"GROWING MY WAY"
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EXCELLENCE in ALL ASPECTS OF TREE MANAGEMENT
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Arboriculture Impact Assessment with Site-Specific Preliminary Tree Plan of Management

August 2024

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90 Cabbage Tree Road Bayview NSW 2104

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1. Summary

Yasmina Elshafei (as the Property Owner of 90 Cabbage Tree Road, Bayview NSW 2104) via Rob Brown from Casey Brown Architecture commissioned the Growing My Way Tree Consultancy (GMW) to prepare an Arboriculture Impact Assessment with Preliminary Site - Specific Tree Plan of Management to be linked to a Development Application (DA) submission for *new swimming pool & landscape.*

The site is Land Zoned as *"RU2 - Rural Landscape".*

The document discusses in detail six (6) trees confirmed to be present. All are located within the subject site, (90 Cabbage Tree Road Bayview).

The subject site shares common boundaries with four (4) same land zoning common boundary adjoining properties & one (1) public road (Cabbage Tree Road). All same zoning common boundary adjoining properties are developed to contain dwellings & other infrastructure.

Motor vehicle & pedestrian access to the subject site is only via Cabbage Tree 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 C. M. S. Surveyors, dated 10 November 2021.*
- *Proposed Plans, Elevations Sections etc., by* Casey Brown Architecture*, dated 27 June 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 individual viability of the discussed trees, relating to 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 will support the as proposed works with compliance to the preliminary management specifications (relative to tree management).

We confirm, eight (8) protected trees present on the Site Survey to be located near proposed works.

Two (2) of these trees are confirmed to have failed & fallen over. On this basis, they do not require any detailed level of discussion.

All six (6) discussed in detail trees are proposed to be retained. By implementation of our specified (Preliminary Site Specific – 'Tree Plan of Management') being fine-tuned when a DA determination has been received, all six (6) trees are considered as able to be viably managed without any compromise to any single tree relative to its Useful Life Expectancy.

Kyle A Hill - AQF level 5, Diploma of Horticulture / Arboriculture, (TAFE NSW & other) & AQF level 8, Post Graduate Certificate in Arboriculture, (University of Melbourne) Practicing/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 Monday 05 August 2024.

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2. Introduction

This report contains observations & recommendations intended to assist in the management of the eight (8) trees identified as near proposed swimming pool. Note, only protected trees within the subject impacted by the proposed work are discussed.

The discussed trees as plotted on the Site Survey (Tree #1, Tree #2, Tree #3, Tree #4, Tree #5, Tree #6, Tree #7 & Tree #8) are located near but not significantly impacted upon. Tree # 6 & Tree #7, were located at the time of our onsite data collection, but unfortunately are confirmed to have died & failed near ground level.

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 a listed 'Heritage Item' as *item - general 2270402*. None of subject site common boundary adjoining property are listed 'Heritage Items'.

The subject site & subject adjoining properties are within the MH - Major Habitat Areas (Pittwater Local Government Area Pittwater 21DCP – wildlife).

Due to the subject site being a NBC listed heritage item, the *10/50 Vegetation Clearing Code Of Practice For New South Wales* exemptions for vegetation management do not apply.

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 C. M. S. Surveyors, dated 10 November 2021.*
- *Proposed Plans, Elevations Sections etc., by* Casey Brown Architecture*, dated 27 June 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*
- *Perusal of documentation provided by Casey Brown Architecture & the NBC p-roperty information website tool*
- *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

The document discusses eight (8) trees located within the subject site (90 Cabbage Tree Road Bayview).

The subject site is 3.17 ha in size (*Site Survey by C. M. S. Surveyors, dated, 10 November 2021*).

The subject site shares common boundaries with four (4) same land zoning common boundary adjoining properties & one (1) public road (Cabbage Tree Road). All same zoning common boundary adjoining property developed to contain dwellings & other infrastructure.

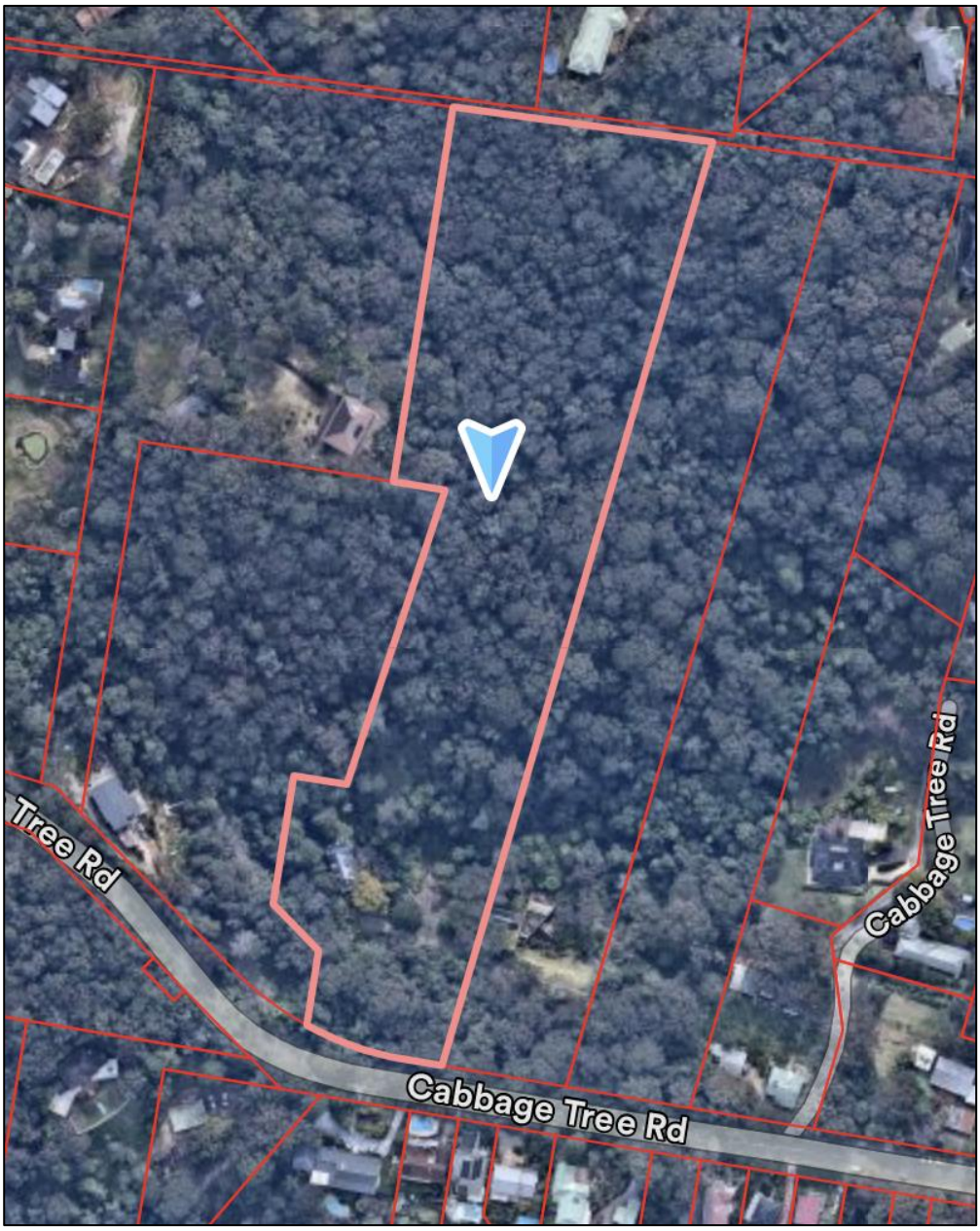


FIGURE 1: ABOVE ILLUSTRATES THE DISCUSSED TREE RELATIVE TO THE SITE 90 CABBAGE TREE ROAD BAYVIEW NSW 2104. (AERIAL PHOTOGRAPH FROM SUNDAY 04 AUGUST 2024, MAP DATA COURTESY OF NEARMAP™)

