PRELIMINARY TREE INSPECTION REPORT.

On: Tree Specimens
Location: 110-112 Mt Vernon Rd Mount Vernon. NSW 2178

TREEHAVEN ENVIRONSCAPES.
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For Superior Home Solutions
On. 30/11/2017

CONTENTS

DISCLAIMER

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 110 to 112 Mount Vernon Rd. Mt. Vernon, henceforth referred to as the Site, is owned by Mr. & Mras Toma, who are proposing to demolish the existing single storey dwelling and outbuildings on the site and replace it with a new house (See Appendix 2). In the process several trees growing on the site are proposed for removal.

1.2 The property is within the jurisdiction of Penrith City Council, (PCC), which has in place Tree Preservation Order (TPO) which prohibit the pruning, removal, ringbarking, topping, lopping, injury or wilful destruction of trees over 3m without Council's written consent.
For the removal or major pruning of trees covered by the TMC, HCC requires an arborist report whose purpose is to examine and appraise them prior to, and post any development of the site.
Consequently Superior Home sSolutions, on behalf of the Tomas, have engaged, Mr. Stephen McLoughlin of Treehaven Environscapes, to visit the site examine 52 specimens growing on or near the Site, which have a potential to be affected by the development, and prepare this report.

1.3 This report details my site visit on 23/8/2017 and the 25/8/2017 for examination of 52 trees that could be affected by the development.

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 PCC's TPO 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 are sited is on a trapezoidal shaped block on a Southeasterly facing slope with a medium gradient and is within the Ropes Creek Catchment.

2.2 A single storey dwelling is on the Site at present with a garage and sheds to the rear, or North East, of the site (see Fig 1).

2.3 There are no tree specimens designated **T1** to **T52** inclusive growing on the property and all tree specimens in this report are contained within the Site Boundaries.

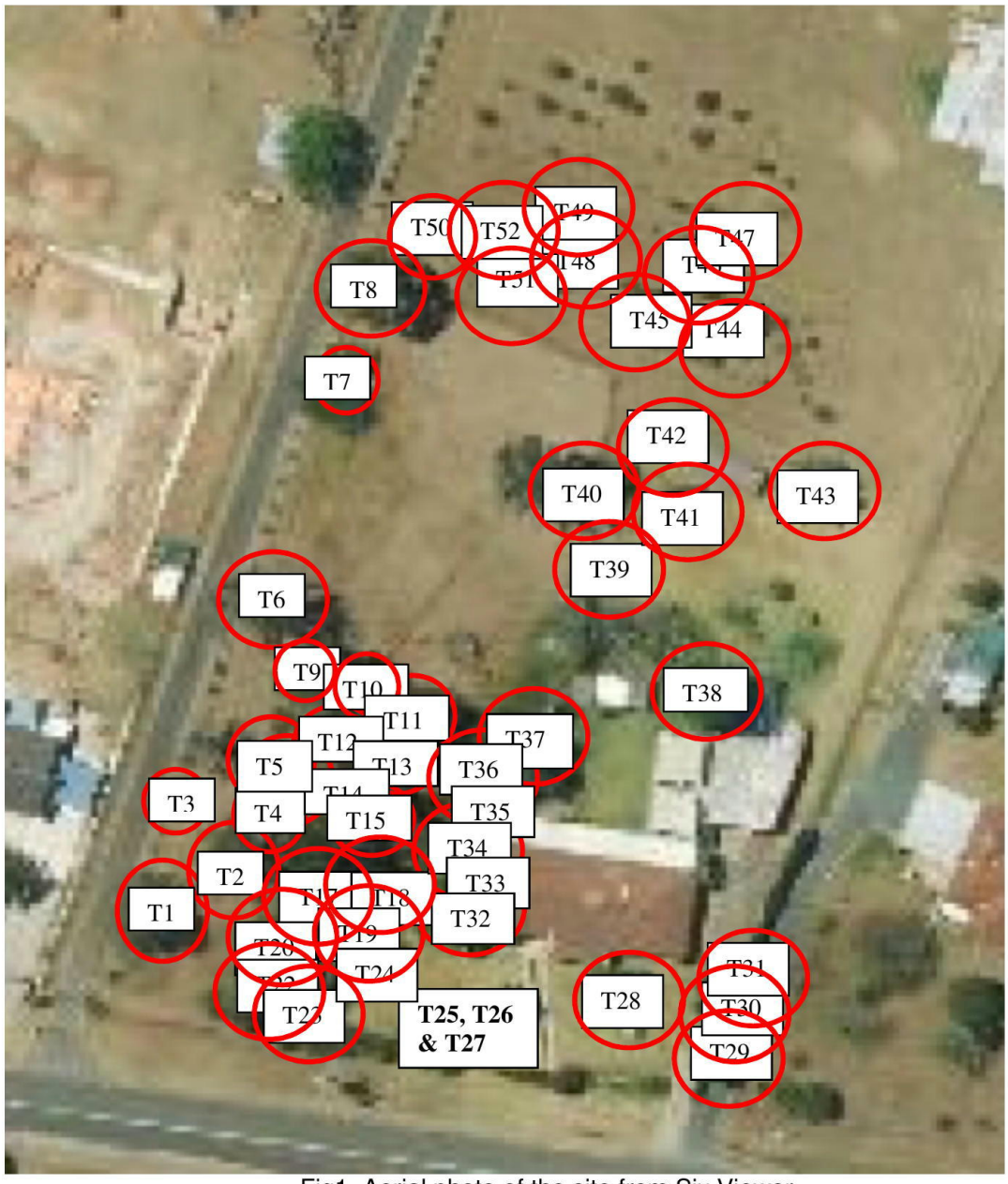

Fig1. Aerial photo of the site from Six Viewer.

3. METHODOLOGY.

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

The information gathered was used to

i) Calculate Tree protection Zones (TPZ) and Structural Root Zones (SRZ) with reference to the Australian Standard (AS) 4970-2009 and

ii) 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 **T2, T3** and **T4**, all of 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 Superior Homes.

3.5 Minor & Major Encroachments are defined in AS 4970-2009 as being up to 10%, for the former, and greater than 10% for the latter of a tree's TPZ.

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

4.1 Tree **T1** to **T15** are all Endemic specimens and form a part of the Cumberland Plains Forest Community which is an endanger Ecological Community which is listed in the NSW 1995 Endangered Species Act. These trees are growing in the Southwest of the property and are Environmentally significant. Many of the trees, particularly the *Eucalyptus molucanna*, have been affected by a wide spread Psyllid infestation[1] and are recovering with new vegetation.
Of these trees the proposal is to remove trees (See Appendix 2a).
These will need to be replaced in the new landscape plan for the property as an offset for Native vegetation removal

4.2 Trees directly affected by the plans for the development are proposed for removal are trees **T3, T4, T5, T9, T10, T11, T12, T13, T14, T24, T26, T27, T28, T30, T32, T33, T34, T35, T36, T37, T38 T39 & 43** as they are located within the proposed building footprint and driveway turnaround (See Appendix 2a & 2b). of these specimens trees **T3, T4, T5, T9, T10, T11, T12, T13, T14** are members of Cumberland Plains Forest Community which is listed under the Threatened Species and Conservation TSC Act 1995.

4.3 Trees outside the development area proposed to be retained include **T1, T2, T6, T7 T8, T15, T16 T17, T18, T20, T21, T22, T23, T25, T29, T31, T40, T41, T42, T4, T45, T46, T47, T48, T49, T50, T51 & T52** (See Appendix 2a & 2b).

5. DISCUSSION

5.1 In order for the development to proceed 23 trees on the Site, will be directly affected by the construction work to the point where it would be unviable to retain them
Of these specimens

- Trees **T2, T4, T5, T10, T11, T12, T13, T14, T15, T16, T17 & T18** are environmentally significant (See Appendix 4).
- Trees **T24, T28, T32, T33, T34, T35, T36, T37, T38 & T39 & T43** will be entirely engulfed by the new building footprint and will need to be removed for the development to proceed as planned. These are planted specimens which are protected by the TPO and would need to be replaced in the new landscape plans for the Site.

5.2 All the rest of the trees namely **T1, T2, T6, T7 T8, T15, T16 T17, T18, T20, T21, T22, T23, T25, T29, T31, T40, T41, T42, T4, T45, T46, T47, T48, T49, T50, T51 & T52** are outside the proposed work area and can be retained and protected.

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[1] **The Psyllid Outbreaks on Cumberland Plain Grey Box**

6. CONCLUSIONS & RECOMENDATIONS

6.1. It is recommended that trees **T3, T4, T5, T9, T10, T11, T12, T13, T14, T24, T26, T27, T28, T30, T32, T33, T34, T35, T36, T37, T38 T39 & T43** be removed and replaced with suitable endemic species elsewhere on the Site.

6.2 Trees to be retained and protected include **T1, T2, T6, T7 T8, T15, T16 T17, T18, T20, T21, T22, T23**, **T25, T29, T31, T40, T41, T42, T4, T45, T46, T47, T48, T49, T50, T51& T52**
Further to this please note the following damage often occurs to trees on building sites;

- The use of excavators which can cause damage directly by slewing around and coming into contact with tree trunks and limbs and indirectly by crushing and compacting soil around the trees within their root zone. Care should be taken to minimise damage when these vehicles are in close proximity to the remaining vegetation by establishing exclusion zones based on the TPZ and SRZ of the tree as calculated in the tree table in Appendix 1.
- Damage to roots and root zone around plants due to changes in soil levels either by compaction of soil around remaining vegetation where heavy vehicles drive over the top of roots, or by soils level being raised with site fill. This limits and prevents respiration by tree roots leading to declining tree health.
  Also the stock piling of soil material for later use or removal, or long term where the use of site fill has been earmarked to back fill low areas and behind retaining walls. Care should be taken to prevent the build up of soil around trees and shrubs as it can suffocate tree roots and encourage the growth of fungal pathogens such as *Phytophthora* which can induce collar rot and lead to death of the plant. Care should therefore be taken to carefully plan out soil levels in advance and as much as possible, retain existing soil gradients.
- Chemical damage to plants can occur with use of cement, paints, stains, glues and solvents and from oil and petrol spills. This can occur by the deliberate dumping of excess materials when finishing a job or inadvertently dumping such waste in a careless manner. Damage can occur to plants when such chemicals, many of which can penetrate deep into soil, are taken up by plant roots or when paints or stains are accidentally sprayed or splashed on plant leaves and branches. Inert materials such as excess mortar can be safely placed in a bin or with regular rubbish removal whereas reactive substances such as paints and solvents should be disposed of in an environmentally safe manner.
- Severing of plant roots is most likely to occur during excavation and it is important that these are not ripped from the ground whereby further damage can be incurred to root systems closer to the plant. It its is generally accepted among consulting arborists

that tree roots encountered during excavation up to 50mm may be safely cut with shears or secateurs and that tree roots <50mm be examined by a consulting arborist prior to severing in order to assess their importance to the tree and likely impact of removal. This needs to be done on a case by case basis as tree's tolerance to such root pruning varies from species to species with a marked difference between native specimens and exotics. Avoid cutting any roots within the stated SRZ s of trees as this practice can result in the destabilization of the tree and lead to trunk failure.

