

# **“GROWING MY WAY”**

## **Tree Consultancy**

Established 1977

EXCELLENCE in ALL ASPECTS OF TREE MANAGEMENT

FULL INSURANCE PROTECTION

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## ***Construction Impact & Management Statement for soon to be Lodged Development Application***

**September 2019, updated December 2019**

|                |                                                                                                                                                                                                                                                                                                                                                                                                                   |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Site:</b>   | Lot 1 in DP 308956<br>34 Hudson Parade<br>AVALON BEACH, NSW                                                                                                                                                                                                                                                                                                                                                       |
| <b>Client:</b> | Bob & Britt Goldie<br>c/- John Evans & Company<br>Unit 7, 6 Jubilee Avenue<br>WARRIEWOOD, NSW 2102<br>Ph: 61 418 976 596 (John Evans)<br>Email: <a href="mailto:info@jdeco.com.au">info@jdeco.com.au</a>                                                                                                                                                                                                          |
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## 1 Summary

Bob & Britt Goldie (as the Property Owners of 34 Hudson Parade) via John Evans of JD Evans & Company (Designers) commissioned the Growing My Way Tree Consultancy (GMW) to prepare a *Tree Assessment & Management Report* to be linked to a soon to be lodged *Development Application for Alterations/Additions to an existing residential dwelling*.

Relative to tree management the DA submission will require eight (8) trees to be discussed. All discussed trees are within the subject site.

The subject site shares common boundaries with two (2) adjoining residential sites, the Pittwater Waterfront & one (1) roadside reserve (Hudson Parade). Both common boundaries adjoining sites are developed to contain residential dwellings.

Motor vehicle access to the subject site is via Hudson Parade. Pedestrian access is via either the Pittwater Waterfront of Hudson Parade.

The sole consent authority is the *Northern Beaches Council*, (from herein NBC).

Information related to the discussed tree was gathered by onsite data collection with cross referencing to:

- NBC website, online property & environment information website tools;
- NSW Vegetation Clearance 'Code of Practice';
- NBC "Tree Management Provisions"
- SEPP 'Vegetation in Non-Rural Areas' (25 August 2017) &
- NBC Heritage Conservation Area & Land Zoning LEP Maps.

The aim of this report is:

1. To confirm the viability of the discussed trees, relating to individual health, vigour & condition taking into account any impact foreseen by the proposed Alterations/Additions.
2. Provide a site specific 'Tree Management Plan'.
3. Provided a list of locally suitable replacement tree species.

This document supports (relative to tree management) the proposal as presented. One (1) subject site tree is required to be replaced. The other eight (8) trees, all Spotted Gums except Tree #2A are assessed as able to be retained with management.

The one (1) tree assessed as unable to be viably retained is specified to be replaced with a suitable to the local environment new tree. (Preferably a locally indigenous species.)

Kyle A Hill (AQF level 5 & 8 Practicing/Consulting Arborist has prepared this report based on "Visual Tree Assessment" (VTA) undertaken on Monday, 16 September 2019.



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## 2 Introduction

This report contains observations & recommendations intended to assist in the management of the eight (8) trees identified as necessary to be discussed.

This document only relates to the nine (9) discussed trees all of which are closer than five (5.00m) from nearby proposed *Alterations/Additions to an existing residential dwelling*.

We acknowledge & confirm to be familiar with the NBC “*Tree Management Provisions*”, specifically the documents; *Pittwater Local Environment Plan, 2014*, (from herein *Pittwater LEP*), *Pittwater 21 Development Control Plan* (from herein *Pittwater 21 DCP*), *Wildlife Corridor Map*)” & the PC 21 DCP clause B4.22 *Preservation of Trees & Bushland Vegetation, parts B & C, starting on page 103, recent changes to the NBC DCP plus the new (August 2017) SEPP, Vegetation in Non Rural Areas*.

The sole consent authority is NBC.

The site is NOT within a NBC designated “*Heritage Conservation Area*”. The subject sites plus the two (2) adjoining residential sites are developed to contain residential dwellings. Both common boundary sites plus the subject site are Land Zoned, ‘E4’ Environmental Living.

All discussed trees are locally indigenous Australian Native Species. All discussed trees by genus/species are listed within the Pittwater Spotted Gum Forest, an Endangered Ecological plant community.

Information related to the discussed trees was gathered by onsite data collection with cross referencing to:

- NBC website, online property & environment information website tools;
- NSW Vegetation Clearance ‘Code of Practice’;
- NBC “*Tree Management Provisions*”
- SEPP ‘*Vegetation in Non-Rural Areas*’ (25 August 2017) &
- NBC Heritage Conservation Area & Land Zoning LEP Maps.

This document includes a “*Site Specific Tree Management Plan*”.



### 3 Methodology

Assessment of the trees has been from ground level by eye, using *Visual Tree Assessment* \* (VTA) techniques developed by Claus Mattheck. The principles of VTA are explained in his widely-used reference book *"The Body Language of Trees (1994)"*.

Assessment includes:

- Tree's current condition & likely future health. Species tolerance to root disturbance &/or development
- Likely future hazard potential to persons & property
- Tree's amenity value, such as significance, screening & habitat.

No root analysis, soil testing, 'Resistograph'® drilling or aerial canopy inspection was undertaken. See the following Appendices for further information:

- Appendix A Glossary of Common Arboreal terms
- Appendix B Site Survey (with tree locations plotted)
- Appendix C Tree Protection/Management Prior to & During Construction

\* **VTA–Visual Tree Assessment**, as referenced is a systematic inspection of a tree for indicators of structural defects that may pose a risk due to failure. Stage 1 is made from ground level (i.e. no aerial inspection is undertaken). An aerial inspection (Stage 2) is undertaken when there are easily identified visual indicators that suggest such an inspection is merited. Visual indicators are outlined within *The Body Language of Trees (Mattheck & Breloer, 1994)*. VTA is a broadly used relatively standardised approach. More complex (can be invasive) diagnostic fault detection equipment may be recommended once visual indicators of potential defects are confirmed.

## 4 Observations

### 4.1 The Site

The report discusses the nine (9) trees, all are located within the subject site. The subject site (by Site Survey) is 1018.00m<sup>2</sup> in size (by Title).

The subject site shares common boundaries with two (2) adjoining residential sites, the Pittwater Waterfront & one (1) roadside reserve (Hudson Parade). Both common boundaries adjoining sites are developed to contain residential dwellings.

The subject & both adjoining sites are Land Zoned 'E4' Environmental Living.

No Geotechnical issues are known to exist.



Map & Aerial photographs courtesy of Whereis.com & the NBC (website tools).



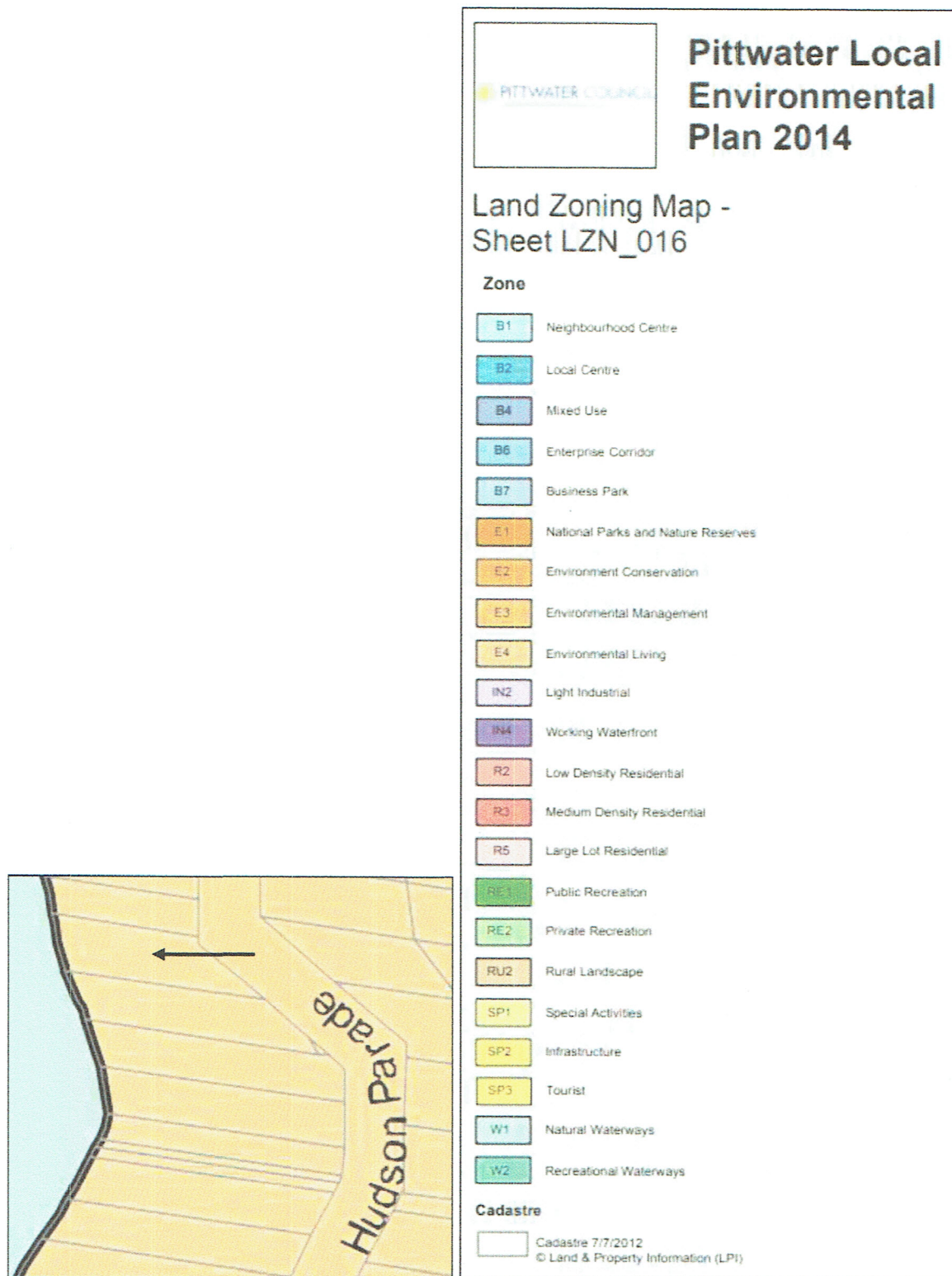


Figure 1: Illustrates NBC (old Pittwater Council) LEP Land Zoning Map Sheet LZN\_016.