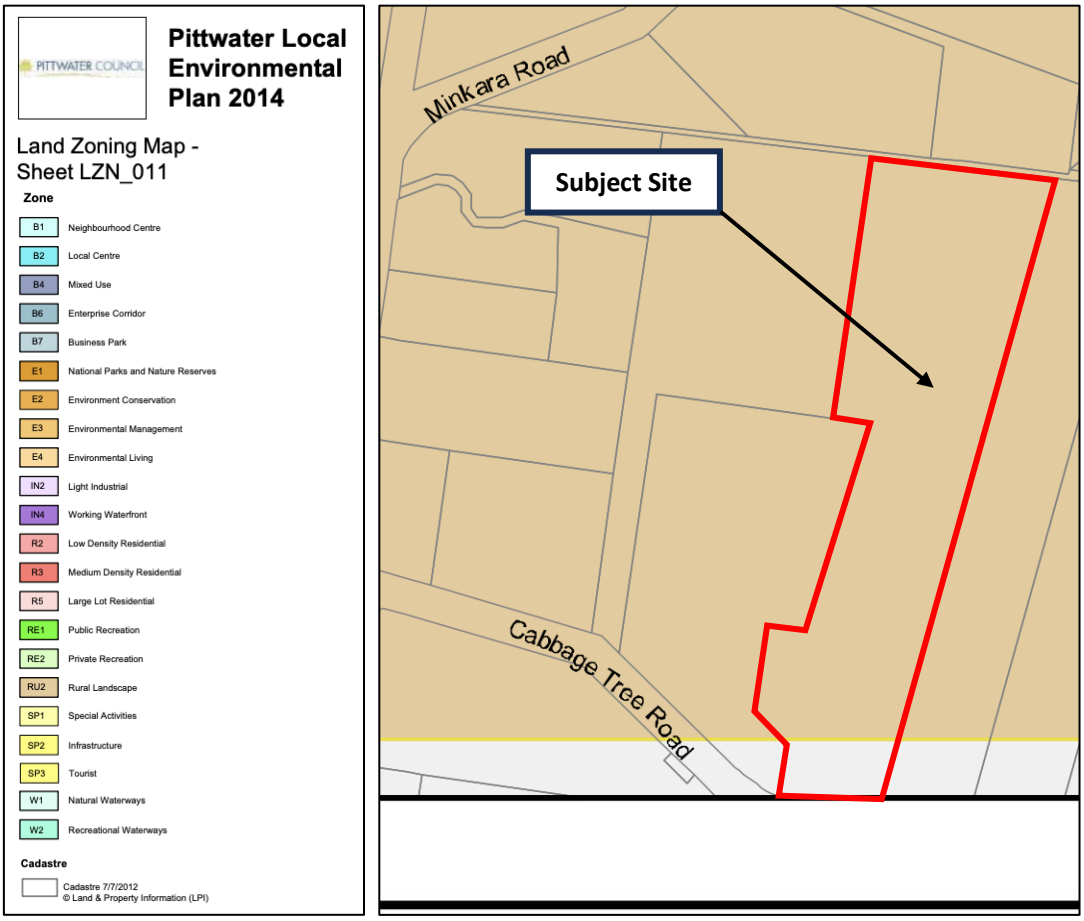


FIGURE 2: CONFIRMS STATUS OF THE SUBJECT SITE RELATIVE "RU2 - RURAL LANDSCAPE (PITTWATER LOCAL ENVIRONMENTAL PLAN 2014, LAND ZONING MAP - SHEET LZN_011).

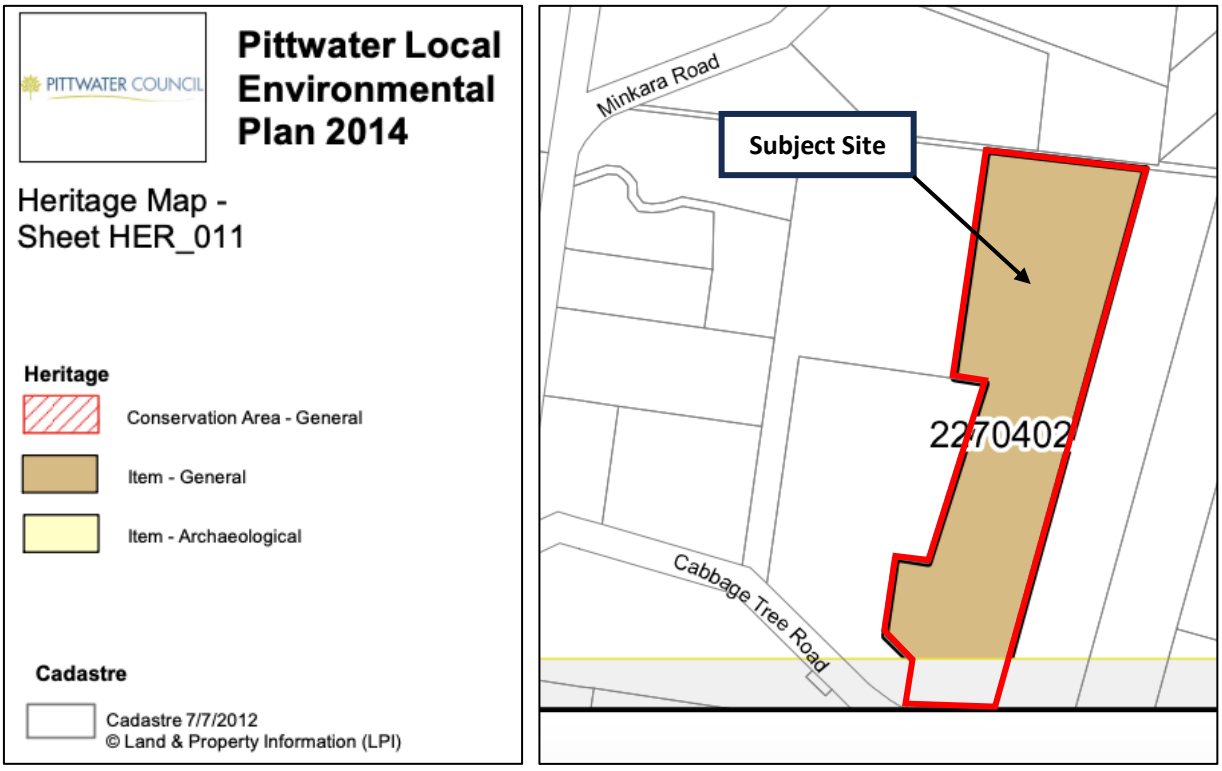


FIGURE 3: CONFIRMS STATUS OF THE SUBJECT SITE RELATIVE TO ITEM – GENERAL (PITTWATER LOCAL ENVIRONMENTAL PLAN 2014, HERITAGE MAP SHEET HER_0011)

