



# *Arboriculture Construction Impact Assessment*

April 2022

**Site:** Lot 15 in DP 240297  
3 Briony Place  
MONA VALE, NSW

**Client:** R & J McColm  
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# 1 Summary

R & J McColm (as the property owners) 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 to an existing Dwelling House.

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 lodged (relative to tree management) proposed works.

Relative to tree management this document focuses on three (3) trees. By information provided, researched & confirmed one (1) discussed tree is located within the subject site (3 Briony Place Mona Vale), two (2) trees are located within the common boundary public reserve (Briony Reserve - southern side of the subject site). Additional trees/vegetation is acknowledged within the subject site but not discussed as they are identified to be exempt by either or both size & species or not impacted upon by the as proposed works.

The site is not listed within the *NBC (old Pittwater Council) 'Local Environment Plan, 2014'* (from herein the *LEP*) as being part of any '*Heritage Conservation Area*'. The subject site is not a listed '*Heritage Item*', nor are any in close proximity. The trees discussed are not a species within any local *-endangered ecological community*. (See *Part 3 of Schedule 1 within the Threatened Species Conservation Act*.)

All discussed in detail trees are confirmed to be NBC protected tree species. See the provisions within the *NBC (old Warringah Council) 'Development Control Plan, 2011'* (from herein *DCP*), current *NBC Tree Management Provisions & the SEPP 'Vegetation in Non-Rural Areas, 25 August 2017'*.

This document supports the retention with implementation of a site specific '*Preliminary Plan of Management*' for the three (3) discussed trees.

Kyle Hill, Practicing & Consulting Arborist AQF Level 5 & 8, has prepared this document based on onsite inspection (Wednesday, 16 March 2022).

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## 2 Introduction

The *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 be a single (locally indigenous) *Angophora costata* (Sydney Red Gum), a single (locally indigenous) *Eucalyptus* spp. (likely Stringy Bark – no fruit found for identification) & a single planted *Eucalyptus microcorys* (Tallowwood Gum).

The confirmed to be locally indigenous species are considered to likely be naturally occurring specimens.

All three (3) discussed trees are considered to be provide significant ‘*landscape amenity*’. As such, it is desirable that they are retained in a manner that does not impact upon their individual Useful Life Expectancy (from herein ULE).

The *NBC* (old Pittwater 21) ‘*Development Control Plan, adopted 8 December 2003*’ (from herein the *DCP*), current *NBC Tree Management Provisions & 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 *C4 “Environmental Living”* (old Pittwater LEP, 2014, Land Zoning Map-Sheet LZN\_012).

This document supports the proposed works but will require some canopy pruning for tree/s within the common boundary public reserve (Briony Reserve).

### 3 Methodology

Assessment of the tree 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 Andy's Home Design, Revision #03, dated 28 February 2022.*
- *Landscape Concept, as per above.*
- *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'<sup>®</sup>, 'ArborTom'<sup>®</sup> assessment or similar was undertaken.

See the following Appendices for further information:

- *Appendix A Glossary of Common Arboreal terms*
- *Appendix B Tree Protection & Management*

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\* **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

