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4th January 2022

Nick Gillon
City of Melville
Operations Centre,
Bramanti Road, Murdoch 6150

Dear Nick,

RE: ARBORICULTURAL REPORT AT 73 BEAMISH AVENUE, BRENTWOOD

With reference to the above, please find attached the Arboricultural Report on the *Lophostemon confertus* (Queensland Box) situated within the Local Authority verge at the above location.

If you require clarification of any point please contact me.

Yours sincerely

Zana Sheary



Professional Advice • Arboricultural Reports • Digital Tree Mapping Services • Tree Risk Assessments



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Arboricultural Inspection Report for City of Melville

Date inspected: 4th January 2022
Location: 73 Beamish Avenue, Brentwood
Tree species: *Lophostemon confertus* (Queensland Box)

1. Reason for Assessment

- 1.1. In accordance with your instructions, I confirm that you have employed this consultant to carry out an inspection of the *Lophostemon confertus* (Queensland Box) situated within the Local Authority verge at the above location due to concerns regarding the health and structural condition of the tree.
- 1.2. The purpose of this report is to assess the trees' current health and mechanical structural condition, to identify potential hazards in relation to the targets beneath the tree using the Quantified Tree Risk Assessment method and provide recommendations accordingly.
- 1.3. A valuation of the tree using the Helliwell Visual Amenity Method is also required.
- 1.4. This consultant confirms that a site visit to inspect the tree situated at the above location was carried out on the 4th of January 2022.

2. Tree Observations

- 2.1. This early mature *Lophostemon confertus* (Queensland Box) has a clinometer height reading of 12.6m, with a canopy spread of 12.0m north/south & 8.0m east/west and an estimated * trunk diameter of 65cm measured at 1.4 metres above ground level (Figure 1).
- 2.2. The trunk of the tree is located within a turfed verge and is approximately * 3m from the adjacent roadway.

* Unable to access to measure

3. Ground Level Inspection

- 3.1. An examination at ground level found the tree leaning in a northerly direction; however, the root plate appears firm at this time with no evidence of significant root heave or soil displacement (Figure 2).
- 3.2. It was evident that the adjacent dwelling has been demolished and new construction works have begun, therefore it is unknown if any roots have been damaged or severed during these works (Figure 3).
- 3.3. Surface roots were not visible and there was no evidence of damage to the surrounding infrastructure.

4. Trunk Inspection

- 4.1. The trunk of this tree was found to be leaning at an angle of approximately 80 degrees in a northerly direction and extends to height of approximately 2.5m where multiple leaders develop to form into the main canopy.
- 4.2. An inspection of the trunk found it to be mechanically and structurally sound with no areas of bark loss, significant decay or cavity formation.
- 4.3. Main lateral limbs were found to be soundly attached with no evidence of cracking, splitting or separation (Figure 4).

5. Crown Inspection

- 5.1. This tree was found in good health displaying a full coverage of healthy foliage supported by multiple crown leaders.
- 5.2. Second and third order limbs form sound tensile forks without bark inclusion as viewed from ground level.
- 5.3. Previous & periodic pruning consisting of the reduction of limbs held over the adjacent property boundary and roadway were visible on the north-western and south-eastern side of the canopy (Figure 5 & 6).
- 5.4. The canopy encroachment over the property boundary is considered minimal at this time, therefore no further pruning is warranted at this time (Figure 7).
- 5.5. There was no evidence of previous significant limb failure or excessive limb loading at the time of inspection.
- 5.6. The tree holds a small amount of deadwood with an approximate diameter of 60mm on the western side of the crown which is considered a size and weight to represent a hazard to surrounding targets at this time (Figure 8).
- 5.7. The tree displays a healthy vitality with suitable overall foliage coverage, colour and size, and with lateral and apical growth showing adequate extension, indicative of a sound and healthy root system.

6. Quantified Tree Risk Assessment (QTRA) (refer also to the Assessment form accompanying this document)

- 6.1. QTRA assessment is based upon the likelihood of failure within the next 12 months.
- 6.2. For this tree the size of parts 4 (25 - 100mm) was used which means that a stem or branch of that size is considered most likely to fail within the one year period.
- 6.3. Probability of limb failure within the next 12 months was estimated at range 3 or 1 /100 - 1/1,000. This equates with a likelihood of failure up to 1,000 times greater than a sound and healthy first order limb of the same species.
- 6.4. The target value of 3 was considered due to the current target level beneath the tree. Giving a Target range 3; **Occupancy rate of people under the trees 2 - 14 min. per day or 2 – 7 people per hour walking beneath the tree. 48 - 470 vehicles passing beneath the tree per day.** Property value of vehicles or buildings within target range, estimate of \$3,800 - \$38,000 (This is the amount of dollars in damages if branch failure was to occur onto vehicles).