6.3 Removal of trees constitutes a loss of amenity for the area and it is considered that compensatory plantings will need to be considered is appropriate spaces on the Site. These are accounted for in Appendix 4 where it is proposed that 23 tree specimens be planted on the Site as compensatory plantings. There is also an opportunity for Street tree plantings on the nature strip to the South of the Site.

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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Australian Association of Bush Regenerators Member
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REFERENCES

Australian Standard 4373 1996 *Pruning of amenity trees.*

Australian Standard 4790 2009 *Trees on development sites.*

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

Penrith City Council 2010 Local Environment Plan Part 5. Clause 5.9

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

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

Web sites visited

NSW Department of Primary Industries
http://weeds.dpi.nsw.gov.au/Weeds/Details/38

http://weeds.dpi.nsw.gov.au/Weeds/Details/43
"Cockspur coral tree is potentially a major weed of waterways and floodplain areas."

The Psyllid Outbreaks on Cumberland Plain Grey Box
https://www.westernsydney.edu.au/hie/research/research_projects/the_psyllid_outbreaks_on_cumberland_plain_grey_box

APPENDIX 1A. Schedule of trees identified on the site listing condition and physical dimensions of trees on the site.

Specimen name	Est. Height	Diameter DBH* DGH**	Crown	Comments	SULE ***	TPZ	SRZ
T1 *Eucalyptus amplifolia* Common name 'Cabbage Tree Gum Age class. 30 years See Fig. 2.	12m	1 x 21cm 1 x 43cm 58cm at the base	N 4m E 3m S 3m W 3m	An endemic tree common to the Western Sydney region and a member of Cumberland Plains Forest community. The tree is growing in the front of the property to the South West of the Site. At the time of inspection the specimen was in good condition. There were no significant pathogens nor signs of mechanical damage. The tree has a dead stem to the North of its main trunk.	C1	5.74m	2.63m
T2 *Eucalyptus molucanna* Common name 'Grey box' Age class. 40 years See Fig. 3.	16m	1 x 18cm 1 x 32cm 53cm at the base	N 4m E 5m S 4m W 2m	An endemic tree common to the Western Sydney region and a member of Cumberland Plains Forest community. The tree is growing in the front of the property to the South West of the Site. At the time of inspection the specimen was in poor condition. There were no significant pathogens nor signs of mechanical damage. The tree has mainly epicormic growth in its canopy and appears to be recovering from some dieback assumed to be from the Psyllid outbreak in Western Sydney.	C1	4.4m	2.5m
T3 Dead Tree See Fig. 4	8m	N/A	N/A	Tree is dead and not subject to the TPO	A4	N/A	N/A
T4 *Eucalyptus molucanna* Common name 'Grey box' Age class. 40 years See Fig. 5.	16m	23cm 31cm at the base	N 2m E 2m S 2m W 1m	An endemic tree common to the Western Sydney region and a member of Cumberland Plains Forest community. The tree is growing in the front of the property to the South West of the Site. At the time of inspection the specimen was in poor condition. There were no significant pathogens nor signs of mechanical damage. The tree has mainly epicormic growth in its canopy and appears to be recovering from some dieback assumed to be from the Psyllid outbreak in Western Sydney.	C1	2.76m	2m

T5 *Eucalyptus amplifolia* Common name 'Cabbage Tree Gum Age class. 30 years See Fig. 6.	16m	38cm 54cm at the base	N 2m E 5m S 5m W 4m	An endemic tree common to the Western Sydney region and a member of Cumberland Plains Forest community. The tree is growing in the front of the property to the South West of the Site. At the time of inspection the specimen was in good condition. There were no significant pathogens nor signs of mechanical damage.	C1	4.56m	2.55m
T6 *Eucalyptus molucanna* Common name 'Grey box' Age class. 40 years See Fig. 7.	16m	1 x 31cm 1 x 44cm 69cm at the base	N 4m E 4m S 4m W 4m	An endemic tree common to the Western Sydney region and a member of Cumberland Plains Forest community. The tree is growing centrally on the property in the Southern portion of the Site. At the time of inspection the specimen was in poor condition. There were no significant pathogens nor signs of mechanical damage. The tree has mainly epicormic growth in its canopy and appears to be recovering from some dieback assumed to be from the Psyllid outbreak in Western Sydney.	C1	6.45m	2.83m
T7 *Erynthrina crista-galli* Common name 'Coral Tree' Age class. 40 years See Fig. 8.	8m	1 x 14cm 1 x 18cm 1 x 22cm 1 x 27cm 49cm at the base	N 2m E 1m S 1m W 2m	An exotic tree endemic to South America. The tree is growing near the boundary to the West of the Site. At the time of inspection the specimen was in good condition with no significant pathogens nor signs of mechanical damage. The tree has 3 stems separating at approx. 0.3m which meet in a 'V' shaped stem junction at the base of the main stem. The specimen is widely recognised as having weedy properties.	B3	5m	2.45m
T8 *Corymbia citriodora* Common name 'Lemon scented gum Age class. 40 years See Fig. 9.	14m	1 x 26cm 1 x 28cm 56cm at the base	N 4m E 4m S 4m W 4m	A native tree belonging to Northern NSW and Queensland. The tree is growing in the South East corner of the Site. At the time of inspection the specimen was in good health and condition with co dominant stems meeting in a 'V' shaped stem junction at approx. 500mm from the ground. There was no significant pathogens or defects apparent at the time of inspection.	A1	4.59m	2.59m

T9 *Eucalyptus molucanna* Common name 'Grey box' Age class. 40 years See Fig. 10.	14m	1 x 25cm 1 x 45cm 77cm at the base	N 3m E 3m S 3m W 3m	An endemic tree common to the Western Sydney region and a member of Cumberland Plains Forest community. The tree is growing centrally on the property in the Southern portion of the Site. At the time of inspection the specimen was in poor condition. There were no significant pathogens nor signs of mechanical damage. The tree has mainly epicormic growth in its canopy and appears to be recovering from some dieback assumed to be from the Psyllid outbreak in Western Sydney.	C1	6.18m	2.97m
T10 *Corymbia citriodora* Common name 'Lemon scented gum Age class. 50 years See Fig. 11.	18m	50cm 63cm at the base	N 7m E 6m S 6m W 5m	A native tree belonging to Northern NSW and Queensland. The tree is growing in the South East corner of the Site. At the time of inspection the specimen was in good health and condition with approx. 5% dead wood in the crown. There was no significant pathogens or defects.	A1	6m	2.72m
T11 *Eucalyptus molucanna* Common name 'Grey box' Age class. 40 years See Fig. 12.	12m	30cm 39cm at the base	N 1m E 0m S 3m W 3m	An endemic tree common to the Western Sydney region and a member of Cumberland Plains Forest community. The tree is growing centrally on the property in the Southern portion of the Site. At the time of inspection the specimen was in poor condition. There were no significant pathogens nor signs of mechanical damage. The tree has mainly epicormic growth in its canopy and appears to be recovering from some dieback assumed to be from the Psyllid outbreak in Western Sydney.	C1	3.6m	2.23m
T12A *Eucalyptus molucanna* Common name 'Grey box' Age class. 40 years See Fig. 13.	10m	1 x 22cm 1 x 26cm 39cm at the base	N 0m E 1m S 2m W 2m	An endemic tree common to the Western Sydney region and a member of Cumberland Plains Forest community. The tree is growing centrally on the property. At the time of inspection the specimen was in poor condition. There was 20% dead wood in the crown and no significant pathogens nor signs of mechanical damage. The tree	C1	4.08m	2.23m

				has mainly epicormic growth in its canopy and appears to be recovering from some dieback assumed to be from the Psyllid outbreak in Western Sydney.			
T12B *Eucalyptus molucanna* Common name 'Grey box' Age class. 40 years See Fig. 14.	12m	25cm 27cm at the base	N 2m E 1m S 0m W 0m	An endemic tree common to the Western Sydney region and a member of Cumberland Plains Forest community. The tree is growing centrally on the property in the Southern portion of the Site. At the time of inspection the specimen was in poor condition. There were no significant pathogens nor signs of mechanical damage. The tree has mainly epicormic growth in its canopy and appears to be recovering from some dieback and appears to be recovering from some dieback assumed to be from the Psyllid outbreak in Western Sydney. The tree has a bias in its crown to the North East.	C1	3m	2.88m
T13 *Eucalyptus molucanna* Common name 'Grey box' Age class. 40 years See Fig. 15.	14m	1 x 26cm 1 x 28cm 57cm at the base	N 2m E 3m S 4m W 4m	An endemic tree common to the Western Sydney region and a member of Cumberland Plains Forest community. The tree is growing centrally on the property. At the time of inspection the specimen was in poor condition with 20% deadwood in the crown. There were no significant pathogens nor signs of mechanical damage. The tree has mainly epicormic growth in its canopy and appears to be recovering from some dieback assumed to be from the Psyllid outbreak in Western Sydney.	C1	4.59m	2.61m
T14 *Eucalyptus molucanna* Common name 'Grey box' Age class. 40 years See Fig. 16.	10m	21cm 26cm at the base	N 0m E 2m S 2m W 2m	An endemic tree common to the Western Sydney region and a member of Cumberland Plains Forest community. The tree is growing centrally on the property in the Southern portion of the Site. At the time of inspection the specimen was in poor condition with 20% deadwood in the canopy. There were no significant pathogens nor signs of mechanical damage. The tree has mainly epicormic growth in its canopy and appears to be	C1	6.18m	2.97m

				recovering from some dieback assumed to be from the Psyllid outbreak in Western Sydney.			
T15 *Eucalyptus molucanna* Common name 'Grey box' Age class. 40 years See Fig. 17.	16m	1 x 29cm 1 x 32cm 46cm at the base	N 3m E 3m S 3m W 3m	An endemic tree common to the Western Sydney region and a member of Cumberland Plains Forest community. The tree is growing centrally on the property in the Southern portion of the Site. At the time of inspection the specimen was in poor condition with 20% deadwood in the canopy and some Mistletoe. There were no significant pathogens nor signs of mechanical damage. The tree has mainly epicormic growth in its canopy and appears to be recovering from some dieback assumed to be from the Psyllid outbreak in Western Sydney.	C1	5.18m	2.39m
T16 *Melia azederach* Common name 'White cedar' Age class. 10 years See Fig. 18.	3m	5cm 7cm at the base	N 1m E 1m S 1m W 1m	An endemic tree common to creeks and rivers in the Sydney region. The tree is growing centrally on the property in the Southern portion of the Site. At the time of inspection the specimen was in good condition. There were no significant pathogens nor signs of mechanical damage.	A5	2m Min TPZ	1.5m Min SRZ
T17 *Araucaria heterophylla* Common name 'Norfolk Island Pine' Age class. 10 years See Fig. 19.	9m	15cm 18cm at the base	N 1m E 1m S 1m W 1m	A native tree common to Norfolk Island. The tree is growing centrally on the property in the Southern portion of the Site. At the time of inspection the specimen was in good condition. There were no significant pathogens nor signs of mechanical damage.	A1	2m Min TPZ	1.5m Min SRZ
T18 *Araucaria bidwillii* Common name 'Monkey Puzzle Tree'	4m	10cm 14cm at the base	N 1m E 1m S 1m W 1m	A native tree common to Northern Queensland. The tree is growing centrally on the property in the Southern portion of the Site. At the time of inspection the specimen was in good condition. There were no significant pathogens but the tree roots appear to be girdled.	A5	2m Min TPZ	1.5m Min SRZ