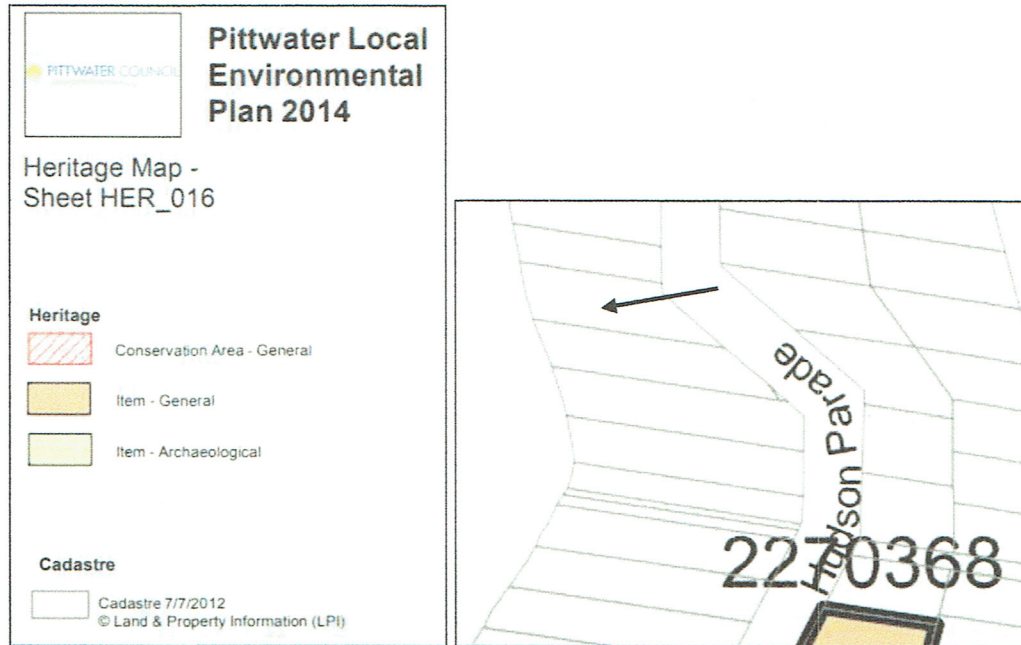


Figure 2: Confirms status of the subject site relative to Heritage Conservation Area. The site is NOT within a NBC designated “Heritage Conservation Area”.

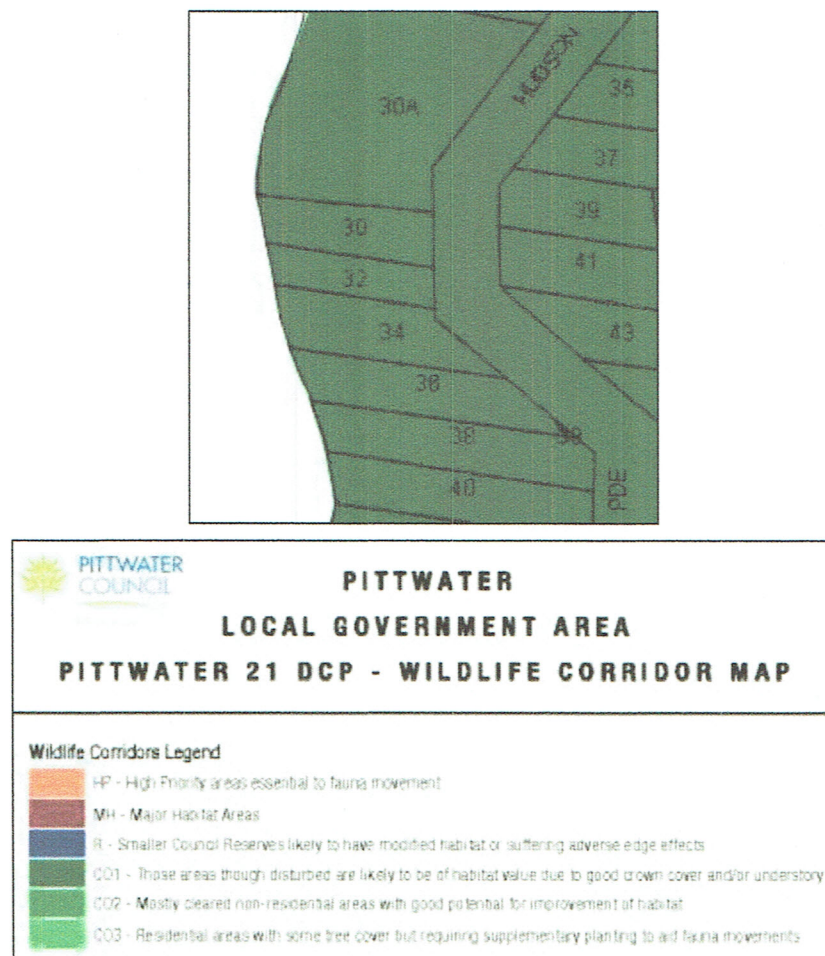


Figure 3: Confirms ‘Wildlife Corridor’ status as being C01.



