

“GROWING MY WAY”

Tree Consultants

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EXCELLENCE in ALL ASPECTS OF TREE MANAGEMENT

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## ***Arboriculture Impact Assessment & Site-Specific Preliminary Plan of Management***

**30 October 2024 updated November 2024**

**Prepared for: Vic & Clare Cherikoff  
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Member of Arboriculture Australia

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Master of Protected Area, Governance & Management (University of Tasmania)

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## 1. Summary

Vic & Clare Cherikoff (as the Property Owners of 99 Riverview Road Avalon Beach NSW 2107) via Ken Russell from A Total Concept Landscape Architects commissioned the Growing My Way Tree Consultancy (GMW) to prepare an Arboriculture Impact Assessment & Preliminary Site - Specific Plan of Management to be linked to a Development Application (DA) submission for *New Swimming Pool and Surroundings*.

The site is Land Zoned as “E4 Environmental Living by NBC LEP, (C4 by State Legislation change)”.

This report discusses five (5) trees including one (1) group of trees, all discussed located within the subject site (99 Riverview Road).

The subject site shares common boundaries with two (2) same land zoning common boundary adjoining properties & one (1) public road (Riverview Road). Both same zoning common boundary adjoining properties are developed to contain dwellings & other infrastructure.

Motor vehicle & pedestrian access to the subject site is only via Riverview Road.

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

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

- *NBC website, online property & environment information website tools.*
- *Site Survey by CMS SURVEYORS, dated 05 March 2024.*
- *Proposed landscape Plans, Elevations Sections etc., by A Total Concept Landscape Architects, dated 06 November 2024.*
- *NSW SEPP; 10/50 Vegetation Clearing ‘Code of Practice’.*
- *NBC “Tree Management Provisions”.*
- *NBC Heritage Conservation Area & Land Zoning LEP Maps.*
- *NBC Heritage Wildlife Corridor Map, Pittwater 21 DCP.*

*The aim of this report is:*

1. *To confirm the viability of the discussed tree, relating to its individual health, vigour & condition considering any potential impact foreseen by the proposed works.*
2. *Provide a Preliminary Site Specific ‘Tree Plan of Management’.*

This document supports with compliance of the preliminary specifications included (relative to tree management).

We confirm, four (4) protected trees assessed can be retained with no able to be reasonably predicted compromise to its Useful Life Expectancy with intensive management during the proposed works.

Kyle A Hill - AQF level 5, Diploma of Horticulture / Arboriculture, (TAFE NSW & other) & AQF level 8, Post Graduate Certificate in Arboriculture, (University of Melbourne) Practising/Consulting Arborist) with the assistance of Ao Wang (Master of Protected Area, Governance & Management (University of Tasmania) &

Bachelor of Environmental Biotechnology (University of Technology Sydney) has prepared this report based on “Visual Tree Assessment” (VTA) undertaken on Tuesday 24 September 2024.

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## 2. Introduction

This report contains observations & recommendations intended to assist in the management of the five (5) trees including one (1) group of trees identified as close to the proposed works. Note: four (4) trees are protected species, plus one (1) Group of palms are normally classified as being exempt species. Only protected trees within the subject & all trees/vegetation within the road reserve are discussed.

Tree #1, Tree #2, Tree #3 & Tree #4 are located within the subject site surround the exiting filled up decking area. Trees #5 are a group of palms located within the subject site close to the proposed area.

The *Australian Standard (AS4970-2009) for the 'Protection of trees on development sites'* is the guideline document required to be addressed in this document.

We acknowledge & confirm to be familiar with the NBC "Tree Management Provisions", specifically the documents; Pittwater Local Environmental Plan 2014, (from herein; Pittwater *LEP*), the Pittwater Development Control Plan 21 last Amendments Dec 2020 (from herein Pittwater *DCP*), plus the State Environmental Planning Policy, Vegetation in Non-Rural Areas, 2017 (August 2017 *SEPP*).

The sole consent authority is *NBC*.

The subject site is NOT within an *NBC* designated "*Heritage Conservation Area*". The subject site is listed 'Heritage Items' as Heritage Item 2270430. None of subject site common boundary adjoining property listed 'Heritage Items'. The subject site & subject adjoining properties are within the CO1 - Those areas though disturbed are likely to be of habitat value due to good crown cover and/or understory (Pittwater Local Government Area Pittwater 21DCP – wildlife).

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

- *NBC website, online property & environment information website tools.*
- *Site Survey by CMS SURVEYORS, dated 05 March 2024.*
- *Proposed landscape Plans, Elevations Sections etc., by A Total Concept Landscape Architects, dated 06 November 2024.*
- *NSW SEPP; 10/50 Vegetation Clearing 'Code of Practice'.*
- *NBC "Tree Management Provisions".*
- *NBC Heritage Conservation Area & Land Zoning LEP Maps.*
- *NBC Heritage Wildlife Corridor Map, Pittwater 21 DCP.*

This document includes a Preliminary Site Specific "Plan of Management".

### 3. Methodology

Assessment Methodology for the discussed tree has been from ground level by eye, using *Visual Tree Assessment (VTA Stage 1)*, techniques developed by Claus Mattheck. The principles of VTA are illustrated & explained in the widely used reference textbook "*The Body Language of Trees (1994)*".

Assessment includes:

- *Onsite assessment, data collection*
- *Tree's current condition & likely future health*
- *Species tolerance to root disturbance &/or development*
- *Likely present & future risk to persons & property.*
- *Tree's (public & private landscape) amenity value, considering habitat potential.*

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 term*
- *Attachment A Tree Protection/Management Prior to & During Construction*

## 4. Observations

### 4.1 The Site

All five (5) trees including one (1) group of trees located within the subject site (99 Riverview Road).

The subject site is 1057m<sup>2</sup> in size (*Site Survey by CMS SURVEYORS, dated 05 March 2024*).

The subject site shares common boundaries with two (2) same land zoning common boundary adjoining properties & one (1) public road (Riverview Road). Both same zoning common boundary adjoining properties are developed to contain dwellings & other infrastructure.

No Geotechnical issues are known to exist relative to tree management.

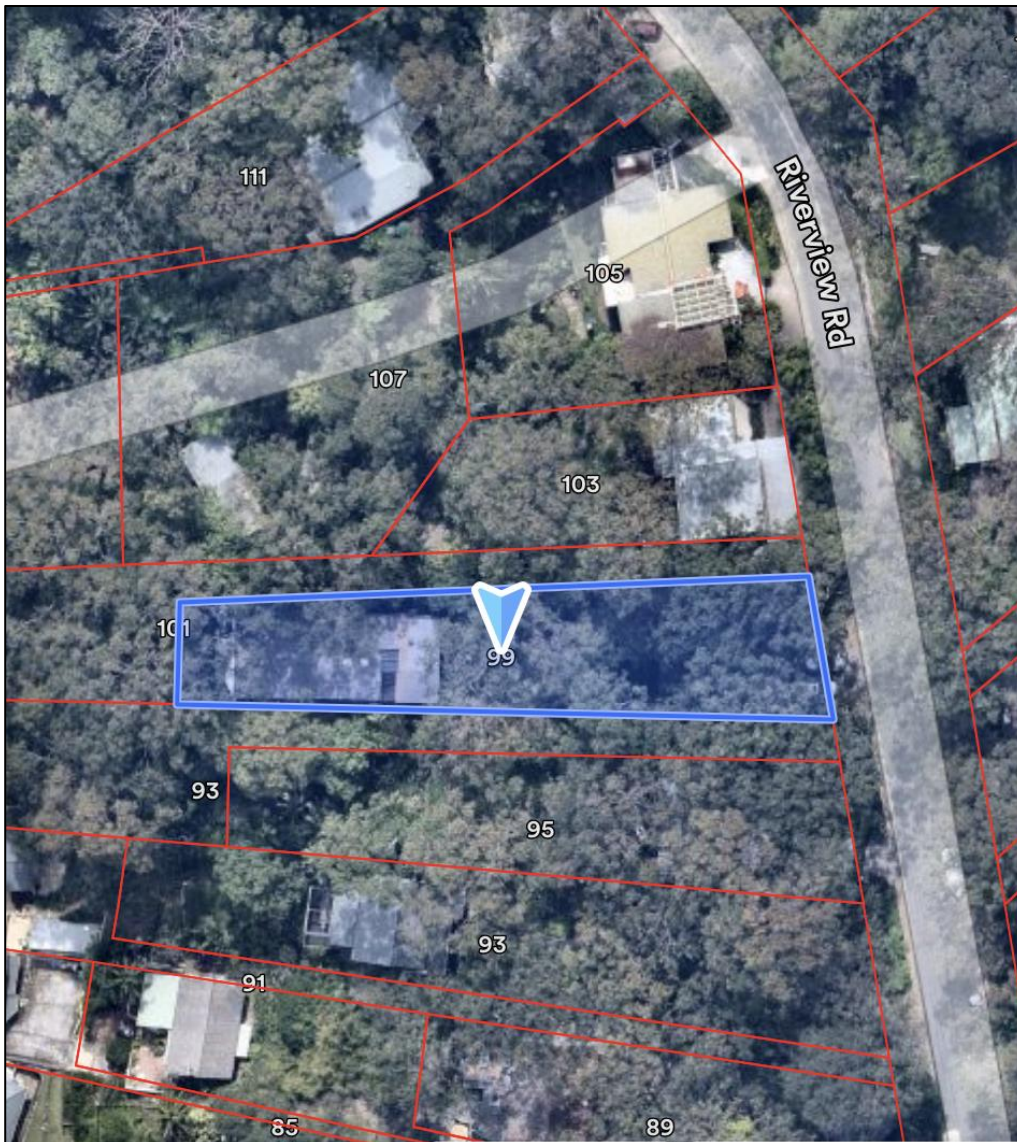


FIGURE 1: ABOVE ILLUSTRATES THE DISCUSSED TREE RELATIVE TO THE SITE 99 RIVERVIEW ROAD AVALON BEACH NSW 2107. (AERIAL PHOTOGRAPH FROM SUNDAY 22 SEPTEMBER 2024, MAP DATA COURTESY OF NEARMAP™)

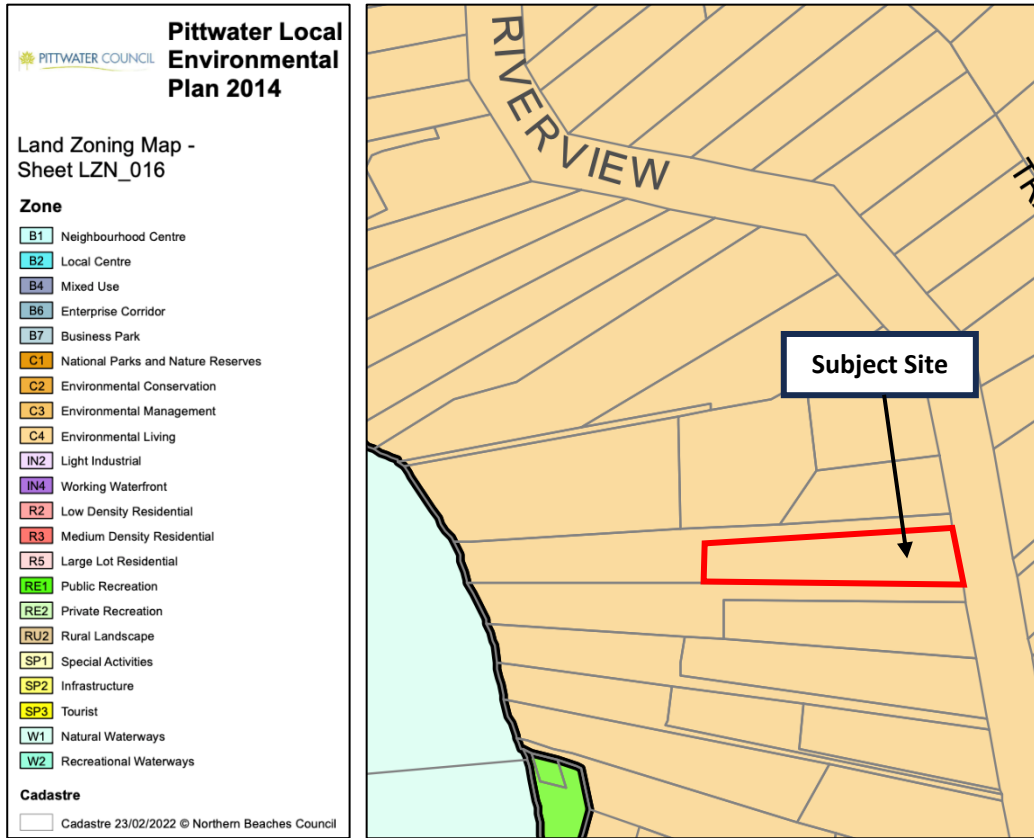


FIGURE 2: CONFIRMS STATUS OF THE SUBJECT SITE RELATIVE E4 ENVIRONMENTAL LIVING (CURRENT C4). (PITTWATER LOCAL ENVIRONMENTAL PLAN 2014, LAND ZONING MAP - SHEET LZN\_016).

