

**ARBORICULTURAL ASSESSMENT REPORT
FOR
JEFFREY & MICHELLE SAPER
907 BARRENJOEY RD
PALM BEACH
DA NO210/16**



PREPARED BY:

PPH

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OUTLINE:

The trees which are the subject of this assessment are located in the western part of the property at 907 Barrenjoey Rd, Palm Beach, which lies between Barrenjoey Rd and Thyra Rd to the west [see plan attached, p4].

The trees assessed are:

Tree 1 – *Eucalyptus maculata* [Syn. *Corymbia maculata*, aka 'Spotted Gum']

Tree 2 – *Eucalyptus maculata* [Syn. *Corymbia maculata*, aka 'Spotted Gum']

Tree 3 – *Acacia floribunda* [aka 'Gossamer Wattle']

Tree 4 – *Glochidion ferdinandi* [aka 'Cheese Tree']

SITE OVERVIEW:

The site slopes gently down from east to west.

Soil type is a clay loam typical of this part of the Northern Beaches peninsula, derived from Narrabeen Group shales and of which *E. maculata* is the typical dominant canopy species.

There are no natural drainage lines running through the property.

There is no other remnant vegetation except the two Spotted Gums.

The site would appear to have been developed for at least 60 years.

METHODOLOGY-

Tree assessment was carried out, using Visual Tree Assessment methods as described by Mattheck and Breloer [1994].

This involved visual examination of the tree, including the use of binoculars to evaluate upper parts of the tree's structure.

Climbing of the tree was not involved and tree coring or resistograph testing were not used.

Exposure of root systems was not performed, only clearing of the area for visual assessment as shown.

Signs of habitat usage of the tree by local fauna were also looked for and noted.

Tree location and crown dimensions are shown in the plan provided.

NOTES TO THE TREE ASSESSMENT REPORT –

: SULE = Safe Useful Life Expectancy

: height x width is given in metres

: diam. is trunk diameter in mm, taken at ~1.4m ht

: "native" indicates the species origin is Australia

: "indigenous" indicates the species is local to the area

: "exotic" indicates the species is non-native in origin

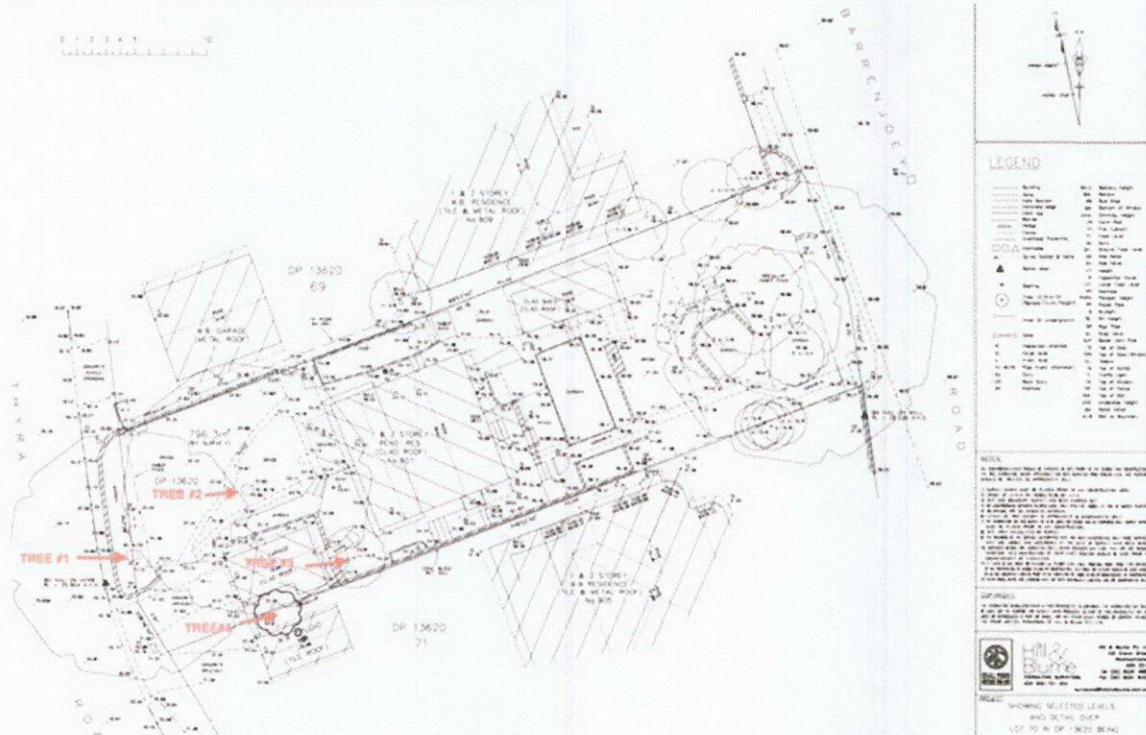
: **TPZ = Tree Protection Zone [as per AS 4970 –2009]**

