"GROWING MY WAY"

Tree Consultancy

Established 1977

EXCELLENCE in ALL ASPECTS OF TREE MANAGEMENT

FULL INSURANCE PROTECTION

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Construction Impact & Management Statement for soon to be Lodged Development Application

MARCH 2019

Site: Lot 31 in DP 33000
84 Hilma Street
COLLAROY PLATEAU, NSW

Client: R & D Arena
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COLLAROY PLATEAU, NSW 2097
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Post Graduate Certificate in Arboriculture, Uni of Melb
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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
Member of Arboriculture Australia

1 Summary

Richard & Diana Arena (Property Owners) commissioned the Growing My Way Tree Consultancy (GMW) to prepare a *Construction Impact & Plan of Management Statement* to be linked to the soon to be lodged *Development Application (DA) relative to tree management* is for: *Alterations/Additions to an existing dwelling residence, including an inground swimming pool & a new landscape concept.*

The subject site is known as 84 Hilma Street, Collaroy Plateau (*the subject site from herein*).

As briefed (by Diana Arena), the *Development Application* relative to tree management requires *Northern Beaches Council* (from herein *NBC*) protected trees greater than five (5.00m) meters tall within the subject site & adjoining sites to be discussed. One (1) tree is determined as being required to be discussed.

The discussed tree is confirmed as being within five meters (5.00m) of proposed works. The discussed tree is an Australian Native species. The discussed tree is likely to be planted or bird sown. The discussed tree is within the rear yard of the subject site.

The subject site & three (3) common boundary sites are developed to contain residential dwellings.

Motor vehicle & pedestrian access is solely via Hilma Street.

The sole consent authority is the *NBC*.

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

- *Site Survey by CMS Surveyors Pty Ltd, dated 8 December 2018;*
- *Plans, Sections & Elevations, by H & C Design Pty Ltd, dated January 2019;*
- *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 its health, vigour & condition taking into account any impact foreseen by the proposed development.*
2. *Provide replacement strategy that results in no loss of site/communal 'canopy density'.*

This document supports (relative to tree management) the proposal for development: as per the information provided by *H & C Design Pty Ltd.*

Kyle A Hill (AQF level 5 & 8 *Practicing/Consulting Arborist* has prepared this report based on *"Visual Tree Assessment" (VTA)* undertaken on Monday, 25 February, 2019.

Table of Contents

2 Introduction

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

This document only relates to the proposed development as per information provided to the documents author by *H & C Design Pty Ltd*. Only the discussed tree is within five (5.00m) of the proposed works. It is discussed as an individual specimen considering its calculated *Tree Protection Zone* (from herein *TPZ*) & *Structural Root Zone* (from herein *SRZ*) radial distances relative to the works proposed. The discussed tree is within the subject site but is confirmed to partially overhang the adjoining property, 82 Hilma Street.

We acknowledge & confirm to be familiar with the *NBC "Tree Management Provisions"*, specifically the *old* document; *Warringah Shire Council "Development Control Plan 2011"*, *Part E, section E1 & SEPP "Vegetation in Non-Rural Areas, 25 August 2017"*.

The sole consent authority is *NBC*.

The site is Land Zoned *'R2' Low Density Residential'*.

The site is NOT within a *NBC* designated *"Heritage Conservation Area"*. It is acknowledged to be near a listed *"Heritage Item"* (I 14).

The discussed tree *is not within a recognised "wildlife corridor" nor is it listed on any known "significant tree register"*.

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

- *Site Survey by CMS Surveyors Pty Ltd, dated 8 December 2018;*
- *Plans, Sections & Elevations, by H & C Design Pty Ltd, dated January 2019;*
- *NBC "Tree Management Provisions";*
- *SEPP 'Vegetation in Non–Rural Areas' (25 August 2017) &*
- *NBC Heritage Conservation Area & Land Zoning LEP Maps.*

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

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 Site Survey with discussed tree location confirmed
- Appendix C 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.

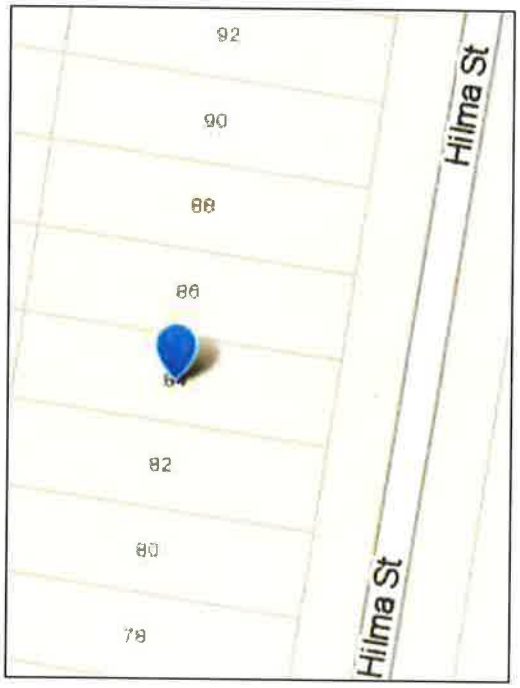
4 Observations

4.1 The Site

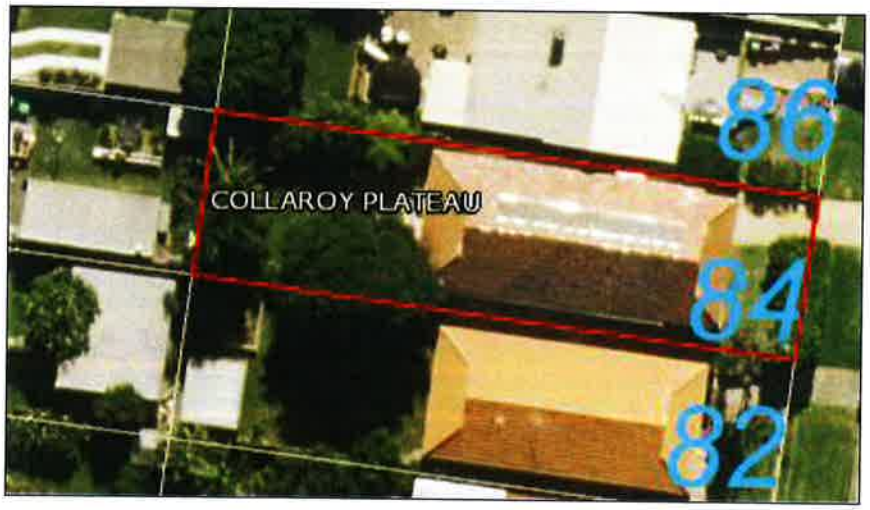
The report discusses one (1) tree near the southern of the subject site (84 Hilma Street) adjoining the subject site. The subject site is 422.70m^2 (as per site survey) in size. The site is linked to one (1) public road & three (3) residential lots.