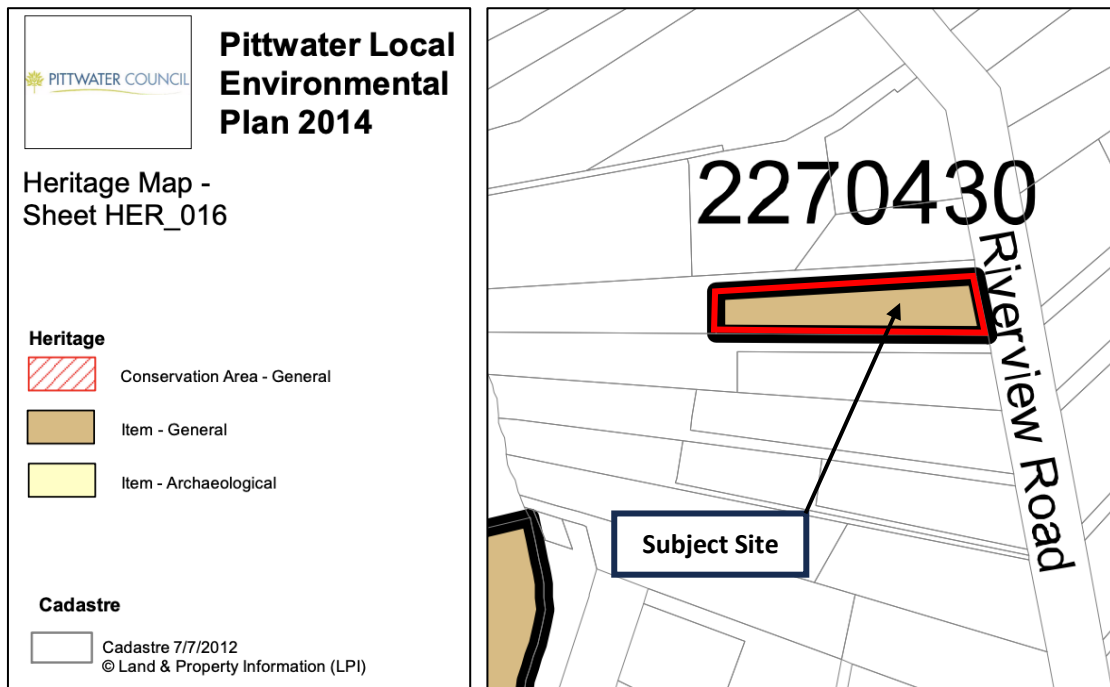


FIGURE 3: CONFIRMS STATUS OF THE SUBJECT SITE RELATIVE A 'HERITAGE ITEMS' AS HERITAGE ITEM 2270430. (PITTWATER LOCAL ENVIRONMENTAL PLAN 2014, HERITAGE MAP SHEET HER\_0016)



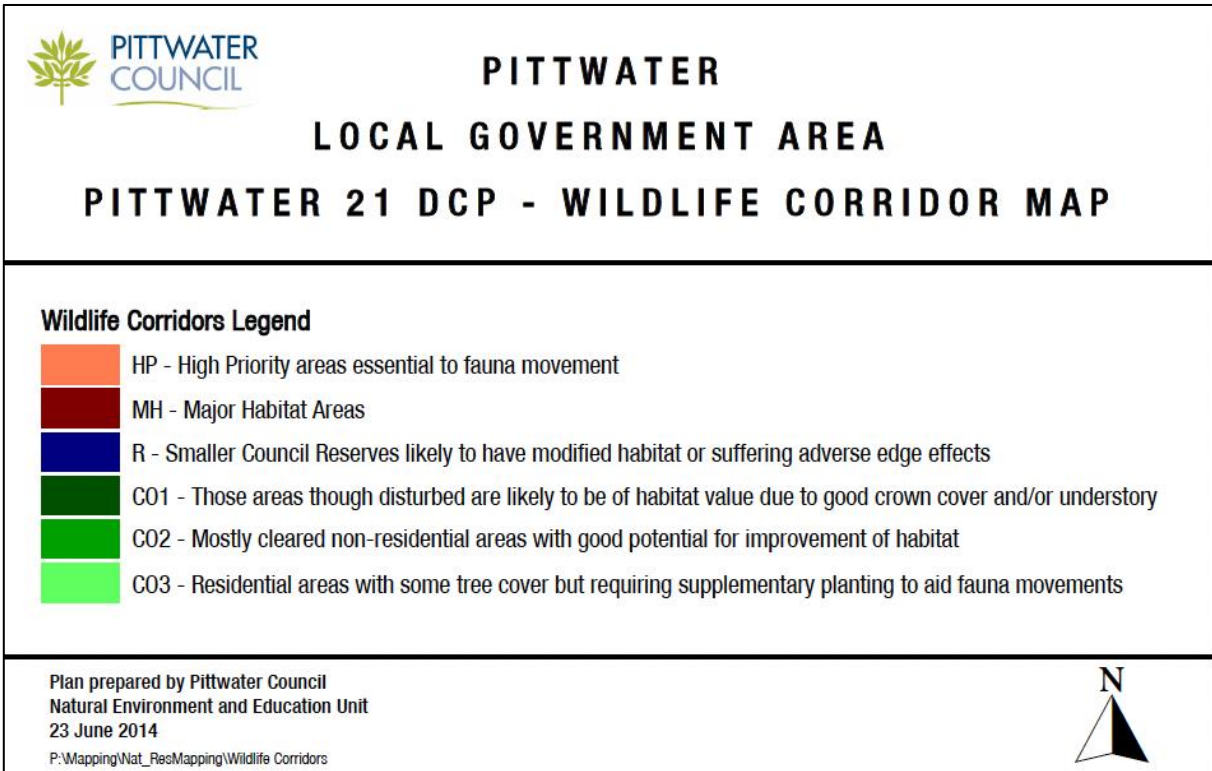
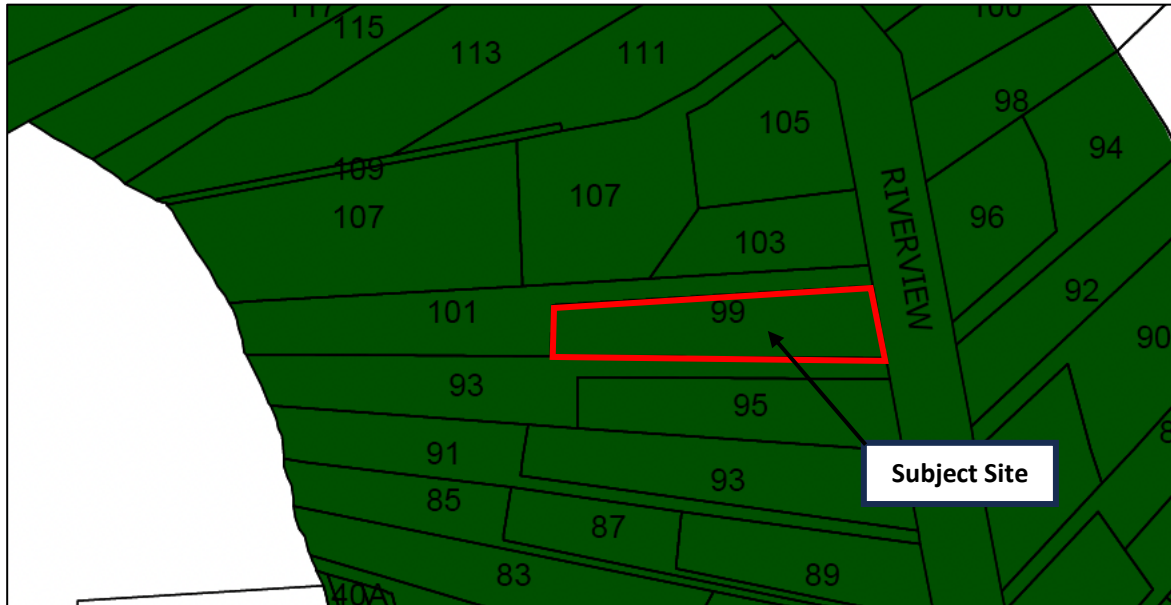
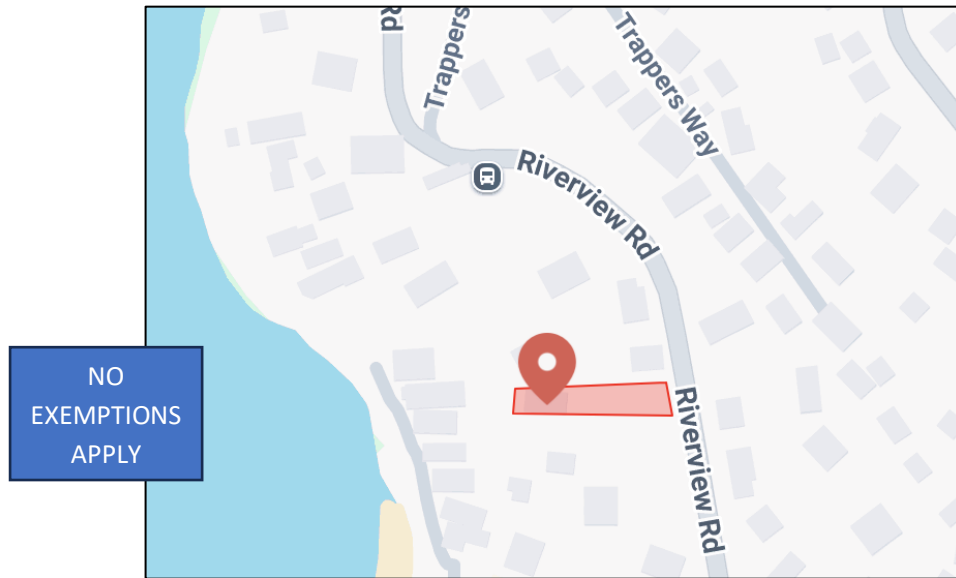


FIGURE 4: SUBJECT SITE IS WITHIN C01 - THOSE AREAS THOUGH DISTURBED ARE LIKELY TO BE OF HABITAT VALUE DUE TO GOOD CROWN COVER AND/OR UNDERSTORY (PITTWATER LOCAL GOVERNMENT AREA PITTWATER 21DCP – WILDLIFE



### Your 10/50 search result

You have conducted a search of the 10/50 online tool for the land identified in the map above. This search result is valid for the date the search was conducted.

Please retain a copy of this search result for your records.



The parcel of land you have selected is not located in a designated 10/50 vegetation clearing entitlement area. You cannot use the 10/50 exemption to clear vegetation on this parcel of land. Contact your local council or [Local Land Services Office](#) regarding any clearing authorisation required.

