



Arboriculture Assessment & Management Statement

for lodged Development Application DA2019/0373)

July 2019

Site: Lot 9 in DP 8184
19 Wallumatta Road
NEWPORT BEACH, NSW

Client: Matt Jeans
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1 Summary

Matt Jeans (as the property owners) have commissioned *Aura Tree Services Pty Ltd* to prepare an "Arboriculture Assessment & Management Statement–Tree Management Strategy" to be linked to the lodged Development Application for Alterations & Additions to a dwelling house including a swimming pool.

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 DA submission.

The *NBC* assessment officer team has requested additional information relative the potential impacts of the lodged DA proposal relative to tree management.

Relative to tree management this document focuses on two (2) trees. By site survey/drawings provided both discussed trees are located within the subject site.

It is our opinion that both discussed trees are able to be viably retained, i.e. without any compromise to their at present predicted to be at least medium term (i.e. 15 to 25 years) Useful Life Expectancy.

The site is not listed within the *NBC* (old *Pittwater Council*) 'Local Environment Plan, 2014' (from herein *LEP*) as being part of any 'Heritage Conservation Area'. Nor is the subject site a listed "Heritage Item". Both trees discussed are species that are part of the *Pittwater spotted gum forest-endangered ecological community*. (See Part 3 of Schedule 1 within the *Threatened Species Conservation Act*.) The discussed trees are not listed within any known "significant tree register".

From a *Local Government Tree Management* perspective, the two (2) trees within the discussed site are subject to the provisions within the *NBC* (old *Pittwater Council*) 'Pittwater 21 Development Control Plan, 2014' (from herein *DCP*) & the *SEPP 'Vegetation in Non Rural Areas, 25 August 2017'*

This document supports the as lodged DA submission based on information supplied by our client. This document acknowledges the provisions within the *Australian Standard (AS4970–2009 Protection of trees on development sites)*.

This scope of this document includes:

- *NBC DA Tracking webtool for as lodged documents & communications from NBC,*
- *general site & tree assessment,*
- *tree's condition assessment (i.e. present condition & Useful Life Expectancy),*
- *perusal of as lodged Architectural Plans/Elevations by Marika Jarv, drawing #WHO1-DA thru #WHO1-DA, dated 25 March 2019,*
- *Site Survey by CMS Surveyors, dated 4 April 2017 &*
- *provision of a "Site Specific Plan of Management".*

Kyle Hill, Practicing & Consulting Arborist AQF Level 5 & 8, has prepared this document based on onsite inspection (Friday, 14 June 2019).

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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 be a *Syncarpia glomulifera*, Turpentine Tree to be known as Tree #1 & a *Corymbia maculata*, Spotted Gum to be known as Tree #2. They are confirmed to be locally indigenous tree species. Both are assessed as being 'naturally occurring specimens', i.e. they were NOT planted as part of any previous '*Landscape Concept*'. Both trees presently co-exist in an environment long term disturbed. No indicators of stress able to be linked to previous natural soil level disturbance can be confirmed.

Drawings & Site Survey provided confirm both discussed trees to be within the subject site.

By Pittwater 21 DCP 'Tree Management Provisions' the two (2) trees discussed are protected. Both discussed trees are listed *as being members of a plant community listed as being Ecologically Endangered*. See The NSW Scientific Committee – final determination "Pittwater spotted gum forest – endangered ecological community listing".

The subject site is Zoned E4 "Environmental Living" (old Pittwater Council LEP, 2014, Land Zoning Map-Sheet LZN_016).

Trees discussed are not proposed to be removed.

This document supports the proposed DA submission lodged based on information supplied by our client, (Architectural Plans/Elevations by Marika Jarv, dated 25 March 2019).

With implementation of Australian Standard (AS4970–2009 *Protection of trees on development sites*) compliance provisions & the site specific '*plan of Management*' it is considered both discussed trees can be retained without any compromise to either tree's Useful Life Expectancy (from herein ULE).

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:

- Tree's current condition & likely future health.
- Perusal of NBC (old Pittwater Council) "Tree Management Provisions". Perusal of NBC (old Pittwater Council) "Endangered Ecological Community listing" information.
- Perusal of NBC communication/responses to the as lodged DA submission
- Review of as lodged Plans, Elevations & Sections.
- Research related to tree root friendly building strategies.
- Discussion of environment where the trees are 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 Site Survey
- Appendix C 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

By NBC website 'Property Search tool the site area is 682.90m², (by Site Survey 686.90m²).

The site is developed to contain a single dwelling residence. The subject site & adjoining common boundary sites are zoned E4 Environmental Living.

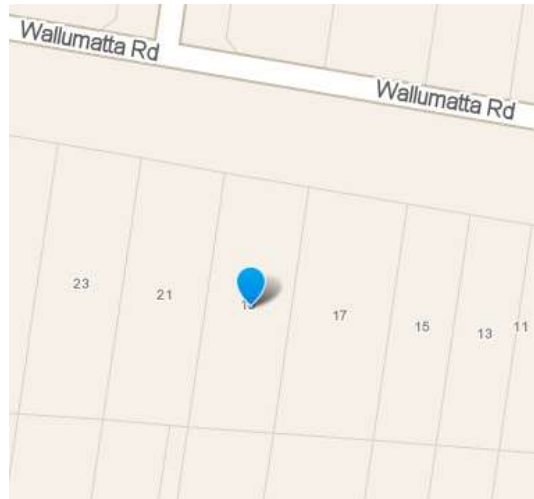


Figure 1: Location Map courtesy of NBC website tool & Whereis.com website tool.



The site is within an area noted to be a classified area of "Wildlife Corridor" significance. It is confirmed to be near lands classified as being subject to the legislated provisions within the Threatened Species Conservation Act (NSW). Both discussed trees provide "habitat potential". The discussed trees are not listed on any known "significant tree register".