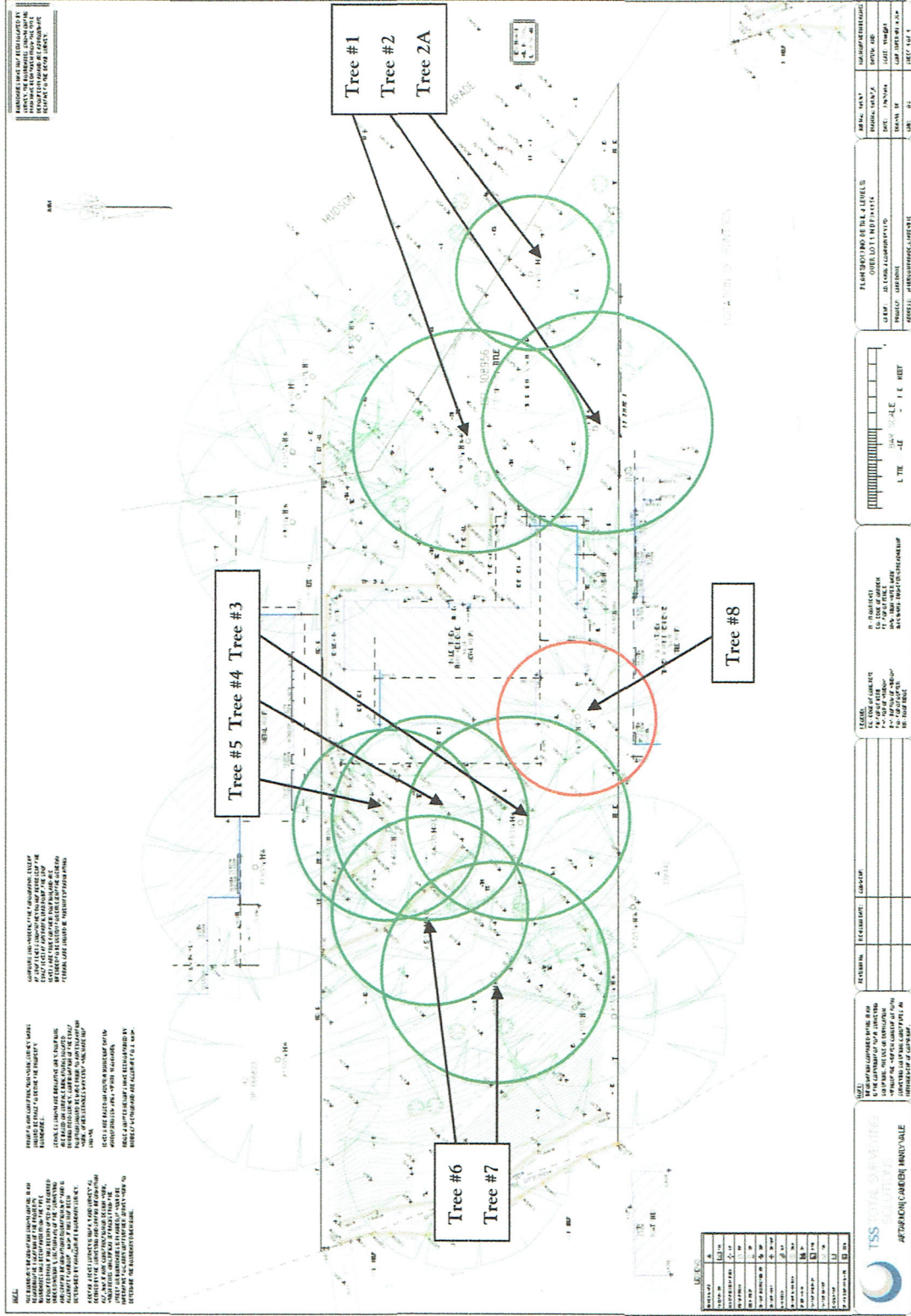
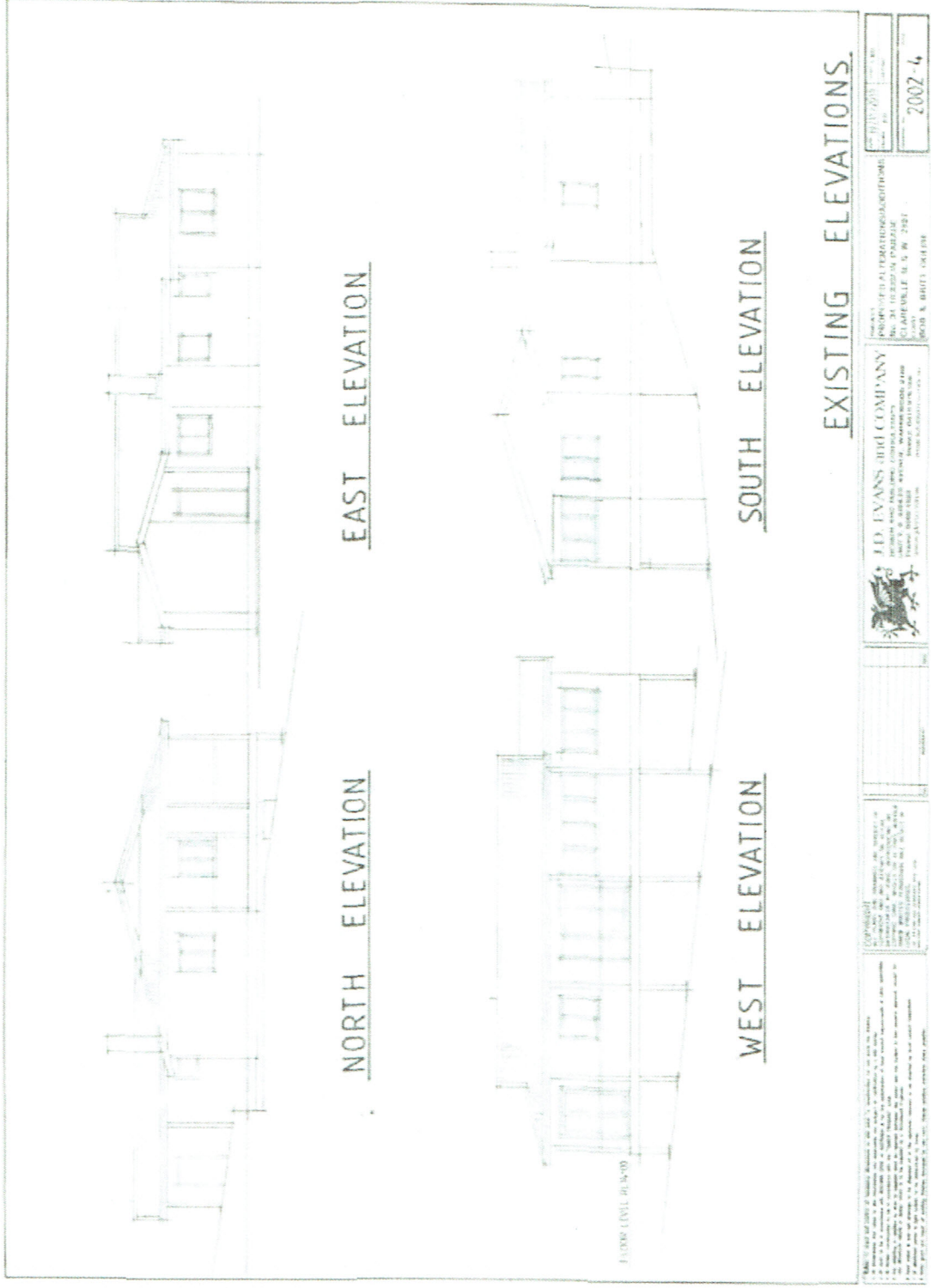
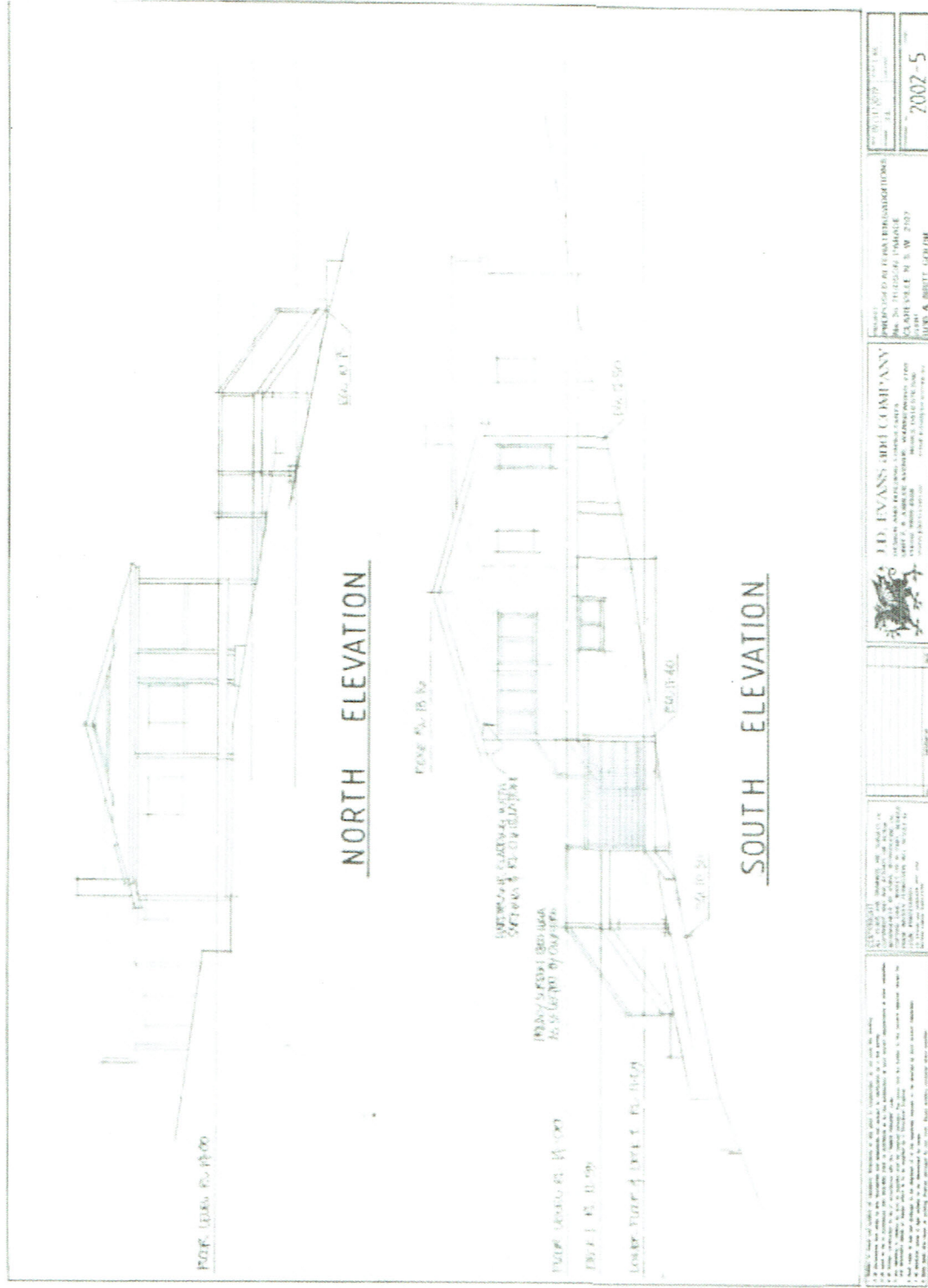


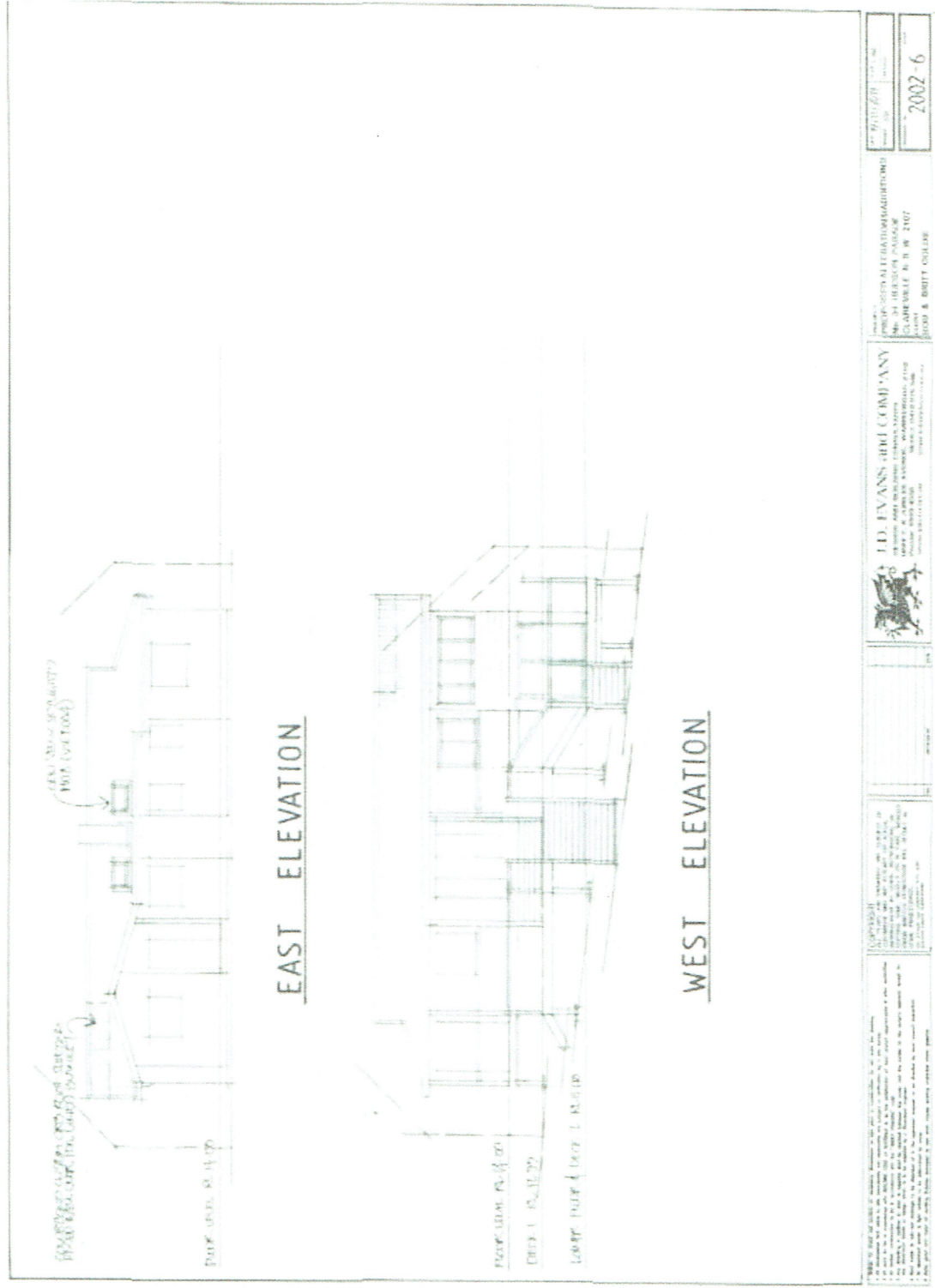
Figure 4: Site Survey with discussed tree locations plotted.

