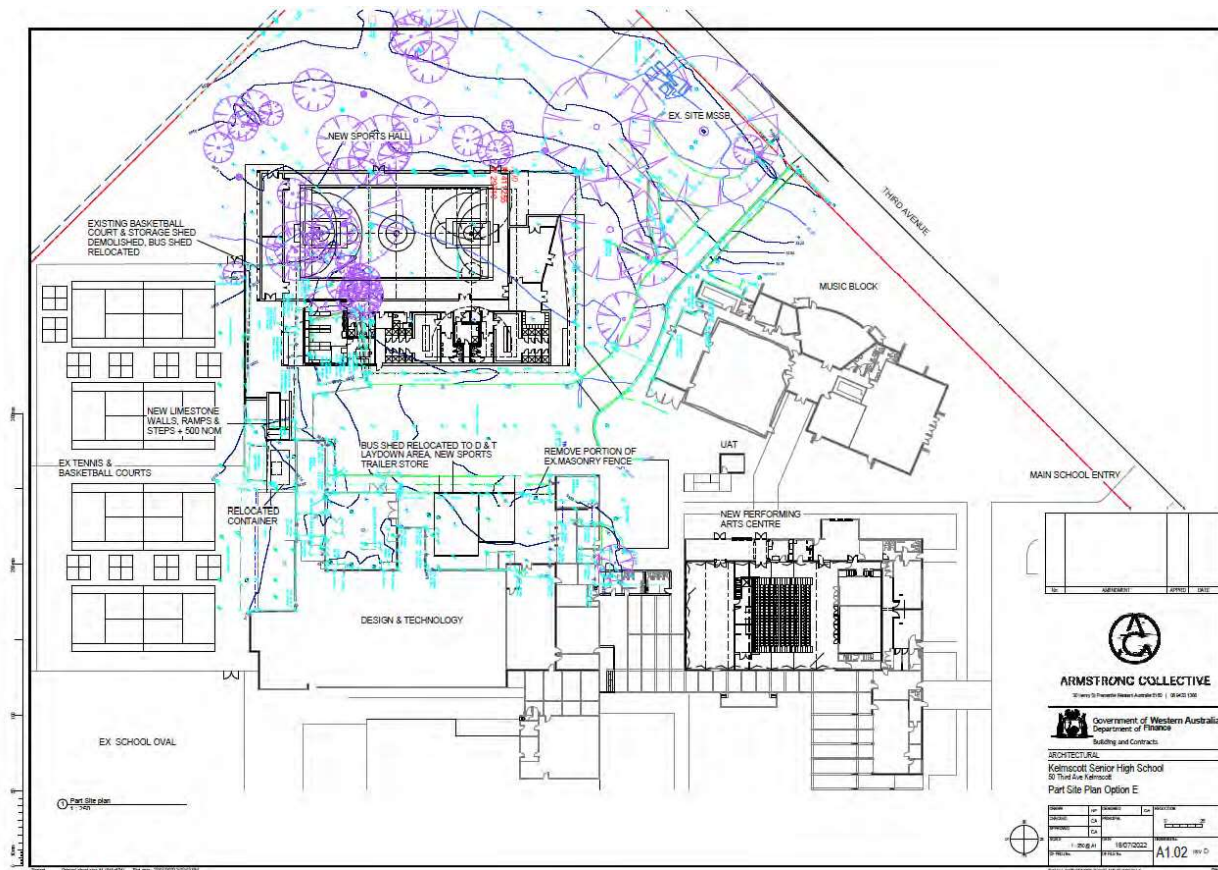


Figure 14. Excerpt from *Part Site Plan Option E (Dwg. No. A1.02, Rev D)*. (Armstrong Collective, July 2022).

## 4.8 Outline of Site Trees

- 4.8.1 Sixty (60) trees were inspected and are the subject of this report. Complete attributes for each tree can be found in the Site Assessment Data section of this report.
- 4.8.2 The subject trees have been numbered in line with the ArborSafe tree numbering system. Trees were physically tagged as part of this report (white tags at ~2m on southern aspect).
- 4.8.3 Subject trees included a mixture of both Australian and locally native WA tree species.

## 5 Discussion

### 5.1 TPZ Encroachment

- 5.1.1 **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.
- 5.1.2 **Minor encroachment.** 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.
- 5.1.3 **No encroachment.** Trees with no encroachment may be retained with specific, generic or no protection requirements throughout the construction stage.

- 5.1.4 For the purposes of this report, trees to be removed or retained have been identified as those:
- Requiring removal due to major encroachment into their TPZ
  - 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).

## 5.2 Additional Excavation/Trenching within TPZs

- 5.2.1 In the event additional excavation is required within the TPZs of retained trees as 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*.
- 5.2.2 Excavation/trenching within the TPZs of retained trees should only be undertaken using sensitive construction methods such as manual excavation, hydro-vac or air spade (only).

## 6 Recommendations

### 6.1 Tree Removal

- 6.1.1 Twenty-one (21) trees would require removal to facilitate this development based on plans supplied by the Client. A fully or partial redesign would be required to retain one or more of these trees.
- 6.1.2 All twenty-one (21) trees requiring removal were identified as WA native species. The removal of these trees (in addition to any unmapped vegetation including grass trees – *Xanthorrhoea* sp.) **should not be undertaken without the relevant clearance permit and/or approvals.**
- 6.1.3 It is recommended that the Department of Water and Environmental Regulation be contacted prior to any (vegetation) works within areas mapped as ESA.