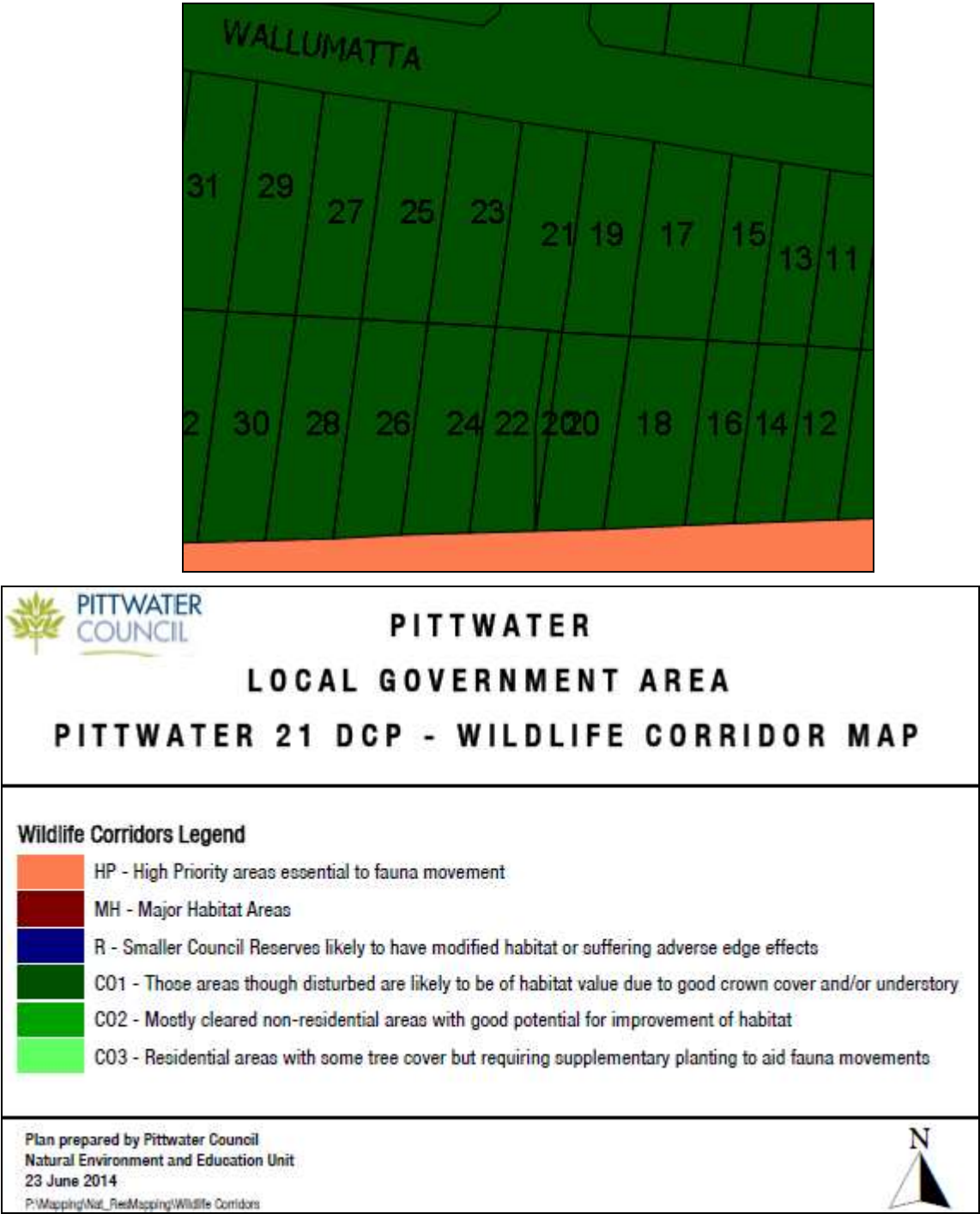


Figure 2: Confirms Pittwater 21 DCP Wildlife Corridor Status of the subject site.

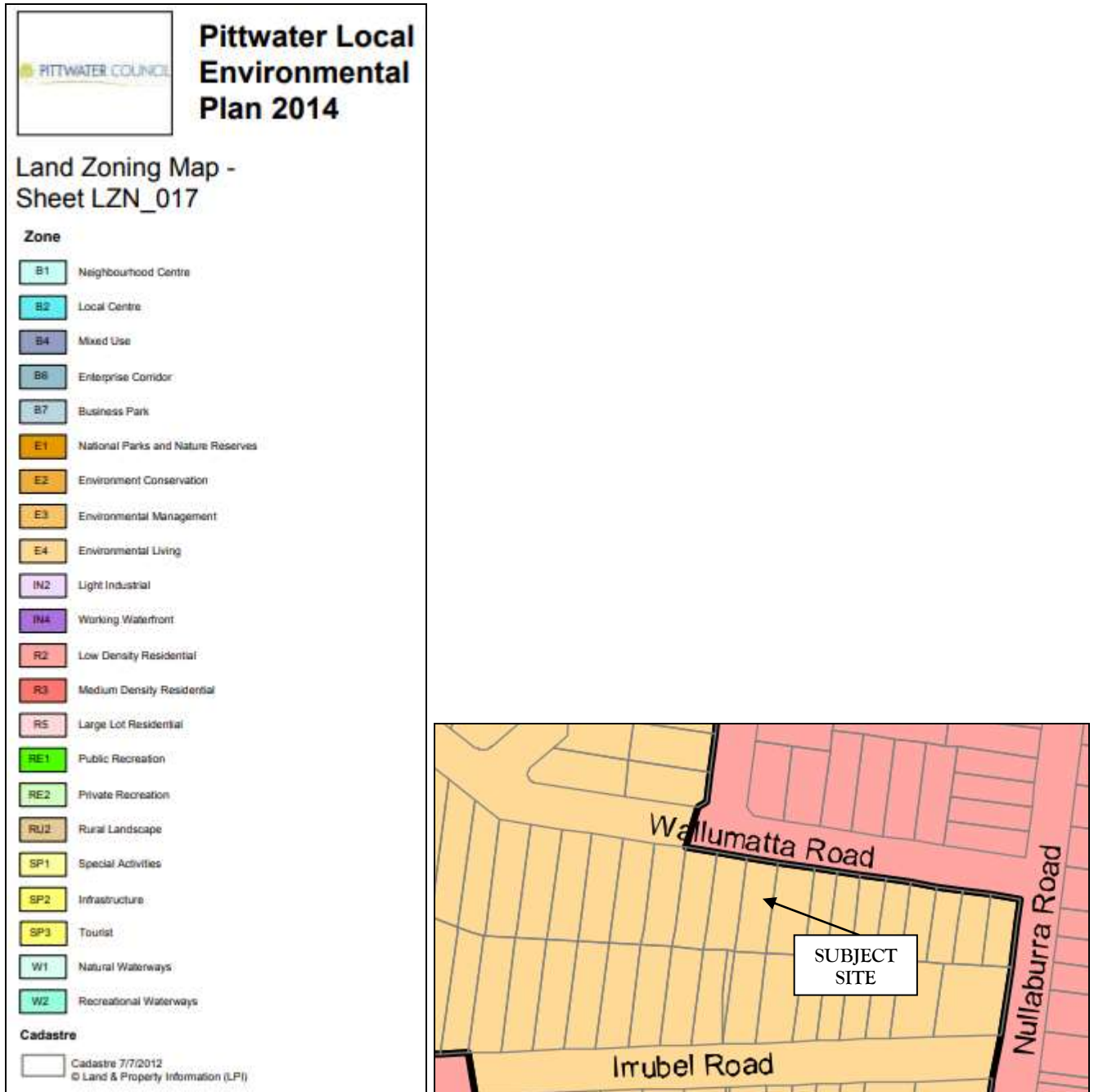


Figure 3: Confirms Land Zoning classification as being E4 Environmental Living.

