

ARBORICULTURAL IMPACT STATEMENT

On: Tree Specimens at tree inspection at
123 Rickard Rd, Nth Narrabeen NSW
2101

TREEHAVEN ENVIRONSCAPES.

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For. Mr. & Mrs. Wright

On. 27/2/2021

TABLE OF CONTENTS

1	Introduction.....	Pg 3
2	Site Description.....	Pg 4
3	Methodology.....	Pg 5
4	Description of Trees.....	Pg 5
5.	Discussion.....	Pg 6
6.	Conclusions and Recommendations.....	Pg 7
7.	The Author's Qualifications and Experience.....	Pg 8
8	References.....	Pg 9
	Appendix 1a- Table of Trees on site.....	Pg 10
	Appendix 1b. Figures 2 to 10 Photos of Trees on Site.....	Pg 11
	Appendix 2a, 2b & 2c –Plans of site showing position of trees in relation to the proposed extension and landscaping.....	Pg 17
	Appendix 3 SULE ratings schedule.....	Pg 20

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Whilst every attempt is made to be accurate and factual with regard to references used in this document no liability is assumed for the work done by others.

Please note that trees are living organisms which are subject to natural growth, change and also to 'Acts of God' such as storms and lightning strikes. This report contains empirical data gathered on the day for the purpose of tree assessment in terms of their health and long term viability. Given the transitory nature of living things such data only gives a 'snapshot' of the organism on the day and cannot be applied to future events, 'Acts of God', mechanical, pathogen attack or chemical damage to the organism after that time.

The information supplied herein is given in good faith and to the best available scientific and industry standards which apply to the Author's level of education and experience.

1 INTRODUCTION

1.1 The property at 123 Rickard Road North Narrabeen NSW 2101 henceforth referred to as the Site, is owned by Mr. & Mrs. Wright who are proposing to renovate and extend their existing dwelling (See Appendix 2a & 2b) and re landscape the area surrounding the new additions (See Appendix 2c).

1.2 The extension will directly affect two trees, a *Plumeria* (undesignated) and a *Jacaranda mimosifolia* (Tree **T1**).
Also investigated in this report is an *Araucaria cunninghamii* (Tree **T2**) which is of concern due to health and safety for the owners and occupants of the Site and surrounding properties.

1.3 The Site is within the jurisdiction of The Northern Beaches Council (NBC) which has in place Tree Management Guidelines (TMG) which prohibits the pruning, removal, ringbarking, topping, lopping, injury or wilful destruction of trees over 5m in height without Council's written consent.

For the removal or major pruning of trees covered by the TMG, THC requires an Arborist report whose purpose is to examine and appraise them prior to, and post any development of the site.

Consequently Mr. and Mrs. Wright have engaged Mr. Stephen McLoughlin of Treehaven Environments to visit the site and examine 2 specimens which will be affected by the development and prepare this report.

1.4 This report contains empirical data collected regarding the tree specimens supported by digital photos, a Discussion regarding the relevance of the specimens and presents Conclusions and Recommendations as to the future treatment of the trees.

Tables and plans relating to this report are included as Appendix 1& 2 at the end of the document.

This document pays heed to NBC's TMGs and utilizes the Australian Standards 4790-2009 *Trees on development sites* and 4373-2007 *Pruning of Amenity Trees* as a set of guiding principles.

2. SITE DESCRIPTION

2.1 The land on which the trees were sited is a rectangular shaped block with a North Easterly facing slope on a steep gradient which has been benched into a series of terraces and the property is located within is in the South Creek Catchment to its North see Fig 1).

2.2 At the time of my inspection there was an existing dwelling on the Site with a small shed to the North West of the existing dwelling (See Appendix 2a).

2.3 The 2 trees are designated **T1** & **T2** are located in the rear yard to the South West of the Existing dwelling (See Fig. 1 below).

2.4 There are several smaller trees and shrubs on the Site which are less than 5m in height which are not subjected to the Tree Management Guidelines.



Fig 1. Aerial view of Site with subject trees outlined in Red.

3. METHODOLOGY.

3.1 The tree specimens were visually assessed using non-destructive means by employing the Visual Tree Assessment (VTA) as developed by Mattek and Broeler (2006).