: **SRZ = Structural Root Zone [as per AS 4970 –2009]**

SUMMARY – TREE HEALTH & RECOMMENDATIONS

TREE NUMBER	SULE [YEARS]	COMMENT
1	50+	RETAIN, PROTECT, REMEDIATE CROWN, ROOT ZONE ISSUES
2	50+	RETAIN, PROTECT
3	3-5	REMOVAL RECOMMENDED
4	50+	RETAIN, PROTECT

SITE PLAN WITH TREE NUMBERS



ASSESSMENT:

Tree 1 - Eucalyptus maculata [Spotted Gum – indigenous]

This is a remnant tree ie likely to have been left at initial development stage

Age – 60-80 years [est.], allowing for growth in prevailing conditions

Tree height -18m [est.]

Trunk diameter - 79cm ABH [measured]

TPZ - 8.8 metres radius [from centre of tree]

SRZ – 3.7 metres radius [from centre of tree]

The tree is mature in comparison to its expected lifespan of 100+ years, but is showing signs of decline, likely to be due to human factors [as below].

Significance in the local streetscape is moderate, being visible from many directions but being part of a surrounding continuous canopy [tree on right in pic 1].

Significance to this property is high, providing shade from the west.

No nests were visible, or signs of faunal habitation, but hollows are present.

No pruning cuts were noted.

The tree is located at the top of a bank approx. 1m high, created by the formation of Thyra Rd. The bank has been concreted for many years but recently exposed. [pic 2]

It appears that soil has been built up around the base of the trunk flare in the past and more recently a bed has been made with sleepers, also changing the trunk's natural intersection with the ground [pics 2 & 3].

The soil level across the root zone appears to have been raised in leveling for the lawn area [pic 1].

TRUNK:

The trunk rises straight to the first branch to the west at approx. 4 metres AGL. It divides into codominant trunks at 6 metres AGL [A – pic 4].

The northern trunk is approx. 45cm diameter and forms a main scaffold at 2.5 metres from its origin [B – pic 4].

This scaffold is approx. 25cm in diameter and extends approx. 5 metres to the west - it has a large wound and hollow at its base [pic 5]. [See RECOMMENDATIONS]

The trunk then divides into 3 minor scaffolds – it appears that a hollow is developing at this point [C – pic 4].

Of these three scaffolds –

1. to the east has gum formation visible for approx. 3m from the junction [D – pic 4, 4A]
2. is a vertical scaffold which appears sound [E – pic 4, 4A]
3. the scaffold extending west has lost a section approx. 15cm in diameter [F – pic 4, 4A]

The southern trunk divides into two scaffolds approx. 1m along [A – pic 6].

The more vertical scaffold has a hollow 1.5m along [B – pic 6].

The scaffold to the south extends over the drive [C – pic 6, 6A] and has approx. 10-15% deadwood.

CANOPY:

No significant epicormic growth development was observed [pics 4 & 6A].

Extension growth was not prolific, but this would be normal, due to it being winter.

The tree's canopy cover would be ~ 80% of expectation for a healthy tree -the best comparator is tree #2 adjacent, which doesn't appear to be subject to the same negative factors.

Branch junctions generally appeared to be well-formed, with indicators of imminent failure not apparent [with the exceptions noted above, due to hollows and damage].

ROOT SYSTEM:

Factors which have apparently affected the present condition of the root system are –

1. the cutting to level and form Thyra Rd 1-2m metres to the west of the tree, probably removing a number of significant roots which would have extended in this direction, and
2. the leveling of the back yard/lawn area with soil fill, to an apparent depth of 15-30cm, which would cover the eastern part of the tree's root zone.
3. the cutting and formation of the concrete driveway to the garage, probably removing a number of significant roots which would have extended in this direction.

The root system is visible where the wall on Thyra Rd has been removed [pics 2 & 7] It appears that the tree has developed 'sinker' roots which extend behind the wall and along to the north, due to restriction in this direction.