FIGURE 5: CONFIRMS STATUS OF THE SUBJECT SITE IS NOT UNDER THE 10/50 SCHEME. (10/50 VEGETATION CLEARING CODE OF PRACTICE FOR NEW SOUTH WALES)

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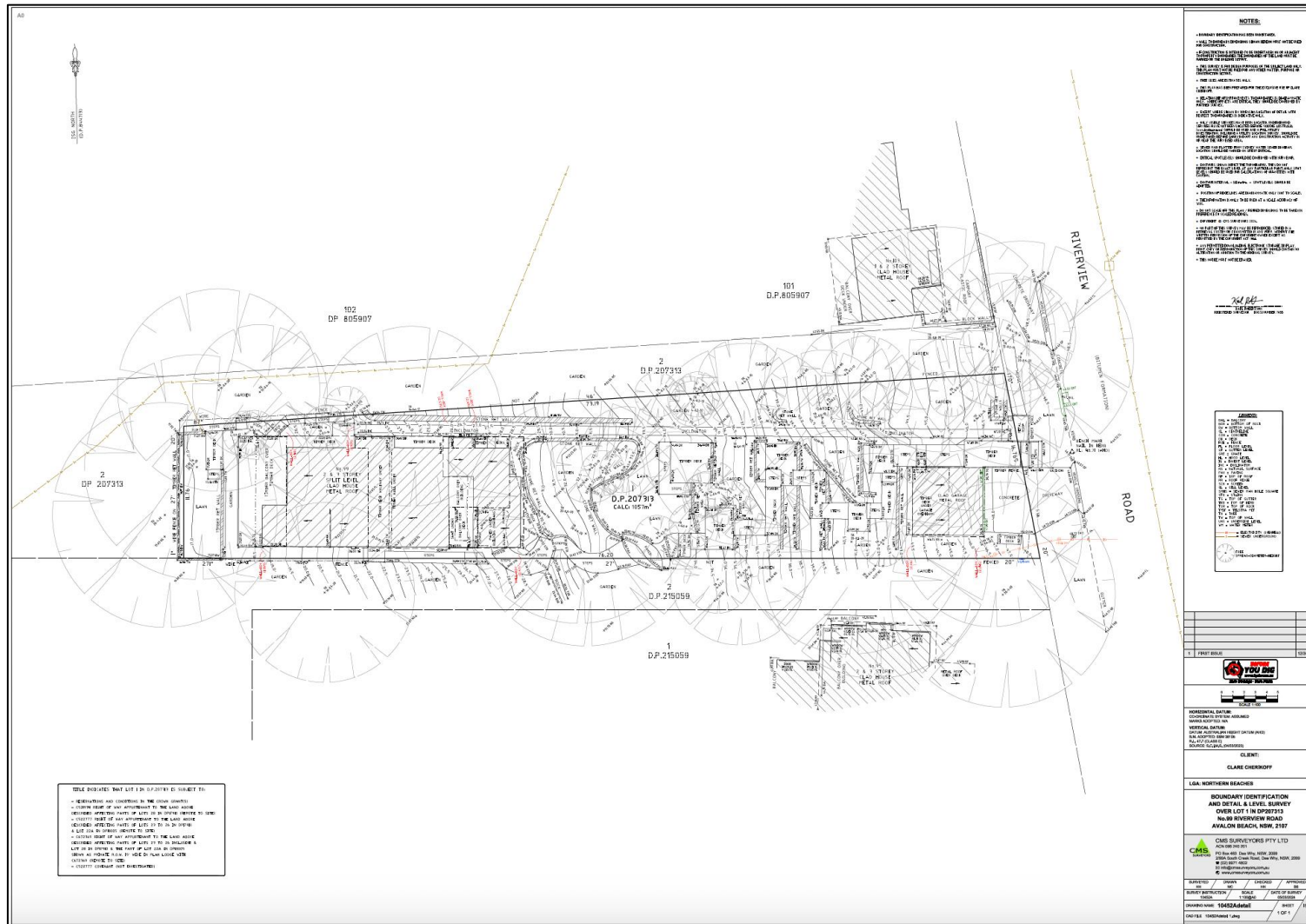


FIGURE 6: THE SITE SURVEY (SITE SURVEY BY CMS SURVEYORS, DATED 05 MARCH 2024)

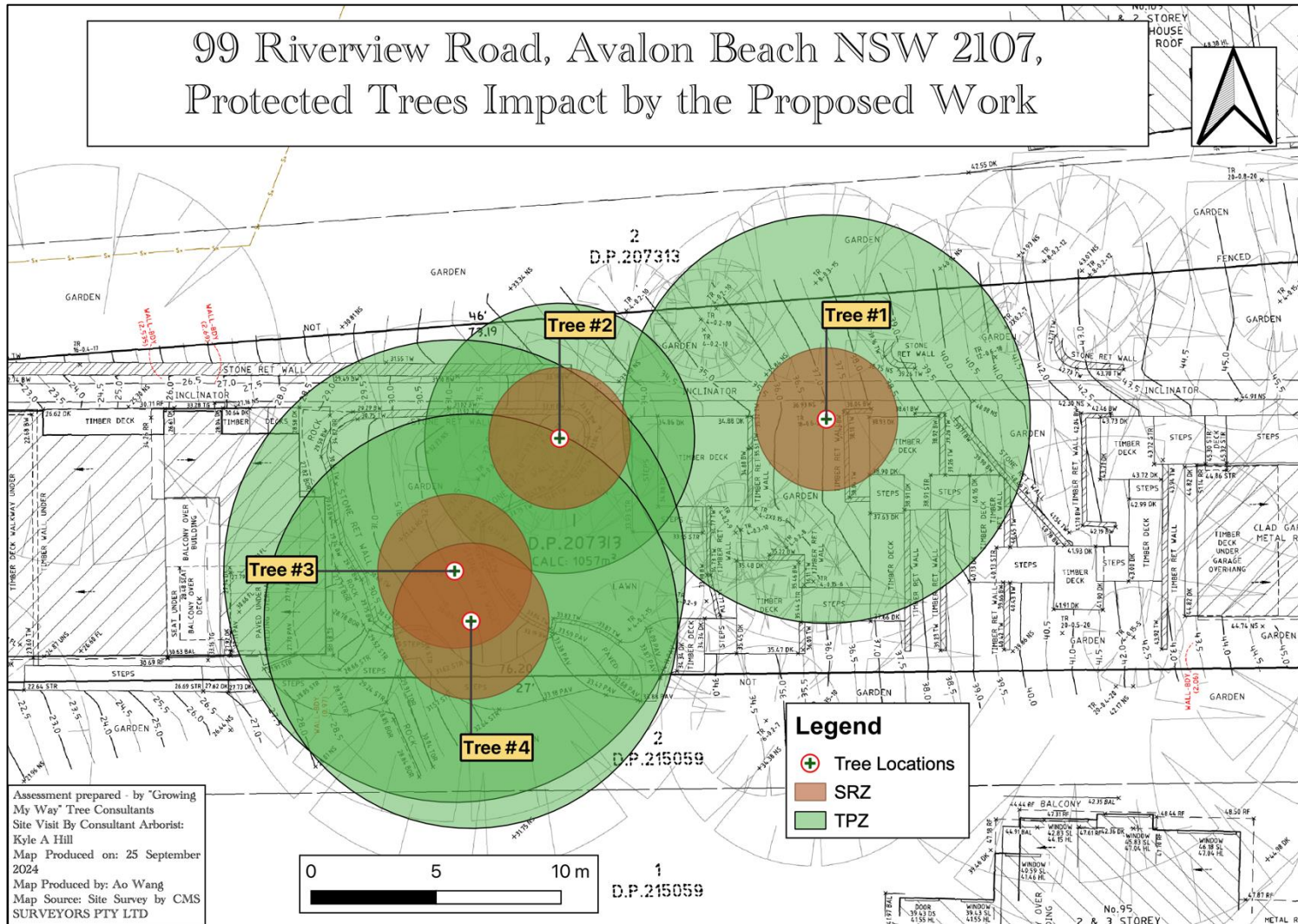


FIGURE 7: NUMBER AND LOCATION OF THE TREE ON SUBJECT SITE. (BY QGIS)

