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Arboriculture Construction Impact & Management Statement for Development Application

December 2022

Site:	Lot 10 in DP 4814 65 Kangaroo Street MANLY, NSW
Client:	Gero & Joanne Farruggio c/- Volker Klemm Landscape Design PO Box 760 AVALON BEACH, NSW 2107 Phone: 61 403 193 337 Email: volker@volkerklemm.com
Author:	Kyle A Hill Registered Practising & Consulting Arborist Post Graduate Certificate in Arboriculture, Uni of Melb Diploma of Horticulture-Arboriculture TAFE, Grow SA Certificate of Horticulture, TAFE Certificate Advanced Tree Care TAFE Founder -Growing My Way Tree Services (1977) Member of International Society of Arboriculture Member of Arboriculture Australia

1 Summary

G & J Farruggio as the property owners via Volker Klemm Landscape Design commissioned the Growing My Way Tree Consultancy (from herein GMW) to prepare a *Construction Impact & Plan of Management Statement* to be linked to a soon a lodged (but on hold) *Development Application for 'Alterations/additions including swimming pool & landscape concept.'*

The site is known as 65 Kangaroo Street, Manly, (the subject site from herein).

This document only discusses one (1) protected subject site (rearyard) tree within five (5.00m) metres of the proposed works.

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

The discussed tree is presumed to have been a planted specimen. The subject site tree is confirmed to be an Australian Native species.

The discussed in detail tree provides a high degree of 'amenity value'. Technically, it is the only vegetation within the rear yard that is subject to the NCB 'Tree Management' provisions.

On this basis, the discussed in detail tree is supported to be retained, protected & managed as part of the current development upgrade concept.

The subject site & two (2) common boundary sites are developed to contain residential dwellings. All are locally listed 'Heritage Items' (I163).

Motor vehicle plus pedestrian access is via the front of subject site public road, Kangaroo Street.

The sole consent authority is the NBC.

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

- SixMaps (NSW department of lands) Property information website tool;
- Site & Concept Plans by Volker Klemm Landscape Design, Rev B & Rev D, dated October & November 2022;
- NBC "Tree Management Provisions";
- SEPP 'Vegetation in Non-Rural Areas' (25 August 2017) &
- NBC Heritage Conservation Area & Land Zoning LEP Maps.

The aim of this report is:

1. To confirm the viability of the discussed tree, relating to individual health, vigour & condition taking into account any impact foreseen by the proposed development.
2. Provide Site Specific 'Plan of Management' for the discussed in detail tree to be viably retained.

This document supports (relative to tree management) the proposal for development: as per the information provided by Volker Klemm Landscape Design & includes onsite observations by the author of this document. Kyle A Hill (AQF level 5 & 8 Practicing/Consulting Arborist is this document's author.

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2 Introduction

This report contains observations & recommendations intended to assist in the management of the one (1) tree assessed as necessary to be discussed.

This document only relates to the proposed development as per information provided to the documents author by Volker Klemm Landscape Design.

The one (1) tree assessed as required to be discussed is captured by the NBC 'Tree Management' provisions by species, size, location & the fact the subject site is part of a listed 'Heritage Item (I163). The discussed in detail tree is within five (5.00m) of the proposed works.

This document contains a Site Specific 'Preliminary Tree Plan of Management' that in our opinion allows the as discussed in detail tree to be viably retained, i.e., retained without any reasonable prediction that the works proposed will compromise its Useful life Expectancy.

We acknowledge & confirm to be familiar with the NBC *"Tree Management Provisions"* & the NSW legislated SEPP *"Vegetation in Non-Rural Areas, 25 August 2017"*.

We also acknowledge & confirm to be familiar with the old Manly Council *'Development Control Plan, 2013'* (from herein MCDCP). See Part 3, Sections 3.2 Heritage Considerations & 3.3 Landscaping plus Schedule 4 – Trees.

The sole consent authority is NBC.

The subject site is confirmed to be opposite a MCLEP, 2013 designated *"Heritage Conservation Area"*.

The subject site & common boundary sites are zoned R1, *General Residential*. The discussed tree is not known to be listed within any 'Significant Tree Register'.

Based on information provided & data collected onsite this document from a 'Tree Management Perspective' supports the proposed works with retention of the as discussed in detail tree..

