

# **“GROWING MY WAY”**

## **Tree Consultants**

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

**May 2024**

**Prepared for: Brasler Properties  
c/ Chris Brasler**

**67 Pacific Parade Dee Why NSW 2099**

**Prepared by: Kyle A Hill**

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Certificate of Horticulture, TAFE

Certificate Advanced Tree Care TAFE

Founder -Growing My Way Tree Services (1977)

Member of International Society of Arboriculture (ISA)

Member of Arboriculture Australia

Victorian Tree Industry Organisation (VTIO)

**Assisted by: Ao Wang**

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

Bachelor of Environmental Biotechnology (University of Technology Sydney)



## 1. Summary

Brasler Properties (as the Property Owner of 67 Pacific Parade, Dee Why NSW 2099) via Chris Brasler commissioned the Growing My Way Tree Consultancy (GMW) to prepare an Arboriculture Impact Assessment & Preliminary Site - Specific Plan of Tree Management to be linked to a Development Application (DA) submission for *new Apartment*.

The site is Land Zoned for *"R3 Medium Density Residential"*.

A total number of four (4) trees are discussed within this report. Discussed trees are located within the subject site 67 Pacific Parade & one (1) subject site common boundary adjoining property (The Crescent Reserve) and one (1) property (63 Pacific Parade Dee Why) close to the rear southwest corner boundary of the subject site.

The subject site shares common boundaries with two (2) same land zoning adjoining properties, one (1) Public Recreation area (The Crescent Reserve) and one (1) public road (Pacific Parade). Both same land zoning common boundary adjoining properties are developed to contain Medium Density dwellings & other infrastructure.

Currently there is no access for Motor vehicle access to the subject site. Pedestrian access to the subject is by only informal pathway. Proposed works includes Motor vehicle & pedestrian access to the subject site via Pacific Parade.

The sole consent authority is the Northern Beaches Council, (from herein the *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 Usher & Company Pty Ltd, dated 21 November 2022.*
- *Proposed Plans, Elevations Sections etc., by DKO Architecture (NSW) Pty Ltd, dated 17 July 2024.*
- *Proposed landscape Plans, Elevations Sections etc., by Matthew Higginson Landscape Architecture Pty Ltd, dated 21 May 2024.*
- *NSW SEPP; 10/50 Vegetation Clearing 'Code of Practice'*
- *NBC "Tree Management Provisions"*
- *NBC Heritage Conservation Area & Land Zoning LEP Maps.*

*The aim of this report is:*

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

This document supports (relative to tree management), the proposal as presented with replacement tree/s that at maturity will least replicate the 'loss of green footprint' provided by the supported to be replaced tree/s.

We confirm, for trees assessed as able to be retained no compromise to any individual discussed tree's Useful Life Expectancy can reasonably be predicted with implementation of a once DA determination Site Specific Plan of Tree Management has been finalised.

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 Saturday, 18 May 2024.

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## 2. Introduction

This report contains observations & recommendations intended to assist in the management of the four (4) trees identified as necessary to be discussed. Tree #1 & Tree #2 are located within front sections of the subject site. Tree #3 is located within the south side adjoining short common boundary property (The Crescent Reserve), Tree #4 is located (63 Pacific Parade Dee Why) close to the rear southwest corner boundary of the subject site.

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; Warringah Local Environmental Plan 2011, (from herein; Warringah *LEP*), the Warringah Development Control Plan 2011 (from herein Warringah *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*". Neither is the subject site, or any common boundary adjoining property listed 'Heritage Items'.

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 Usher & Company Pty Ltd, dated 21 November 2022.*
- *Proposed Plans, Elevations Sections etc., by DKO Architecture (NSW) Pty Ltd, dated 17 July 2024.*
- *Proposed landscape Plans, Elevations Sections etc., by Matthew Higginson Landscape Architecture Pty Ltd, dated 21 May 2024.*
- *NSW SEPP; 10/50 Vegetation Clearing 'Code of Practice'*
- *NBC "Tree Management Provisions"*
- *NBC Heritage Conservation Area & Land Zoning LEP Maps.*

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

### 3. Methodology

Assessment Methodology for the discussed trees has been from ground level by eye, applying *Visual Tree Assessment (VTA Stage 1 & Stage 2)*, provisions 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

The report discusses trees within the subject site 67 Pacific Parade, one (1) subject site common boundary adjoining property and (The Crescent Reserve) and one (1) property (63 Pacific Parade Dee Why) located close to the rear southwest corner boundary of the subject site.

The subject site is 682m<sup>2</sup> in size (*Site Survey by Usher & Company Pty Ltd, dated 21 November 2022*).

The subject site shares common boundaries with two (2) same land zoning common boundary adjoining properties, one (1) Public Recreation area (The Crescent Reserve) and one (1) public road (Pacific Parade). Both same land zoning common boundary adjoining properties are developed to contain Medium Density dwellings & other infrastructure.

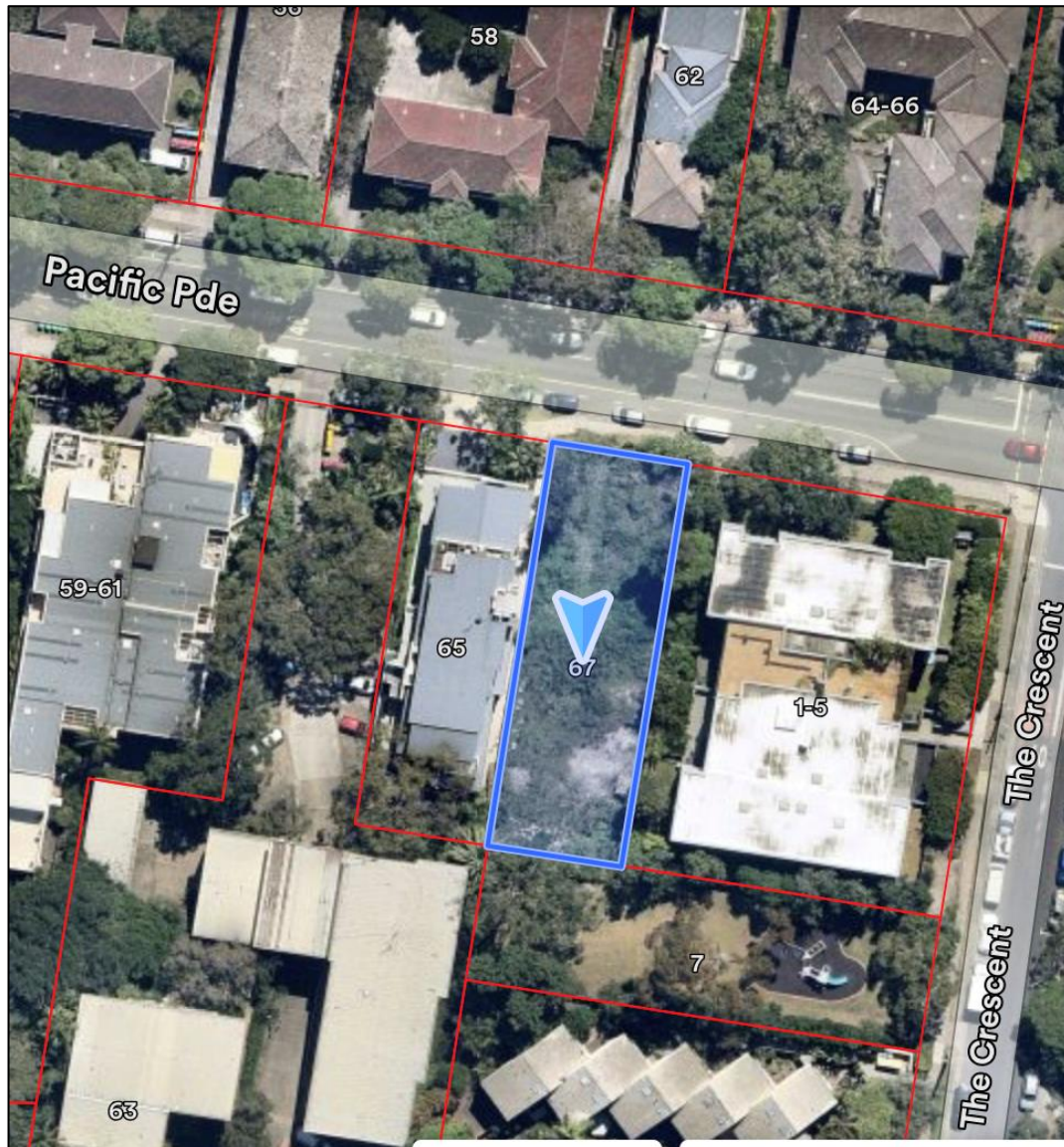


FIGURE 1: ABOVE ILLUSTRATES THE DISCUSSED TREES RELATIVE TO THE SITE 14A WEST STREET, BALGOWLAH NSW 2093. (AERIAL PHOTOGRAPH FROM SUNDAY 25 FEBRUARY 2024, MAP DATA COURTESY OF NEARMAP™)

