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Arboricultural Impact Assessment (AIA)

Location: 17 Playfair Road, North Curl Curl NSW 2099

Client: Pos Simson simsonp@bigpond.com

Report date: 26.3.2018

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1. Executive Summary

- 1.1 This AIA has been commissioned to assess the trees on the subject site for a DA application to subdivide the land. One tree is impacted - the *Eucalyptus punctata* or grey gum close to the northern boundary at the rear of 17 Play Road, North Curl Curl (refer Figure 1).
- 1.2 It has been prepared to comply with AS 4970-2009, Protection of trees on development sites.
- 1.3 The following documents were made available to assist in the preparation of this report:
- Veris's Survey DETL-001 / D Detail and Level Survey
 - Cardno's Civils Works CC-001 / 2 Stormwater Plan
- 1.4 The proposed subdivision shows the installation of a stormwater pipe along part of the northern boundary adjacent to the grey gum.
- 1.5 Since the initial Survey Plan (11.1.16) was issued, Standfast Tree Services have provided arborist advice and carried out removals, commencing in July 2016 when a *Glochidion ferdinandi* or Sydney cheese tree was removed. It had failed, revealing a large area of decay in its base – the home of too many Christmas beetle larvae (refer Figures 2 and 3).
- 1.6 At this time, the poor condition of the grey gum was noted

2. Findings

- 2.1 A site visit was carried out on the morning of 14.3.2018 for the purposes of this report. The grey gum was assessed and measurements and photos were taken.
- 2.2 Table 1 (below) shows the tree data, recorded in approximate metres (refer definition of terms in Appendix 1, Terminology).

Table 1 – Tree data

#	DBH	Spread	Height	Health	Condition	Age	Comments
Grey gum	0.35	6	12	VG	P	M	Large canker on stem and other small cankers, cavities forming in previous pruning scars, recent branch failure

- 2.3 Table 2 (below) shows the Tree Protection Zone (TPZ) and the Structural Root Zone (SRZ) data, recorded in approximate metres (refer definition of terms in Appendix 1, Terminology).

Table 2 – TPZ and SRZ

#	DBH	TPZ radius	DAB	SRZ radius	Comments
Grey gum	0.35	4.2	0.5	2.47	The trench excavated to install the stormwater will be 1m away from the base of the grey gum and will be within the SRZ

- 2.4 There is a large canker¹ on the main stem, approximately 3m above ground level (refer Figure 4). Exposed wood occupies approximately half the trunk diameter.
- 2.5 There are other small cankers visible on the tree's branches throughout the canopy
- 2.6 The site of a recent branch failure (approximately 80mm diameter), some 4m above the ground shows the failure point occurring at a canker sited near the base of the branch (refer Figure 5).
- 2.7 Two old pruning sites near the base of the grey gum do not have new cambium and bark cover to the exposed wood - most likely caused by fungi that have invaded the sites. Decay has begun to take hold (refer Figure 6).

3. Conclusions

- 3.1 The circular area of the *E. punctata*'s SRZ (radius approximately 2.47m), an area set aside to protect tree stability,² will be breached by excavation to install the stormwater pipe in a trench approximately 1m away from the base of the tree
- 3.2 Minor encroachments into the TPZ can be allowed but regarding the SRZ, AS 4970-2009 says '*The woody root growth and soil cohesion in this area are necessary to hold the tree upright.*'
- 3.3 Cutting the trench approximately 1m away from the grey gum will cut through roots that stabilise the tree as well as its absorbing roots. '*Roots of most plants, including large trees, grow primarily in the top meter (3ft) of soil.*' (Richard W. Harris, 2004).

4. Recommendations

- 4.1 The root system close to the base of the grey gum would be exposed and cut during excavation work for the proposed stormwater pipe resulting in destabilisation and loss of absorbing roots.
- 4.2 As the tree has deteriorated further since July 2016, is under attack from canker fungi and is in poor condition it should be removed.

¹ Appendix 1, Terminology

² AS 4970-2009, Protection of trees on development sites

Bibliography

AS 4970-2009, Protection of trees on development sites (2009).

Breloer, C. M. (1994). Field Guide for visual tree assessment (VTA). *Arboriculture Journal*, 18, 1-23.

Richard W. Harris, J. R. (2004). *Arboriculture: integrated management of landscape trees, shrubs, and vines* (4th ed.).