The trunk flare has clearly been buried to a depth of 20-30cm, most likely during 2. above, as indicated by the obscuring of the expected visible emergent part of the flare with soil [pic 7].

A 75mm diameter root, a remnant of a recently removed tree, lies hard against the exposed base of the trunk flare [pic 7] and is likely to cause girdling of the tree in time.

DISCUSSION:

Man-made works likely to be detrimental to the health of the tree's root zone, and thus the whole tree's health, have occurred in the past [see ROOT SYSTEM above].

Covering of the root system with the depth of clayey soil seen here impedes entry of air and water into the rhizosphere [root zone], especially as the layer becomes compacted through foot traffic.

Loss of roots due to construction is not able to be compensated fully by new growth, as the new adjacent environments eg compacted road/driveways, are not as favourable to root growth as the previous natural one.

The tree is less able to supply nutrients and water to the canopy, so a cycle of decline sets in, becoming apparent in dieback of the canopy, loss of vigour and development of significant epicormic growth.

Disease pathogens and insects then attack the tree more readily.

This tree shows some signs of decline or, at least, the effects of stress –

1. Canopy less vigorous than expected [esp. when compared to Tree 2]
2. Deadwood and various branch losses, leaving some large stubs
3. Hollows and areas of defensive gum formation where the tree has been physically attacked, probably by longicorn borers, and quite likely, cockatoos.

RECOMMENDATIONS:

TREE FRAMEWORK –

It is strongly advised that assessment, and probably removal, of the scaffold to the west, which has a large wound at its base [pic 5], be carried out as soon as possible.

An expert climber/arborist will be required to assess the hollow and likely strength at that point – however, it extends over a high target risk area [residents, vehicles] and removal is advisable on a precautionary basis.

The hollow at its base is likely to be compartmentalized and should be left as is.

The branch extending over the driveway [C, pic 6 & 6A] is also recommended for removal, due to the high target area risk [child activity, driveway], as a precaution.

The tree should have deadwood removed, leaving hollows for faunal habitat as much as possible. This will also make it easier to assess the further decline of the tree in future.

ROOT ZONE –

The sleeper beds adjacent to the tree should be reduced to no closer than 2 metres from the trunk flare, the soil level be reduced in this area and the beds be reconstructed.

The soil level towards Thyra Rd should be reduced [by hand to avoid trunk/root damage] until the natural trunk flare is visible, to reduce the chance of pathogens entering through damage to the bark of the lower trunk.

The lawn area should be aerated to 100mm using a coring machine, to enhance infiltration into the rhizosphere, once the work is completed.

Proposed reconstruction of ext. driveway to comply with gradient standards –

I have advised Mr Christopher Glanville [project architect] that the digging out of the driveway, if such work were undertaken, is **highly** likely to cause damage to major structural roots, which would be reasonably expected to run under the existing driveway.

Given that a substantial part of the tree's rootzone is somewhat compromised already, and the tree is already showing various symptoms of stress, it would be **highly inadvisable** to risk increasing that stress by carrying out works likely to damage the root system further.

Such work is likely to lead to degradation of the root system on the south side, which then has the potential to lead to failure of the tree in extreme weather conditions.

Construction of a new driveway and garage is no longer proposed. This avoids major disturbance within the SRZ of the tree.

Reconstruction of the front wall may be required in the future, but is not part of this DA. This would be within the SRZ of the tree.

Should this work be carried out, then these conditions would apply -

None of the roots visible along Thyra Rd are to be removed or damaged.

If major roots are exposed during the repair work, these must not be cut, or the tree may become infected by fungi, or in the worst case become unstable, given that the other parts of the rootzone are somewhat compromised already.

Any wall must be constructed to give min. clearance of 100mm to these roots.

A site arborist must be present during any excavation/removal of the existing concrete wall, to advise on the appropriate procedure if roots larger than 50mm diam. are seen.

Backfill between any new wall and the existing bank must only be with coarse blue metal, to allow free movement of air and water.

The girdling root and old stump [pic 7] should be removed, carefully by hand, to avoid future issues.

Tree 2 - Eucalyptus maculata [Spotted Gum – indigenous]

Remnant tree is likely to have been left at initial development stage

Age – 60-80 years [est.], allowing for growth in prevailing conditions

Tree height -18m [est.]