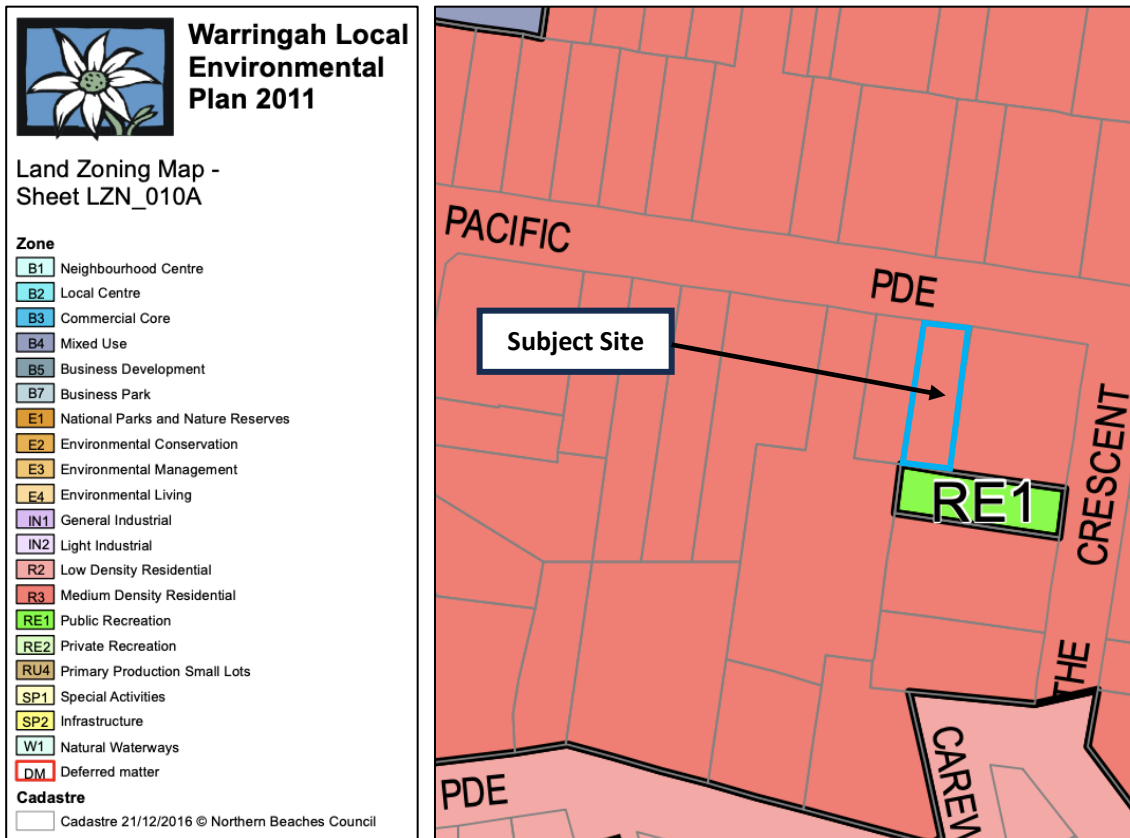


FIGURE 2: CONFIRMS STATUS OF THE SUBJECT SITE RELATIVE R3 MEDIUM DENSITY RESIDENTIAL. (WARRINGAH LOCAL ENVIRONMENTAL PLAN 2011, LAND ZONING MAP - SHEET LZN\_010A).

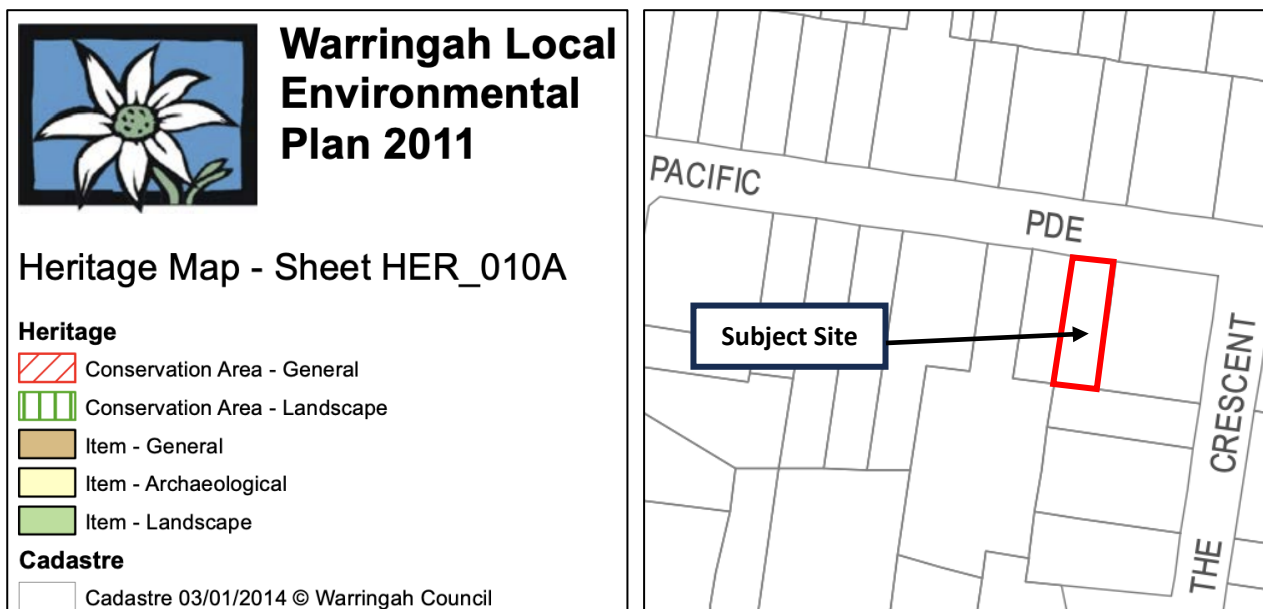


FIGURE 3: CONFIRMS STATUS OF THE SUBJECT SITE RELATIVE TO CADASTRE (WARRINGAH LOCAL ENVIRONMENTAL PLAN 2011, HERITAGE MAP SHEET HER\_010A)



