AURA TREE SERVICES pty ltd

"We go out on a limb for you"

Arboriculture Assessment & Management Statement

for lodged Development Application (2019/0377)

June 2019

Site:	**Lot 11 in DP 12186** **82 Innes Road** **MANLY VALE, NSW**
Client:	**L Lum / T Hogan** **82 Innes Road** **MANLY VALE, NSW** **Email:** tomhogan79@gmail.com
Commissioned:	**Tom Hogan**
Author:	**Kyle A Hill** Registered (Arb Aus #1884) Practising & Consulting Arborist Post Graduate Certificate in Arboriculture, Melbourne University 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

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1 Summary

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

The site is within the *Northern Beaches Council (*from herein *NBC)* local government area.

NBC is the sole consent authority for the soon to be lodged DA submission.

Relative to tree management this document focuses on three (3) trees. By site survey/drawings provided one (1) discussed tree is located within the private lot adjoining the subject site, (84 Innes Road). The other two (2) trees are located within the Innes Road roadside reserve.

It is our opinion that all discussed trees are able to be viably retained, (i.e. without any compromise to their present Useful Life Expectancy.

The site is not listed within the *NBC (old Warringah Council) 'Local Environment Plan, 2011' (*from herein *LEP) as being part of any 'Heritage Conservation Area'.* The subject site rear boundary links to a listed "*Heritage Item*" (I 87). No trees discussed are species within any *endangered ecological community.* (*See Part 3 of Schedule 1within the Threatened Species Conservation Act*.) The discussed trees are not listed within any known "*significant tree register*".

From a *Local Government Tree Management* perspective, all three (3) discussed trees are subject to the provisions within the *NBC (old Warringah Council) 'Development Control Plan, 2011' (from herein DCP) & the SEPP 'Vegetation in Non Rural Areas, 25 August 2017'*

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

This scope of this document includes:

- *NBC DA Tracking webtool for as lodged documents & communications from NBC,*
- *general site & tree assessment,*
- *tree's condition assessment (i.e. present condition & Useful Life Expectancy),*
- *perusal of as lodged Architectural Plans/Elevations by Anderson Architecture Pty Ltd, drawing #DA00 thru DA20 & #DA24, dated June 2019,*
- *Site Survey by CMS Surveyors Pty Ltd, dated 21 February 2018 &*
- *provision of a "Site Specific Plan of Management".*

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

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2 Introduction

NBC is the *local government area* primary consent authority relative to development & tree management for the discussed & surrounding properties.

The discussed trees are from two (2) genera of different species. None are confirmed to be locally indigenous tree species. The two (2) roadside reserve discussed trees are assessed as being planted specimens, the private lot tree discussed is likely 'bird sown'.

Drawings & Site Survey provided confirm the discussed tree to be accurate.

The *Warringah DCP* & *NBC* 'Tree Management Provisions/Guidelines' plus the *SEPP 'Vegetation in Non Rural Areas, 25 August 2017* are acknowledged to be the management criteria required to be addressed.

The subject site is Zoned *R2* "*Low Density Residential*" (*old Warringah Council LEP, 2011, Land Zoning Map*–Sheet LZN_010).

Trees discussed are not assessed as being potentially compromised by the DA proposal & as such are not proposed to be removed.

This document supports the proposed *DA* submission as lodged based on information supplied by our client, (Architectural Plans/Elevations by Anderson Architecture Pty Ltd, dated June 2019).

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

3 Methodology

Assessment of the trees has been by eye from ground level & aerial photography from multiple sources. Implementation of the *Visual Tree Assessment (VTA) Stage 1 principles* developed by Claus Mattheck, et.al is the assessment method & tool chosen for this site. The principles of *VTA* Stage 1 are explained & illustrated in the publication *The Body Language of Trees (1994).*

Assessment includes:

- *Tree's current condition & likely future health.*
- *Perusal of NBC (old Warringah Council) "Tree Management Provisions". Perusal of NBC (old Warringah Council) "Endangered Ecological Community listing" information.*
- *Perusal of NBC communication/responses to the as lodged DA submission*
- *Review of as lodged Plans, Elevations & Sections.*
- *Discussion of environment where the trees are growing. Tree's amenity & retention value, such as significance, screening & habitat.*

No root tissue analysis, soil testing, '*Resistograph*'®, '*ArborTom*'® assessment or similar was undertaken.

See the following Appendices for further information:

- *Appendix A Glossary of Common Arboreal terms*
- *Appendix B Site Survey*
- *Appendix C Protection/Management Prior to & During Construction*

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

4 Observations

4.1 The Site

By NB website 'Property Search tool the site area is 883.00m^2 by calculation.

The site is developed to contain a single dwelling residence. The subject site & adjoining common boundary sites are zoned either R2 'Low Density residential', the rear common boundary site is a listed 'Heritage Item'.

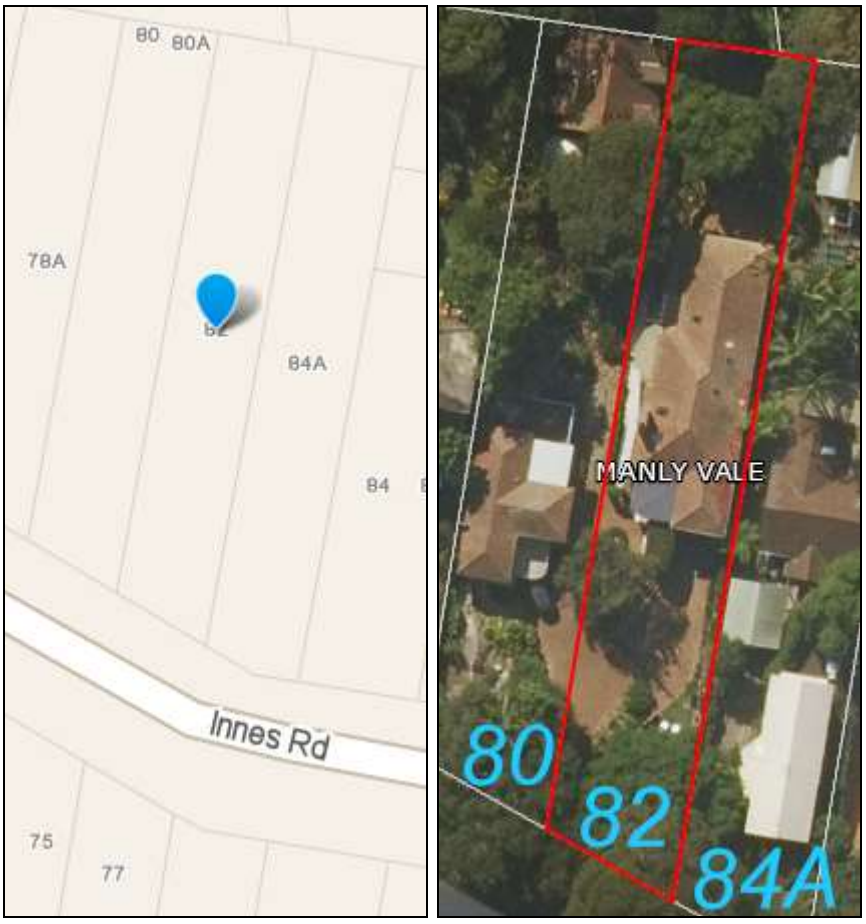


***Figure 1*: Location Map courtesy of NBC website tool & Whereis.com website tool.**

Of the three (3) discussed trees, one (1), the larger of the two (2) Eucalypts (roadside reserve) trees is estimated as being long term (>40 years) established, the second (smaller) tree is unlikely to be in excess of thirty (30) years old, the likely 'bird sown' tree is estimated to be less than twenty (20) years old. The site is NOT within an area noted to be a classified area of "Wildlife Corridor" significance. The discussed trees are not listed on any known "*significant tree register*".

