AURA TREE SERVICES pty ltd

"We go out on a limb for you"

# *Arboriculture Assessment & Construction Impact Statement*

July 2021

| | |
|---|---|
| **Site:** | **Lot 36 in DP 10648**<br>**23 Hay Street**<br>**COLLAROY, NSW** |
| **Client:** | **Charles & Anna Parisi**<br>**23 Hay Street**<br>**COLLAROY, NSW**<br>**Email:** AParisi@wmw.com.au |
| **Commissioned:** | **Anna Parisi** |
| **Author:** | **Kyle A Hill**<br>Registered (Arb Aus #1884) Practising & Consulting Arborist<br>Post Graduate Certificate in Arboriculture, Melbourne University<br>Diploma of Horticulture-Arboriculture TAFE, Grow SA<br>Certificate of Horticulture, TAFE<br>Certificate Advanced Tree Care TAFE<br>Founder -Growing My Way Tree Services (1977)<br>Member of International Society of Arboriculture<br>Member of Arboriculture Australia |

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# 1 Summary

Charles & Anna Parisi as the property owner commissioned *Aura Tree Services Pty Ltd* to prepare an "*Arboriculture Assessment & Management Statement–Tree Management Strategy*" to be linked to an application for Alterations & Additions & Pool to Existing Dwelling.

The site is within the *Northern Beaches Council (*from herein *NBC)* local government area.

*NBC* is the sole consent authority for the soon to be Tree Removal Applications.

Relative to tree management this document focuses on three (3) trees. By information provided, onsite data collection & website researched the three (3) discussed trees are confirmed to be within the subject site.

The site is not listed within the *NBC (old Warringah Council) 'Local Environment Plan, 2011'* (from herein *LEP) as being part of any 'Heritage Conservation Area'*. The subject site is not a listed 'Heritage Item', however there is an adjacent property listed as a 'Heritage Item'. The discussed trees are locally indigenous species. It is not known if they are planted or naturally established. The discussed trees are not listed within any known "*significant tree register*".

From an NBC *Local Government Tree Management* perspective, the discussed trees are acknowledged to be protected species.

This document supports the removal/replacement of two (2) subject site discussed tree & retention with management for the other one (1) subject site tree.

Kyle Hill, Practicing & Consulting Arborist AQF Level 5 & 8, has prepared this document based on onsite inspections (Fridays, 25 June & 23 July 2021).

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# 2 Introduction

*NBC* is the *local government area* primary consent authority relative to development & tree management for the discussed & surrounding properties.

The discussed trees are identified to all be *Eucalyptus botryoides* (Bangalay Gums). It is not known if the three (3) discussed trees are planted specimens.

The *Warringah DCP* & *NBC* 'Tree Management Provisions/Guidelines' plus the *SEPP 'Vegetation in Non-Rural Areas, 25 August 2017* are acknowledged to be the management criteria required to be addressed.

The subject site is Zoned *R2* "*Low Density Residntial*" (*old Warringah Council LEP, 2011, Land Zoning Map*–Sheet LZN_010).

This document supports the removal/replacement for two (2) of the three (3) discussed trees.

# 3 Methodology

Assessment of the trees has been by eye from ground level & aerial photography from multiple sources. Implementation of the *Visual Tree Assessment (VTA) Stage 1 principles* developed by Claus Mattheck, et.al is the assessment method & tool chosen for this site. The principles of *VTA* Stage 1 are explained & illustrated in the publication *The Body Language of Trees (1994).*

Assessment includes:

- *Plans, Elevations, Sections etc., by Sammy Fedele, Architectural Drafting Services, Original Issue, dated 10 June 2021.*
- *Site Survey by Bee & Lethbridge, Revision #00, 19 May 2021.*
- *Tree's current condition & likely future health.*
- *Perusal of NBC (old Warringah Council) "Tree Management Provisions". Perusal of NBC (old Warringah Council) "Endangered Ecological Community listing" information.*
- *Perusal of NBC communication/responses to the as lodged DA submission*
- *Discussion of environment where the tree is growing. Tree's amenity & retention value, such as significance, screening & habitat.*

No root tissue analysis, soil testing, '*Resistograph*'®, '*ArborTom*'® assessment or similar was undertaken.

See the following Appendices for further information:

- *Appendix A Glossary of Common Arboreal terms*
- *Appendix B Tree Protection/Management Prior to & During Construction (Generic)*

*** *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 subject site land area is approximately 687.50m$^2$ by Site Survey.

The site is developed to contain a single multi storey dwelling. The subject site is Land Zoned R2 'Low Density Residential'. The subject site shares three (3) common boundaries with private developed. The subject site & adjoining boundary property is Land Zoned R2 'Low Density Residential'. The subject site is additionally confirmed to share one (1) boundary with a public roadway.

