ARBORICULTURAL ASSESSMENT

Theatre Annexe Poplars – UTAS Inveresk

21st June 2019

For: Tony Long
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1. Terms of Reference

This report was requested by Tony Long, to assess a group of trees growing adjacent to the Theatre Annexe at UTAS Inveresk (fig. 1). A visual inspection was completed from the ground on the 20th of June 2019 to assess their current condition. This report will present those findings, discuss the risk that the trees pose and provide advice for their future management.

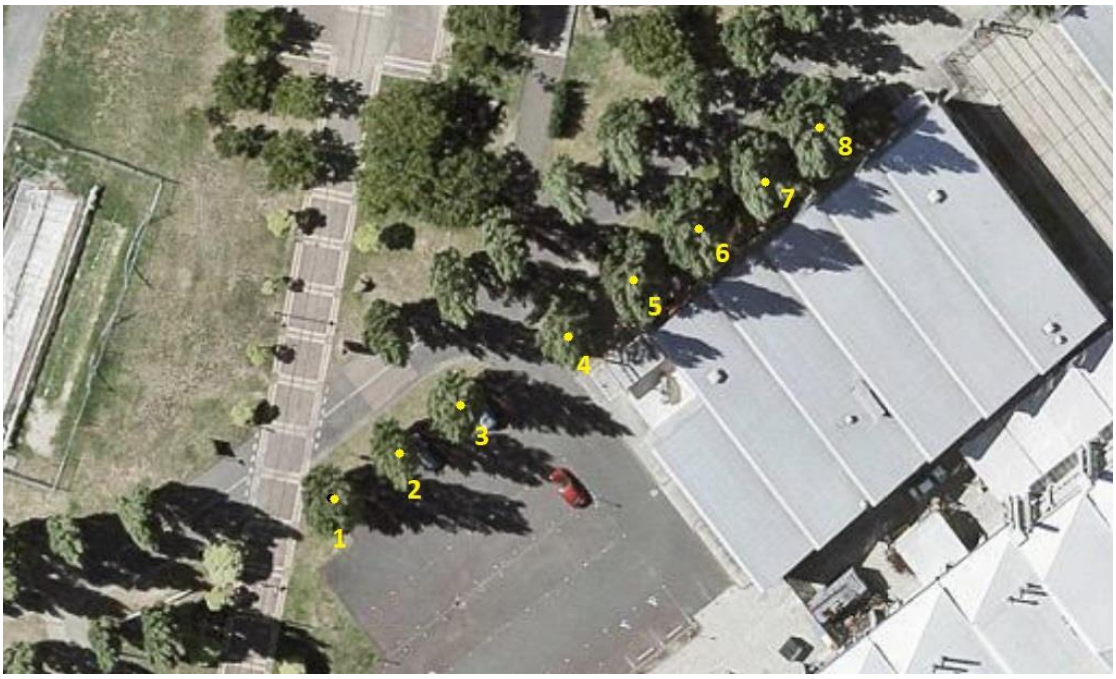

Fig. 1 – an aerial image of the site indicating the trees which are subject to this report. Image courtesy of listmap.

2. Site Findings

A total of eight Lombardy poplars (*Populus nigra* 'Italica') were inspected. These selected trees form part of a longer avenue which extends from the Invermay Road intersection to the rear of the site.

In their current situation all of the trees pose a risk that is considered as low as reasonably practicable and require no maintenance at present. Although the canopy does include some dead wood, it is very small in size and unlikely to cause a significant injury.

Sounding with a soft faced hammer did not reveal any significant amount of decay within the lower trunks which suggests that the likelihood of windthrow is reduced.

In Tasmania, Lombardy poplar was a common planting in an agricultural setting through the mid-1800's to mid-1900's. From experience, this species has a

landscape life expectancy of approximately 100 years. Their ultimate decline comes from their capacity to compartmentalize decay, something this species does not do well.

I expect that the subject trees are between 25 and 40 years of age and may remain in the landscape for approximately another 50 years.

The following table will provide specific information on each tree.

Table 1 – Inspection data.

Tree	Basal Dia.	Dia. At 1.4m	Height	Notes
1	.77m	.60m	17m	No major defects. Minor dead wood. Significantly displacing kerb to north.
2	.52m	.41m	13.5m	No major defects. Minor dead wood. Moderate kerb displacement to north.
3	.57m	.44m	14.5m	No major defects. Minor dead wood. Significant kerb displacement to north and east.
4	.79m	.68m	19m	No major defects. Large surface root to south-west, tree appears stable. Minor dead wood. Displacing kerb to north and west. Evidence of suckering roots 15m south of trunk.
5	.94m	.62m	21m	No major defects. Minor dead wood. Minor kerb displacement.
6	.99m	.70m	20.5m	No Major defects. Minor dead wood. Significant kerb displacement to west.
7	.73m	.61m	19m	No major defects. Minor dead wood. Minor displacement of hard surfaces.
8	1.06m	.76m	21m	No major defects. Minor dead wood. Minor displacement of hard surfaces.