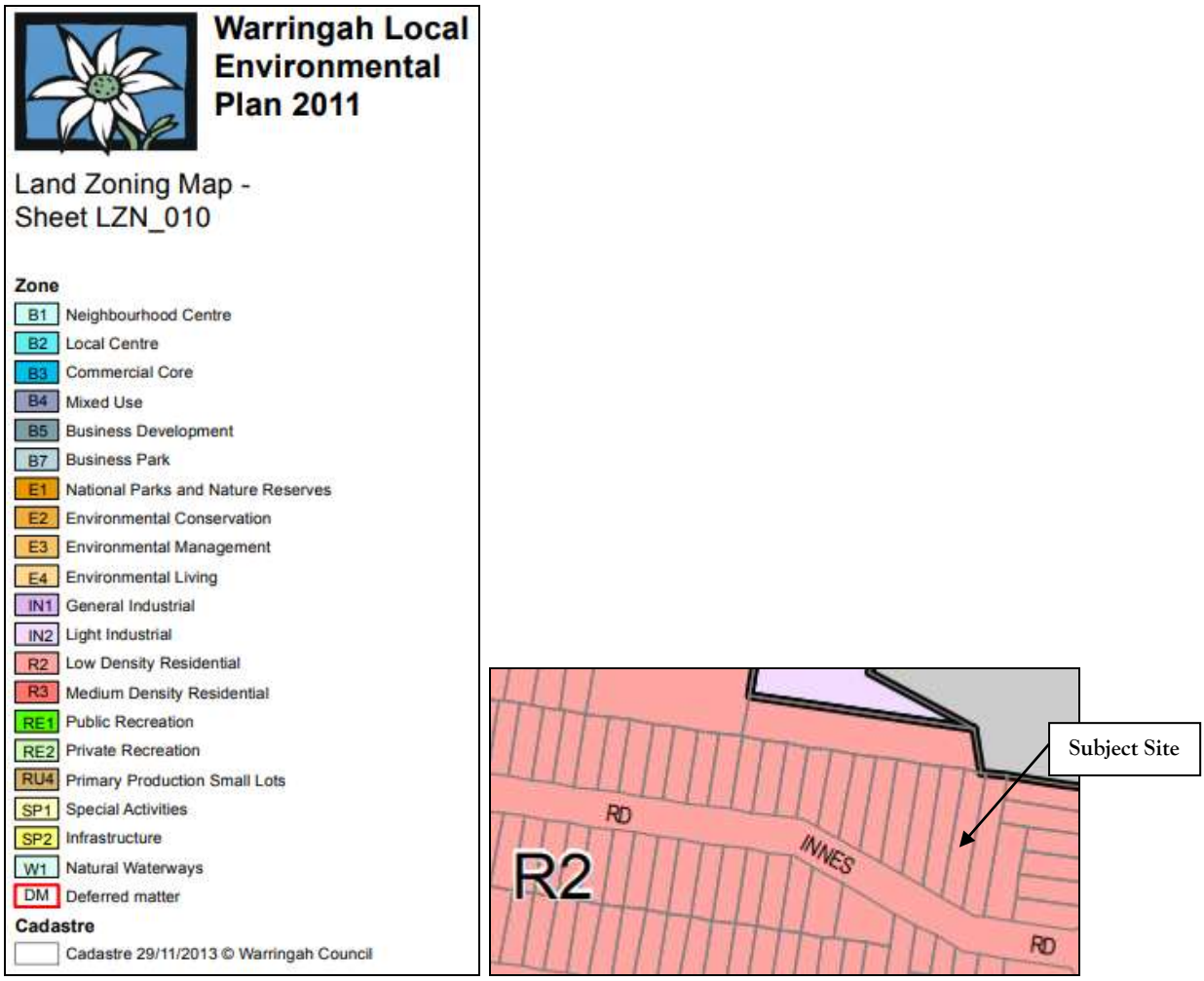
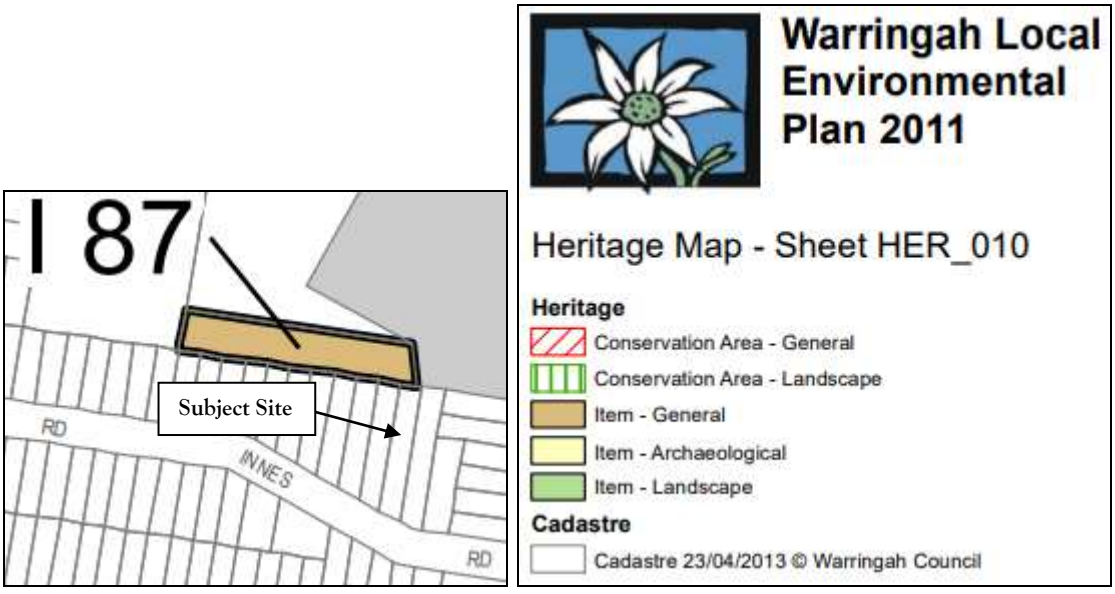
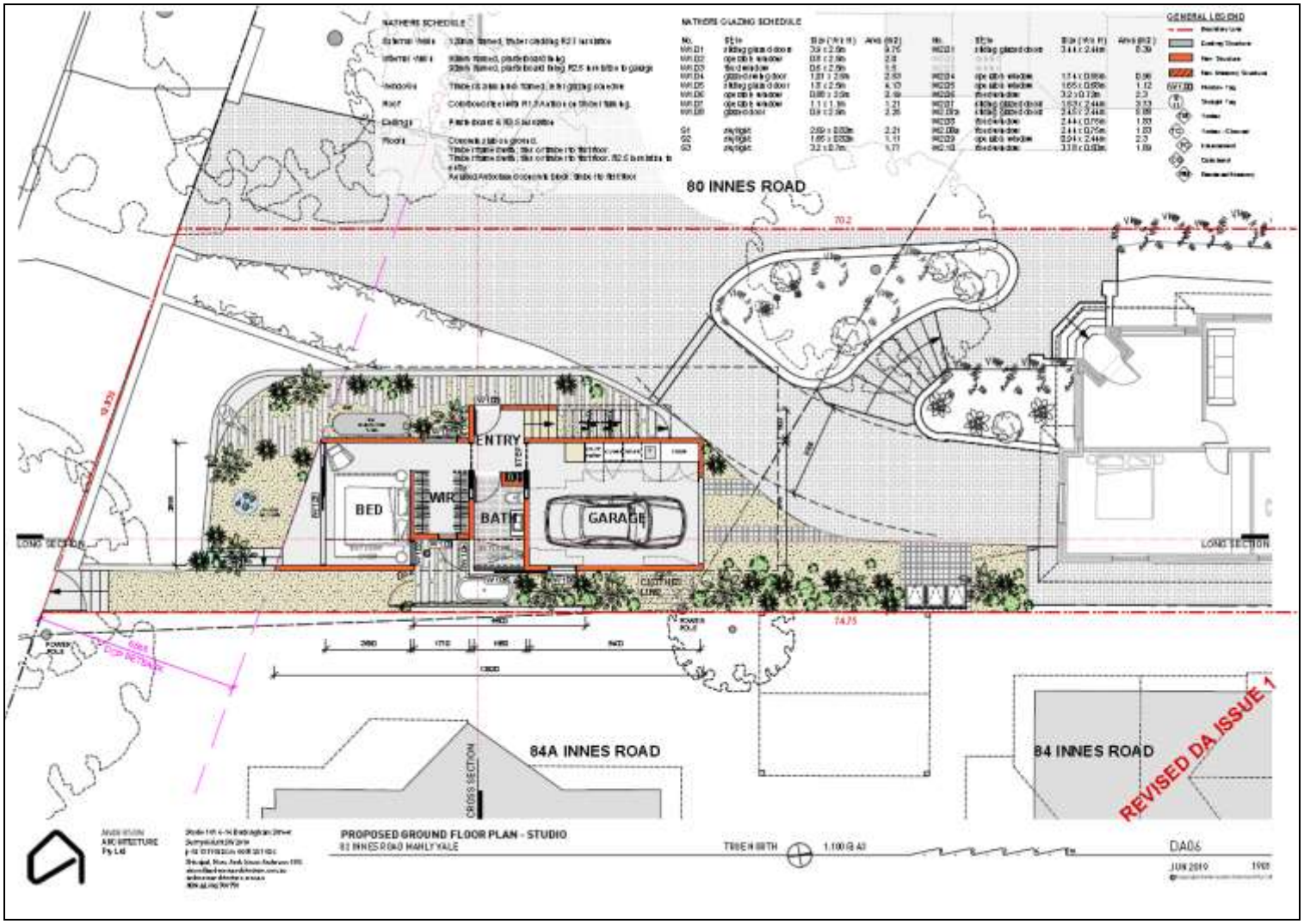
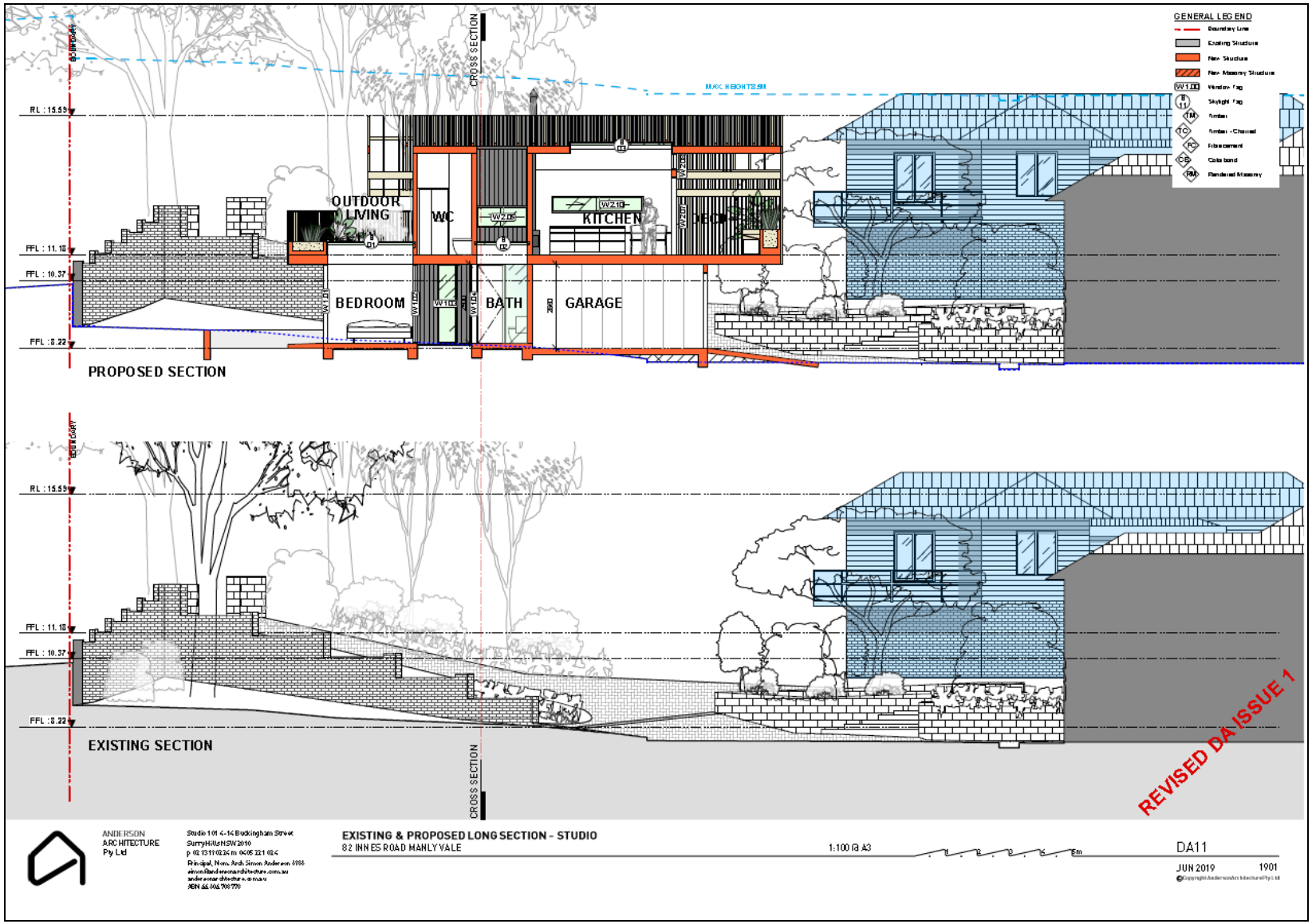