### 6.2 Tree Retention

- 6.2.1 Thirty-nine (39) trees were recommended for retention, four (4) of which will require specific protection measures during construction to ensure that they remain viable following the completion of works. These were Trees 3, 6, 20 and 22. All subject trees designated for retention are subject to the generic protection measures documented within this report.

### 6.3 Specific Protection Measures

- 6.3.1 Excavation within the TPZ of **Trees 3, 6, 20 and 22** is to be carried out under arborist supervision only. No excavation should occur within the SRZ of these trees. It is recommended that the proposed excavation commence at the outer extent of each respective TPZ and move inwards to minimise root damage to the trees.
- 6.3.2 The full (non-excavated) extent of each TPZ (Trees 3, 6, 20 and 22) is to be mulched using seasoned tree mulch. Supplementary irrigation and drenching may also be required at the discretion of the project arborist, both during and post project completion.

- 6.3.3 Works should be undertaken using techniques that are sensitive to tree roots to avoid unnecessary damage. Such techniques include:
- Excavation using a high-pressure water jet and vacuum truck
  - Excavation using an Air Spade with vacuum truck
  - Excavation by hand.
- 6.3.4 Machine excavation should be prohibited within the TPZs of retained trees unless undertaken at the direct consent/supervision from the project arborist.
- 6.3.5 Roots discovered are to be treated with care and minor roots (<40mm diameter) pruned with a sharp, clean handsaw or secateurs. All significant roots (>40mm diameter) are to be recorded, photographed and reported to the project arborist.
- 6.3.6 Trees requiring specific protection measures are also subject to the generic protection controls specified within this report.
- 6.3.7 Further plant health care/and or protection measures may be required during and post construction, as recommended by the project arborist.

## 6.4 Tree Pruning

- 6.4.1 Six (6) trees (Trees 3, 6, 14, 15, 20 and 22) will likely require pruning to accommodate the construction envelope. Any and all pruning is to be agreed in advance with the project arborist.
- 6.4.2 All pruning/tree removal is to be undertaken 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 Level 3 arborist).

## 6.5 Offset Tree Planting/Revegetation

- 6.5.1 Where an application for vegetation removal is made (*application for new permit or referral to clear native vegetation* - refer to Section 4.6 of this report), offset/mitigation tree planting and revegetation is recommended.
- 6.5.2 An existing bush area adjacent to the proposed development offers open/lawn areas which equate to approximately 700-800m<sup>2</sup>, offering a potential zone for revegetation post development – refer to Figure 15 (City of Armadale, n.d.).
- 6.5.3 A planting density of one (1) plant per m<sup>2</sup> is recommended, with a 1-2m clear area to be maintained from surrounding fence lines and structures, i.e. approximately 500 plants in total.
- 6.5.4 Species composition is to be made up of WA indigenous bush species including, but not limited to, *Eucalyptus marginata*, *Allocasuarina fraseriana*, *Banksia* sp. and *Jacksonia* sp. – TBC.
- 6.5.5 Offset planting should reflect the number of trees removed and the initial loss of amenity and biomass. New plants should be of long-term potential and sourced from a reputable supplier.
- 6.5.6 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 plant species must be selected in consultation with a consulting arborist/horticulturalist/landscape designer who can also assist in implementing successful tree establishment techniques.

- 6.5.7 Replacement tree/plant species and intended planting locations are to form part of the site's final landscape plan.
- 6.5.8 Planting and aftercare is to be undertaken by a suitably qualified and experienced landscape/revegetation contractor as part of a documented deliverable/service agreement.
- 6.5.9 A suitable aftercare period (which is to include the replacement of failed plants during this period) of between 24-36 months is recommended to ensure the establishment of new plantings.
- 6.5.10 A proportional and documented weed control program is to form part of the documented aftercare works/deliverable.



Figure 15. Excerpt from CoA Intramaps – showing approximate area (only) available for revegetation. (CoA Intramaps, n.d.)

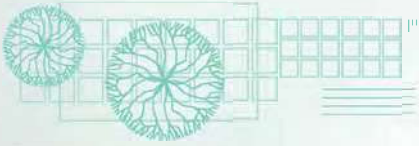
## 6.6 Grass Trees (*Xanthorrhoea preissii*)

- 6.6.1 Several unsurveyed Grass Trees (*Xanthorrhoea preissii*) were observed close to/within the proposed development area. These trees are to be retained and incorporated into the final design.
- 6.6.2 Where grass trees are located directly within the development footprint or >0.5m from any proposed retaining edge or point of excavation, such trees should be transplanted/relocated PRIOR to the commencement of site/construction/demolition works.
- 6.6.3 Where possible, all transplanted Grass Trees are to be relocated elsewhere within the physical boundary of Kelmescott Senior High School, preferably in a manner contiguous with existing bushland areas.