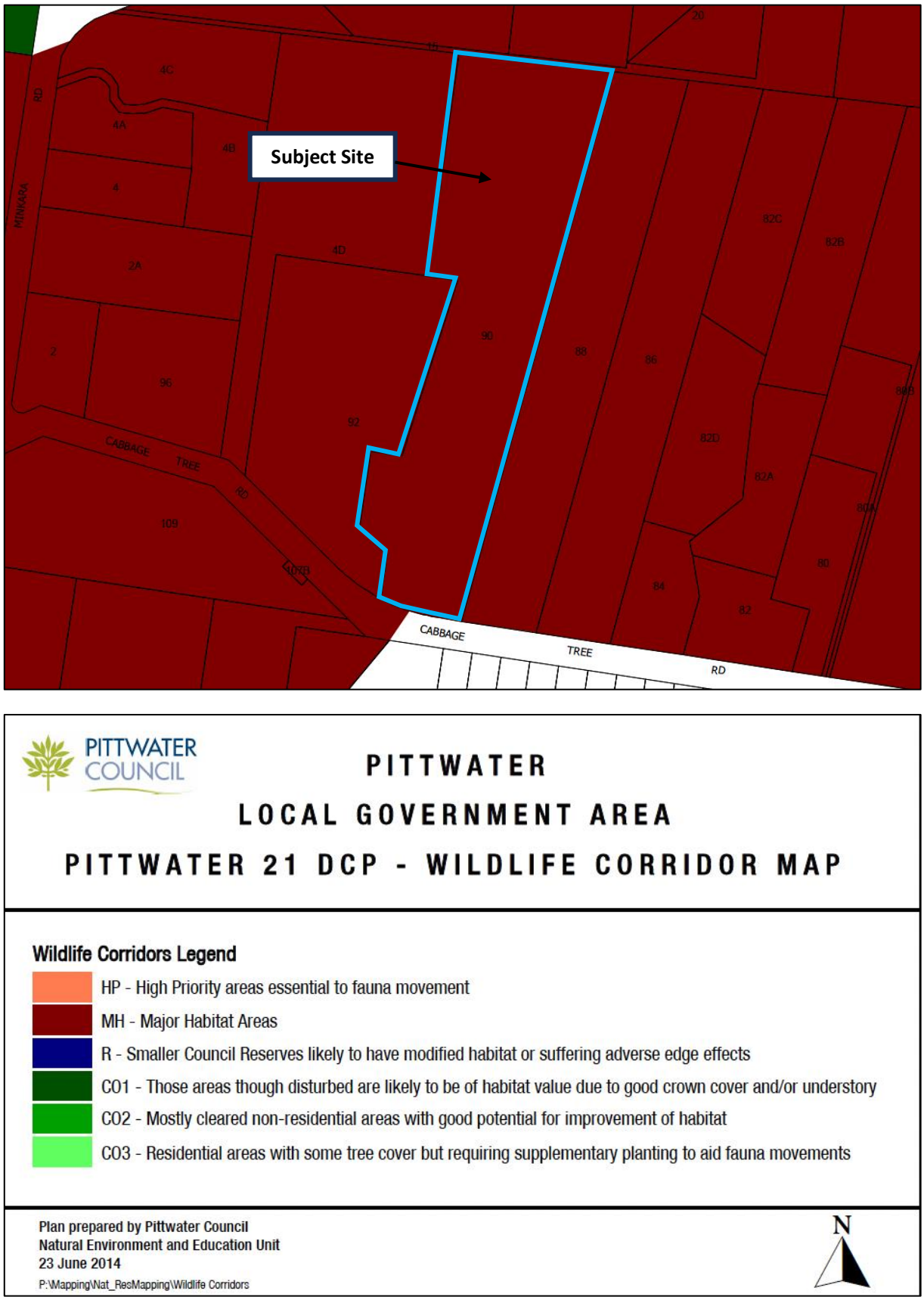


FIGURE 4: SUBJECT SITE IS WITHIN MH - MAJOR HABITAT AREAS (PITTWATER LOCAL GOVERNMENT AREA PITTWATER 21DCP – WILDLIFE

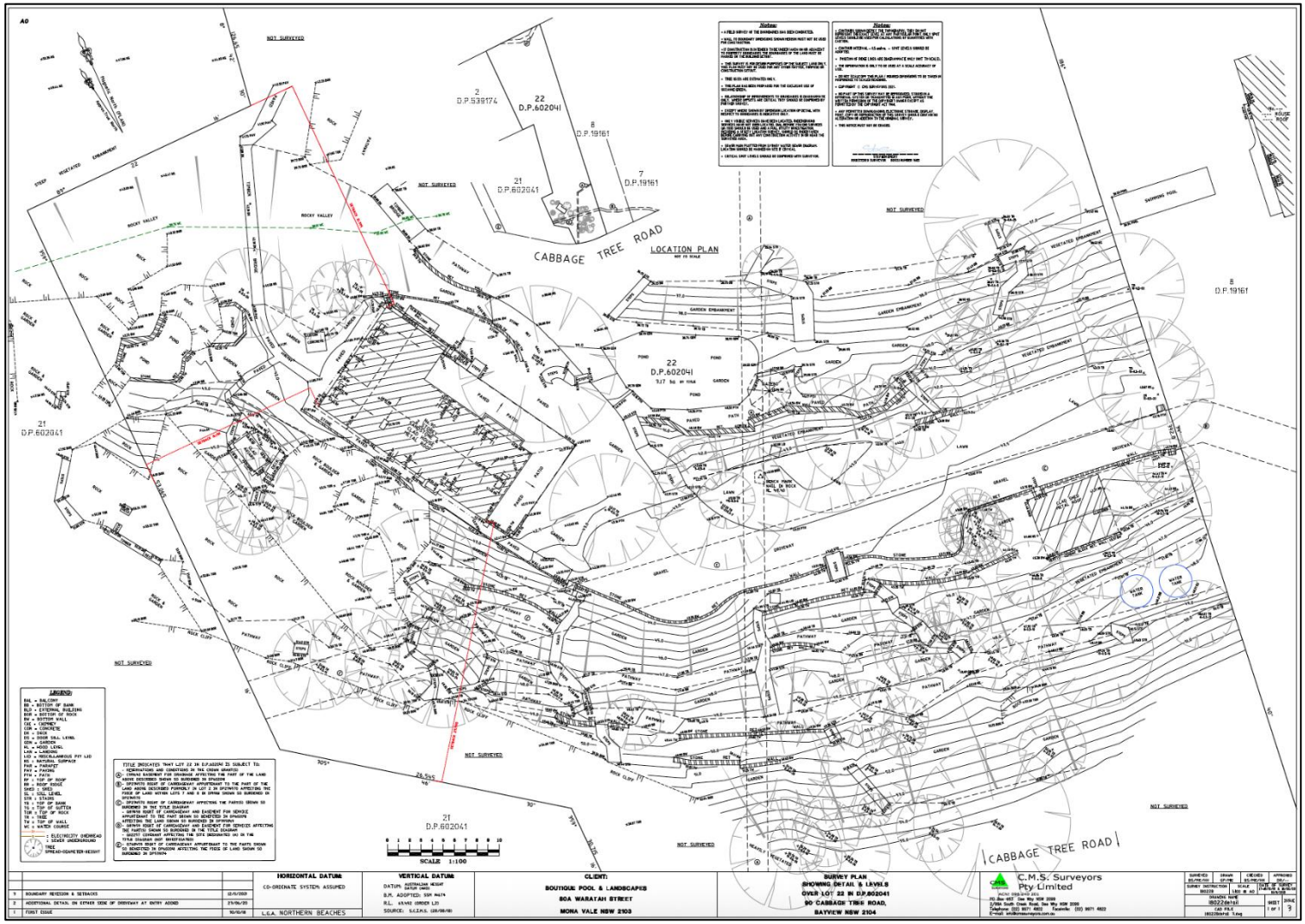


FIGURE 5: THE SITE SURVEY (SITE SURVEY BY C. M. S. SURVEYORS, DATED 10 NOVEMBER 2021)