## 4.2 The Proposal















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*Tree & Site Images*











Figure 6: Confirms the location & canopies for Tree #1 & Tree #2.





Figure 7: Illustrates waterfront yard trees discussed with the exception of Tree #7.





**Figure 8: Illustrates canopies of discussed Tree #3, Tree #4 & Tree #5.**



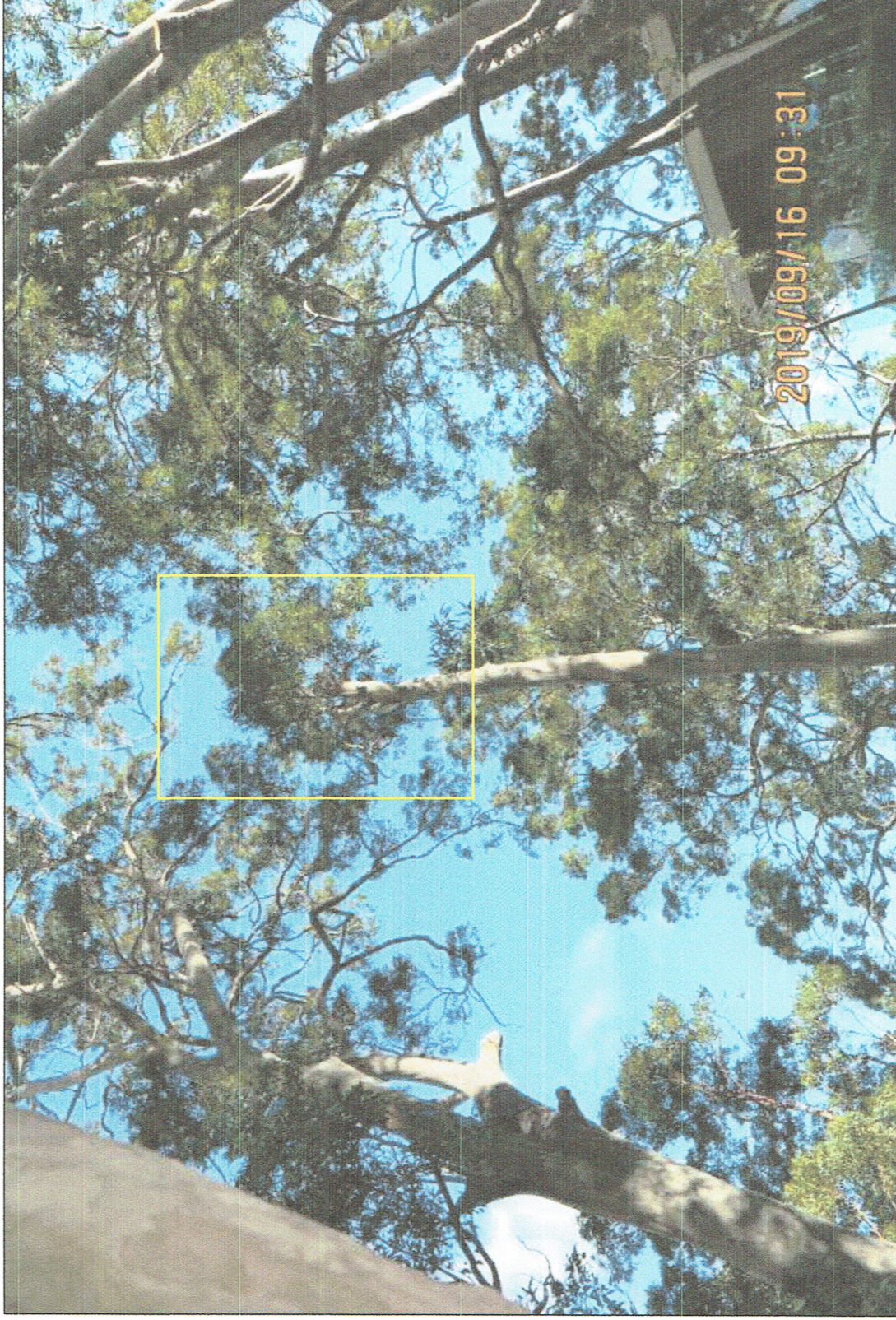


Figure 9: Confirms the canopy condition for discussed Tree #6.





Figure 10: Illustrates the defects (dead/dying branches/stubs) plus site of recent large diameter 'live branch failure' (Yellow Circle) for Tree #7.





Figure 11: Illustrates the location & canopy condition for Tree #8.



#### 4.4 The Tree – Summary Table

Read this table in conjunction with Appendix A–Common Arboreal Terms

| Trees Recommended for retention     |                                                                            |            |           |         |         |         |     |               |           |            |                                                                                                                                                                                                                  |
|-------------------------------------|----------------------------------------------------------------------------|------------|-----------|---------|---------|---------|-----|---------------|-----------|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Trees retainable but of low amenity |                                                                            |            |           |         |         |         |     |               |           |            |                                                                                                                                                                                                                  |
| Exempt species                      |                                                                            |            |           |         |         |         |     |               |           |            |                                                                                                                                                                                                                  |
|                                     | Identification                                                             | Height (m) | Crown (m) | DBH (m) | TPZ (m) | SRZ (m) | Age | Health/Vigour | Structure | Form/Habit | Comments                                                                                                                                                                                                         |
| 1                                   | <i>Corymbia maculata</i><br>Spotted Gum                                    | <24.00     | <12.50    | 0.69    | 8.28    | 3.04    | M   | Good & Good   | Typical   | Typical    | <u>Retain, Manage &amp; Protect</u> : Tree is considered to be of High Significance & High Retention Values. Tree is considered as able to be managed relative to Structural Root Zone radial distance breach. * |
| 2                                   | <i>Corymbia maculata</i><br>Spotted Gum                                    | <25.00     | <17.50    | 1.19    | 14.28   | 3.83    | M   | Good & Good   | Typical   | Typical    | <u>Retain, Manage &amp; Protect</u> : Tree is considered to be of High Significance & High Retention Values. Tree is considered as able to be managed relative to Structural Root Zone radial distance breach. * |
| 2A                                  | <i>Eucalyptus</i> spp.<br>(likely <i>E. capitella</i> )<br>Stringybark Gum | <16.00     | <14.00    | 0.54    | 6.48    | 2.65    | M   | Good & Good   | Typical   | Typical    | <u>Retain, Manage &amp; Protect</u> : Tree is considered to be of High Significance & High Retention Values. Tree is considered as able to be managed relative to Structural Root Zone radial distance breach. * |
| 3                                   | <i>Corymbia maculata</i><br>Spotted Gum                                    | <26.00     | <18.00    | 0.94    | 11.28   | 3.38    | M   | Good & Good   | Typical   | Typical    | <u>Retain, Manage &amp; Protect</u> : Tree is considered to be of High Significance & High Retention Values. Tree is considered as able to be managed relative to Structural Root Zone radial distance breach. * |
| 4                                   | <i>Corymbia maculata</i><br>Spotted Gum                                    | <13.50     | <9.00     | 0.36    | 4.32    | 2.37    | M   | Fair & Fair   | Atypical  | Typical    | <u>Retain, Manage &amp; Protect</u> : Tree is considered to be of High Significance & High Retention Values. Tree is considered as able to be managed relative to Structural Root Zone radial distance breach. * |



|   | Identification                                                                 | Height<br>(m) | Crown<br>(m) | DBH<br>(m) | TPZ<br>(m) | SRZ<br>(m) | Age | Health/<br>Vigour | Structure | Form/Habit                                                     | Comments                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|---|--------------------------------------------------------------------------------|---------------|--------------|------------|------------|------------|-----|-------------------|-----------|----------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5 | <i>Corymbia maculata</i><br>Spotted Gum                                        | <17.00        | <8.50        | 0.69       | 5.40       | 2.37       | M   | Good<br>&<br>Good | Typical   | Typical                                                        | <u>Retain, Manage &amp; Protect:</u> Tree is considered to be of High Significance & High Retention Values. Tree is as able to be managed relative to Structural Root Zone radial distance breach. *                                                                                                                                                                                                                                                          |
| 6 | <i>Corymbia maculata</i><br>Spotted Gum                                        | <20.00        | <8.00        | 0.48       | 5.76       | 2.63       | M   | Fair<br>&<br>Fair | Atypical  | Atypical, tree is very tall but with very small canopy spread. | <u>Retain, Manage &amp; Protect:</u> Tree is considered to be of High Significance & High Retention Values. Tree is as able to be managed relative to Structural Root Zone radial distance breach.<br>Tree displays potential symptoms of internal compromised supporting wood near tree trunk base.                                                                                                                                                          |
| 7 | <i>Corymbia maculata</i><br>Spotted Gum                                        | <25.00        | <15.50       | 0.93       | 11.16      | 3.44       | OM  | Fair<br>&<br>Fair | Typical   | Typical                                                        | <u>Retain, Manage &amp; Protect:</u> Tree is considered to be of High Significance & High Retention Values. Tree is as able to be managed relative to Structural Root Zone radial distance breach.<br>Tree displays significant dead/dying defective branches/stubs. The cause of recent large diameter (approximate 300mm diameter) 'live scaffold branch is unknown. Branch failure wound site displays likely fungal pathogen compromised supporting wood. |
| 8 | <i>Eucalyptus</i> spp.<br>(likely <i>E. acmenoides</i> )<br>White Mahogany Gum | <10.50        | <5.50        | 0.33       | 3.96       | 2.23       | M   | Fair<br>&<br>Fair | Typical   | Atypical, Appears suppressed by competition for solar access.  | <u>Remove &amp; Replace:</u> The tree is within the proposed footprint of an additional room to be added to the south west corner of the residence dwelling.                                                                                                                                                                                                                                                                                                  |

\* Trees#1, 2, 3, 4, & 5 have been recently pruned to remove dead/dying/defective branches.