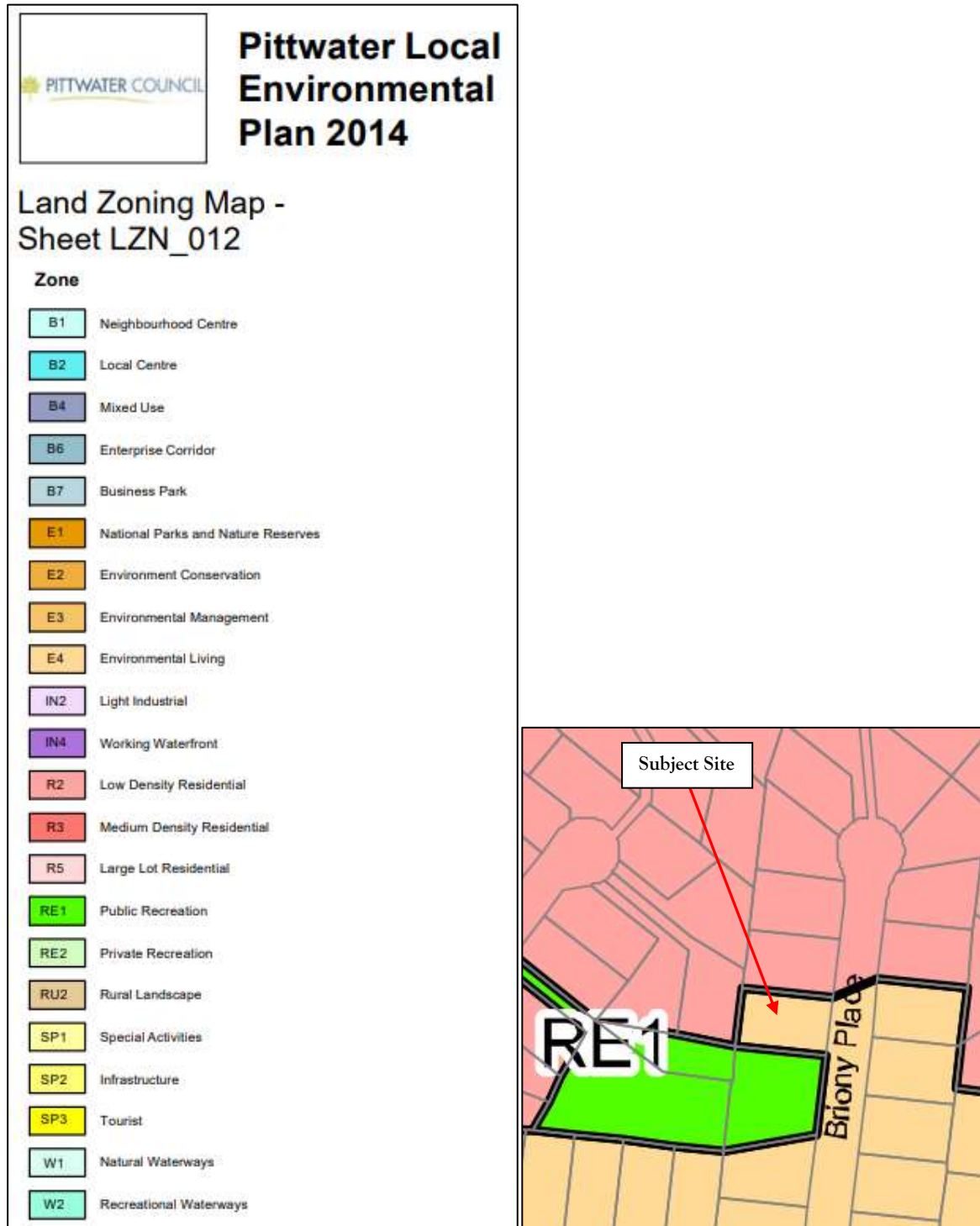
The subject site land area is approximately 696.60m<sup>2</sup> by client provided Plans.

The subject site & three (3) common boundary sites are developed to contain residential dwellings. The subject site plus the one (1) common boundary property are Land Zoned C4 'Environmental living'. The subject site, is additionally confirmed to share one (1) common boundary with the public reserve known as Briony Reserve & one (1) public roadway (Briony Place).