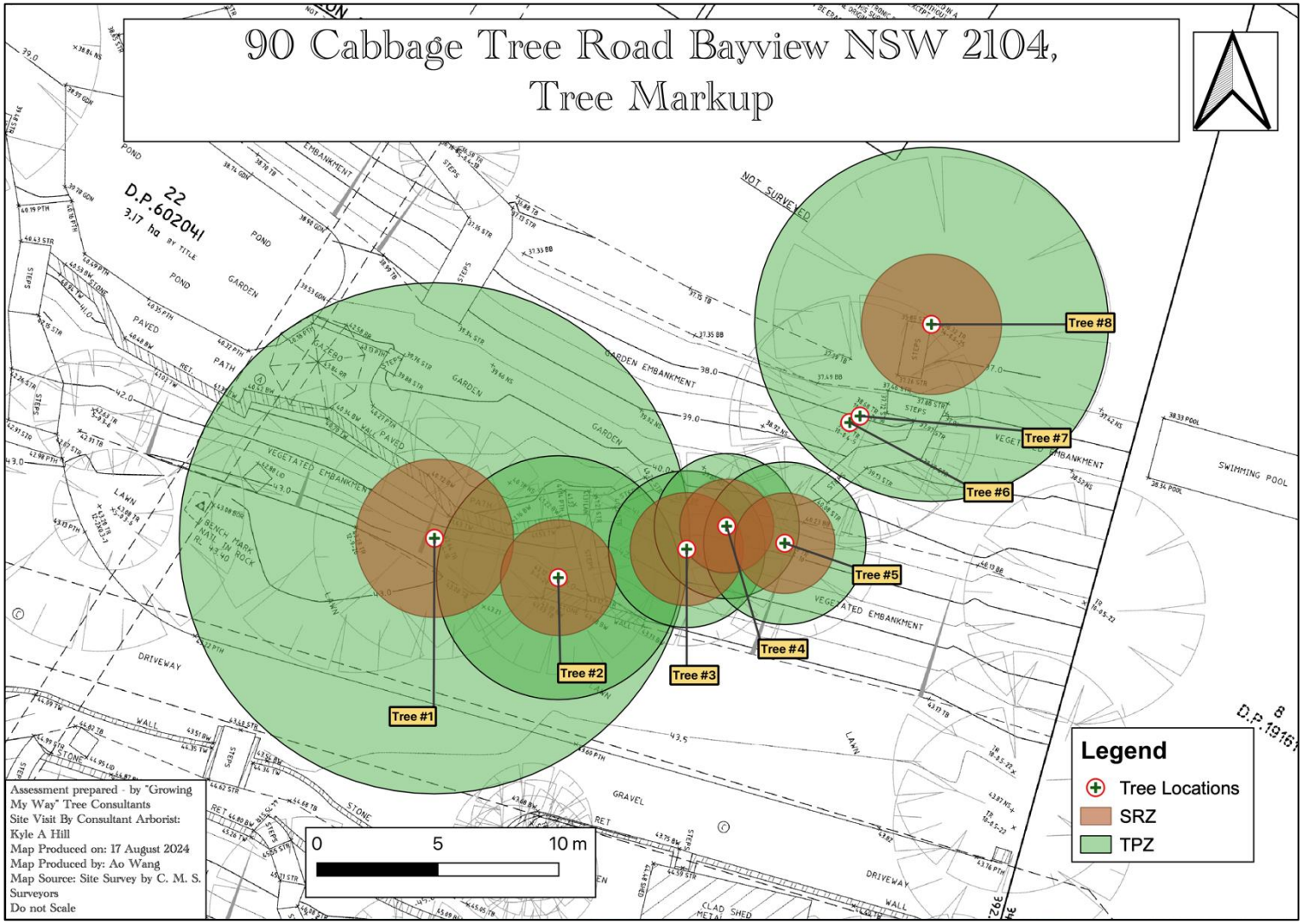


FIGURE 6: NUMBER AND LOCATION OF THE TREE ON SUBJECT SITE. (BY QGIS)