Age class. 10 years See Figs. 20 & 21.							
T19 *Melaleuca quinquinervia* Common name 'Broadleaved Paperbark' Age class. 10 years See Fig. 22 & 23.	8m	2 x 12cm 2 x 14cm 25cm at the base	N 3m E 3m S 3m W 2m	A native tree common to estuarine areas of the NSW coast. The tree is growing centrally on the property in the Southern portion of the Site. At the time of inspection the specimen was in poor condition. There was two large *Ganoderma* bracket fungus on the main stem and the tree has 4 co dominant stems meeting in 'V' shaped stem junctions.	A5	3.13m	2.38m
T20 *Lophostemon confertus* Common name 'Brushbox" Age class. 20 years See Fig. 24.	9m	1 x 10cm 1 x 19cm 37cm at the base	N 3m E 3m S 3m W 3m	A native tree endemic to Northern NSW and Queensland. The tree has been planted in the center in the southern portion of the Site. At the time of inspection the specimen was in good condition with no significant pathogens or defects. The tree has co dominant stems meeting in a 'V' shape at 1.1m from the ground.	A1	2.58m	2.18m
T21 *Eucalyptus leucoxylon connata* Common name 'Melbourne Yellow Gum' Age class. 40 years See Figs. 25 & 26.	14m	43cm 54cm at the base	N 5m E 4m S 4m W 3m	A native tree belonging to Western Victoria. The tree is growing in the Southern portion of the Site. At the time of inspection the specimen was in reasonable health and condition with some scaring at the base. There was 20 % dead wood in the crown and a bias in the canopy to the Northwest.	A2	5.16m	2.55m
T22 *Lophostemon confertus* Common name 'Brushbox" Age class. 20 years See Fig. 27.	9m	15cm 22cm at the base	N 1m E 2m S 2m W 2m	A native tree endemic to Northern NSW and Queensland. The tree has been planted in the center in the southern portion of the Site. At the time of inspection the specimen was in good condition with no significant pathogens or defects.	A1	2m Min TPZ	1.5m Min SRZ

T23 *Melaleuca quinquinervia* Common name 'Broadleaved Paperbark' Age class. 10 years See Fig. 28.	3m	Multiple stems 25cm at the base	N 1m E 1m S 1m W 2m	A native tree common to estuarine areas of the NSW coast. The tree is growing near the Southern border of the Site. At the time of inspection the specimen was in reasonable condition with sooty mould on the lower stems and branches.	A5	2m Min TPZ	1.5m Min SRZ
T24 *Harpyphyllum caffrum* Common name 'Kaffir Plum' Age class. 30 years See Fig. 29.	5m	15cm 21cm at the base	N 2m E 2m S 2m W 1m	An exotic tree endemic to South Africa. The tree is growing in the Southern portion of the Site. At the time of inspection the specimen was in poor health condition and is suppressed in its growth by harsh microclimate. There were no significant pathogens nor signs of mechanical damage. The tree appears stunted in its growth due to a harsh microclimate.	A2	2m Min TPZ	1.5m Min SRZ
T25 *Jacaranda mimosifolia* Common name 'Jacaranda' Age class. 30 years See Fig. 30.	7m	13cm 16cm at the base	N 2m E 2m S 2m W 1m	An exotic tree endemic to Brazil. The tree is growing near the boundary to the South of the Site. At the time of inspection the specimen was in good health condition.. There were no significant pathogens nor signs of mechanical damage. The tree appears stunted in its growth due to microclimate.	A2	2m Min TPZ	1.5m Min SRZ
T26 *Fraxinous* Common name 'Ash' Age class. 40 years See Fig. 31.	7m	1 x 11cm 1 x 13cm 1 x 15cm 26cm at the base	N 2m E 3m S 3m W 3m	An exotic deciduous tree. The tree is growing near the Southern border of the Site. At the time of inspection the specimen was in reasonable condition with co dominant stems 400mm from the ground. There were no significant pathogens or defects present at the time of inspection.	A1	2.72m	1.88m
T27 *Sapium sebiferum* Common name	8m	21cm 29cm at the base	N 3m E 3m S 3m W 3m	An exotic tree endemic to China. The tree has been planted centrally on Southern portion the Site. At the time of inspection the specimen was in good health condition with no significant pathogens nor signs of mechanical	A1	2.52m	1.97m

'Chinese tallowwood' Age class. 30 years See Fig. 32				damage. The species is widely recognised to have 'Weedy' properties.			
T28 *Acer negundo* Common name 'Box elder' Age class. 30 years See Fig. 33 & 34.	5m	1 x 5cm 1 x 8cm 1 x 10cm 43cm at the base	N 2m E 1m S 2m W 1m	An exotic tree endemic to North America. The tree is growing in the Southern portion of the Site. At the time of inspection the specimen was in poor health condition with two stems removed and one main stem remaining.	A2	2m Min TPZ	1.5m Min SRZ
T29 *Brachychiton populneus* Common name 'Kurrajong' Age class. 40 years See Fig. 35.	6m	18cm 27cm at the base	N 2m E 1m S 1m W 1m	A native tree belonging to Inland areas of NSW Queensland and Victoria. The tree is growing in the Southeast corner of the Site. At the time of inspection the specimen was in poor health and condition with foliage restricted to the top of the tree. there are co dominant stems with included bark in the main stem.	A3	2m Min TPZ	2.3m
T30 *Callistemon viminalis* Common name 'Weeping bottlebrush' Age class. 40 years See Fig. 36.	3m	1 x 8cm 1 x 9cm 1 x 11cm 21cm at the base	N 0m E 1m S 3m W 1m	A native tree common to creeks and damp areas of the Queensland coastal areas. The tree is growing near the Western border of the Site. At the time of inspection the specimen was growing in an asymmetric habit with foliage restricted to the upmost part of the tree.	A3	2m Min TPZ	1.5m Min SRZ
T31 *Photinia robusta* Common name 'Photinia' Age class. 40 years See Fig. 37.	6m	Multi stemmed 35cm at the base	N 1m E 1m S 3m W 1m	An exotic tree endemic to Japan and China. The tree is growing near the Western border of the Site. At the time of inspection the specimen has been intensively pruned and has a lopsided habit.	A2	2m Min TPZ	1.5m Min SRZ

T32 *Harpyphyllum caffrum* Common name 'Kaffir Plum' Age class. 40 years See Figs. 38 & 39.	12m	1 x 11cm 1 x 13cm 1 x 25cm 1 x 29cm 47cm at the base	N 5m E 5m S 5m W 3m	An exotic tree endemic to South Africa. The tree is located centrally on the Site to the West of the existing dwelling. At the time of inspection the specimen was in good health condition and has a bias in its canopy to the North East. There are four main stems from three co dominants separating out at 600mm from the ground. There is included bark at the stem junction. There were no significant pathogens nor signs of mechanical damage.	A2	5.03m	2.41m
T33 *Shefflera actinofolius* Common name 'Umbrella Tree' Age class. 40 years See Fig. 40.	9m	1 x 8cm 1 x 11cm 18cm at the base	N 1m E 1m S 1m W 1m	A native tree common to rainforest areas of North Queensland. The tree is growing near the Western side of the existing dwelling. At the time of inspection the specimen was in good health and condition with no significant pathogens nor signs of mechanical damage. The species is well known to have 'Weedy attributes.	A3	2m Min TPZ	1.5m Min SRZ
T34 *Eucalyptus microcorys* Common name 'Tallowwood' Age class. 40 years See Figs. 41 & 42.	14m	62cm 68cm at the base	N 3m E 3m S 2m W 4m	A native tree belonging to Northern NSW and Queensland. The tree is growing near the Western side of the existing dwelling. At the time of inspection the specimen was in poor health and condition having been heavily lopped and rot evident at the base of the main stem. The tree has a bias in its crown to the Northeast.	A4	7.44m	2.81m
T35 *Stenocarpus sinuatus* Common name 'Queensland Firewheel Tree' Age class. 40 years	13m	1 x 14cm 1 x 16cm 27cm at the base	N 1m E 1m S 1m W 1m	A native tree common to rainforest areas of coastal Eastern Queensland. The tree is growing near the Northern Side of the existing dwelling. At the time of inspection the specimen was in good health and vigour with less than 5% dead wood in the crown. There were no significant pathogens or defects.	A3	2.55m	1.91m

See Fig. 43.							
T36 *Lagerstroemia indica* Common name 'Crepe Myrtle' Age class. 40 years See Fig. 44.	5m	Multi stemmed 21cm at the base	N 3m E 3m S 3m W 3m	A exotic tree endemic to India and the subcontinent. The tree is growing near the Northern Side of the existing dwelling. At the time of inspection the specimen was in good health and vigour with no significant pathogens or defects.	A1	2.52m	1.72m
T37 *Melaleuca styphelioides* Common name 'Prickly Paperbark' Age class. 40 years See Fig. 45.	11m	36cm 48cm at the base	N 4m E 4m S 4m W 4m	An endemic tree common to Cumberland Plain Forest Community. The tree is assumed to be a planted specimen growing centrally on the Site to the North of the existing house. At the time of inspection the specimen was in good health and condition with no significant pathogens defects nor signs of mechanical damage.	A1	4.32m	2.43m
T38 *Acer spp.* Common name 'Maple tree' Age class. 40 years See Fig. 46.	10m	35cm 54cm at the base	N 3m E 3m S 3m W 3m	A exotic tree endemic to North America. The tree is located centrally on the Site to the Northeast of the existing dwelling. At the time of inspection the specimen was in good health and vigour with no significant pathogens or defects. There were no leaves or fruit on the tree at the time of inspection and so identifying the species was indeterminate though some Maple like leaves were noted around the base.	A1	2.52m	2.13m
T39 *Prunus blireana* Common name 'Plum tree' Age class. 40 years See Fig. 47.	3m	Multi stemmed 21cm at the base	N 1m E 1m S 1m W 1m	A exotic tree less than 3m in height and not subject to the TPO.	A5	N/A	N/A