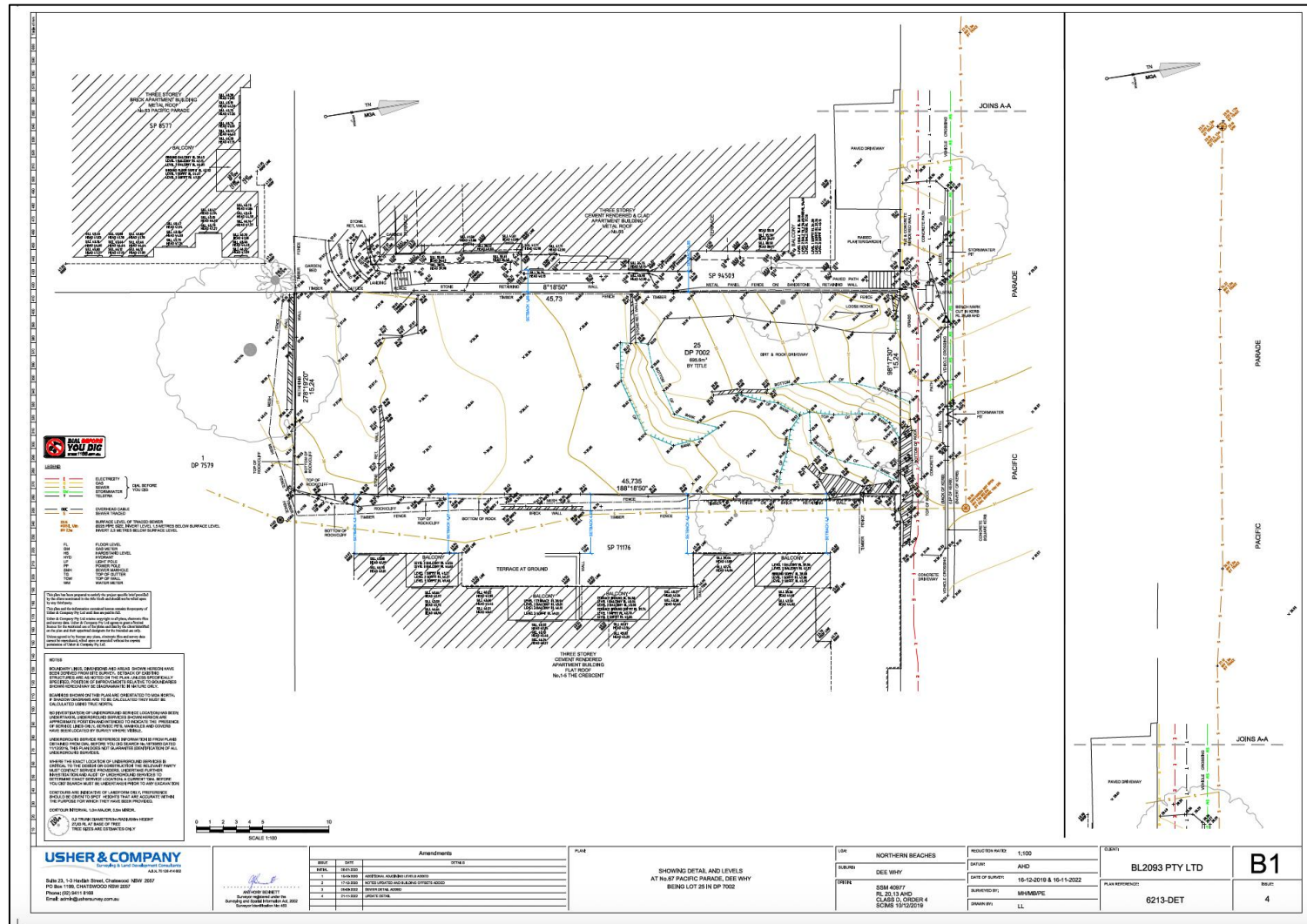


FIGURE 4: SITE SURVEY BY USHER & COMPANY PTY LTD, DATED 21 NOVEMBER 2022.

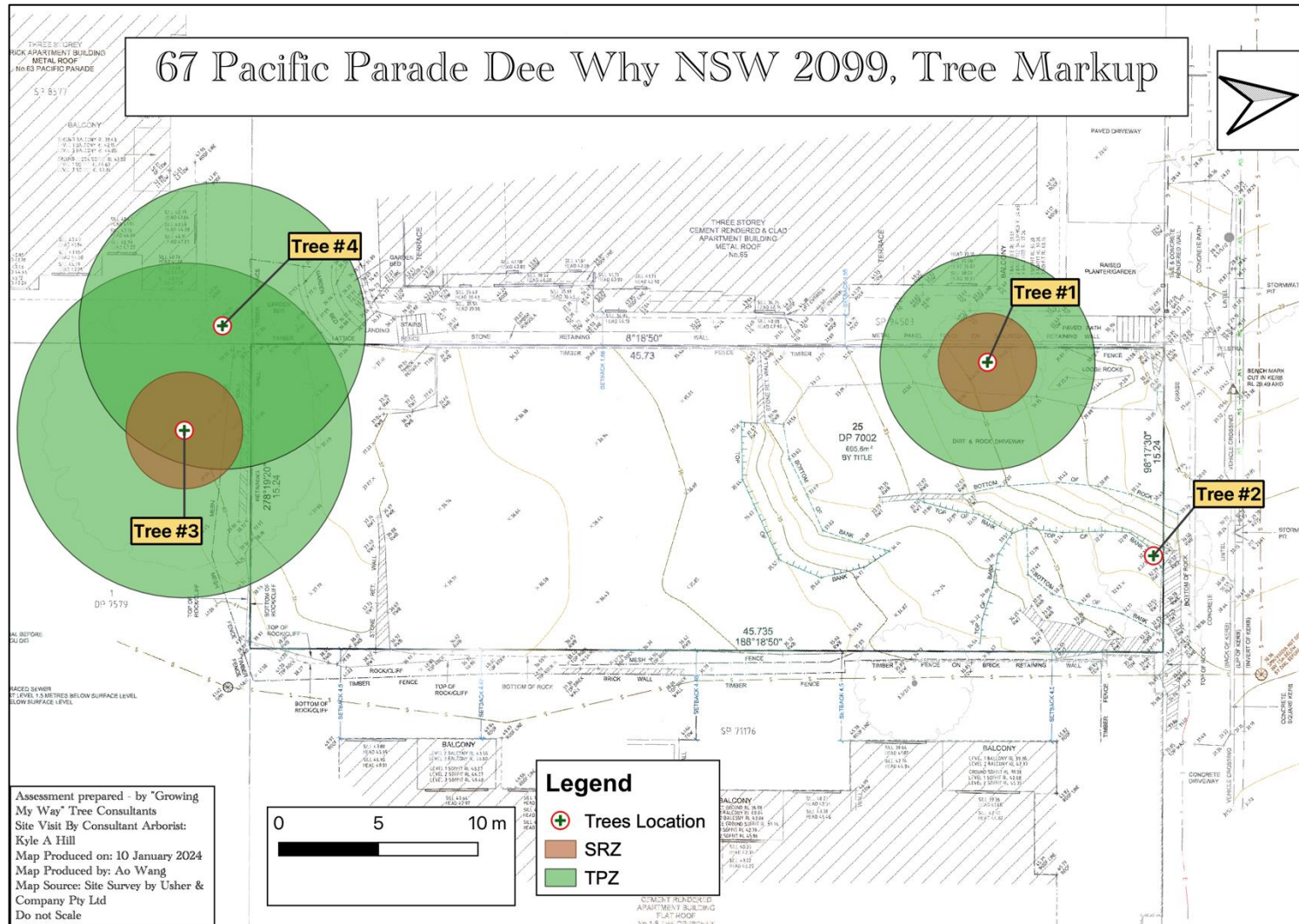


FIGURE 5: NUMBER AND LOCATION OF THE TREES ON SUBJECT SITE. (BY QGIS)