4.2 The Proposal

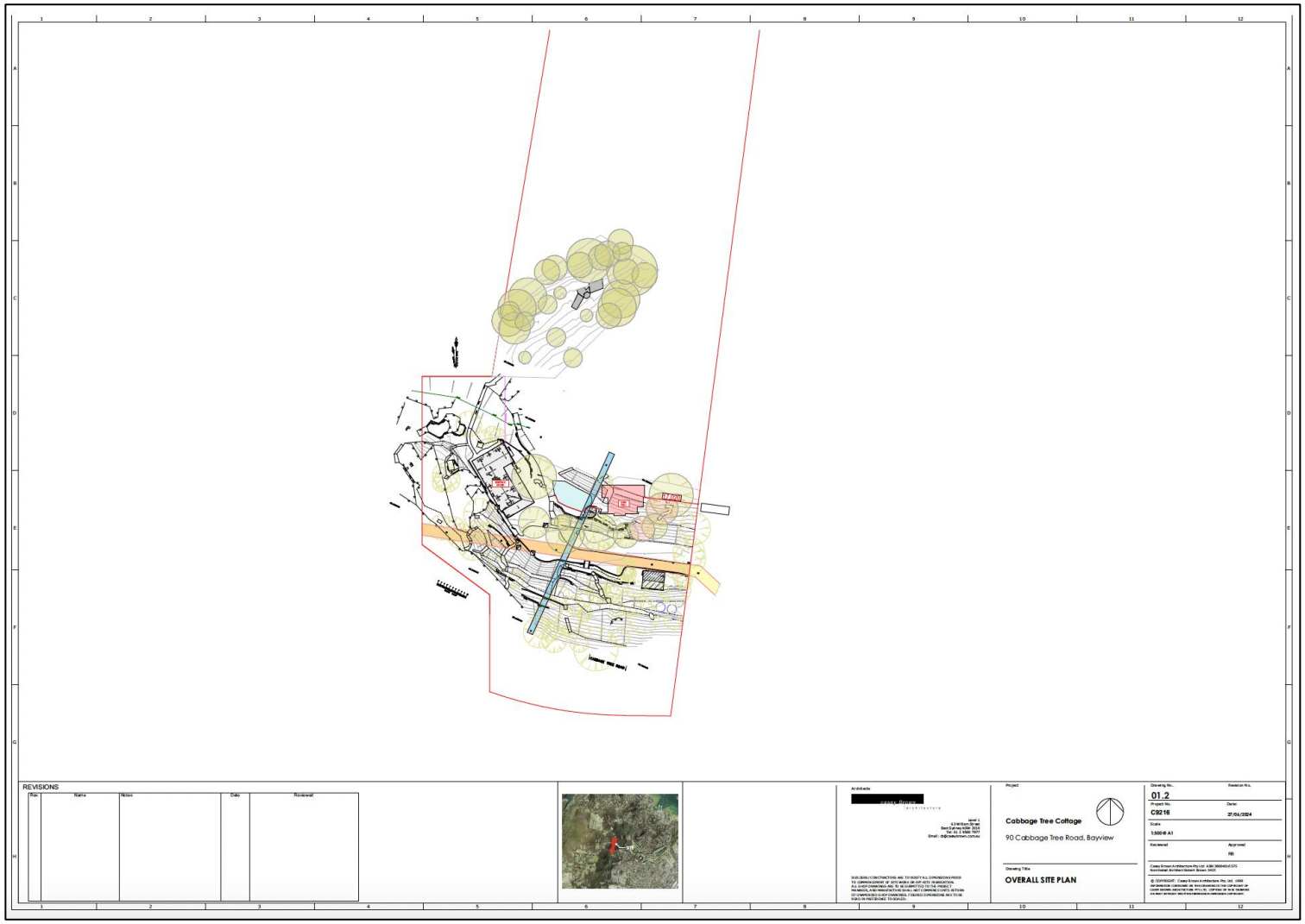


FIGURE 7: ILLUSTRATES PROPOSED SITE PLAN

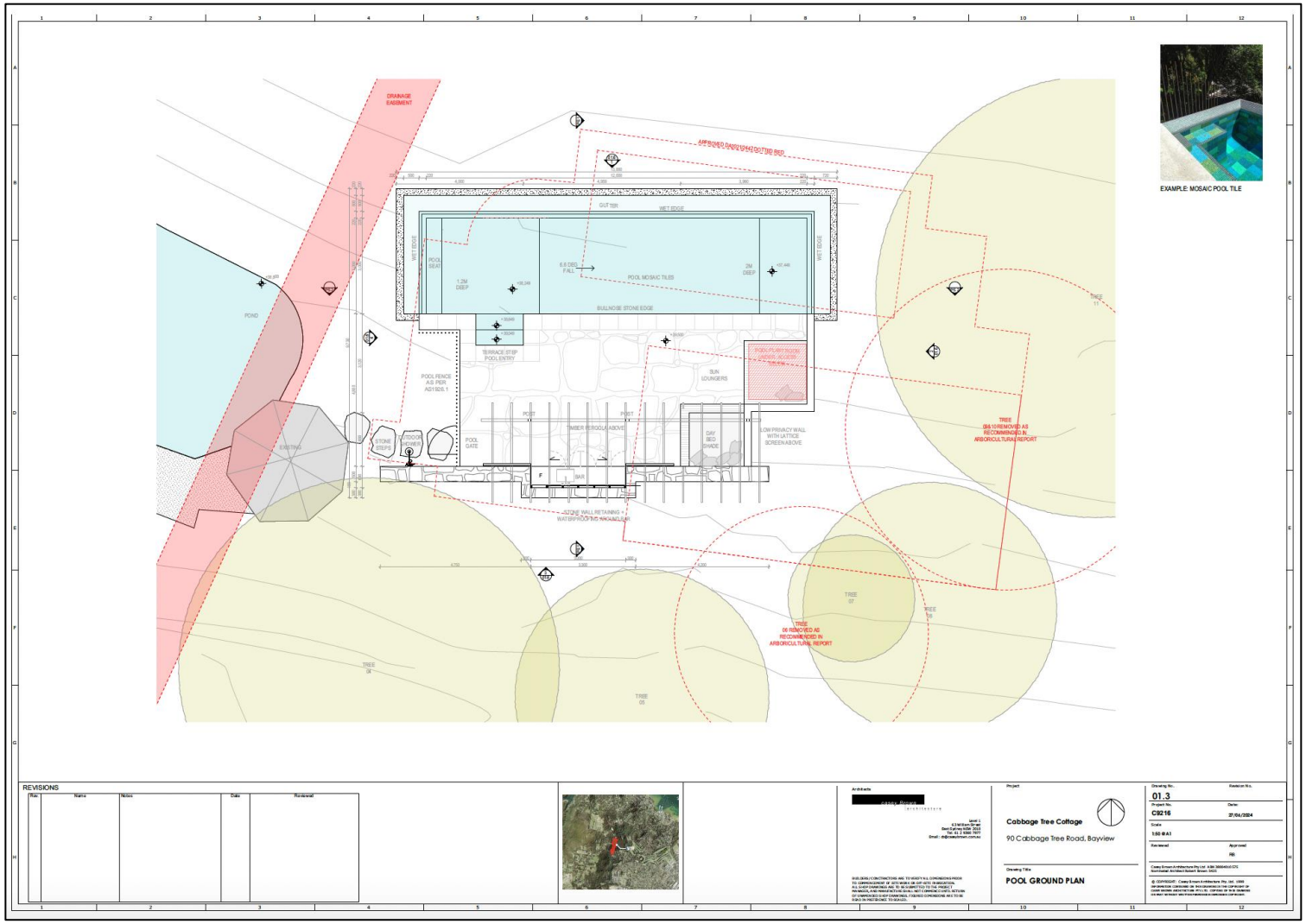


FIGURE 8: ILLUSTRATES PROPOSED GROUND FLOOR PLAN

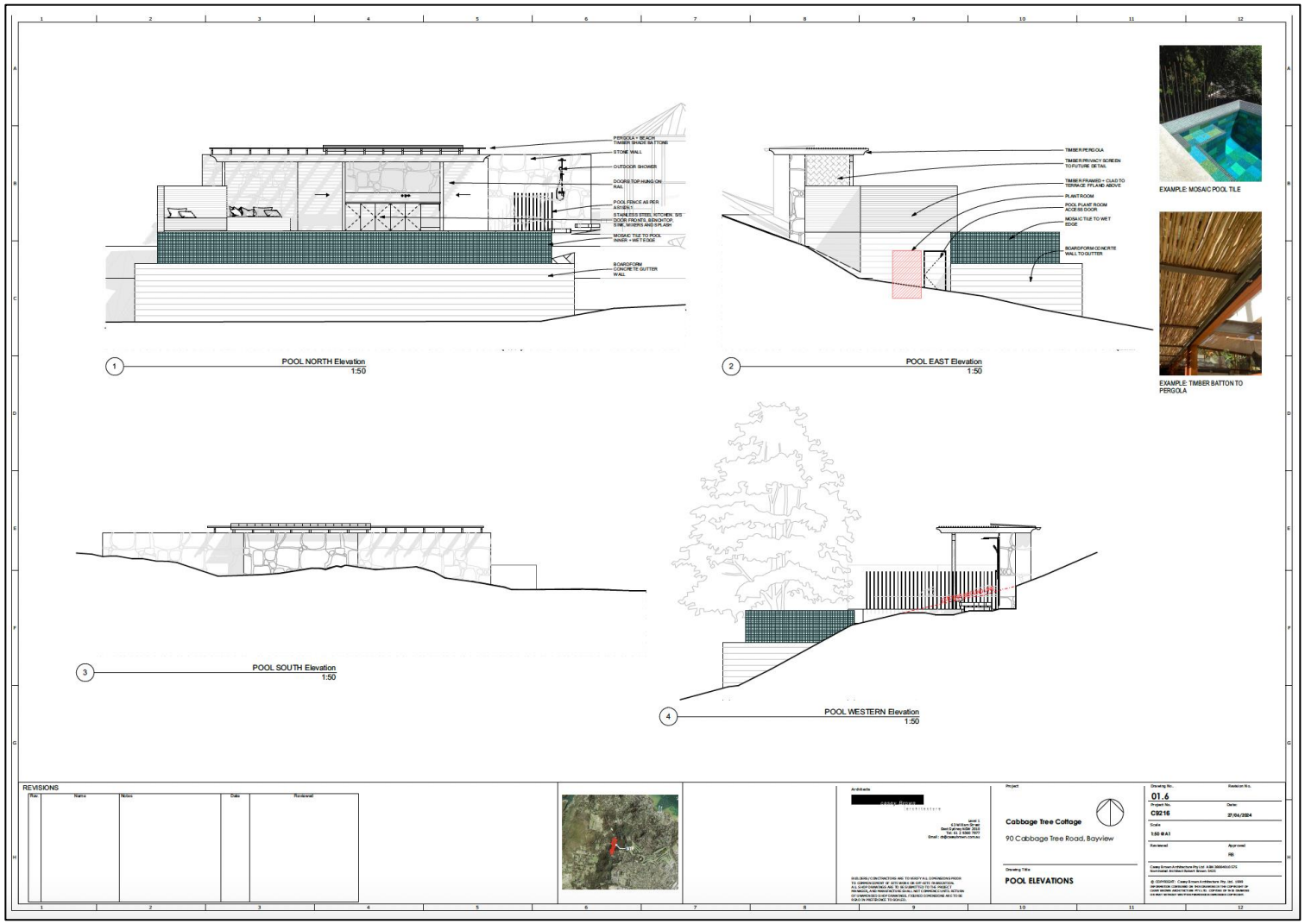


FIGURE 9: ILLUSTRATES PROPOSED ELEVATIONS

4.3 The Tree – Summary Table

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

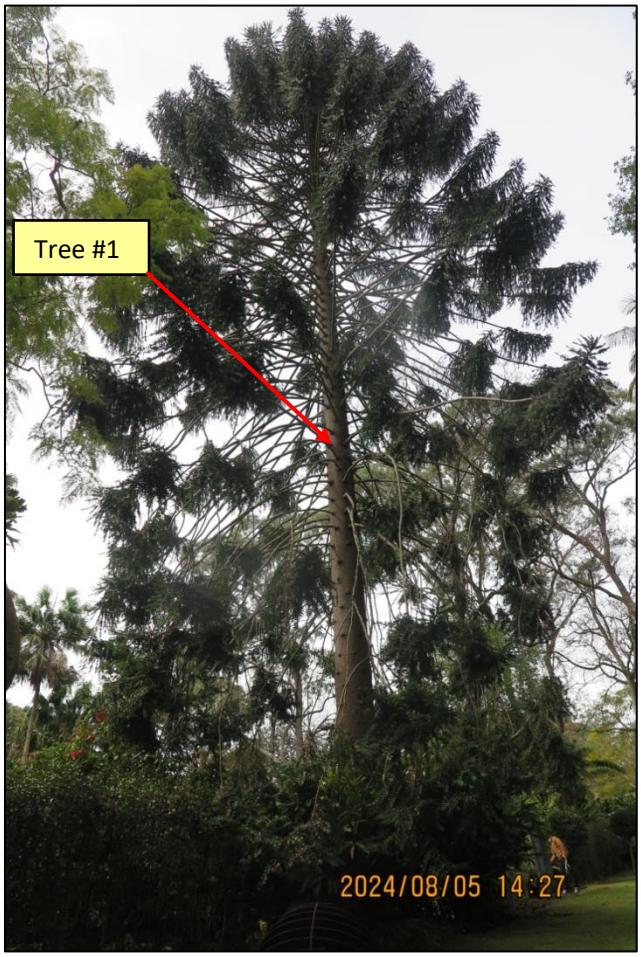
Trees Recommended for removal	Trees Recommended for retention
Exempt or Weed species	Trees retainable but of low amenity/significance

	Identification	Height (m)	Crown (m)	DBH (m)	TPZ (m)	SRZ (m)	Age	Health/ Vigour	Retention & Significance Value	Structure /Form	Comments
1	***Araucaria bidwillii*** (Bunya Pine)	<16.00	<10.00	0.88	10.56	3.27	M	Good & Good	Moderate & Moderate	Typical	RETAIN, PROTECT & MANAGE: Standard Temporary Fencing and Manual Excavation within TPZ radial distance is specified.
2	***Melia azedarach*** (White Cedar)	<11.00	<7.00	0.42	5.04	2.39	M	Good & Good	Moderate & Moderate	Typical	RETAIN, PROTECT & MANAGE: Standard Temporary Fencing and Manual Excavation within TPZ radial distance is specified.
3	***Acronychia oblongifolia*** (White Aspen)	<8.00	<7.00	0.27	3.24	2.34	M	Fair to Good & Fair to Good	High & High	Typical	RETAIN, PROTECT & MANAGE: Standard Temporary Fencing and Manual Excavation within TPZ radial distance is specified.
4	***Acronychia oblongifolia*** (White Aspen)	<7.00	<6.00	0.25	3.00	1.94	M	Poor & Fair	High & High	Atypical (massive open wound with decay impacted trunk base)	RETAIN, PROTECT & MANAGE: Standard Temporary Fencing and Manual Excavation within TPZ radial distance is specified.