- 6.6.4 A preliminary assessment and the excavation/transplanting process should be conducted by an appropriately licenced and experienced commercial operator (Grass Tree transplanting).
- 6.6.5 The method of transplanting should be based upon the following guidelines (Botanic Gardens and Parks Authority, Government of WA, 2021):
- Trim off leaves of the grass-tree with shears or tie them up with string.
  - Dig around the base of the plant severing the old roots\* (\*~10cm minimum from base of stem). Do not push on the top of the plant as it may snap off.
  - Wrap the root system in damp hessian or canvas to prevent desiccation whilst transporting the plant.
  - Plant the grass-tree as soon as possible at the same depth at which it was growing. Fill in the soil around the root system, keeping a hose running to moisten the soil and eliminate any air pockets.
  - As soon as transplanting is finished make a depression or 'saucer' around the plant for future hand watering or install trickle irrigation.
  - Trim off the leaves to reduce water loss. Within a few weeks new leaves should appear from the centre of the plant.
  - Water the plants regularly until the onset of heavy winter rains and then water once a week, starting in early Spring and continuing through Summer and Autumn until the onset of further winter rain.
- 6.6.6 A physical tree count and location map showing the total number and final location of transplanted trees should be made available by the nominated contractor to the Client upon completion of works.
- 6.6.7 A specified aftercare period/recommendations should also be provided by the designated contractor to the Client.
- 6.6.8 Where the designated contractor deems appropriate, transplanted trees may be moved off site for a designated holding period and/or be replaced by existing/supplied (same species) trees of healthy, disease free and sustainable stock and be of similar dimensions at planting.

## 7 References

- Botanic Gardens and Parks Authority, Government of WA, 2021. *Transplanting Trees*. [Online] Available at: <https://www.bgpa.wa.gov.au/about-us/conservation/gardening-resources/385-transplanting-trees>
- City of Armadale, n.d. *Online mapping (Intramaps)*. [Online] Available at: <https://maps.armadale.wa.gov.au/intramapspublic96/> [Accessed August 2022].
- Department of Environment and Conservation, n.d. *Conserving Threatened Ecological Communities*. [Online] Available at: <https://www.dpaw.wa.gov.au/images/documents/plants-animals/threatened-species/tecs/conserving-tecs-brox.pdf> [Accessed August 2022].
- Government of Western Australia, 2022. *Environmentally Sensitive Areas Clearing Permit System Mapping*. [Online] Available at: <https://www.der.wa.gov.au/your-environment/environmentally-sensitive-areas> [Accessed June 2022].
- Standards Australia, 2007. *AS 4373–2007 Pruning of Amenity Trees*, GPO Box 476 Sydney NSW 2001: Standards Australia.
- Standards Australia, 2009. *AS4970–2009: Protection of Trees on Development Sites*, Sydney: Standards Australia.
- The British Standards Institution, 2012. *BS5837–2012: Trees in relation to design, demolition and construction*, London: BSI Standards Limited.



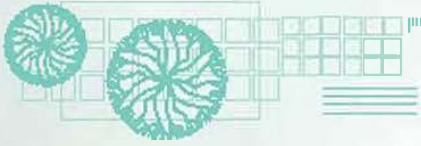
## Site Map





Figure 16. Site map showing subject trees. Note that icon colour indicates trees current risk rating (not Retention Value). Tree attributes are to be obtained from Appendix E – Tree Assessment Data. (ArborSafe, August 2022).





## Appendices



## 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
<b>Indigenous</b>	Occurs naturally in the local area and is native to a given region or ecosystem.
<b>State Native</b>	Occurs naturally within State but is not indigenous.
<b>Australian Native</b>	Occurs naturally within Australia and its territories but is not a State native or indigenous.
<b>Exotic Evergreen</b>	Occurs naturally outside of Australia and its territories and typically retains its leaves throughout the year.
<b>Exotic Deciduous</b>	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
<b>Excellent</b>	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.
<b>Good</b>	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.
<b>Fair</b>	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.
<b>Poor</b>	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.
<b>Dead</b>	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
<b>Young</b>	Newly planted small tree not fully established may be capable of being transplanted or easily replaced.
<b>Juvenile</b>	Tree is small in terms of its potential physical size and has not reached its full reproductive ability.
<b>Semi-mature</b>	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.
<b>Mature</b>	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.
<b>Senescent</b>	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
<b>Good</b>	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.
<b>Fair</b>	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.
<b>Poor</b>	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.
<b>Hazardous</b>	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)		
<b>Category U</b>			
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.	<ul style="list-style-type: none"> <li>Trees that have a severe structural defect that are not remediable such that their failure is expected within 12 months.</li> <li>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).</li> <li>Trees that are dead or are showing signs of significant, immediate and irreversible overall decline.</li> <li>Trees infected with pathogens of significance to the health and or safety of other trees nearby</li> <li>Low quality trees suppressing adjacent trees of better quality.</li> <li>Noxious weeds or species categorised as weeds within the local area.</li> </ul> <p><b>Note:</b> Category U trees can have existing or potential conservation value* which might make it desirable to preserve.</p>		
	<b>1. Arboricultural Qualities</b>	<b>2. Landscape qualities</b>	<b>3. Cultural and environmental values</b>
<b>Category A</b>			
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).
<b>Category B</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).
<b>Category C</b>			
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.

<b>Category A</b>	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.
<b>Category B</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.
<b>Category C</b>	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.
<b>Category U</b>	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 Protection Measures

**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

### **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



## Protective Fencing Specification

Protective fencing is to be installed as far as practicable from the trunk of any 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).