### 4.2 The Proposal

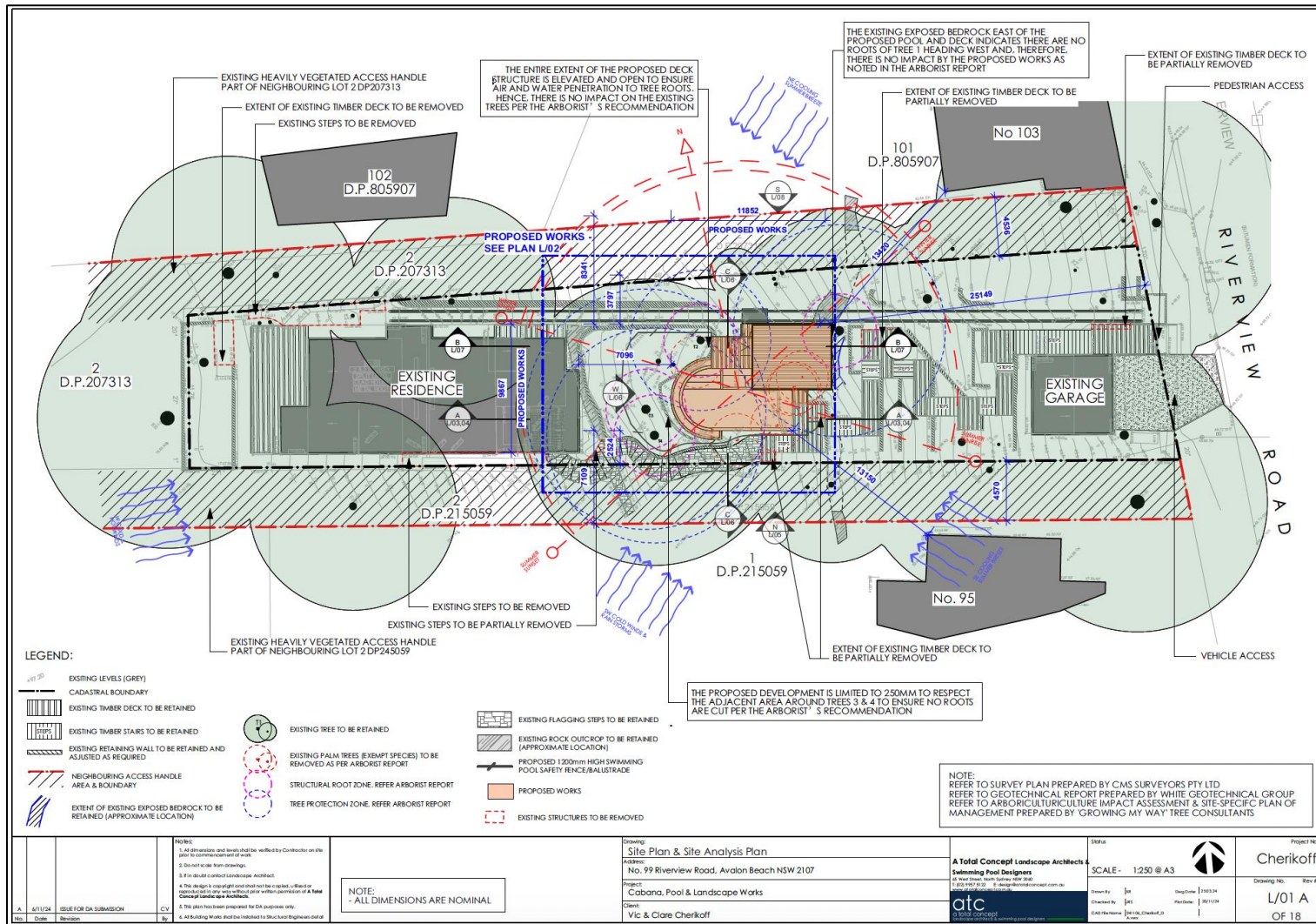


FIGURE 8: ILLUSTRATES PROPOSED SITE LANDSCAPE PLAN



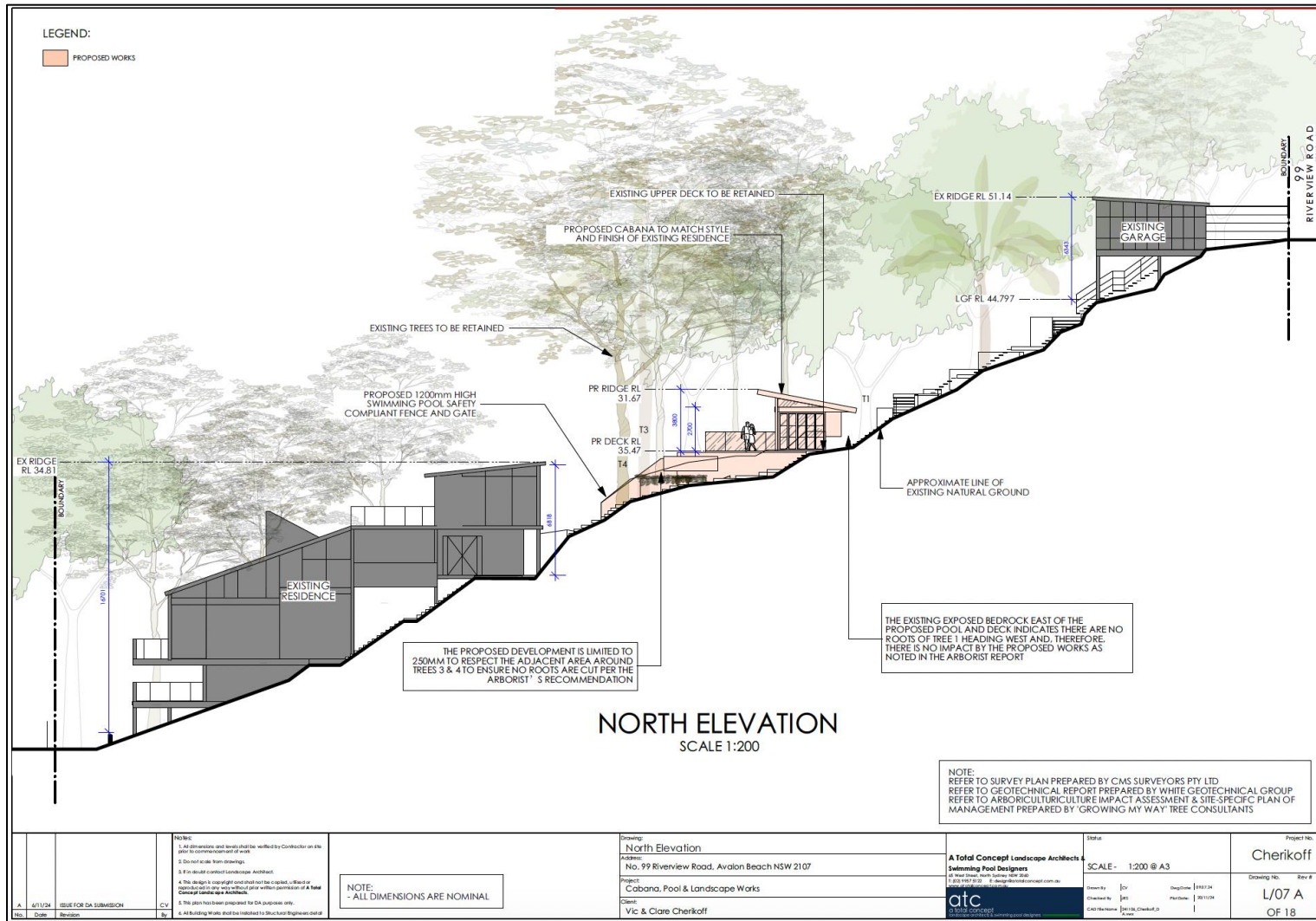


FIGURE 10: ILLUSTRATES PROPOSED NORTH ELEVATION

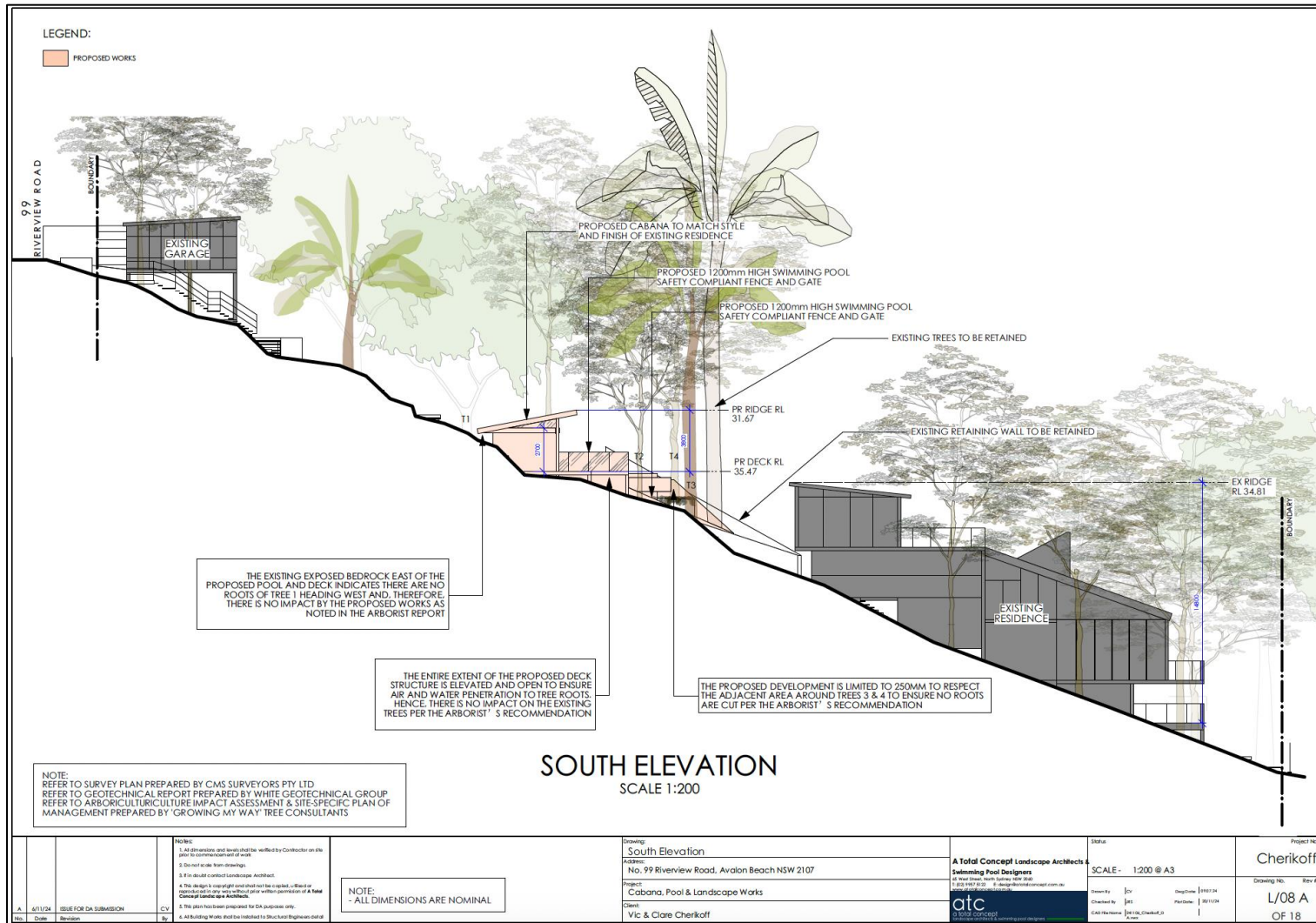


FIGURE 11: ILLUSTRATES PROPOSED SOUTH ELEVATION



# Growing My Way Tree Services

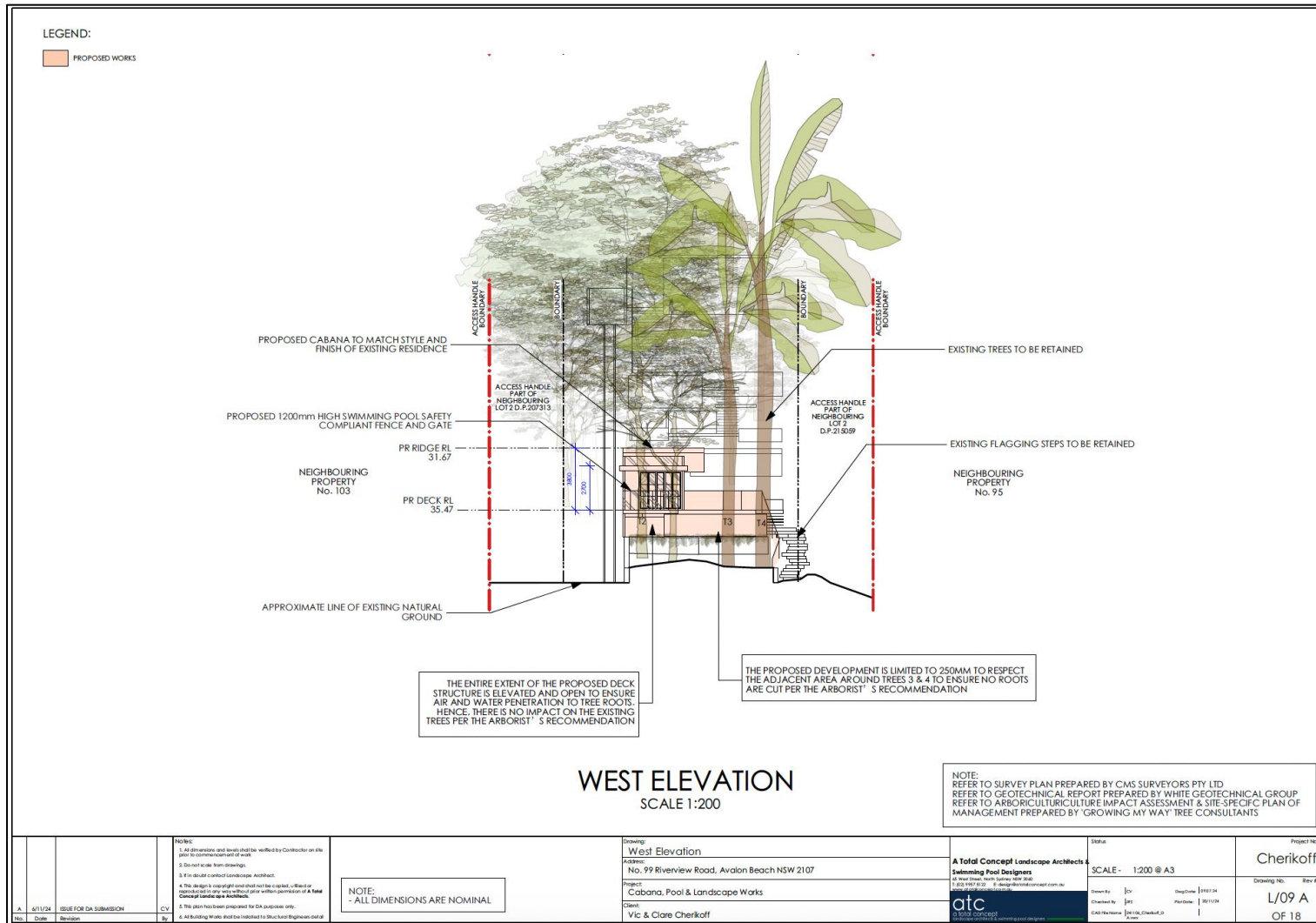


FIGURE 12: ILLUSTRATES PROPOSED WEST ELEVATION

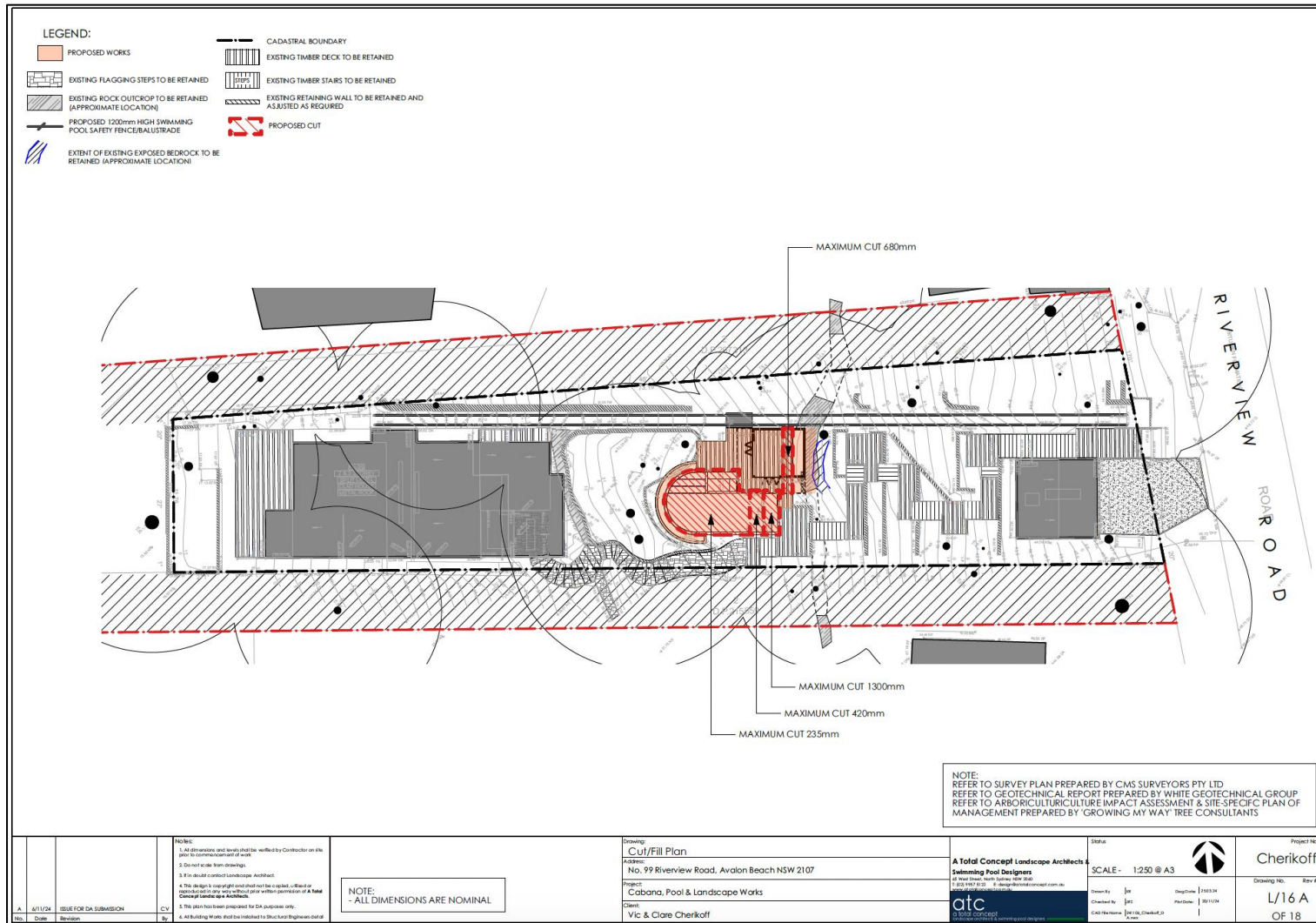


FIGURE 13: ILLUSTRATES PROPOSED CUT/FILL PLAN

### 4.3 The Tree – Summary Table

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

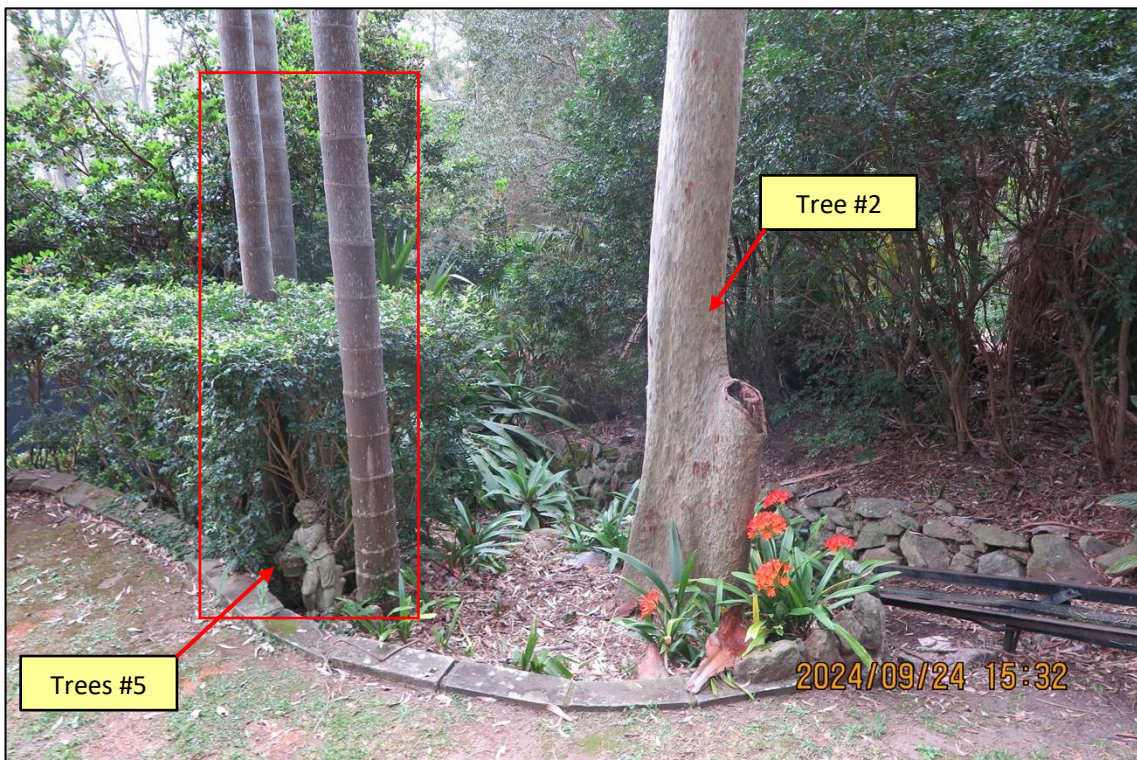
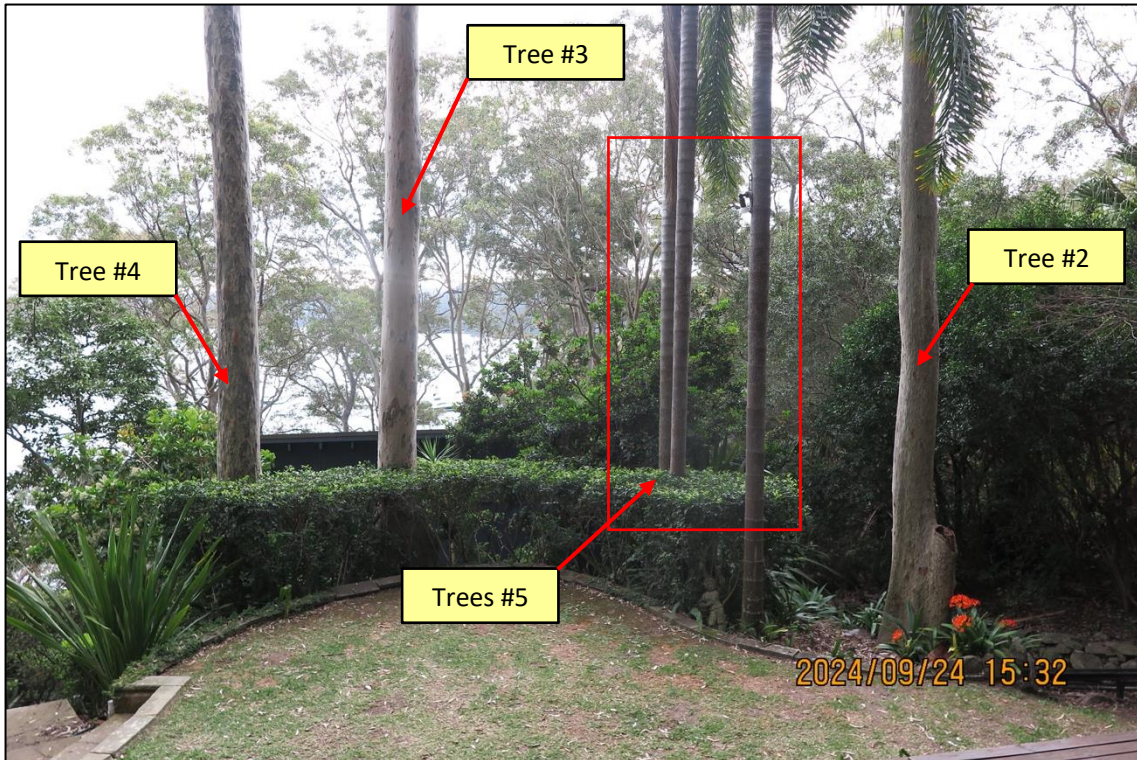
Trees Recommended for removal							Trees Recommended for retention					
Exempt species							Trees retainable but of low amenity/significance					
#	Identification	Height (m)	Crown (m)	DBH (m)	DRC (Base) (m)	TPZ (m)	SRZ (m)	Age	Health/Vigour	Structure / Retention value	Form/Habit	Comments
1	<b><i>Corymbia maculata</i></b> (Spotted Gum)	<27.00	<15.00(individual ) (Linking canopy)	0.68	0.70	8.16	2.85	M	Fair to Good & Fair to Good	High & High	Typical	<b>RETAIN, PROTECT &amp; MANAGE:</b> Standard Temporary Fencing and Manual Excavation within TPZ radial distance is specified.