***Figure 2*: Confirms Land Zoning classification as being R2 'Low Density Residential'.**



4.2 The Proposal

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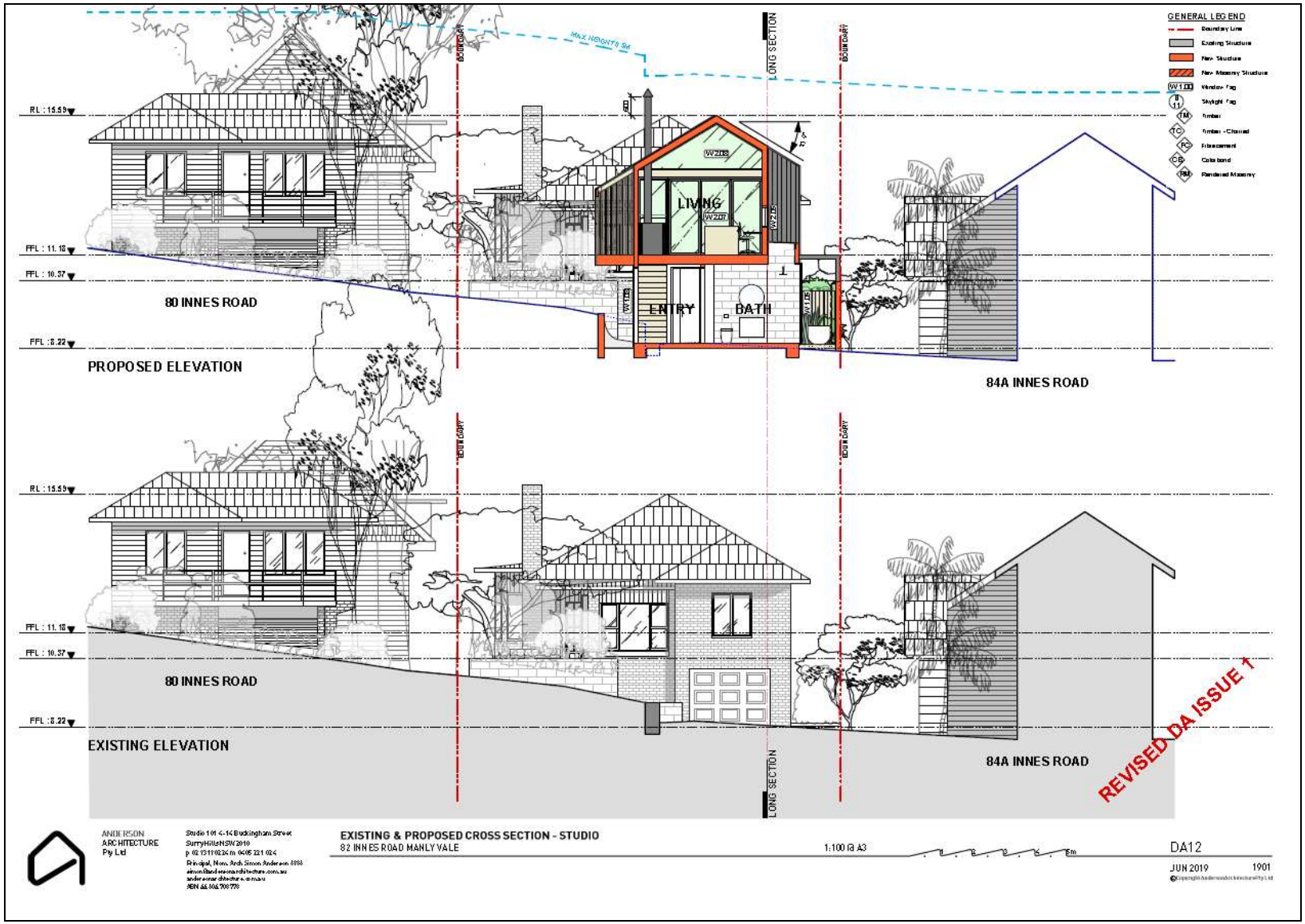
Boundary Line
Existing Structure
New Structure
New Masonry Structure
Window Tag
Skylight Tag
Timber
Timber - Charred
Fibrecement
Colorbond
Rendered Masonry
BOUNDARY
CROSS SECTION
MAX HEIGHTS.6M
RL : 15.59
FFL : 11.18
FFL : 10.37
FFL : 8.22
OUTDOOR LIVING
WC
KITCHEN
BEDROOM
BATH
GARAGE
PROPOSED SECTION
EXISTING SECTION
REVISED DA ISSUE 1
ANDERSON ARCHITECTURE Pty Ltd
Studio 101 4-14 Buckingham Street
Surry Hills NSW 2010
EXISTING & PROPOSED LONG SECTION - STUDIO
82 INNES ROAD MANLY VALE
1:100 @ A3
DA11
JUN 2019
1901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LONG SECTION
BOUNDARY
MAX HEIGHT 8.5M
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FFL : 10.37
FFL : 8.22
80 INNES ROAD
PROPOSED ELEVATION
LIVING
ENTRY
BATH
84A INNES ROAD
EXISTING ELEVATION
REVISED DA ISSUE 1
ANDERSON ARCHITECTURE Pty Ltd
EXISTING & PROPOSED CROSS SECTION - STUDIO
82 INNES ROAD MANLY VALE
1:100 @ A3
DA12
JUN 2019
1901