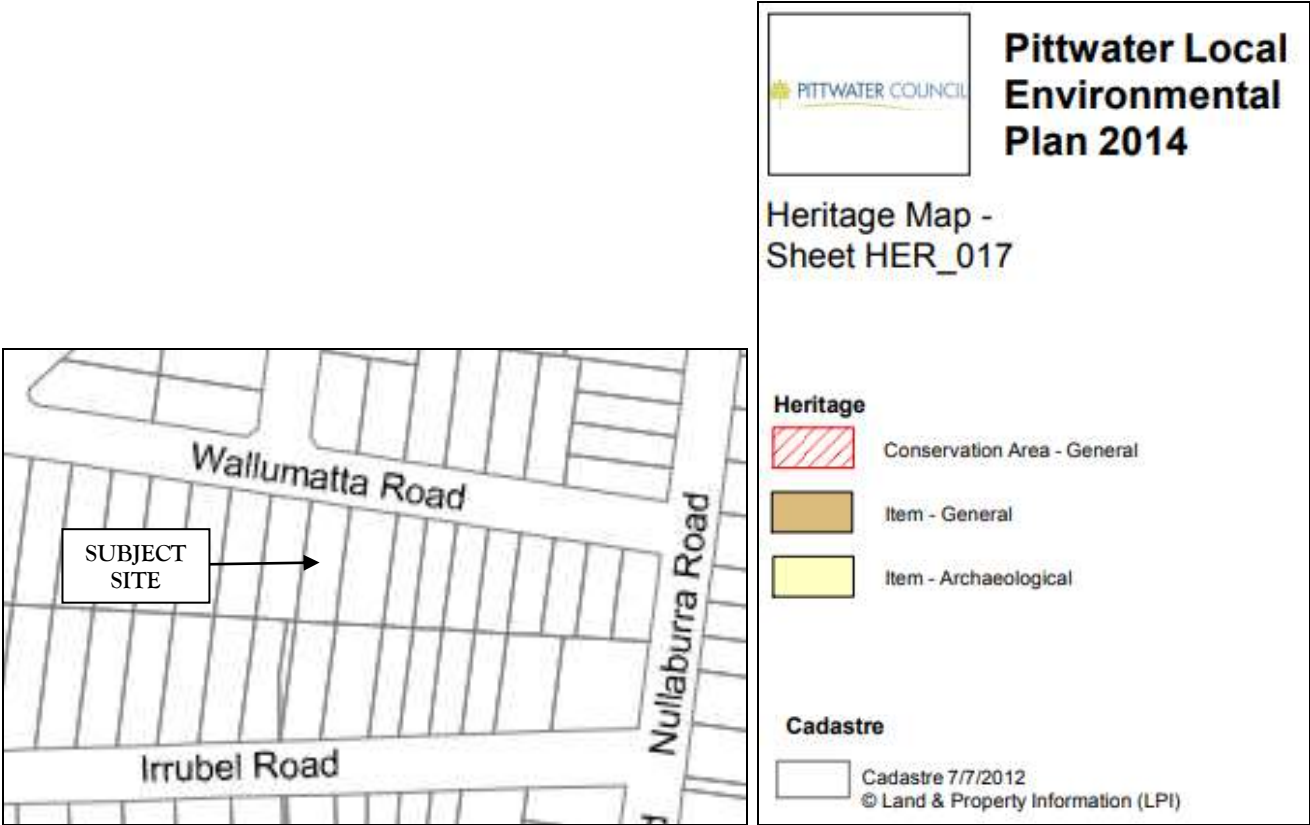
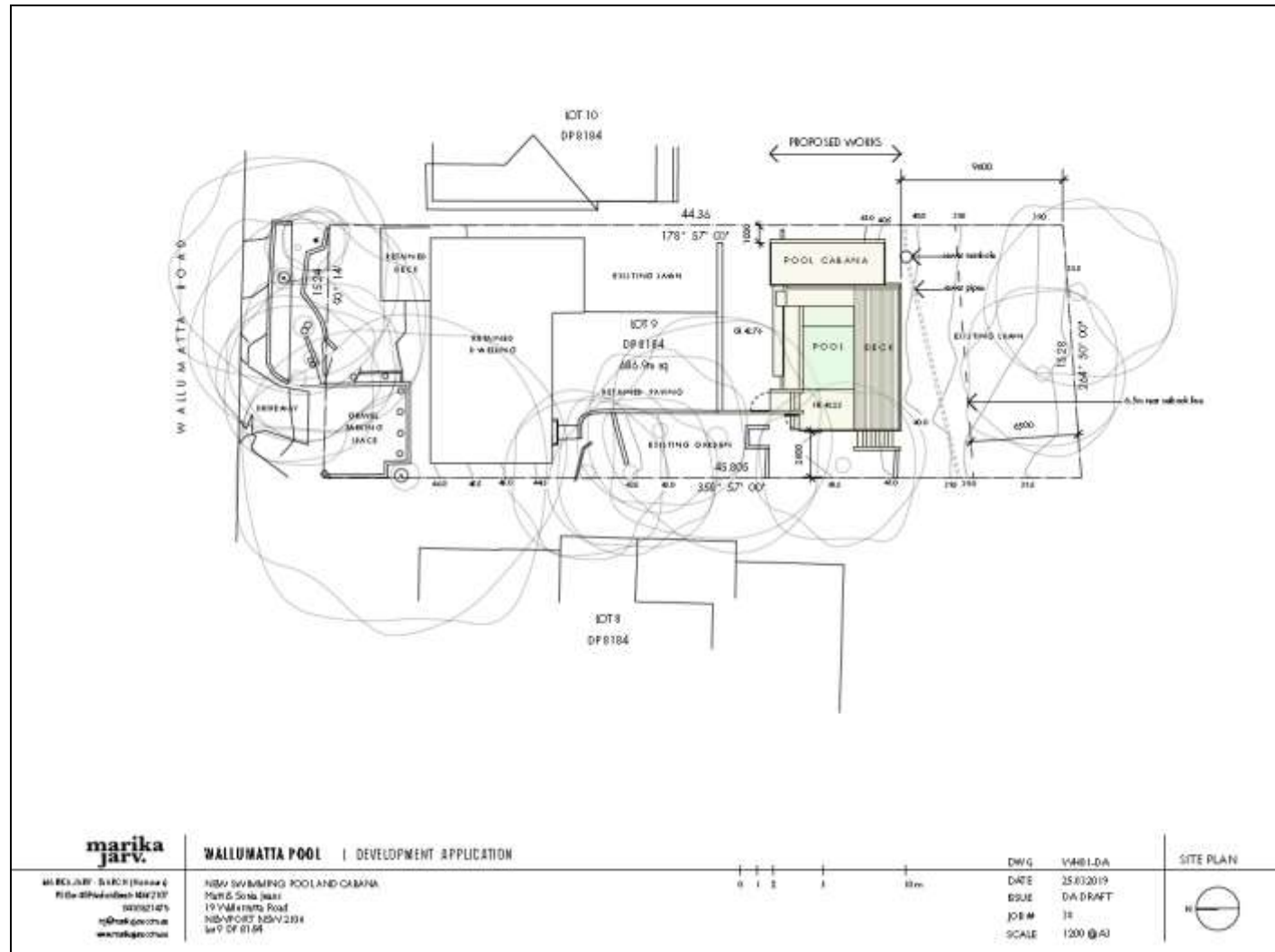