The information gathered was used to
Calculate Tree protection Zones (TPZ) and Structural Root Zones (SRZ) with reference to the Australian Standard (AS) 4970-2009 and
Provide a qualitative assessment of the tree utilizing Jeremy Barrell's Safe Usable Life Expectancy (SULE) of which a table outlining the different categories appears in Appendix 3 of this document.

3.2 No invasive procedures, such as coring or drilling, were used in the examination of the specimen.

3.3 Structural Root Zone (SRZ) calculations provided in section 3.3.5 of Australian Standard 4970 -2010 are given as

$$SRZ = (D \times 50)^{0.42} \times 0.64$$

Where D is the diameter of the tree as measured just above the root buttress and the result is the radius of a circle enclosing the tree. This is referred to as the tree's Diameter at Ground Level (DGH) in the table in Appendix 1.

Also section 3.2 Tree Protection Zones (TPZ) is given as,

$$TPZ = DBH \times 12$$

Where DBH is the diameter of the trunk of the trunk measured at 1.4m from the ground.

In the case of trees which have multiple stems at 1.4m from the ground, DBH was determined by using the following formula as advised in AS4970-2009

$$\text{Total DBH} = \sqrt{(DBH1)^2 + (DBH2)^2 + (DBH3)^2}$$

3.4 The position of the trees has been determined by survey plans as forwarded from Idraft Plans.

3.5 Australian Standard 4970-2009 advises that a Major Encroachment is greater than 10% of the TPZ and a Minor Encroachment is less than 10% of the TPZ.

4. DESCRIPTION OF THE TREES (See Appendix 1).

- 4.1 Tree T1 is a *Jacaranda mimosifolia* or simply 'Jacaranda' which is an exotic tree common to Brazil that had been planted in the rear yard to the South West of the existing dwelling (See Figs. 2, 3, 4, & 5). The tree has a significant defect in its formation where there are co dominant stems which adjoin in a 'V' shaped union at ground level (see Fig. 10). There is also strong bias in its crown to the East which overhangs the existing dwelling. Also noted is the presence of a *Ficus* sapling growing in the cleft formed by the stem junction of the *Jacaranda* stems.

Impact of the Development:

This specimen will be subjected to a Major Encroachment into its TPZ from the new upper floor which will necessitate the removal of one limb which overhangs the existing dwelling and forms a constraint for development to proceed as planned (See Appendix 2b & 2c).

- 4.2 Tree T2 is an *Araucaria cunninghamii* or 'Hoop Pine' which is a native conifer that had been planted up slope near a small shed to the West of the existing dwelling (See Figs. 6 & 7). The tree has significant defects in the form of four multiple stems which adjoin in 'V' shaped stem junctions (See Figs. 3, 6 & 7).

Impact of the Development.

This tree won't be directly affected by the proposed development and is being considered for removal due to health and safety concerns in relation to a significant defect in its upper canopy (See Fig. 6) and the overall stability of the tree given that it is growing on a step slope and would have formed an asymmetric root plate (See Fig. 7).

5. DISCUSSION

- 5.1 None of the trees on or near the Site are endemic nor naturally occurring remnant forest. All the trees in the vicinity of the proposed development are planted specimens.

- 5.2 Tree T1 has co dominant stems at ground level which has a 'V' shaped stem junction with included bark in the union (See Fig. 10).

In this regard "Codominant stems tend to fail much more often than others, especially in storms"¹. Also "Co-dominant stems and narrow "V" shaped attachments often are weakly attached. These are the points at which failure will occur when the tree is under stress from high winds"²,

This is considered to be a defect in that the stems can move differentially and fail especially during high wind events and the included bark precludes the tree from forming a strong stem attachment (Matteck & Breloer 2006).

¹ University of Massachusetts.

² New York State Department of Environmental Conservation

Exacerbating this situation there is a *Ficus* tree sapling growing in the cradle of the union which has the potential to expand and split the main stem of the *Jacaranda* (See Figure 10).

Nonetheless Mr. Wright advises me that they wish to retain the *Jacaranda* which can be achieved by the removal of one limb on the Tree's North East (See Figs.8 & 9).

5.3 Tree **T2** has a formative defect where the main stem has divided into 4 smaller stems which adjoin in 'V' shaped unions at the junction. As in the case of **T1** this is a significant defect which can lead to stem failure as the stems become heavier over time.

5.4 Further to this both of the subject trees have asymmetric rootplates where it is assumed that the bulk of the roots, in particular structural roots that are responsible for the stability of the tree, would be located up slope and be in tension counteracting for the lack of roots downslope.