No Geotechnical issues are known to exist.

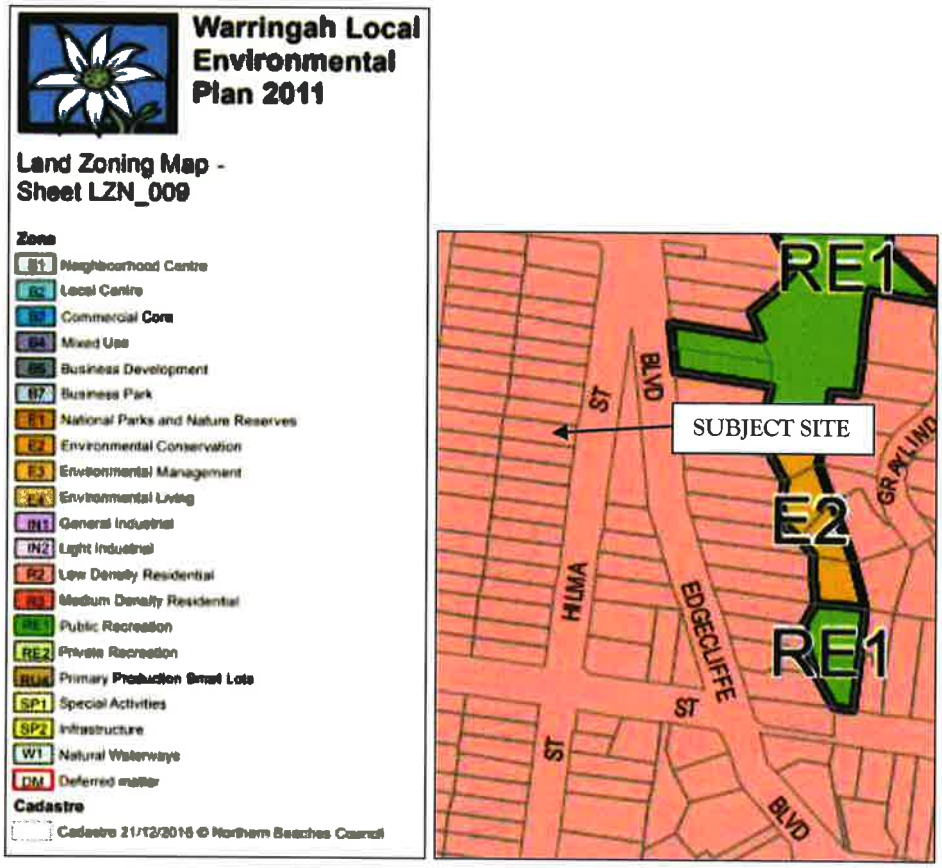
All surrounding & adjacent properties are developed & contain dwelling residences.



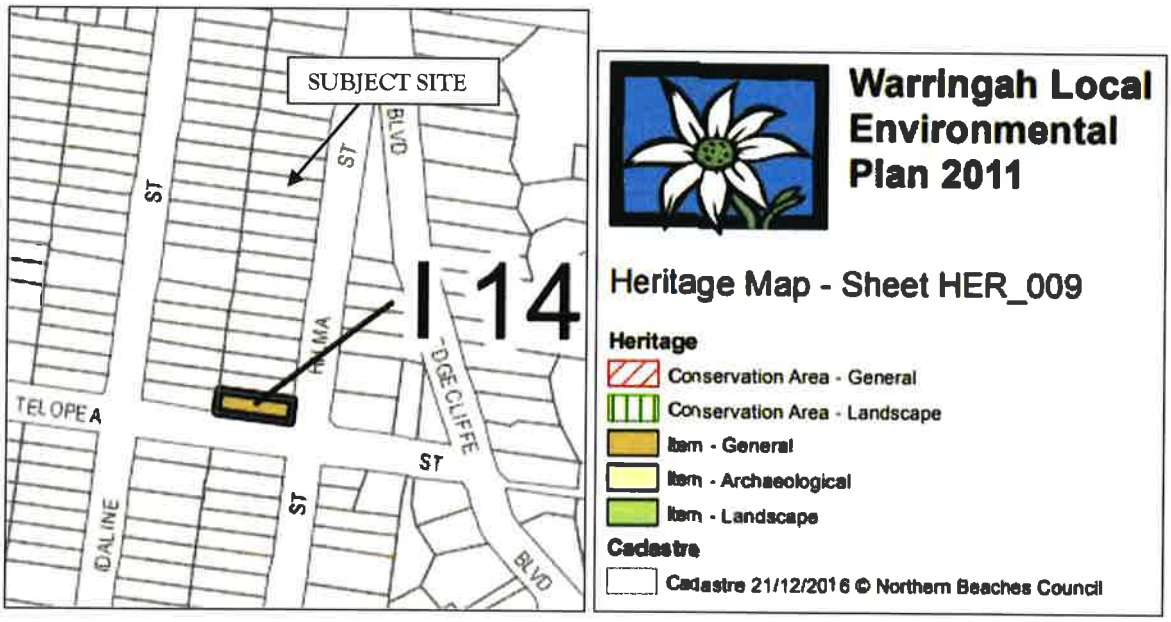
Map & Aerial photographs courtesy Whereis.com (web site tool) NBC (web site tool).