Trunk diameter - 70cm ABH [measured]

TPZ - 8.4 metres radius [from centre of tree]

SRZ – 3.5 metres radius [from centre of tree]

The tree is mature in comparison to its expected lifespan of 100+ years.

All visible signs are of general good health, appearing unaffected by nearby human developments.

Significance in the local streetscape is moderate, being visible from many directions but being part of a surrounding continuous canopy [tree on left in pic. 1].

Significance to this property is high, providing shade from the west.

No nests or hollows were visible, no signs of faunal habitation are present.

No pruning cuts were noted.

TRUNK:

Soil build-up at the trunk flare was not observed – unlike Tree #1, Tree #2 appears to emerge from natural ground level.

It has a clear trunk to 6 metres AGL, where a major scaffold extends to the west [upper centre, pic 1].

At 7 metres AGL another large scaffold extends to the southwest, over the garage [upper left, pic 1].

A nail has been driven into the trunk on the east side, causing gum exudation but no necrosis around this point.

CANOPY:

The canopy presents as being in robust good health.

Density would be 100% of expectation for the species.

No deadwood was observed, also no wounds, no epicormic growth, no gum exudation. No hollows were noted.

Branch junctions appeared sound and well-formed.

ROOTS:

The original excavation for the garage may have caused the loss of some roots on the south side but, if so, it has not led to a decline in the tree's health.

This may be because the remainder of the root zone has not been filled over or otherwise harmfully altered.

Rebuilding of the garage is not proposed to require alterations to the existing ground levels.

If reconstruction of the wall [pic 8] is required then precautions as for Tree #1 possible wall reconstruction would also apply.

DISCUSSION:

No problematic issues were apparent.

RECOMMENDATIONS:

Removal of the nail is advised, so the tree can heal that potential entry point for pathogens.

Rigorous application and observation of the TPP [below] is required and intended to keep it that way.

Tree #3 – Acacia floribunda ['Gossamer Wattle' - indigenous]

A small Acacia specimen is located between the house and the garage in an area of sandstone flagging [pic 9].

Height is approx. 4 metres, spread approx. 3 metres

Est age is 10-15 years ie the tree is mature in respect to its usual life span of 15-20 years

The tree has been pruned extensively [pic 10], possibly to remove deadwood caused by borer infestation [pic 11 & 12].

Borer galleries approx 3-4mm in diameter are seen in the cut ends.

DISCUSSION & RECOMMENDATION:

This tree is nearing the end of its useful life. Expectation of further lifespan would be at most 3-5 years.

This is a shortlived species, usually due to borer infestation as seen here, which cuts through the cambium layer and causes progressive branch loss.

If the owners wish to do so, I would fully support removal of this tree and recommend its replacement with a long-lived, bird-attracting species eg Callistemon citrinus Endeavour, or C. viminalis Hannah Ray.

Tree #4 – Glochidion ferdinandii ['Cheese Tree' – indigenous]

This tree is located in the property to the south [pic 13].

It is within 5 metres of the proposed works. Consequently it is to be afforded the same protection as trees on site.

It is a multi-trunked young trees, est 5-10 years old.

Height is approx. 4 metres. Width approx. 3 metres.

Health appears good [access for assessment is difficult [pic 13].

The root system appears likely to run along the boundary and probably under the garage. If reconstruction of the wall along that boundary is undertaken, care must be taken not to damage the roots in this area.

If a strip footing is required, then pier and beam construction must be used over the roots, with a minimum clearance of 100mm allowed for future growth.

Pruning of the canopy, to provide clearance during garage reconstruction, will need to be carried out by a person familiar with the Australian Standard for Tree Pruning.

TREE PROTECTION PROCEDURES:

Tree protection structures MUST be installed on site to avoid any damage to the trunks of the trees and to prevent compaction in the rootzone.

This will consist of 2m high chainlink fencing on a pipework support attached to blocks ie not driven into the ground. A clearance between tree and fence of 4m is required to protect the SRZ, while still allowing free movement for workers.

Where this is impossible eg between driveway/roadway and tree, then padded timber protection is to be attached by strapping to the tree to avoid impact damage.

To permit worker movement while avoiding compaction, walkways using Trakmat are to be installed and used by staff at all times. Traffic on the grassed areas is to be avoided.

Signage advising workers of the purpose of this fencing etc is to be provided and understanding of the purpose of the fencing is to be acknowledged to the site manager.

Storage of construction materials, washing out of cement waste, paint containers etc, is all forbidden within the TPZ and is to be acknowledged by workers to the site manager.