3 Methodology

Assessment of the trees has been from ground level by eye, using *Visual Tree Assessment*^{*} (VTA) techniques developed by Claus Mattheck. The principles of VTA are explained in his widely-used reference book “*The Body Language of Trees* (1994)”.

Assessment includes:

- Tree’s current condition & likely future health. Species tolerance to root disturbance &/or development
- Likely future hazard potential to persons & property
- Tree’s amenity value, such as significance, screening & habitat.

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 terms
- Appendix B Tree Management & Protection Prior to & During Construction

^{*} **VTA–Visual Tree Assessment**, as referenced is a systematic inspection of a tree for indicators of structural defects that may pose a risk due to failure. Stage 1 is made from ground level (i.e. no aerial inspection is undertaken). An aerial inspection (Stage 2) is undertaken when there are easily identified visual indicators that suggest such an inspection is merited. Visual indicators are outlined within *The Body Language of Trees* (Mattheck & Breloer, 1994). VTA is a broadly used relatively standardised approach. More complex (can be invasive) diagnostic fault detection equipment may be recommended once visual indicators of potential defects are confirmed.

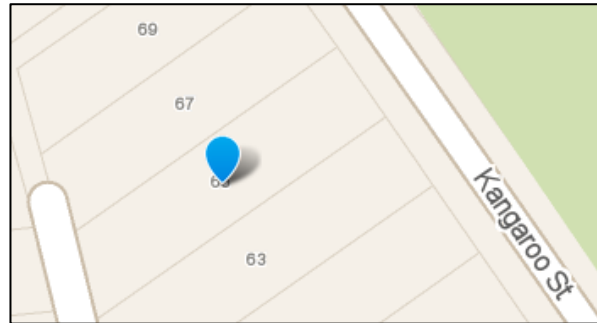
4 Observations

4.1 The Site

The report discusses in detail one (1) tree located within the rear yard of the subject site, (65 Kangaroo Street, Manly). The site is approximately 619.10m² in size. The site is linked to one (2) public road & two (2) developed residential lots.

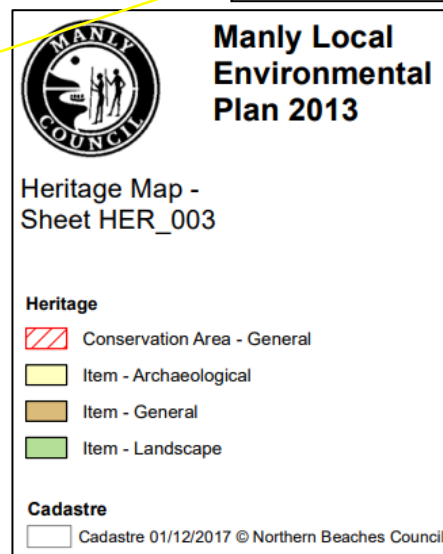
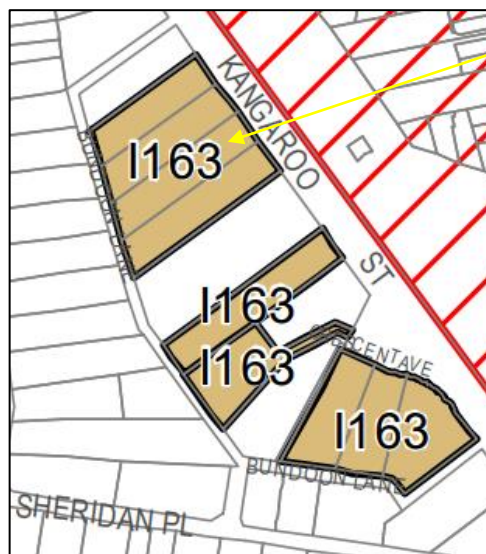
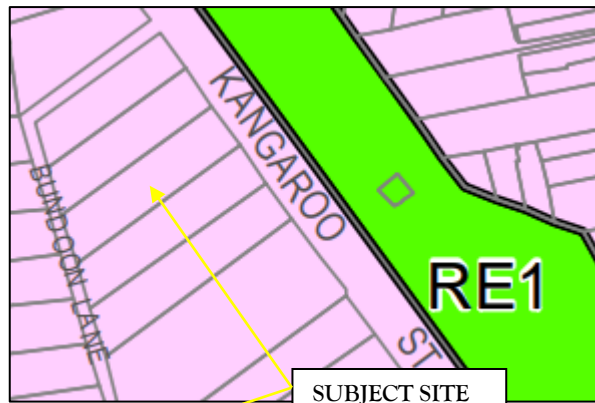
No Geotechnical issues are known to exist.