Over time, and as the main stems of these trees become heavier, there is a potential for the main stems to fail and fall onto anything within their respective target areas. This includes neighbouring properties.

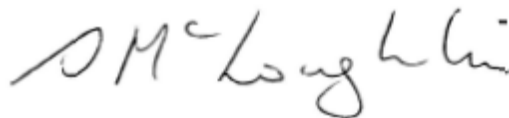
6. CONCLUSIONS & RECOMENDATIONS

6.1 It is recommended that one **T1** retained with the removal of one limb as depicted in Figs 8 & 9.

6.2 It is further recommended that **T2** be removed from the Site due to structural defects and a potential for personal injury and property damage from falling limbs and stems.

6.2 There are no other large trees located within 5m of the proposed dwelling extension (See Appendix 2b). Some of the new landscaping will be in the vicinity of neighbouring trees which is anticipated to form a Minor Encroachment within their respective TPZs (See Appendix 2c).

Yours sincerely



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7. THE AUTHOR'S QUALIFICATIONS AND EXPERIENCE.

Stephen McLoughlin obtained a Horticultural Certificate (1982) with Arboriculture as the third year elective whilst an employee of 10 years service with Baulkham Hills Shire Council (BHSC) now The Hills Council. Most of this time employed in the Council's Parks and Gardens and street tree plantings and, later, managing the Council's Nursery. This was augmented with a Bush Regeneration Certificate (1987) where he studied native plant communities, the means necessary to protect and restore them and the identification and eradication of weed species. Additional to this he obtained a Bachelor of Environmental Science Degree (1997) involving the study of natural environments, Ecology, data collection, analysis and documentation, report writing as well studies in relevant Common Law, current Environmental and Heritage Legislation. Since obtaining his degree Stephen writes reports on a regular basis covering Environmental, Heritage and Horticultural / Arboricultural subjects.

Further to this he upgraded his qualifications to that of Arborist Qualification 5 (AQF5) having completed the Associate Diploma of Horticulture / Arboriculture, a standard of qualification which is currently expected by many Local Government and statutory bodies.

Stephen also has a current NSW Structural Landscaper's Licence and has been involved in regular landscape construction works as both Principle and Sub Contractor on many Public, Private and Commercial ventures since commencing his contracting business in 1989. He has many garden and estate maintenance contracts, and Bush Regeneration projects involving large scale properties with many trees under his care, including the providing of advice and practical solutions to the issues of Bush Fire Asset Protection Zones.

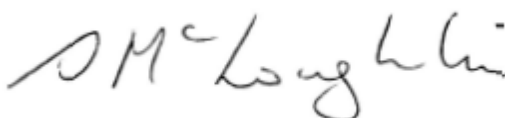
Consequently Stephen has well grounded experience in both Public and Private tree plantings, the care and maintenance of them as well as hands on experience of what occurs on construction sites and the results of mechanical disturbance to trees on such sites.

The Author is also an accredited Root Barrier Australia ® installer and has been involved with many excavations involving tree roots.

In 2014 Stephen completed his Diploma of Environmental Management at the Ryde campus of North Sydney TAFE involving studies with regard to Bushfire Management, Global Information Systems (GIS), Mapping, Managing Native Fauna (for which he obtained a distinction) and River Restorations.

Also he has recently completed the Quantified Tree Risk Assessment Course (QTRA)

Yours sincerely



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8. REFERENCES

Australian Standard 4373 1996 *Pruning of amenity trees*.

Australian Standard 4790 2009 *Trees on development sites*.

Barrell, J. 1996. '*Predevelopment tree assessment*'

Matteck C and Breloer H. 2006 'The Body Language of Trees'

Six Maps. Aerial view of site (fig 1).

Northern Beaches Council 2009 'Tree Management Guidelines'

Websites visited

The Gymnosperm database

https://www.conifers.org/ar/Araucaria_bidwillii.php

New York State Department of Environmental Conservation 'Recognising Hazardous defects in trees' <http://www.dec.ny.gov/lands/5293.html>

University of Massachusetts. Urban and Community Forestry Factsheet #35
http://www.umass.edu/urbantree/factsheets/35codominantstems_rev1.html

APPENDIX 1a. Schedule of trees identified on the site listing condition and physical dimensions of trees on the site. Table describing trees growing on the development site. Tree numbers correspond with numbers on site plan appendix. 2.

