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Arboricultural assessment on: Proposed development site trees

Site Address: Cnr Heath Road/Canning Road, Kalamunda

Attn: Hindley & Associates PTY LTD
Andrew Jennings-Lowe

Date: 04.03.24

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1. ABSTRACT

- 1.1** This assessment gives a general overview of the health and condition of the 6 trees, situated in the car park/vacant land off Heath Road, Kalamunda. The client brief was to assess the trees for their current health and condition status, and advice on protection measures to undertake during the proposed development work. Recommendations have been made at the end of the report.

2. INTRODUCTION

2.1 Engagement

Treeswest Australia were engaged by Hindley and Associates (Andrew Jennings – Lowe) via email on the 13.02.24 to assess the impact the proposed building works would have on the trees designated for retention, and how best to protect them.

2.2 Scope of works

- The request was to originally assess three, possibly four trees across 2 sites, Lot 28, 29, adjoining Lot 3. While onsite, it was noted there were 2 other significant trees, this was then amended to include all 6 trees. The assessment was to ascertain their current health, and condition as part of a development application.
- The assessment was to consider tree protection measures on the trees to be retained.
- The relevant zones for tree protection were requested, based on the Australian Standard 4970-2009.
- Measures were to be included on how to protect the trees during the scope of works.
- Dave Crispin carried out the assessment on the 21.02.24

3. LOCATION

Images taken May 2023, from Google Maps from a satellite image, and from Canning Road below.



4. METHODS

4.1 Equipment

The weather on the day was sunny, the temperature was around 36 deg Celsius with no wind. The assessment was carried out between 08.30hrs and 13:30hrs. The trees were viewed from within the car park. Photographs were taken with an iPhone 11. Equipment used a Nikon clinometer, 8m retractable tape, trenching shovel, long handled screwdriver, a penetrometer for probing, and a nylon tapping hammer for percussion testing. Data was recorded on a Panasonic toughpad.

4.2 Visual Tree Assessment

The VTA (Visual Tree Assessment) method is an internationally recognised and acknowledged method for tree inspection. Hazardous symptoms are interpreted, defects are confirmed and measured, and criteria of failure are assessed. VTA helps to distinguish between apparent hazardous trees from those that are hazardous. This method reduces the risk of removing a viable tree.

VTA gives information about the body language and the mechanics of trees.

The VTA method is thus neither tree-friendly nor tree-hostile. In the event of damage, this method enables a largely fair judgment to be reached. Claus Mattheck introduced a biomechanically based system of visual tree assessment (VTA), which uses the reactive nature of tree growth. The basis behind VTA is the identification of symptoms, which the tree produces in reaction to a weak spot, or area of mechanical stress.

Based on the above findings, appropriate management measures will be recommended.

5. OBSERVATIONS

5.1 Subject tree – Appendix A

- Species – *Ficus microphylla* – Moreton Bay fig
- Height – 20.9m
- Diameter Breast Height (DBH) – 1.14 m taken at 1.4m
- Tree Protection Zone (TPZ) – 14 m
- Diameter Root Crown (DRC) – 1.27m
- Structural Root Zone (SRZ) – 3.66m
- Age – Mature
- Health – Good
- Useful Life Expectancy (ULE) – 50+ years
- Live Canopy Ratio (LCR) – 90%
- Canopy spread – S 10.8m, E 8m, N 2m, W 6.5m

5.2 Discussion

The first tree assessed is located close to the council verge on the northern boundary of the property line, next to the bitumen footpath. The mature *Ficus* encroaches into the car park, and has been crown lifted, allowing cars to park underneath for shade.

The northern canopy extends out over the footpath and appears to have been pruned back on a number of occasions.

The tree sits in a degraded soil planter bed, 2m wide and 10m long.

Typical of the species the roots buttress out radially from the trunk, but are constrained by the confines of their environment, Appendix B.

The radial surface roots have lifted the dividing kerbing between the planter bed and bitumen.

The tree bifurcates at 0.6m, with the stems extending to the east and west.

Multiple branches emanate from the 3m east, and west trunks, all heavily weighted with secondary growth. The canopy has been lifted on the southern side to accommodate car parking, lifted to a height of approximately 1.8m.

The northern side reaches down to the pavement. The upper canopy has been regularly cut back from encroaching into the overhead powerlines.