## 4.2 The Proposal

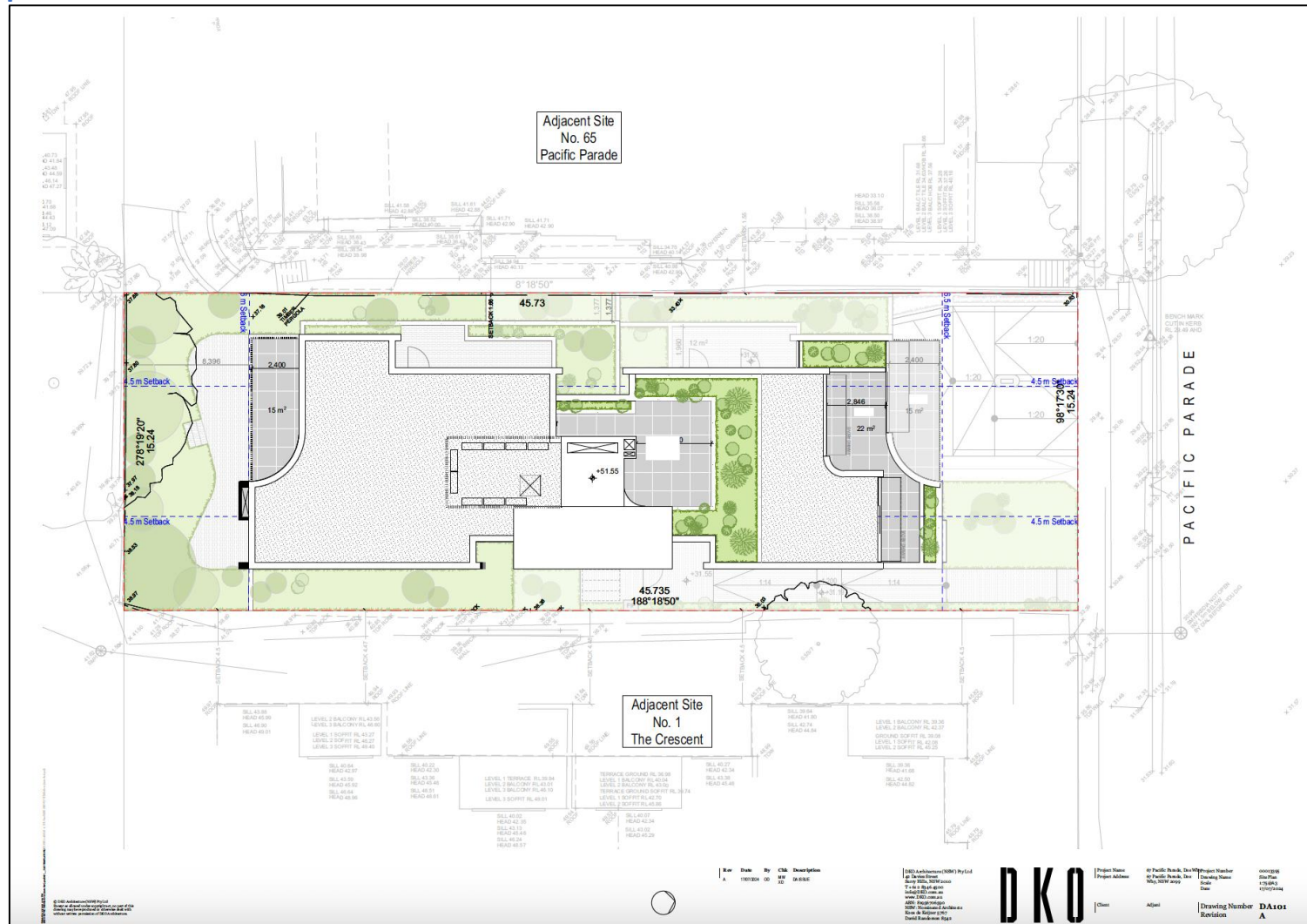


FIGURE 6: ILLUSTRATES PROPOSED SITE PLAN



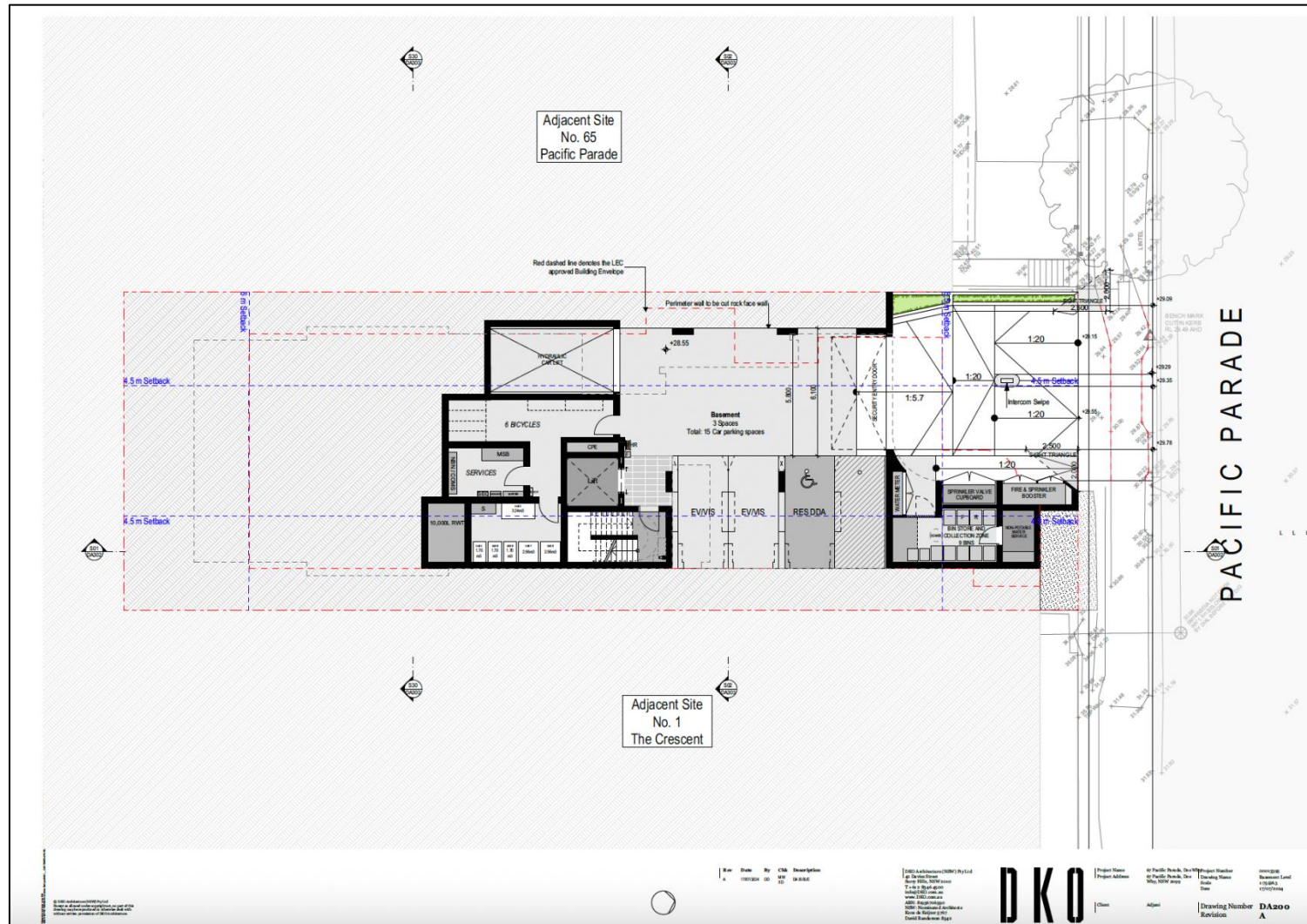


FIGURE 7: ILLUSTRATES PROPOSED BASEMENT LEVEL

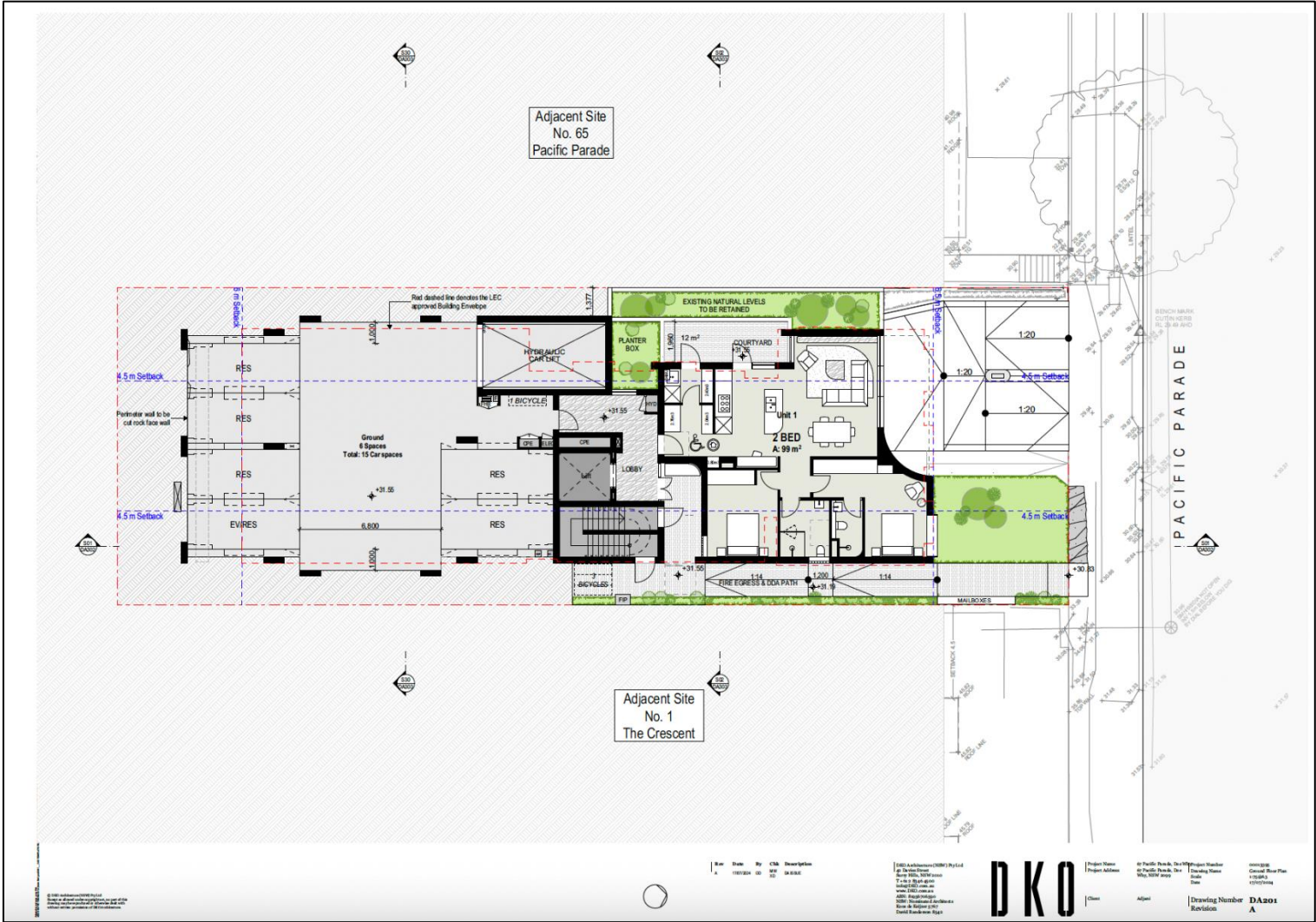


FIGURE 8: ILLUSTRATES PROPOSED GROUND FLOOR PLAN







FIGURE 10: ILLUSTRATES PROPOSED LEVEL 2 PLAN











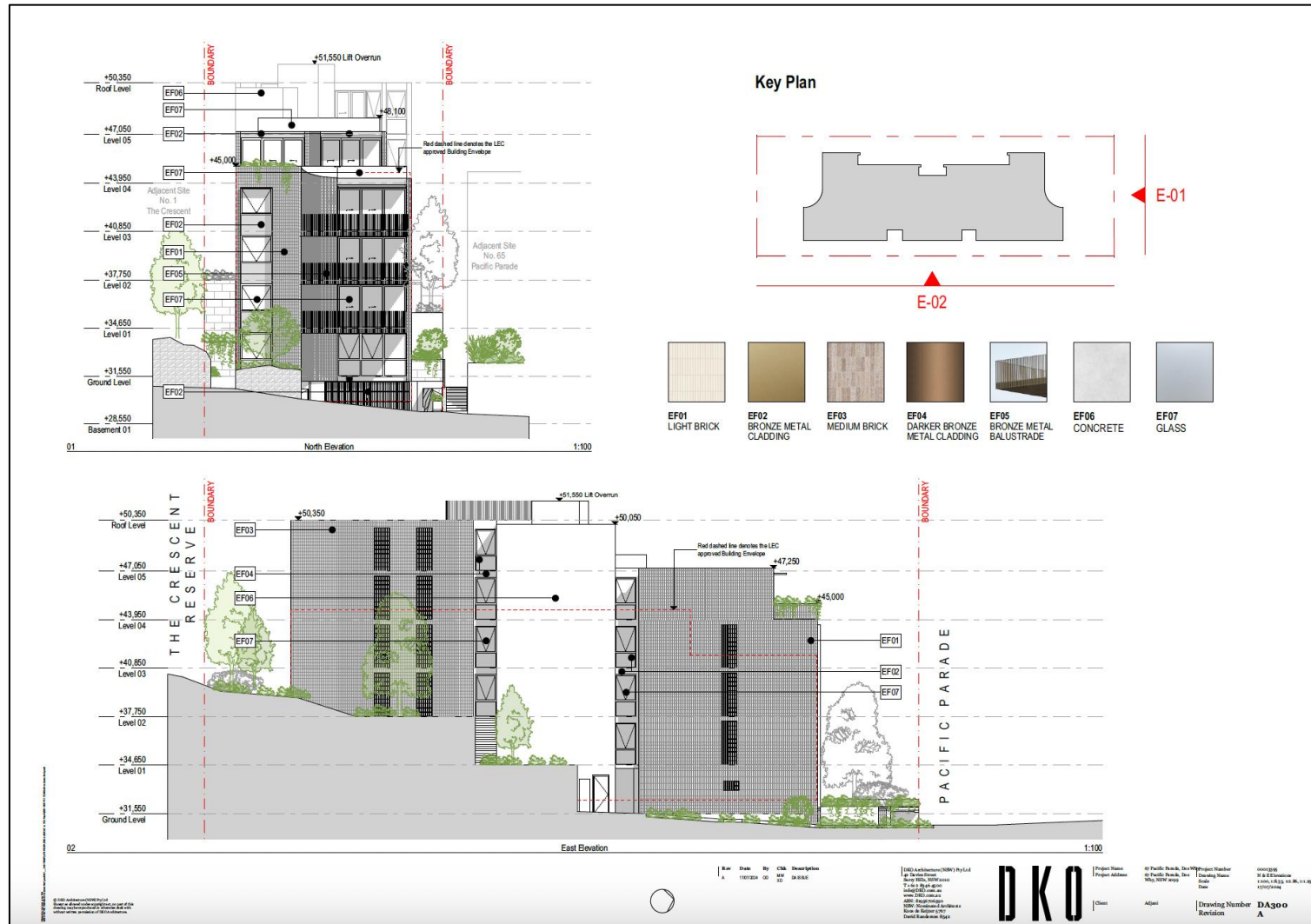


FIGURE 15: ILLUSTRATES PROPOSED NORTH & EAST ELEVATIONS



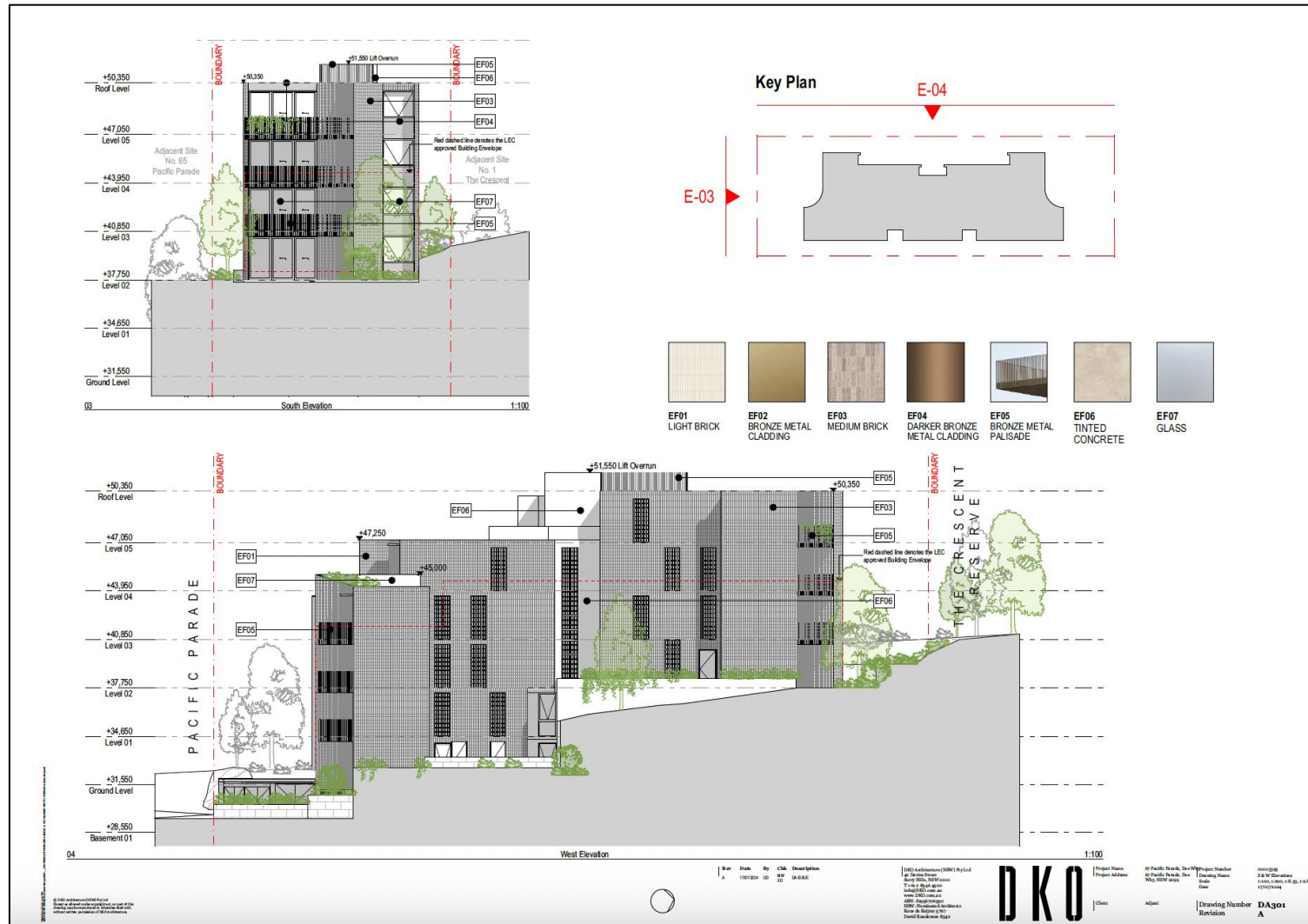


FIGURE 16: ILLUSTRATES PROPOSED SOUTH & WEST ELEVATIONS

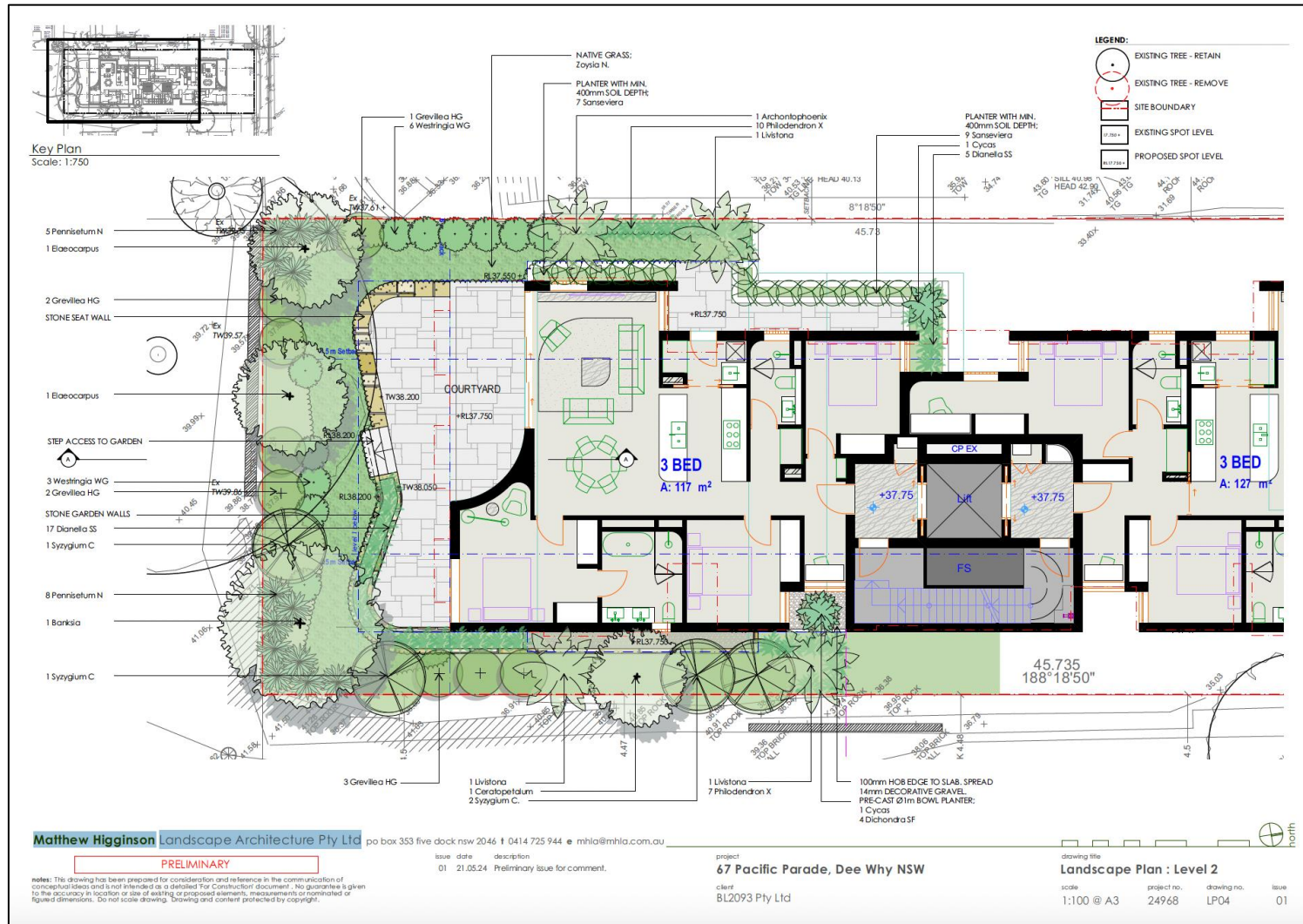