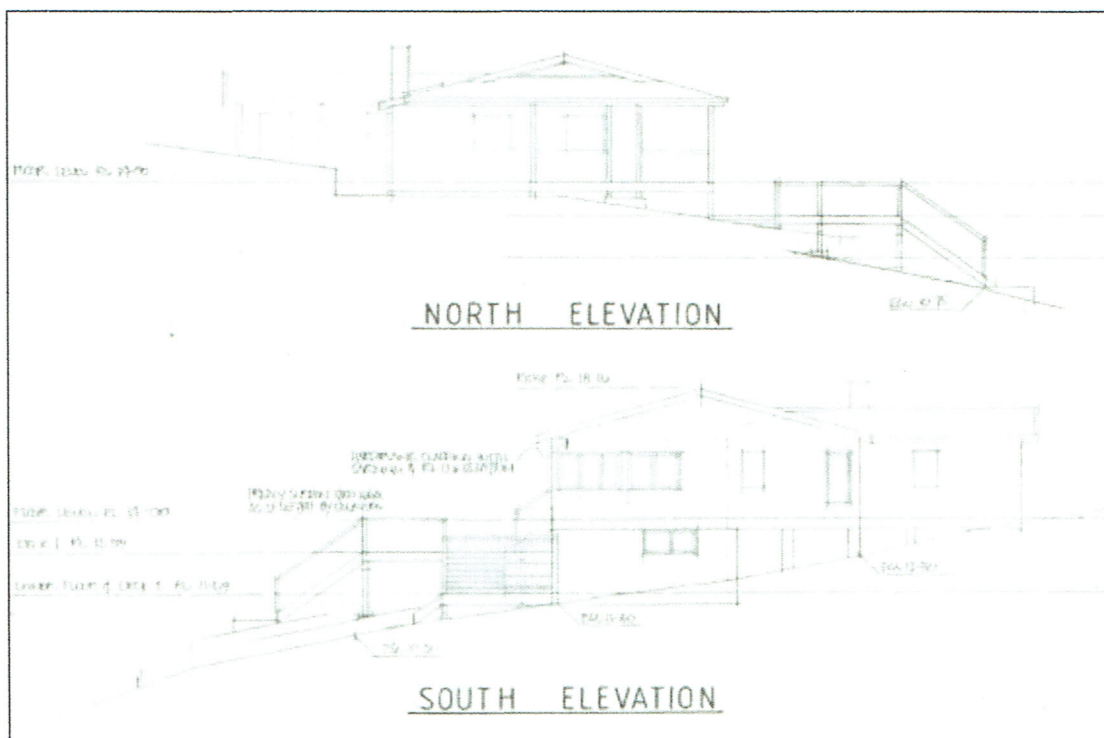


## 5 Discussion

Of the nine (9) discussed trees, eight (8) are assessed as able to be retained with application of intensive management. As briefed the existing carport (suspended structure) is to be demolished & replaced with a new garage with upper level home office, see page 13 drawings provided by JD Evans & Company.

The proposal relative to the existing residence as interpreted from drawings provided by JD Evans & Company, see pages 10 thru 13 requires only the removal/replacement of one (1) tree, (Tree #8). The reason for its proposed removal/replacement is a new veranda for the lower level floor & an extension to the existing veranda (main floor of the residence) are proposed. The waterfront face of the residence is additionally confirmed to have a new deck, lower than the main floor veranda level constructed with two (2) new stairs linking to the main floor level & pathway to the waterfront.

All other discussed trees (Tree #1, Tree #2, Tree #2A, Tree #3, Tree #4, Tree #5, Tree #6 & Tree #7) are determined as able to be viably retained with 'intensive management'. The key component of 'intensive management' will be to minimise disturbance to any retained individual tree's 'live woody root system'. In addition to manually excavated new footing/pier sites (mostly for the new garage/home office) it is preferable where possible to re-use existing footings/piers sites. New footing/pier sites must be able to be flexibly located so as to avoid damage to 'live woody tree roots' of a 'significant diameter'. ('Significant diameter' in this instance is defined as being equal to or greater than fifty Millimetres (50mm) in diameter.) The specifications for achieving minimal to nil 'significant diameter live woody tree root system' damage is discussed on the following pages for each individual tree.





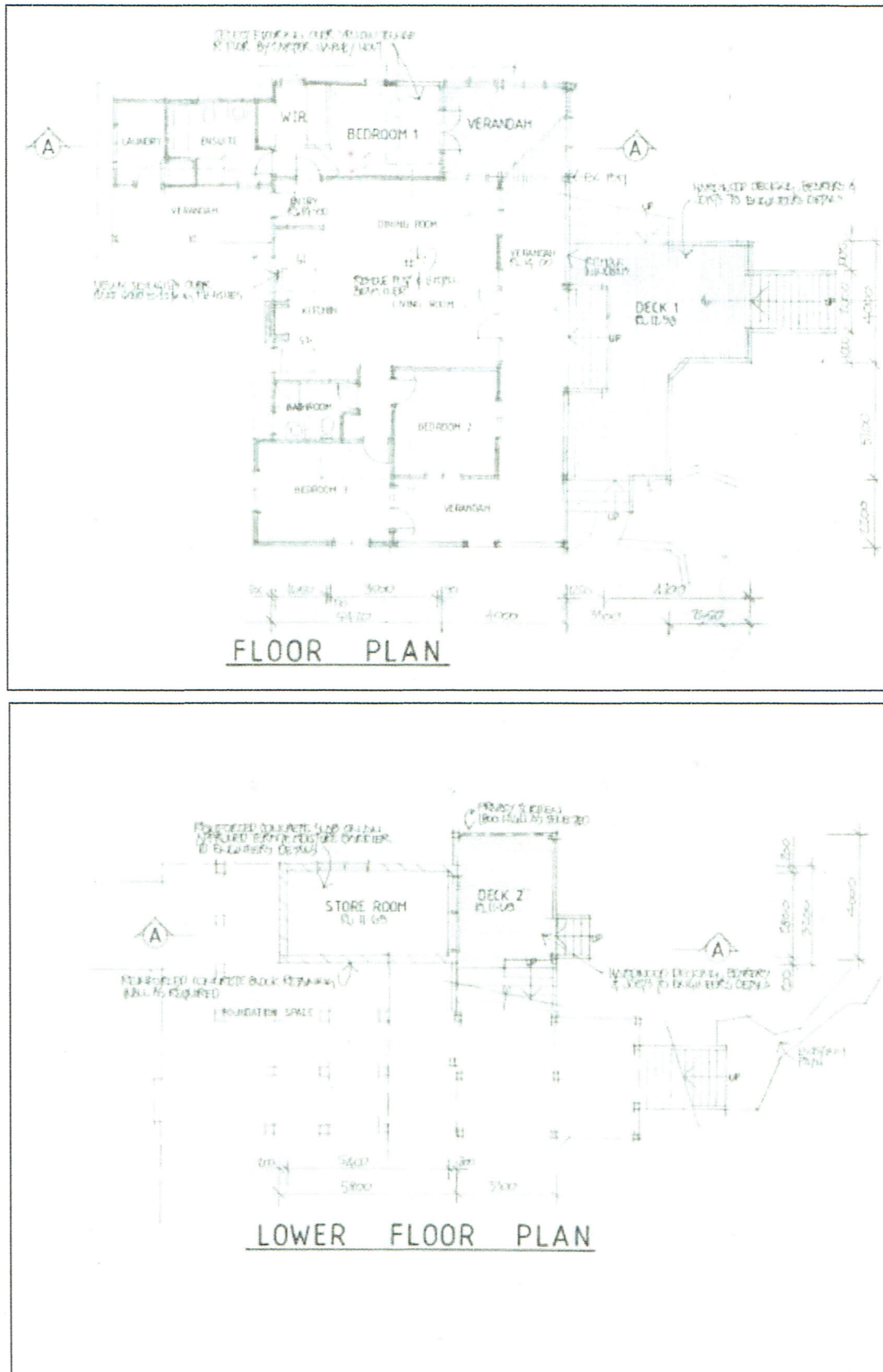


Figure 12: Above & previous page Illustrates the proposed works North/South Elevations & Floor plans for the residence. See page 13 for Garage/Home Office Elevations.



**TREE #1:** As can be seen on pages 14 thru 16 photographs, this tree is deemed to be of good health & good vigour. Simply, to maintain its *Useful Life Expectancy* (from herein ULE) & retention & significance values any ground level disturbance must be manually excavated to support 'flexibly located footings/piers so as to avoid damage to any significant diameter 'live woody tree roots. The reason for the below specification is to not adversely impact upon the root system or the total tree natural ULE.