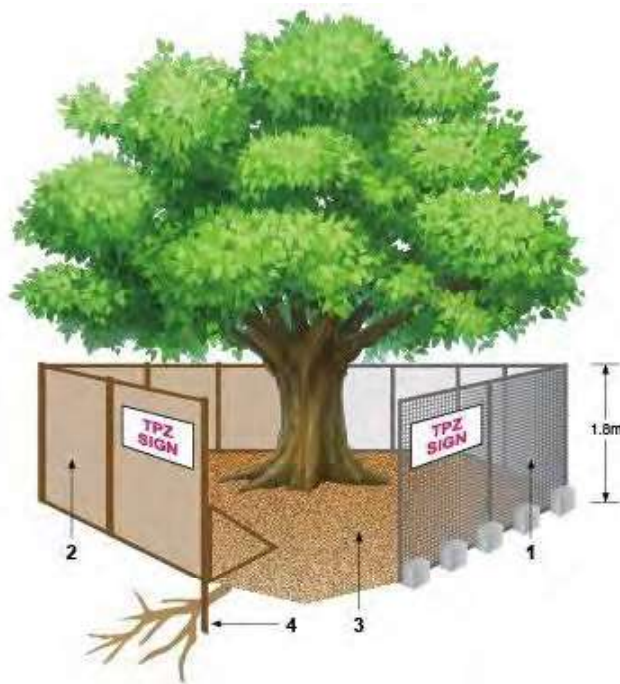
In some areas of the site (i.e. protection of trees on neighbouring properties) existing boundary fencing may be used as an alternative to protective fencing.

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.

TPZ fencing is to be a minimum of 1.8m high and mesh or wire between posts must be highly visible – an example is shown in Appendix Figure 1. 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.

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.

The subject trees themselves must also not 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.

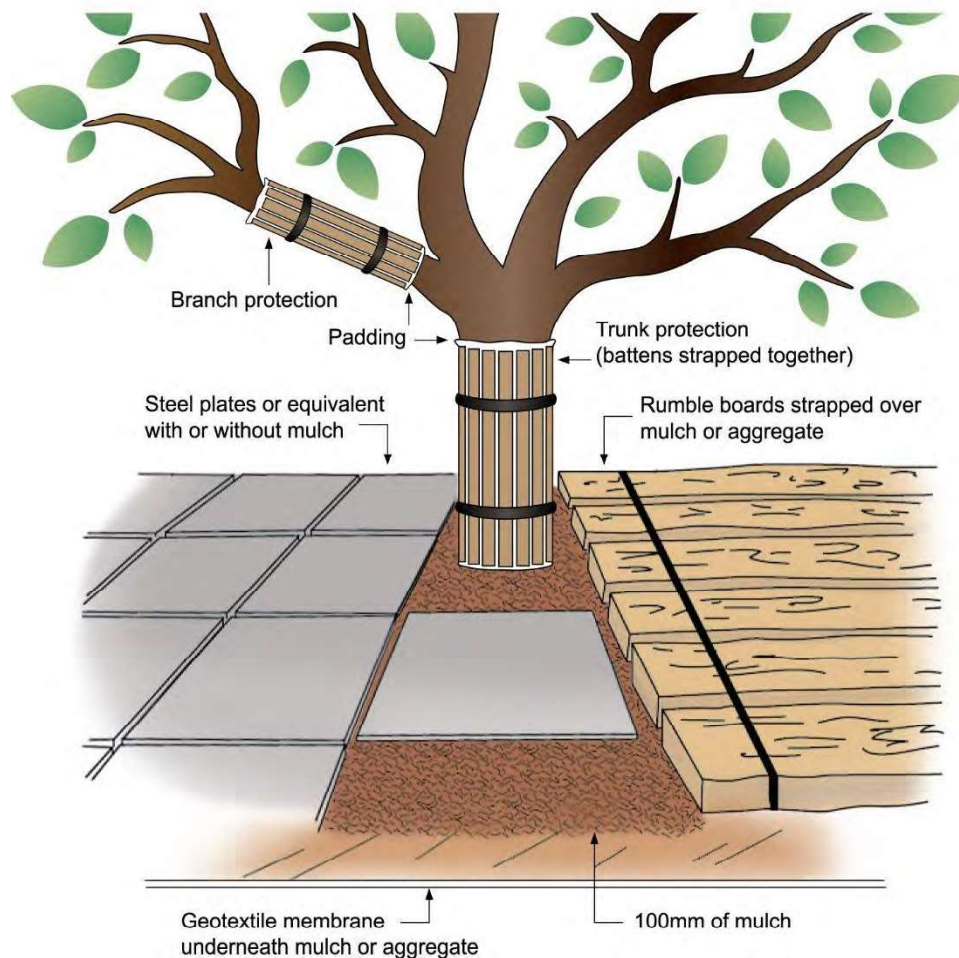
Appendix Figure 1. Depicts standard fencing techniques. (AS 4970–2009).

## Trunk and Ground Protection

Given that proposed works are often 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.

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.

