

# ARBORICULTURAL IMPACT REPORT

51 KALANG ROAD  
ELANORA HEIGHTS NSW

PREPARED FOR STEVE DJOGO

12<sup>TH</sup> MAY 2021



Prepared by:  
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## 1. BACKGROUND

Landscape Matrix Pty Ltd has been engaged by Steve Djogo to prepare an Arboricultural Impact Report in respect to a tree at 51 Kalang Road Elanora Heights (the site). The tree is potentially impacted by proposed development works at the site.

The tree is located on the nature strip frontage of the site. The location and context of the tree is illustrated in the photograph on the cover page of this report.

This report has been prepared by Guy Paroissien a Director of Landscape Matrix Pty Ltd.

The site was inspected on 9<sup>th</sup> July 2020. The assessment of the tree is based upon a visual inspection of the tree from ground level using elements of the Visual Tree Assessment (VTA) method described by Mattheck & Breloer (1994). The Useful Life Expectancy (ULE) category identified in the report follows Barrell (1996).

The visual inspection included examination of the tree's dimensions, foliage density and foliage health, form, structure, structural condition, overall health and vigour and landscape significance. The inspection was limited to visual inspection of the tree without dissection, probing or coring. No aerial inspection of the tree was carried out and the assessment did not include any woody tissue testing or subterranean root investigation.

The tree height and canopy spread were estimated and are expressed in metres and the tree diameters at breast height (DBH) were measured with a standard metal tape measure at approximately 1.4 metres above ground level and are expressed in millimetres.

Measurements from the tree referred to in this report are to be taken as if measured from the centre of the tree's trunk.

## 2. TREE ASSESSED FOR THIS REPORT

One Smooth Barked Apple/Sydney Red Gum has been assessed in preparing this report. The tree is located on the nature strip frontage of the site.

### 2.1 Observations regarding the tree

The tree is a mature, single trunked *Angophora costata* (Smooth Barked Apple, Sydney Red Gum) approx. 22 metres in height with a canopy spread of 16 x 18 metres and a diameter at breast height (DBH) of 730mm. The trunk diameter above the root flare is 900mm.

The tree has an upright trunk lean and the majority of its past canopy development has been to the west due to suppression from adjacent trees to the east. Lower branches from the tree have been pruned in the past to 3 metres above ground level and lower/mid canopy branches have been pruned on the north side for OH wire clearance.

At the time of inspection the tree was of good health and vigour with no evidence of recent dieback. There was no visual evidence of significant pest or disease.

The tree currently appears stable with no evidence of instability (such as cracked and lifted soil in the structural root zone area). The tree exhibits fair branch attachment with some evidence of past branch failures (small diameter branches, possibly dead wood failures).

The tree has 3 codominant leaders from 2.5 metres with some evidence of poor attachment at the junction – the junction is not considered at risk of failure in the short term. There was no visual evidence of other poorly attached branches considered at risk of failure in the short term.

There is evidence of past tissue damage on the lower trunk on the south side – from visual inspection the damage appears superficial and the trunk appears sound at the location of the damage. A medium sized exposed woody root is located on the eastern side of the trunk.

The tree is of high visual significance as viewed from the street frontage and within the site and is of high landscape significance. Taking into account its location on the road reservation and adjacent infrastructure it is concluded the tree has a medium Useful Life Expectancy (ULE), i.e. 15 to 40 years.

## **2.2 Observations regarding the site conditions in the vicinity of the tree**

The tree is located on the nature strip frontage of the site. There is a combination of the following within the tree's identified tree protection zone (TPZ):

- The kerb and gutter and formed roadway of Kalang Road;
- The existing concrete footpath on the nature strip;
- A power pole adjacent to the tree;
- The existing landscape areas and lawn areas in the front garden of the site;
- The existing driveway access to the site;
- Other mature trees in the front setback of the site;
- A small level change and associated low retaining wall; and
- An underground services pit.

Observations regarding the tree and site conditions are illustrated in photographs 1 to 6 in Appendix A.

## **3. IDENTIFICATION OF SETBACKS FOR THE TREE**

A number of methods to determine the likely extent of root zones and appropriate setbacks for tree root protection zones for trees on development sites have been developed in the past.

The key criteria used in determining setbacks is the tree's trunk diameter at breast height (DBH) in conjunction with other factors including the sensitivity of the species in

question to environmental disturbance/change, the age of the tree and the tree's health and vigour at the time.

Harris et al (2004) provide formulae for calculating tree protection zones based on the above criteria and modified from the 1991 British Standard for protection of trees on construction sites (BS 5837:1991). The 2005 version of the British Standard (BS 5837:2005) recommends a radius of 12 times the tree's DBH. For multi trunked trees BS 5837:2005 recommends a setback of 10 times the basal trunk diameter.

The Australian Standard *AS4970-2009 Protection of Trees on development Sites* also identifies a 'Tree Protection Zone' (TPZ) of 12 times the tree's DBH. The Australian Standard also provides a formula for calculating the "Structural Root Zone" of trees on development sites.

Using the formulae provided in *AS4970-2009* the tree protection zone for the tree is calculated as 8.8 metres and its structural root zone is calculated as 3.2 metres.

The tree protection zone identified above is the identified setback from the tree where disturbance (e.g. soil level changes, compaction, excavation etc.) should be minimised to reduce potential impacts on the long-term health of the tree.