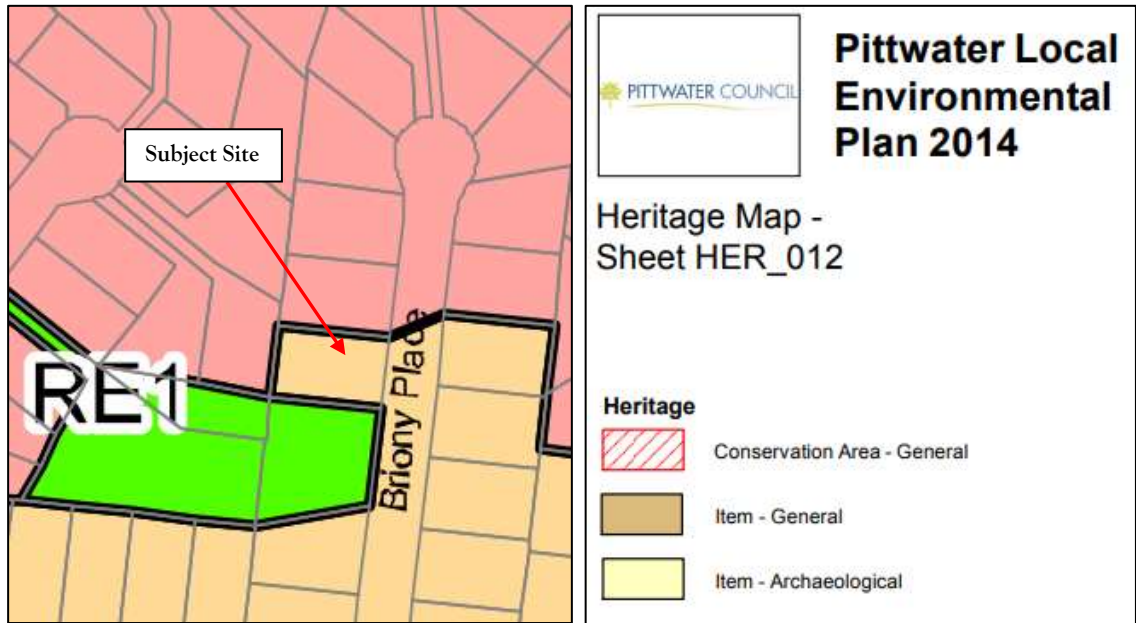
**Figure 1:** Location Map courtesy of NBC website tool & Whereis.com website tool.

The subject site/adjointing sites are not a listed 'Heritage Item', nor are any in close proximity. The trees discussed are not a species within any local *endangered ecological community*. (See Part 3 of Schedule 1 within the Threatened Species Conservation Act.)



**Figure 2:** Confirms local area Land Zoning classification as being C4 (old E4) 'Environmental Living'.







## 4.2 Tree Images



Figure 3: Subject Site tree, location & condition.



Figure 4: Adjoining Briony Reserve tree/s that will require pruning.



### 4.3 The Trees 'Summary Table'

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

Trees Recommended for removal/replacement relative to proposed works, site character, condition or safety

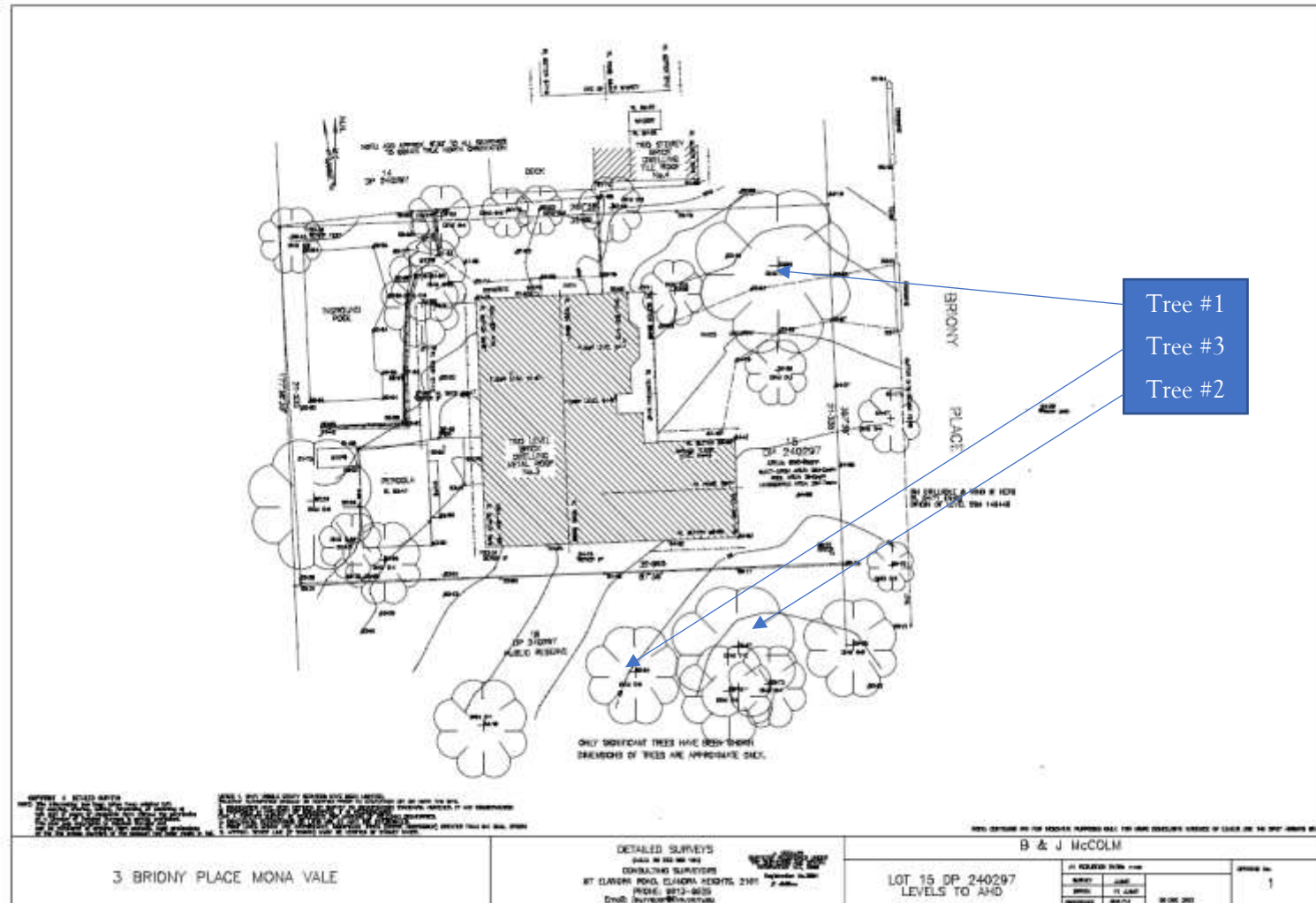
Trees Recommended for protection & retention