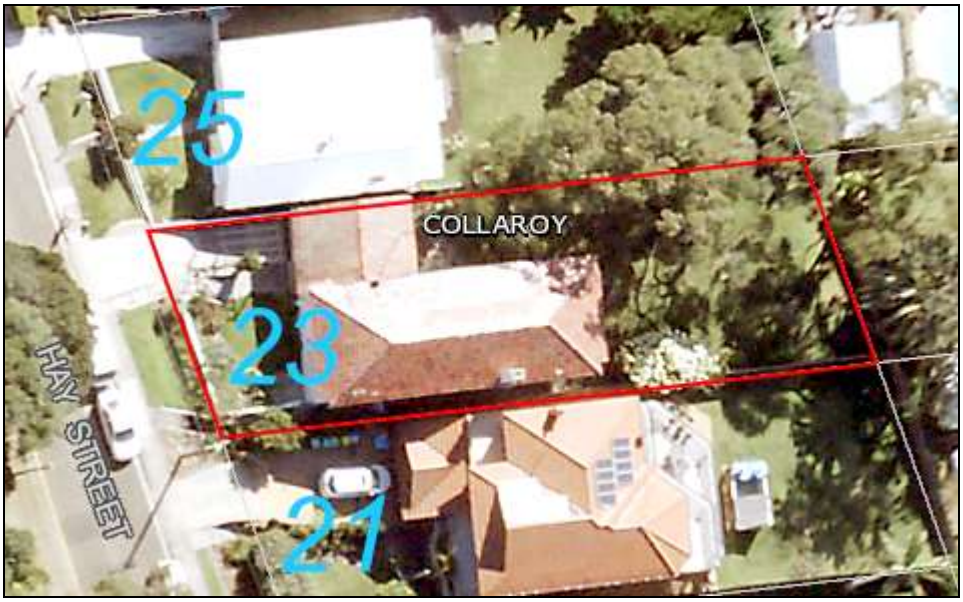



***Figure 1:*** **Courtesy of NBC website tool.**

The site is NOT within an area noted to be a classified area of "Wildlife Corridor" significance. The discussed trees are not listed on any known "*significant tree register*".