GENERAL LEGEND
BOUNDARY
LONG SECTION
RL : 15.59
FFL : 11.18
FFL : 10.37
FFL : 8.22
80 INNES ROAD
84A INNES ROAD
PROPOSED ELEVATION
EXISTING ELEVATION
REVISED DA ISSUE 1
ANDERSON ARCHITECTURE Pty Ltd
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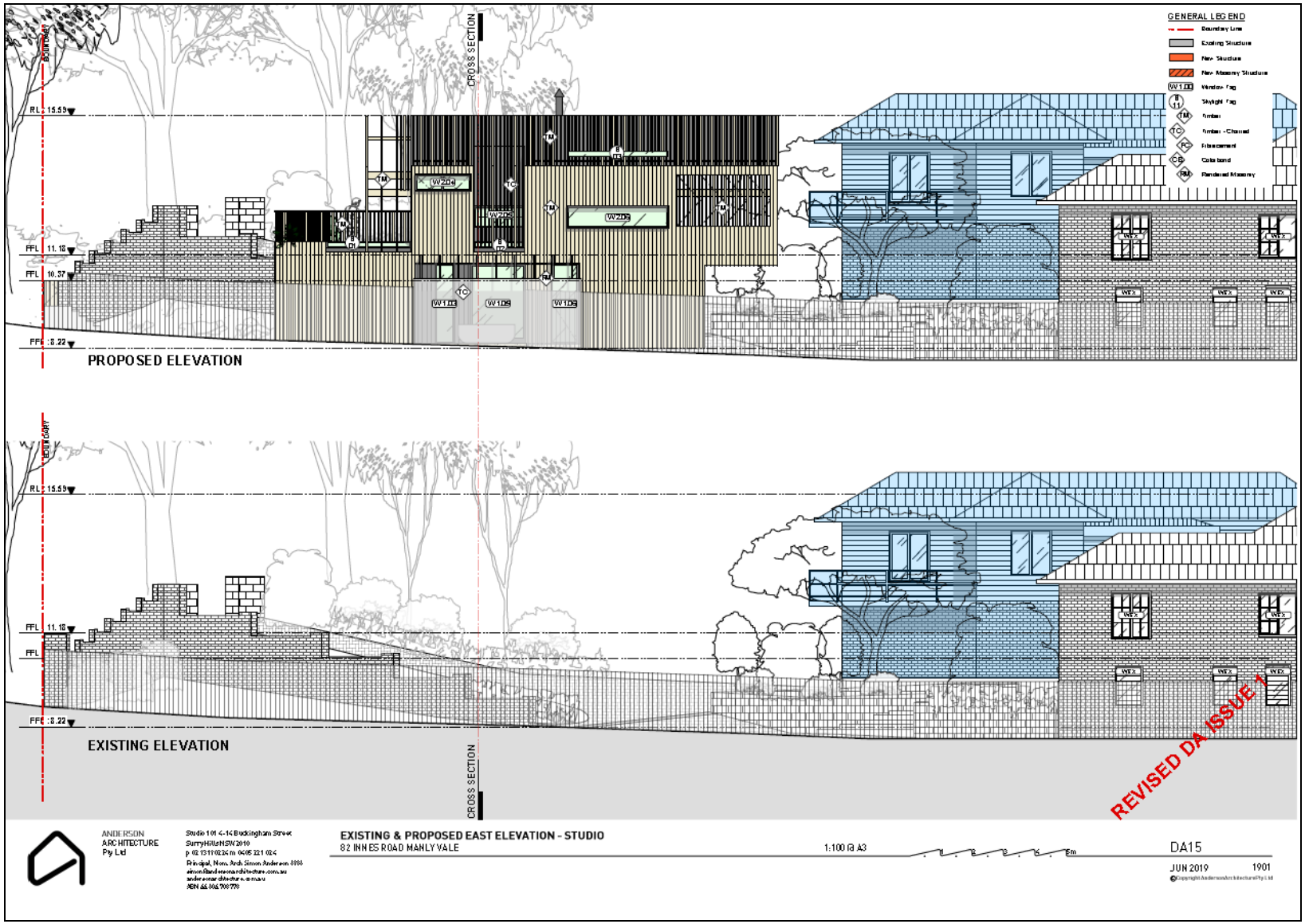
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CROSS SECTION
RL : 15.59
FFL 11.18
FFL 10.37
FFL : 8.22
PROPOSED ELEVATION
EXISTING ELEVATION
REVISED DA ISSUE 1
ANDERSON
ARCHITECTURE
Pty Ltd
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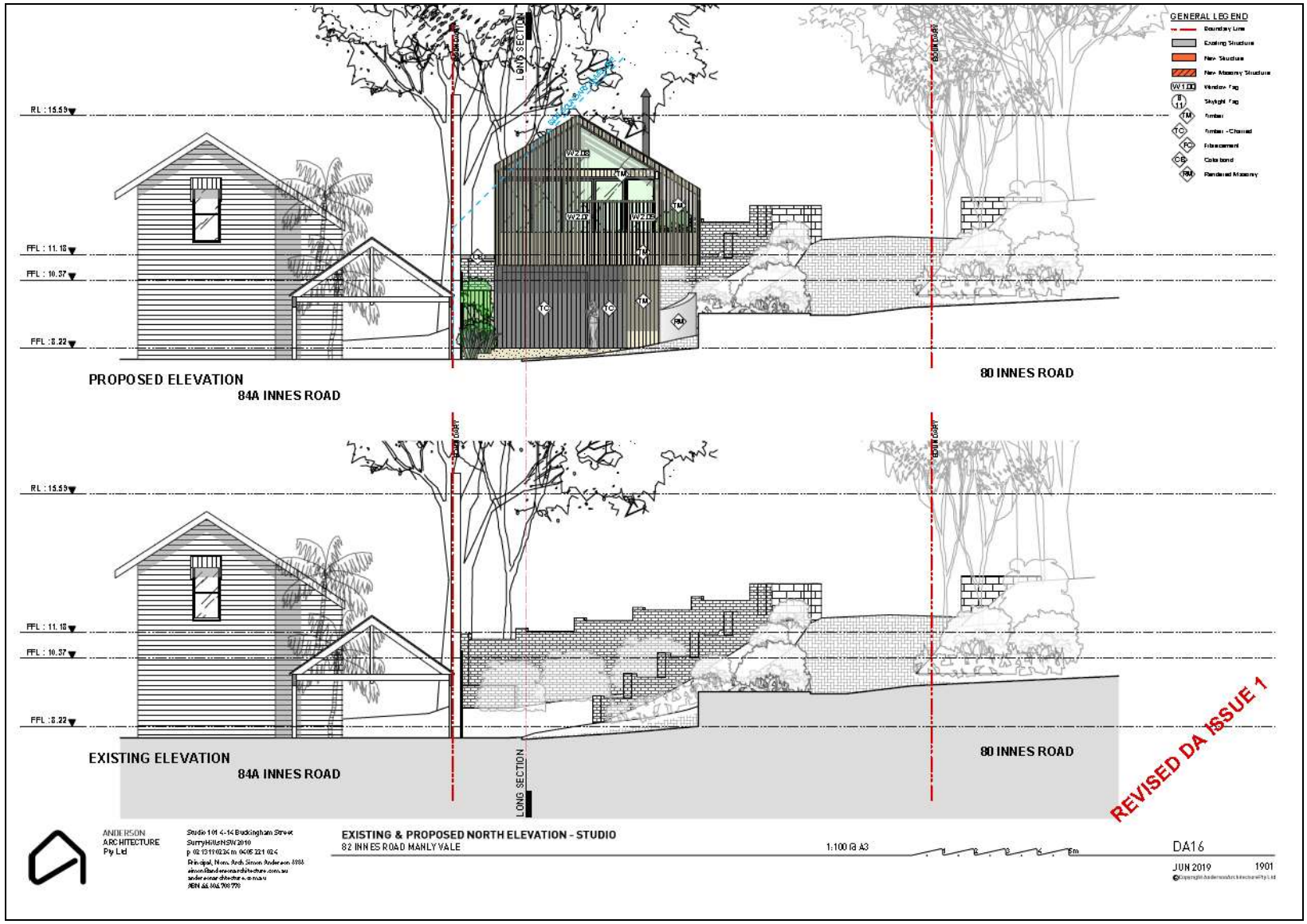
1:100 @ A3
DA15
JUN 2019
1901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Boundary Line
Existing Structure
New Structure
New Masonry Structure
Window Tag
Skylight Tag
Timber
Timber - Charred
Fibrecement
Colorbond
Rendered Masonry
RL : 15.59
FFL : 11.18
FFL : 10.37
FFL : 8.22
PROPOSED ELEVATION
84A INNES ROAD
80 INNES ROAD
LONG SECTION
EXISTING ELEVATION
84A INNES ROAD
80 INNES ROAD
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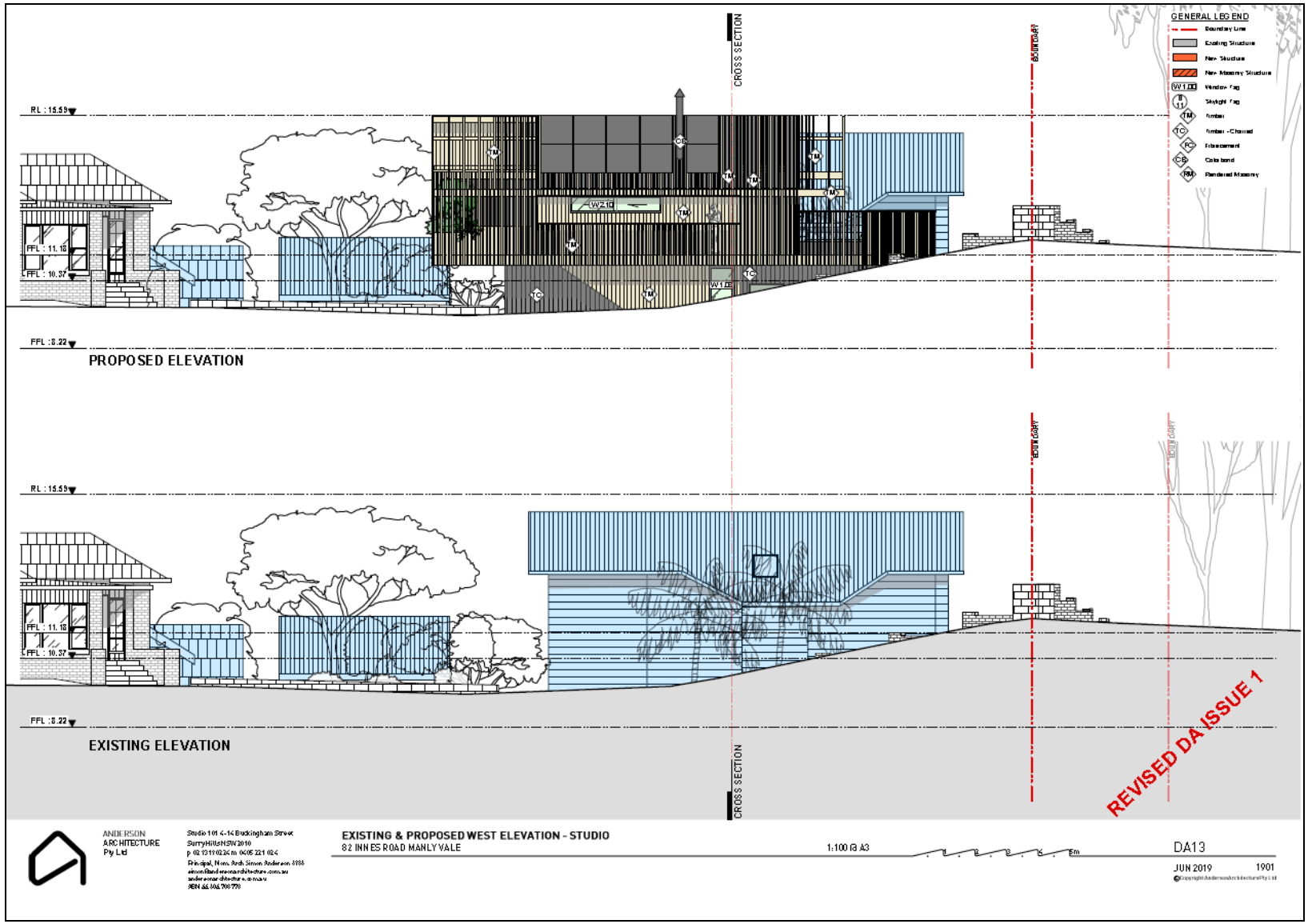
DA16
JUN 2019
1901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BOUNDARY
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ANDERSON
ARCHITECTURE
Pty Ltd
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DA13
JUN 2019
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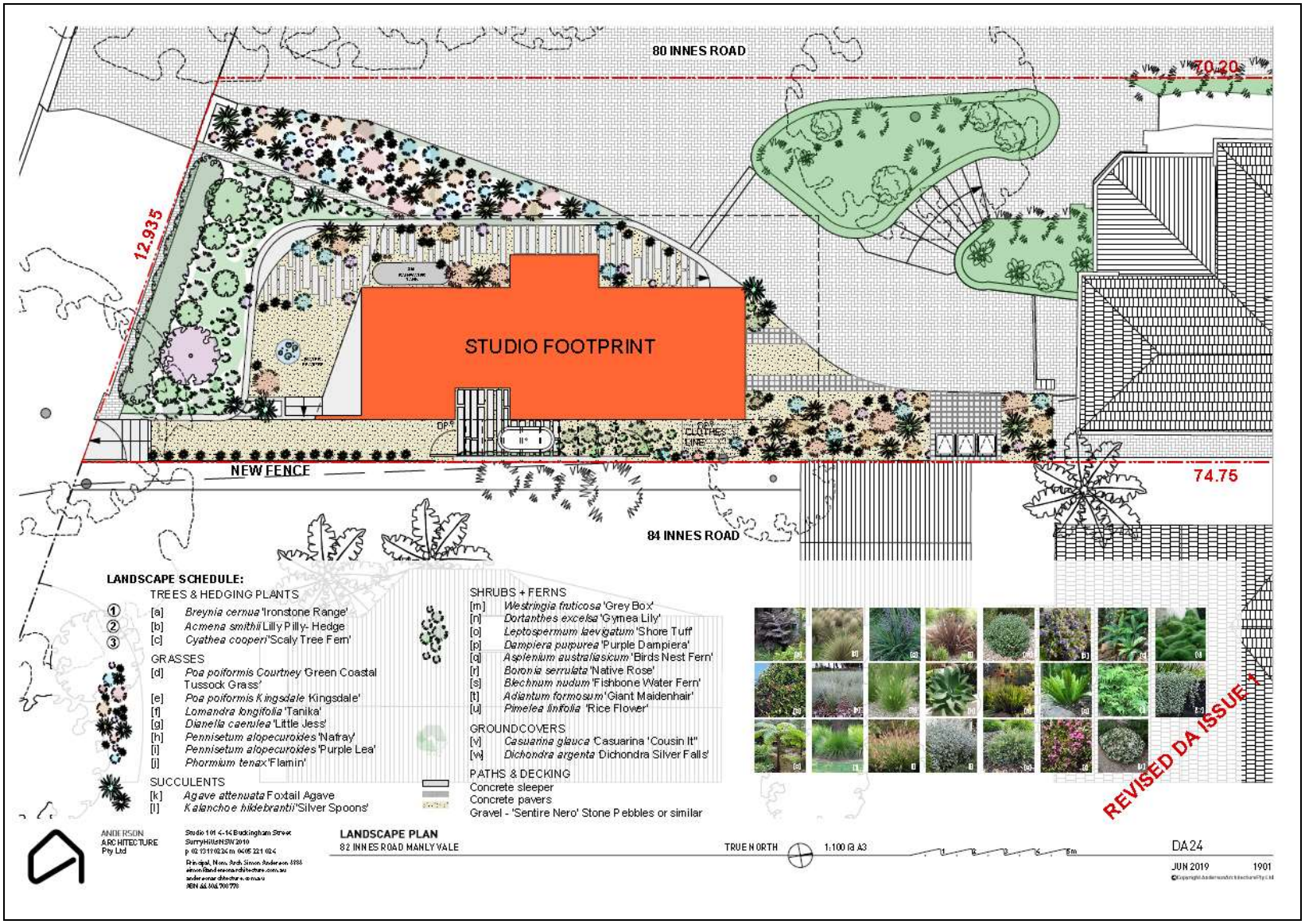