All tree protection works are to be approved by the site arborist before work commences.

Disclaimer:

Whilst every effort has been made to assess the tree fully and to detect any faults, diseases or likely causes of tree or branch failure, to the best of my professional ability and that of my colleagues, it is not possible to guarantee that such failure will not occur due to causes which could not be reasonably expected to be detected or foreseen.

Yours faithfully

Phil Packham

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CONSULTING ARBORIST

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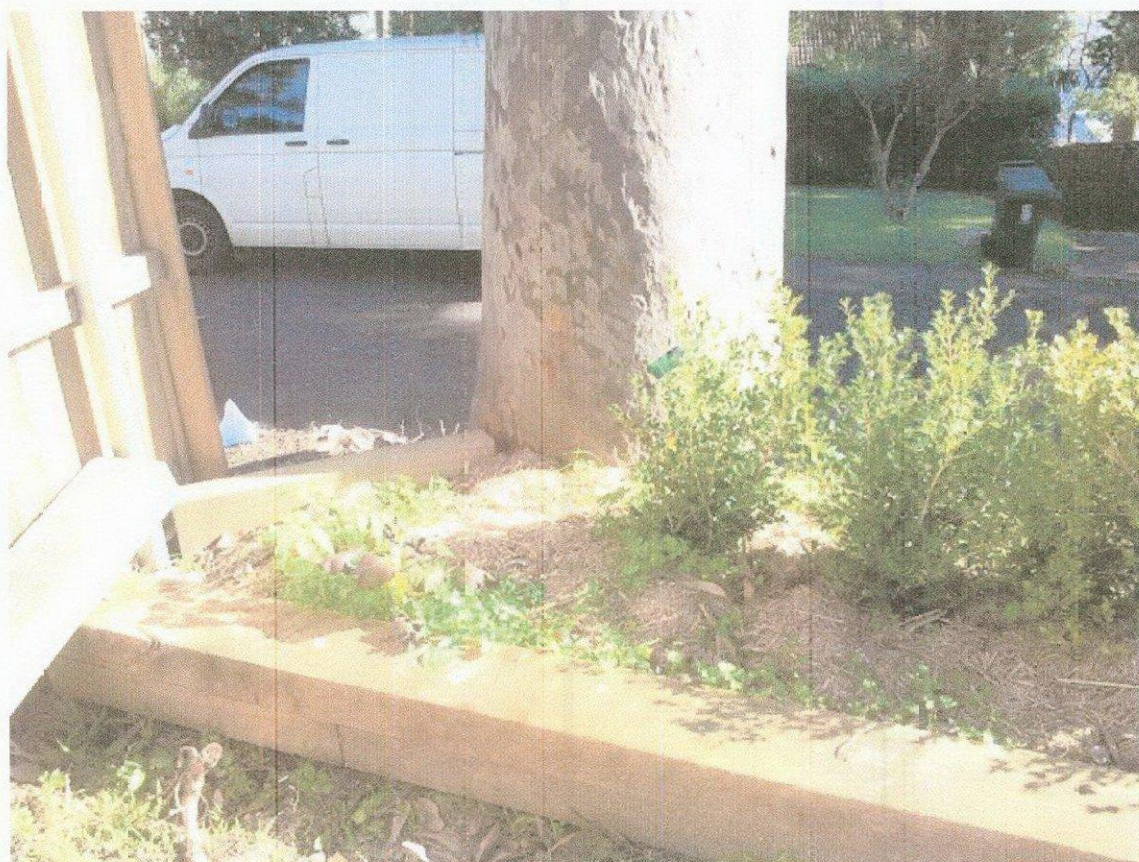
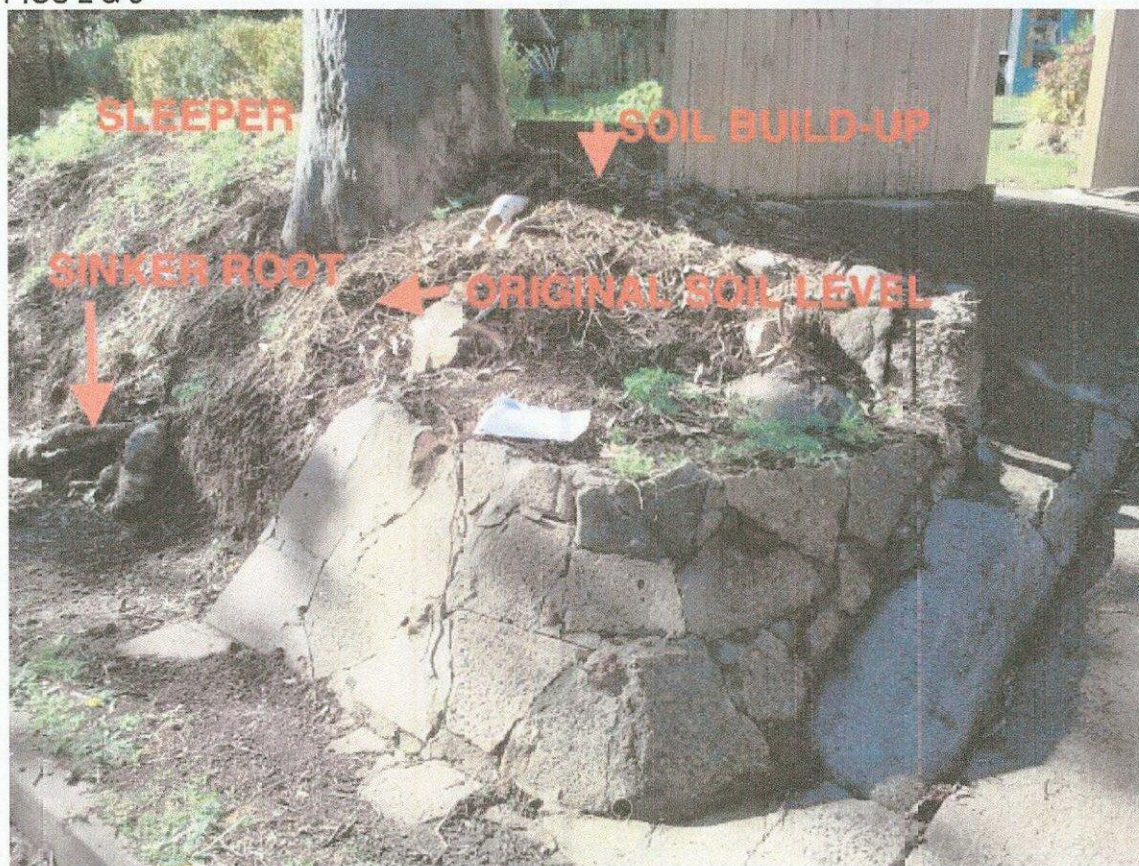
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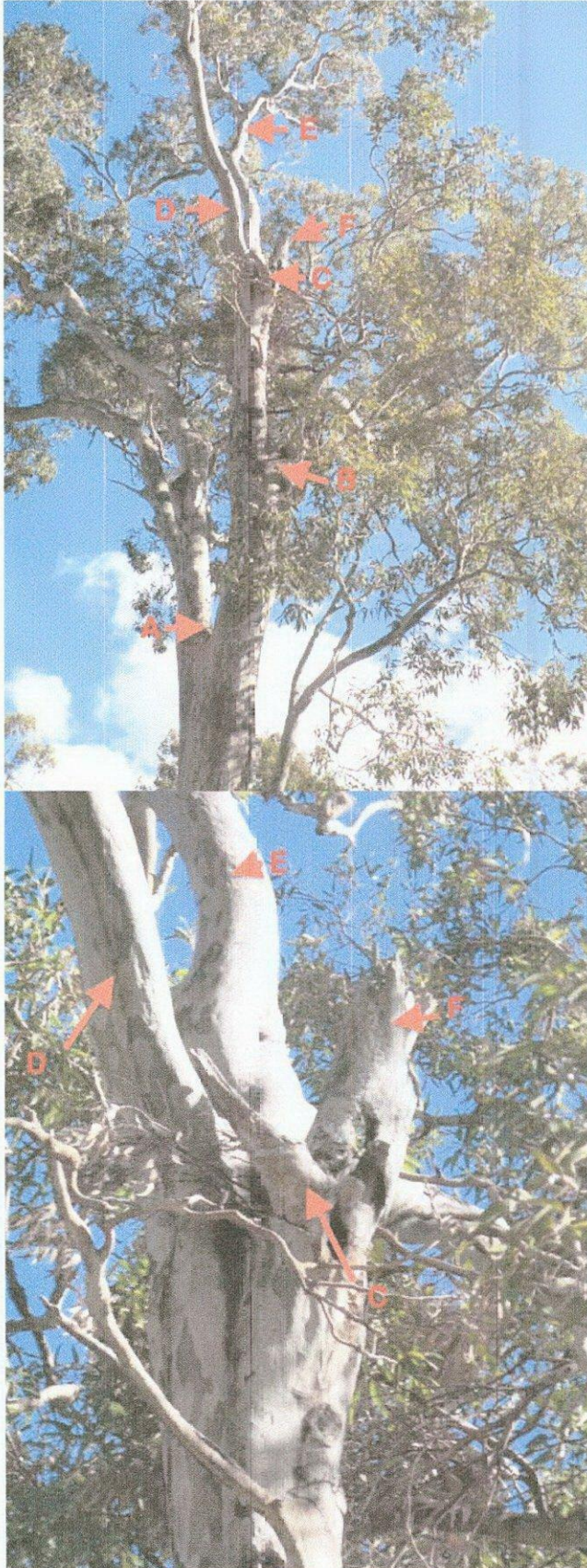
PIC 1