FIGURE 17: LANDSCAPE PLAN LEVEL 2

### 4.3 The Trees – 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	<i>Callistemon viminalis</i> (Weeping Bottlebrush)	<8.50	<6.50	0.27	3.24	2.10	M	Fair to Good & Fair to Good	High & High	Typical	<u>Replace:</u> Located within the proposed works footprint
2	<i>Plumeria acutifolia</i> (Frangipani)	<4.50	<5.00				M	Fair to Good & Fair to Good	Moderate & Moderate	Typical	<u>EXEMPT:</u> Exempt by species
3	<i>Eucalyptus spp.</i>	<16.00	<14.00	0.70 (Estimate)	8.40	2.93	M	Fair to Good & Fair to Good	High & High	Typical	<u>RETAIN, PROTECT &amp; MANAGE:</u> Standard Temporary Fencing and Manual Excavation within TPZ radial distance is specified
4	<i>Phoenix canariensis</i> (Canary Island Date Palm)	<12.00	<7.00	0.60 (Estimate)	7.20		M	Good & Good	Moderate & Moderate	Typical	<u>RETAIN, PROTECT &amp; MANAGE:</u> Exempt by species Standard Temporary Fencing.



#### 4.4 Tree & Site Images

(Most Photographs taken on Saturday, 18 May 2024)







FIGURE 18: ABOVE & PREVIOUS PAGE PHOTOGRAPHS ILLUSTRATES THE FOUR (4) DISCUSSED TREES LOCATIONS & SITE FEATURES

## 5. Discussion

### 5.1 General Discussion /Tree Environments:

The total number of trees discussed is four (4).