*DBH Diameter at Breast Height. **DGH Diameter at Ground Height. ***SULE ratings are included as Appendix 3 of this report.

Specimen name	Est. Height	Diameter DBH* DGH**	Crown	Comments	SULE***	TPZ	SRZ
<p>T1 <i>Jacaranda mimosifolia</i></p> <p>Common name</p> <p>'Jacaranda'</p> <p>Age class 40 years</p> <p>See Figs. 2, 4, 5, 8, 9 & 10</p>	14m	<p>1 x 36cm</p> <p>1 x 54cm</p> <p>70cm at the base</p>	<p>N 7m</p> <p>E 6m</p> <p>S 4m</p> <p>W 4m</p>	<p>An exotic specimen from Brazil. The tree was growing in the back yard of the Site to the immediate West of the Existing dwelling. At the time of inspection the tree was in good health and condition with no significant pathogens nor signs of mechanical damage. The tree has co dominant stems which adjoin in a 'V' shaped union at ground level. There is a young <i>Ficus</i> stem growing in the cradle of the junction. The specimen has a strong bias in its crown to the North East and limbs from this tree overhang the existing dwelling. Further The tree is growing on the edge of a small escarpment and would have obviously formed an asymmetric rootplate with the bulk of the structural roots assumed to have formed up slope and in tension.</p>	B3	7.8m	N/A*
<p>T2 <i>Araucaria cunninghamii</i></p> <p>Common name</p> <p>'Hoop Pine'</p>	20m	<p>69cm</p> <p>78cm at the base</p>	N/A	<p>A native tree common to North Eastern NSW and Coastal Queensland. The tree was growing adjacent to the existing shed to the North of the dwelling. The tree is growing on a steep bank and would have obviously formed an asymmetric rootplate with the bulk of the structural roots assumed to have formed up slope and in tension. The tree has been</p>	B3	8.28m	N/A*

Age class 40 years See Figs. 3, 6 and 7.				subjected to a formative injury whereby several stems have formed at approx. 4m from the ground. The union where these stems meet is in a 'V' shape which is considered to be a defect.			
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*Not Applicable due to asymmetric root plates

APPENDIX 1b. Figures 2 to 10. Photos of Trees on the Site.



Fig 2. Photo of T1 a *jacaranda mimosifolia*



Fig 3. Photo of tree T2 an *Araucaria cunninghamii*.



Fig4. Photo of of a *Plumeria* spp.



Fig 5. Photo of *Plumeria* and T1 the *Jacaranda* showing a strong bias in their main stems to the North East which overhang the existing dwelling.



Fig. 6. Photo showing formative damage on T2



Fig. 7. Photo showing main stem of T2 growing on steep bank.