The branch architecture shows good balance with sound unions, no signs of branch failure was observed.

5.3 Subject tree – Appendix C

- Species – *Jacaranda mimosifolia* - Jacaranda
- Height – 12m
- Diameter Breast Height (DBH) – 0.44 m taken at 1.4m
- Tree Protection Zone (TPZ) – 5.28m
- Diameter Root Crown (DRC) – 0.48m
- Structural Root Zone (SRZ) – 2.43m
- Age – Mature
- Health – poor
- Useful Life Expectancy (ULE) – 1 - 5 years
- Live Canopy Ratio (LCR) – 10%
- Canopy spread – N 1.5m,

5.4 Discussion

The Jacaranda is the second tree, located next to the Ficus, and almost covered by the large fig. With minimal canopy accessing light, an estimated 10% (seen poking through at Appendix D) the tree is in a state of decline. The trunk of 2m branches out into two stems, one to the north, and one to the south. The northern stem is dead, the southern stem supports minimal growth.

5.5 Subject tree – Appendix D

- Species – *Jacaranda mimosifolia* - Jacaranda
- Height – 11m
- Diameter Breast Height (DBH) – 0.61 m taken at 1.4m
- Tree Protection Zone (TPZ) – 7.32m
- Diameter Root Crown (DRC) – 0.62m
- Structural Root Zone (SRZ) – 2.71m
- Age – Mature
- Health – Good
- Useful Life Expectancy (ULE) – 20+ years
- Live Canopy Ratio (LCR) – 70%
- Canopy spread – S 8m, E 3.5m, N 6m, W 6m

5.6 Discussion

The tree sits in a compacted gravel bed, with no protection from the vehicles parking alongside. The trunk of 0.5m leads into a bifurcated stem that has an included bark union (typically a weak union unless compensating wood has been added), with bulges either side to strengthen the junction. The trunk shows previous pruning, on smaller and larger limbs, mainly to raise the canopy. The southern stem has a large wound 1.6m up, the result of a previous pruning cut, and is slow to occlude the wound. The tree shows poor

pruning practices, with flush cuts allowing potential harmful pathogens entry into the trees xylem tissue (inner wood).

5.7 Subject tree – Appendix E

- Species – *Quercus robur* (English oak)
- Height – 21m
- Diameter Breast Height (DBH) – 0.82 m taken at 1.4m
- Tree Protection Zone (TPZ) – 9.84m
- Diameter Root Crown (DRC) – 1m
- Structural Root Zone (SRZ) – 2.43m
- Age – Mature
- Health – Good
- Useful Life Expectancy (ULE) – 50+ years
- Live Canopy Ratio (LCR) – 100%
- Canopy spread – W 8m, N 10m, E 9m, S 7.5m.

5.8 Discussion

The English oak tree is located next to the southern boundary fence, and property boundary fence of Lot 3. Surface roots radiate out from the trunk and can be seen above ground out to 8m underneath the canopy. Several have degraded due to vehicle damage.

Remaining largely untouched, the tree shows very little signs of pruning, with many small shoots growing out from the trunk creating a dense lower understory.

The trunk of 5m, bifurcates with a sound union between two north and south facing stems. At the top of the stems at 1.5m, multiple stems extend out forming a dense crown that is well balanced. Looking within the canopy the primary and secondary branches show no weak attachments, with no cavities, major dead branches, or hangers. The tree shows balance with good branch architecture. The leaves do show signs of psyllid attack.

5.9 Subject tree – Appendix F

- Species – *Corymbia calophylla* (Marri tree)
- Height – 24m
- Diameter Breast Height (DBH) – 1.62 m taken at 1.4m
- Tree Protection Zone (TPZ) – 15m
- Diameter Root Crown (DRC) – 1.79m
- Structural Root Zone (SRZ) – 4.23m
- Age – Mature
- Health – Good
- Useful Life Expectancy (ULE) – 50+ years
- Live Canopy Ratio (LCR) – 50%
- Canopy spread – N 11.6m, W 10.7m, S 10m, E 12.6m

5.10 Discussion

The mature Marri tree, estimated to be in the region of 100 – 120 years of age, is situated in the middle of the unofficial car parking lot. The ground around the tree is hard compacted gravel, and coffee rock, consequently leading to a shallow root plate.

