

# Appendix H

## Arboriculturist Report





August 23, 2018

Propagule Consulting Pty Ltd  
3 Amherst Street  
Fremantle WA 6160

**ATTENTION:** Julian Croudace

**RE:** Assessment of Trees on Victoria Avenue adjacent to Lot 37, Montario Quarter, Shenton Park

Dear Julian,

Further to your request, the following is a summary of my assessment of the identified trees on Victoria Avenue adjacent to Lot 37, Montario Quarter, Shenton Park.

Should you have any queries regarding the findings of this report, or if I can be of any further assistance in the protection of the identified trees, please do not hesitate to contact me.

Yours sincerely

A handwritten signature in black ink, appearing to read "JRM", is written over a light blue horizontal line.

JASON ROYAL

Dip. Arboriculture (UK)  
Tech. Arbor A

*Assessment of identified Trees on Victoria Avenue adjacent to Lot 37,  
Montario Quarter, Shenton Park*

*Prepared For*

*Propagule Consulting Pty Ltd*

*Prepared By*



July 12, 2018	Rev 0	Draft for Comment
July 24, 2018	Rev 1	FINAL
August 12, 2018	Rev 2	Up-Dated
August 23, 2018	Rev 3	FINAL

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Company Information & Disclaimer

## 1. Terms Used

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The following terms have been used in this report:

'Lot'	meaning the area known as Lot 37 Montario Quarter, Shenton Park
'Tree'	meaning any individual tree identified adjacent to the Lot that has been included in this assessment
"TPZ"	meaning 'Tree Protection Zone'; the area where the majority of the Tree's root mass is considered likely to be found.  Any works required in this zone are considered likely to have some potential to impact the Tree's future health.
"SRZ"	meaning 'structural root zone; the area where the majority of the Tree's larger in-ground supportive root mass is considered likely to be found.  Any works required in this zone are considered likely to have some potential to impact the Tree's future health and possibly its in-ground stability as well.
"AS 4970"	meaning Australian Standards 4970; Protection of Trees on Development Parks
"AS 4373"	meaning Australian Standards 4373; Pruning of Amenity Trees

**For the purpose of this assessment the Trees have been referenced in accordance with the LandCorp arborist report dated September 2014.**

## 2. Purpose of the Assessment

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- Undertake an assessment of the Trees, and provide comment on their current condition.
- Provide comment on the potential impact of the development of the Lot to the Trees as a result of construction of the proposed building including the basement level, overshadowing from the building.
- Provide any broad-brush purposeful and practical recommendations for any design and construction implications that may apply to minimise impact to the Trees.

### 3. Particulars of this Assessment

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The findings and opinion provided in this report are my own and have been based on the visual observations of the Trees undertaken on the morning of July 11, 2018, and (in response to changes on the Site) August 15, 2018.

All observations of the Trees were undertaken from ground level.

No exploratory excavations have been undertaken as part of this particular assessment to verify the actual root spread of any given Tree. As such the allocation of TPZ for each Tree has at this stage been based on AS 4970 guidelines, with some amendments being made for the physical size and canopy dimensions of the Tree, its condition, the known root zone morphology of its given species in the sort of soil profile considered to be typical to this area of Western Australia.

### 4. Methodology of the Assessment

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All of the Trees on this Site were visually inspected from ground level in accordance with visual tree assessment (“VTA”) methods and principles.

The VTA method is based on the sciences of tree biology, physiology, tree structure, and tree bio-mechanics. It is a method widely used by arborists worldwide to identify visible signs on trees that indicate any health or potential structural issues that in turn could increase the risks associated with the given tree.

The overall health of each Tree was adjudged from an inspection of its leaf, overall percentage of leaf mass present in the canopy of the Tree, and the presence (or absence) of any pest or disease factor that could have an effect on the overall health of the Tree.