All nearby/adjacent private properties are developed & contain dwelling residences.



Map & Aerial photographs courtesy of Whereis.com. SixMaps.com & NBC website tools.

The subject site is confirmed to be Land Zoned R1 General Residential; it is also confirmed to be a locally listed Heritage Item (I163). The subject site is opposite a MC designated "Heritage Conservation Area".



4.2 The Proposal with Discussed Tree Location Identified

The proposal is for: *Alterations/Additions to include the construction of swimming pool & landscape concept.*

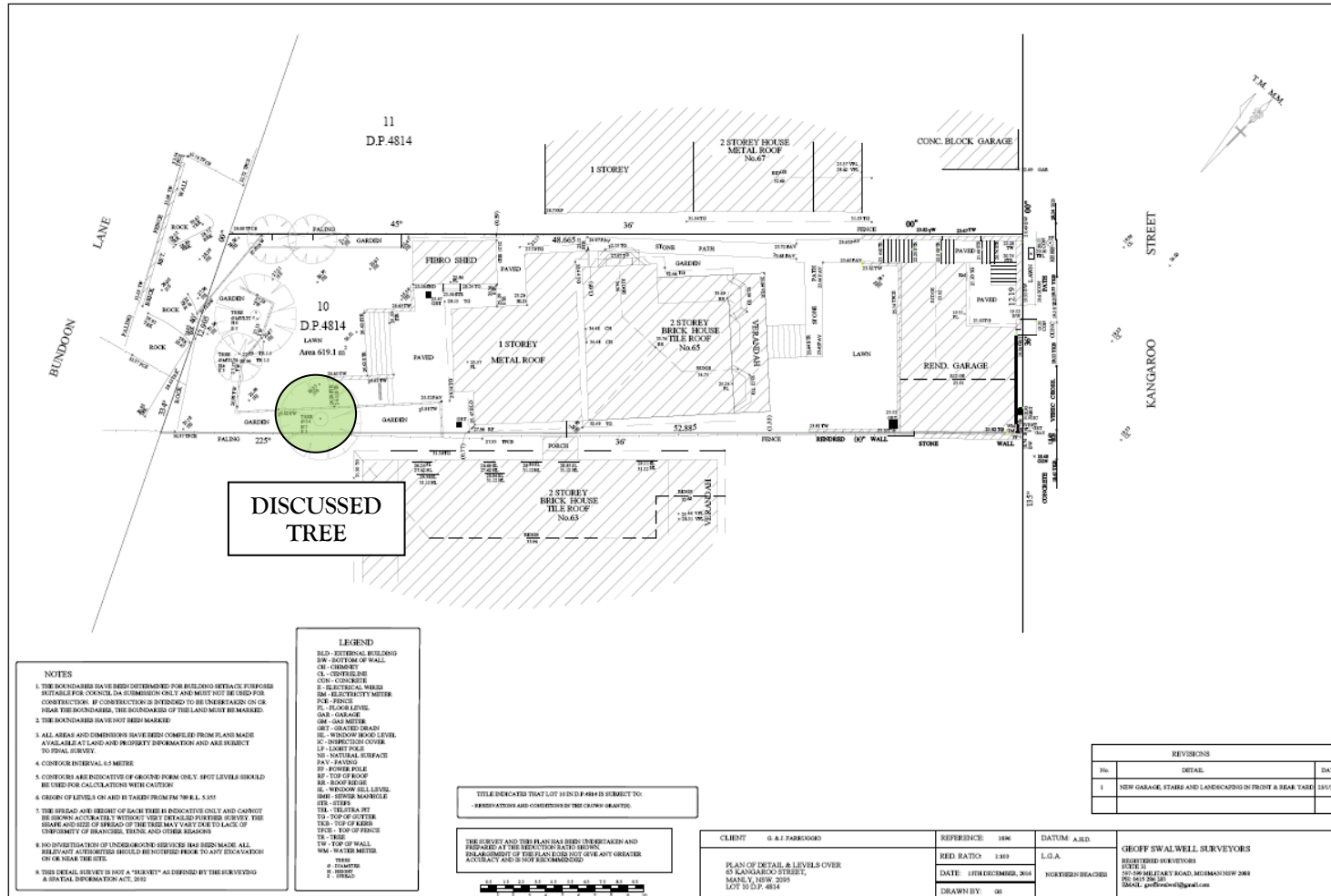
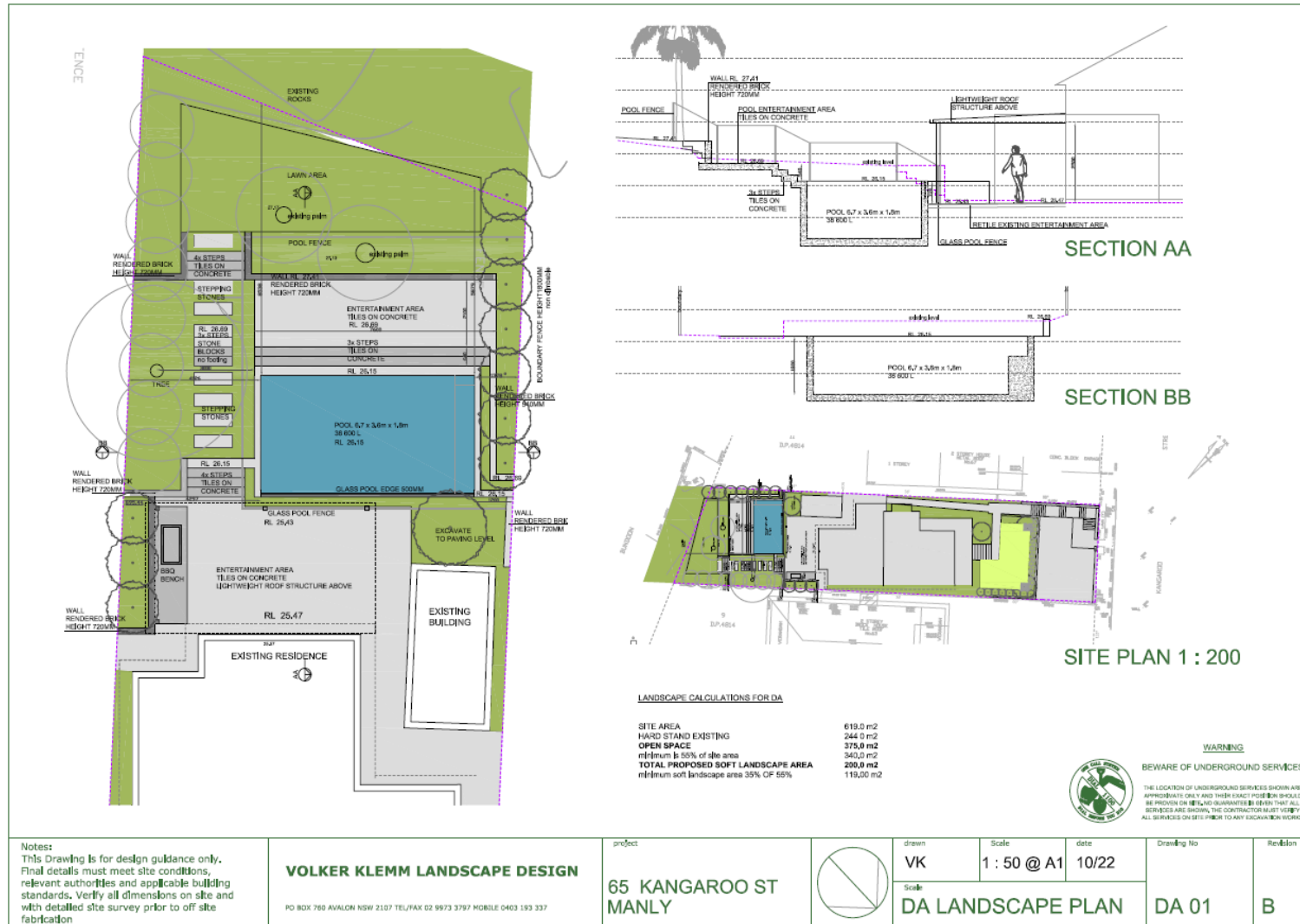
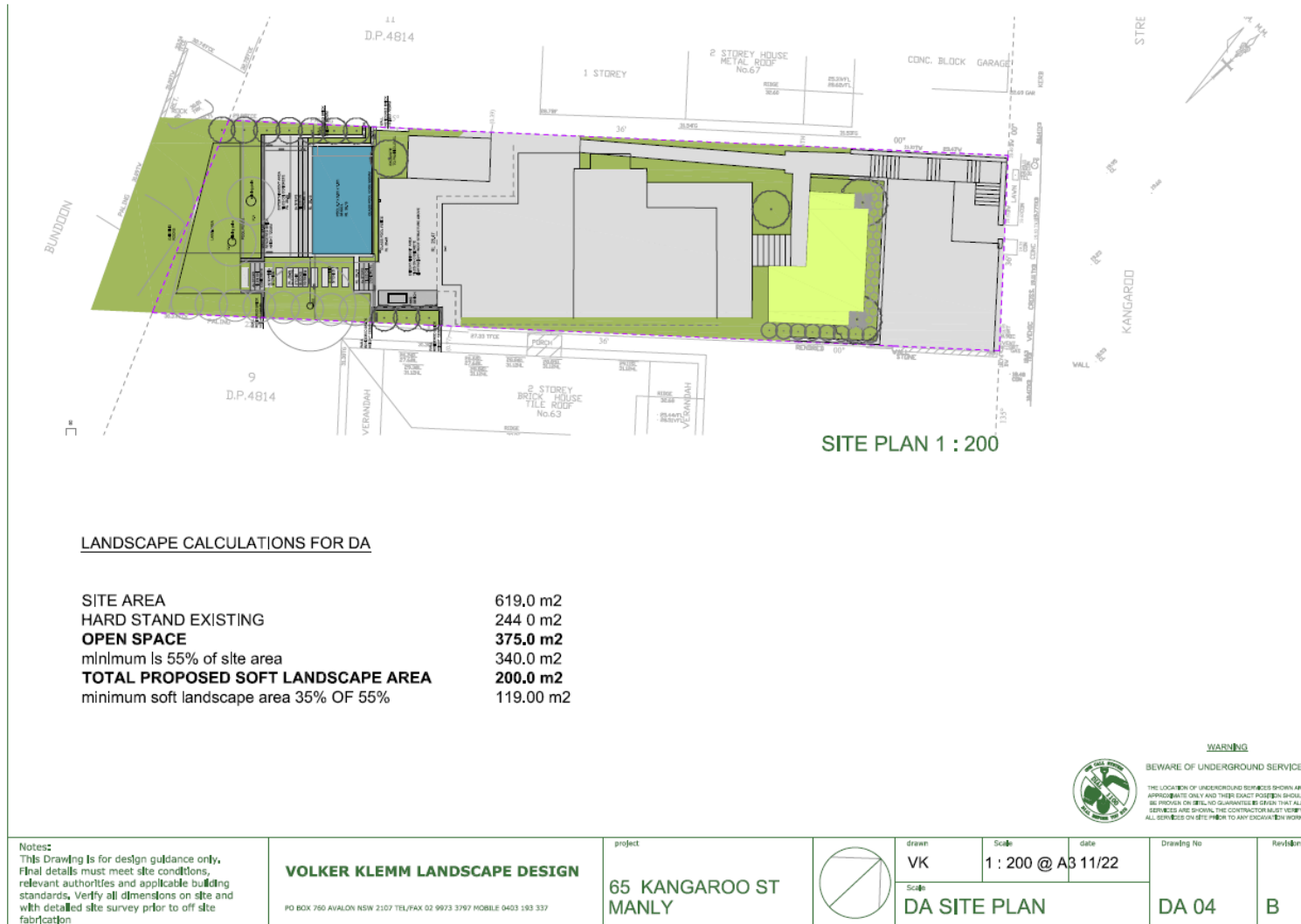