	Identification	Height (m)	Crown (m)	DBH (m)	TPZ (m)	SRZ (m)	Age	Health/ Vigour	Retention & Significance Value	Structure /Form	Comments
5	***Acronychia oblongifolia*** (White Aspen)	<9.00	<7.00	0.28	3.36	2.08	M	Good & Good	High & High	Typical	RETAIN, PROTECT & MANAGE: Standard Temporary Fencing and Manual Excavation within TPZ radial distance is specified.
6	*DEAD*										TREE IS CONFIRMED TO HAVE FAILED & FALLEN
7	*DEAD*										TREE IS CONFIRMED TO HAVE FAILED & FALLEN
8	***Eucalyptus paniculata*** (Grey Ironbark)	<16.50	<10.00	0.61	7.32	2.90		Good & Good	High & High	Typical	RETAIN, PROTECT & MANAGE: Standard Temporary Fencing and Manual Excavation within TPZ radial distance is specified.

4.4 Tree & Site Images

Photographs taken on Monday, 05 August 2024. (Canon G1X MkII digital camera)




Tree #2
Tree #3
Tree #4
2024/08/05 14:28


Tree #4
2024/08/05 14:41


Tree #5
Tree #4
Tree #3
2024/08/05 14:38


Tree #6 & Tree #7 Confirmed Dead
(Failed at ground level)
2024/08/05 14:39


Tree #8
2024/08/05 14:40


Tree #8
2024/08/05 14:39

FIGURE 10: ABOVE & PREVIOUS PAGE PHOTOGRAPHS ILLUSTRATES THE EIGHT (8) DISCUSSED TREE LOCATIONS & SITE FEATURES

5. Discussion

5.1 General Discussion /Tree Environments:

Eight (8) trees by the site survey are near to proposed works. On the basis, two (2) trees have died & failed at ground level only six (6) trees are required to be discussed in detail.