Fig 8. Photo showing limbs from T1 overhanging the existing dwelling. t

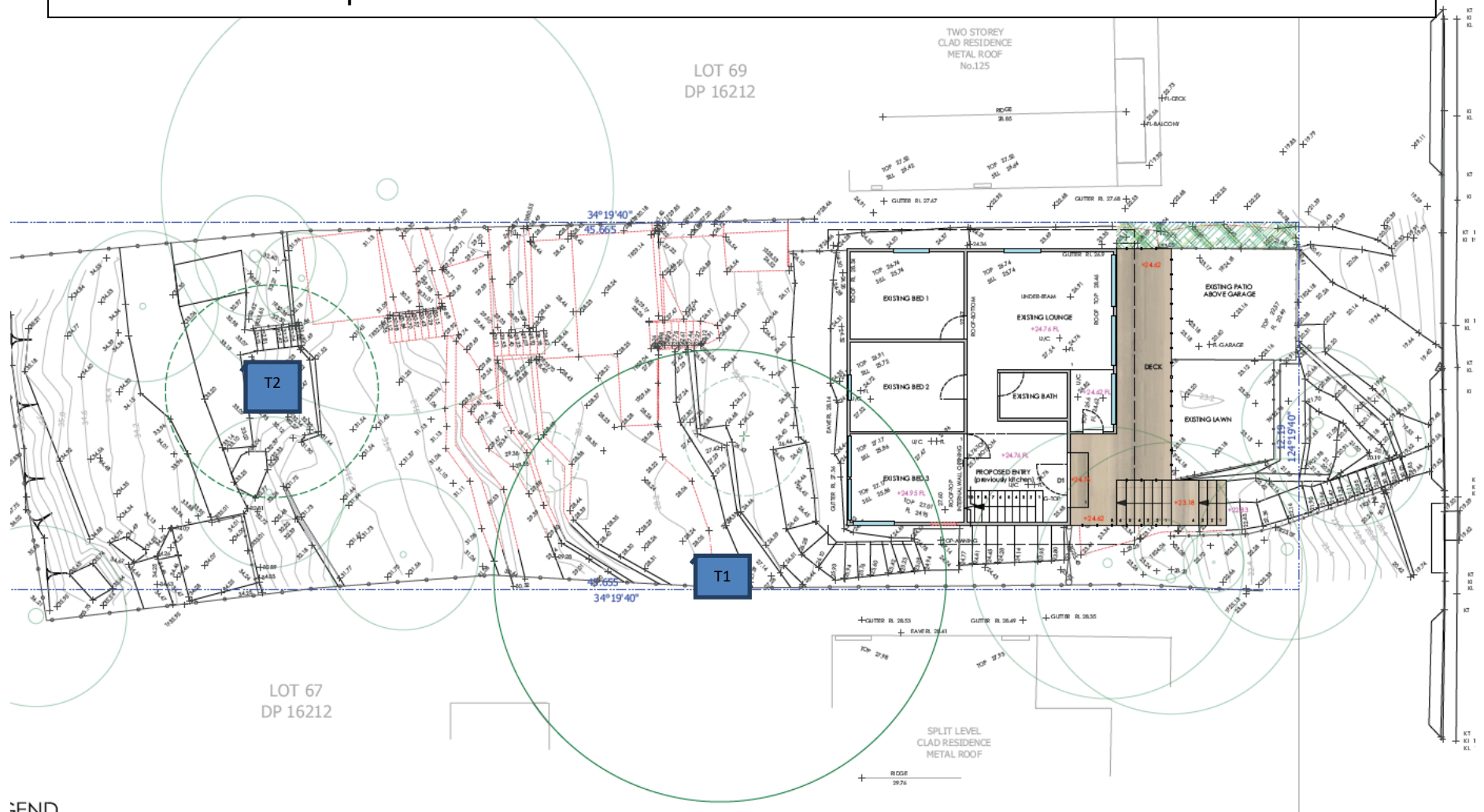


Fig. 9. Photo showing limb proposed for removal overhanging existing dwelling.