The tree will be specified to have 'temporary metal mesh' isolation fencing installed as far away from the tree trunk as site/proposed built form will allow. Additionally, as the new proposed garage/home office will be suspended over its Structural Root Zone (from herein SRZ) radial distance of 3.04m a 'Tree Trunk Guard' to a minimum height of 5.00m is specified as the TPZ/STZ areas will need to be breached until the proposed structure is well out of the ground.

It is envisaged Tree #1, Tree 2 & Tree #2A will be isolated as individual tree specimens.

The access pathway required for builders for access to the residence will be specified to be a temporary (i.e. above existing ground level) bridge/raised structure. The existing ground level within the retained tree's calculated Tree Protection Zone (from herein TPZ) radial distance (8.28m) must be covered & maintained throughout the project with a 'native mulch' that comprises both woody & foliage components. The mulch at all times must be between 50mm & 75mm thick. Water applications in the absence of natural rainfall events is essential & is to be applied in compliance with at time of construction processes "Water Restrictions" status.

With intensive management the proposed demolition of existing carport structure & the new garage/home office is not assessed as having any potential to shorten this tree's ULE.

**TREE #2:** As can be seen on pages 14 thru 16 photographs, this tree is deemed to be of good health & good vigour. Simply, to maintain its ULE, retention & significance values any ground level disturbance must be manually excavated to support 'flexibly located footings/piers so as to avoid damage to any significant diameter 'live woody tree roots. The reason for the below specification is to not adversely impact upon the root system or the total tree natural ULE.

The tree will be specified to have 'temporary metal mesh' isolation fencing installed as far away from the tree trunk as site/proposed built form will allow. Additionally, as the new proposed garage/home office will be suspended over its SRZ radial distance of 3.83m a 'Tree Trunk Guard' to a minimum height of 5.00m is specified as the TPZ/STZ areas will need to be breached until the proposed structure is well out of the ground.

The access pathway required for builders for access to the residence will be specified to be a temporary (i.e. above existing ground level) bridge/raised structure. The existing ground level within the retained tree's calculated TPZ radial distance (14.28m) must be covered & maintained throughout the project with a 'native mulch' that comprises both woody & foliage components. The mulch at all times must be between 50mm & 75mm thick. Water applications in the absence of natural rainfall events is essential & is to be applied in compliance with at time of construction processes "Water Restrictions" status.



With intensive management the proposed demolition of existing carport structure & the new garage/home office is not assessed as having any potential to shorten this tree's *ULE*.

**TREE #2A:** As can be seen on pages 14 thru 16 photographs, this tree is deemed to be of good health & good vigour. Simply, to maintain its *ULE*, retention & significance values any ground level disturbance must be manually excavated to support 'flexibly located footings/piers so as to avoid damage to any significant diameter 'live woody tree roots. The reason for the below specification is to not adversely impact upon the root system or the total tree natural *ULE*.

The tree will be specified to have 'temporary metal mesh' isolation fencing installed as far away from the tree trunk as site/proposed built form will allow. Additionally, as the new proposed garage/home office will be suspended over its SRZ radial distance of 5.00m a 'Tree Trunk Guard' to a minimum height of 5.00m is specified as the TPZ/STZ areas will need to be breached until the proposed structure is well out of the ground.

The access pathway required for builders for access to the residence will be specified to be a temporary (i.e. above existing ground level) bridge/raised structure. The existing ground level within the retained tree's calculated TPZ radial distance (5.00m) must be covered & maintained throughout the project with a 'native mulch' that comprises both woody & foliage components. The mulch at all times must be between 50mm & 75mm thick. Water applications in the absence of natural rainfall events is essential & is to be applied in compliance with at time of construction processes "Water Restrictions" status.

With intensive management the proposed demolition of existing carport structure & the new garage/home office is not assessed as having any potential to shorten this tree's *ULE*.

**TREE #3:** As can be seen on page 17 photograph, this tree is deemed to be of good health & good vigour. Simply, to maintain its *ULE*, retention & significance values any ground level disturbance must be manually excavated to support with 'flexibly located footings/piers so as to avoid damage to any significant diameter 'live woody tree roots. The reason for the below specification is to not adversely impact upon the root system or the total tree natural *ULE*.

Additionally, the tree will be specified to have a 'tree trunk guard' installed around its trunk to a minimum height of 4.50m as is impractical to install 'temporary metal mesh fencing' relative to the required access for the builders.

The access pathway required for builders to access the side of the subject site where the tree is located will be specified to be a temporary (i.e. above existing ground level) bridge/raised structure. The existing ground level within the retained tree's calculated TPZ radial distance (11.28m) must be covered & maintained throughout the project with a 'native mulch' that comprises both woody & foliage components. The mulch at all times must be between 50mm & 75mm thick. Water applications in the absence of natural rainfall events is essential & is to be applied in compliance with at time of construction processes "Water Restrictions" status.

With intensive management the proposed nearby works are not assessed as having any potential to shorten this tree's *ULE*.



**TREE #4:** As can be seen on pages 17 & 18 photographs, this tree is deemed to be of fair health & fair vigour. Simply, to maintain its *ULE*, retention & significance values any ground level disturbance must be manually excavated to support 'flexibly located footings/piers so as to avoid damage to any significant diameter 'live woody tree roots. The reason for the below specification is to not adversely impact upon the root system or the total tree natural *ULE*.

Additionally, the tree will be specified to have a 'tree trunk guard' as the proposed new deck/stairs are suspended over its Structural Root Zone (from herein SRZ) radial distance of 2.37m.

The existing ground level within the retained tree's calculated TPZ radial distance (4.32m) must be covered & maintained throughout the project with a 'native mulch' that comprises both woody & foliage components. The mulch at all times must be between 50mm & 75mm thick. Water applications in the absence of natural rainfall events is essential & is to be applied in compliance with at time of construction processes "Water Restrictions" status.

With intensive management the proposed nearby works are not assessed as having any potential to shorten this tree's *ULE*.

**TREE #5:** As can be seen on pages 17 & 18 photographs, this tree is deemed to be of good health & good vigour. Simply, to maintain its *ULE*, retention & significance values any ground level disturbance must be manually excavated to support 'flexibly located footings/piers so as to avoid damage to any significant diameter 'live woody tree roots. The reason for the below specification is to not adversely impact upon the root system or the total tree natural *ULE*.

Additionally, the tree will be specified to have a 'tree trunk guard' as the proposed new deck/stairs are suspended over its Structural Root Zone (from herein SRZ) radial distance of 2.37m.

The existing ground level within the retained tree's calculated TPZ radial distance (4.32m) must be covered & maintained throughout the project with a 'native mulch' that comprises both woody & foliage components. The mulch at all times must be between 50mm & 75mm thick. Water applications in the absence of natural rainfall events is essential & is to be applied in compliance with at time of construction processes "Water Restrictions" status.

With intensive management the proposed nearby works are not assessed as having any potential to shorten this tree's *ULE*.

**TREE #6:** As can be seen on page 19 photograph, this tree is deemed to be of fair health & fair vigour. Simply, to maintain its *ULE*, retention & significance values any ground level disturbance must be manually excavated to support 'flexibly located footings/piers so as to avoid damage to any significant diameter 'live woody tree roots. The reason for the below specification is to not adversely impact upon the root system or the total tree natural *ULE*.

Additionally, the tree will be specified to have a 'tree trunk guard' as the proposed new deck/stairs are suspended over its Structural Root Zone (from herein SRZ) radial distance of 2.63m.



The existing ground level within the retained tree's calculated TPZ radial distance (5.76m) must be covered & maintained throughout the project with a 'native mulch' that comprises both woody & foliage components. The mulch at all times must be between 50mm & 75mm thick. Water applications in the absence of natural rainfall events is essential & is to be applied in compliance with at time of construction processes "Water Restrictions" status.

With intensive management the proposed nearby works are not assessed as having any potential to shorten this tree's ULE.

**TREE #7:** As can be seen on page 20 photograph, this tree is deemed to be of fair health & fair vigour. Simply, to maintain its ULE, retention & significance values any ground level disturbance must be manually excavated to support 'flexibly located footings/piers so as to avoid damage to any significant diameter 'live woody tree roots. The reason for the below specification is to not adversely impact upon the root system or the total tree natural ULE.

Additionally, the tree will be specified to have a 'tree trunk guard' as the proposed new deck/stairs are suspended over its Structural Root Zone (from herein SRZ) radial distance of 3.44m.

The existing ground level within the retained tree's calculated TPZ radial distance (11.16m) must be covered & maintained throughout the project with a 'native mulch' that comprises both woody & foliage components. The mulch at all times must be between 50mm & 75mm thick. Water applications in the absence of natural rainfall events is essential & is to be applied in compliance with at time of construction processes "Water Restrictions" status.

With intensive management the proposed nearby works are not assessed as having any potential to shorten this tree's ULE.

**TREE #8:** Remove & Replace. This tree is located where the proposed existing residence main floor & lower floor areas are to have new verandas constructed.

The following three (3) dot points apply to all proposed to be retained, protected & managed discussed trees:

- Excavation required for footing/pier locations must be confirmed in writing with supporting photographic evidence as NOT having damaged any 'significant diameter live woody tree root'. This can be completed by either the sites retained Practicing/Consulting Arborist or the project/site manager with Principle Certifying Authority written approval before the commencement of any works including demolition. This documentation (with photographs) must be provided to the retained Practicing/Consulting Arborist
- Should footing/pier sites NOT be able to be removed away from an exposed 'significant diameter live woody tree root' so as a strategy can be developed, e.g. bridging over the exposed root to avoid it having to be severed. This can only be completed by the sites retained Practicing/Consulting Arborist. It will also be essential for this process to be documented in writing with supporting photographic evidence for provision to the retained Practicing/Consulting Arborist.



- TREE #1, TREE #2, TREE #2A, TREE #3, TREE #4, TREE #5, TREE #6 & TREE #7 tree protection is to be inspected & certified as being compliant with the *Australian Standard, (AS4970-2009 Protection of trees on development site)*. This can be completed with written documentation & supporting photographic evidence by either the sites retained Practicing/Consulting Arborist or the project/site manager for provision to the retained Principle Certifying Authority.