T40 *Macadamia tetraphylla* Common name 'Macadamia' Age class. 50 years See Fig. 48.	2m	N/A	N 2m E 2m S 2m W 2m	A native tree endemic to Northern NSW and Queensland. The tree has been planted centrally on the Site. The tree is an exotic specimen less than 3m in height and not subject to the TPO.	A5	N/A	N/A
T41 *Fraxinous* Common name 'Ash' Age class. 40 years See Fig. 49.	4m		N 2m E 3m S 3m W 3m	An exotic tree. The tree is growing centrally on the Site. At the time of inspection the specimen was in good health and condition. There were no significant pathogens or defects present at the time of inspection.	A1	2m Min TPZ	1.5m Min SRZ
T42 *Grevillia robusta* Common name 'Silky Oak Age class. 30 years See Fig. 50.	6m	17cm 22cm at the base	N 2m E 2m S 2m W 2m	A native tree endemic to Northern NSW and Queensland. The tree has been planted in the central area of the Site. At the time of inspection the specimen was in poor condition with no significant pathogens or defects. Foliage in the canopy was sparse and the tree appears to be supressed in its growth.	A3	2.04m	1.75m
T43 *Grevillia robusta* Common name 'Silky Oak Age class. 30 years See Fig. 51.	10m	21cm 28cm at the base	N 3m E 3m S 3m W 3m	A native tree endemic to Northern NSW and Queensland. The tree has been planted in the center to the West of the Site. At the time of inspection the specimen was in good condition with no significant pathogens or defects. The tree has co dominant stems meeting in a 'V' shape at 2m from the ground.	A1	2.52m	1.94m
T44 *Syzygium australae* Common name 'Lilli Pilli' Age class. 5 years See Fig. 52.	3m	6cm 8cm at the base	N 0.5m E 0.5m S 0.5m W 0.5m	A native tree usually found in littoral rainforest in coastal NSW. The tree is growing near the boundary to the Southeast corner of the Site. At the time of inspection the specimen was in good condition with no significant pathogens nor signs of mechanical damage.	A1	2m Min TPZ	1.5m Min SRZ

T45 *Eucalyptus spp* Common name 'gum' Age class. 40 years See Fig. 53.	3m	8cm 10cm at the base	N 3m E 3m S 2m W 4m	A native tree planted in the 'Grove' towards the Northern border of the property. At the time of inspection the specimen was in poor health and condition having been subjected formative damage in that the main stem is truncated at approx. 1.5m from the ground. Foliage on the tree is sparse and largely comprised of epicormic regrowth.	A5	2m Min TPZ	1.5m Min SRZ
T46 *Lophostemon confertus* Common name 'Brushbox" Age class. 20 years See Fig. 54.	4m	5cm 7cm at the base	N 1m E 1m S 1m W 1m	A native tree endemic to Northern NSW and Queensland. The tree has been planted in the 'Grove' towards the Northern border of the property. At the time of inspection the specimen was in reasonable condition and comprising of 3 stems arising from the *Lignotuber* of a a failed main stem.	A5	2m Min TPZ	1.5m Min SRZ
T47 *Callistemon viminalis* Common name 'Tuckeroo" Age class. 20 years See Fig. 55.	4m	Multi stemmed 12cm at the base	N 1m E 1m S 1m W 1m	A native tree endemic to Northern NSW and Queensland. The tree has been planted in the 'Grove' towards the Northern border of the property. At the time of inspection the specimen was in good condition with no significant pathogens or defects.	A5	2m Min TPZ	1.5m Min SRZ
T48 *Cupaniopsus anacardioides* Common name 'Tuckeroo" Age class. 20 years See Fig. 56.	3m	15cm 22cm at the base	N 1m E 2m S 2m W 2m	A native tree endemic to Northern east coast of NSW and Queensland. The tree has been planted in the 'Grove' towards the Northern border of the property. At the time of inspection the specimen was in good condition with no significant pathogens or defects.	A5	2m Min TPZ	1.5m Min SRZ
T49 *Corymbia gummifera* Common name 'Red Bloodwood" Age class. 20 years See Fig. 57.	4m	2 x 4cm 2 x 6cm 12cm at the base	N 1m E 1m S 1m W 1m	A native tree endemic to the Sydney region and occurring in coastal strips along Eastern NSW and Queensland. The tree has been planted in the 'Grove' towards the Northern border of the property. At the time of inspection the specimen was in good condition with no significant pathogens, defects nor mechanical injury.	A5	2m Min TPZ	1.5m Min SRZ

T50 *Eucalyptus torelliana* Common name 'Gadaga' Age class. 20 years See Fig. 58.	7m	1 x 12cm 1 x 16cm 29cm at the base	N 3m E 3m S 2m W 4m	A native tree belonging to Northern NSW and Queensland. The tree is growing near the Western side of the existing dwelling. At the time of inspection the specimen was in good health and condition.	A4	2.4m	1.97m
T51 *Eucalyptus torelliana* Common name 'Gadaga' Age class. 20 years See Fig. 59.	7m	19cm 22cm at the base	N 3m E 3m S 2m W 4m	A native tree belonging to Northern NSW and Queensland. The tree is a planted specimen located in the 'Grove' towards the Northern boundary of the Site.. At the time of inspection the specimen was in good health and condition.	A4	2.28m	1.75m
T52 *Melaleuca saligna* Common name 'Broadleaved Paperbark' Age class. 10 years See Fig. 60.	4m	Multiple stems 25cm at the base	N 1m E 1m S 1m W 2m	A native tree common to low-lying river flats and damp creeks of the NSW coast. The tree is a planted specimen located in the 'Grove' towards the Northern boundary of the Site. At the time of inspection the specimen was in reasonable condition with sooty mould on the lower stems and branches.	A5	2m Min TPZ	1.5m Min SRZ

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.**

APPENDIX 1B. Figures 2 to 60**.** Photos of Trees as listed in Appendix1 A.