The structural integrity of each Tree was determined from a visual inspection of its main stem, primary (and secondary) branch unions to determine the presence of any areas considered to be a structural ‘defect’ or ‘imperfection’ such as unions with included bark, swelling, or noticeable splitting at them.

Symptoms of decay, growth patterns and defects are identified and assessed as to their potential to cause whole tree, part tree or branch failure, and where considered necessary further investigation by way of the use of sounding techniques was utilised to determine the presence and general extent of any areas of cavity or associated decay within a tree’s main stem structure.

Each Tree’s root plate area was also inspected to identify any visible signs of root plate, movement, cracking or heave from which a determination of the in-ground stability of the Tree can be ascertained. It is however important to note that there are limitations in verifying the in-ground stability of a tree based on a ‘one-off’ cursory visual observation; particularly if the inspection is undertaken during a period of ‘fine’ weather with little to no wind; as was the case over the period of this assessment.

The Tree’s species and its ability to cope with disturbances to its root zone that typically occur as part of a works process are also taken into consideration.

The known root zone morphology of the species was taken into consideration when allocating the recommended TPZ for each of the identified trees. Note: Whilst some reference and acknowledgment is given to the guidelines provided in AS 4970, the TPZ for each Tree has been based on the known typical root zone morphology for specimens of their species, the condition of the given Tree, and the known tolerance to root zone disturbance of the given species.

## 5. Summary of Key Findings of the Assessment

### 5.1 Condition of the Trees

Tree #163 looks to be have been replaced with a new tree (of the same species) since the LandCorp arborist report was undertaken.

Tree #165 looks to have been removed since the LandCorp arborist report was undertaken.

Tree #167 looks to be in poor health and suggests that it may have limited life span remaining.

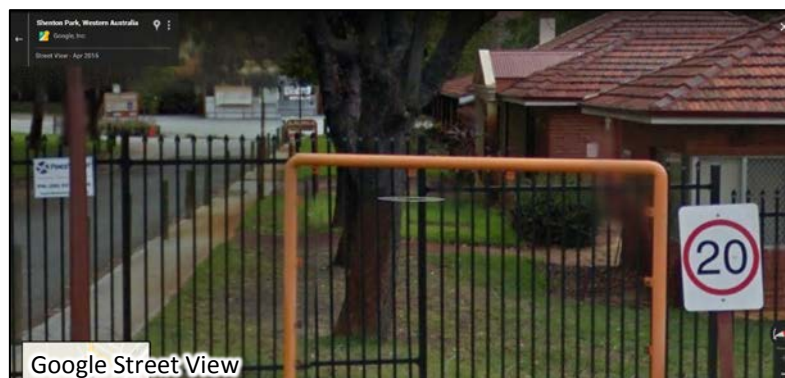
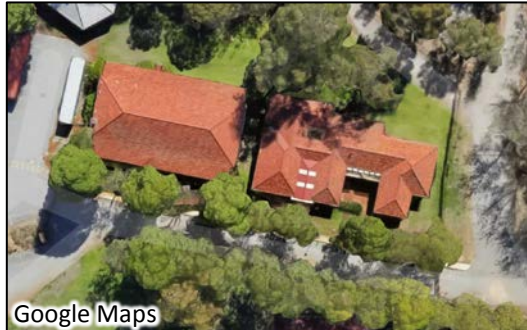
Tree #168, #169, #170, and #171 look to be in 'fair' health condition at this time. Apical sections of its canopy do however look to be declining. Remaining lower-mid canopy area looks to be in reasonably good health at this time although volume does appear to be low for what would be typically expected for specimens of this species at this size/age. Cause of their declining health looks to be typical to abiotic (environment) factors rather than any pest or disease pathogen. As a result some (if not all) of these Trees may only have another 5-15 years of life span remaining; regardless of any development undertaken around them.

Trees #162, #164 and #166 look to be in reasonably good health based on the condition of their leaf and overall volume of leaf mass remaining in their canopy. These Trees may have another 15-30 years of life span remaining.