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



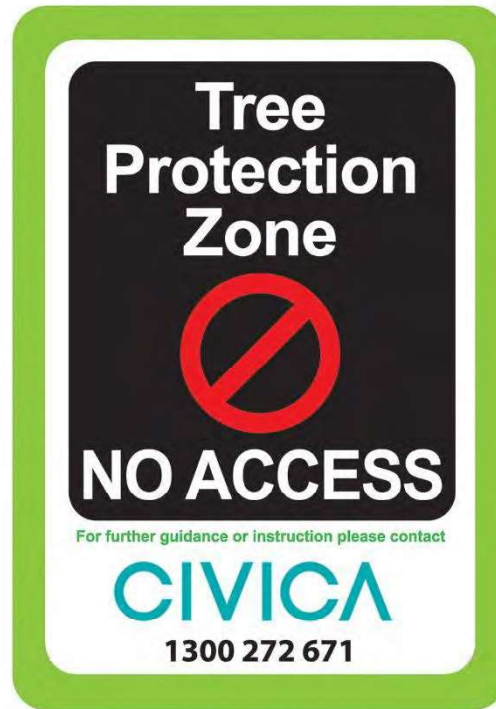
### Notes:

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.

Appendix Figure 2. Depicts trunk and ground protection techniques. (AS 4970–2009).

## Tree Protection Signs

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. An example is shown below in Appendix Figure 3.



Appendix Figure 3. Depicts standard fencing techniques. (AS 4970–2009).