Figure 1: *Eucalyptus punctata* or grey gum

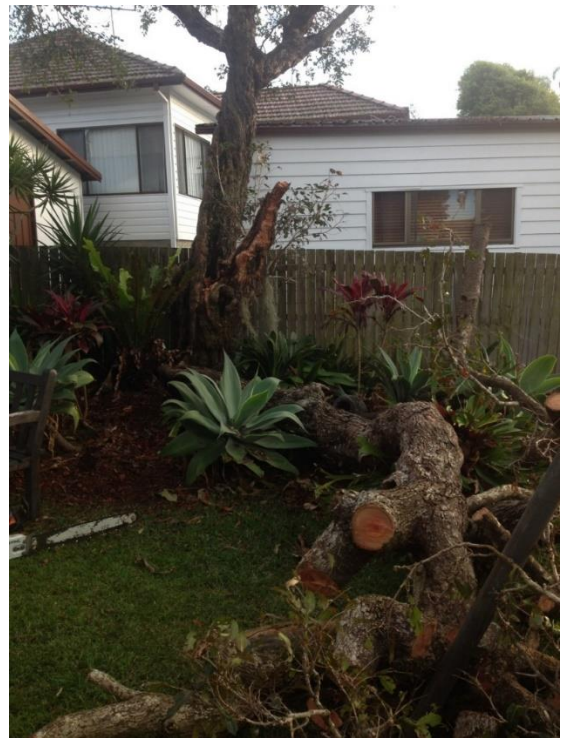


Figure2: Failed cheese tree July 2016



Figure 3: Decay in base of cheese tree, home to Christmas beetle larvae



Figure 4: Canker on main stem,
about 3m above ground



Figure 5: A canker was the point of failure for a branch which recently fell



Figure 6: Old pruning scar now site of canker and decay

Appendix 1 - Terminology

Age Classes:

Juvenile refers to a well-established but young tree (J).

Semi Mature refers to a tree at growth stages between juvenile and full size (SM).

Mature refers to a full-sized tree with some capacity for further growth (M).

Over Mature refers to a tree about to enter decline or already declining (OM).

Health:

Refers to a tree's vigour and is assessed by looking at crown density, leaf colour, presence of epicormic shoots and degree of dieback. Classes are Very Good (VG) Good (G) Poor (P) Very Poor, declining (VP).

Condition:

The state of the scaffold (trunk and major branches) is assessed. Defects such as cavities, included branches and trunk unions and the fruiting body of a fungus would be indicative of compromised condition. Classes are Very Good (VG) Good (G) Poor (P) Very Poor (VP).

Note: Trees may be found to be in VG health but in VP condition and vice versa

DBH:

Diameter at Breast Height refers to the tree trunk diameter measured at breast height or 1.4 metres above ground level.

DAB:

Diameter Above the Buttress refers to the tree trunk diameter measured above the root buttress and is used to calculate the radius of the SRZ.

VTA:

Visual Tree Assessment³ – a systematic inspection usually conducted from ground level looking for defects in a tree. Further investigation would be carried out if necessary by aerial

¹Breloer, C. M. & H., 1994. Field Guide for visual tree assessment (VTA). *Arboriculture Journal*, Volume 18, pp. 1-23.

inspection or with specialised equipment to test the extent of a defect and the implications for the tree. A VTA is the accepted starting point and often the end point for assessing trees for defects.

Defect:

Tree defects are injuries, growth patterns, decay, or other conditions that reduce a tree's structural strength. While a defect identifies the point at which a tree may fail or why it may fail it does not mean the tree will fail. Defects should be tested until their full extent is established.

Hazard:

Something that has the potential to cause harm or loss; this does not mean that it will cause harm or is likely to cause harm.

Note: all trees are hazardous.

Risk:

The likelihood of a particular harm or loss occurring (Likelihood x Consequence). In most cases risk associated with trees is so small that it can be ignored or small enough that no reasonable practicable solution exists to reduce risk. Consequence refers to the target that would be affected by tree or branch failure.

TPZ:⁴

Tree Protection Zone The radius of the TPZ is calculated for each tree by multiplying the DBH x 12. To establish the TPZ this radius is measured from the centre of the stem at ground level and it is an area that is to be isolated from construction disturbance. Any encroachment into the TPZ of more than 10% is considered to be a major encroachment.

SRZ:⁵

Structural Root Zone The radius of the SRZ is calculated using the following formula:

$r(SRZ) = (D \times 50)^{0.42} \times 0.64$ where D is the DAB measured in metres. It is the area around a tree that is required for tree stability and is usually applied on constructions sites after there has been a major encroachment of the TPZ.

$t/R < 0.30$ ⁶

t = width of sound wood, R = radius of the trunk. Regarded as the threshold for action when the ratio of the width of sound wood to the radius of the trunk is less than 0.3 for a cavity or decay in the stem of a tree.

Canker:

A localised area of exposed wood with no bark or cambium on the trunk or a branch caused by invading fungi. The bark and cambium does not grow back and the wood can become brittle and may be the point at which the trunk or branch fails⁴.

⁴ AS 4970-2009, Protection of trees on development sites

⁵ AS 4970-2009, Protection of trees on development sites

⁶ Harris, C. a. M., 2004. *Arboriculture, Integrated Management of Landscape Trees, Shrubs, and Vines*. 4th ed. Upper Saddle River: Pearson Education, Inc.