The subject site is Zoned R2 Low Density Residential. See below.



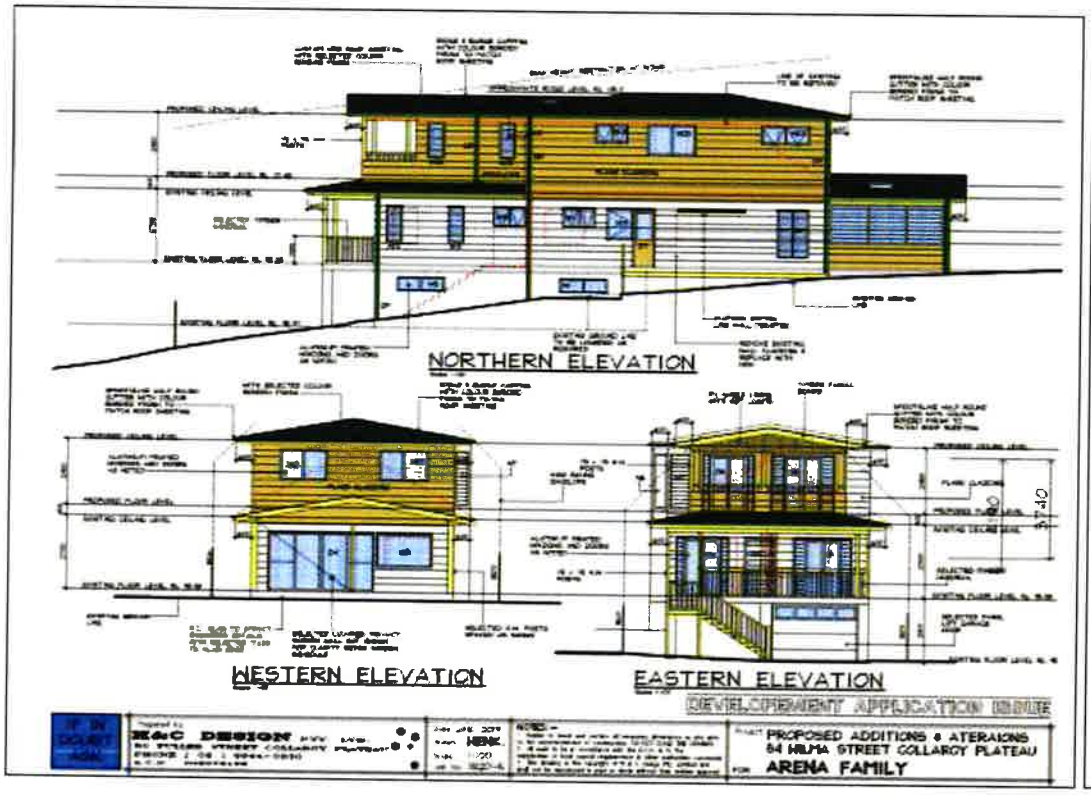
The site is NOT within a MC designated "*Heritage Conservation Area*". It is acknowledged to be near a listed "*Heritage Item*". See below.