80 INNES ROAD
70.20
12.935
STUDIO FOOTPRINT
CLOTHES LINE
NEW FENCE
74.75
84 INNES ROAD
LANDSCAPE SCHEDULE:
TREES & HEDGING PLANTS
① [a] Breynia cernua 'Ironstone Range'
② [b] Acmena smithii Lilly Pilly- Hedge
③ [c] Cyathea cooperi 'Scaly Tree Fern'
GRASSES
[d] Poa poiformis Courtney 'Green Coastal Tussock Grass'
[e] Poa poiformis Kingsdale 'Kingsdale'
[f] Lomandra longifolia 'Tanika'
[g] Dianella caerulea 'Little Jess'
[h] Pennisetum alopecuroides 'Nafray'
[i] Pennisetum alopecuroides 'Purple Lea'
[j] Phormium tenax 'Flamin'
SUCCULENTS
[k] Agave attenuata Foxtail Agave
[l] Kalanchoe hildebrantii 'Silver Spoons'
SHRUBS + FERNS
[m] Westringia fruticosa 'Grey Box'
[n] Dortanthes excelsa 'Gymea Lily'
[o] Leptospermum laevigatum 'Shore Tuff'
[p] Dampiera purpurea 'Purple Dampiera'
[q] Asplenium australiasicum 'Birds Nest Fern'
[r] Boronia serrulata 'Native Rose'
[s] Blechnum nudum 'Fishbone Water Fern'
[t] Adiantum formosum 'Giant Maidenhair'
[u] Pimelea linifolia 'Rice Flower'
GROUNDCOVERS
[v] Casuarina glauca 'Cousin It'
[w] Dichondra argenta 'Dichondra Silver Falls'
PATHS & DECKING
Concrete sleeper
Concrete pavers
Gravel - 'Sentire Nero' Stone Pebbles or similar
REVISED DA ISSUE
ANDERSON ARCHITECTURE Pty Ltd
LANDSCAPE PLAN
82 INNES ROAD MANLY VALE
TRUE N ORTH
1:100 @ A3
DA24
JUN 2019
1901