2	<b><i>Corymbia maculata</i></b> (Spotted Gum)	<27.00	<15.00(individual ) (Linking canopy)	0.45	0.69	5.40	2.83	M	Fair to Good & Fair to Good	High & High	Typical	<b>RETAIN, PROTECT &amp; MANAGE:</b> Standard Temporary Fencing and Manual Excavation within TPZ radial distance is specified.
3	<b><i>Corymbia maculata</i></b> (Spotted Gum)	<27.00	<15.00(individual ) (Linking canopy)	0.77	0.84	9.24	3.08	M	Fair to Good & Fair to Good	High & High	Typical	<b>RETAIN, PROTECT &amp; MANAGE:</b> Standard Temporary Fencing and Manual Excavation within TPZ radial distance is specified.
4	<b><i>Corymbia maculata</i></b> (Spotted Gum)	<27.00	<15.00(individual ) (Linking canopy)	0.69	0.87	8.28	3.12	M	Fair to Good & Fair to Good	High & High	Typical	<b>RETAIN, PROTECT &amp; MANAGE:</b> Standard Temporary Fencing and Manual Excavation within TPZ radial distance is specified.
5	<b>Group of Palms &amp; Bird of paradise</b> ( <i>Strelitzia nicolai</i> & <i>Archontophoenix cunninghamiana</i> )											<b>EXEMPT</b> Exempt by species refers to NBC DCP scheme

#### 4.4 Tree & Site Images

Photographs taken on Tuesday, 24 September 2024. (Canon G1X MkII digital camera)









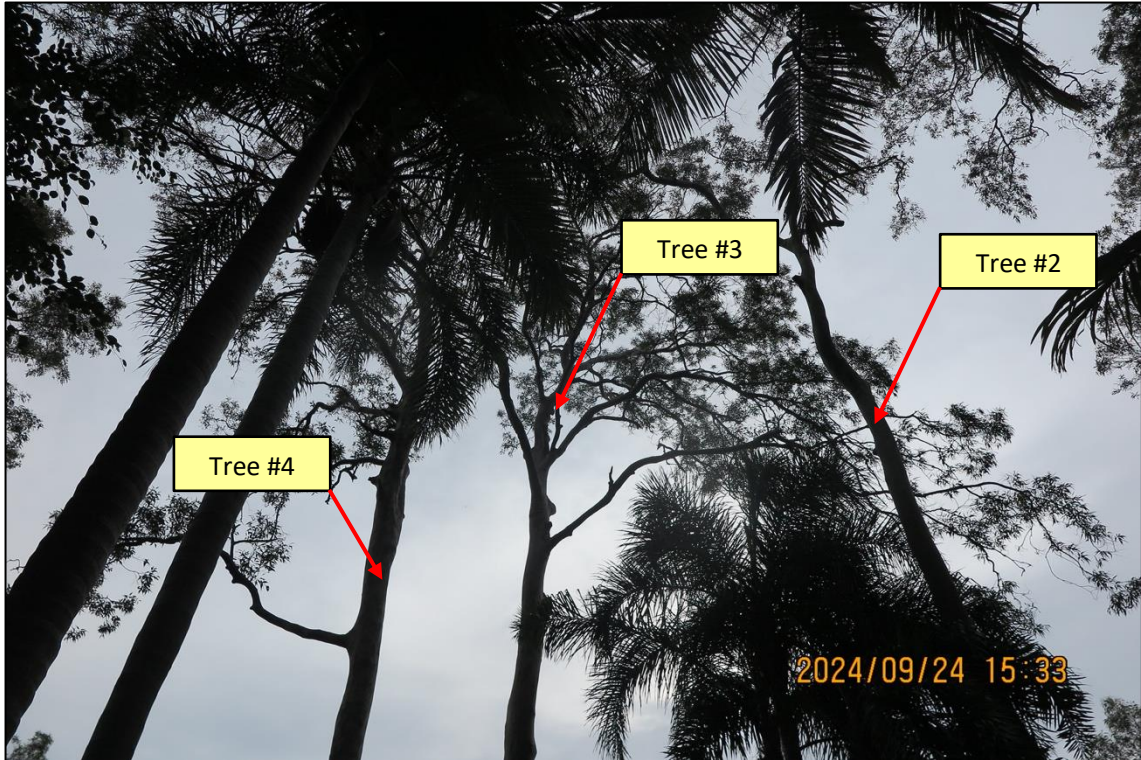


FIGURE 14: ABOVE & PREVIOUS PAGE PHOTOGRAPHS ILLUSTRATES THE FIVE (5) DISCUSSED TREES LOCATIONS & SITE FEATURES



## 5. Discussion

### 5.1 General Discussion /Tree Environments:

Five (5) trees including (1) one group of trees are near to proposed works, four (4) protected trees are required to be discussed in detail.