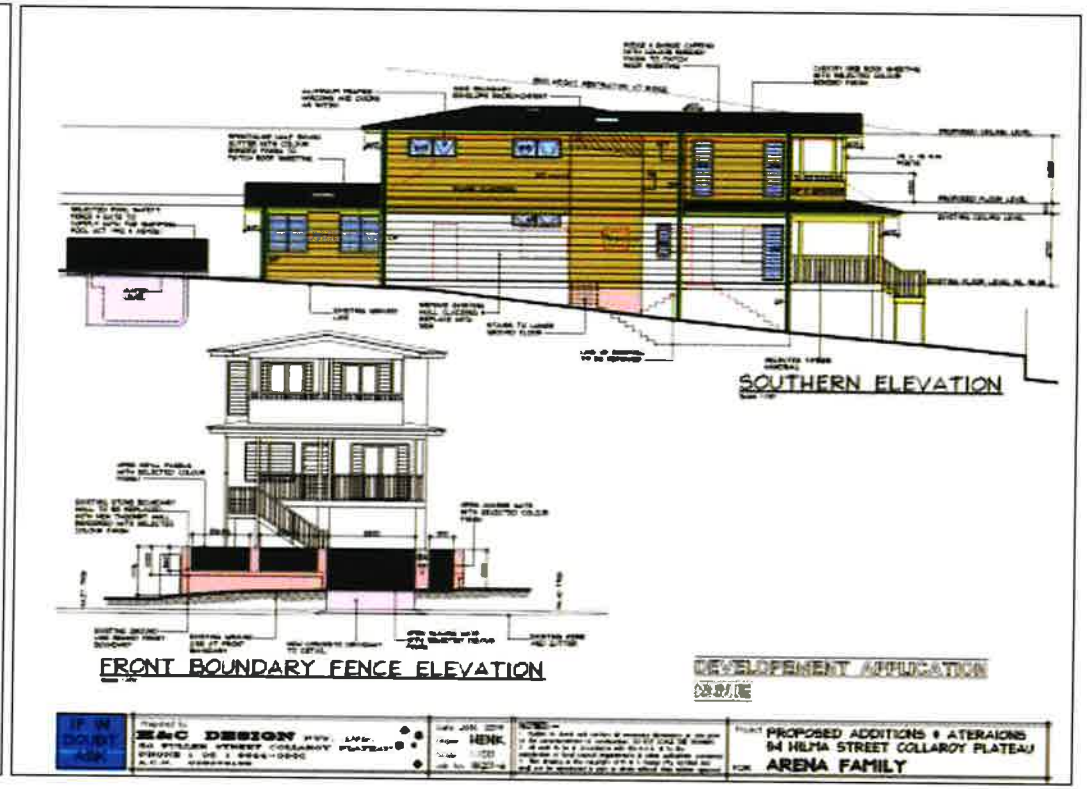


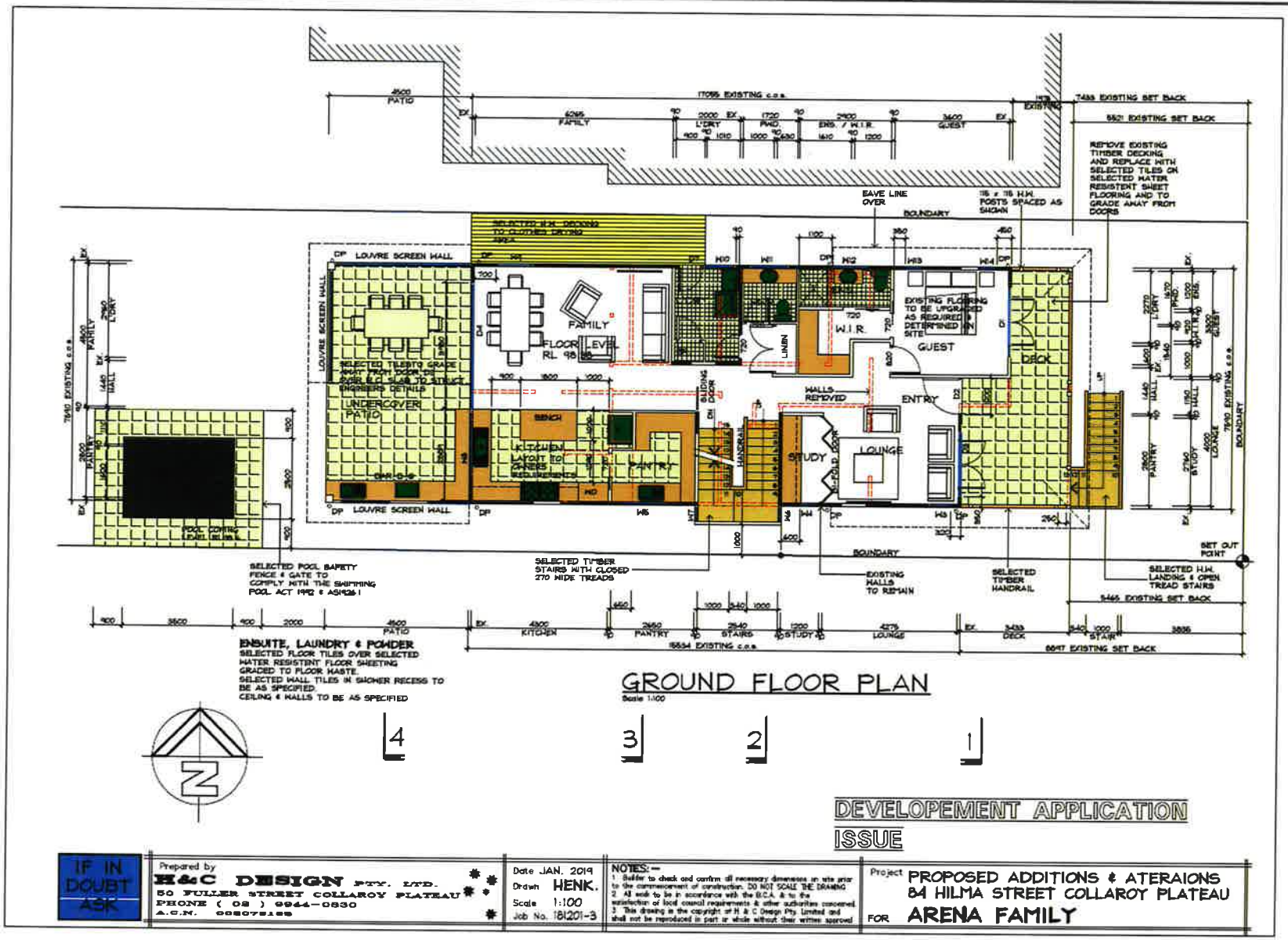
4.2 The Proposal

The soon to be lodged *Development Application (DA) relative to tree management* is for: *Alterations/Additions to an existing dwelling residence, including an inground swimming pool & a new landscape concept.*

One (1) NBC protected tree is confirmed to be within five (5.00m) metres of the proposed works.






GROUND FLOOR PLAN
Scale 1:100
DEVELOPEMENT APPLICATION
ISSUE
ENSUITE, LAUNDRY & POWDER
SELECTED FLOOR TILES OVER SELECTED WATER RESISTANT FLOOR SHEETING GRADED TO FLOOR WASTE.
SELECTED WALL TILES IN SHOWER RECESS TO BE AS SPECIFIED.
CEILING & WALLS TO BE AS SPECIFIED
SELECTED POOL SAFETY FENCE & GATE TO COMPLY WITH THE SWIMMING POOL ACT 1992 & AS1926.1
SELECTED TIMBER STAIRS WITH CLOSED 270 WIDE TREADS
EXISTING WALLS TO REMAIN
SELECTED TIMBER HANDRAIL
SELECTED H.W. LANDING & OPEN TREAD STAIRS
REMOVE EXISTING TIMBER DECKING AND REPLACE WITH SELECTED TILES ON SELECTED WATER RESISTENT SHEET FLOORING AND TO GRADE AWAY FROM DOORS
EXISTING FLOORING TO BE UPGRADED AS REQUIRED DETERMINED ON SITE
EAVE LINE OVER
BOUNDARY
SET OUT POINT
UNDERCOVER PATIO
FAMILY
KITCHEN
PANTRY
STUDY
LOUNGE
ENTRY
GUEST
DECK
W.I.R.
LINEN
BENCH
WALLS REMOVED
LOUVRE SCREEN WALL
FLOOR LEVEL RL 98
IF IN DOUBT ASK
Prepared by
H&C DESIGN PTY. LTD.
50 FULLER STREET COLLAROY PLATEAU
PHONE (02) 9944-0830
A.C.N. 008078188
Date JAN. 2019
Drawn HENK.
Scale 1:100
Job No. 181201-3
NOTES:-
1 Builder to check and confirm all necessary dimensions on site prior to the commencement of construction. DO NOT SCALE THE DRAWING
2 All work to be in accordance with the B.C.A. & to the satisfaction of local council requirements & other authorities concerned.
3 This drawing is the copyright of H & C Design Pty. Limited and shall not be reproduced in part or whole without their written approval
Project PROPOSED ADDITIONS & ATERAIONS
84 HILMA STREET COLLAROY PLATEAU
FOR ARENA FAMILY