#### **Tree #1: *Callistemon viminalis*** (Weeping Bottlebrush)

Tree #1 is located within subject site (right side) front. The proposed new work is confirmed breach the TPZ total surface area for Tree #1.

Regardless of any development proposal, this tree is considered as not being long term viable by the fact it is with a regular frequency pruned to reduce overhanging canopy to the common boundary adjoining property, 65 Pacific Parade

By our calculation, the total TPZ surface area of Tree #1 is 91.53m<sup>2</sup>. The proposed new work equates to an approximate 44.30m<sup>2</sup> mathematical disturbance of total TPZ surface area for Tree #1. This equates to approximately 48.4% of total TPZ surface area, (defined by AS4970-2009 as a Major Encroachment).

On this basis, we suggest a replacement tree/s be planted as far from any permanent existing (neighbours) & subject site new infrastructure as possible.

The replacement tree/s must be sourced from a grower/supplier whose stock is certified to meet the production benchmarks as described within the *Australian Standard (AS2303- 2015 Tree stock for landscape use)*.

Any new replacement tree/s are to be professionally planted & and maintained for at least a minimum full Sydney active growing season. defined as being from mid-August through late May.

#### **Tree #2: *Plumeria acutifolia*** (Frangipani)

Tree #2 is located within subject site (left side) front. The proposed new works are confirmed to significantly breach the TPZ total surface area for Tree #2.

Tree #2 is exempt by size refer to NBC (Warringah) DCP 2013.

On this basis, we suggest a replacement tree/s be planted as far from any permanent existing (neighbours) & subject site new infrastructure as possible.

The replacement tree/s must be sourced from a grower/supplier whose stock is certified to meet the production benchmarks as described within the *Australian Standard (AS2303- 2015 Tree stock for landscape use)*.

Any new replacement tree/s are to be professionally planted & and maintained for at least a minimum full Sydney active growing season. defined as being from mid-August through late May.

#### **Trees #3: *Eucalyptus* spp.**

Tree #3 is located within the south side adjoining short common boundary property, (The Crescent Reserve). The proposed new works requires a minor breach to the TPZ total surface area for Tree #3.

By our calculation, the total TPZ surface area of Tree #3 is 221.48m<sup>2</sup>. The proposed new work equates to an approximate 10.08m<sup>2</sup> mathematical disturbance of total TPZ surface area for Tree



#3. This equates to approximately 4.6% of total TPZ surface area, (defined by AS4970-2009 as a Major Encroachment).

Near the rear boundary of subject site, a natural sandstone feature creates a near vertical drop of around 2 meters between proposed works and Tree #3.

Tree #3 'live roots' of a significant diameter (greater than 50mm in diameter) are very unlikely to be located at the base of the natural sandstone feature.

As such, we can support the viable retention for Tree #3 with intensive management. Should any significant diameter 'live root/s' (greater than 50mm in diameter), be exposed 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.

On this basis, Tree #3 requires intensive management (implies any manual excavation above the top of the sandstone feature) during any works phase.

Tree #3 is additionally specified to require TPZ temporary 'temporary metal mesh fencing panels with above ground supports'. (Builders Boundary fencing.)

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

**Tree #4: Phoenix canariensis** (Canary Island Date Palm)

Tree #4 is located within southwest rear corner of the subject site common boundary property, (63 Pacific Parade Dee Why). The proposed new works requires a minor breach to the TPZ total surface area for Tree #4.

Tree #4 is exempt by size refer to NBC (Warringah) DCP 2013.

By our calculation, the total TPZ surface area of Tree #4 is 162.72m<sup>2</sup>. The proposed new works equates to an approximate 3.06m<sup>2</sup> mathematical disturbance of total TPZ surface area for Tree #4. This equates to approximately 1.9% of total TPZ surface area, (defined by AS4970-2009 as a Minor Encroachment).

As such, Tree #4 requires minimal management during excavation works phase.

Tree #4 is additionally specified to require TPZ temporary 'temporary metal mesh fencing panels with above ground supports'. (Builders Boundary fencing.)

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

NBC policy when trees have been approved to be replaced by impacts for proposed works, is to replace those trees with new trees that at maturity will equal & preferably exceed the existing 'green footprint' previously provided (when in good health & vigour) by the discussed in detail.

In our opinion, the area adjacent to the subject site & public pathway common boundary is an ideal area for new tree specimens to be planted as part of the methodology for replicating the existing 'green footprint' assessed as being required to be replaced.

New trees are specified to be sourced from growers/suppliers whose stock is certified to meet the production benchmarks of the Australian Standard (AS23023-2015 Tree stock for landscape use). New trees are to be professionally planted & managed for a minimum of one coastal Sydney growing season (late August through early June).

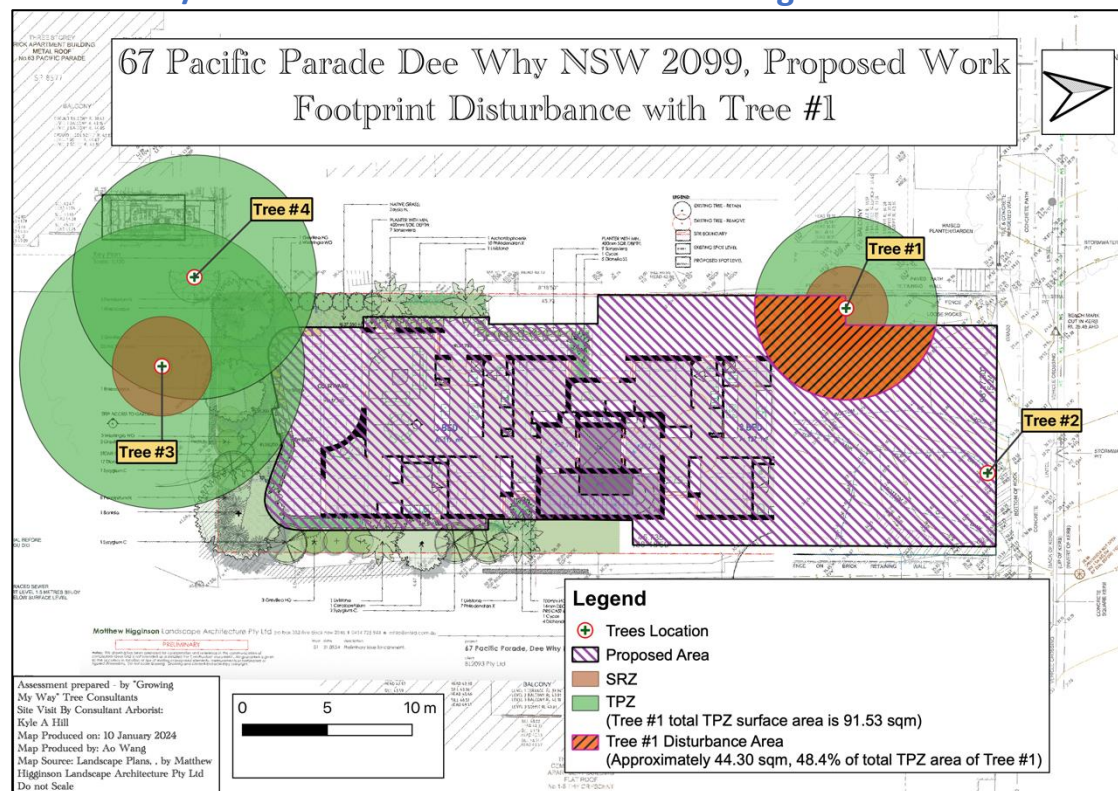
Tree removal can only be undertaken by suitably qualified practitioners (or those always supervised/instructed by such a person) in compliance with the provisions within the WorkSafe