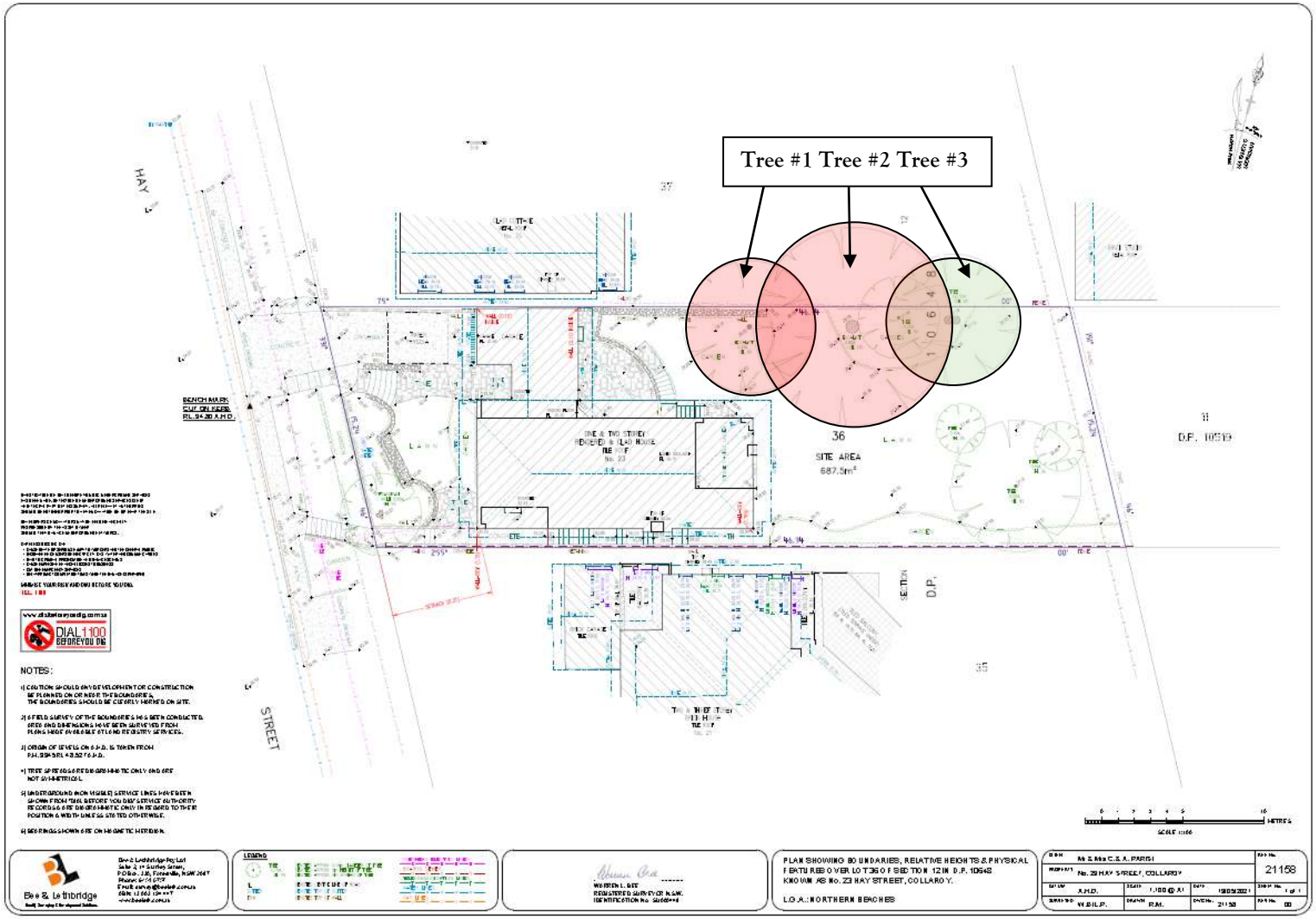



***Figure 2*: Site Survey with Tree Locations Plotted.**

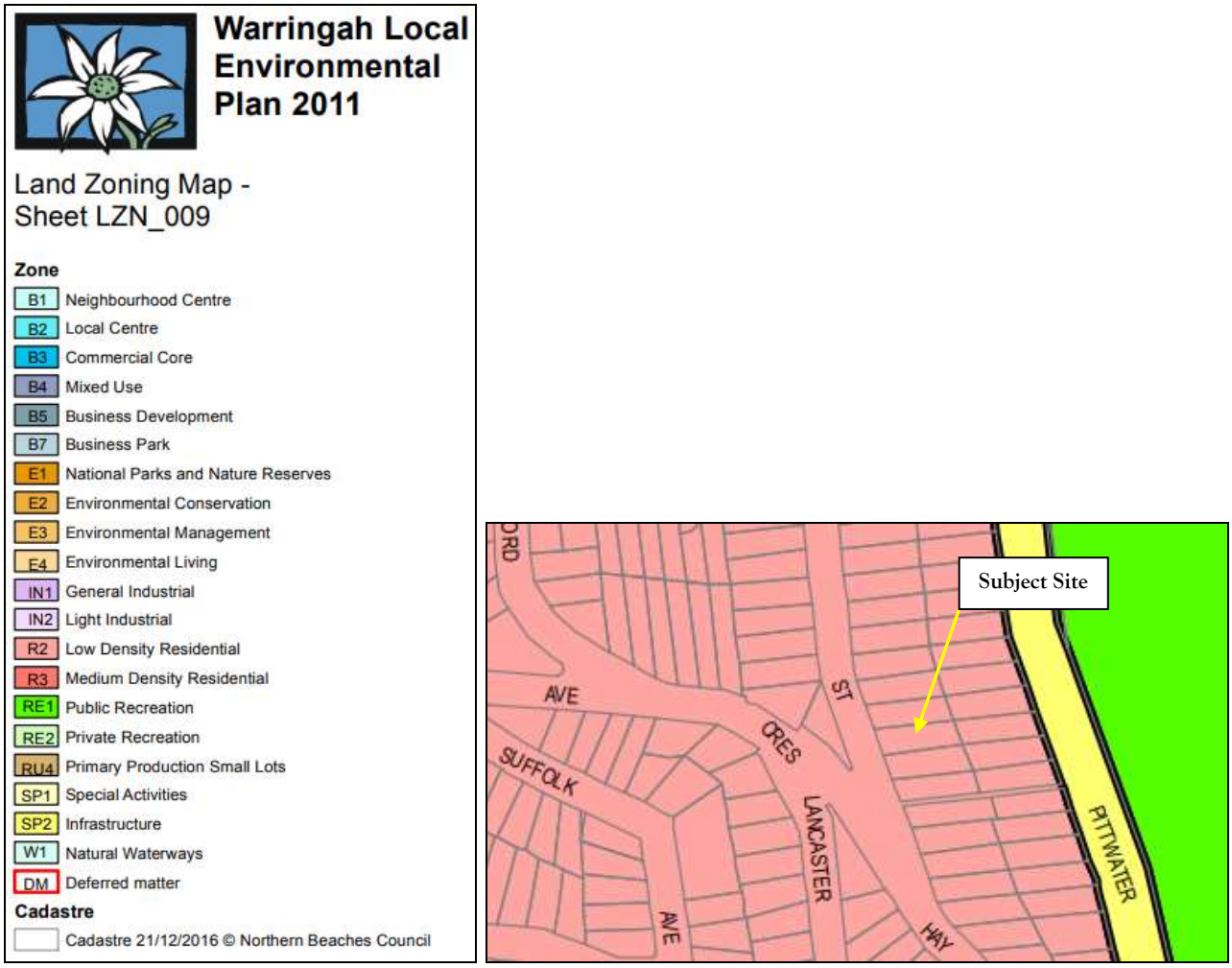



***Figure 3*: Confirms Land Zoning classification as being R2 'Low Density Residential'.**

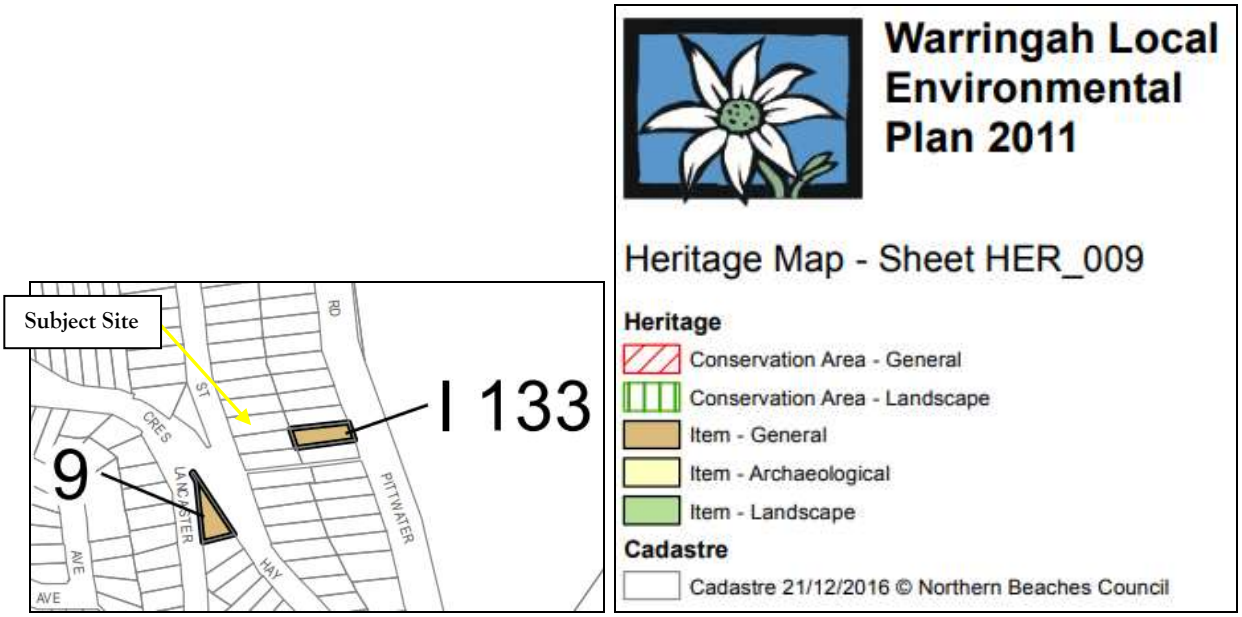



***Figure 4*: Confirms Land Zoning & Heritage Conservation Area status.**

## *4.2 Tree Images*


**Figure 5: Illustrates the three (3) discussed tree locations.**

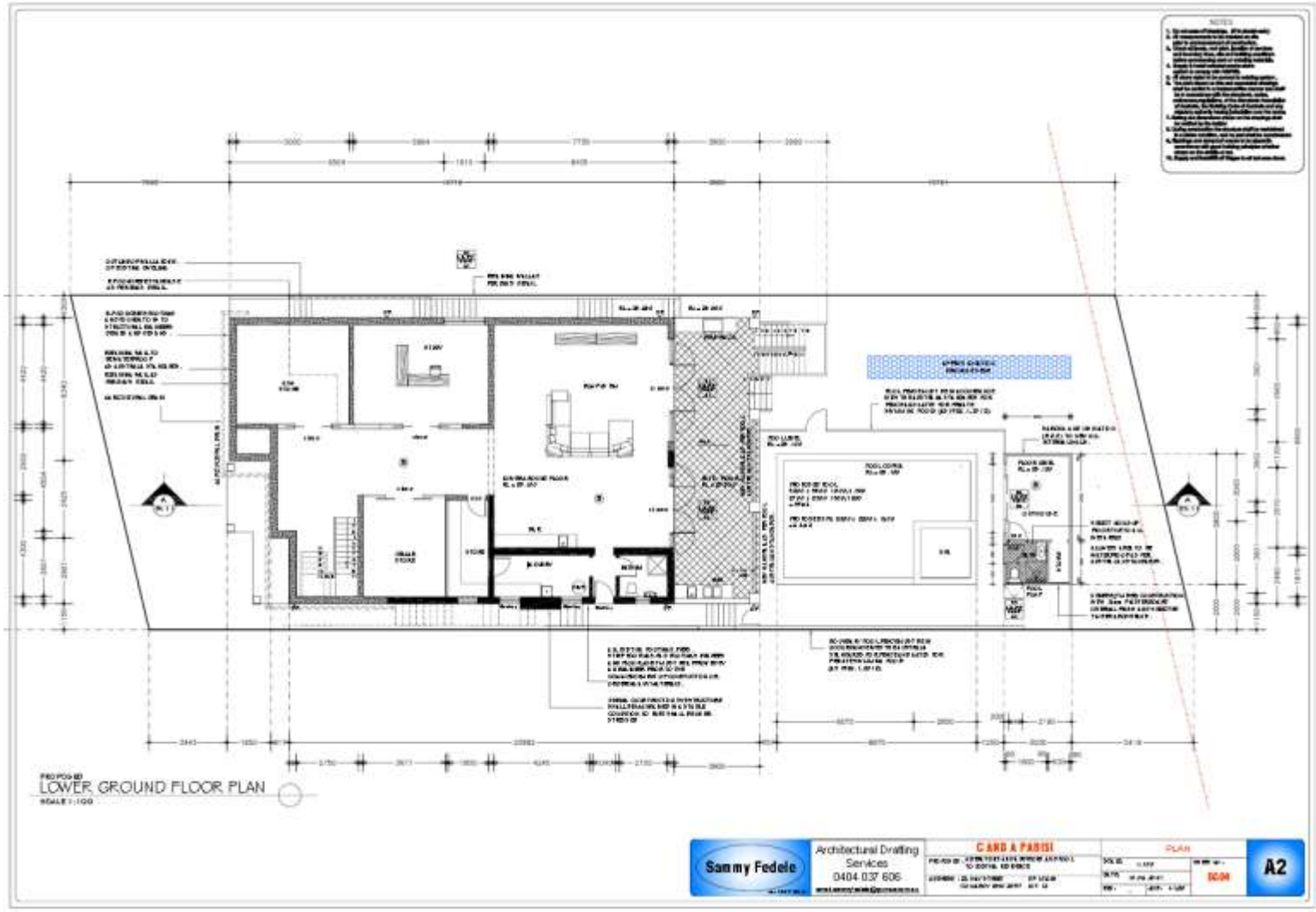
## *4.3 The Trees 'Summary Table'*

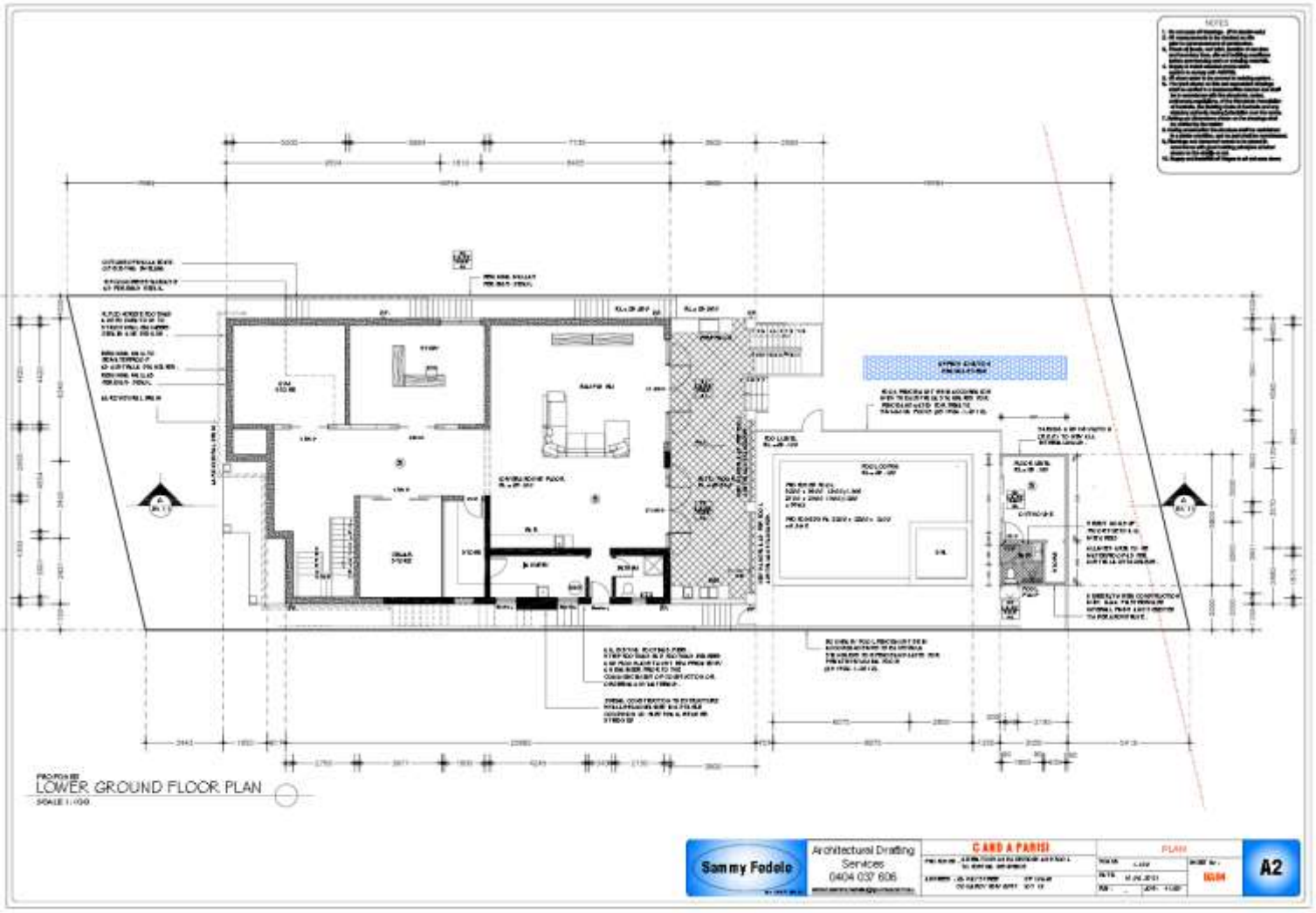
Read this table in conjunction with Appendix A–Common Arboreal Terms