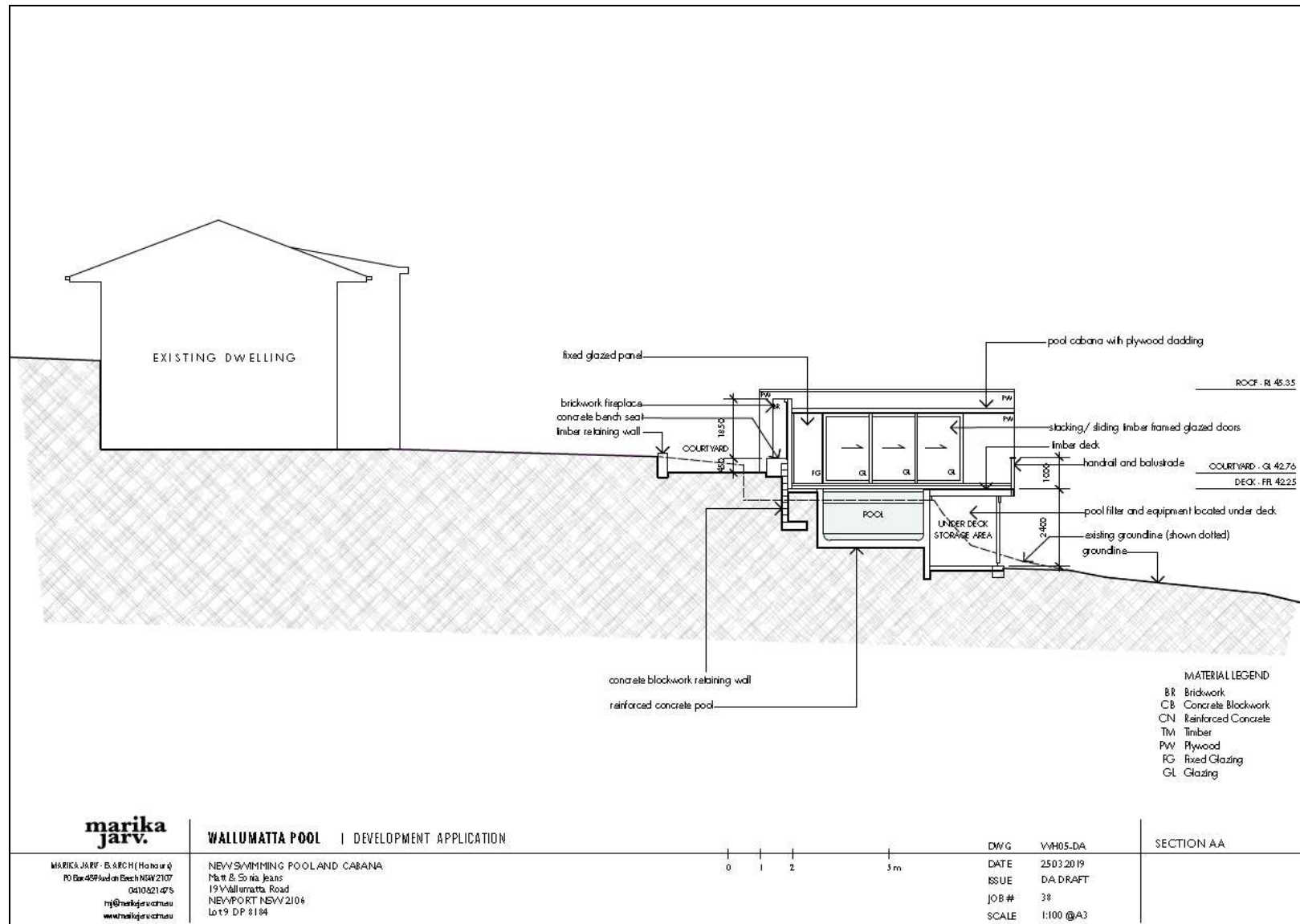
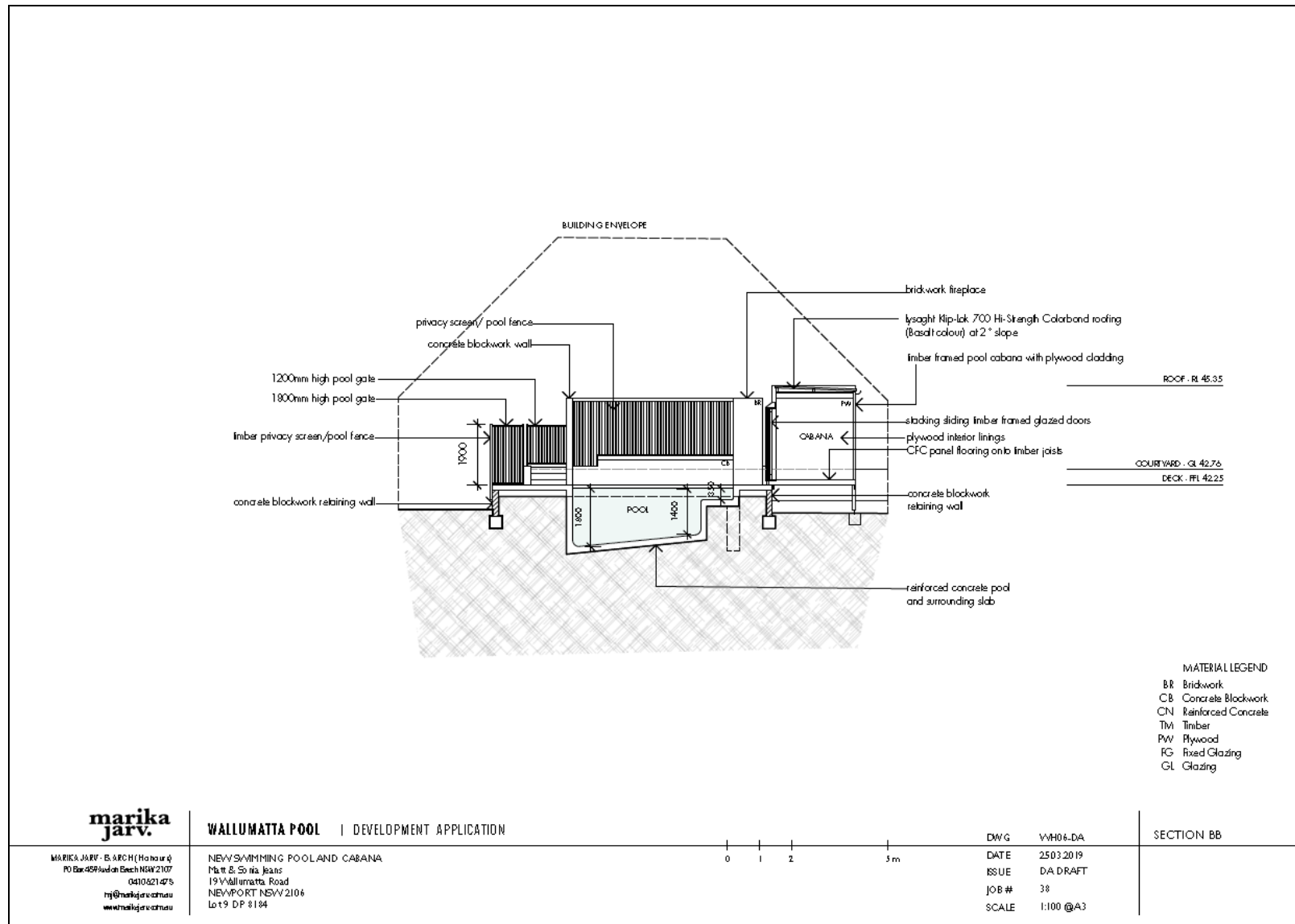