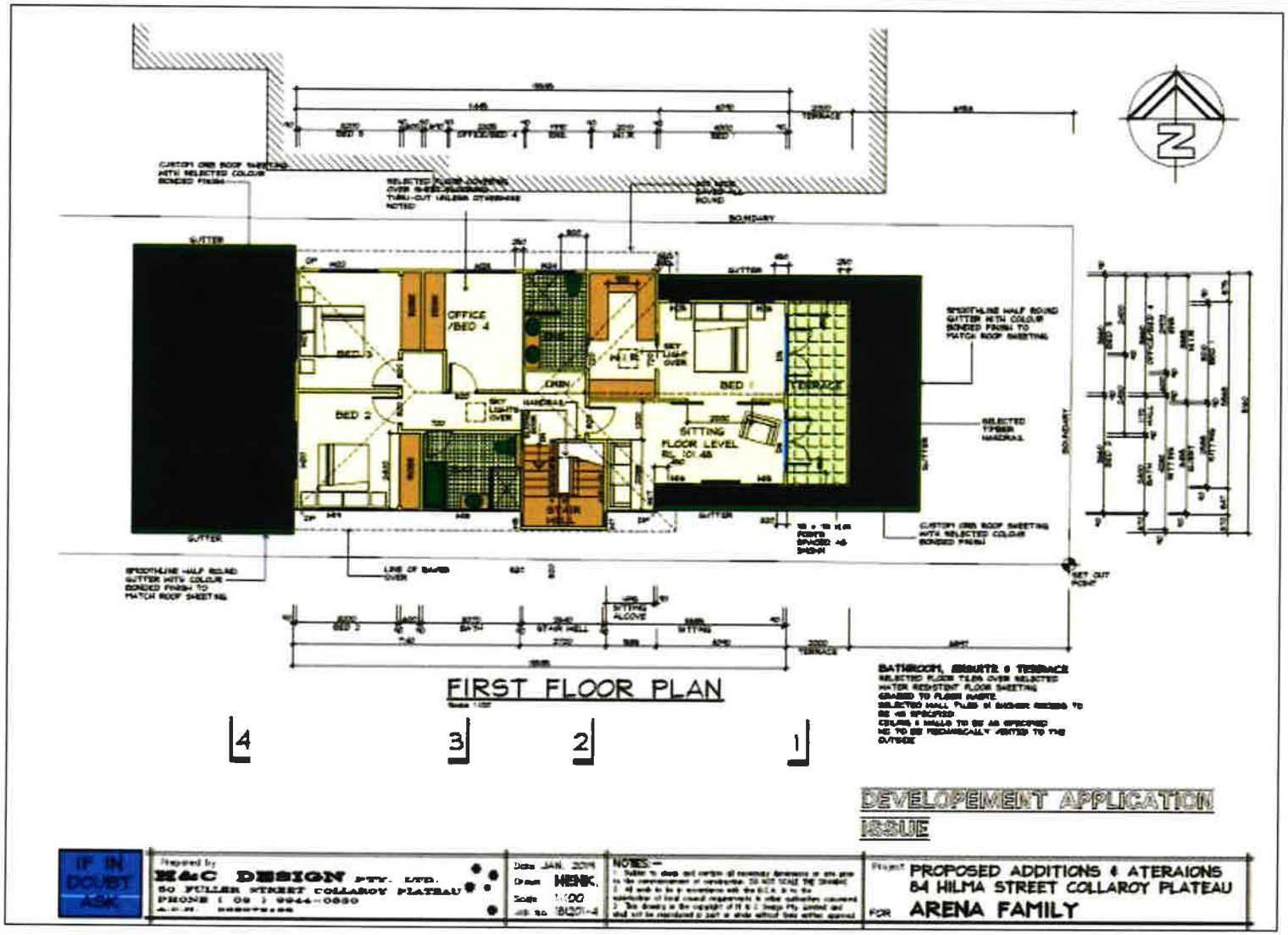


Figure 1: Page 8, 9 & 10: Illustrates proposed Alterations/Additions to the existing dwelling residence including new inground swimming pool & new landscape concept.

4.3 Tree Location & Site Images


25/02/2019 06:00

Figure 2: Illustrates location & condition of the discussed tree plus above photograph of rear yard character.

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	*Syzygium australe* *Brush Cherry Lilly Pilly*	<9.00	<10.50	<0.40 Multiple trunks*	6.96	2.69	Long term established	Good & Good	High/ High	Typical	**Replace: Tree is considered as incompatible with the DA proposal on two grounds, (i) the percentage of pruning required for reasonable new built form &) tree canopy separation plus (ii) ground level disturbance to its supporting root system.**

*Tree has multiple trunks all less than .040m in diameter, they are unable to be measured by virtue of rubbing against each other @ 1.40m above natural ground level.

5 Discussion

The discussed tree is confirmed to be located within the subject site with a significant percentage of its canopy within both the subject site & the adjoining rear yard of 82 Hilma Street. See below 4 March 2019 'aerial photograph', courtesy of the NearMap® (webtool).