Drawings provided indicate the proposed swimming pool and surroundings to be constructed above existing subject site ground levels. We note: the proposed structures are mostly to be suspended structure on an exiting filled up decking area.

From a tree management perspective, we support these structures (footprints) being built without any significant disruption to any individual discussed trees as calculated Tree Protection Zone (from herein TPZ) radial distance.

Any excavation within the TPZ radial distance of any individual tree must be completed manually.

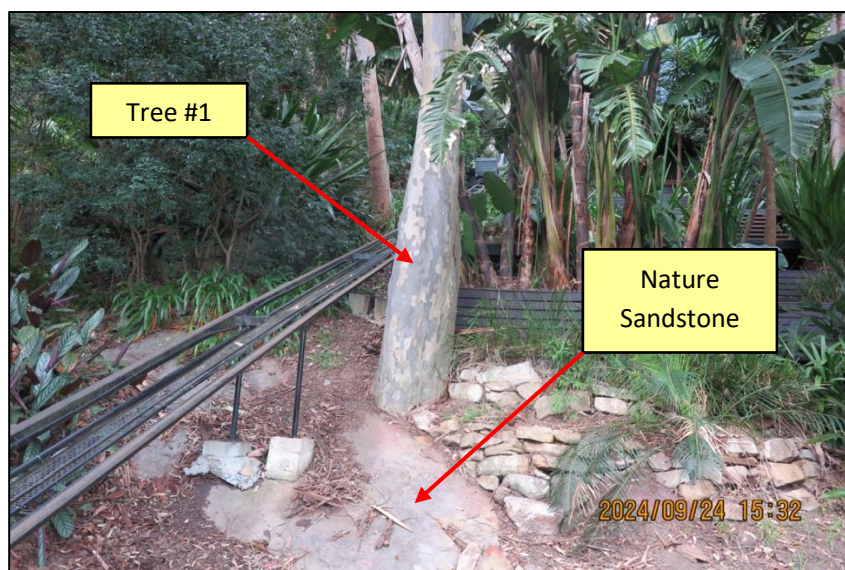
Any 'live root' exposed during any phase of works of a that cannot be avoided must have the retained project arborist inspect, prepare & document in writing with supporting photographic evidence the as close to as Best Arboriculture Practice strategy was applied.

#### **Tree #1: *Corymbia maculata*** (Spotted Gum)

Tree #1 is located within the subject site surround the exiting filled up decking area. The proposed new swimming pool & surroundings are confirmed to breach the TPZ & SRZ total surface area for Tree #1.

By our calculation, the total TPZ surface area of Tree #1 is 209.01m<sup>2</sup>. The proposed works equates to an approximate 42.37m<sup>2</sup> mathematical disturbance of total TPZ surface area for Tree #1. This mathematically equates to approximately 20.3% of total TPZ surface area, (defined by AS4970-2009 as a Major Encroachment).

Factually, the mathematical percentage of Major Encroachment can be very significantly reduced to a manageable percentage of the total TPZ surface area breach, which refers to the excavation plan of landscape architectural design (see page 18). Part of the proposed works is specified as being supported by flexibly located footings/piers, which reduces the disturbance to 5.8%. Additionally, Tree #1 is growing between the natural sandstone, and the cut at the show on the west side of Tree #1 SRZ are very unlikely to find significant diameter (defined in this situation as being greater than 50mm) 'live roots' from Tree #1.



On this basis, we can support Tree #1 is viable to be retained by intensive management during the proses of the proposed construction. Should any significant diameter 'live root/s' (greater than 50mm in diameter), be exposed that are unable to be avoided, the direct input & documentation with supporting evidence photographs from the retained project arborist is essential to confirm as close as possible to best Arboriculture Practice being applied.

Tree #1 is additionally specified to require TPZ temporary 'temporary metal mesh fencing with ground level support' as well as native tree mulch being instated within the subject site ground level where proposed works are within the Tree #1 total TPZ surface area.

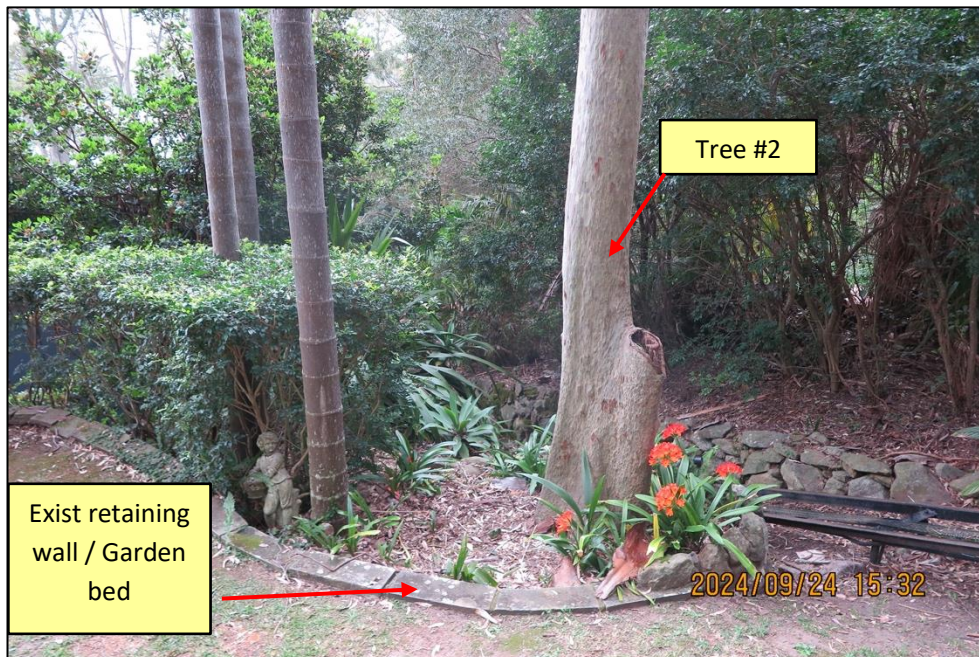
*In our opinion, with intensive management, this tree is assessed as able to be viably retained.*

**Tree #2: *Corymbia maculata*** (Spotted Gum)

Tree #2 is located within the subject site surround the exiting filled up decking area. The proposed new swimming pool & surroundings are confirmed to breach the TPZ & SRZ total surface area for Tree #2.

By our calculation, the total TPZ surface area of Tree #2 is 91.53m<sup>2</sup>. The proposed works equates to an approximate 32.17m<sup>2</sup> mathematical disturbance of total TPZ surface area for Tree #2. This mathematically equates to approximately 35.1% of total TPZ surface area, (defined by AS4970-2009 as a Major Encroachment).

Factually, the mathematical percentage Major Encroachment the reality is this can be very significantly reduced to a manageable percentage of total TPZ surface area breach refers to the excavation plan of landscape architectural design (see page 18). There is a part of proposed works is specified as able to be supported by flexible located footings/piers, which reduce the disturbance to 17.5%. The entire extent of the proposed deck structure is elevated and open to preserve essential gaseous exchange and water penetration to tree roots. There is an existing retaining wall / garden bed around Tree #2, which create separation between Tree #2 'live root' system the proposed works.



On this basis, we can support Tree #2 is viable to be retained by intensive management during the proses of the proposed construction. Should any significant diameter 'live root/s' (greater than 50mm in diameter), be exposed that are unable to be avoided, the direct input &

documentation with supporting evidence photographs from the retained project arborist is essential to confirm as close as possible to best Arboriculture Practice being applied.

Tree #2 is additionally specified to require TPZ temporary 'temporary metal mesh fencing with ground level support' as well as native tree mulch being instated within the subject site ground level where proposed works are within the Tree #2 total TPZ surface area.

*In our opinion, with intensive management, this tree is assessed as able to be viably retained.*

**Tree #3: *Corymbia maculata*** (Spotted Gum)

Tree #3 is located within the subject site surround the exiting filled up decking area. The proposed new swimming pool & surroundings are confirmed to breach the TPZ & SRZ total surface area for Tree #3.

By our calculation, the total TPZ surface area of Tree #3 is 268.00m<sup>2</sup>. The proposed driveway, driveway crossover & car port equates to an approximate 42.94m<sup>2</sup> mathematical disturbance of total TPZ surface area for Tree #3. This mathematically equates to approximately 16.00% of total TPZ surface area, (defined by AS4970-2009 as a Major Encroachment).

Factually, the mathematical percentage Major Encroachment the reality is this can be very significantly reduced to a manageable percentage of total TPZ surface area breach refers to the excavation plan of landscape architectural design (see page 18). There is a part of proposed works is specified as able to be supported by flexible located footings/piers, which reduce the disturbance to 10.8%. The entire extent of the proposed deck structure is elevated and open to preserve essential gaseous exchange and water penetration to tree roots. There is an existing retaining wall around Tree #3, which create separation between Tree #3 'live root' system the proposed works. Refers to the landscape architectural design, the proposed excavation is only 250mm below the existing filled area. This is unlikely to find significant diameter 'live root/s' (greater than 50mm in diameter) of Tree #3.

On this basis, we can support Tree #3 is viable to be retained by intensive management during the proses of the proposed construction. Should any significant diameter 'live root/s' (greater than 50mm in diameter), be exposed that are unable to be avoided, the direct input & documentation with supporting evidence photographs from the retained project arborist is essential to confirm as close as possible to best Arboriculture Practice being applied.

Tree #3 is additionally specified to require TPZ temporary 'temporary metal mesh fencing with ground level support' as well as native tree mulch being instated within the subject site ground level where proposed works are within the Tree #3 total TPZ surface area.

*In our opinion, with intensive management, this tree is assessed as able to be viably retained.*

**Tree #4: *Macadamia integrifolia*** (Macadamia)

Tree #4 is located within the subject site surround the exiting filled up decking area. The proposed new swimming pool & surroundings are confirmed to breach the TPZ & SRZ total surface area for Tree #4.

By our calculation, the total TPZ surface area of Tree #4 is 215.20m<sup>2</sup>. The proposed driveway, driveway crossover & car port equates to an approximate 33.82m<sup>2</sup> mathematical disturbance of total TPZ surface area for Tree #4. This mathematically equates to approximately 15.7% of total TPZ surface area, (defined by AS4970-2009 as a Major Encroachment).

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Factually, the mathematical percentage Major Encroachment the reality is this can be very significantly reduced to a manageable percentage of total TPZ surface area breach refers to the excavation plan of landscape architectural design (see page 18). There is a part of proposed works is specified as able to be supported by flexible located footings/piers, which reduce the disturbance to 12.0%. The entire extent of the proposed deck structure is elevated and open to preserve essential gaseous exchange and water penetration to tree roots. There is an existing retaining wall around Tree #4, which create separation between Tree #4 'live root' system the proposed works. Refers to the landscape architectural design, the proposed excavation is only 250mm below the existing filled area. This is unlikely to find significant diameter 'live root/s' (greater than 50mm in diameter) of Tree #4.

On this basis, we can support Tree #4 is viable to be retained by intensive management during the proses of the proposed construction. Should any significant diameter 'live root/s' (greater than 50mm in diameter), be exposed that are unable to be avoided, the direct input & documentation with supporting evidence photographs from the retained project arborist is essential to confirm as close as possible to best Arboriculture Practice being applied.

Tree #4 is additionally specified to require TPZ temporary 'temporary metal mash fending with ground level support' as well as native tree mulch being instated within the subject site ground level where proposed works are within the Tree #4 total TPZ surface area.