Figure 1: Site Survey with discussed tree location identified.





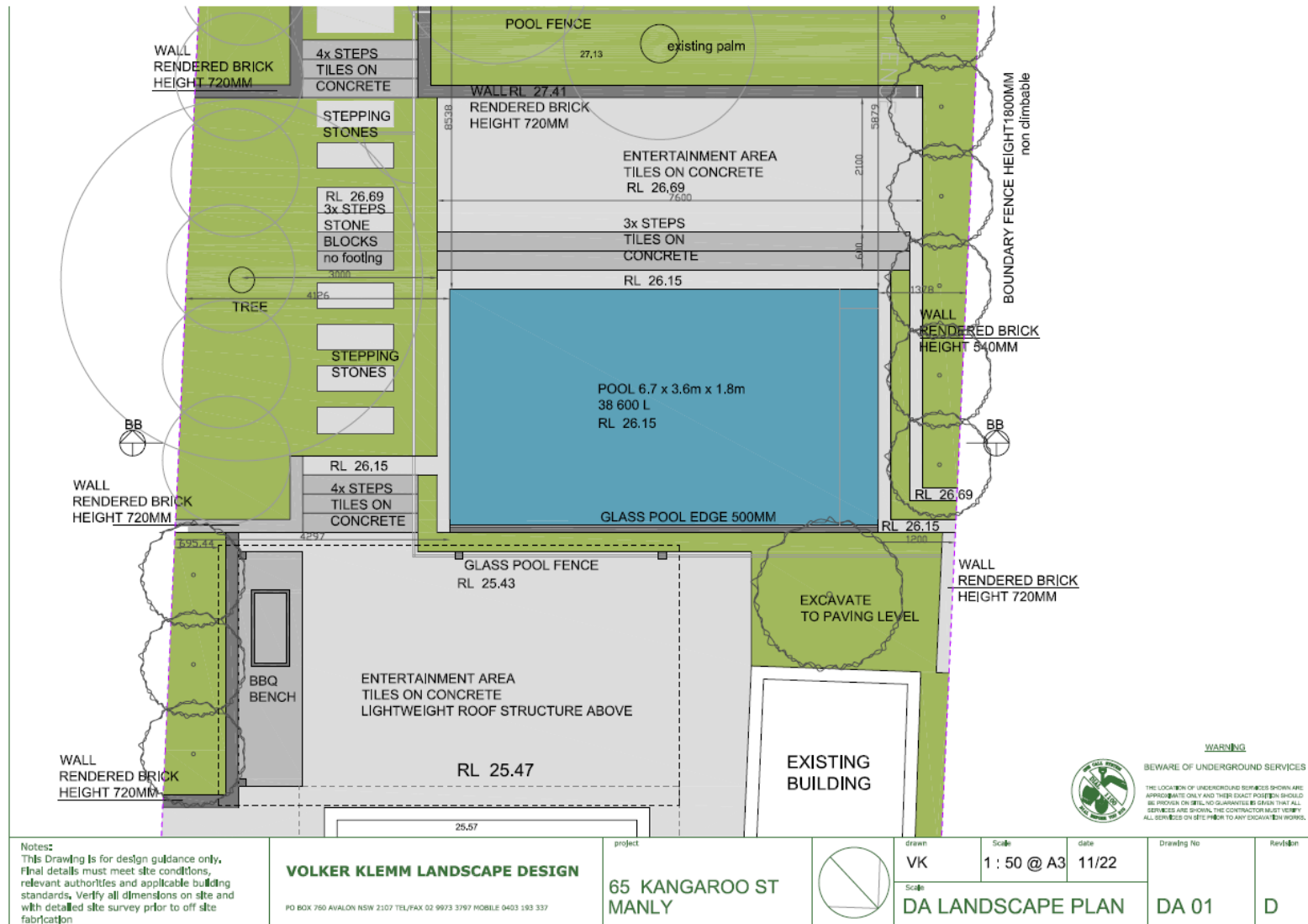


Figure 2: Pages 9, 10 & 11 contain Site Plans, Landscape Plan/Elevations/Sections.

4.3 *Tree & Site Images*







Discussed in
detail tree



Figure 3: Pages 9, 10 & 11 illustrates the subject site character, vegetation present & the discussed in detail tree.

4.4 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

	Identification	Height (m)	Crown (m)	DBH (m)	TPZ (m)	SRZ (m)	Age	Health/ Vigour	Retention/ Significance Values	Form/Habit	Comments
1	<i>Syzygium paniculatum</i> Lilly Pilly	<11.00	<8.50	0.48	5.76	2.47	M	Good & Good	High/ High	Typical.	<u>Retain, Manage & Protect:</u> See Site Specific “Tree Management Plan”

5 Discussion

The discussed tree, from herein Tree #1 is confirmed to be located within the rear yard of the subject site. See Below Aerial photograph of Monday 12 September 2022.