The table attached to this report provides further comments on each of the Trees.

### 5.2 Site Observations

Previous buildings look to have been around 3 - 4 metres from the Trees (based on information available on Google Maps, Street View and images of the Site; see copies below).



Ground levels to the north of the Trees looks to have been lower than the levels at the base of their main stems. As such it is assumed that limited root mas from the Trees would have extended underneath the foundations of the previously existing buildings to their north.

**As such it is considered fair to assume that the nominal TPZ of the Trees is able to be modified to be no greater than the same alignment of the foundations of the previously existing buildings.**



## 5. Summary of Key Findings of the Assessment

Some extent of root zone disturbance looks to already have occurred around all Trees during Site clearing/demolition works.

Full extent of root disturbance and/or loss of root mass remains unknown and unable to be verified at this time. However it is assumed that clearing and some level of excavation has already occurred within part of the nominal TPZ of the Trees and possibly as close as 2-3 metres from their main stems.

A trench also looks to have been excavated between Trees #162 and #163. Disturbance was also noted to have occurred around 2 metres from the base of Tree #166.

Levels (within the Lot) now look to be currently higher than the original previous ground level.



Original levels

Excavations look to have been undertaken close to #171 for installation of power service line. Alignment of the service not able to be verified at this time.

Protection of the Trees does not look to fully comply with AS 4970 guidelines at this time.

## 5. Summary of Key Findings of the Assessment

### 5.3 Plan Observations

Lot boundary looks to be approximately 5 metres from the Trees.



Closest building on the Lot looks to be approximately 5 metres from the Trees; further away from the Trees than the previously existing buildings and in many respects outside of their likely root zone (modified TPZ) area.

Plan provided shows basement level to be constructed as part of the development, with closest point of basement 10.6 metres from Trees #166, #167 and #168. This is outside of the nominal TPZ of any of these Trees.

Maximum depth of 3 metres excavation is at this time assumed to be required for basement construction and de-watering for purposes of construction is not anticipated to be required. Construction assumed to be undertaken by way of open-cut excavation within 1:1 batter applied; resulting in excavation possibly as close as 7.6 metres from the closest Trees.

**This looks to be outside of the nominal TPZ of any of these Trees, and well outside of the modified TPZ of the Trees.**

A 6 metres wide driveway is shown to be proposed to be installed between Trees #164 and #166. Driveway RL to be at verge level until Lot boundary before ramping up at 1:8.

This looks to encroach into the nominal TPZ of both of these Trees.

Shadow modelling of the development shows the Trees will remain overshadowed by the building during the winter months (period of semi-dormancy/limited growth), overshadowed for parts of the day during the Spring and Autumn periods (active growing seasons). Minimal overshadowing looks likely to occur during summer periods (active growing season).

No services look to be aligned to go past the Trees into the Lot as part of Lot development.

New Trees look to be proposed to be planted within the avenue to in-fill the current gaps where previous trees were.

## 6. Potential Impact of Development to the Trees

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### 6.1 Development of the Lot

Given the level of disturbance that already looks to have occurred during site clearing and demolition stages of the development, development of the Lot itself looks likely to have minimal impact to the Trees; if any.

### 6.2 Construction of Basement Level

Excavations for the construction of the basement level look likely to remain outside of the nominal or modified TPZ of any of the Trees, and de-watering does not look to be required as part of construction. As such construction of the basement is not anticipated to have any impact to the Trees.

### 6.3 Driveway Construction

Box-out for driveway may have some impact to the root zone of Trees #164/#166; depending on depth of box-out required and level of disturbance/excavation that has already occurred. However some level of disturbance already looks to have occurred to within 2 metres of Tree #166. Increasing levels of crossover to minimise depth of box-out excavation required should help reduce the potential to impact roots from the Trees to some extent. Final levels suggested to be subject to findings of exploratory excavations along proposed crossover alignment.