3. Risk Assessment

Risk was assessed using the Quantified Tree Risk Assessment method[1]. In this instance it is expected that the targets around this tree are weather affected, being reduced in strong wind events, when trees are at a higher probability of failure.

I expect that the most likely failure candidate is small dead wood falling out towards parked vehicles and also over pedestrian access

The following table will evaluate the risk posed to people and potential to damage property.

[1] For further information please visit www.qtra.co.uk

Table 2 – Risk Assessment

Tree Part	Target	Size	Probability of Failure	Risk Index	Risk of Harm
Dead wood	Vehicles $4000- $400	Fixed Range	(1/100 - 1/1000)	1/300,000	Tolerable
Dead wood	Pedestrians 72/hr – 8/hr	100mm – 25mm	(1/100 - 1/1000)	1/500,000	Tolerable

The assessment reveals that these trees currently pose a tolerable risk. The cost to reduce the risk to a broadly acceptable level will outweigh the benefit gained and QTRA deem that no work is required.

4. Trees and development

It is expected that these trees may be subject to development. The Australian Standard 4970 – 2009 *Protection of trees on development sites* gives clear direction on how to avoid critical damage occurring to trees prior to, during and post works.

As we know that Lombardy poplar does not compartmentalise damage well, the utmost care must be taken to avoid root damage. If these roots experience damage, it is likely that it could manifest in decay forming which may increase the potential for the trees to be windthrown.

Although only a guide, the included table will outline the structural root zone (SRZ) and tree protection zone (TPZ) of each specimen.

Table 3 – Tree protection zone measurements

Tree	SRZ	TPZ	TPZ Area
1	2.97m	7.2m	163m^2
2	2.51m	4.92m	76m^2
3	2.61m	5.28m	88m^2
4	3.0m	8.16m	209m^2
5	3.22m	7.44m	174m^2
6	3.3m	8.4m	222m^2
7	2.9m	7.32m	168m^2
8	3.39m	9.12m	261m^2

The structural root zone is an area that is critical for tree stability and no works are to be completed in this zone. More leniency exists within the tree protection zone and a 10% incursion is acceptable without intervention from an arborist. Although minor incursions can be tolerated, I would be extremely cautious when working with poplars and their roots.

5. Discussion

Although I have not seen the engineering drawings for the proposed works, I suggest that trees 1 – 4 may be significantly impacted due to the proximity of the proposed building and Indigenous cultural garden.

Lombardy poplar can be challenging to manage in a confined area due to their advantageous root system. It is already evident how the roots are breaking the concrete kerbs and bitumen roads. This is likely to continue and may impact the new elements of the proposed design. Further compounding this is the many suckers that will develop where these roots reach the upper soil profile. Unfortunately, there is no herbicides that are registered to control this issue.

Debris accumulation in the saw tooth gutters has been raised as an issue, particularly trees 5 – 8. As the trees are only 7m from the building and extend approximately 15m above the roofline, it is likely that this issue will continue. As the building(s) are located on the leeward side of the trees, the greatest amount of foliage will continue to dump on these structures. Although the trees could be reduced in size to limit this, the heading cuts would be quickly compromised by decay, dramatically reducing their landscape life expectancy.

6. Conclusion

- In their current situation, the Lombardy poplars do not pose an unacceptable risk and require no maintenance at present.
- The trees are expected to have a landscape life expectancy of approximately a further 50 years.
- The proposed development may result in root damage and has the potential to impact their health and structure. This may result in a change to the trees risk rating.
- Ongoing infrastructure damage will continue as long as the trees are growing in this hard landscape.

Yours sincerely,

Alister Hodgman

Appendix 1 – QTRA Tolerability of risk framework

Thresholds	Description	Action
	Unacceptable Risks will not ordinarily be tolerated	• Control the risk
1/1 000	**Unacceptable** (where imposed on others) Risks will not ordinarily be tolerated	• Control the risk • Review the risk
	Tolerable (by agreement) Risks may be tolerated if those exposed to the risk accept it, or the tree has exceptional value	• Control the risk unless there is broad stakeholder agreement to tolerate it, or the tree has exceptional value • Review the risk
1/10 000	**Tolerable** (where imposed on others) Risks are tolerable if ALARP	• Assess costs and benefits of risk control • Control the risk only where a significant benefit might be achieved at reasonable cost • Review the risk
1/1 000 000	**Broadly Acceptable** Risk is already ALARP	• No action currently required • Review the risk

Appendix 2 – Selected Images

Trees 1 – 4 (right to left). All trees are bounded by hard surfaces which are beginning to crack as a result of large root systems.

Trees 5 - 8 (foreground to background). Note the distance to, and height above the building. Due to the design of the gutter system, there are no practical solutions to avoid their constant blocking with tree debris in Autumn.

The damage that has occurred through root development - tree 3 (top left) Tree 1 (top right). Between tree 5 and 6 (above).