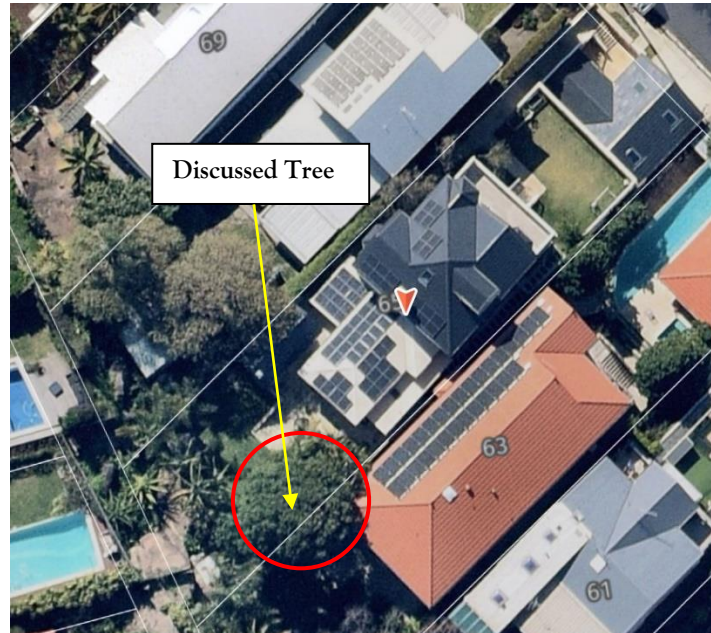


Figure 4: Aerial Photograph courtesy of NearMap®, dated Sunday, 24 January 2021.

Vegetation within the rear yard other than the discussed tree is either exempt by size or species from any NBC 'Tree Management Provisions' & as such is not required to be discussed.

This report acknowledges the *Australian Standard (AS4970-2009 Protection of trees on development sites)* as the guideline document for tree management prior to & during construction which any proposed works must be compliant with at all times. See Sections 3, 4 & 5 of the document for more detailed explanation of compliance requirements. The guidelines within this document apply to the proposed works relative to this tree being retained. It takes into consideration not only tree health & vigour but also surrounding infrastructure within the subject site.

At the time of site assessment, the standout rear yard feature was previous changes to natural soil levels.

The discussed tree as an Australian Native species is desirable to retain. The proposed works equate to an *Australian Standard (AS4970-2009 Protection of trees on development sites)* 'major encroachment'. The total TPZ surface area is 104.23m², works proposed disturbs an approximate 17% of total TPZ surface area.

The site as previously mentioned does not represent original soil levels, the best evidence being the discussed in detail tree has little to no measurable basal flare difference to DBH (DBH = 0.480m, base = 0.500m).

Works proposed require excavation within the TPZ, no change to existing ground level character is required within the as calculated Structural Root Zone (from herein SRZ) radial distance of 2.470m.

At the proposed distance from tree trunk centre for excavation 'live roots' of a significant diameter are likely to be exposed. Our interpretation is that these 'live roots' would have divided at least two (2) times at three (3.00m) metres from the tree trunk base centre.

On this basis, we are able to support the retention of the discussed in detail tree relative to the as proposed works not compromising its 'structural integrity' relative to stable anchorage. The discussed in detail tree is likely to receive its water from sandstone surfaces or between sandstone layers &/or vertical gaps. This is a reasonable assumption on the basis previous change to natural ground levels has not had any adverse impact to the discussed in detail tree relative to its Useful Life Expectancy.

Our support for the as proposed works (excavation) to proceed is conditional upon the line of excavation - three (3.00m) metres from the tree trunk centre - being manually excavated to allow for best practice pruning of any exposed 'live root' to be undertaken in compliance with the *Australian Standard (AS4373-2007 Pruning of amenity trees)*, see Chapter 9 *Root Pruning*.

The discussed in detail tree will also be specified to be isolated from the as proposed works by installation of a temporary metal mesh fencing panel fence with above ground supports as far from the tree trunk base centre.