Appendix E: Tree Assessment Data

Tree no.	Botanical Name	Common Name	Radial TPZ (m)	TPZ area (m <sup>2</sup> )	Radial SRZ (m)	Age	TLE (Yrs)	Defects	Significance	Arboret comments	Tree Quality Score	Tree Retention value subcategory	Recommendation	
1	<i>Eucalyptus leucopylla</i> ssp. <i>leucopylla</i> / <i>E. rosea</i>	Red-flowered Yellow Gum	4.3	58.63	2.6	Semi-Mature	15-25	Co-dominant stems; Deadwood/stubs < 30mm; Soil compaction;	Attractive landscape feature; Amenity value/shade;		B		Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).	
2	<i>Eucalyptus leucopylla</i> ssp. <i>leucopylla</i> / <i>E. rosea</i>	Red-flowered Yellow Gum	5.2	83.65	2.5	Semi-Mature	15-25	Co-dominant stems; Crossing/rubbing branches; Deadwood/stubs < 30mm; Soil compaction; Suppressed;	Attractive landscape feature; Amenity value/shade;		B		Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).	
3	<i>Eucalyptus grandis</i>	Flooded Gum	10.1	319.21	3.3	Semi-Mature	25-50	Crossing/rubbing branches; Deadwood/stubs > 30mm; Previous failure(s); Wound(s);	Attractive landscape feature; Amenity value/shade;		B		Retain tree with specific protection requirements (i.e. Generic measures plus supervision of works within the TPZ and/or use of root sensitive construction techniques).	
4	<i>Callistemon 'Kings Park Special'</i>	Kings Park Special Bottlebrush	3.0	28.27	2.0	Semi-Mature	10-15	Co-dominant stems; Epicormic growth;	Amenity value/shade;		C		Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).	
5	<i>Eucalyptus grandis</i>	Flooded Gum	13.2	547.39	3.8	Mature	25-50	Co-dominant stems; Crossing/rubbing branches; Deadwood/stubs > 30mm; Soil compaction;	Attractive landscape feature; Amenity value/shade; Significant due to age/size;	11-08-2022: Nick Arnold - Visible from surrounding area.	A	2		Retain tree with specific protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
6	<i>Eucalyptus grandis</i>	Flooded Gum	9.2	288.22	3.3	Semi-Mature	25-50	Co-dominant stems; Crossing/rubbing branches; Deadwood/stubs > 30mm; Soil compaction;	Attractive landscape feature; Amenity value/shade;		B		Retain tree with specific protection requirements (i.e. protective fencing and restriction of activities within the TPZ).	
7	<i>Eucalyptus marginata</i>	Jarrah	9.0	254.47	3.0	Semi-Mature	15-25	Co-dominant stems; Deadwood/stubs < 30mm; included bark;	Attractive landscape feature; Amenity value/shade; Significant due to age/size; Rare or localised distribution;		B	23		Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
8	<i>Banksia attenuata</i>	Slender Banksia	5.8	104.23	2.7	Mature	15-25		Rare or localised distribution; Attractive landscape feature; Amenity value/shade;		B	3		Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
9	<i>Banksia attenuata</i>	Slender Banksia	6.4	127.08	2.7	Mature	15-25	Co-dominant stems; Crossing/rubbing branches; Deadwood/stubs < 30mm; Exposed root(s); Mechanical damage to root(s); Resin exudation/ink; Suppressed;	Significant due to age/size; Rare or localised distribution; Attractive landscape feature; Amenity value/shade;		B	13		Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
10	<i>Banksia grandis</i>	Bull Banksia	4.0	49.27	2.3	Mature	15-25	Co-dominant stems; Crossing/rubbing branches; Deadwood/stubs < 30mm; Wound(s);	Rare or localised distribution; Attractive landscape feature; Amenity value/shade;		B	3		Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
11	<i>Banksia grandis</i>	Bull Banksia	3.8	46.32	2.1	Mature	10-15	Crack(s)/split(s); Crossing/rubbing branches; Deadwood/stubs > 60mm; Decay; Hanger(s); Previous failure(s); Wound(s);	Rare or localised distribution; Attractive landscape feature; Amenity value/shade;		B	3		Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
12	<i>Xylomelum occidentale</i>	Woody Pear	2.5	19.95	1.9	Juvenile	10-15	Deadwood/stubs < 30mm; Decay; Wound(s);	Rare or localised distribution; Attractive landscape feature;	11-08-2022: Nick Arnold - Tree is Xylomelum occidentale Woody Pear.	C	2		Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
13	<i>Xylomelum occidentale</i>	Woody Pear	2.0	12.57	1.5	Juvenile	10-15	Decay; Wound(s);	Rare or localised distribution; Attractive landscape feature;	11-08-2022: Nick Arnold - Tree is Xylomelum occidentale Woody Pear.	C	2		Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
14	<i>Banksia menziesii</i>	Firewood Banksia	2.6	21.90	1.9	Semi-Mature	15-25	Co-dominant stems; Suppressed;	Attractive landscape feature; Rare or localised distribution;		B	3		Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