The above ground root flare extends out to the west, this is to support the heavy western lateral branch, along with a reinforcing rib of compensating wood to counter the lean. Several surface roots have been degraded due to vehicle damage, mainly superficial with the outer bark (periderm) being removed.

The trunk of 2.5m shows no signs of major damage, only minor, probably caused by vehicle impact.

At the top of the trunk 4 stems emerge, evenly spaced growing unopposed. The upper canopy consists of approximately 50% live growth, showing slightly stunted chlorotic leaves, possibly due to heat stress.

A hanging broken branch can be seen in the upper western part of the crown. All primary and secondary branches that were visible from the ground, appeared to be sound.

The vertical stem on the southern side in the upper canopy shows wear marks/damage from something being wrapped around it. The subject tree has a small amount of deadwood, not of any significant weight or size.

There were no observable signs of the fatal Marri canker (*Quambalaria coyercup*).

5.11 Subject tree – Appendix G

- Species – *Corymbia calophylla* (Marri tree)
- Height – 22m
- Diameter Breast Height (DBH) – 1.14m taken at 1.4m
- Tree Protection Zone (TPZ) – 15m
- Diameter Root Crown (DRC) – 1.32m
- Structural Root Zone (SRZ) – 3.72m
- Age – Mature
- Health – Good
- Useful Life Expectancy (ULE) – 50+ years
- Live Canopy Ratio (LCR) – 75%
- Canopy spread – E 12m, N 13.3m, W 10m, S 9.8m

5.12 Discussion

The last tree to be assessed was the Marri tree closest to the church.

A considerable amount of organic matter sits under the tree, which probably accounts for the full, and rich green canopy. The tree, similar to the oak, remains largely unpruned, apart from previous pruning back from hanging over the church boundary to the west. The canopies to the north, east and south hang down to the ground, as the tree is not a convenient place to park for the shopping centre over the road.

No surface roots were found, mainly because they would have been covered by leaf litter.

The trunk stands at 3m, then bifurcates into a northern leaning stem, and a vertical stem. To the west, several limbs have been poorly cut leaving jagged branch stubs and decay as a result.

Sporadic deadwood is present >60mm in the upper canopy.

6. RECOMMENDATIONS

- 6.1
- Any excavation or construction works carried out within the tree protection zones has the potential to damage the tree's root system. The Australian Standard – AS4970-2009 Protection of Trees on a Development Site, is a guide only, and calculates two zones based on the two set criteria: the diameter at breast height x 12, and the diameter just above the root crown $SRZ(m) = (D \times 50)^{0.42} \times 0.64$. The two zones, however, do not consider the species, or the environmental factors influencing root growth. Given the shallow root plates of the two Marri trees (#5 and #6), and the presence of coffee rock, it is recommended that a site investigation be carried out by a surveyor prior to submission, to determine the location, and height of the tree roots in relation to the proposed infrastructure. This will determine the extent of the impact on any structural roots.
 - During machine excavation in either the TPZ or SRZ, it is recommended a spotter, or observer be present to ensure any minor roots (<35mm) uncovered are cleanly cut. Roots >35mm are considered structural and advice should be sought from the project arborist.
 - If excavators are used within the designated SRZ, tree protection in the form of a temporary fence must be used to avoid damage to the tree. The temporary fence must stay in situ until work in that area is to commence. The exact location of the fence needs to be a compromise between the TPZ and SRZ – determined by the project arborist.
 - Any root pruning >35mm should be carried out under the guidance of the project arborist.

- Compaction, or change in grade within these zones will negatively impact the trees. It is recommended supplemental water be used to minimise stress through water loss.
- Monitor upper canopy decline.
- The above is based on the Australian Standard for working around trees on a development site, AS4970-2009.

7. CONCLUSION

- 7.1** In concluding, all 6 trees were assessed on site of which 4 were categorised as significant (due their age and canopy volume) – Ficus, Oak, and 2 Marri trees. Trees to be retained have been given a benchmark health report and can be monitored as work progresses.

Any queries or questions, please do not hesitate to contact me,
Kind regards,

Dave Crispin
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NB. This report is based on the condition of the tree/s at the time of the assessments.

Appendix A



Appendix B



Appendix C



Appendix D







Appendix G