4.3 The Trees

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

Trees Recommended for removal relative to site characteristics	Trees Recommended for protection & retention
Exempt species	Trees retainable but of low amenity/significance

	Identification	Height (approx in m)	Crown (approx in m)	DBH (approx in m)	TPZ (approx in m)	SRZ (approx in m)	Age	Health/ Vigour	Retention & Significance Value	Structure/ Form	Comments
1	***Eucalyptus haemastoma*** *Small Leaf Scribbly Gum*	<23.00	<18.00	0.75	9.00	3.00	M	Fair-Good/ Fair-Good	High/High	Typical	**Retain, Protect & Manage: Tree is considered as able to be retained without compromise to its Useful Life Expectancy.**
2	***Eucalyptus* spp.** *Gum Tree*	<23.00	<8.00	0.43	5.30	2.40	OM	Fair-Good/ Fair-Good	Low/Low	Atypical, suppressed by Tree #1	**Retain, Protect & Manage: Tree is considered as able to be retained without compromise to its Useful Life Expectancy.**
3	***Pittosporum undulatum*** *Native Daphne*	<6.00	<4.50	<0.25	Approx. 3.00	Approx. 1.90	M	Good/ Good	Medium/ Medium	Typical	**Retain, Protect & Manage: Tree is considered as able to be retained without compromise to its Useful Life Expectancy.**