Below is a list of suggested potentially suitable new tree species compatible with the local environment & the subject site.

- *Callitris rhomboidea* (Port Jackson Cypress)
- *Corymbia gummifera* (Red Bloodwood Gum)
- *Glochidion ferdinandi* (Cheese Tree)
- *Banksia integrifolia* (Coast Banksia)
- *Acacia binervia* (Coast Myall)
- *Backhousia citriodora* (Lemon Scent Myrtle)
- *Melaleuca linariifolia* (Snow in Summer)
- *Murraya paniculata* (Orange Jessimine)

#### New Tree Planting & Establishment Criteria:

- Replacement tree is to be sourced from growers/suppliers whose stock meets the production benchmarks of the *Australian Standard (AS2303.2015 Tree stock for landscape use)* or NATSPEC specification for the production of quality container produced trees.
- New tree specimen is to be professionally planted & maintained for a minimum period of six (6) months once installed.



## 6 Site Specific “Tree Management Plan”

### TREE #1:

- Install ‘Temporary Tree Trunk Guard’ (see Appendix C generic drawing) for protection during demolition of existing carport structure & building of new garage/home office structure.
- Install ‘Temporary Metal Mesh Fencing Panels with above ground supports as close to TPZ radial distance as building/site restrictions allow.
- Install native tree mulch.
- Create an above existing ground level temporary walkway for trade persons access to the dwelling
- Manually excavate (footings/piers) within the TPZ radial distance of 8.28m within the subject site.
- Document in writing with photographic evidence the completed excavation for footings/piers should no ‘*significant diameter live woody roots*’ be exposed.
- In the event a ‘*significant diameter live woody root*’ (i.e. >50mm in diameter) is exposed the sites retained Practicing/Consulting Arborist is to be summonsed to prepare, oversee & document in writing with supporting photographic evidence the most appropriate ‘management strategy’ applied.

### TREE #2:

- Install ‘Temporary Tree Trunk Guard’ (see Appendix C generic drawing) for protection during demolition of existing carport structure & building of new garage/home office structure.
- Install ‘Temporary Metal Mesh Fencing Panels with above ground supports as close to TPZ radial distance as building/site restrictions allow.
- Install native tree mulch.
- Create an above existing ground level temporary walkway for trade persons access to the dwelling
- Manually excavate (footings/piers) within the TPZ radial distance of 14.28m within the subject site.
- Document in writing with photographic evidence the completed excavation for footings/piers should no ‘*significant diameter live woody roots*’ be exposed.
- In the event a ‘*significant diameter live woody root*’ (i.e. >50mm in diameter) is exposed the sites retained Practicing/Consulting Arborist is to be summonsed to prepare, oversee & document in writing with supporting photographic evidence the most appropriate ‘management strategy’ applied.

### TREE #2A:



- Install 'Temporary Tree Trunk Guard' (see Appendix C generic drawing) for protection during demolition of existing carport structure & building of new garage/home office structure.
- Install 'Temporary Metal Mesh Fencing Panels with above ground supports as close to TPZ radial distance as building/site restrictions allow.
- Install native tree mulch.
- Create an above existing ground level temporary walkway for trade persons access to the dwelling
- Manually excavate (footings/piers) within the TPZ radial distance of 6.48m within the subject site.
- Document in writing with photographic evidence the completed excavation for footings/piers should no '*significant diameter live woody roots*' be exposed.
- In the event a '*significant diameter live woody root*' (i.e. >50mm in diameter) is exposed the sites retained Practicing/Consulting Arborist is to be summonsed to prepare, oversee & document in writing with supporting photographic evidence the most appropriate 'management strategy' applied.

TREE #3:

- Install 'Temporary Tree Trunk Guard' (see Appendix C generic drawing) for protection during demolition of existing carport structure & building of new garage/home office structure.
- Install native tree mulch.
- Create an above existing ground level temporary walkway for trade persons access to the dwelling
- Manually excavate (footings/piers) within the TPZ radial distance of 11.28m within the subject site.
- Document in writing with photographic evidence the completed excavation for footings/piers should no '*significant diameter live woody roots*' be exposed.
- In the event a '*significant diameter live woody root*' (i.e. >50mm in diameter) is exposed the sites retained Practicing/Consulting Arborist is to be summonsed to prepare, oversee & document in writing with supporting photographic evidence the most appropriate 'management strategy' applied.

TREE #4:

- Install 'Temporary Tree Trunk Guard' (see Appendix C generic drawing) for protection during demolition of existing carport structure & building of new garage/home office structure.
- Install native tree mulch.
- Create an above existing ground level temporary walkway for trade persons access to the dwelling



- Manually excavate (footings/piers) within the TPZ radial distance of 4.32m within the subject site.
- Document in writing with photographic evidence the completed excavation for footings/piers should no '*significant diameter live woody roots*' be exposed.
- In the event a '*significant diameter live woody root*' (i.e. >50mm in diameter) is exposed the sites retained Practicing/Consulting Arborist is to be summonsed to prepare, oversee & document in writing with supporting photographic evidence the most appropriate 'management strategy' applied.

TREE #5:

- Install 'Temporary Tree Trunk Guard' (see Appendix C generic drawing) for protection during demolition of existing carport structure & building of new garage/home office structure.
- Install native tree mulch.
- Create an above existing ground level temporary walkway for trade persons access to the dwelling
- Manually excavate (footings/piers) within the TPZ radial distance of 5.40m within the subject site.
- Document in writing with photographic evidence the completed excavation for footings/piers should no '*significant diameter live woody roots*' be exposed.
- In the event a '*significant diameter live woody root*' (i.e. >50mm in diameter) is exposed the sites retained Practicing/Consulting Arborist is to be summonsed to prepare, oversee & document in writing with supporting photographic evidence the most appropriate 'management strategy' applied.

TREE #6:

- Install 'Temporary Tree Trunk Guard' (see Appendix C generic drawing) for protection during demolition of existing carport structure & building of new garage/home office structure.
- Install native tree mulch.
- Create an above existing ground level temporary walkway for trade persons access to the dwelling
- Manually excavate (footings/piers) within the TPZ radial distance of 5.76m within the subject site.
- Document in writing with photographic evidence the completed excavation for footings/piers should no '*significant diameter live woody roots*' be exposed.
- In the event a '*significant diameter live woody root*' (i.e. >50mm in diameter) is exposed the sites retained Practicing/Consulting Arborist is to be summonsed to prepare, oversee & document in writing with supporting



photographic evidence the most appropriate 'management strategy' applied.

TREE #7:

- Install 'Temporary Tree Trunk Guard' (see Appendix C generic drawing) for protection during demolition of existing carport structure & building of new garage/home office structure.
- Install native tree mulch.
- Create an above existing ground level temporary walkway for trade persons access to the dwelling
- Manually excavate (footings/piers) within the TPZ radial distance of 11.16m within the subject site.
- Document in writing with photographic evidence the completed excavation for footings/piers should no '*significant diameter live woody roots*' be exposed.
- In the event a '*significant diameter live woody root*' (*i.e. >50mm in diameter*) is exposed the sites retained Practicing/Consulting Arborist is to be summonsed to prepare, oversee & document in writing with supporting photographic evidence the most appropriate 'management strategy' applied.

## 7 Conclusion

- As per the reference material provided the proposed works are able to be completed with no significant concern relative to the *Useful Life Expectancy* for Tree #1, Tree #2, Tree #2A, Tree #3, Tree #4, Tree #5, Tree #6 & Tree #7 provided the Site Specific 'Tree Management Plan' is implemented.
- Tree #8 is supported to be removed & replaced. (Any Tree specified to be removed must be removed by suitably qualified & experienced practitioners (*Minimum AQF level 3 in Arboriculture*) in compliance at all times with the *Workcover NSW 'Amenity Tree Industry, Code of Practice, 1998'*).

If you have any questions relating to this report or implementation of recommendations, please contact Kyle Hill on 0412-221-962.

Yours faithfully,



Kyle A. Hill

[AQF level 5 & AQF level 8 Registered with Arboriculture Australia (Reg #1884)  
Practicing & Consulting Arborist]



## 8 Limitations on the use of this report

This report is to be utilised in its entirety only. Any written or verbal submission, report or presentation that includes statements taken from the findings, discussions, conclusions or recommendations made in this report, may only be used where the whole of the original report (or a copy) is referenced in, & directly attached to that submission, report or presentation.

## 9 Assumptions

Care has been taken to obtain information from reliable resources. All data has been verified insofar as possible; however, Growing My Way Tree Services, can neither guarantee nor be responsible for the accuracy of information provided by others.

### Unless stated otherwise:

Information contained in this report covers only the trees that were examined & reflects the condition of the trees at the time of inspection.

The inspection was limited to visual examination of the subject trees without dissection, excavation, probing or coring. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the subject trees may not arise in the future.

## 10 Recommended References

- Barrell, J. 1993. 'Preplanning Tree Surveys: Safe Useful Life Expectancy (SULE) is the Natural Progression', *Arboricultural Journal* 17:1, February 1993, pp.
- Barrell, J. 1995, 'Pre-development Tree Assessments', in *Trees & Building Sites*, Proceedings of an International Conference Held in the Interest of Developing a Scientific Basis for Managing Trees in Proximity to Buildings, International Society of Arboriculture, Illinois
- Dr. G. Watson & Dr. D. Neely, 'Trees & Building Sites', LSA Illinois USA 1995
- Dr. N. Matheny & Dr. J.R. Clark, 'Trees & Development', ISA Illinois USA 1998
- Phillip J. Craul, 'Urban Soil in Landscape Design', J. Wiley & Sons, New York USA 1992

## 11 Selected Bibliography

- Hitchmough, J.D. 1994. 'Urban Landscape Management', Inkata Press, Sydney.
- Mattheck, C. & Breloar, H. 1994 'Body Language of Trees', The Stationery Office, London.
- AS 4373:2007, 'Pruning of Amenity Trees', Standards Australia.
- AS 4970:2009, 'Protection of Trees on Development Sites', Standards Australia.
- BS 5837:2005, 'Guide for Trees in Relation to Construction', Standards Board, UK.