Fig 2. Photo of T1 a *Eucalyptus amplifolia*

Fig 3. Photo of T2 a *Eucalyptus molucanna*

Fig 4. Photo of T3 a dead tree

Fig 5. Photo of T4 a *Eucalyptus molucanna.*

Fig 6. Photo of T5 a *Eucalyptus amplifolia*

Fig 7. Photo of T6 a *Eucalyptus molucanna*

Fig 8 . Photo of T7 an *Erynthrina crista galla*

Fig 9. Photo of T8 a *Corymbia citriodora*

Fig 10. Photo of T9 a *Eucalyptus molucanna*

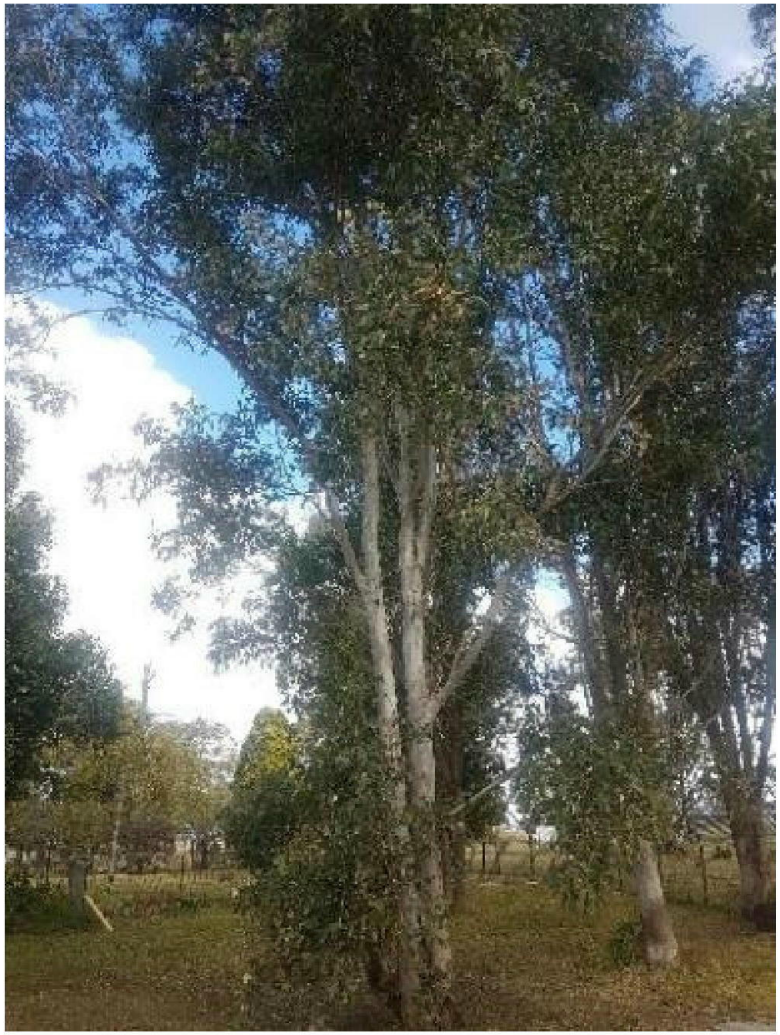


Fig 11. Photo of T10 a *Eucalyptus molucanna*

Fig 12. Photo of T11 a *Eucalyptus molucanna*

Fig 13. Photo of T12 a *Eucalyptus molucanna*

Fig 14. Photo of T12B a *Eucalyptus molucanna*

Fig 15. Photo of T13 a *Eucalyptus molucanna*

Fig 16. Photo of T14 a *Eucalyptus molucanna*

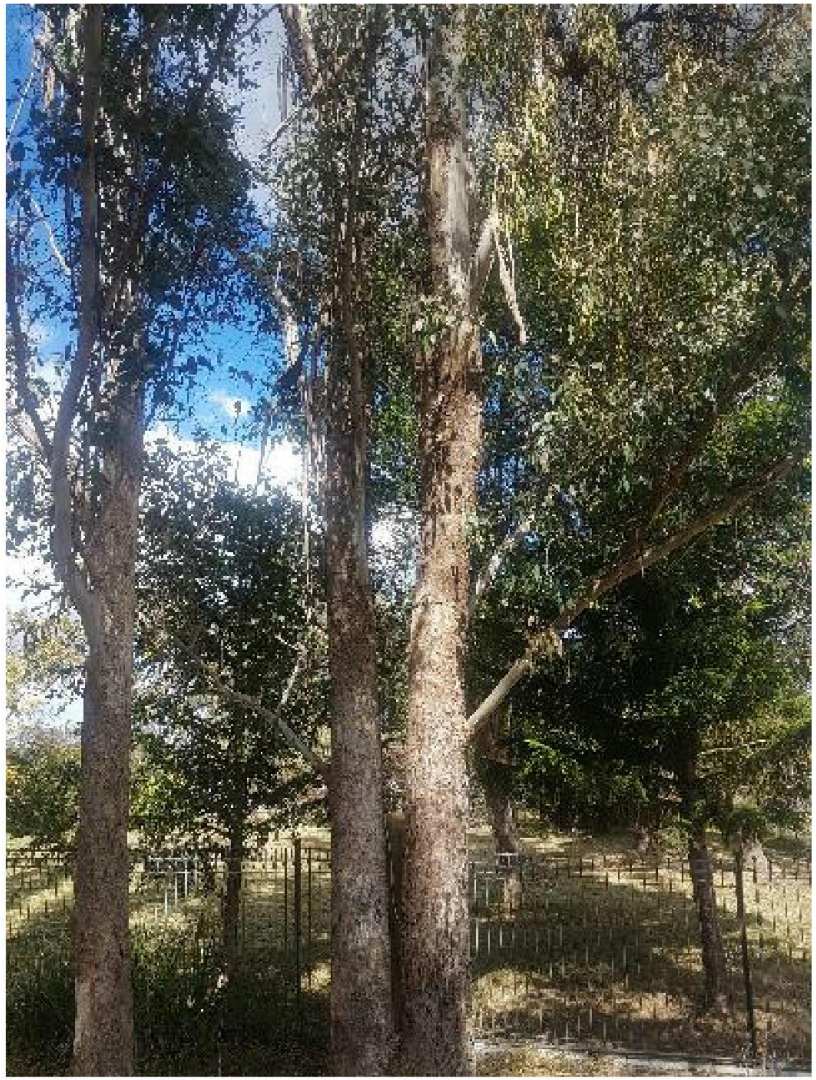


Fig 17. Photo of T15 a *Eucalyptus molucanna*

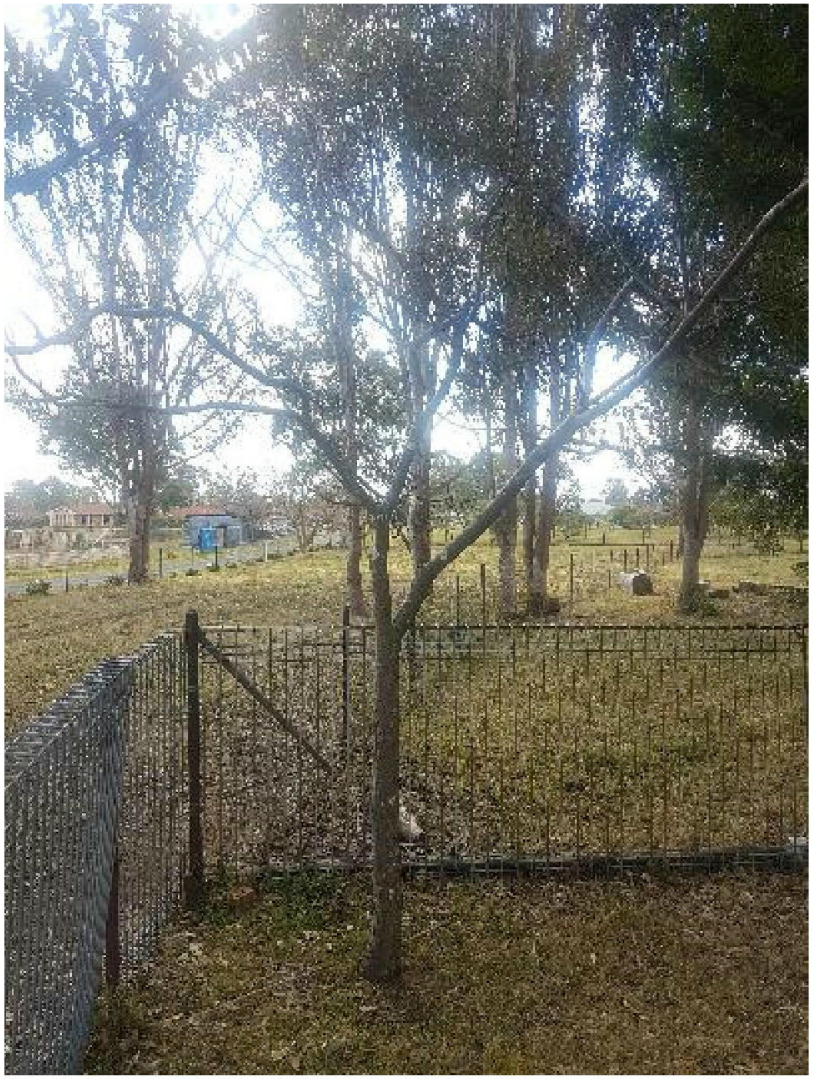


Fig 18. Photo of T16 a *Melia azaderach*

Fig 19. Photo of T17 an *Araucaria heterophylla*

Fig 20. Photo of T18 an *Araucaria bidwilli*

Fig 21. Photo of T18 with girdled Roots.

Fig 22. Photo of T19 a *Melaleuca quinquinervia*

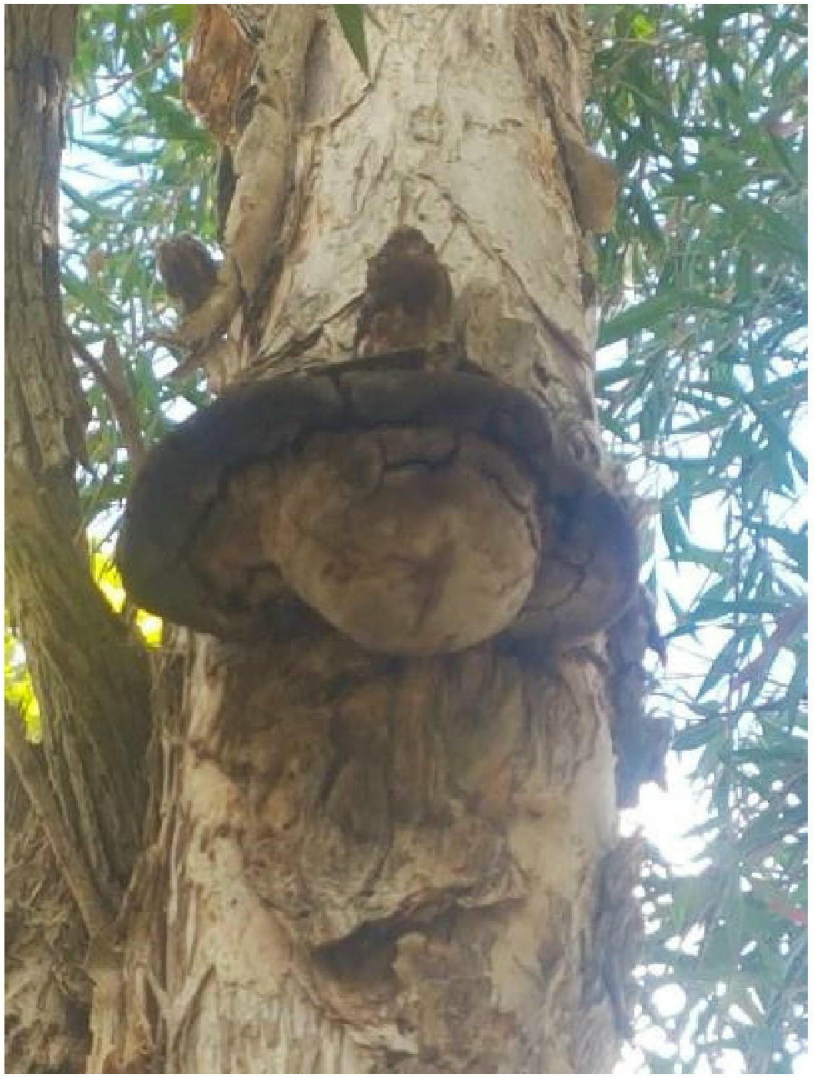


Fig 23. Photo of T19 showing *Ganoderma* bracket on main stem.

Fig 24. Photo of T20 a *Lophostemon confertus.*

Fig 25. Photo of T21 a *Eucalyptus leucoxylon connata*

Fig 26. Photo of T21 showing large scar at base growing over

Fig 27. Photo of T22 a *Lophostemon confertus.*

Fig 28. Photo of T23 a *Melaleuca quinquinervia*

Fig 29. Photo of T24 a *Harpephyllum caffrum*.

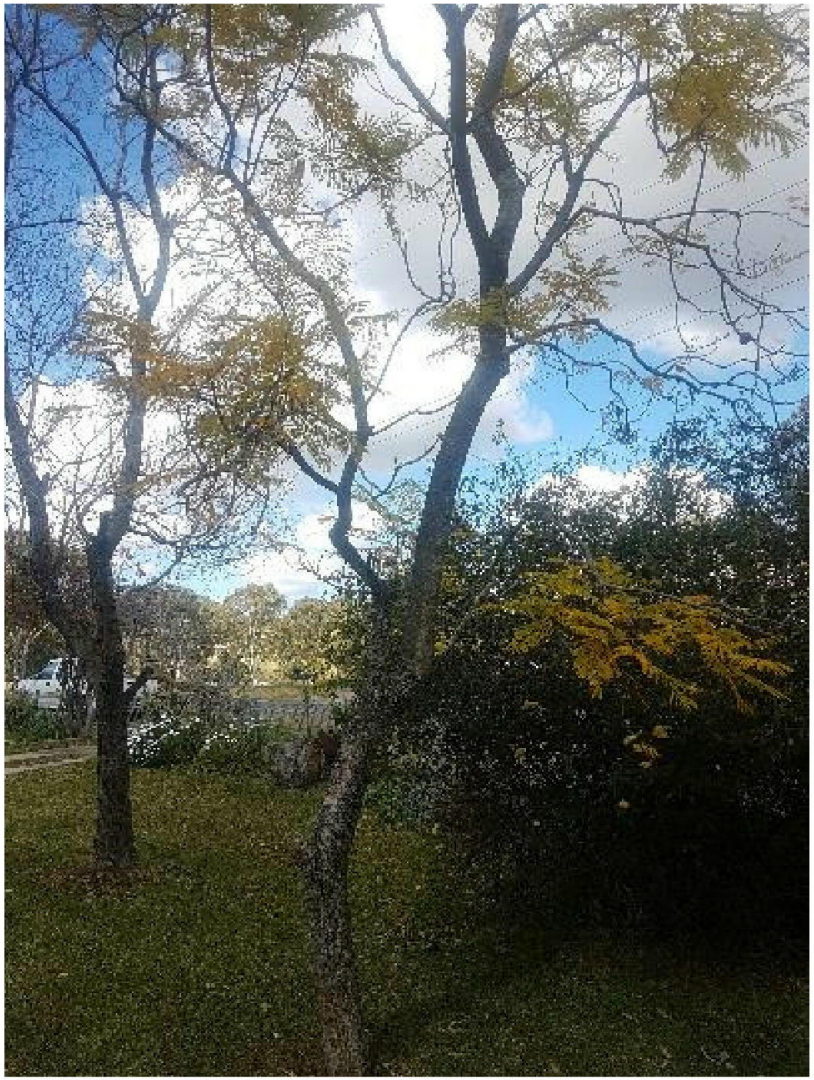


Fig 30. Photo of T25 a *Jaccaranda mimosifolia*.