Exempt species

Trees retainable but of low amenity/significance

	Identification	Height (approx in m)	Crown (approx in m)	DBH (measured)	TPZ (calculated)	SRZ (calculated)	Age	Health/ Vigour	Retention & Significance Value	Structure/ Form	Comments
1	<i>Angophora costata</i> <i>Sydney Red Gum</i>	<16.50	<16.00	0.68	8.16	2.95	M	Good & Good	High/ High	Typical as a specimen tree	<u>Retain, Manage &amp; Protect:</u> Tree is considered as manageable in a sustainable manner with intensive root system management.
2	<i>Eucalyptus microcorys</i> <i>Tallowwood Gum</i>	<18.00	<16.50	0.64	7.68	2.88	M	Good & Good	Moderate/ Moderate	Typical as a specimen tree	<u>Retain, Manage &amp; Protect:</u> Tree is considered as manageable in a sustainable manner with basic root system management & pruning to create canopy/new built form separation.
3	<i>Eucalyptus</i> spp. <i>Stringybark Gum</i>	<10.50	<10.00	<0.52	6.24	2.65	M	Good & Good	High/ High	Typical as a specimen tree	<u>Retain, Manage &amp; Protect:</u> Tree is considered as manageable in a sustainable manner with basic root system management & pruning to create canopy/new built form separation.