| | |
|---|---|
| Trees Recommended for removal relative to site character, condition or safety | Trees Recommended for protection & retention |
| Exempt species | Trees retainable but of low amenity/significance |

| Identification | Height (approx in m) | Crown (approx in m) | DBH (approx in m) | TPZ (approx in m) | SRZ (approx in m) | Age | Health/ Vigour | Retention & Significance Value | Structure/ Form | Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| ***Eucalyptus botryoides*** *Bangalay Gum* | <9.50 | <9.50 | <0.24 | 4.10 | 2.30 | M | Fair to Good & Fair to Good | Moderate/ High | Linked Canopy | **Remove & Replace: Tree is considered as best replaced as its ULE is likely compromised by the proposal.** |
| ***Eucalyptus botryoides*** *Bangalay Gum* | <13.50 | <12.00 | <0.99 | 11.90 | Approx. 3.40 | M | Good & Good | Moderate/ High | Linked Canopy Multi stemmed | **Remove & Replace: Tree is considered as best replaced as its ULE is likely compromised by the proposal.** |
| ***Eucalyptus botryoides*** *Bangalay Gum* | <11.50 | <11.00 | 0.65 | 7.80 | 3.00 | M | Good & Good | Moderate/ High | Linked Canopy Multi stemmed | **Retain & Protect: Tree is assessed as being able to be retained with management without compromise to its ULE.** |