Preferably, no more than 10% of the tree protection zone should be disturbed with compensation made by extension of other areas of the TPZ to compensate for the area(s) disturbed.

Where greater than 10% of the tree protection zone is potentially disturbed the tree's viability needs to be investigated and demonstrated by the project arborist.

The structural root zone is the area required for stability and where disturbance of any sort should be avoided.

#### **4. POTENTIAL IMPACTS TO THE TREE**

The impacts of the proposal are based on the following Plans:

- Basement Plan prepared by Fortney and Grant Architecture dated 5/5/2021 and identified as Drawing Number DA.02, Issue A; and
- Ground Floor Calculations Plan prepared by Fortney and Grant Architecture dated 5/5/2021 and identified as Drawing Number DA.03, Issue A.

The extent of potential impacts to the tree have been rated using the following guideline:

- 0% of root zone impacted – no impact of significance
- 0 to 10% of TPZ impacted – low level of impact
- 10 to 15% of TPZ impacted – low to moderate level of impact
- 15 to 20% of TPZ impacted – moderate level of impact
- 20 to 25% of TPZ impacted – moderate to high level of impact

25 to 35% of TPZ impacted – high level of impact  
>35% of TPZ impacted – significant level of impact

The proposed basement is located 4 metres from the tree at the closest point and the ground floor is located in the same footprint 4 metres from the tree – allowing for 300mm over-excavation these structures are calculated to encroach within 33.76m<sup>2</sup> or 14.01% of the tree's identified TPZ – this is a low to moderate level of impact and within an acceptable threshold.

Due to the proximity of the excavation to the tree's identified SRZ and the canopy bias to the west it is recommended hand excavation be undertaken along the line of the proposed excavation to ensure that important structural roots will not be affected by the works.

Existing soil levels within the tree's TPZ outside of the impacted area will need to be retained and the surface protected during works through a combination of tree protection fencing and ground protection where construction access is required.

The fencing and ground protection will need to be in accordance with Figure 3 (fencing) and Figure 4 (ground protection) of *AS4970-2009 Protection of trees on development sites*.

The TPZ calculations referred to above were made using scale drawings of the trees' identified tree protection zones (TPZ) in a CAD program (TurboCAD®) with potentially affected areas added to the drawing. The area of potential impact was converted to a percentage of TPZ using a spreadsheet (Microsoft Excel®).

## 5. CONCLUSION

The tree assessed for this report is mature, single trunked *Angophora costata* (Smooth Barked Apple, Sydney Red Gum) approx. 22 metres in height with a canopy spread of 16 x 18 metres and a DBH of 730mm. The tree is located on the nature strip frontage of the site.

At the time of inspection the tree was of good health and vigour with no evidence of recent dieback. There was no visual evidence of significant pest or disease.

The tree is of high visual significance as viewed from the street frontage and within the site and is of high landscape significance. Taking into account its location on the road reservation and adjacent infrastructure it is concluded the tree has a medium Useful Life Expectancy (ULE), i.e. 15 to 40 years.

The proposed works are calculated to encroach within 14.01% of the tree's identified TPZ – this is a low to moderate level of impact and within an acceptable threshold.

Due to the proximity of the excavation to the tree's identified SRZ and the canopy bias to the west it is recommended hand excavation be undertaken along the line of the proposed excavation to ensure that important structural roots will not be affected by the works.

Existing soil levels within the tree's TPZ outside of the impacted area will need to be retained and the surface protected during works through a combination of tree protection fencing and ground protection where construction access is required in accordance with Figures 3 and 4 of *AS4970-2009 Protection of trees on development sites*.

It is recommended a specific tree protection plan be prepared to identify the locations of fencing and ground protection (and other measures) to ensure the impacts to the tree are minimised.



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12<sup>th</sup> May 2021

## **BIBLIOGRAPHY/REFERENCES**

Australian Standards Association (2007) AS 4373- 2007 - Australian Standard 4373-2007 'Pruning of Amenity Trees'.

Australian Standards Association (2009) AS 4790- 2009 - *Australian Standard 4790-2009 'Protection of trees on development sites'*.

Fortney and Grant Architecture (2021) - Basement Plan prepared by Fortney and Grant Architecture dated 5/5/2021 and identified as Drawing Number DA.02, Issue A.

Fortney and Grant Architecture (2021) - Ground Floor Calculations Plan prepared by Fortney and Grant Architecture dated 5/5/2021 and identified as Drawing Number DA.03, Issue A.

Harris et al (2004). Harris RW, Clark JR, Matheny NP: Arboriculture – Integrated Management of Landscape Trees Shrubs and Vines 4<sup>TH</sup> Edition. Prentice Hall, New Jersey 07458.

Mattheck & Breloer (1994) – The Body Language of Trees – a handbook for failure analysis - Research for Amenity Trees No. 4. Published by TSO (The Stationary Office) Norwich UK.



## APPENDIX A



Photograph 1: Illustrating the tree as viewed from outside the site.



Photograph 2: Illustrating existing structures in the tree's TPZ.





Photograph 3: Illustrating the underground services pit.



Photograph 4: Illustrating the codominant leaders from 2.5 metres.





Photograph 5: Illustrating the canopy bias to the west.



Photograph 6: Illustrating the exposed wood root growing into the site.