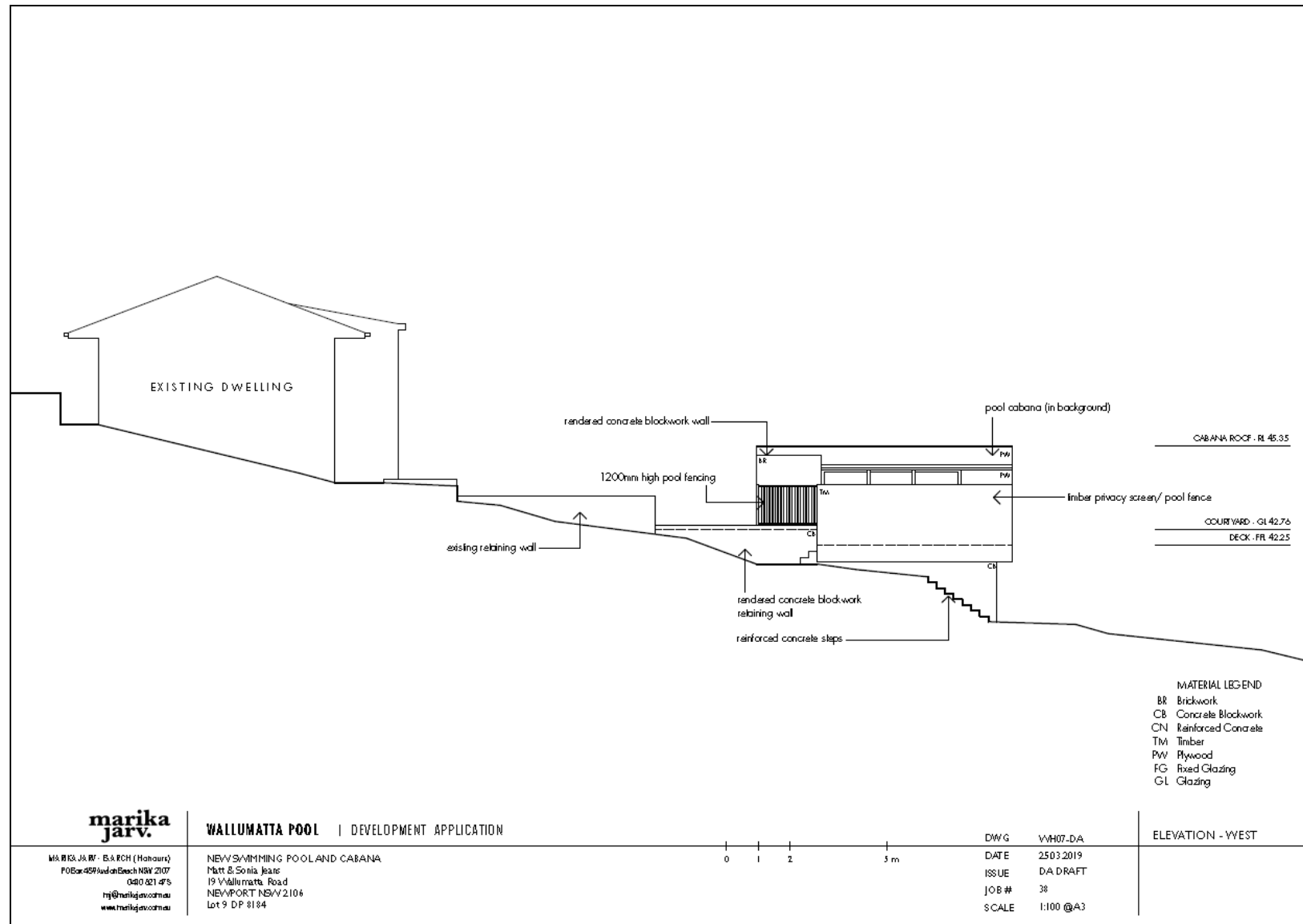
Figure 4: Confirms Heritage Conservation Area/ Heritage Item Status.