## 4.4 The Site Survey / Proposal



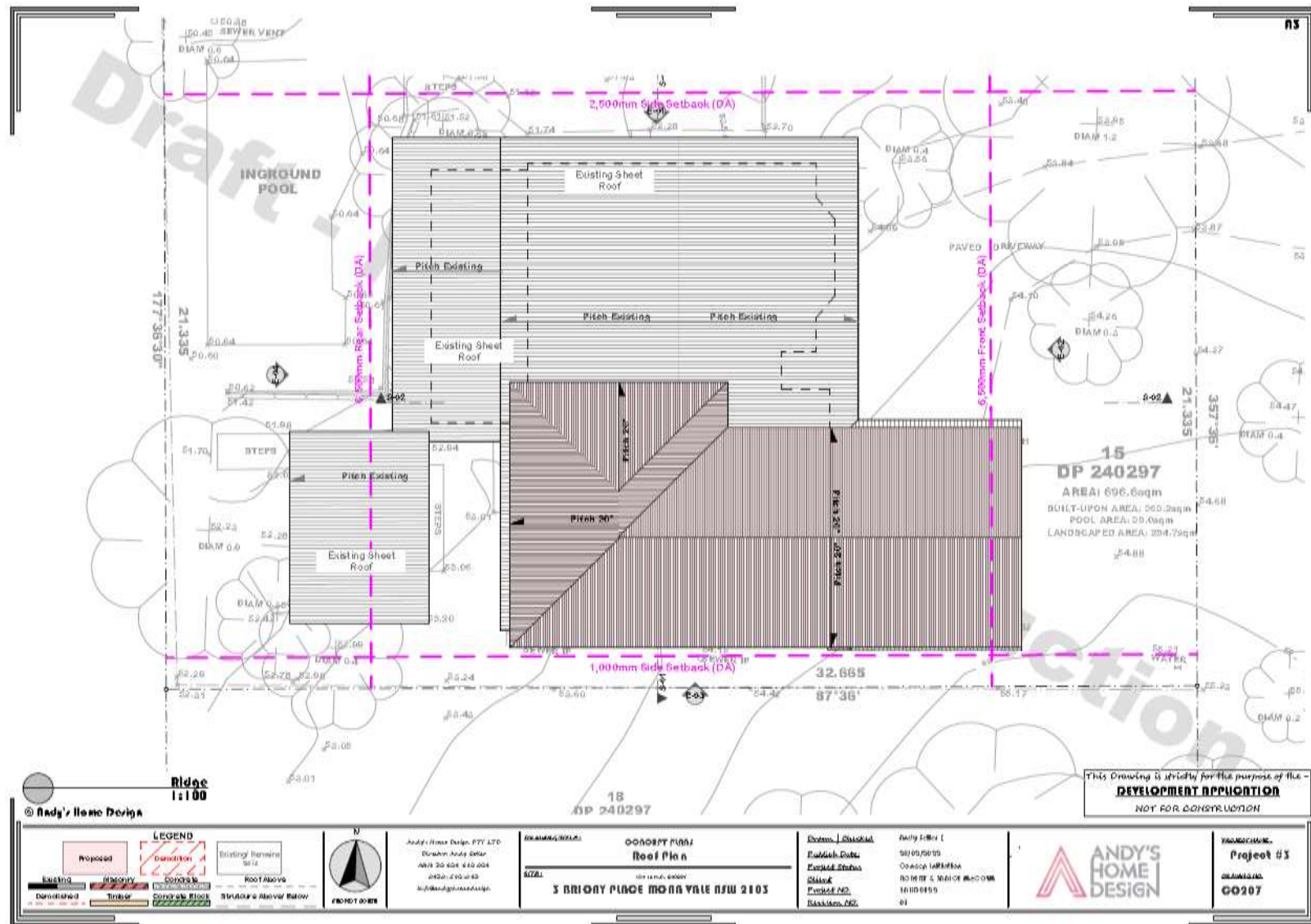












Figure 5: Above & previous pages confirm proposed works relative to tree management.

## 5 Discussion

The soon to be lodged DA proposes alterations & additions to the existing subject site single storey dwelling. The proposal relative to Tree Management requires Tree #1 to be discussed with respect to how its 'live root system' can be managed in a manner compatible with the as proposed new front of boundary dividing fence. Tree #2 & Tree #3 are assessed as being well away from any proposed works at ground level but potentially subject to minor pruning. Tree #2 from an infield assessment perspective will very likely require minor pruning, Tree #3 is unlikely to require any pruning.

All three (3) discussed trees are NBC 'Tree management Provisions' protected. Tree #1 is within the subject site. Tree #2 & Tree #3 are located within the southern common boundary Briony Reserve.

Tree #1 requires management of its 'live root system' relative to the as proposed new front of subject site dividing fence. The new structure proposes 'brick columns linked with timber panels'.

Footings/Pier sites must be able to be flexibly located so as to minimise & preferably avoid damage to any 'live root' of a significant diameter (defined in this situation as being greater than 50mm in diameter). Preferred potential footing/pier sites must be as small as possible & manually excavated. Any 'live root' less than 50mm in diameter exposed can be cleanly severed without any input from the sites retained Project Arborist. Finalised footing/pier sites if able to be completed in their preferred (by design) locations in a manner whereby significant diameter 'live roots' have NOT BEEN EXPOSED can be documented in writing with supporting photographic evidence by either the project manager or the sites retained Project Arborist (with Principle certifying Authority approval).