PICS 2 & 3

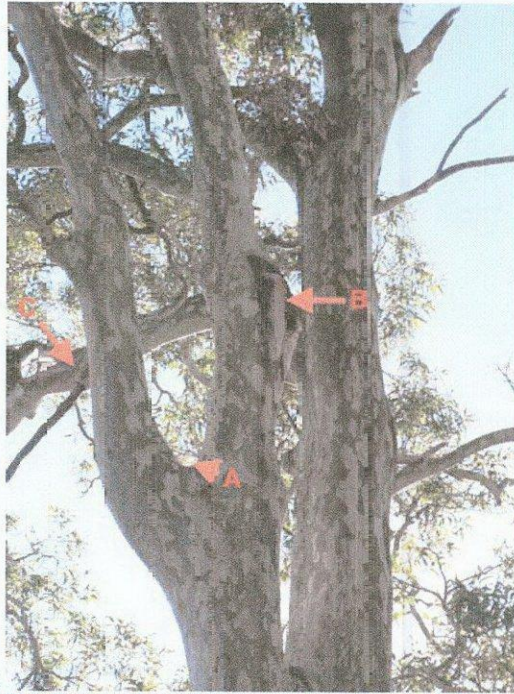


PICS 4 & 4A

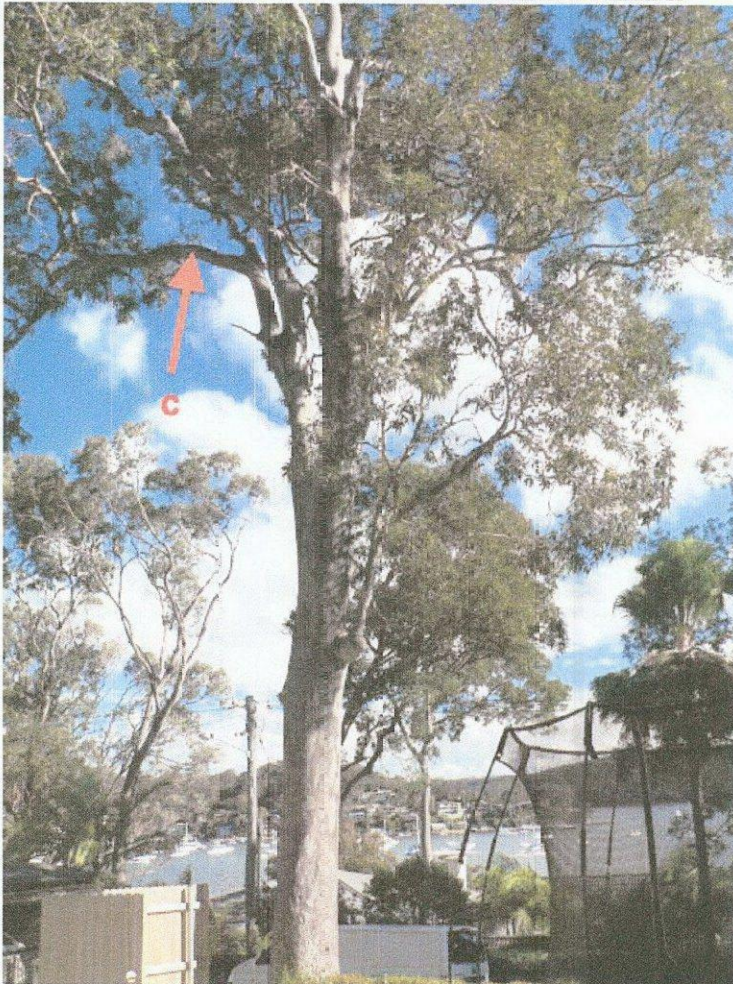


PIC 5





PICS 6, & 6A