### 6.4 Impact from Over-shadowing

Once the building has been constructed, overshadowing of the Trees is considered likely to have minimal impact to the Trees as the modelling undertaken would suggest that majority of overshadowing looks likely to occur during periods of limited/no active growth.

There are also a number of examples of specimens of this species situated in similar situations within the Perth metropolitan area (such as St Georges Terrace Perth and Richardson Street West Perth) where they are overshadowed for part of the year without major impact to their health.

### 6.5 Other Considerations

Although not necessarily directly related to the development of the Lot, landscape treatment for the verge area where the Trees are situated, installation of the proposed footpath shown of the Plan provided, and any works undertaken on Victoria Avenue all look likely to have the potential to have a greater impact to the Trees than the development of the Lot.

## 7. Considerations and Recommendations

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**7.1** Recommend to seek verification as to what level of site remediation was undertaken in the vicinity of the Trees and up to what point in relation to the Lot boundary.

**7.2** Recommend to seek verification as to what level of excavation and works has been undertaken to date in the area of the verge between the Trees and the Lot boundary.

**7.3** Recommend to look to locate the driveway into the Lot from Victoria Avenue central to Trees #164 and #166 and undertake some further investigation to verify what level of root mas may be impacted by the extent of box-out required for its construction.

Arboricultural consultant is recommended to be on-site during box-out for driveway to undertake root pruning and provide further guidance as necessary.

**7.4** During development of the lot the protection of the verge area where the Trees are situated in accordance with AS 4970 guidelines will remain critical to the success of their retention and ensuring any impact to the Trees during the Lot development will remain minimal.

In particular the verge area should not at any time be used for:

- Traversing and/or parking of plant machinery or vehicles
- Storage for construction or deleterious materials
- Vehicle refuelling
- Storage of surplus fill
- Preparation of chemicals and/or cement products (or within 15 metres of the TPZ)
- Areas to dump construction and general waste
- Wash down or cleaning
- Locations for site offices or toilets
- Or any activity that may harm or injure the tree above or below ground parts





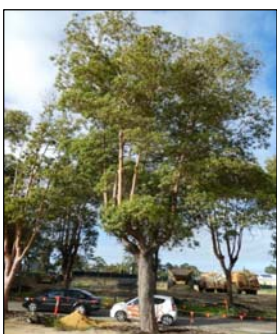
This is however at this time **not** anticipated to be an issue as the verge area of Victoria Avenue is anticipated to be landscaped before Lot development commences.






**7.5** Maintaining any supplementary watering of the area around the Trees that they are currently accustomed will be critical to the success of their retention.

**7.6** Method of construction of the proposed building must also take into consideration the proximity of the Trees and their canopy extents to the Lot and utilise methods and strategies to minimise any impact to their canopy during the construction stages of the development.

**Attachment; Table of Information on current condition of the Trees**


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Tree Ref No	Species	Height (metres)	DBH (cm)	Canopy Spread (metres diameter)		Health	Structure	Image	Comment	Nominal TPZ (metres radius)
				N-S	E-W					
162	Queensland Box ( <i>Lophostemon confertus</i> )	15	62	8	9	Good	Acceptable		Continues to show reasonably good health based on the condition of its canopy. Excavation noted to have been undertaken to the west of the Tree at around 2m from the base of the Tree; within its nominal TPZ	7.44
163	Queensland Box ( <i>Lophostemon confertus</i> )	3	<10	1.5	1.5	Good	Good		Juvenile tree and assumed to be a replacement for the previous tree. Good health/form and no issues noted	2
164	Queensland Box ( <i>Lophostemon confertus</i> )	14	50	7	8	Good	Acceptable		Continues to show reasonably good health based on the condition of its canopy, although uppermost canopy does look to be slightly sparse and possible early indications of decline	6
165	Queensland Box ( <i>Lophostemon confertus</i> )								No tree present in this location; Looks to have been removed since the LandCorp arborist report was undertaken	
166	Queensland Box ( <i>Lophostemon confertus</i> )	15	60	9	9	Good	Acceptable		Continues to show reasonably good health based on the condition of its canopy. Some disturbance noted to have occurred within its nominal TPZ to the west of the Tree's main stem	7.2