## 4.4 The Proposal

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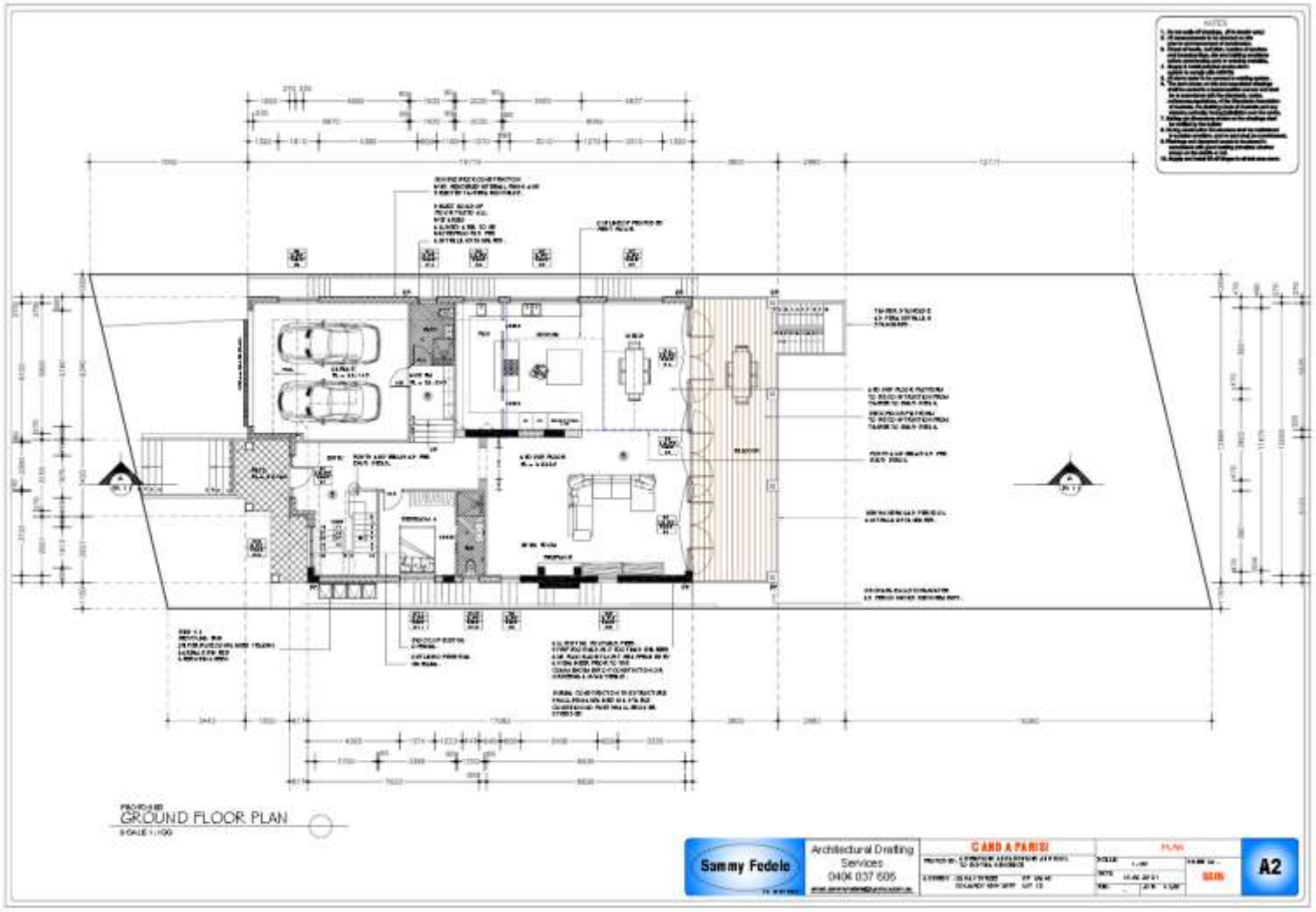
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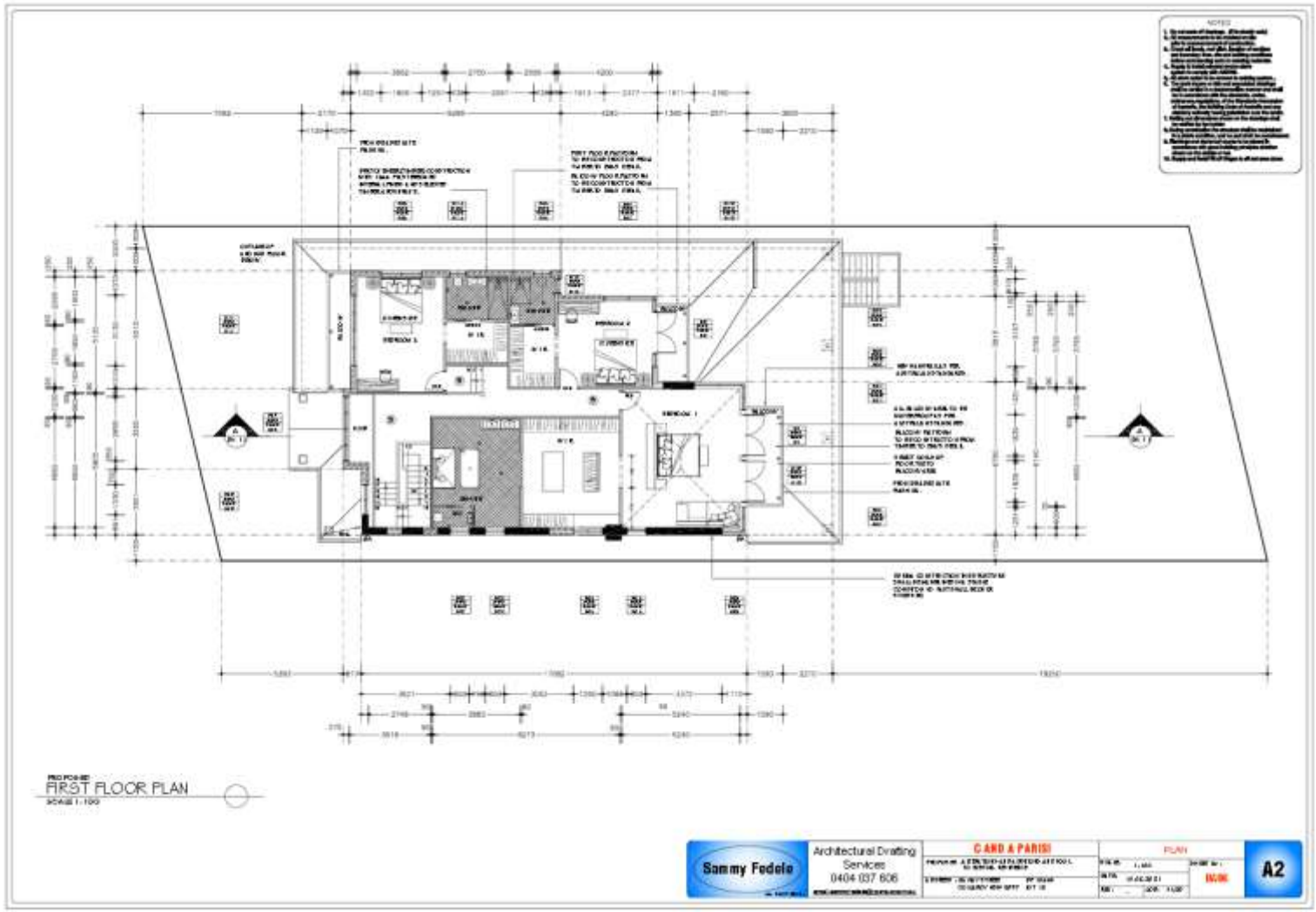
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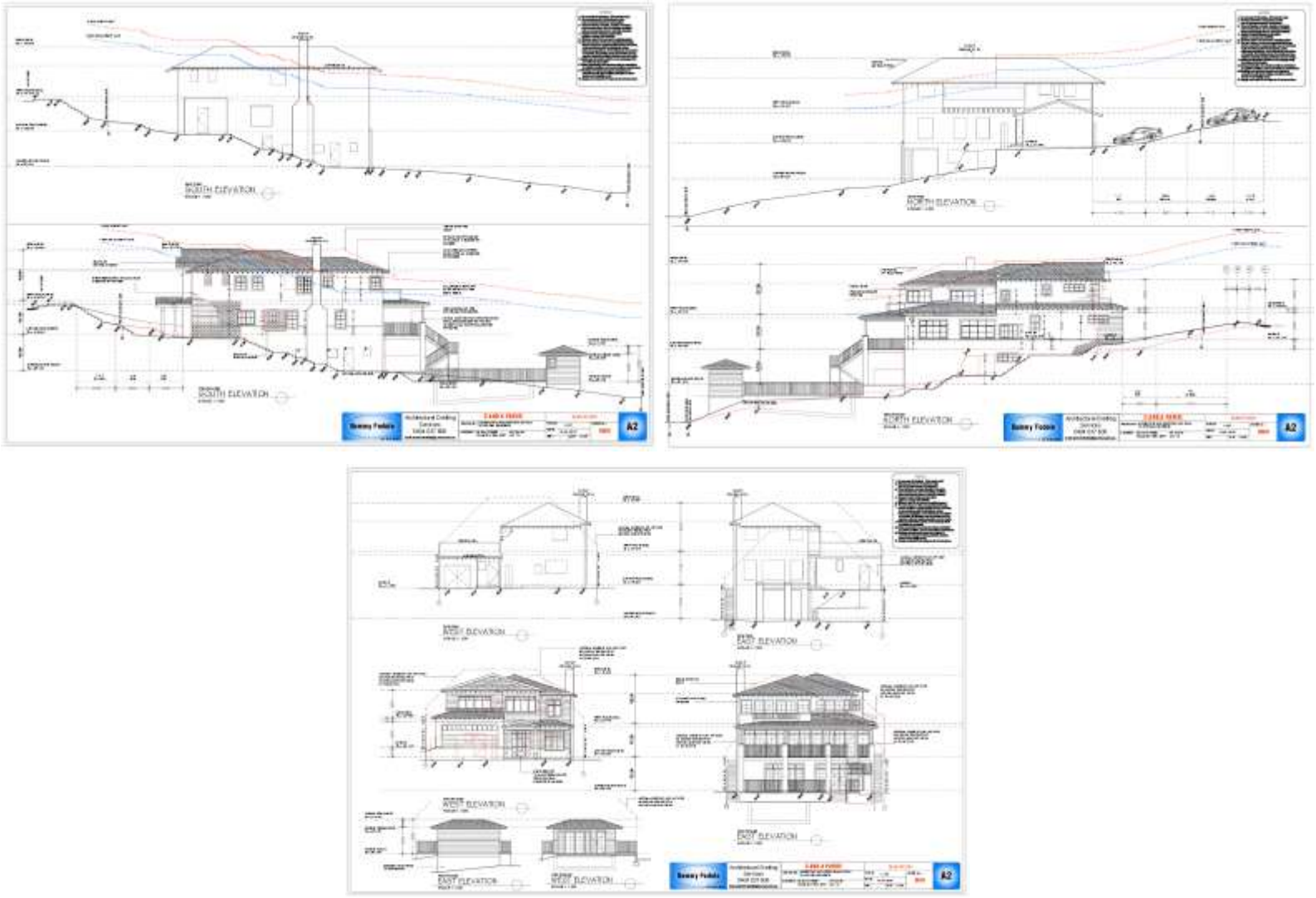