15	<i>Xylomelum occidentale</i>	Woody Pear	2.9	26.06	2.1	Semi-Mature	10-15	Co-dominant stems; Deadwood/stubs < 30mm; Decay; Wound(s);	Rare or localised distribution; Attractive landscape feature;	11-08-2022: Nick Arnold - Tree is Xylomelum occidentale Woody Pear.	B	3		Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
16	<i>Banksia menziesii</i>	Firewood Banksia	3.1	30.58	2.1	Semi-Mature	10-15	Cavity(s); Deadwood/stubs > 30mm; Dieback;	Attractive landscape feature; Rare or localised distribution;		B	3		Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
17	<i>Banksia menziesii</i>	Firewood Banksia	6.5	131.92	2.7	Mature	5-10	Co-dominant stems; Deadwood/stubs > 30mm; Decay; Dieback; Wound(s);	Attractive landscape feature; Rare or localised distribution;		B	13		Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
18	<i>Xylomelum occidentale</i>	Woody Pear	2.4	18.10	1.8	Semi-Mature	15-25	Co-dominant stems; Deadwood/stubs < 30mm; Suppressed;	Rare or localised distribution; Attractive landscape feature;	11-08-2022: Nick Arnold - Tree is Xylomelum occidentale Woody Pear.	C	2		Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
19	<i>Banksia menziesii</i>	Firewood Banksia	2.6	21.90	1.8	Semi-Mature	10-15	Co-dominant stems; Suppressed;	Attractive landscape feature; Rare or localised distribution;		B	3		Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
20	<i>Eucalyptus marginata</i>	Jarrah	5.5	95.73	2.5	Semi-Mature	15-25	Co-dominant stems; Deadwood/stubs < 30mm; Resin exudation/ink; Suppressed; Wound(s);	Attractive landscape feature; Amenity value/shade; Rare or localised distribution;		B	3		Retain tree with specific protection requirements (i.e. Generic measures plus supervision of works within the TPZ and/or use of root sensitive construction techniques).
21	<i>Eucalyptus marginata</i>	Jarrah	5.8	104.23	2.5	Semi-Mature	15-25	Co-dominant stems; Deadwood/stubs < 30mm; included bark; Suppressed;	Attractive landscape feature; Amenity value/shade; Rare or localised distribution;		B	3		Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
22	<i>Banksia attenuata</i>	Slender Banksia	5.4	91.61	2.6	Mature	15-25	Co-dominant stems; Deadwood/stubs < 30mm; Poor pruning; Wound(s);	Rare or localised distribution; Attractive landscape feature; Amenity value/shade; Significant due to age/size;		B	13		Retain tree with specific protection requirements (i.e. Generic measures plus supervision of works within the TPZ and/or use of root sensitive construction techniques).
23	<i>Banksia attenuata</i>	Slender Banksia	7.1	157.48	2.8	Mature	15-25	Co-dominant stems; Deadwood/stubs > 100mm; Previous failure(s); Wound(s);	Rare or localised distribution; Attractive landscape feature; Amenity value/shade; Significant due to age/size;		B	13		Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
24	<i>Banksia menziesii</i>	Firewood Banksia	5.0	79.80	2.3	Semi-Mature	15-25	Co-dominant stems; Deadwood/stubs < 30mm;	Attractive landscape feature; Rare or localised distribution; Amenity value/shade; Significant due to age/size;	11-08-2022: Nick Arnold - Crown somewhat thin.	B	13		Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
25	<i>Xylomelum occidentale</i>	Woody Pear	3.6	40.72	2.1	Semi-Mature	15-25	Deadwood/stubs < 30mm; Epicormic growth;	Amenity value/shade; Rare or localised distribution; Attractive landscape feature;	11-08-2022: Nick Arnold - Tree is Xylomelum occidentale Woody Pear.	B	3		Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
26	<i>Banksia menziesii</i>	Firewood Banksia	4.0	49.27	2.3	Mature	15-25	Co-dominant stems; Deadwood/stubs < 30mm;	Attractive landscape feature; Rare or localised distribution; Amenity value/shade; Significant due to age/size;		B	3		Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
27	<i>Xylomelum occidentale</i>	Woody Pear	5.0	79.80	2.4	Mature	15-25	Co-dominant stems; Deadwood/stubs > 60mm; Wound(s);	Rare or localised distribution; Attractive landscape feature; Amenity value/shade;	11-08-2022: Nick Arnold - Tree is Xylomelum occidentale Woody Pear.	B	3		Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
28	<i>Xylomelum occidentale</i>	Woody Pear	4.4	61.93	2.3	Mature	15-25	Deadwood/stubs < 30mm; Dieback; Suppressed;	Rare or localised distribution; Attractive landscape feature; Amenity value/shade;	11-08-2022: Nick Arnold - Tree is Xylomelum occidentale Woody Pear.	B	3		Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
29	<i>Xylomelum occidentale</i>	Woody Pear	4.8	72.38	2.4	Mature	15-25	Co-dominant stems; Deadwood/stubs < 30mm; Wound(s);	Rare or localised distribution; Attractive landscape feature; Amenity value/shade;	11-08-2022: Nick Arnold - Multi-stemmed at base.	B	3		Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).