## Appendix A – Glossary

### Glossary of common Arboreal terms

|             |           |                                                                                                                           |
|-------------|-----------|---------------------------------------------------------------------------------------------------------------------------|
| <b>Age:</b> | <b>I</b>  | <i>Immature</i> refers to a refers to a well-established but juvenile tree                                                |
|             | <b>SM</b> | <i>Semi-mature</i> refers to a tree at growth stages between immaturity & full size                                       |
|             | <b>M</b>  | <i>Mature</i> refers to a full sized tree with some capacity for further growth                                           |
|             | <b>LM</b> | <i>Late Mature</i> refers to a full sized tree with little capacity for growth that is not yet about to enter decline     |
|             | <b>OM</b> | <i>Over-mature</i> refers to a tree about to enter decline or already declining                                           |
|             | <b>LS</b> | <i>Live Stag</i> refers to a tree in a significant state of decline. This is the last life stage of a tree prior to death |

**Hth & Vig** Health & Vigour

**Health** refers to the tree's form & growth habit, as modified by its environment (aspect, suppression by other tree, soils) & the state of the scaffold (ie. trunk & major branches), including structural defects such as cavities, crooked trunks or weak trunk/branch junctions. These are not directly connected with health & it is possible for a tree to be healthy but in poor condition/vigour. **Classes are:**

Excellent (E), V. Good (VG), Good (G), Fair (F), Declining (D), Poor (P), Very Poor (VP)

**Vigour** refers to the tree's growth rate/condition as exhibited by the crown density, leaf colour, presence of epicormic shoots, ability to withstand disease invasion & the degree of dieback. **Classes are:**

Excellent (E), V. Good (VG), Good (G), Fair (F), Declining (D), Poor (P), Very Poor (VP)

**Useful Life Expectancy (ULE)** refers to any individual tree specimen's potential life expectancy (viability) based on VTA assessment, three groups are described,

**Short = Less than Fifteen years**

**Medium = Fifteen – Twenty-five years**

**Long = more than Twenty-five years**

**Significant diameter roots** are defined as those being greater than 0.05m/50mm in diameter.

**Diameter at Breast Height (DBH)** refers to the tree trunk diameter at breast height (1.4 metres above ground level)

**Structural Root Zone (SRZ)** refers to a radial offset which relates to tree stability. This zone is presumed to be main location of the tree's structural support roots. It is calculated using the formula  $SRZ\ radius = (D \times 50)^{0.42} \times 0.64$ .

**Primary Root Zone (PRZ)** refers to a radial offset of ten (10) times the trunk DBH measured from the centre of the trunk. This zone often contains a significant amount of (but by no means all of a tree's) fine, non-woody roots required for uptake of nutrients, oxygen & water.

**Tree Protection Zone (TPZ)** is ideally a "No Go Zone" surrounding a tree to aid in its ability to cope with disturbances associated with construction works. **TPZ = DBH x 12**. Tree protection involves minimising root damage that is caused by activities such as construction. Tree protection also reduces the chance of a tree's decline in health or death & the possibly damage to structural stability of the tree from root damage.

To limit damage to the tree, protection within a specified distance of the tree's trunk must be maintained throughout the proposed development works. No excavation, stockpiling of building materials or the use of machinery is permitted within the TPZ.

A TPZ is required for each tree or group of trees within five metres (unless otherwise specified) of building envelopes.



**Stem/bark inclusion** refers to a genetic fault in the tree's structure. This fault is located at the point where the stems/branches meet. In the case of an inclusion this point of attachment is potentially weak due to bark obstructing healthy tissue from joining together to strengthen the joint.

**Decay** refers to the break down tissues within the tree. There are numerous types of decay that affect different types of tissues, spread at different rates & have different affect on both the tree's health & structural integrity.

**Point of Attachment** refers to the point at which a stem/branch etc join.

**Dead wood** refers to any whole limb that no longer contains living tissues (eg live leaves &/or bark). Some dead wood is common in a number of tree species.

**Die back** refers to the death of growth tips/shoots & partial limbs. Die back is often an indicator of stress & tree health.

**One dimensional crown** refers to branching habits & leaves that extend/grow in One direction only. There are many causes for this growth habit such as competition & pruning.

**Crown Foliage Density of Potential (CFDP)** refers to the density of a tree's crown in relation to the expected density of a healthy specimen of the same species. CFDP is measured as a percentage.

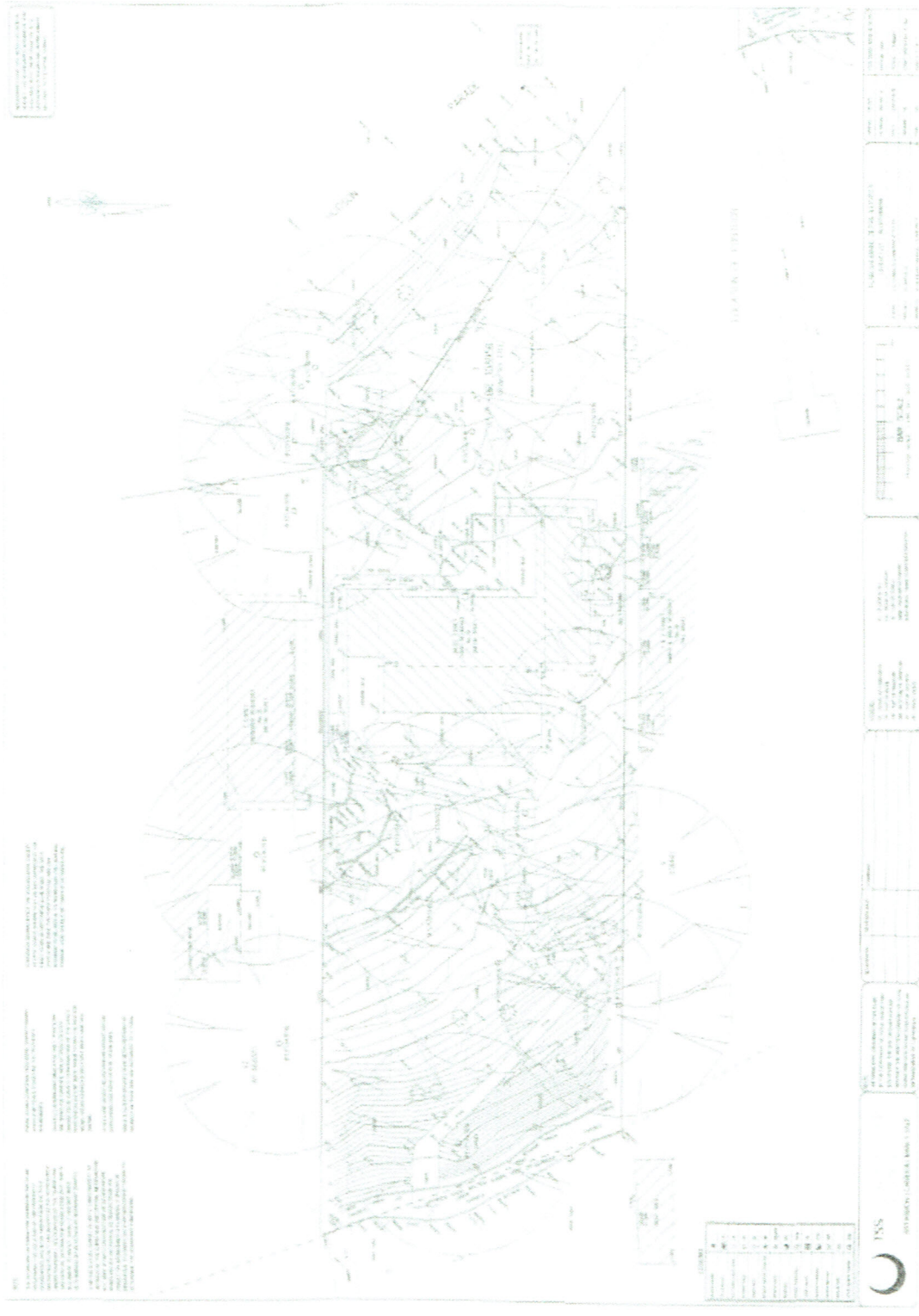
**Epicormic growth/shoots** refers to growth/shoots that are/have sprouted from axillary buds within the bark. Epicormic growth/shoots are a survival mechanism that often indicates the presence of a current or past stress even such as fire, pruning, drought etc.

**Over Head Powerlines (OHP)** Over head electricity wiring.

|       |                                  |
|-------|----------------------------------|
| LVOHP | Low Voltage Overhead Powerlines  |
| HVOHP | High Voltage Overhead Powerlines |
| ABC   | Aerial Bundled Cable             |



# Appendix B – Site Survey





## Appendix C – Tree Protection/Management Prior to & During Construction

The installation of Tree Protection Zone (TPZ) fencing is to be carried out prior to commencement of all works. The most suitable fencing material is 1.8m tall chain link mesh with 50mm metal pole supports, see **detail 1: tree protection fencing**.

A mulch layer of composted leaf & woodchip to a depth of 75mm is required within the TPZ to aid in retention of soil moisture & to protect soil from contaminants. Water is to be applied by hand held or soaker/leaky hose within TPZ as required & in Accordance with Stage 3 Water Restrictions. Watering is to be carried out by either an Arborist or is to form part of the Builder's/Contractor's contract, with recommended monthly checks by an Arborist.

There is to be no stock piling of building material (including waste), machinery or any other item within TPZ of any retained tree. Access to personnel & machinery, & storage of fuel, chemicals, cement or site sheds is prohibited

Regular monitoring of protected trees during development works for unforeseen changes or decline, will aid in the success & longevity of the retained trees.