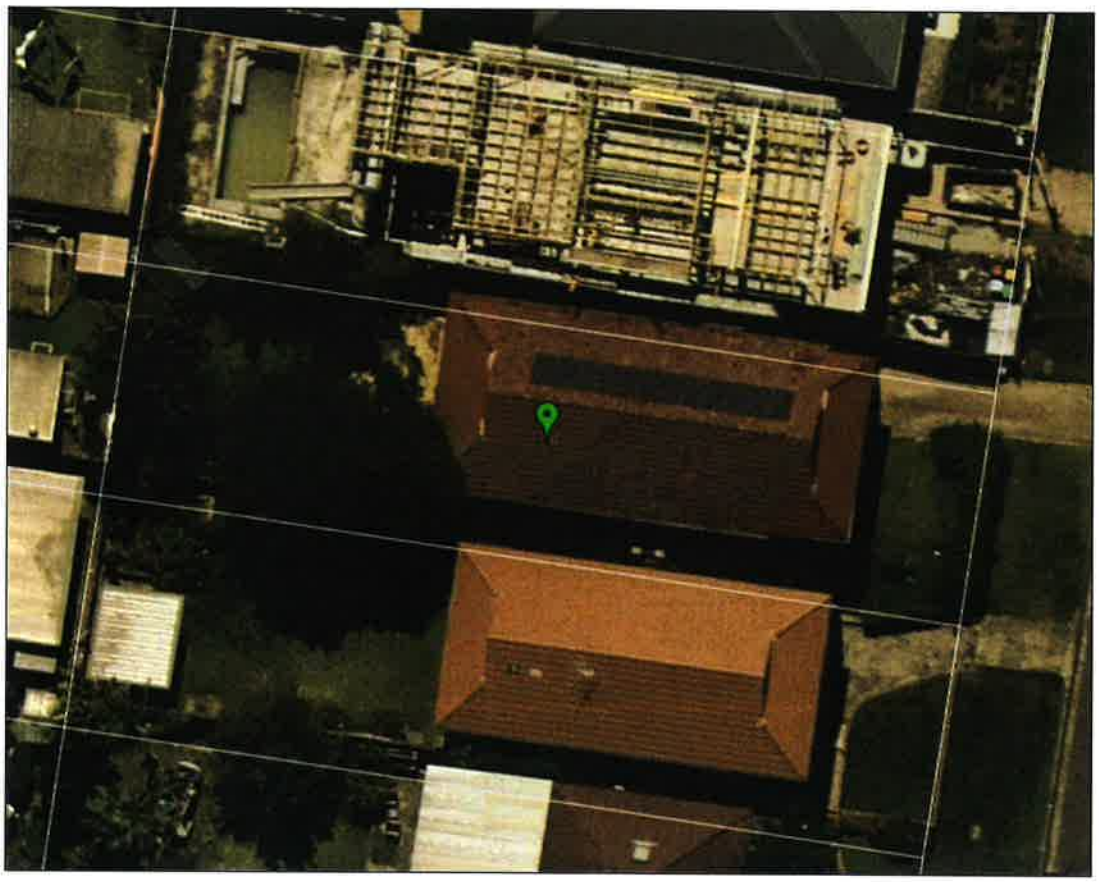
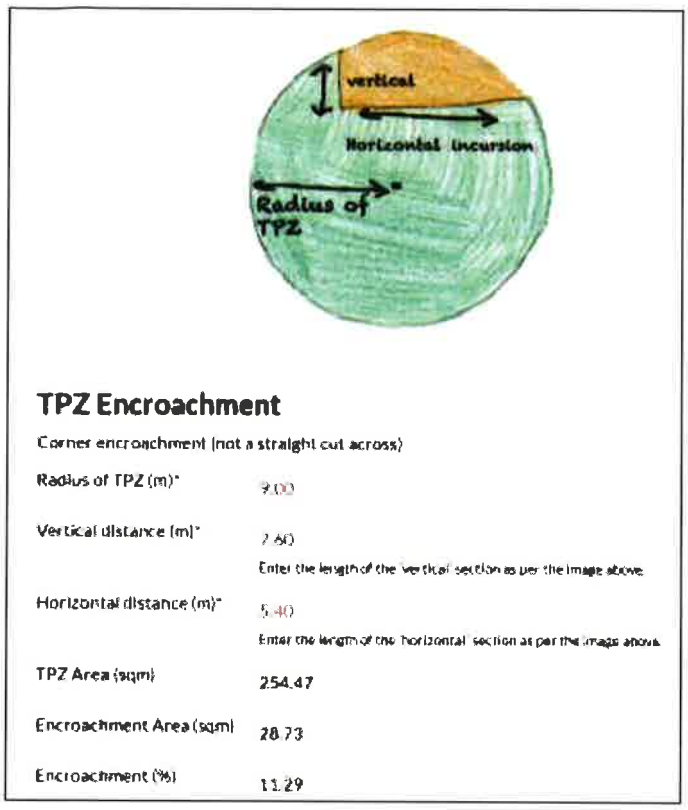


Figure 3: Above, illustrates the subject site & adjoining properties (as confirmed on Monday, 4 March 2019).

The discussed tree based on 'communal landscape amenity value' has been given HIGH retention & HIGH significance values. This does not mean that these values cannot be replicated by planting of new trees with a similar 'canopy density footprint' at maturity. It is presumed the subject site DA 'Conditions of Consent' will require 'canopy density' for new trees at maturity to reflect what is currently present.