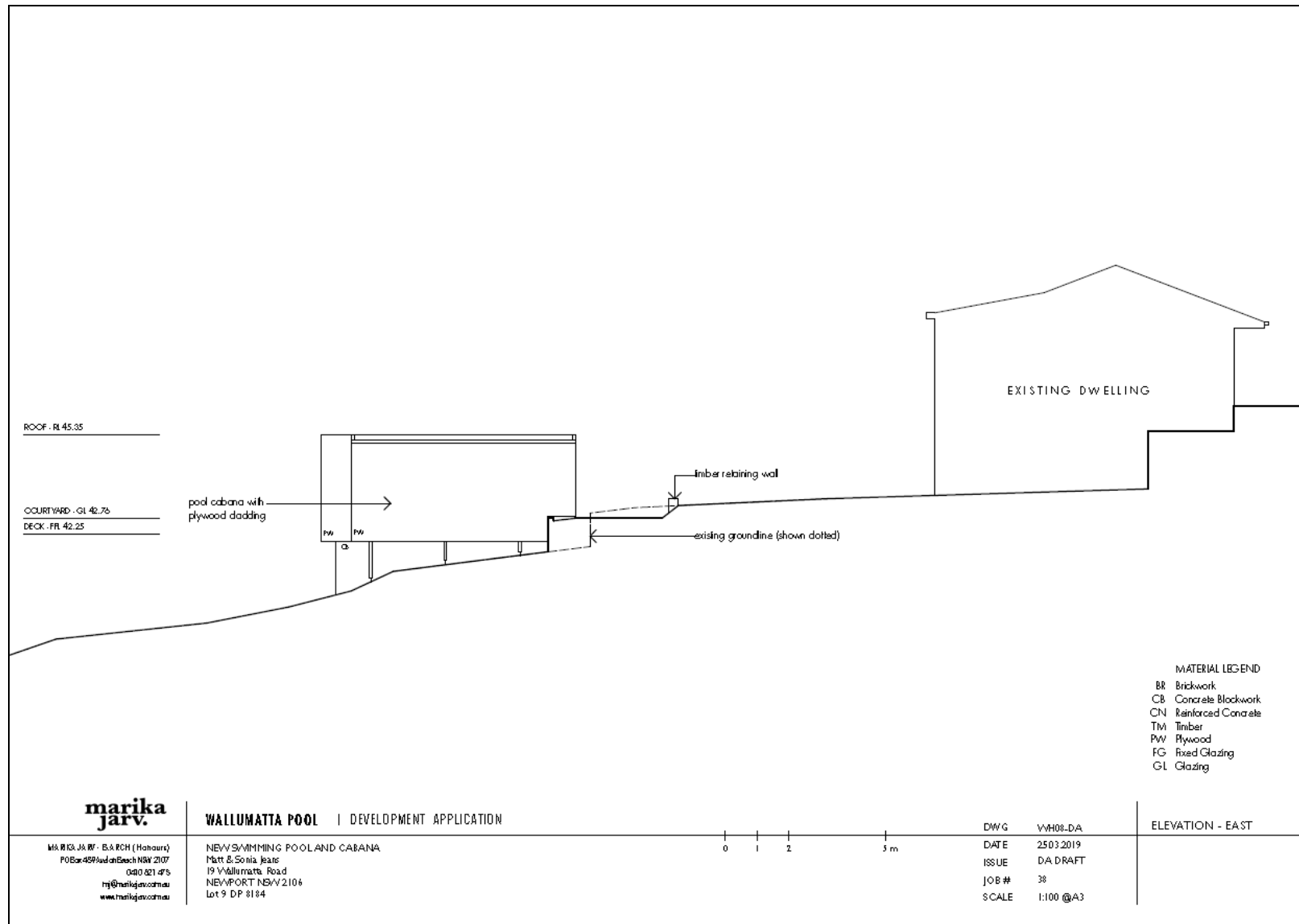
4.2 The Proposal











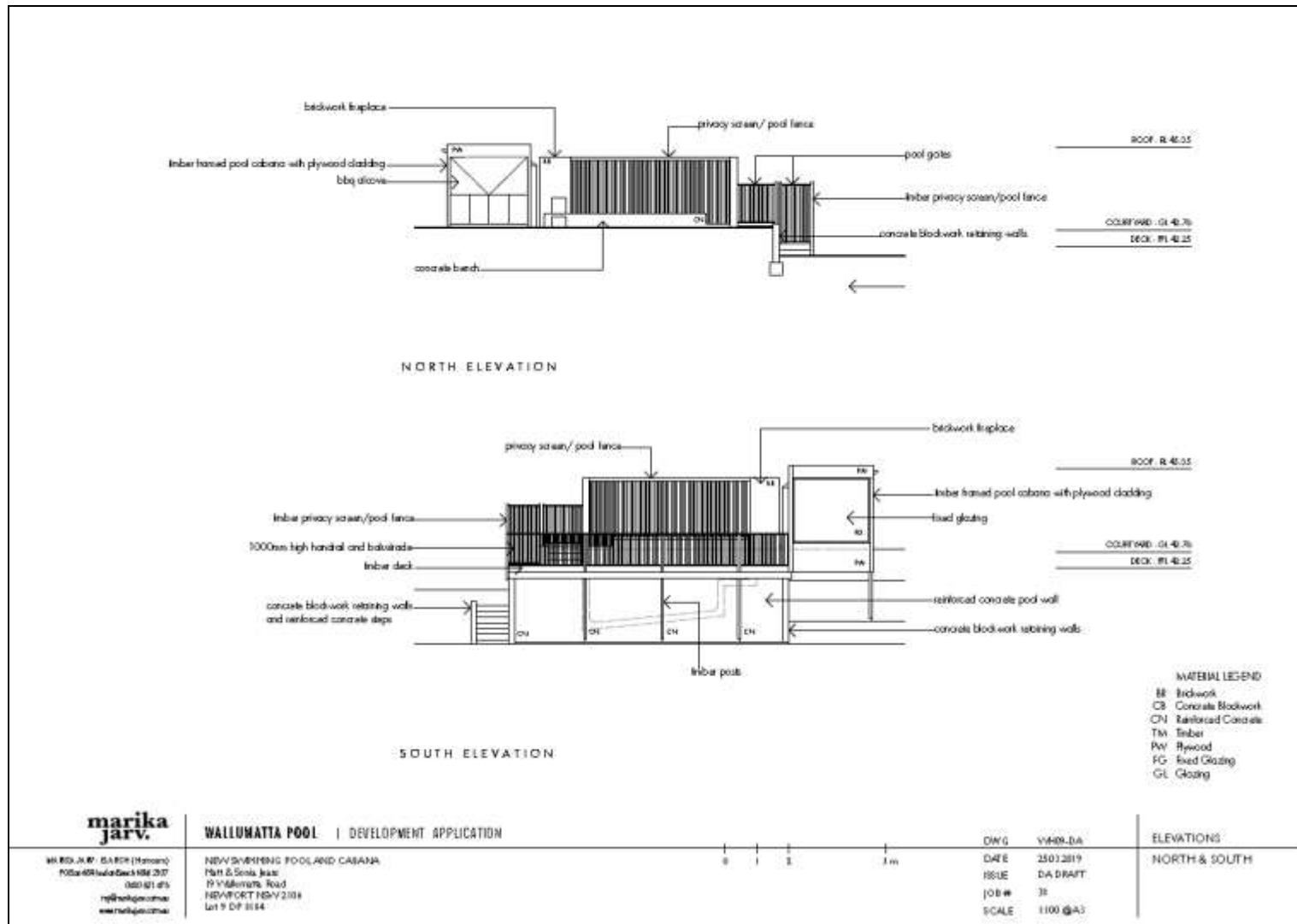


Figure 5: Pages 10 thru 15 illustrate the Plans/Elevations Lodged with the NBC.

4.3 The Trees & Tree Locations as plotted on Site Survey

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

Trees Recommended for removal relative to site characteristics							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
1	<i>Syncarpia glomulifera</i> Turpentine Tree	<13.50	<12.50	0.67	8.20	2.90	M	Good & Good	High/High	Typical habit & form	<u>Retain, Protect & Manage:</u> Tree is considered as able to be retained without compromise to its Useful Life Expectancy.
2	<i>Corymbia maculata</i> Spotted Gum	<23.00	<17.50	0.71	8.60	3.00	M	Good & Good	High/High	Typical habit & form	<u>Retain, Protect & Manage:</u> Tree is considered as able to be retained without compromise to its Useful Life Expectancy.