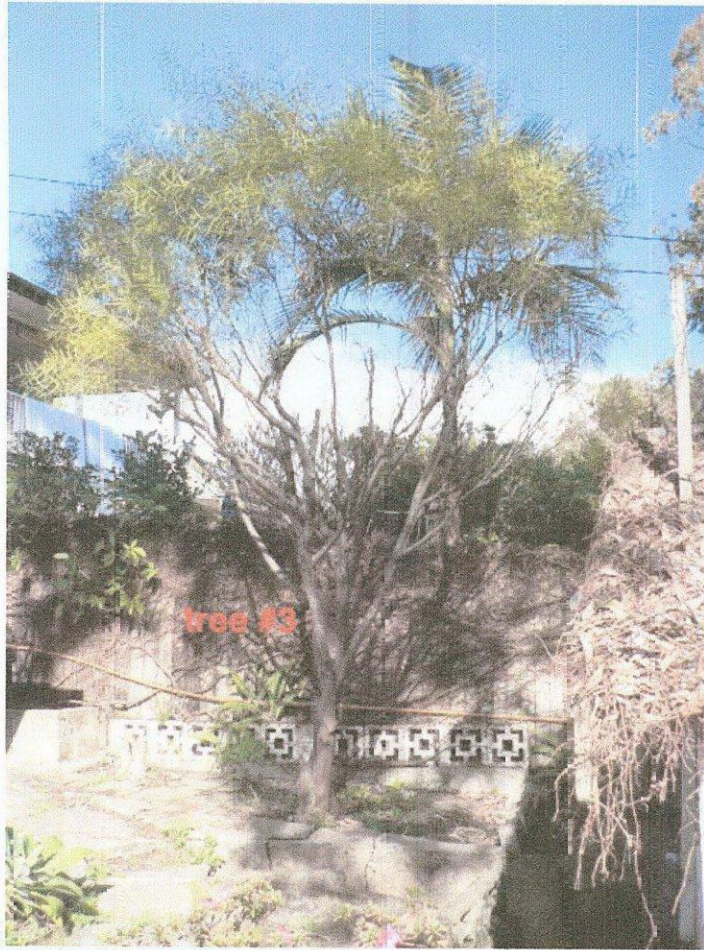


PIC 7



PIC 8

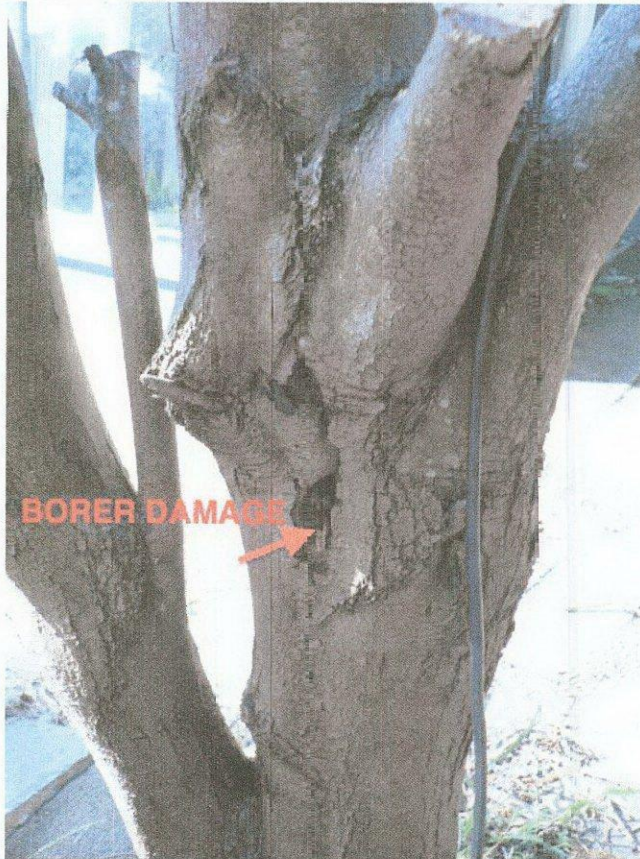




PICS 9 & 10



PICS 11 & 12



PIC 13