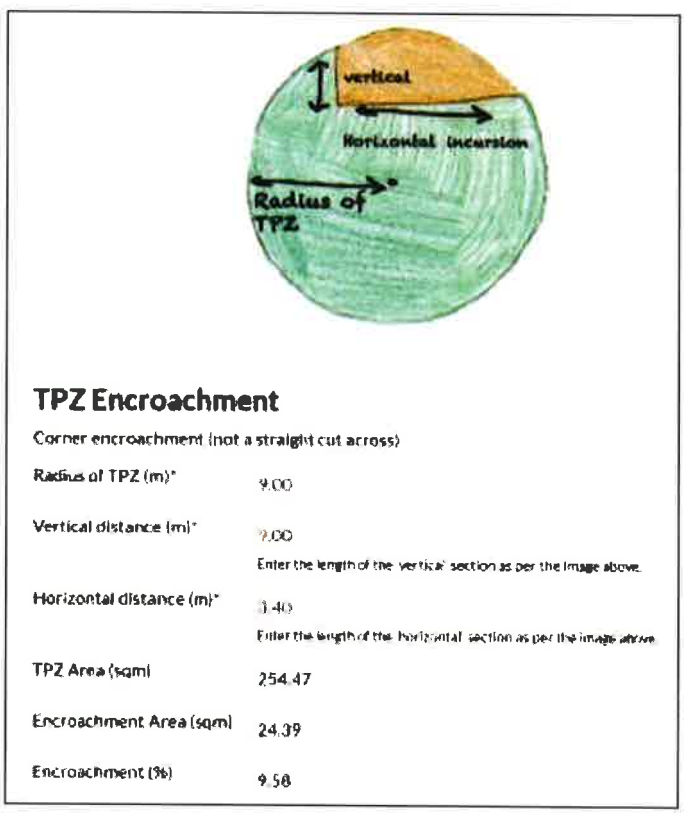
The proposed works create by definitions within the *Australian Standard (AS4970-2009 Protection of trees on development sites, (see Chapters 3, 4 & 5)* a 'Major Encroachment' of Tree Protection Zone (from herein TPZ) total surface area. The breach is calculated to be an approximate 20.00% encroachment, i.e. 53.12m^2 of a total TPZ surface area of 254.70m^2. See below calculation tool results for the residence & the swimming pool/swimming pool surrounds which have been combined to get the above stated outcome.



TPZ Encroachment

Corner encroachment (not a straight cut across)

Radius of TPZ (m)*	9.00
Vertical distance (m)*	2.60
	Enter the length of the 'vertical' section as per the image above.
Horizontal distance (m)*	5.40
	Enter the length of the 'horizontal' section as per the image above.
TPZ Area (sqm)	254.47
Encroachment Area (sqm)	28.73
Encroachment (%)	11.29



TPZ Encroachment

Corner encroachment (not a straight cut across)

Radius of TPZ (m)*	9.00
Vertical distance (m)*	2.00
	Enter the length of the 'vertical' section as per the image above.
Horizontal distance (m)*	3.40
	Enter the length of the 'horizontal' section as per the image above.
TPZ Area (sqm)	254.47
Encroachment Area (sqm)	24.39
Encroachment (%)	9.58

Figure 4: The above calculations (left side for residence footprint at ground level, right side for swimming pool/swimming pool surrounds at ground level) are CONSERVATIVE. Simply, there may be a very slight (i.e. less than 1.5% variation) if calculated using more accurate software.

With a Structural Root Zone (from herein SRZ) radial distance of 3.14m a 'significant breach' is proposed (but not able to be supported) as per the plans provided. Combining the TPZ total surface area 'Major Encroachment', the (on paper totally unacceptable) SRZ radial distance breach & 'Canopy Pruning' essential to establish the proposed residence roofline footprint & reasonable 'tree canopy/new built form separation' (in this situ defined as 2.00m) this tree relative to its Useful Life Expectancy (from herein ULE) cannot be assessed as able to be viably retained. Simply, the proposed works are totally incompatible with the discussed tree with respect to its ULE if disturbed as has been proposed.

On this basis the proposed works require the discussed tree to be replaced with at least one (1) new similar at maturity 'canopy density footprint' tree species. The same outcome could be achieved using more than one (1) new but smaller at maturity new tree species. A list of potentially new suitable to the subject site 'canopy providing trees is provided as part of the Site Specific "Tree Plan of Management". (See page 17 for easily separated/printable form body of this document Site Specific "Tree Plan of Management".)

6 Site Specific "Tree Plan of Management"

- **Protected Tree #1 is to be Replaced with at least one (1) new canopy tree. Below is a list of considered to be suitable new tree species for the subject site.**
- *Backhousia citriodora (Lemon Scent Myrtle)**
- *Banksia integrifolia (Coast Banksia)**
- *Banksia serrata (Old Man Banksia)*
- *Callitris rhomboidea (Oyster Bay Pine)*
- *Elaeocarpus angustifolius (Blue Qandong)**
- *Hymenosporum flavum (Native Franjipani)*
- *Magnolia grandiflora cv. 'Exmouth' (Evergreen Magnolia)*

  Trees with an asterisk (*) are considered as suitable for a single tree replacement. Most other trees on the list would be suitable as a group planting, (i.e. 2 or more trees close to each other) or as an informal but taller than average hedge.
- **Replacement tree specimen/s (minimum of x2) 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 for the production of quality container produced trees.**
- **New tree specimen/s are to be professionally planted & maintained for at least one (1) full active Sydney growing season, (i.e. mid-August thru mid-June) once installed.**
- **Tree removal must be undertaken in total compliance with the by persons that abide at all times to the "*WorkCover NSW Industry Code of Practice, (1998)*".**
- **For any tree retained but not discussed compliance with the Australian Standard (*AS4970–2009 Protection of trees on development sites*) requires an '*exclusion zone' is to be created by installation of 'temporary metal mesh' boundary fencing supported by above ground plastic or concrete feet around any individual or group of trees. This is to be established as close to the tree/trees being retained calculated TPZ radial distance as already built infrastructure will allow.* (See Appendix C.)**

  Any excavation within any proposed to be retained tree's calculated *TPZ* radial distance must be completed by manual excavation. '*Live woody tree roots*' less than 50mm in diameter can be cleanly severed without any professional supervision (by the sites retained Practicing & Consulting Arborist). Any *'live woody diameter tree roots'* greater than 50mm in diameter must be managed by the sites retained Practicing & Consulting Arborist. (The individual tree root strategy applied must be documented in writing with supporting photographic evidence.)

  No building materials of any description can legally be stored within the calculated TPZ radial distance of any retained tree.

See the document *AS4970-2009, Section 4, clauses 4.1 thru 4.6 & Section 5, clauses 5.1 thru 5.5 (pages 15 thru 23) for exact specifications/definitions required to be addressed.*

7 Recommendations

- **Relative to the *DA* information as presented the *GMW Consultancy Practice* recommends the *DA* be lodged for determination as has been presented in documentation supplied by H & C Design Pty Ltd.**

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 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

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 *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 (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.