This tree passes QTRA with a Risk of Harm calculation of <1/1,000,000.

7. Helliwell Visual Amenity Valuation

The objectives of the evaluation are to provide a disciplined and objective way of examining a tree, with the most commonly and widely used method of establishing the value of large trees is by the use of formulas. Although there are a number of evaluation methods available, one of the most common methods used in Australia is the **Helliwell System**.

The **Helliwell System** is a system used worldwide for assessing the **Amenity Value** of a tree. This system assesses the contribution each tree makes to the urban forest by evaluating the size of tree, the health and condition, the species and suitability for the location. This method allows us to attach a monetary value to each tree which is considered a valuable community asset to be enjoyed by all.

Seven standard factors are identified for the tree. For each of the factors the tree is given a score of up to 8 points, the scores for all the factors are then multiplied together to give an assessment of the amenity value of the tree, which is then multiplied by the conversion rate.

The value per point rate for the assessment has been assigned at **\$71.13** which has been calculated using the appropriate conversion exchange rates.

Table showing factors and scores for the tree

Factor	Points									
	0	0.5	1	2	3	4	5	6	7	8
Size of tree (Canopy size)	Less than 2m ²	2-5m ²	5-10m ²	10-20m ²	20-30m ²	30-50m ²	50-100m ²	100-150m ²	150-200m ²	over 200m ²
Useful life expectancy	Less than 2 years		2-5 years	5-40 years	40-100 years	100+ years				
Importance of position in the landscape	No importance	Very little importance	Little importance	Some importance	Considerable importance	Great importance				
Presence of other trees		Woodland	Many	Some	Few	None				
Relation to the setting	Totally unsuitable	Moderately unsuitable	Just suitable	Fairly suitable	Very suitable	Particularly suitable				
Form		Ugly	Average or indifferent	Good						
Special factors			None	One	Two Three					

The *Lophostemon confertus* (Queensland Box) in question has been assessed as follows:

Factor	Comments	Score
Size of the tree (Crown area)	108m ²	6
Useful Life Expectancy	5 – 40 years	2
Importance of position in the landscape	Considerable importance (aligned location and species consistent with streetscape)	3
Presence of other trees	Some	2
Relation to the setting	Fairly suitable (widely planted species in urban areas)	2
Form	Average Form	1
Special Factors	None	1

Total score = 6x2x3x2x2x1x1 = 144 x \$71.13 = \$10,242.72

This method of assessment only takes account of the amenity value of a tree and does not attempt to assess any costs which may be incurred in growing or maintaining the tree.

Helliwell valuation for this tree is calculated at \$10,242.72

8. Conclusions

- 8.1. This tree was found to be in good health and a predominantly sound structural condition at time of inspection with an estimated useful life expectancy of up to 40 years.
- 8.2. The tree passes the QTRA with a Risk of Harm of <math><1/1,000,000</math> which is found to represent a broadly acceptable level of risk to persons and property at this time.
- 8.3. The tree is currently valued at \$10,242.72.
- 8.4. This tree provides significant aesthetic and amenity value to the surrounding streetscape and there is no sound arboricultural justification for tree removal or significant canopy reduction pruning works at this time.
- 8.5. It is recommended to carry out minor pruning works and ensure that the tree is adequately watered during the building and construction works period and to re-inspect the tree in 12 months' time to monitor how it is progressing.

9. Recommendations

- 9.1. Selectively prune canopy of deadwood (Figure 8).
- 9.2. Ensure the tree is adequately watered weekly during the summer months due to building and works adjacent the tree. (Minimum of 600 litres per week)
- 9.3. Re-inspect in 12 months.

9. Method of Assessment

This consultant has made recommendations based upon the following criteria:

- The characteristics of the species.
- The existing health and condition of the tree.
- The structural integrity of major limbs.
- The level of risk that the tree represents to property and to persons.
- The aesthetic quality and amenity value that the tree provides to the surrounding streetscape.



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Limitation of liability

Trees can be managed, but they cannot be controlled. To live or work near a tree involves a degree of risk.

This report only covers identifiable defects present at the time of inspection. Paperbark Technologies accepts no responsibility and cannot be held liable for any structural defect or unforeseen event/situation or adverse weather conditions that may occur after the time of inspection. Paperbark Technologies cannot guarantee that the tree/s contained within this report will be structurally sound under all circumstances, and is not able to detect every condition that may possibly lead to the structural failure of a tree. Paperbark Technologies cannot guarantee that the recommendations made will categorically result in the tree being made safe.