***Figure 6*: Illustrates the as proposed Floor Plans & Elevations.**

# 5 Discussion

Perusal of the NBC website 'Property Information' tool confirms a Tree Removal/Pruning Application (DA2018/0087) was lodged on 23 January 2018 (determined 2 February 2018). This document determined two (2) trees, both named as *Eucalyptus robusta* (Swamp mahogany) could be removed & replaced. We cannot confirm if these two (2) trees are actually linked to this document or were other trees removed & replaced.

Tree #2 & Tree #3 display canopy stress, dead/dying branches up to in excess of 100mm diameter. Tree #2 & Tree #3 also display a concerning number of dead upper canopy branch tips. This is a concern as it is often an indicator of 'live root' & certainly an indicator of 'change of environment'. It is noted tree trunk bases appear vertically out of the existing ground level which is a classic indicator of original soil levels being raised. Such changes are accepted to often be the primary cause of a shortened Useful Life Expectancy (from herein ULE) & almost always consistent with upper canopy branch tip dieback.

Tree #1 is supported by this document to be replaced. The now proposed ground level disturbance, general health & vigour in our assessment do not justify this tree being attempted to be retained.

- ***Tree removal must be undertaken by suitably experienced & qualified tree workers as per the provisions within the SafeWork NSW 'Amenity Tree Industry 'Industry Code of Practice, 1998'.***
- ***The 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.***
- ***The replacement tree is to be professionally planted & maintained for a minimum period of one (1) full active growing season in the Sydney Environment.***

**Potentially Suitable to the Local Environment New Tree Species:**

- ***Eucalyptus botryoides (Bangalay Gum)***
- ***Angophora hispida* (Dwarf Apple)**
- ***Banksia serrata* (Old Man Banksia)**
- ***Banksia marginata* (Silver Banksia)**
- ***Hymenospermum flavum* (Native Frangipani)**
- ***Tristaniopsis laurina* (Watergum)**
-

Tree #2 is supported by this document to be replaced. The now proposed ground level disturbance, general health & vigour plus significant canopy pruning to create a reasonable new built form/canopy separation distance of a minimum of two & a half (2.50m) to three (3.00m) meters in our assessment do not justify this tree being attempted to be retained.