In the event a 'live root' of a significant diameter is exposed & the footing/pier site cannot be relocated in a manner so as to avoid it, the sites retained Project Arborist must be summonsed to prepare, oversee & document in writing with supporting photographic evidence the strategy adopted to minimise 'live root' of a significant diameter damage. Should this essential objective not be able to be achieved, we suggest a new dividing fence of lighter weight materials be designed & built. All documentation must be provided to the retained Principle Certifying Authority.

Tree #1 for *AS4970-2009 Protection of trees on development sites compliance* will additionally be specified to have 'temporary metal mesh fencing panels with above ground supports' instead along the edge of the hard surface driveway & area towards the dwelling so as to create an exclusion zone for the protection of the tree's root system as well as to avoid any potential for accidental contamination from builders' materials. Simply, where possible, the TPZ radial distance of 8.16m (within the subject site) is to be treated as a 'no go zone'.

Tree #2 is assessed as being far enough away from ground level works to not be of a significant concern. The site by law has to be isolated as a construction site prior to the commencement of any works. This is best achieved by installing 'temporary metal mesh fencing panels with above ground supports' along the subject site common boundary with the Briony Reserve.

Proposed works are for the current single-story dwelling to be converted into a two (2) storey dwelling. This has been interpreted to require some minor canopy pruning for reasonable new built form & tree canopy separation. Any pruning must be completed by suitable qualified & experienced practitioners (minimum AQF level 3 Arboriculture, 3 years pruning experience) or persons under the direct instruction & supervision of a suitably qualified & experienced person. Pruning must be in compliance at all times with the Australian Standard AS4373-2007 Pruning of amenity trees. (See Chapter 7, parts 7.2 & 7.3.)

Fencing instated will like for Tree #1 be required to be certified as being compliant. Again, this can be completed by either the Project Manager or the sites retained Project Arborist & provided to the sites retained Principle Certifying Authority.

Tree #3: in the event it requires any minor canopy pruning for reasonable new built form & tree canopy separation is to be managed as per Tree #2. The same specification applies for the isolation from works process as for Tree #2 required for *AS4970-2009 Protection of trees on development sites compliance*

## 6 Preliminary Site Specific 'Tree Plan of Management'

Tree #	Retain, Protect & Manage	Manual Excavation for Root Location	Tree Trunk Guard or Tree Protection Fencing	Construction Certificate Documentation Occupation Certificate Documentation	Comments
Tree #1	YES	YES (requires intensive, careful manual excavation plus detailed documentation)	Tree Protection Zone fencing	YES YES	Provided live roots of a significant diameter can be avoided this tree is considered as be to be viably retained.
Tree #2	YES	NO	Tree Protection Zone fencing	YES YES	T ree is supported to undergo minor pruning as is required.
Tree #3	YES	NO	Tree Protection Zone fencing	YES YES	Tree is supported to undergo minor pruning as is required.

## 7 Recommendations:

- Provide this report with management specifications within this document as part of the DA determination process.
- Implement the Section 5 & Section 6 portions of this document Discussion & Preliminary Site-Specific Tree Plan of Management be part of the DA determination.

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.

Document Author: Kyle A Hill, Practicing & Consulting Arborist (AQF level 5 & 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 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*', 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

<b>Age:</b>	<b>I</b>	<i>Immature</i> 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** 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  $SRZ\ radius = (D \times 50)^{0.42} \times 0.64$ .

**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.  $TPZ = DBH \times 12$ . 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.

<b>LVOHP</b>	Low Voltage Over head Powerlines
<b>HVOHP</b>	High Voltage Over head Powerlines
<b>ABC</b>	Aerial Bundled Cable

## Appendix B – Tree Protection & Management

### Tree Protection & Management Prior to Excavation & 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**.

Trunk protection “Tree Guards” are detailed (below) by generic diagram.

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 handheld 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 fortnightly checks by an Arborist.

There is to be no stock piling of building material (including waste), machinery or any other item within the 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.