Tree no.	Botanical Name	Common Name	Radial TPZ (m)	TPZ area (m <sup>2</sup> )	Radial SRZ (m)	Age	TLE (Yrs)	Defects	Significance	Arborist comments	Tree Quality Score	Tree Retention value subcategory	Recommendation
30	<i>Xylomelum occidentale</i>	Woody Pear	2.0	12.57	1.5	Juvenile	15-25	Epicormic growth; Previous failure(s);	Rare or localised distribution; Attractive landscape feature;	11-08-2022: Nick Arnold: Tree is Xylomelum occidentale; Woody Pear.	C	2	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
31	<i>Xylomelum occidentale</i>	Woody Pear	2.3	16.33	1.7	Juvenile	15-25	Co-dominant stems; Suppressed;	Rare or localised distribution; Attractive landscape feature;	11-08-2022: Nick Arnold: Tree is Xylomelum occidentale; Woody Pear.	C	2	Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
32	<i>Xylomelum occidentale</i>	Woody Pear	2.5	19.95	1.8	Juvenile	10-15	Co-dominant stems; Epicormic growth; Suppressed;	Rare or localised distribution; Attractive landscape feature;	11-08-2022: Nick Arnold: Tree is Xylomelum occidentale; Woody Pear.	C	2	Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
33	<i>Eucalyptus marginata</i>	Jarrah	14.3	640.63	3.7	Mature	25-50	Co-dominant stems; Crossing/rubbing branches; Excessive end weight; Previous failure(s); Wound(s);	Attractive landscape feature; Amenity value/shade; Rare or localised distribution; Significant due to age/size;	11-08-2022: Nick Arnold: Established tree, appears to be translocating established stump regrowth with evidence of several previous limb failures.	A	13	Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
34	<i>Xylomelum occidentale</i>	Woody Pear	2.5	19.95	1.8	Juvenile	10-15	Co-dominant stems; Crossing/rubbing branches; Epicormic growth; Suppressed;	Rare or localised distribution; Attractive landscape feature;	11-08-2022: Nick Arnold: Tree is Xylomelum occidentale; Woody Pear.	C	2	Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
35	<i>Banksia attenuata</i>	Slender Banksia	6.5	131.92	2.7	Mature	15-25	Co-dominant stems; Crossing/rubbing branches; Deadwood/stubs < 30mm; Fungal fruiting body(s); Previous failure(s);	Attractive landscape feature; Amenity value/shade; Significant due to age/size;	11-08-2022: Nick Arnold: Fruiting bodies at base.	B	3	Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
36	<i>Eucalyptus marginata</i>	Jarrah	2.0	12.57	1.6	Juvenile	10-15	Epicormic growth; Suppressed;	Rare or localised distribution;		C	2	Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
37	<i>Banksia attenuata</i>	Slender Banksia	4.6	65.33	2.3	Mature	15-25	Co-dominant stems; Deadwood/stubs < 30mm; Included bark; Suppressed;	Attractive landscape feature; Amenity value/shade;		B	3	Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
38	<i>Banksia attenuata</i>	Slender Banksia	4.6	65.33	2.3	Mature	15-25	Co-dominant stems; Deadwood/stubs < 30mm; Included bark; Resin exudation/ink; Suppressed;	Rare or localised distribution; Attractive landscape feature; Amenity value/shade;		B	3	Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
39	<i>Xylomelum occidentale</i>	Woody Pear	3.0	28.27	1.9	Semi-Mature	10-15	Co-dominant stems; Suppressed;	Rare or localised distribution; Attractive landscape feature;	11-08-2022: Nick Arnold: Tree is Xylomelum occidentale; Woody Pear.	B	3	Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
40	<i>Banksia attenuata</i>	Slender Banksia	6.6	136.85	2.7	Mature	15-25	Co-dominant stems; Deadwood/stubs < 30mm; Poor pruning; Suppressed;	Significant due to age/size; Rare or localised distribution; Attractive landscape feature; Amenity value/shade;	11-08-2022: Nick Arnold: Co-dominant at base.	B	3	Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
41	<i>Corymbia maculata</i>	Spotted Gum	6.4	127.08	2.7	Semi-Mature	>50	Co-dominant stems; Deadwood/stubs > 30mm; Included bark;	Attractive landscape feature; Amenity value/shade;		B	2	Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
42	<i>Eucalyptus marginata</i>	Jarrah	6.4	127.08	2.7	Semi-Mature	15-25	Deadwood/stubs < 30mm; Suppressed;	Attractive landscape feature; Amenity value/shade;		B	3	Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
43	<i>Banksia attenuata</i>	Slender Banksia	2.6	21.90	1.8	Semi-Mature	10-15	Co-dominant stems; Epicormic growth; Suppressed;	Rare or localised distribution; Attractive landscape feature;	11-08-2022: Nick Arnold: Tree is Xylomelum occidentale; Woody Pear.	B	3	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
44	<i>Xylomelum occidentale</i>	Woody Pear	3.0	28.27	2.0	Semi-Mature	10-15	Co-dominant stems; Damaging infrastructure;	Rare or localised distribution; Attractive landscape feature;	11-08-2022: Nick Arnold: Contacting fence line.	B	3	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
45	<i>Eucalyptus marginata</i>	Jarrah	3.1	30.58	2.1	Juvenile	15-25	Suppressed;	Rare or localised distribution; Attractive landscape feature; Amenity value/shade;		C	2	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
46	<i>Eucalyptus marginata</i>	Jarrah	5.6	99.93	2.5	Semi-Mature	25-50	Co-dominant stems; Deadwood/stubs < 30mm;	Rare or localised distribution; Attractive landscape feature; Amenity value/shade;		B	3	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
47	<i>Xylomelum occidentale</i>	Woody Pear	2.4	18.10	1.7	Juvenile	5-10	Damaging infrastructure; Suppressed;	Rare or localised distribution;	11-08-2022: Nick Arnold: Tree is Xylomelum occidentale; Woody Pear.	C	2	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
48	Dead Tree	Dead tree	3.2	32.98	2.0	Semi-Mature	<5	Co-dominant stems; Deadwood/stubs > 100mm; Decay;		11-08-2022: Nick Arnold: Suppressed over roofline. Dead acacia with minor habitat value.	C	1	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
49	<i>Banksia menziesii</i>	Firewood Banksia	4.3	58.63	2.4	Mature	5-10	Co-dominant stems; Deadwood/stubs > 30mm; Dieback;	Attractive landscape feature; Rare or localised distribution; Amenity value/shade;	11-08-2022: Nick Arnold: Crown somewhat thin.	B	3	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
50	<i>Banksia menziesii</i>	Firewood Banksia	4.3	58.63	2.3	Semi-Mature	10-15	Previous failure(s); Wound(s);	Attractive landscape feature; Rare or localised distribution; Amenity value/shade;		B	3	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
51	<i>Eucalyptus marginata</i>	Jarrah	4.4	61.93	2.3	Semi-Mature	25-50	Deadwood/stubs < 30mm; Suppressed;	Rare or localised distribution; Attractive landscape feature; Amenity value/shade;		B	3	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
52	<i>Eucalyptus marginata</i>	Jarrah	3.1	30.58	2.0	Juvenile	25-50	Co-dominant stems; Deadwood/stubs < 30mm; Suppressed;	Rare or localised distribution; Attractive landscape feature; Amenity value/shade;		B	3	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
53	<i>Eucalyptus marginata</i>	Jarrah	3.0	28.27	1.9	Juvenile	25-50	Deadwood/stubs < 30mm;	Rare or localised distribution; Attractive landscape feature; Amenity value/shade;		B	3	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
54	<i>Eucalyptus marginata</i>	Jarrah	2.9	26.06	1.9	Juvenile	5-10	Deadwood/stubs < 30mm; Suppressed; Wound(s);	Rare or localised distribution; Amenity value/shade;	11-08-2022: Nick Arnold: Heavily suppressed over court.	C	1	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
55	<i>Eucalyptus marginata</i>	Jarrah	2.9	26.06	2.0	Juvenile	15-25	Crossing/rubbing branches; Suppressed;	Attractive landscape feature; Rare or localised distribution; Amenity value/shade;		B	3	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
56	<i>Banksia menziesii</i>	Firewood Banksia	3.0	28.27	1.9	Semi-Mature	<5	Co-dominant stems; Crossing/rubbing branches; Dieback; Excessive thinning; Suppressed;	Rare or localised distribution;	11-08-2022: Nick Arnold: Extensive dieback throughout crown indicates tree is in advanced decline.	C	2	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
57	<i>Eucalyptus marginata</i>	Jarrah	2.9	26.06	1.9	Juvenile	5-10	Damaging infrastructure; Deadwood/stubs < 30mm; Suppressed;	Rare or localised distribution; Amenity value/shade;	11-08-2022: Nick Arnold: Heavily suppressed over court.	C	2	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
58	<i>Eucalyptus marginata</i>	Jarrah	3.1	30.58	2.0	Juvenile	15-25	Crossing/rubbing branches; Suppressed;	Rare or localised distribution; Amenity value/shade; With minor habitat value.		B	3	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
59	<i>Eucalyptus marginata</i>	Jarrah	3.8	46.32	2.3	Semi-Mature	10-15	Crossing/rubbing branches;	Rare or localised distribution; Amenity value/shade;	11-08-2022: Nick Arnold: Crown somewhat thin.	B	3	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.
60	<i>Eucalyptus marginata</i>	Jarrah	5.8	104.23	2.6	Semi-Mature	15-25	Co-dominant stems; Deadwood/stubs < 30mm;	Attractive landscape feature; Rare or localised distribution; Amenity value/shade;	11-08-2022: Nick Arnold: Codominant at base.	B	3	Remove - tree located within proposed development footprint or has major encroachment into its TPZ.



Appendix F. Tree Protection Zones / Structural Root Zone Plan