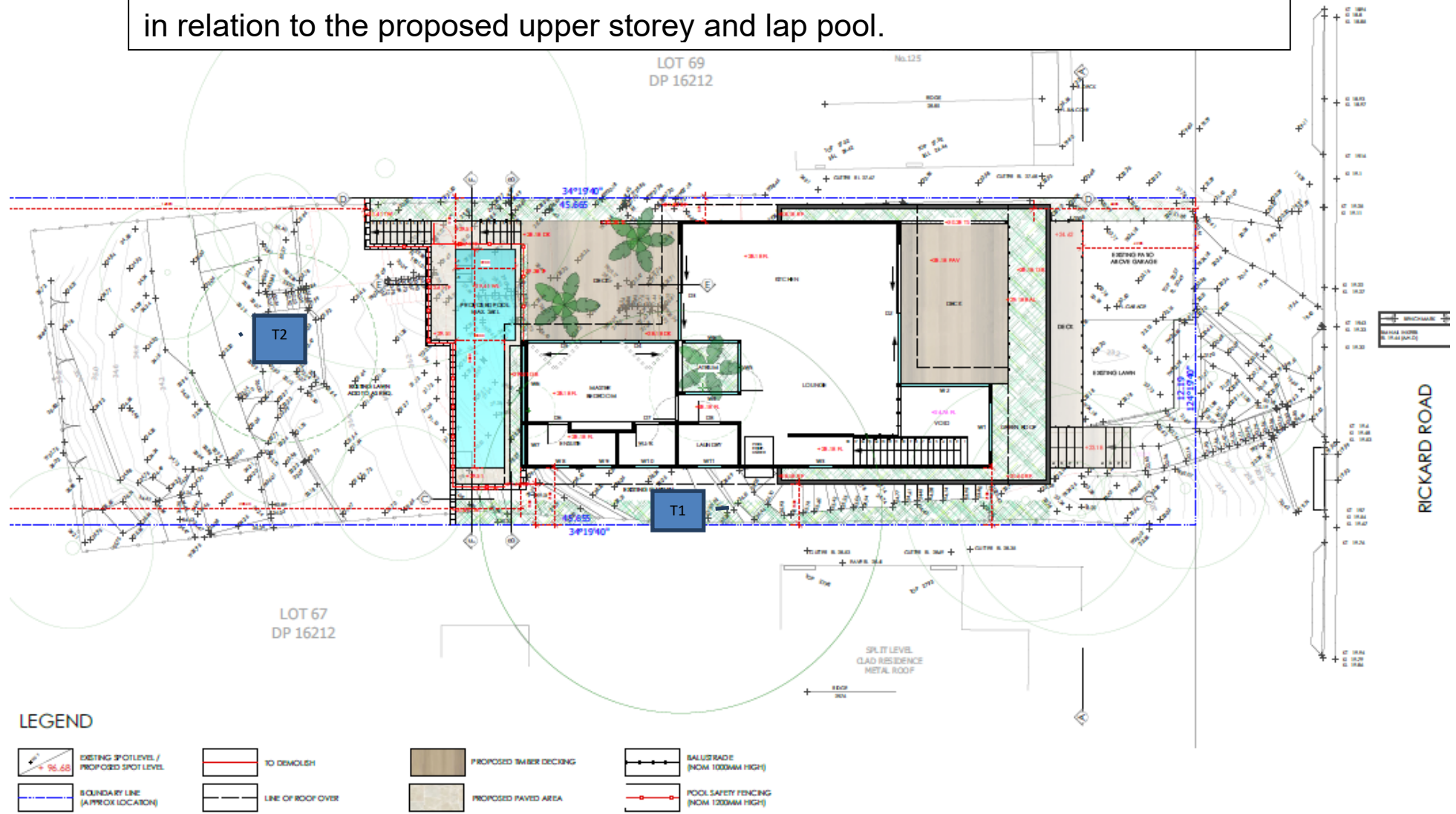
Fig. 10. Photo showing co dominant stems with 'V' shaped stem junction and a *Ficus* growing in the cradle of the junction.

APPENDIX 2a. Excerpt from Site Survey and lower floor layout showing position of trees examined in this report.