6 Site Specific "Preliminary Tree Plan of Management"

- Install 'temporary metal mesh fencing panels with above ground supports' area parallel to the as proposed works as close to three (3.00m) metres from the tree trunk base centre as can be achieved. This installation is to be certified in writing with supporting photographic evidence prior to the commencement of any works as being as compliant with *AS4970-2009* provisions for the "*Protection of trees on development sites*".
- Any excavation within the Tree #1 calculated TPZ radial distances of (5.76m minimum) must be completed manually to a depth of 1.00m (1000mm) or to solid rock formations. Any 'live tree root' less than 50mm (0.05m) that may be exposed can be cleanly severed without the input of the sites retained Practicing/Consulting Arborist. Completed excavation must be documented in writing with supporting photographic evidence of no significant diameter (i.e., >50mm/0.05m) having been damaged.
- Any 'live tree root' greater than 50mm (0.05m) that may be exposed can only be managed with the input of the sites retained Project Arborist. Again, any completed excavation must be documented in writing with supporting photographic evidence of how the exposed 'significant diameter root' has been managed.
- No 'live branch' shrouding has been specified as by our assessment there is ample tree canopy/existing & proposed built form separation.
- Likewise, no pruning specifications have been included for the same reason as the above dot point.
- No builder's material of any description can be stored within the Tree Protection Zone radial distance (minimum 8.52m) on existing ground levels.

- Post completion of the project, the retained Project Arborist must document with supporting photographic evidence compliance with the *AS4970-2009 provisions* as well as any DA determination 'Conditions of Consent' specifications.

7 Conclusion

- Tree#1 as discussed is to be Retained, Protected & Managed. This is in this situation is considered to be a relatively straight forward task without any compromise to its ULE with implementation of the 'Site Specific "Tree Plan of Management"'

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 & AQF level 8 Registered with Arboriculture Australia (Reg #1884)
Practicing & Consulting Arborist]

8 Limitations on the use of this report

This report is to be utilised in its entirety only. Any written or verbal submission, report or presentation that includes statements taken from the findings, discussions, conclusions or recommendations made in this report, may only be used where the whole of the original report (or a copy) is referenced in, & directly attached to that submission, report or presentation.

9 Assumptions

Care has been taken to obtain information from reliable resources. All data has been verified insofar as possible; however, 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.

10 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

11 Selected Bibliography

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

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

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	<i>Immature</i> refers to a refers to a well-established but juvenile tree
	SM	<i>Semi-mature</i> refers to a tree at growth stages between immaturity & full size
	M	<i>Mature</i> refers to a full sized tree with some capacity for further growth
	LM	<i>Late Mature</i> refers to a full sized tree with little capacity for growth that is not yet about to enter decline
	OM	<i>Over-mature</i> refers to a tree about to enter decline or already declining
	LS	<i>Live Stag</i> refers to a tree in a significant state of decline. This is the last life stage of a tree prior to death

Hth & Vig Health & Vigour

Health refers to the tree's form & growth habit, as modified by its environment (aspect, suppression by other tree, soils) & the state of the scaffold (ie. trunk & major branches), including structural defects such as cavities, crooked trunks or weak trunk/branch junctions. These are not directly connected with health & it is possible for a tree to be healthy but in poor condition/vigour. **Classes are:**

Excellent (E), V. Good (VG), Good (G), Fair (F), Declining (D), Poor (P), Very Poor (VP)

Vigour refers to the tree's growth rate/condition as exhibited by the crown density, leaf colour, presence of epicormic shoots, ability to withstand disease invasion & the degree of dieback. **Classes are:**

Excellent (E), V. Good (VG), Good (G), Fair (F), Declining (D), Poor (P), Very Poor (VP)

Useful Life Expectancy (ULE) refers to any individual tree specimen's potential life expectancy (viability) based on VTA assessment, three groups are described,

Short = Less than Fifteen years

Medium = Fifteen – Twenty-five years

Long = more than Twenty-five 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 of 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 affect on both the tree's health & structural integrity.

Point of Attachment refers to the point at which a stem/branch etc join.

Dead wood refers to any whole limb that no longer contains living tissues (eg live leaves &/or bark). Some dead wood is common in a number of tree species.

Die back refers to the death of growth tips/shoots & partial limbs. Die back is often an indicator of stress & tree health.

One dimensional crown refers to branching habits & leaves that extend/grow in One direction only. There are many causes for this growth habit such as competition & pruning.

Crown Foliage Density of Potential (CFDP) refers to the density of a tree's crown in relation to the expected density of a healthy specimen of the same species. CFDP is measured as a percentage.

Epicormic growth/shoots refers to growth/shoots that are/have sprouted from axillary buds within the bark. Epicormic growth/shoots are a survival mechanism that often indicates the presence of a current or past stress even such as fire, pruning, drought etc.

Over Head Powerlines (OHP) Over head electricity wiring.

LVOHP Low Voltage Over head Powerlines

HVOHP High Voltage Over head Powerlines

ABC Aerial Bundled Cable

Appendix B – 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 hand held 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.