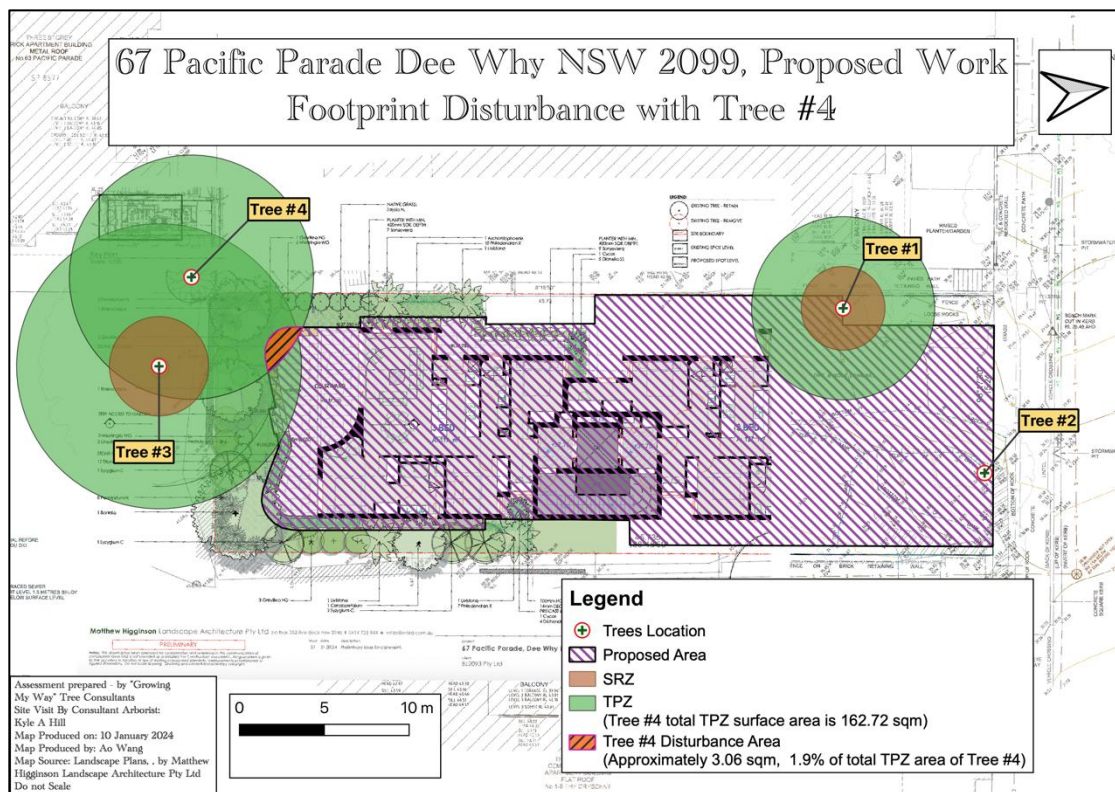
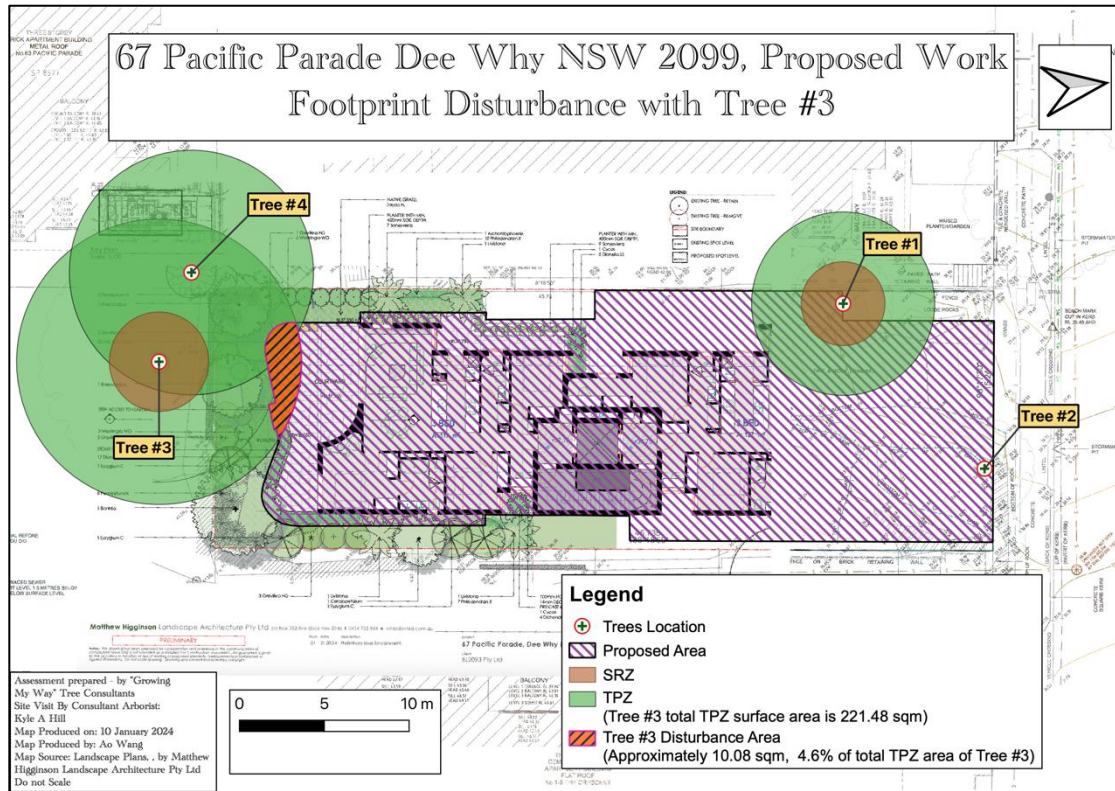
NSW, (old WorkCover NSW) "Amenity Tree Industry – Code of Practice 1998".

See the below potentially suitable to the subject site tree species list is provided within this document. (The list includes both Exotic & Australian Native species. It is not necessarily the only species potentially chosen/specified for the subject site. We additionally, acknowledge that species availability may have an impact on the preferred chosen species.)

- *Backhousia citriodora* (Lemon Scent Myrtle)
- *Banksia integrifolia* (Coast Banksia)
- *Banksia serrata* (Old Man Banksia)
- *Livistona australis* (Cabbage Tree Palm)
- *Melaleuca linariifolia* (Snow in Summer)
- *Murraya paniculata* (Orange Jessimine)
- *Michelia champaca* (Himalayan Magnolia)
- *Tristanopsis laurina* 'Luscious'™ (Watergum Cultivated Variety)
- *Waterhausea floribunda* 'Green Avenue'™ (Weeping Lilly Pilly)

## 5.2 TPZ / SRZ Tree 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 discussed adjoining property tree supported as able to be retained in a viable manner.
- Remove Tree #1, and Tree #2.



## Growing My Way Tree Services

- *TPZ installations (builders common boundary fencing) 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 is always intact.*
- *All demolition of existing infrastructure within any retained, managed & protected tree TPZ/SRZ is to be completed manually, especially when 'live roots' of a significant diameter belonging to any retained trees may be exposed. Any exposed 'live root' of a significant diameter must be covered until the required input & documentation from the retained Project Arborist can be obtained. Preferably, any 'live root' exposed would be covered in subject site topsoil. If this is not practicable, hessian or geotextile matting kept moist can be used until able to be covered & isolated from the proposed works.*
- *Any 'live roots' of any diameter exposed ideally should be covered & maintained until the retained Project Arborist can attend the site. We suggest, covering using subject site topsoil, damp hessian, or similar suitable geotextile matting to reduce any desiccation of 'live roots' by exposure to direct sunlight.*

### Post Completion of Works

- *Confirm the presence & condition of all required by the DA determination 'Conditions of Consent' individual trees 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.*

### New Tree Generic Specifications:

- *Replacement trees are to be sourced from growers/suppliers whose stock meets the production benchmarks of the Australian Standard (AS2303.2015 Tree stock for landscape use) or NATSPEC specification to produce quality container produced trees.*
- *New tree specimens are to be professionally planted & maintained for a minimum period of six (6) months once installed.*
- *New tree specimens are to be 45 litre container stock as the local environment has only shallow topsoil on top of sandstone bedrock. (A lack of natural topsoil depth may dictate smaller container replacement trees to be more appropriate.*

## 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 'KHill', is written over a light blue horizontal line.

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 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*', 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. & Breloer, 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.