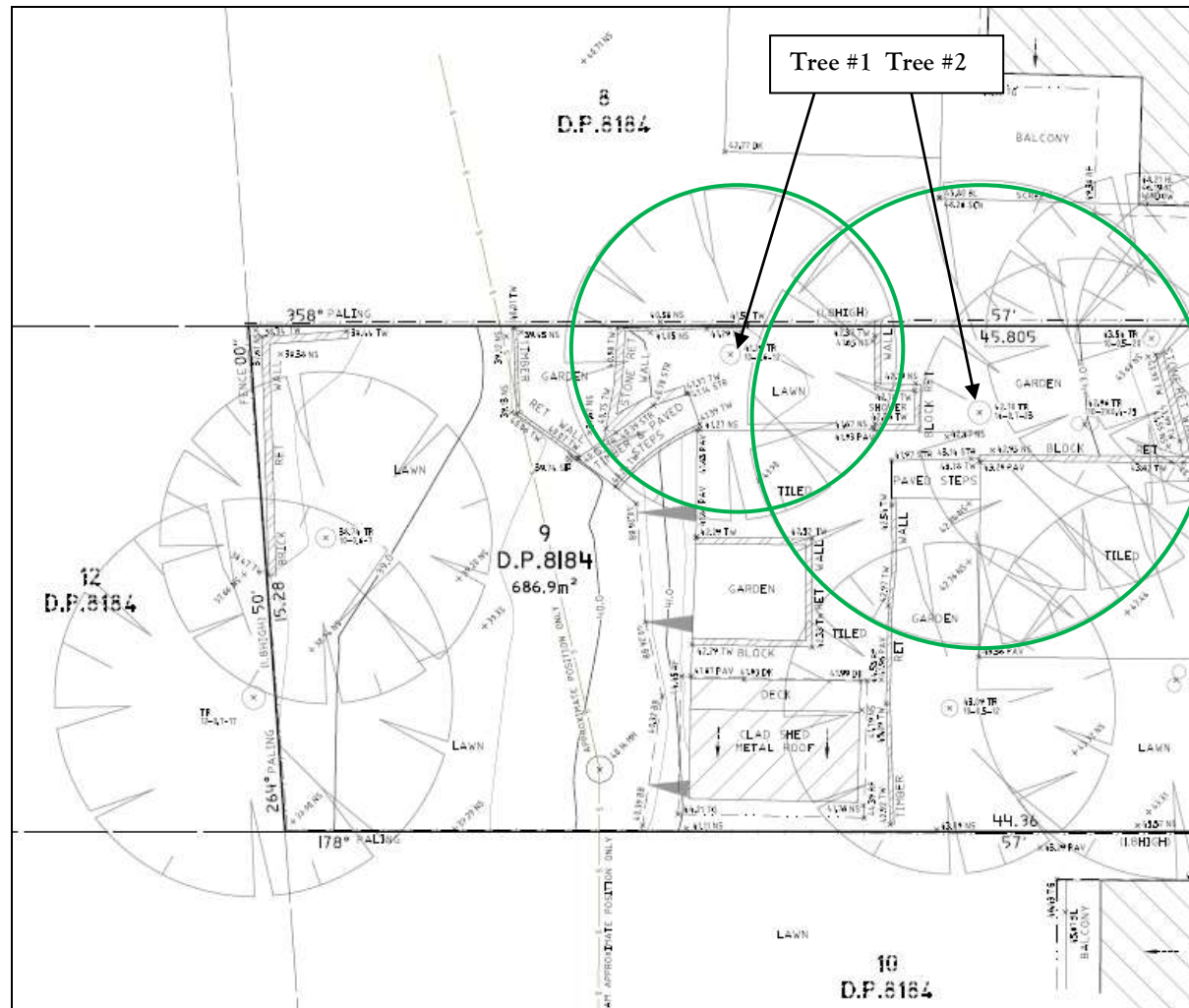


Figure 6: Portion of Site Survey Confirms discussed tree locations.

5 Discussion

The purpose of this document is to respond to the issues brought up by the *NBC Natural Environment Referral Response – Biodiversity* officer, Ashley Warnest in a manner that allows the proposed works to proceed without compromise to the two (2) trees confirmed to be within five (5.00m) of the works Useful Life Expectancy, (from herein ULE).

Within the area discussed long term change to original soil levels is noted. To date there cannot be any link to either discussed tree's ULE being compromised by these works. It is important to understand this as in reality very little to nil changes (only upgrading) to the existing built form is proposed within the most important (from a structural integrity perspective) calculated Structural Root Zone (from herein SRZ) radial distances, 2.90m for Tree #1 & 3.00m for Tree #2. See (below) portion of the lodged Site Analysis Plan.

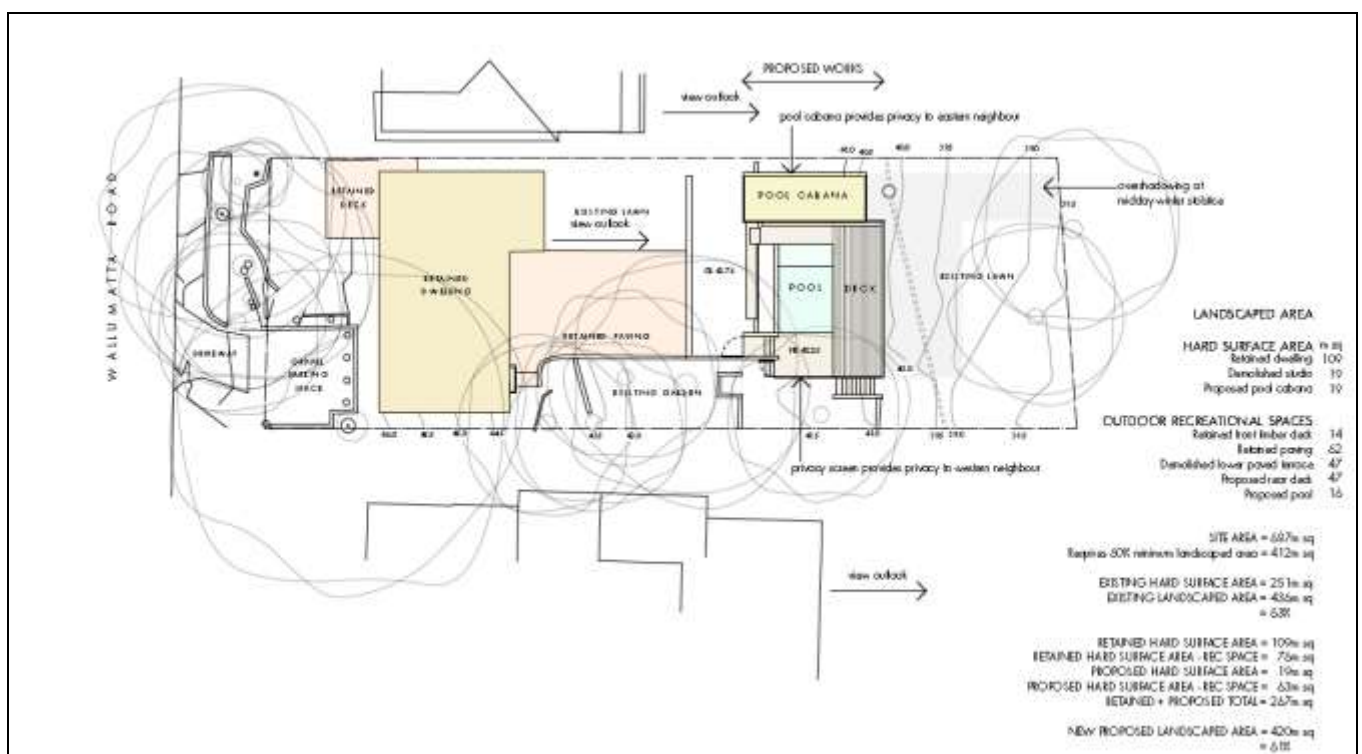


Figure 7: Illustrates proposed Site Analysis Plan.