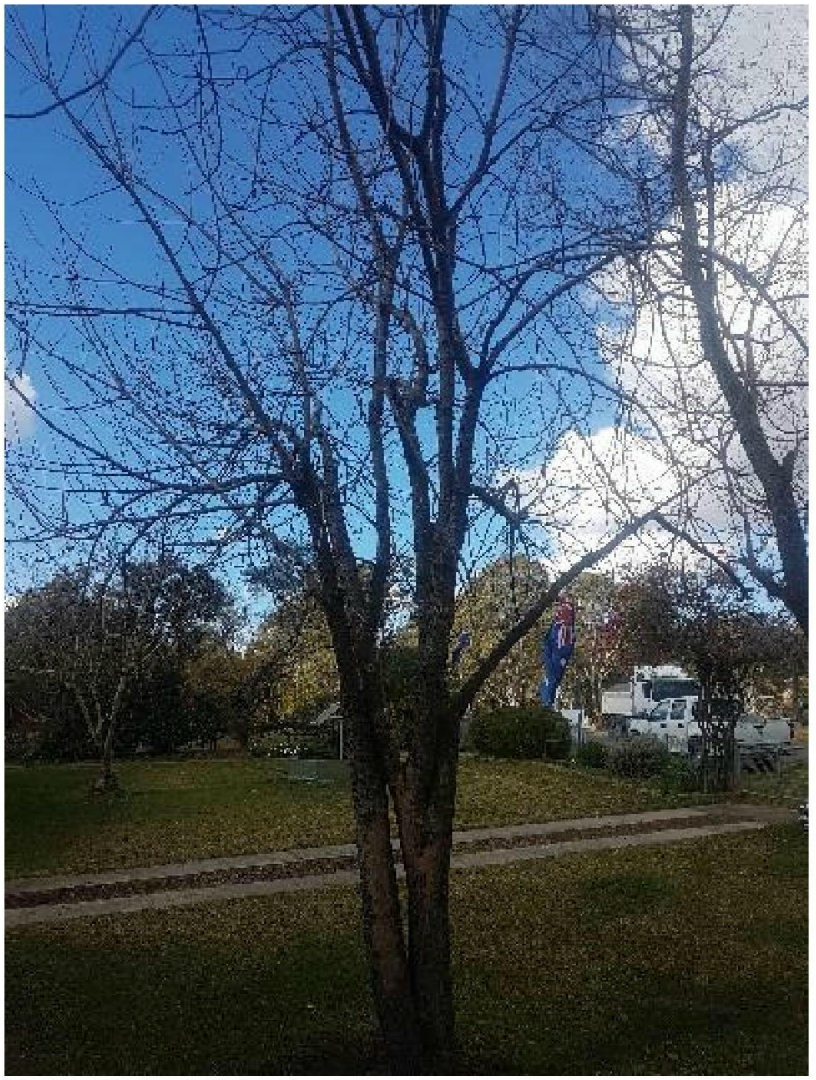


Fig 31. Photo of T26 a *Fraxinus*

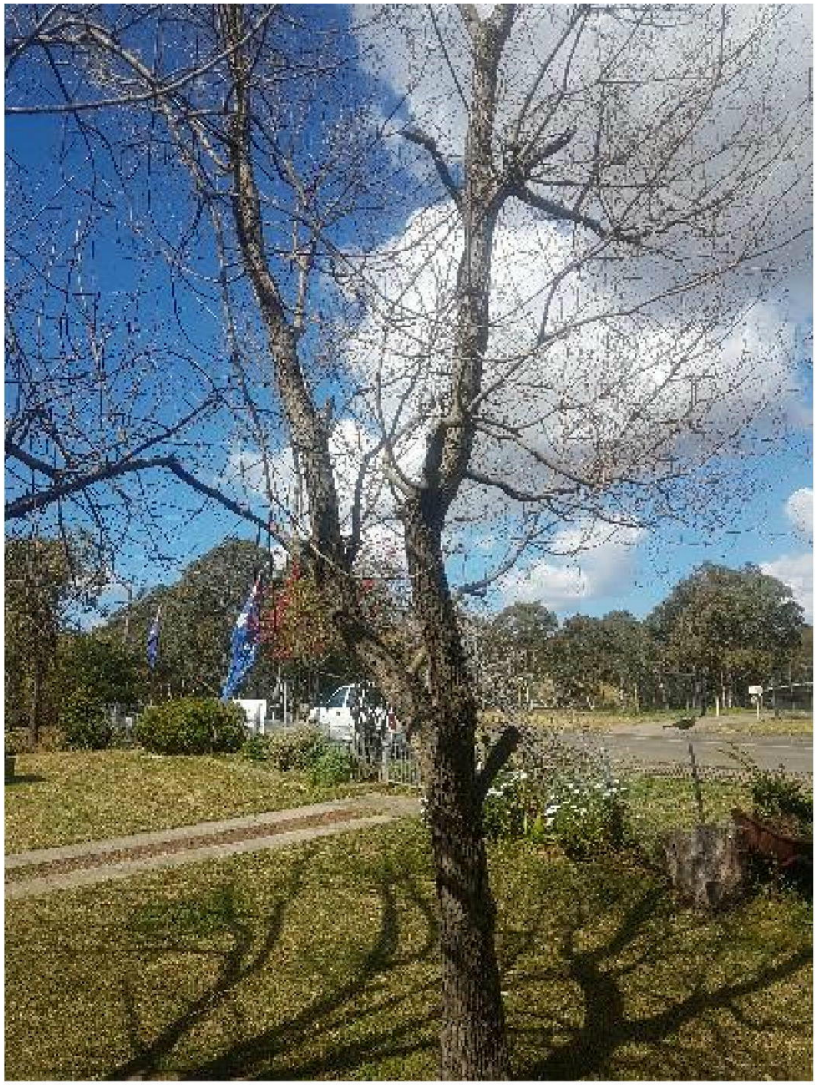


Fig 32. Photo of T27 a *Sapium sebiferum*.

Fig 33. Photo of T28 an *Acer negundo.*

Fig 34. Base of T28 showing old stubs from removed stems.

Fig 35. Photo of T29 a *Brachychiton populneus.*

Fig 36. Photo of T30 a *Callistemon viminalis*.

Fig 37. Photo of T31 a *Photinia robusta*.

Fig 38. Photo of T32 a *Harpyphyllum caffrum*

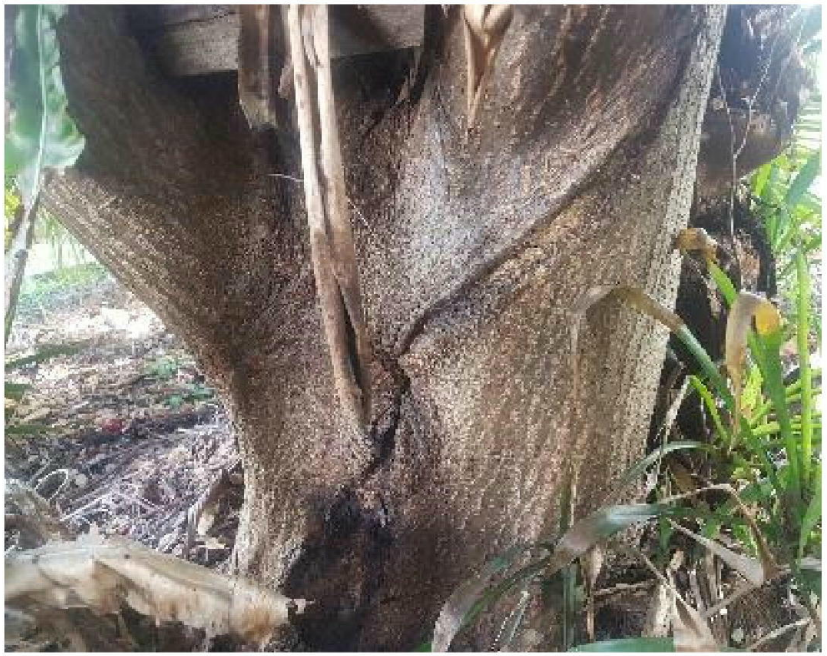


Fig 39. Photo of T32 Showing scar at base.

Fig 40. Photo of T33 a *Shefflera actinophylla*

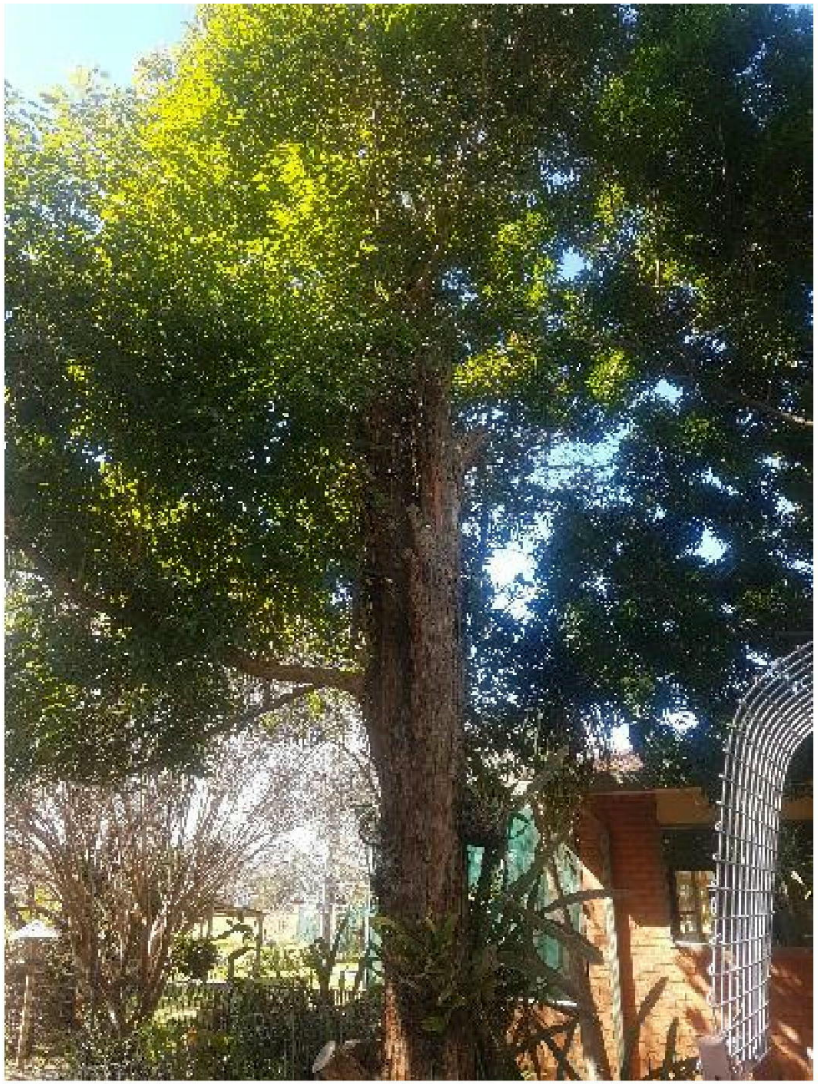


Fig 41. Photo of T34 a *Eucalyptus microcorys*

Fig 42. Included bark and rot at base of T34.