Tree Ref No	Species	Height (metres)	DBH (cm)	Canopy Spread (metres diameter)		Health	Structure	Image	Comment	Nominal TPZ (metres radius)
				N-S	E-W					
167	Queensland Box ( <i>Lophostemon confertus</i> )	12.5	33	4	4	Poor	Acceptable		Canopy of this Tree is relatively sparse and apical sections of its canopy look to be dead. Remaining leaf mass is ok at this time, but volume is low	3.96
168	Queensland Box ( <i>Lophostemon confertus</i> )	14.5	40	5	7	Fair	Acceptable		Shows ok health. Apical sections of its canopy do however look to be declining. Remaining lower-mid canopy area looks to be in reasonably good health at this time although volume does appear to be low for a specimen of this species at this size/age	4.8
169	Queensland Box ( <i>Lophostemon confertus</i> )	15	48	6	7	Fair	Acceptable		Shows ok health. Apical sections of its canopy do however look to be declining. Remaining lower-mid canopy area looks to be in reasonably good health at this time although volume does appear to be low for a specimen of this species at this size/age	5.76
170	Queensland Box ( <i>Lophostemon confertus</i> )	12	42	7	5	Fair	Acceptable		Shows ok health. Apical sections of its canopy do however look to be declining. Remaining lower-mid canopy area looks to be in reasonably good health at this time although volume does appear to be low for a specimen of this species at this size/age	5.04
171	Queensland Box ( <i>Lophostemon confertus</i> )	12.5	44	8	7	Fair	Acceptable		Shows ok health. Apical sections of its canopy do however look to be declining. Remaining lower-mid canopy area looks to be in reasonably good health at this time although volume does appear to be low for a specimen of this species at this size/age	5.28

**Attachment; Company Information**

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Company Name:   
A.C.N.: 107 194 061  
A.B.N.: 66 566 369 687

**Insurance Details:**

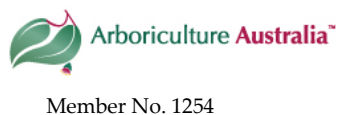
General Liability; QBE \$20 million  
Professional Indemnity; Vero \$10 million  
Personal Protection; Macquarie, Asteron

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**Consultant Details**

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J. Royal; 172723



## Disclaimer

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This Report has been provided in good faith and based upon the material information provided by the Client to Arbor logic, and/or based on the visual inspection of the tree(s) at the time this advice was prepared.

The contents of this Report should be read in full, and at no time shall any part of the Report be referred to unless taken in full context with the remainder of the document.

The contents of this Report may not be reissued to another party or published in part or full without Arbor logic's written permission.

Arbor logic does not accept liability arising out of loss or damage that results from: -

- Material information not being provided by the Client to Arbor logic at the time this advice was prepared.
- The provision of misleading or incorrect information by the Client or any other party to Arbor logic upon which this advice was prepared.
- This advice being used by the Client or any other party in circumstances or situations other than the specific subject of this advice.
- Failure by the Client to follow this advice.
- The action(s) or inaction(s) of the Client or any other party that gives rise to the loss of, or damage to, the tree(s) that are the subject of this advice.

It is also important to take into consideration that all trees are living organisms and as such there are many variables that can affect their health and structural properties that remain beyond the scope of reasonable management practices or the advice provided in this Report based on the visual inspection of the tree(s).

As such a degree of risk will still remain with any given tree(s) despite the adoption of any best management practices or recommendations made in this Report.

**DEPARTMENT OF PLANNING, LANDS  
AND HERITAGE**

DATE	FILE
16-Nov-2018	08-50167-1