*In our opinion, with intensive management, this tree is assessed as able to be viably retained.*

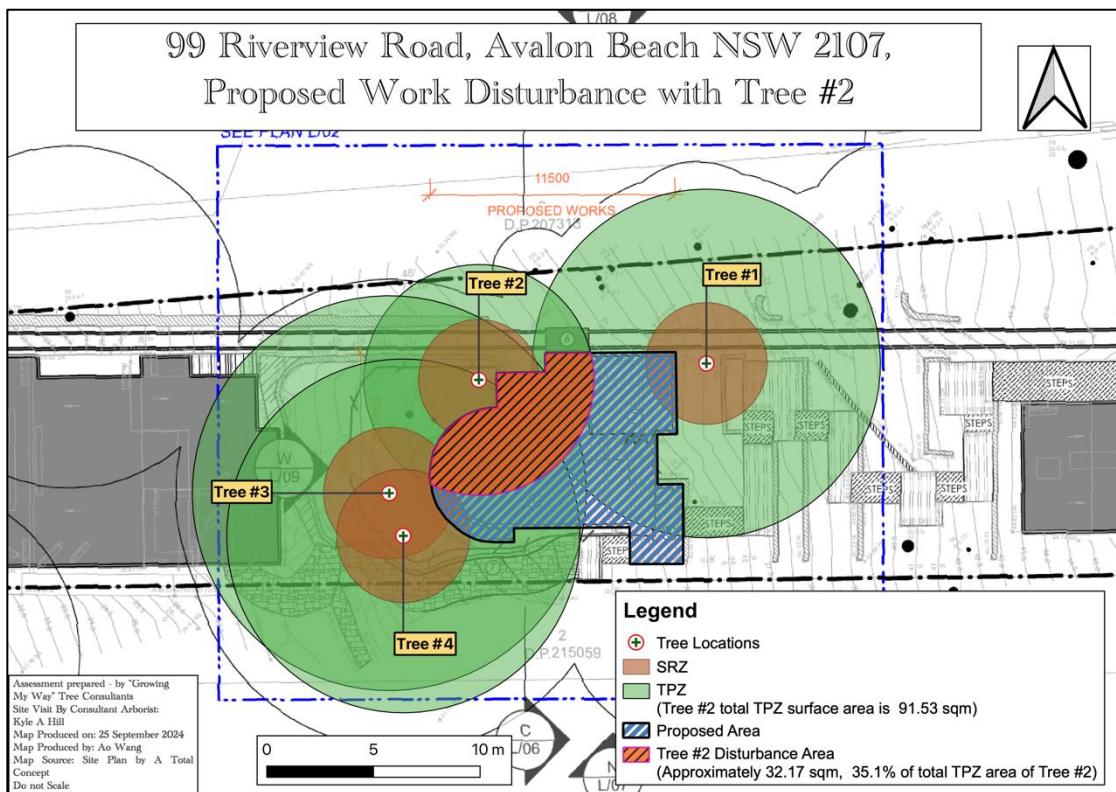
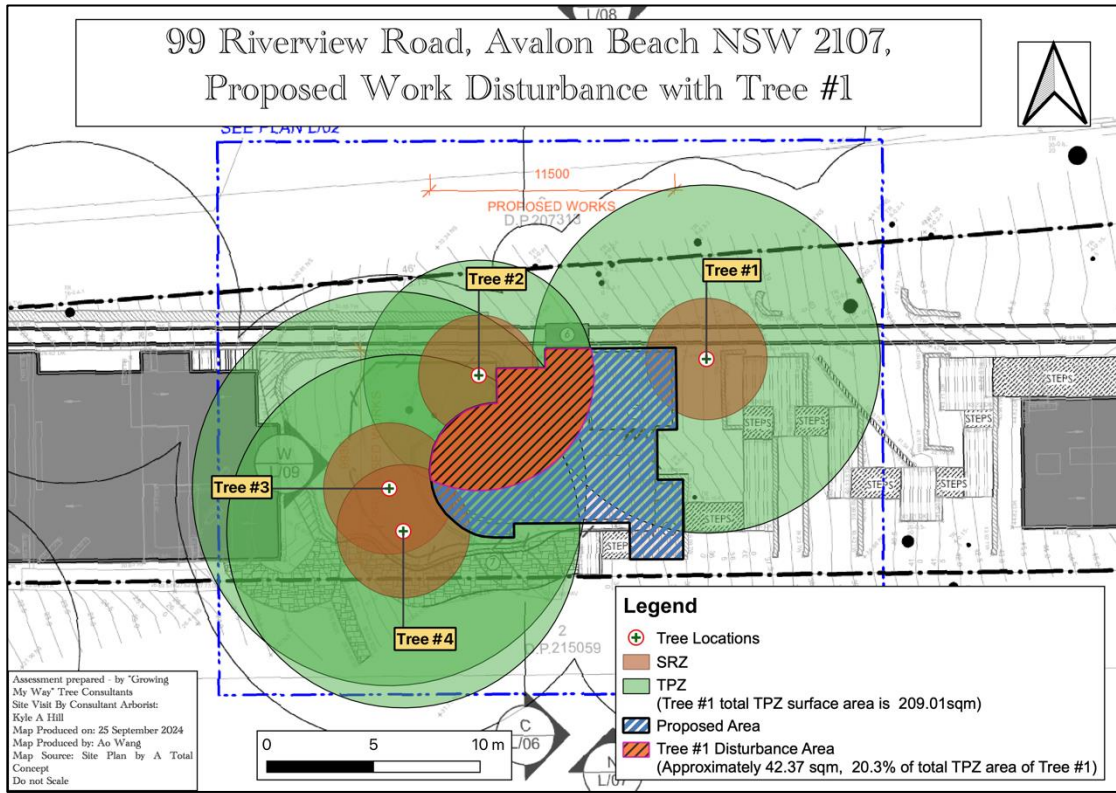
### **Trees #5: *Corymbia maculata* (Spotted Gum)**

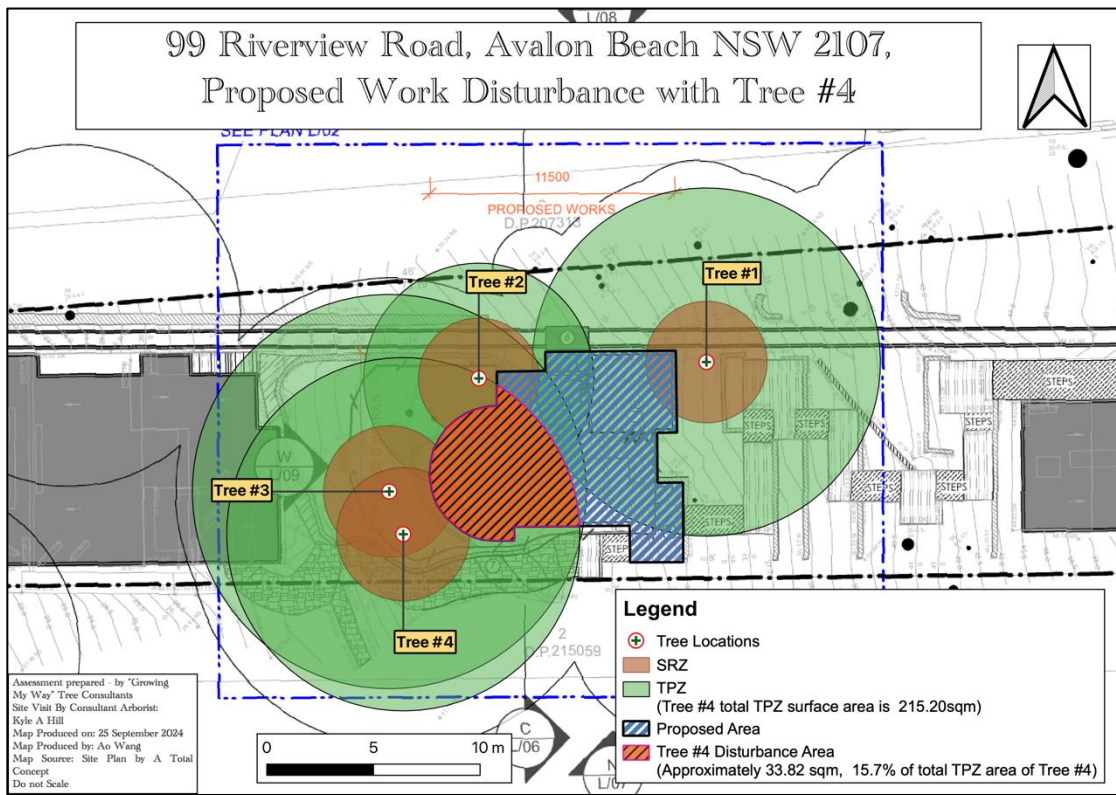
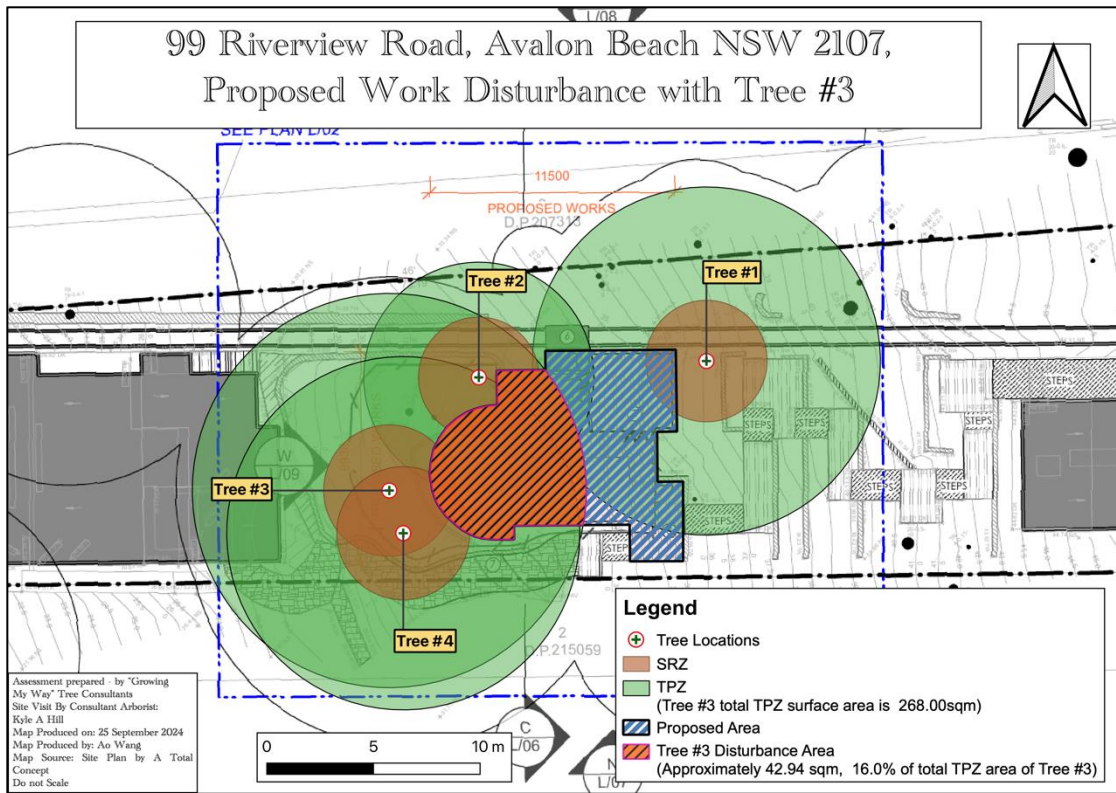
Trees #5 are a group of palms located within the subject site close to the proposed area.

Trees #5 is located within the subject site. Trees #5 is exempt by species refers to NBC DCP scheme.