The two (2) failed trees are identified to be Tree #6 & Tree #7.

None of these trees display any adverse impact features with respect to the as raised uphill change of natural environment features. One (1) tree, Tree #4 displays very significant decay near its base. Our opinion is, this tree will fail in the short term (i.e., less than 5 years) regardless of any proposed works near it.

Tree #1, Tree #2, Tree #3, Tree #4 & Tree #5 have all been subjected to a 'change of environment' uphill levelled garden / driveway area for likely the very long term (i.e., greater than 25 years).

Works proposed includes a new swimming pool, swimming pool surrounds (with timber pergola) & upgraded landscape concept.

No mathematical breach to total TPZ surface area for any discussed as able to be viably retained, protected & managed tree exceeds 10% of its total TPZ surface area.

Simply, any breach to total TPZ surface area for any discussed in detail tree is less than 10%, as such, the total TPZ surface area is defined as being a *'Minor Encroachment'*. See *AS4970-2009 Protection of trees on development sites, Chapters 3, 4 & 5.'*

The slope of the site where works are proposed is not 'management of builders material's friendly' by any assessment.

Storage/movement of builder's materials is specified to be isolated from the Tree #1 & Tree #2 TPZ area by using 'temporary metal mesh fencing panels with above ground supports' to isolate these trees.

We suggest a more appropriate area for the storage/movement of builder's materials to be adjacent to the subject site entrance levelled area. This area is mathematically well away from any tree proposed to be retained. See below area highlighted by a box with red infill to be our suggested builder's storage area.

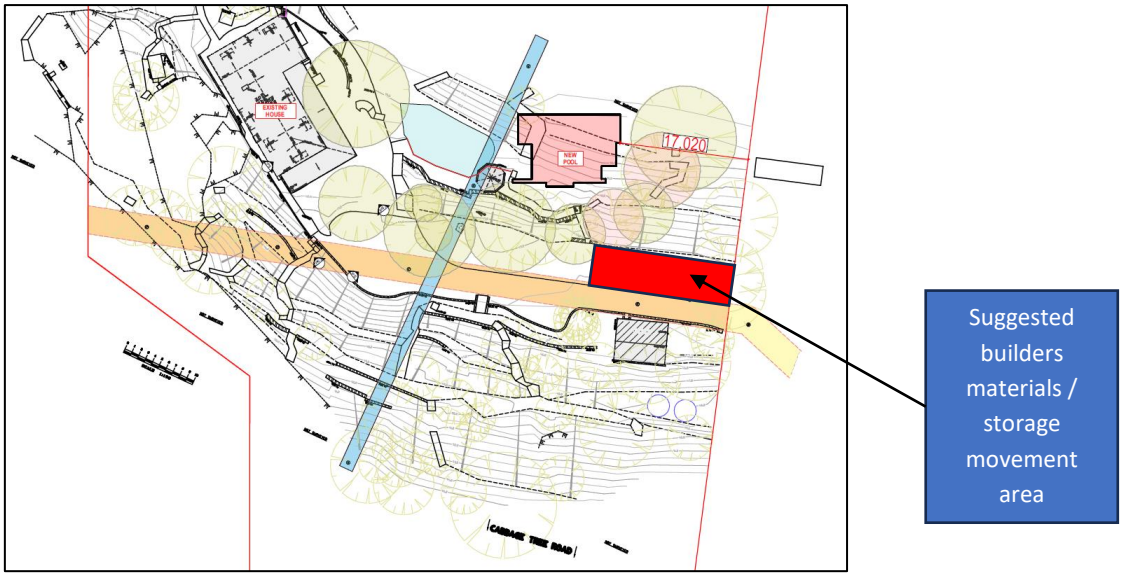


FIGURE 11: SOLID RED INFILLED BOW REPRESENTS OUR SUGGESTED AREA FOR THE STORAGE/MOVEMENT OF BUILDING MATERIALS.

Tree #1: *Araucaria Bidwillii* (Bunya Pine)

Tree #1 is located within the subject site near the top of the downhill area where works discussed are proposed.

Works proposed are confirmed to breach the TPZ total surface area for Tree #1.

By our calculation, the total TPZ surface area of Tree #1 is 350.03m^2. The proposed works (swimming pool & surrounds) equates to an approximate 34.06m^2 mathematical disturbance of total TPZ surface area. This mathematically equates to an approximate 9.7% of total TPZ surface area, (defined by *AS4970-2009* as a *Minor Encroachment*).

As such, an intensive management strategy is not required.

From a tree manager's perspective, the as proposed works only requires the installation of standard temporary metal mesh fencing panels within the levelled area adjacent to the driveway. Downhill of the discussed tree, it is specified that once the land is cleared prior to the commencement of building works, it be covered with a native tree mulch. The thickness is specified to be between 50 &75mm. The specified mulch thickness must be retained throughout all phases of construction.

Should a significant diameter 'live root/s' (greater than 50mm in diameter), be exposed during excavation for footings/piers that is not able 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 strategy applied.

In our opinion, with management as suggested, this tree is assessed as able to be viably retained without any compromise to its Useful Life Expectancy.

Tree #2: *Melia azedarach* (White Cedar)

Tree #2 is located within the subject site near the top of the downhill area where works discussed are proposed.

The proposed new swimming pool & surrounds are confirmed to not breach this tree's total TPZ surface area.

Tree #2 (like Tree #1) is specified to require TPZ temporary 'temporary metal mesh fencing with above ground supports' 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. Its TPZ radial distance is captured by the Tree #1 TPZ radial distance isolation strategy.

In our opinion, with management as suggested, this tree is assessed as able to be viably retained without any compromise to its Useful Life Expectancy.

Tree #3: *Acronychia oblongifolia* (White Aspen)

The proposed new swimming pool & surrounds are confirmed to not breach this tree's total TPZ surface area.

Tree #3 (like Tree #1 & Tree #2) is specified to require TPZ temporary 'temporary metal mesh fencing with above ground supports' as well as native tree mulch being instated on the works area steeply sloped ground. Tree #3, Tree #4 & Tree #5 can be isolated as group.

In our opinion, with management as suggested, this tree is assessed as able to be viably retained without any compromise to its Useful Life Expectancy.

Tree #4: *Acronychia oblongifolia* (White Aspen)

The proposed new swimming pool & surrounds are confirmed to not breach this tree's total TPZ surface area.

Tree #4 (like Tree #1, Tree #2 & Tree #3) is specified to require TPZ temporary 'temporary metal mesh fencing with above ground supports' as well as native tree mulch being instated on the works area steeply sloped ground. Tree #3, Tree #4 & Tree #5 can be isolated as group.

Tree #4, separate to any discussion relative to any proposed works is assessed as having only a short-term Useful Life Expectancy by virtue of it being very significantly impacted upon by decay pathogen activity nearly destroying its trunk base structural integrity.

In our opinion, with management as suggested, this tree is assessed as able to be viably retained without any compromise to its Useful Life Expectancy.

Tree #5: *Acronychia oblongifolia* (White Aspen)

The proposed new swimming pool & surrounds are confirmed to not breach this tree's total TPZ surface area.