The existing deck level are where the swimming pool is proposed to be constructed is largely built on 'fill'. Proposed to be replaced retaining walls & stairs linking the upper level (between residence & lower proposed swimming pool level) can easily be built to be 'tree root friendly structures'. Simply, this specifies the required footings with pier & beam to support the retaining walls/new stairs are to be located in sites that do not require the severance of any significant diameter (in this situ defined as being greater than 50mm in diameter) 'live woody tree roots'. Stairs to the lower level of the yard are specified to be suspended with only the bottom of structure touching the existing ground level.

Excavation for footings/pier & beam structure supported retaining walls/stairs within the Tree #1 Tree Protection Zone (from herein TPZ) calculated radial distance of 8.20m must be completed manually, likewise for the Tree #2 TPZ calculated radial distance of 8.60m. Completed excavation must be documented with supporting photographic evidence that no

significant diameter 'live woody tree roots' were damaged. This must be provided to the appointed Principle Certifying Authority, (from herein PCA).



Figure 8: Above illustrates the location of Tree #1 relative to existing built infrastructure. Below, illustrates the location of Tree #2 relative to existing built infrastructure.



Figure 9: Illustrates Tree #1 (left) & Tree #2 (right) canopy condition.

The intent of the *Australian Standard (AS4970–2009 Protection of trees on development sites)* does not prevent development within either TPZ or SRZ radial distances from discussed tree trunk centres provided it can be demonstrated that NO supporting ‘Structural Roots’ will be damaged & that significant diameter ‘live woody tree root’ damage is kept to a reasonable minimum. Simply, tree root systems intensively managed can co-exist with minor site disturbance.

The lodged DA proposal does not require any not previously disturbed soil level disturbance relative to the swimming pool & swimming pool surrounds.

As previously alluded to the greatest challenge relative to minimising ‘live woody tree root’ disturbance is the required to be upgraded (regardless of any development proposal) retaining walls/stairs uphill of the swimming pool/swimming pool surrounds. The existing (required to be replaced) timber retaining walls are very unlikely to pass any engineers assessment relative to structural integrity. The existing concrete block structure seen in the middle of page 19 photographs is specified to be retained. It makes no sense to create additional disturbance if avoidable.

Excavation for the swimming pool will likely be difficult as it is presumed the created existing level was established using builder’s rubble/excavated site soils. Excavation into the natural soil level for the swimming pool to a depth of 1.00m is specified to be completed manually. As per the retaining wall footing/pier & beam structure specified the competed swimming pool excavation is to be documented with supporting photographic evidence provided to the appointed PCA

Any significant diameter (i.e. >50mm Ø) ‘live woody tree root’ exposed by the manual excavation process must be managed & documented with photographic evidence by the Sites Retained Practicing / Consulting Arborist. This is NOT NEGOTIABLE.

NO excavated material from the into ground level ‘footings/piers & beams’ as well as No Builders Materials of any description is at any time is able to be STORED within the discussed trees TPZ radial distances of 8.20m & 8.60m. Likewise, No concrete or paint mixing is allowed within the calculate TPZ/SRZ radial distances without the appropriate ground level protection for any Tree #1 ‘live woody roots’ that may be within this area.

See the *Australian Standard (AS4970-2009 Protection of trees on development s sites, Chapters 3, 4 & 5).*

The proposed Alterations & Additions do not require any pruning to the Tree #1 canopy. See the *Australian Standard (AS4970-2009 Protection of trees on development s sites, Chapters 3, 4 & 5).*

The proposed Alterations & Additions do not require any pruning of either discussed tree canopy.

6 Site Specific Tree Management Plan

Tree #1:

- *Retain, Protect & Manage*
- *Install “Temporary Metal Mesh Fencing” as close to the calculated TPZ radial distance of 8.20m as the site/proposed works naturally allows.*

- *Finalised 'footings/piers & beams locations must be documented in writing with supporting photographic evidence of not compromising any 'significant diameter live woody tree root'.*
- *Any excavation required within 8.20m of the tree trunk centre must be completed manually to a depth of 1.00m (or to solid rock). Any 'live woody tree root less than 50mm in diameter may be severed cleanly without the input of the sites retained Practicing/Consulting Arborist, (both written & photographic evidence of works completed must be provided to the Principle Certifying Authority).*
- *Any 'live woody tree root greater than 50mm in diameter can only be managed with input from the sites retained Practicing/Consulting Arborist, (both written & photographic evidence of the strategy adopted for individual root management must be provided to the Principle Certifying Authority).*
- *NO excavated material from the into ground level 'footings/piers & beams' as well as No Builders Materials of any description is at any time is able to be STORED within the discussed trees TPZ radial distance of 8.20m. Likewise, No concrete or paint mixing is allowed within the calculate TPZ/SRZ radial distances without the appropriate ground level protection for any Tree #1 'live woody roots' that may be within this area.*
- *Photograph the tree canopy prior to the beginning of any DA determined works.*

Tree #2:

- *Retain, Protect & Manage*
- *Install only a 'Tree Trunk Guard' as existing infrastructure to be retained separates soils from works being proposed.*
- *Any excavation required within 8.60m of the tree trunk centre must be completed manually to a depth of 1.00m (or to solid rock). Any 'live woody tree root less than 50mm in diameter may be severed cleanly without the input of the sites retained Practicing/Consulting Arborist, (both written & photographic evidence of works completed must be provided to the Principle Certifying Authority).*
- *Any 'live woody tree root greater than 50mm in diameter can only be managed with input from the sites retained Practicing/Consulting Arborist, (both written & photographic evidence of the strategy adopted for individual root management must be provided to the Principle Certifying Authority).*
- *NO excavated material from the into ground level 'footings/piers & beams' as well as No Builders Materials of any description is at any time is able to be STORED within the discussed trees TPZ radial distance of 8.20m. Likewise, No concrete or paint mixing is allowed within the calculate TPZ/SRZ radial distances without the appropriate ground level protection for any Tree #1 'live woody roots' that may be within this area.*
- *Photograph the tree canopy prior to the beginning of any DA determined works.*

7 Recommendations:

- By providing the requested additional information relative to tree management to *NBC* officers assessing/determining the lodged Development Application (DA 2019/0373) it should now be able to be determined.

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,

A handwritten signature in black ink, appearing to read 'K Hill', is positioned above a horizontal line.

Kyle A Hill, Practicing & Consulting Arborist (AQF level 8 & AQF level 5)

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

Age:	I	<i>Immature</i> refers to a refers to a well-established but juvenile tree
	SM	<i>Semi-mature</i> refers to a tree at growth stages between immaturity & full size
	M	<i>Mature</i> refers to a full sized tree with some capacity for further growth
	LM	<i>Late Mature</i> refers to a full sized tree with little capacity for growth that is not yet about to enter decline
	OM	<i>Over-mature</i> refers to a tree about to enter decline or already declining
	LS	<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 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 – 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**.

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.