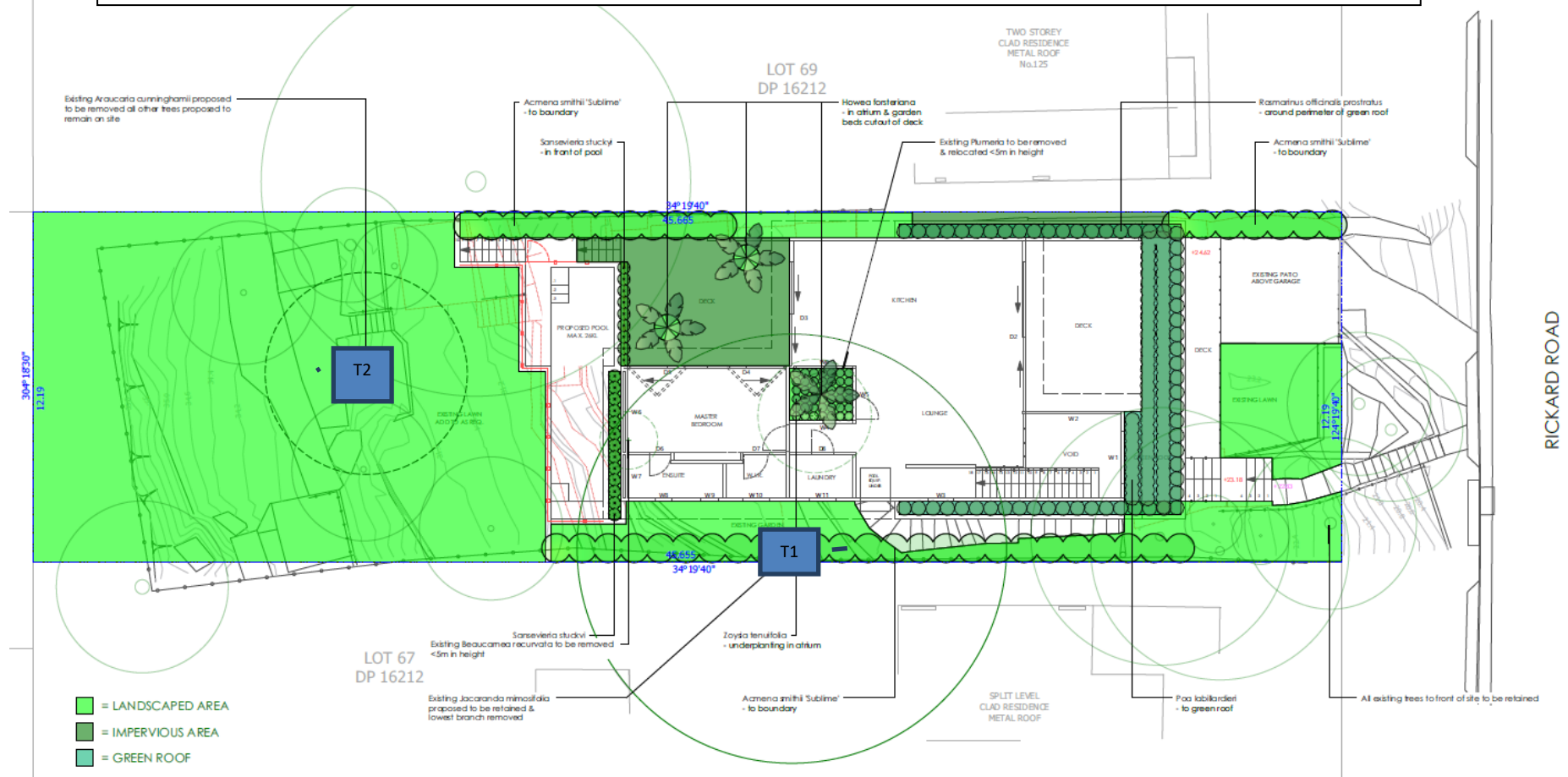


END

APPENDIX 2b. Excerpt from Site Survey showing position of trees in this report in relation to the proposed upper storey and lap pool.



APPENDIX 2c. Excerpt from Site landscaping plan showing position of trees in this report in relation to the proposed new landscaping for the Site.



APPENDIX 3. TABLE 2. SULE CATAGORIES AND SUB-CATEGORIES.

	1	2	3	4	5
	Long SULE: Appeared to be retainable at the time of assessment for over 40 years with an acceptable degree of risk, assuming reasonable maintenance.	Medium SULE: Appeared to be retainable at the time of assessment for 15 to 40 years with and acceptable degree of risk assuming reasonable maintenance.	Short SULE: Appeared to be retainable at the time of assessment for 5 to 15 years with and acceptable degree of risk assuming reasonable maintenance.	Remove: Trees which should be removed within the next 5 years.	Small young or regularly clipped: Trees that can be reliably transplanted or replaced.
A	Structurally sound trees located in positions that can accommodate future growth	Trees that may only live for 15 and 40 more years.	Trees that may only live for between 5 and 15 more years	Dead, Dying suppressed or declining trees through disease or inhospitable conditions.	Small trees less than 5 m in height.
B	Trees that could be made suitable for retention in the long term by remedial care.	Trees that may live for than 40 years, but would need to be removed for safety or nuisance reasons	Trees that may live for than 15 years, but would need to be removed for safety or nuisance reasons	Dangerous trees through instability or recent loss of adjacent trees.	Young trees less than 15 years old but over 5m in height.
C	Trees of special significance for historical, commemorative or rarity reasons that would warrant extraordinary efforts to secure their long term retention.	Trees that may live for more than 40 years but should be removed to prevent interference with more suitable individuals or to provide space for new plantings	Trees that may live for more than 15years but should be removed to prevent interference with more suitable individuals or to provide space for new plantings	Dangerous trees through structural defects including cavities, decay, included bark, wounds or poor form.	Trees that have been regularly pruned to artificially control their growth

D		Trees that could be made suitable for retention in the medium term by remedial care	Trees that require substantial remedial care and are only suitable for retention in the short term.	Damaged trees that are clearly not safe to retain.	
E				Trees that may live for more than 5 years but should be removed to prevent interference with more suitable individuals or to provide space for new plantings.	
F				Trees that may cause damage to existing structures within 5 years.	
G				Trees that will become dangerous after removal of other surrounding trees	

Table 2 Ref Barrell, Jeremy (1996). Predevelopment tree assessment. Proceedings of the International Conference on Trees and Building Sites (Chicago)