Unless specifically mentioned this report will only be concerned with above ground inspections, as such all observations have been visually assessed from ground level. Trees are living organisms and as such cannot be classified as safe under any circumstances. Trees fail in ways that the arboriculture industry does not fully understand. The recommendations are made on the basis of what can be reasonably identified at the time of inspection therefore Paperbark Technologies accepts no liability for any recommendations made. All care has been taken to obtain information from reliable sources, however Paperbark Technologies can neither guarantee nor be responsible for the accuracy of information provided by others.

In the event that reinspection of the tree/s is recommended it is the client's responsibility to make arrangements with Paperbark Technologies.

10. Photos



Figure 1 Displaying the *Lophostemon confertus* located within the verge adjacent no. 73 Beamish Avenue, Brentwood.



Figure 2 Displays the base and lower trunk of the tree which is leaning in a northerly direction.



Figure 3 Displaying the tree in relation to the new construction works.



Figure 4 Displaying the sound main branch attachments.





Figures 5 & 6 Indicating the pruning wounds visible on the north-western and south-eastern side of the canopy.



Figure 7 Displaying the canopy encroachment over the adjacent property which is considered minimal at this time.



Figure 8 Indicating the deadwood to be selectively pruned.

11. Glossary

Branch attachment	The structural union of a lateral limb to the trunk or another branch.
Branch bark ridge	Enlarged area of bark tissue on the upper side of a branch junction; a normal pattern of development.
Branch collar	Wood which forms around a branch attachment, frequently more pronounced below the branch.
Canker	A localised area of dead tissue on a stem or branch, caused by fungal or bacterial organisms.
Cavity	An open wound, characterized by the presence of decay and resulting in a hollow.
Central leader	The main stem of the tree.

Chlorotic	Lacking chlorophyll, typically yellow in colour.
Codominant	Equal in size and relative importance, usually associated with either the trunks/stems or scaffold limbs/branches in the crown.
Crack	Longitudinal split in the stem, involving bark, cambium and xylem; may be vertical and horizontally oriented.
Crotch	The point at which two branches (or branch and leader) meets.
DBH	Diameter breast height. Diameter of the trunk, measured at breast height - 1.4 m above ground level.
Decay	Process of degradation of woody tissues by fungi and bacteria through the decomposition of cellulose and lignin.
Decurrent	Referring to the growth habit of the tree being rounded or spreading.
Defect	Any structural weakness or deformity.
Dieback	Progressive death of twigs and small branches, generally from tips.
Dripline	The width of the crown, as measured by the lateral extent of foliage.
End Weight	The concentration of the foliage at the distal ends of branches.
Epicormic shoot	Shoot that arises from latent or adventitious buds that occur on stems and from poorly pruned branches.
Excurrent	Tree growth habit with pyramidal crown and a central leader.
Flush cut	Pruning technique where both branch and stem tissue are removed; Flush cutting usually is a poor practice.
Fork	Bifurcation of branches, usually equal in size and occurring at a narrow angle.
Girdling roots	Roots that grow around the trunk in a circular manner, constricting other roots or restricting trunk growth.
Growth crack	Longitudinal split in the bark due to normal expansion of cambium and xylem; not considered a defect.
Hanger	Both partially attached (but clearly broken) and unattached, lodged branches in the crown.
Heart rot	Decay in the centre (heartwood) of a branch, trunk, or large root.
Included bark	Pattern of development at branch junctions where bark is turned inward and embedded in a crotch between branches or stems causing a weakened structure.

Lion tailing The removal of excessive number of inner laterals and foliage. This practice displaces foliar weight to the ends of the branches and may result in sunburned bark tissue, water sprouts, reduced branch taper, weakened branch structure and breakage from wind exposure.

Necrotic Localised death of tissue in a living organism.

pH A measure of the acidity or alkalinity of a soil. pH of 7.0 is neutral, acidic soil has a pH less than 7.0, and alkaline soil is greater the 7.0.

Pollard Pruning technique where young trees or branches are initially lopped, then re-lopped on an annual basis without disturbing the callus.

Scaffold limb Primary structural branch of the crown.

Structural Root Zone (SRZ) The area required for tree stability. The SRZ radius is calculated by the diameter at root flare using the following formula $(D \times 50)^{0.42} \times 0.64$.

Stub Short length of branch remaining following pruning or limb failure.

Suppressed Trees which have been overtopped by adjacent trees and whose crown development is restricted from above.

Topping Pruning technique to reduce a trees height, heading of large branches. Generally considered poor practice.

Tree Protection Zone (TPZ) The tree protection zone is the principal means of protecting trees on development sites. It is an area isolated from construction disturbance, so that the tree remains viable. The radius of the TPZ is calculated for each tree by multiplying its DBH x 12.

12. References

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