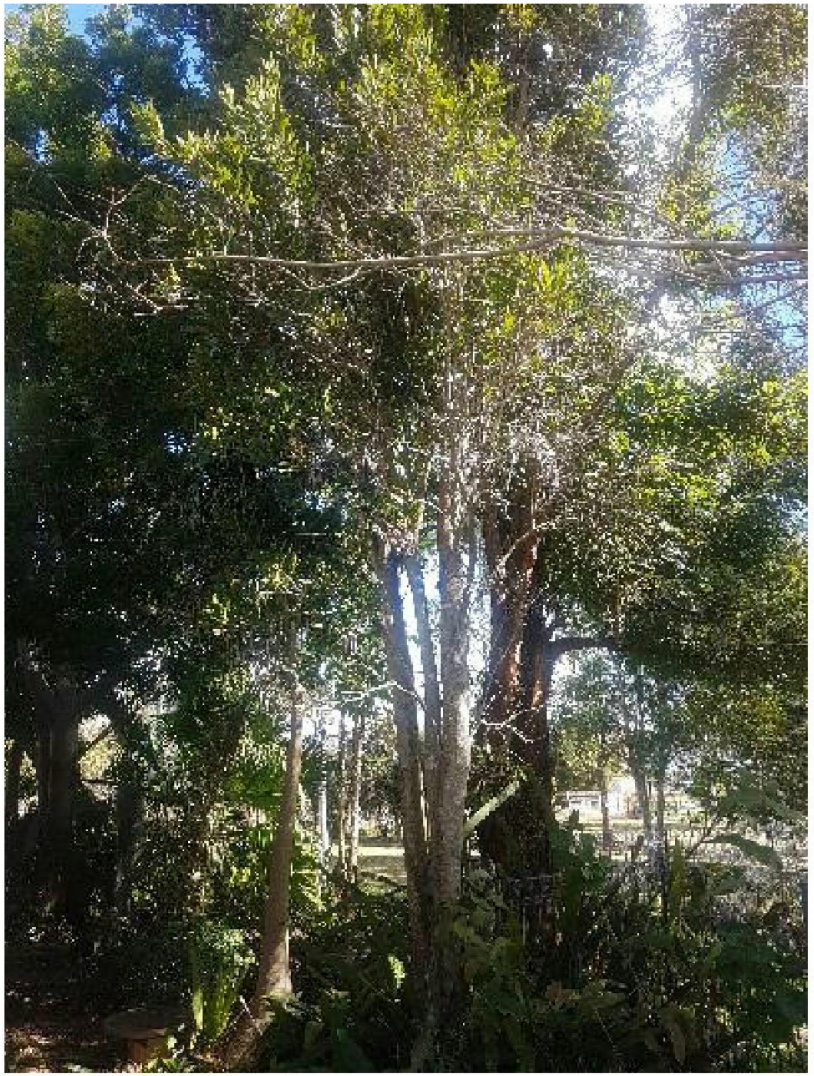


Fig 43. Photo of T35 a *Stenocarpus sinuatus*.

Fig 44. Photo of T36 a *Lagerstroemia indica*.

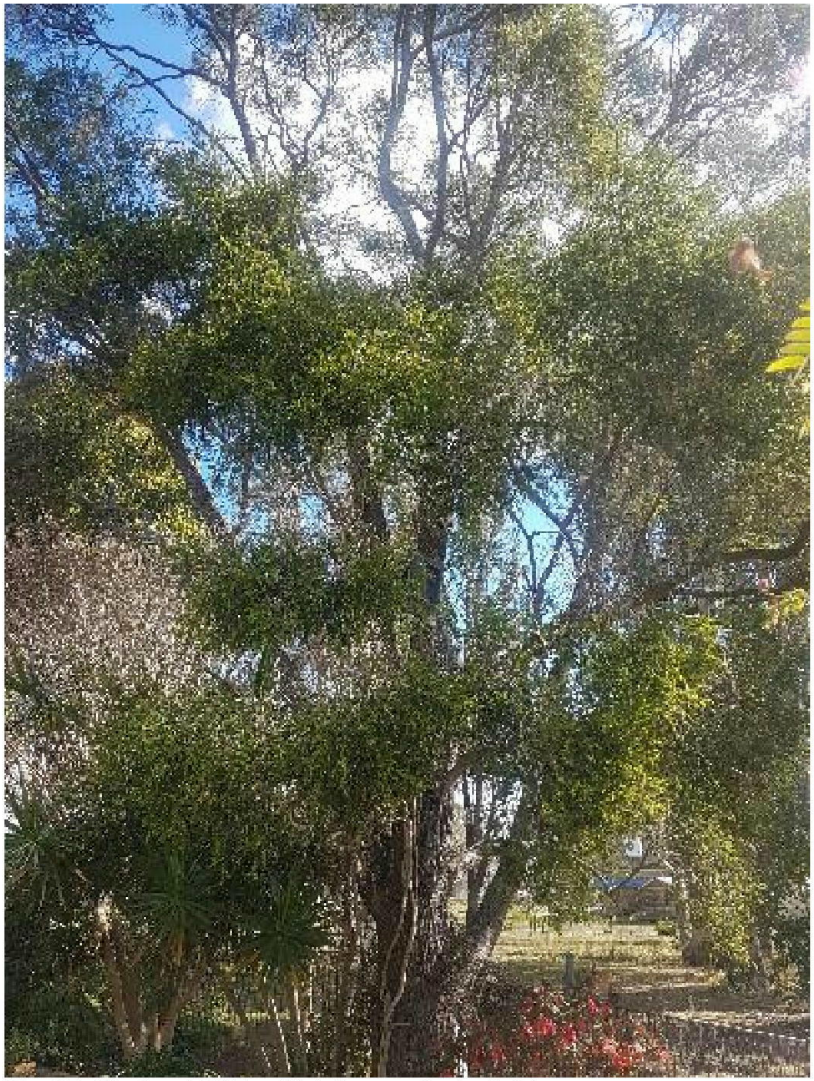


Fig 45. Photo of T37 a *Melaleuca styphelloides*

Fig 46. Photo of T38 an *Acer spp.*

Fig 47. Photo of T39 a *Prunus blireana*.

Fig 48. Photo of T40 a *Fraxinous*?

Fig 49. Photo of T41 a *Macadamia tetraphylla*.

Fig 50. Photo of T42 a *Grevillea robusta*.

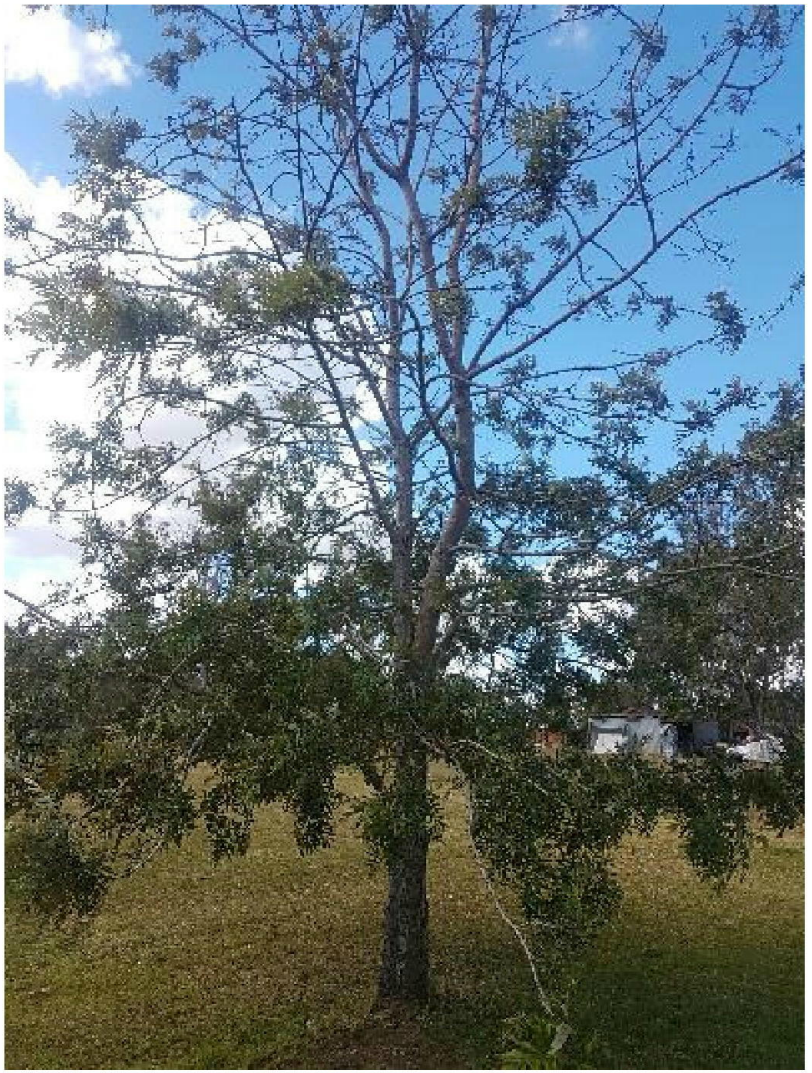


Fig 51 Photo of T43 *Grevillea robusta*

Fig 52. Photo of T44 a *Syzygium australae.*

Fig 53. Photo of T45 a small *Eucalyptus.*

Fig 54. Photo of T46 a *Lophostemon confertus*

Fig 55. Photo of T47 a *Callistemon viminalis*.

Fig 56. Photo of T48 a *Cupaniopsus anacardioides*.

Fig 57. Photo of T49 a *Corymbia gummifera*.