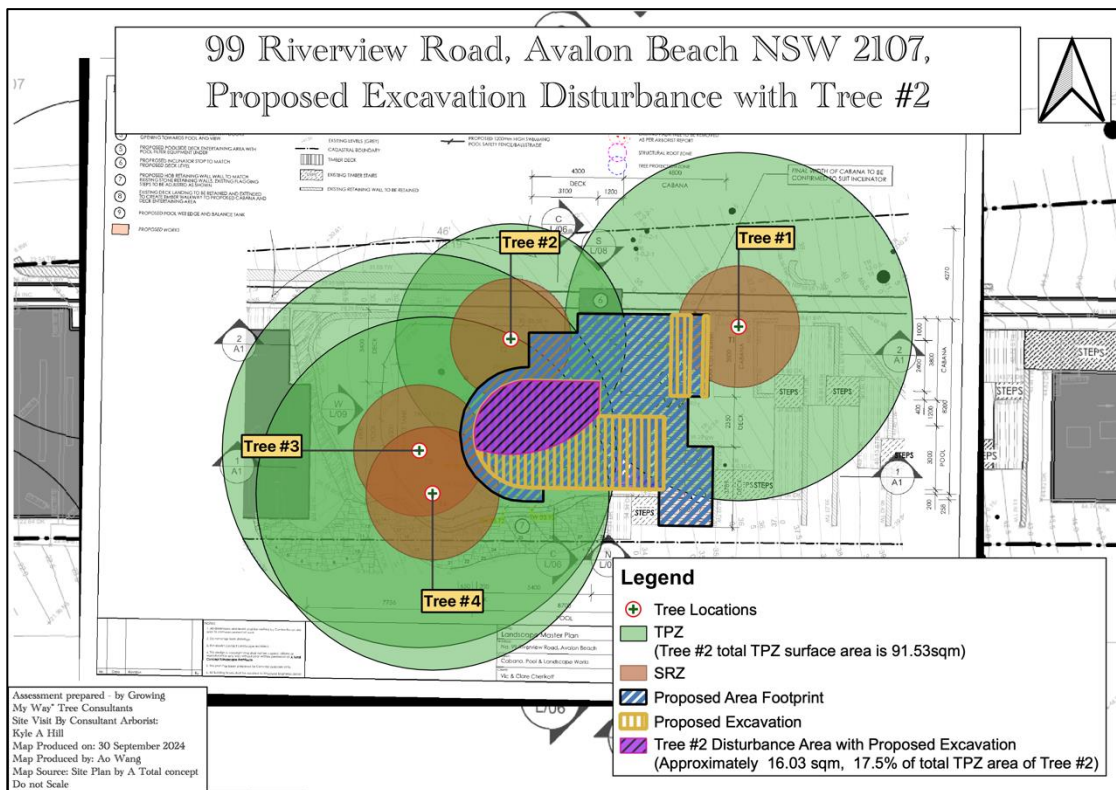
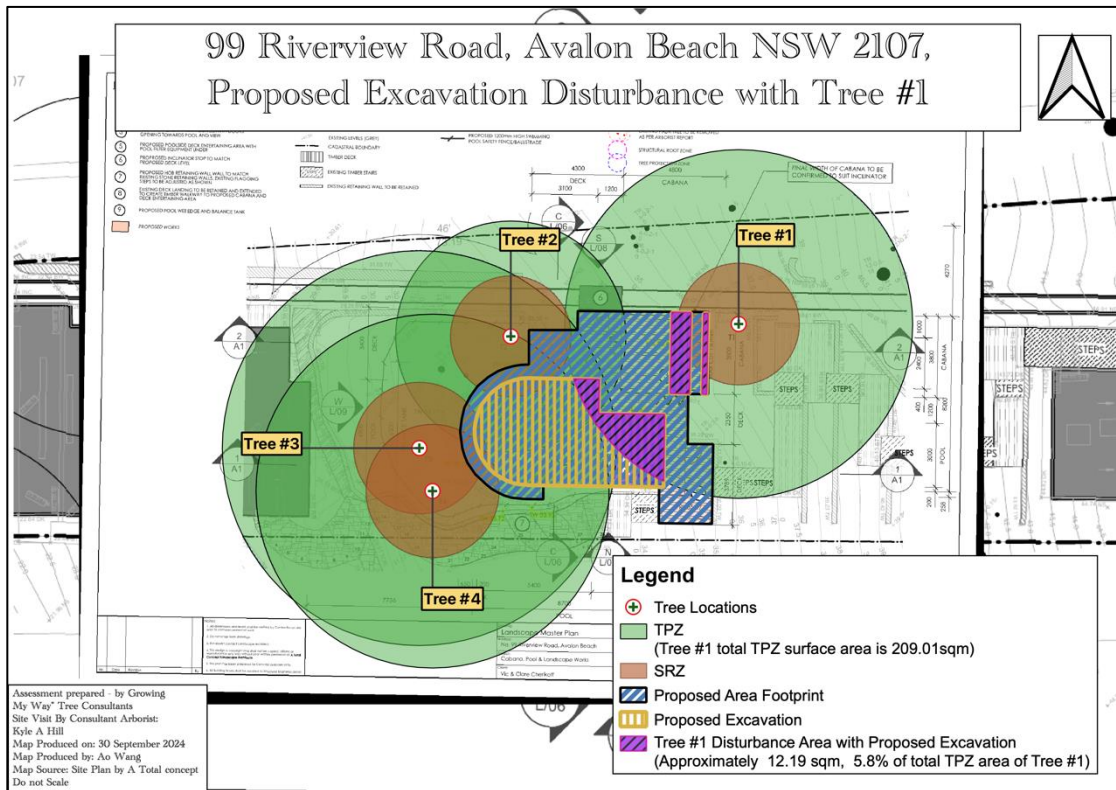
No formal discussion is required.

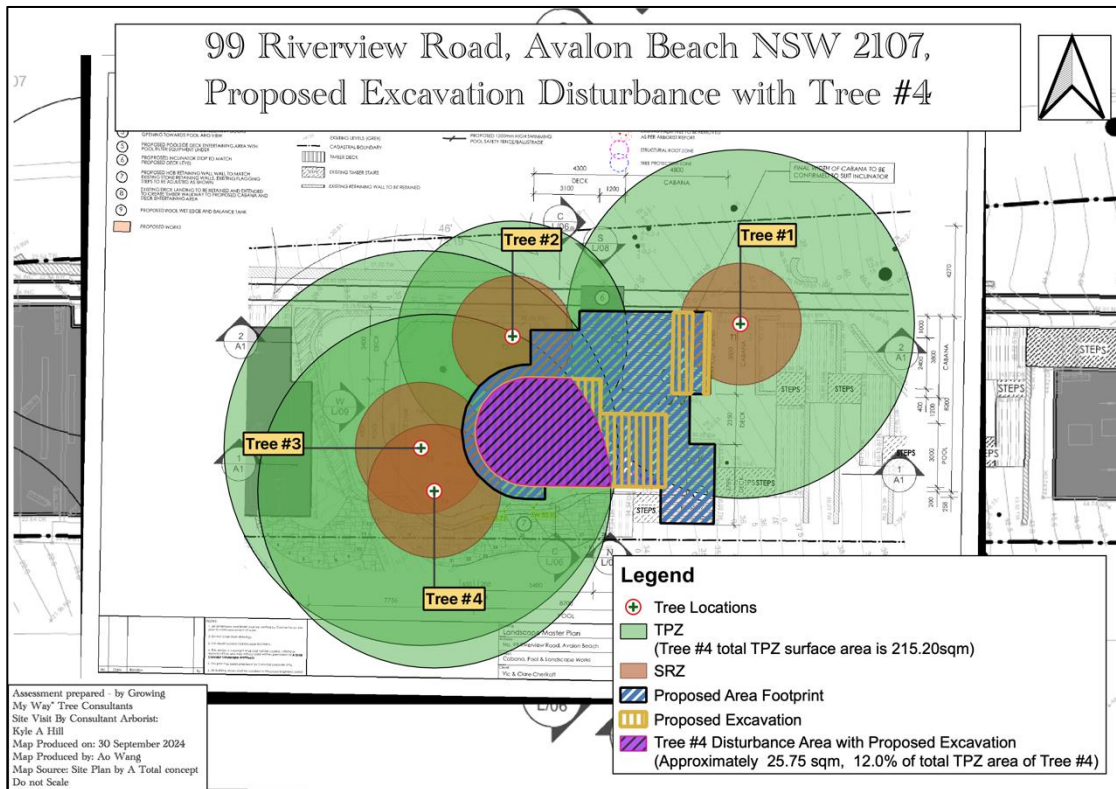
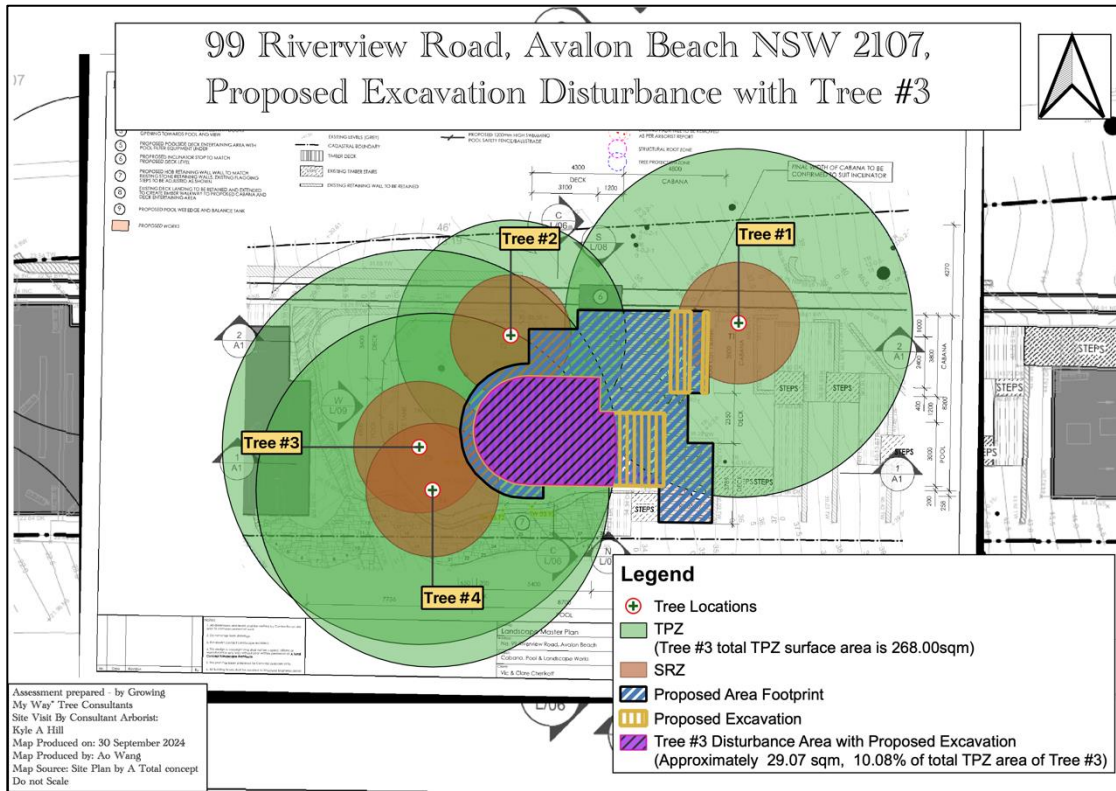
5.2 TPZ / SRZ Tree Disturbance Calculation Diagrams





Proposed Excavation Disturbance Calculation Diagrams







### 5.3 Preliminary Site Specific “Tree Plan of Management”

#### Pre-Commencement of Works

- *Establish builder’s common boundary fencing to establish isolation for all discussed as able to be retained in a viable manner.*
- *Install ‘temporary metal mesh fencing panels with above ground supports’ for Tree #1, Tree #2, Tree #3, Tree #4 separation from the proposed construction.*
- *Install native mulch for the life of the project with a maintained thickness of 50mm to 75mm*
- *TPZ installations (builders common boundary fencing) & mulch instated must be ‘signed off’ as being AS4970-2009 compliant. This requires documentation to be in writing with supporting photographic evidence. This document must be provided to the appointed Principle Certifying Authority.*
- *In the unlikely event, excavation (completed manually) exposes a ‘live root’ of a significant diameter it can only be managed & documented relative to the management strategy applied by the retained Project Arborist. Again, this requires documentation to be in writing with supporting photographic evidence. This document must be provided to the appointed Principle Certifying Authority.*

#### Commencement of and During Works

- *Ensure common boundary isolation fencing & mulch thickness is always intact.*
- *Any ‘live roots’ of any diameter are exposed they ideally should be covered if not by subject site topsoil, damp, hessian, or similar suitable geotextile matting to reduce any desiccation by exposure to direct sunlight.*

#### Post Completion of Works

- *Confirm the presence & condition of the required by the DA determination ‘Conditions of Consent’ individual tree required to be retained.*
- *The above is to be certified in writing with supporting photographic evidence as being DA determination ‘Conditions of Consent’ plus AS4970-2009 provisions compliant relative to all required to be retained trees.*
- *All documentation from each stage of works must be provided to the appointed Principle Certifying Authority as soon as is reasonably possible post each stage of works being completed.*

## 6. Conclusions

- The proposal in its present format is considered as able to be built without any compromise to any discussed tree with respect to individual Useful Life Expectancy with implementation of the once finalised Site Specific 'Tree Plan of Management'.
- This document can be submitted to the NBC assessment officers for review & approval in its present form.

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

Yours faithfully,

A handwritten signature in black ink, appearing to read 'K Hill', written in a cursive style.

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

## 7. 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.

## 8. 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.

## 9. Recommended References

Barrell, J. 1993. '*Preplanning Tree Surveys: Safe Useful Life Expectancy (SULE) is the Natural Progression*', *Arboricultural Journal* 17:1, February 1993, pp.

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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

## 10. 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.

## 11. 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 (i.e., 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 Five years**

**Medium = Five–Fifteen years**

**Long = more than Fifteen 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 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 effect 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 (e.g., live leaves &/or bark). Some dead wood is common in several 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

## 12. Attachment A: 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 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 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.