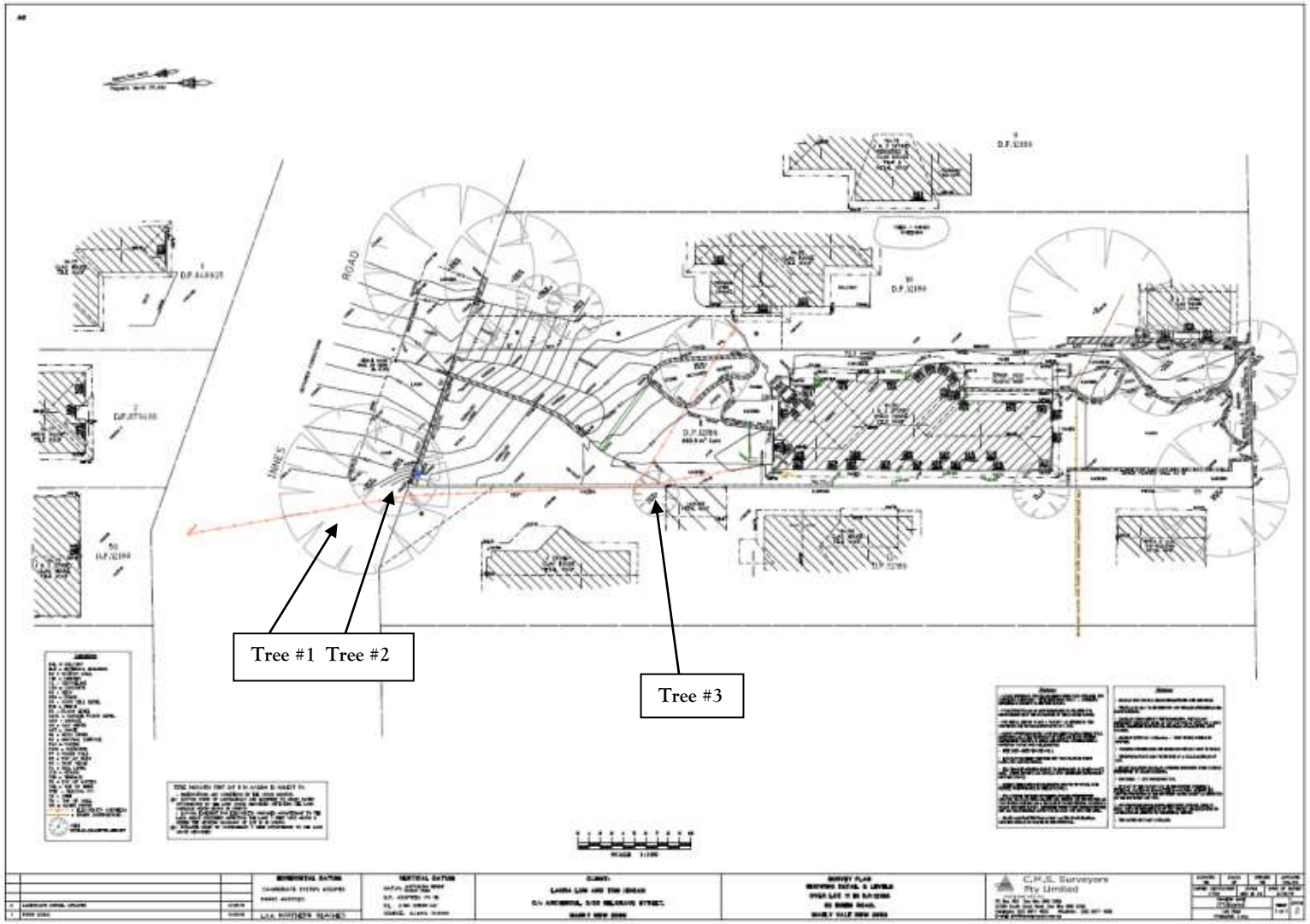


***Figure 3*: Portion of Site Survey Confirms discussed tree locations.**

5 Discussion

The proposed secondary dwelling & required separate access pathway is the works council assessment officers have identified as potentially impacting upon the three (3) close by discussed trees relative to their individual *ULE*. The roadside reserve trees are actually separated by a front of the subject site long term established brick retaining wall/boundary fence. This is considered to be a significant structure that has likely restricted Tree #1 & Tree #2 roots from being able to cross into the subject site. On this basis taking into account the proposed finished floor level being 8.22 & the ground level next to the roadside reserve boundary being four steps higher (best described this way as roadside reserve levels are extremely variable) ground level disturbance is quite minimal. See DA06, DA11 & DA14 drawings.) Relative to Tree #3 the proposed works are even less disruptive to existing levels/structures on the basis the driveway access to the garage is actually designed to be above the existing ground levels. (See DA06, DA11 & DA24 drawings.) Provided the landscape materials used to create the new finished ground levels are free draining no adverse impact to the adjoining property Tree #3 could reasonably be predicted.

***Figure 4*: Illustrates the location of Tree #1 & Tree #2. Below illustrates Tree #1 & Tree #2 canopy condition.**

***Figure 5*: Illustrates the location & condition of Tree #3.**

Tree protection will be specified in the form of 'Tree Trunk Guards' being installed around Tree #1 & Tree #2, (see Appendix C). Tree #3 will be specified to be isolated from the proposed works (until the new landscape component is built) by simply 'temporary metal mesh panel fencing as close to its 3.00m calculated 'Tree Protection Zone' radial distance as the site works will allow. The installation of the specified 'Tree Protection' measures must eb certified in writing with supporting photographic evidence as being Australian Standard (As4970-2009 Protection of trees on development sites) compliant. This can be completed by either the site manager or the retained Practicing/Consulting Arborist for submission to the appointed Principle Certifying Authority (from herein PCA).

Tree #1 with implementation of the site specific 'Plan of Management' is considered to be have an at least ULE medium to long term viability, i.e. 15 to 25 years.

Tree #2 regardless of any proposed works is assessed to have an at best short term, i.e. 5 to 15 years ULE base on its health & vigour at the time of it being assessed (Friday, 14 June 2019).

Tree #3 with implementation of the site specific 'Plan of Management' is considered to be have an at least ULE medium term viability, i.e. 15 to 25 years.

***Figure 6*: Illustrate proposed location of secondary dwelling.**

6 Site Specific 'Tree Plan of Management'

Tree #1:

- ***Retain, Protect & Manage***
- ***Install to a minimum height of 2.50m a temporary 'Tree Trunk Guard'.***
- ***No excavated or builders' materials of any description is allowed to be stored on existing ground levels within the trees calculated 9.00m TPZ radial distance.***
- ***Any excavation required within 9.00m of the tree trunk centre must be completed manually. Any 'live woody tree root less than 50mm in diameter may be severed cleanly without the input of the sites retained Practicing/Consulting Arborist, (both written & photographic evidence of works completed must be provided to the Principle Certifying Authority).***
- ***Any 'live woody tree root greater than 50mm in diameter can only be managed with input from the sites retained Practicing/Consulting Arborist, (both written & photographic evidence of the strategy adopted for individual root management must be provided to the Principle Certifying Authority).***
- ***Photograph installed 'Tree Trunk Guard'.***
- ***Photograph the tree canopy prior to the beginning of any DA determined works.***

Tree #2:

- ***Retain, Protect & Manage***
- ***Install to a minimum height of 2.50m a temporary 'Tree Trunk Guard'.***
- ***No excavated or builders' materials of any description is allowed to be stored on existing ground levels within the trees calculated 5.30m TPZ radial distance.***
- ***Any excavation required within 5.30m of the tree trunk centre must be completed manually. Any 'live woody tree root less than 50mm in diameter may be severed cleanly without the input of the sites retained Practicing/Consulting Arborist, (both written & photographic evidence of works completed must be provided to the Principle Certifying Authority).***
- ***Any 'live woody tree root greater than 50mm in diameter can only be managed with input from the sites retained Practicing/Consulting Arborist, (both written & photographic evidence of the strategy adopted for individual root management must be provided to the Principle Certifying Authority).***
- ***Photograph installed 'Tree Trunk Guard'.***
- ***Photograph the tree canopy prior to the beginning of any DA determined works.***

Tree #3:

- ***Retain, Protect & Manage***

- ***Install temporary metal mesh fencing panels supported by above ground footings as close to the calculated TPZ radial distance of 3.00m as the site character & proposed works will allow.***
- ***No excavated or builders materials of any description is allowed to be stored on existing ground levels within the trees calculated 3.00m TPZ radial distance.***
- ***Any excavation required within 9.00m of the tree trunk centre must be completed manually. Any 'live woody tree root <u>less than 50mm in diameter</u> may be severed cleanly without the input of the sites retained Practicing/Consulting Arborist, (both written & photographic evidence of works completed must be provided to the Principle Certifying Authority).***
- ***Any 'live woody tree root <u>greater than 50mm in diameter</u> can only be managed with input from the sites retained Practicing/Consulting Arborist, (both written & photographic evidence of the strategy adopted for individual root management must be provided to the Principle Certifying Authority).***
- ***Photograph the tree canopy prior to the beginning of any DA determined works.***

7 Recommendations:

By providing the requested additional information relative to tree management to *NBC* officers assessing/determining the as (now amended) lodged Development Application (2019/0377) the proposal should now be able to be determined.

If you have any questions relating to this report or require the implementation of recommendations, please contact Kyle Hill (Monday to Friday) on 02 9939 0078.

Yours faithfully,

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

8 Limitations on the use of this report

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

9 Assumptions

Care has been taken to obtain information from reliable resources. All data has been verified insofar as possible; however, AURA Tree Services Pty Ltd, can neither guarantee nor be responsible for the accuracy of information provided by others.

Unless stated otherwise:

Information contained in this report covers only the trees that were examined & reflects the condition of the trees at the time of inspection; and

The inspection was limited to visual examination of the subject trees without dissection, excavation, probing or coring. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the subject trees may not arise in the future.