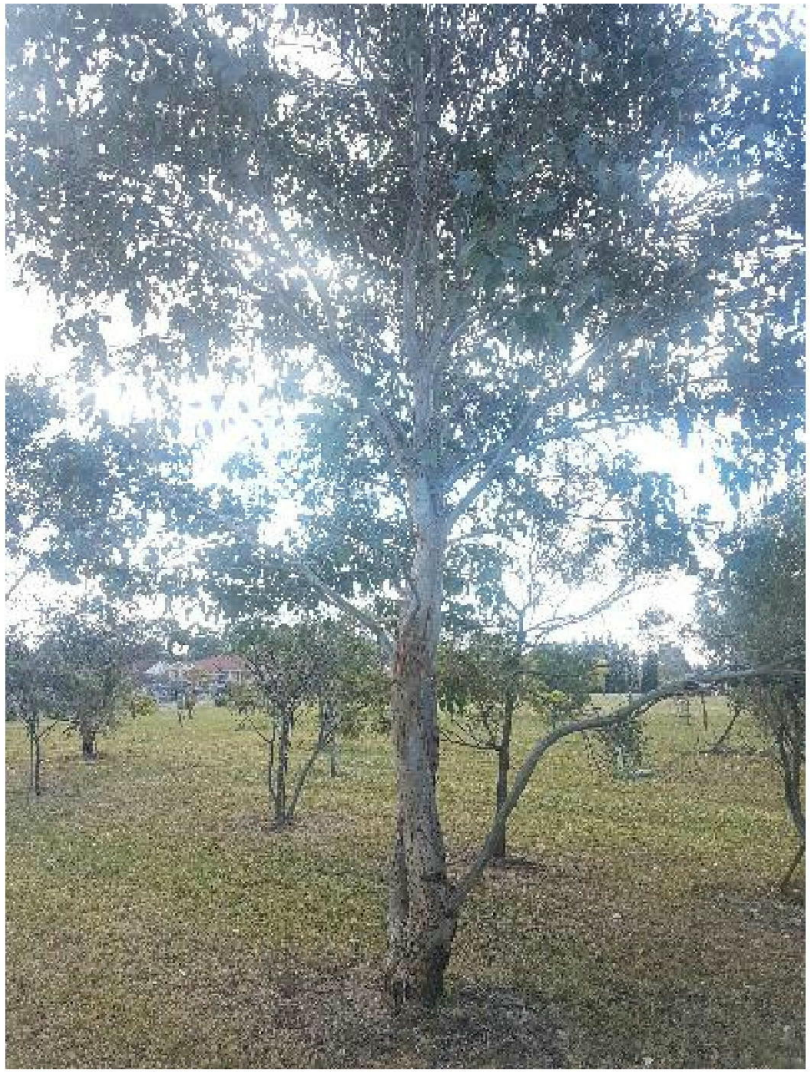


Fig 58. Photo of T50 a *Eucalyptus torelliana*

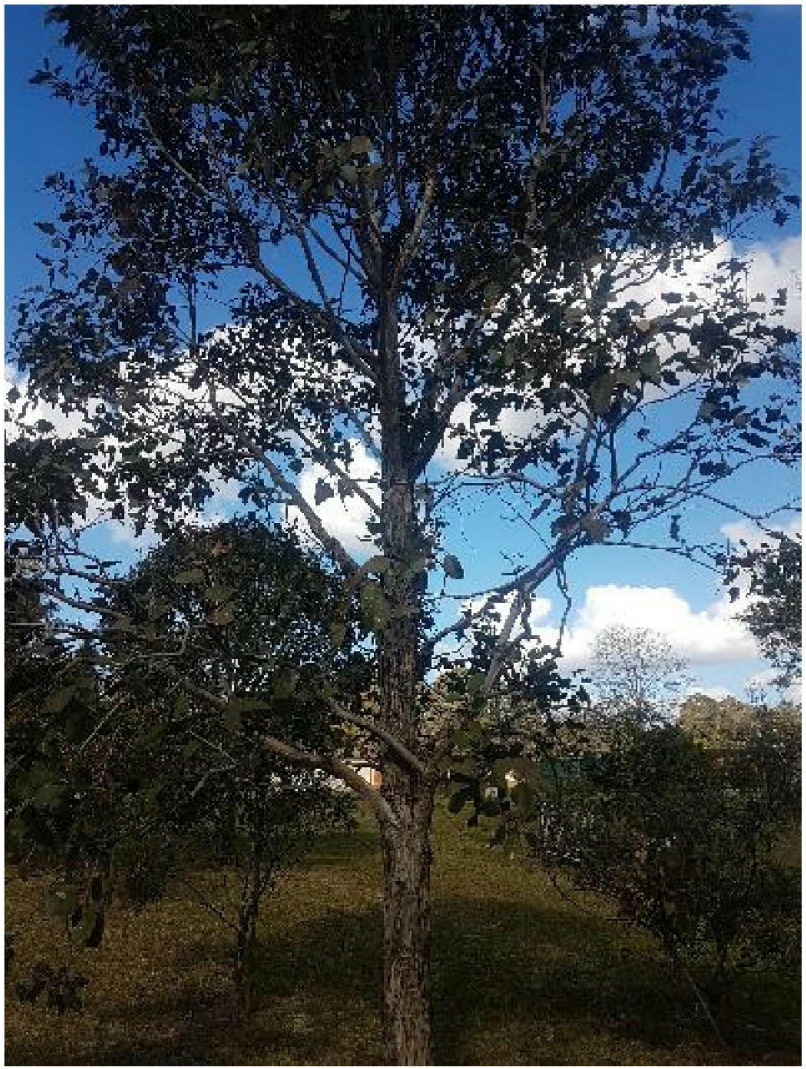
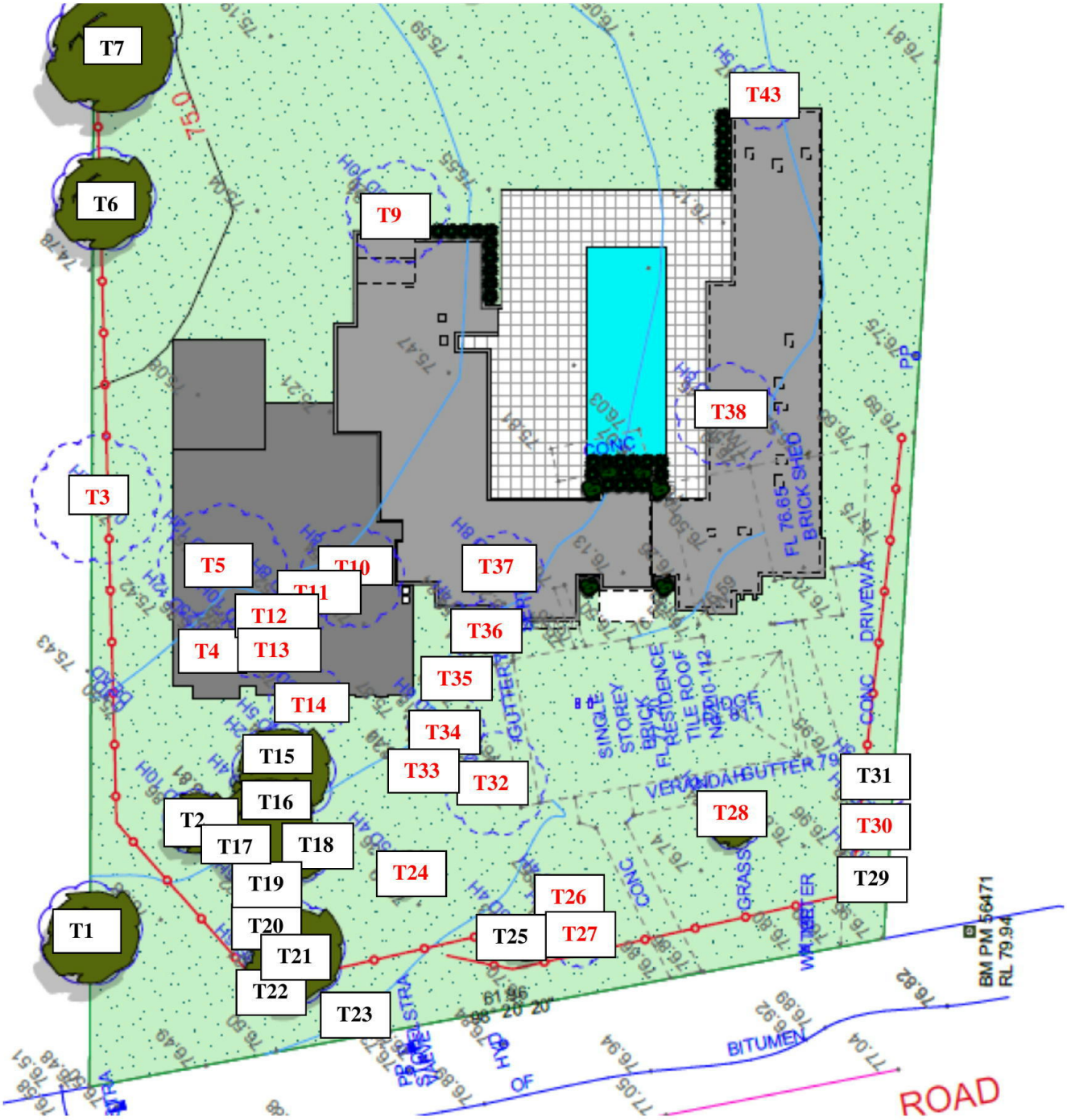


Fig 59. Photo of T51 a *Eucalyptus torelliana*.

Fig 60. Photo of T52 a *Melaleuca saligna*.

APPENDIX 2a Excerpt from site survey showing the position of trees referred to in Appendix 1.

APPENDIX 2b Excerpt from site Plans showing the position of trees in relation to the proposed building works. Trees numbered in Black are to be retained and Trees marked in red are to be removed.



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	Trees that may live for more than 40 years but should be removed to prevent interference with more suitable	Trees that may live for more than 15years but should be removed to prevent interference with more suitable	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

	extraordinary efforts to secure their long term retention.	individuals or to provide space for new plantings	individuals or to provide space for new plantings		
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)

APPENDIX 4 Excerpt from Penrith Council's preferred tree replacement list.

TREES Botanical Name	Common Name
Acacia decurrens	Green Wattle
Acacia elata	Cedar Wattle
Acacia falcata	Sickle Wattle
Acacia floribunda	White Sally
Acacia implexa	Hickory Wattle
Acacia longifolia	
Acacia parramattensis	Parramatta Wattle
Acmena smithii	Lilly Pilly
Allocasuarina littoralis	-
Alphitonia excelsa	Red Ash
Angophora bakeri	Narrow Leaved Apple
Angophora floribunda	Rough Barked Apple
Angophora subvelutina	Broad Leaved Apple
Backhousia myrtifolia	Grey Myrtle
Brachychiton populneus	-
Callicoma serratifolia	Black Wattle
Casuarina cunninghamiana	River She Oak
Casuarina glauca	Swamp Oak
Commersonia fraseri	Brush Kurrajong
Corymbia eximia	Yellow Bloodwood
Eucalyptus agglomerata	Blue-leaved Stringybark
Eucalyptus amplifolia	Cabbage Gum
Eucalyptus benthami	Camden White Gum
Eucalyptus crebra	Narrow Leaved Ironbark
Eucalyptus deanei	Mountain Blue Gum
Eucalyptus elata	River Peppermint
Eucalyptus eugenoides	Thin Leaved Stringbark
Eucalyptus fibrosa	Broad Leaved Ironbark
Eucalyptus longifolia	Woolybutt
Eucalyptus moluccana	Grey Box
Eucalyptus parramattensis	Parramatta Red Gum
Eucalyptus punctata	Grey Gum
Eucalyptus saligna	Sydney Blue Gum
Eucalyptus sclerophylla	Scribbly Gum
Eucalyptus tereticornis	Forest Red Gum
Exocarpus cuppressiformis	Cherry Ballart
Ficus coronata	Creek Sandpaper Fig
Glochidion ferdinandi	Cheese Tree
Leptospermum polygalifolium	Yellow Tea-tree