***Tree removal must be undertaken by suitably experienced & qualified tree workers as per the provisions within the SafeWork NSW 'Amenity Tree Industry 'Industry Code of Practice, 1998'.***

- ***The 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.***

- ***The replacement tree is to be professionally planted & maintained for a minimum period of one (1) full active growing season in the Sydney Environment.***

**Potentially Suitable to the Local Environment New Tree Species:**

- ***Eucalyptus botryoides (Bangalay Gum)***
- ***Angophora hispida*** **(Dwarf Apple)**
- ***Banksia serrata*** **(Old Man Banksia)**
- ***Banksia marginata*** **(Silver Banksia)**
- ***Hymenospermum flavum*** **(Native Frangipani)**
- ***Tristaniopsis laurina*** **(Watergum)**

Tree #3 is specified to be retained in a manner that could reasonably be expected for it to not have its Useful Life Expectancy compromised by the as proposed works (especially any new 'landscaping concept & the construction of swimming pool & pool surrounds.

- ***Temporary Australian Standard (AS4970-2009 Protection of trees on development sites) compliant 'metal mesh fencing panels (2.40m x 1.80m) supported by above ground blocks' are required to be instated, then confirmed in writing with supporting photographic evidence so as to isolate Tree #2 & Tree #3 (as a group planting) from the proposed works. (See Chapters 3, 4 & 5.) These must be as far from the tree trunk centres as the proposed works/site characteristics allow. This document must be provided to the appointed Principle Certifying Authority.***
- ***Any excavation required for any works within the calculated TPZ radial distance of 7.80m must be completed manually, (this implies the line of excavation closest to the tree trunk centre not the full swimming pool/pool surrounds footprint). The end result must be confirmed in writing with supporting photographic evidence & provided to the appointed Principle Certifying Authority.***

  ***Any 'live woody root' greater than 50mm in diameter is defined as being a 'significant diameter root.***

  ***Any such 'live woody root' can only be managed & documented by the sites retained Project Arborist.***
- ***Any 'live woody root' less than 50mm in diameter can be cleanly pruned (manually) & documented in writing with supporting photographic evidence & provided to the appointed Principle Certifying Authority by the site manager.***
- ***It is best practice 'tree management' to prune to remove any dead/dying/broken or considered dangerous branches prior to the commencement of any works. Any pruning must at all times be compliant with the Australian Standard (AS4373-2007 Pruning of amenity trees') by suitably qualified (AQF3 Arboriculture) & experienced pruning practitioner (minimum 3 years) or a person under the direct instruction/supervision of such a qualified/experienced person. (See Chapter 7.)***

# 6 Site Specific 'Tree Plan of Management'

| Tree # | Retain, Protect & Manage | Replace | Management Required | Comments |
|---|---|---|---|---|
| Tree #1 | | | See Tree #1 Discussion Section observations/specifications | A new tree or multiple different species tree/s must be able to recreate any lost 'landscape amenity'. |
| Tree #2 | | | See Tree #1 Discussion Section observations/specifications | A new tree or multiple different species tree/s must be able to recreate any lost 'landscape amenity'. |
| Tree #3 | | | Tree is specified to have 'temporary metal mesh fencing panels with above ground supports instead. The closest line of excavation within the TPZ radial distance must be completed manually to a depth of 800mm (or to rock). The results are to be documented so as to confirm the management strategy applied, this must be supported with photographic evidence. | Tree has been assessed as well worthy of retention. |

# 7 Recommendations:

- **Lodge DA as per information provided (Relative to Tree Management).**
- **Tree Retention/Management or Tree Removal/Replacement as per Sections 5 & 6.**

If you have any questions relating to this report or require the implementation of recommendations, please contact Kyle Hill (Monday to Friday) on 02 9939 0078.

Yours faithfully,

Kyle A Hill, Practicing & Consulting Arborist (AQF level 8)

# 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, AURA Tree Services Pty Ltd, 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; and

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,

Barrell, J. 1995, '*Pre-development Tree Assessments*', in Trees & Building Sites, Proceedings of n 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',* ISA 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,

Clark, Ross, '*A Guide to Assessment of Tree Quality*'. NATSPEC/ Construction Information, Milson's Point NSW, 2003 &

Clark, Ross. '*Purchasing Landscape Trees*', Construction Information Systems Australia Pty. Ltd., Milson's Point NSW, 1996.

# 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.

AS4373.2007 '*Pruning of amenity trees*', Standards Australia.

AS4970.2009 '*Protection of trees on development sites*', Standards Australia.

BS5837-2005. '*Guide for Trees in Relation to Construction*', Standards Board, UK.

# Appendix A – Glossary of Common Arboreal Terms

**Age:** **I** *Immature* refers to a refers to a well-established but juvenile tree

**SM** *Semi-mature* refers to a tree at growth stages between immaturity & full size

**M** *Mature* refers to a full sized tree with some capacity for further growth

**LM** *Late Mature* refers to a full sized tree with little capacity for growth that is not yet about to enter decline

**OM** *Over-mature* refers to a tree about to enter decline or already declining

**LS** *Live Stag* 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** refers to any trees potential life expectancy (viability) not related to potential disturbances based on VTA assessment, classifications are: **Short, (0 – 5 years), Medium, (5 – 15 years) & Long, (15 or more years).**

**Retention Value** is expressed as Low, Medium, High or of Heritage Importance

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

**Significant Diameter Roots** are defined as being woody roots with a diameter greater than 0.05m/50mm. (Unless otherwise specified)

**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 x 50)$^{0.42}$ x 0.64.*

**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 Over head Powerlines |
| **HVOHP** | High Voltage Over head Powerlines |
| **ABC** | Aerial Bundled Cable |

# Appendix B – 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.