10 Recommended References

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

Barrell, J. 1995, '*Pre-development Tree Assessments*', in Trees & Building Sites, Proceedings of 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',* ISA Illinois USA 1995,

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

Phillip J. Craul, '*Urban Soil in Landscape Design',* J. Wiley & Sons, New York USA 1992,

Clark, Ross, '*A Guide to Assessment of Tree Quality*'. NATSPEC/ Construction Information, Milson's Point NSW, 2003 &

Clark, Ross. '*Purchasing Landscape Trees*', Construction Information Systems Australia Pty. Ltd., Milson's Point NSW, 1996.

11 Selected Bibliography

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

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

AS4373.2007 '*Pruning of amenity trees*', Standards Australia.

AS4970.2009 '*Protection of trees on development sites*', Standards Australia.

BS5837-2005. '*Guide for Trees in Relation to Construction*', Standards Board, UK.

Appendix A – Glossary of Common Arboreal Terms

Age: **I** *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 (ie. trunk & major branches), including structural defects such as cavities, crooked trunks or weak trunk/branch junctions. These are not directly connected with health & it is possible for a tree to be healthy but in poor condition/vigour. **Classes are:**

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

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

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

Useful Life Expectancy refers to any trees potential life expectancy (viability) not related to potential disturbances based on VTA assessment, classifications are: **Short, (0 – 5 years), Medium, (5 – 15 years) & Long, (15 or more years).**

Retention Value is expressed as Low, Medium, High or of Heritage Importance

Diameter at Breast Height (DBH) refers to the tree trunk diameter at breast height (1.4 metres above ground level).

Significant Diameter Roots are defined as being woody roots with a diameter greater than 0.05m/50mm. (Unless otherwise specified)

Structural Root Zone (SRZ) refers to a radial offset which relates to tree stability. This zone is presumed to be main location of the tree's structural support roots. It is calculated using the formula *SRZ radius= (D x 50)$^{0.42}$ x 0.64.*

Tree Protection Zone (TPZ) is ideally a "No Go Zone" surrounding a tree to aid in its ability to cope with disturbances associated with construction works. **TPZ = DBH x 12**. Tree protection involves minimising root damage that is caused by activities such as construction. Tree protection also reduces the chance of a tree's decline in health or death & the possibly damage to structural stability of the tree from root damage

To limit damage to the tree, protection within a specified distance of the tree's trunk must be maintained throughout the proposed development works. No excavation, stockpiling of building materials or the use of machinery is permitted within the TPZ

A TPZ is required for each tree or group of trees within five metres (unless otherwise specified) of building envelopes.

Stem/bark inclusion refers to a genetic fault in the tree's structure. This fault is located at the point where the stems/branches meet. In the case of an inclusion this point of attachment is potentially weak due to bark obstructing healthy tissue from joining together to strengthen the joint

Decay refers to the break down tissues within the tree. There are numerous types of decay that affect different types of tissues, spread at different rates & have different affect on both the tree's health & structural integrity

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

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

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

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

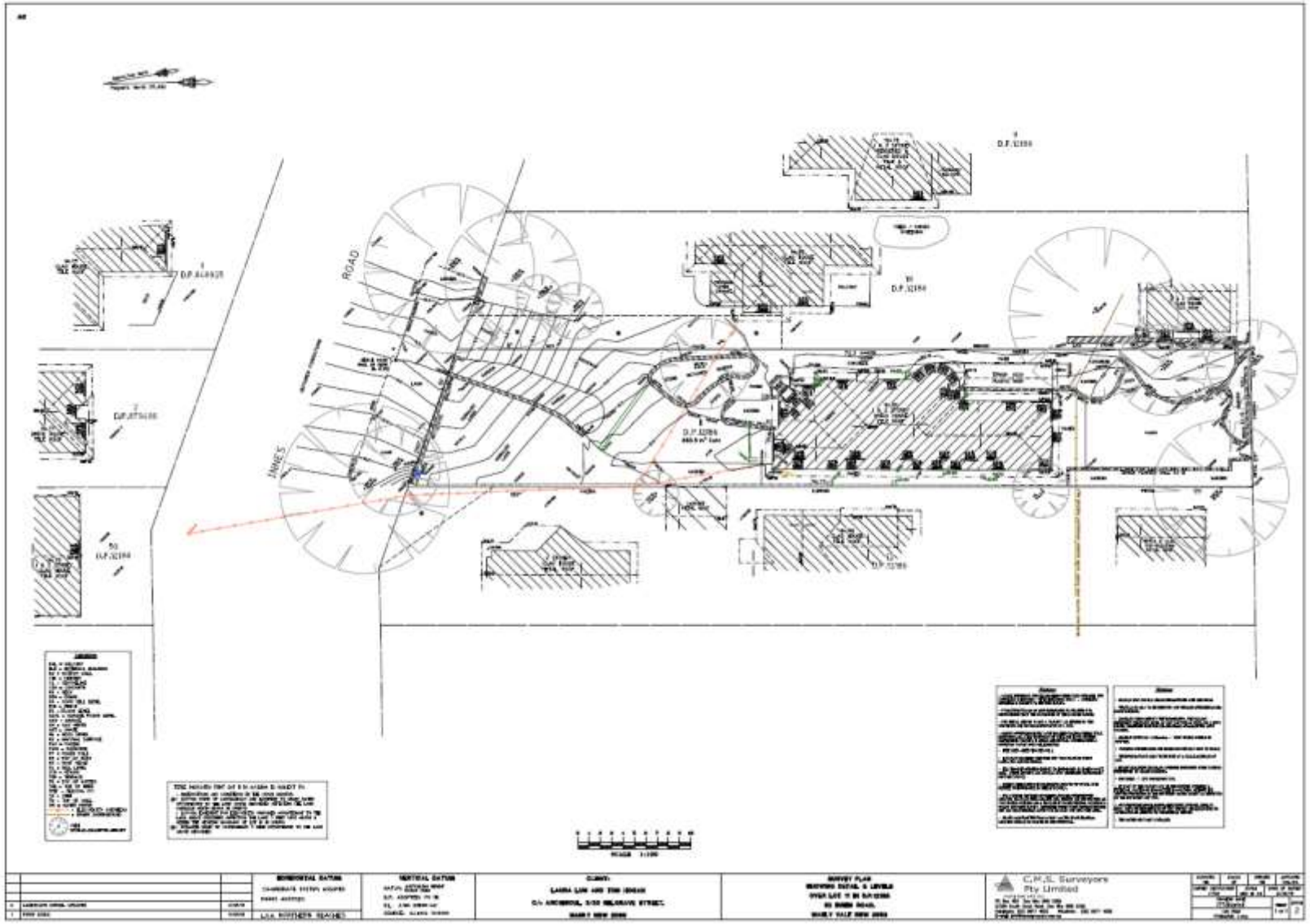
Crown Foliage Density of Potential (CFDP) refers to the density of a tree's crown in relation to the expected density of a healthy specimen of the same species. CFDP is measured as a percentage

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

Over Head Powerlines (OHP) Over head electricity wiring.

LVOHP	Low Voltage Over head Powerlines
HVOHP	High Voltage Over head Powerlines
ABC	Aerial Bundled Cable

Appendix B – Site Survey



Appendix C – Tree Protection/Management Prior to & During Construction

The installation of Tree Protection Zone (TPZ) fencing is to be carried out prior to commencement of all works. The most suitable fencing material is 1.8m tall chain link mesh with 50mm metal pole supports, see **detail 1: tree protection fencing**.

Trunk protection "Tree Guards" are detailed (below) by generic diagram.

A mulch layer of composted leaf & woodchip to a depth of 75mm is required within the TPZ to aid in retention of soil moisture & to protect soil from contaminants. Water is to be applied by handheld or soaker/leaky hose within TPZ as required & in Accordance with Stage 3 Water Restrictions. Watering is to be carried out by either an Arborist or is to form part of the Builder's/Contractor's contract, with recommended fortnightly checks by an Arborist.

There is to be no stock piling of building material (including waste), machinery or any other item within the TPZ of any retained tree. Access to personnel, machinery, & storage of fuel, chemicals, cement or site sheds is prohibited

Regular monitoring of protected trees during development works for unforeseen changes or decline, will aid in the success & longevity of the retained trees.