Tree #5 (like Tree #1, Tree #2, Tree #3 & Tree #6) is specified to require TPZ temporary 'temporary metal mesh fencing with above ground supports' as well as native tree mulch being instated on the works area steeply sloped ground. Tree #3, Tree #4 & Tree #5 can be isolated as group.

In our opinion, with management as suggested, this tree is assessed as able to be viably retained without any compromise to its Useful Life Expectancy.

Tree #6: DEAD

Tree #6 is confirmed dead. It has also failed at ground level.

Tree #7: DEAD

Tree #7 is confirmed dead. It has also failed at ground level.

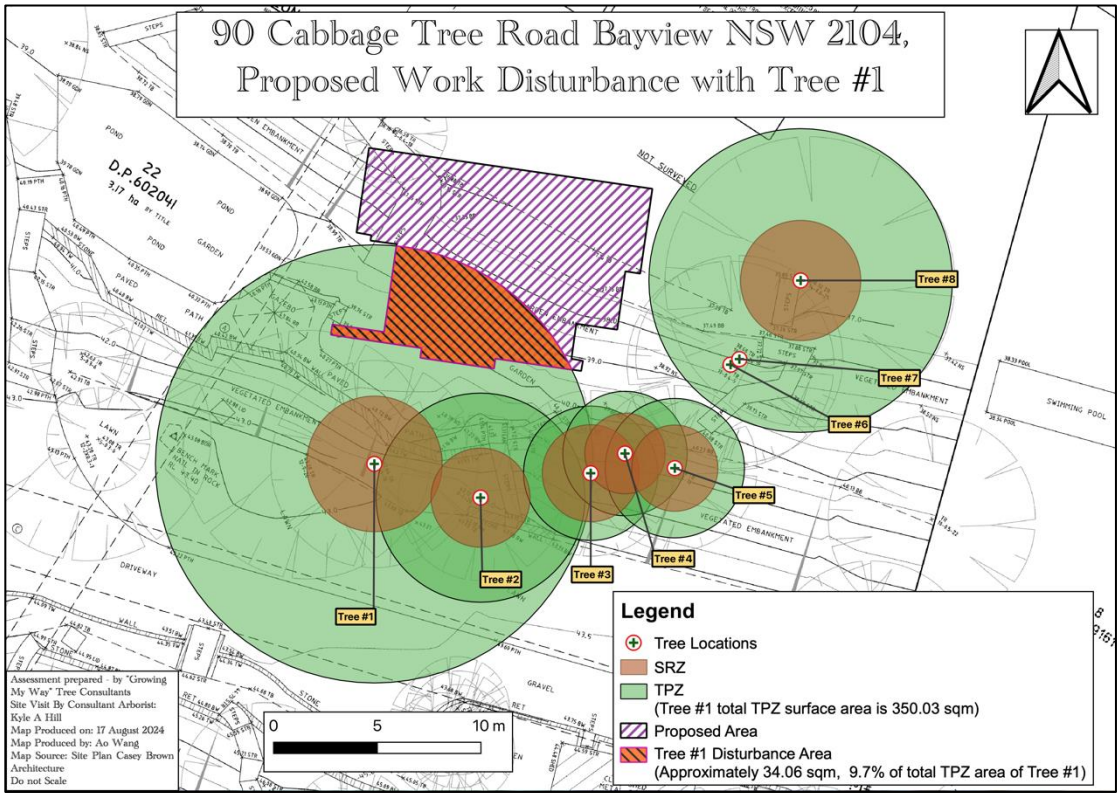
Tree #8: *Eucalyptus paniculata* (Grey Ironbark)

Tree #8 is located within the subject site near the lower portion of the works proposed.. The proposed new swimming pool & surrounds is confirmed to not breach the Tree #8 TPZ total surface area.

On this basis, it only requires a like Tree #3 (& others) management strategy being applied.

In our opinion, with management as suggested, this tree is assessed as able to be viably retained without any compromise to its Useful Life Expectancy.

5.2 TPZ / SRZ Tree Disturbance Calculation Diagrams



5.3 Preliminary Site Specific "Tree Plan of Management"

Pre-Commencement of Works

- *Establish temporary common boundary fencing to establish isolation for all discussed as able to be retained in a viable manner trees.*
- *Install 'temporary metal mesh fencing panels with above ground supports' for Tree #1, Tree #2, Tree #3, Tree #4 Tree #5, & Tree 8.*
- *TPZ installations including 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.*

Commencement of and During Works

- *Ensure common boundary isolation fencing & the as specified mulch thickness is always intact.*

- *In the unlikely event, excavation (completed manually) exposes a 'live root' of a significant diameter that cannot be avoided by shifting the works (e.g., footing/pier site) 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*
- *Any 'live roots' of any diameter that are exposed 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,

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.

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',* LSA Illinois USA 1995

Dr. N. Matheny & Dr. J.R. Clark, '*Trees & Development',* ISA Illinois USA 1998

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Hitchmough, J.D. 1994. '*Urban Landscape Management*', Inkata Press, Sydney.

Mattheck, C. & Breloar, H. 1994 '*Body Language of Trees'*, The Stationery Office, London.

AS 4373:2007, '*Pruning of Amenity Trees'*, Standards Australia.

AS 4970:2009, 'Protection of Trees on Development Sites'', Standards Australia.

BS 5837:2005, '*Guide for Trees in Relation to Construction'*, Standards Board, UK.

Appendix A – Glossary

Glossary of common Arboreal terms

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 (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

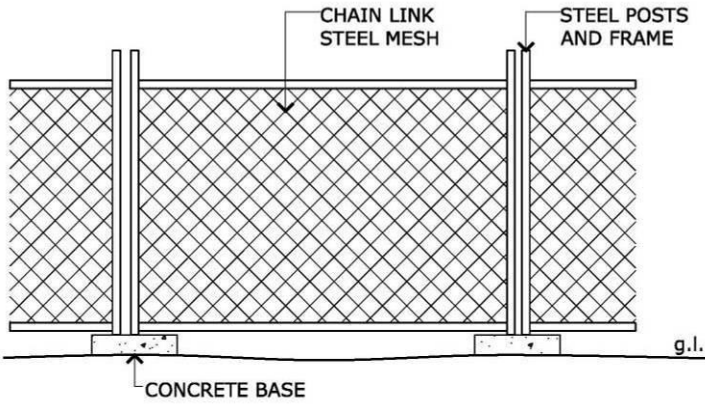
Attachment A: Tree Protection/Management Prior to & During Construction

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**.

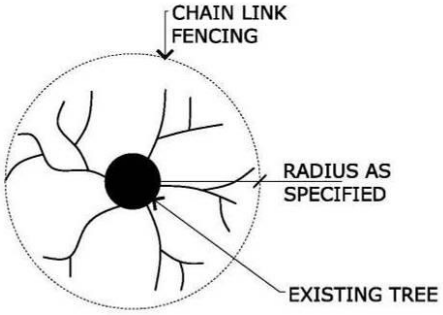
A mulch layer of composted leaf & woodchip to a depth of 75mm is required within the TPZ to aid in retention of soil moisture & to protect soil from contaminants. Water is to be applied by handheld or soaker/leaky hose within TPZ as required & in Accordance with Stage 3 Water Restrictions. Watering is 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.



ELEVATION



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