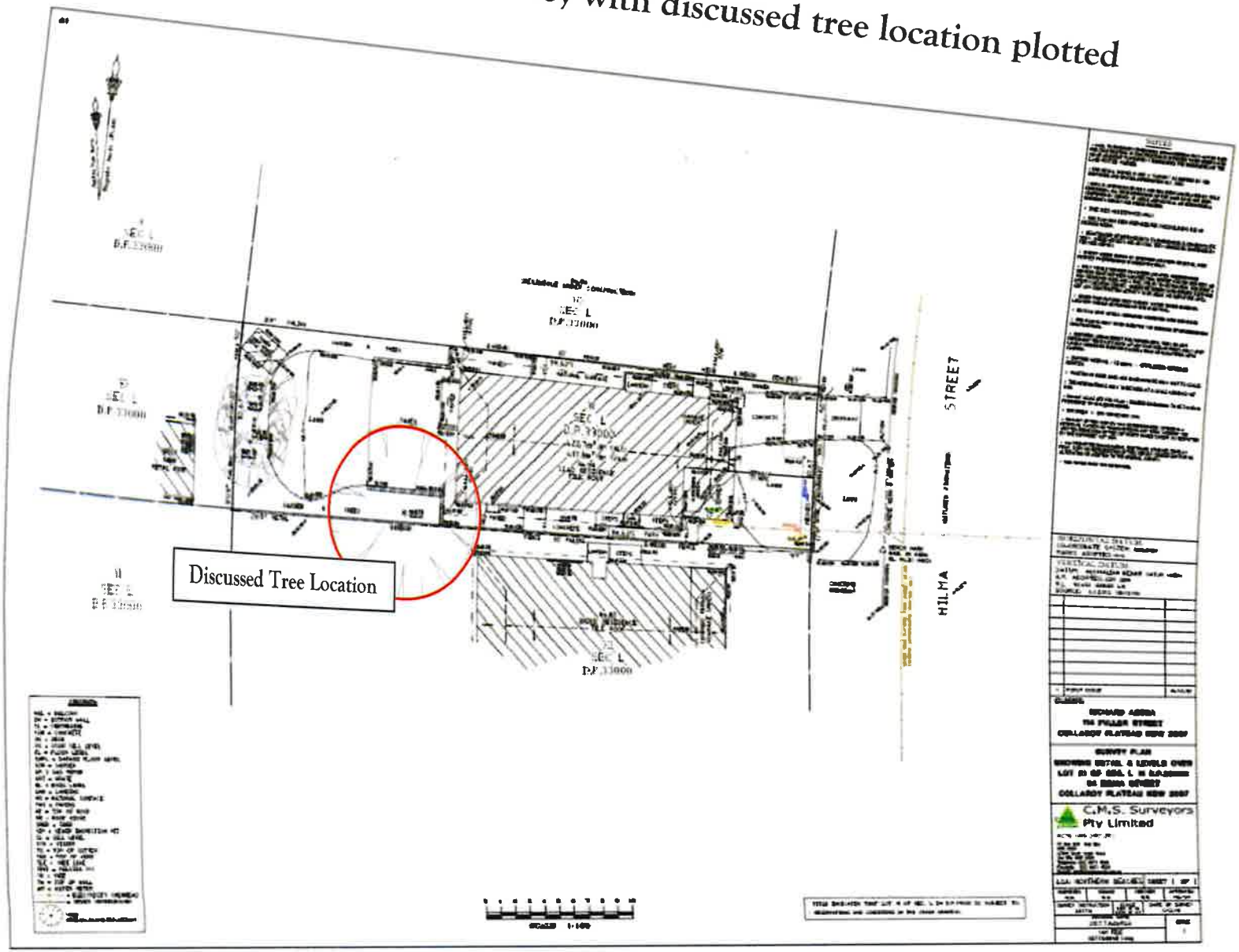
Crown Foliage Density of Potential (CFDP) refers to the density of a tree's crown in relation to the expected density of a healthy specimen of the same species. CFDP is measured as a percentage.

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 – Site Survey with discussed tree location plotted



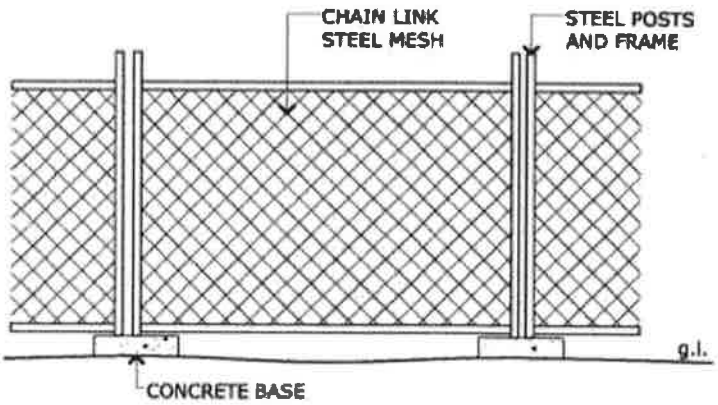
Appendix C – Tree Protection/Management Prior to & During Construction

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**.

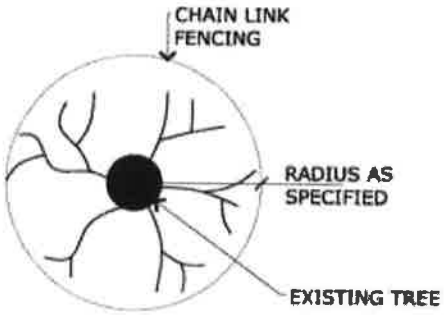
A mulch layer of composted leaf & woodchip to a depth of 75mm is required within the TPZ to aid in retention of soil moisture & to protect soil from contaminants. Water is to be applied by hand held or soaker/leaky hose within TPZ as required & in Accordance with Stage 3 Water Restrictions. Watering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



ELEVATION



PLAN