

“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

July 2019

Site:	Lot 1 in DP 1229229 145A Crescent Road NEWPORT, NSW
Client:	Jacob & Jessica Shanahan 145A Crescent Road NEWPORT, NSW 2106
Author:	Kyle A Hill Registered (Arb Aus #1884) 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

Jacob Shanahan as the property owner commissioned the Growing My Way Tree Consultancy (GMW) to prepare a *Construction Impact & Management Statement* relative to proposed *Construction of new dwelling with lower level double garage* within the property known as 145A Crescent Road, Newport, (from herein the subject site). This document supersedes the document prepared for the determined Development Application 2018/1905.

Two (2) individual tree has been identified as being required to be discussed relative to the proposal for Construction of new dwelling with lower level double garage. Both discussed trees are subject to the tree management provisions as defined within the *Northern Beaches Council (from herein NBC) "Tree Management Provisions" plus the new SEPP "Vegetation in non-rural Areas, August 2017.* Additional to the discussed trees are trees within the subject site & adjoining common boundary sites determined to be either exempt species or not impacted by the DA submission as is proposed.

Both discussed/protected trees are proposed to be retained, managed & protected.

The proposal is able to satisfy compliance criteria with the *Australian Standard (AS4970-2009 Protection of trees on development sites).*

Motor vehicle & pedestrian access is via Crescent Road. The subject site shares a common driveway with the site known as 145 Crescent Road.

The sole consent authority is the NBC. The old *Pittwater Council Planning Instrument (Local Environment Plan, 2014)* applies at the time of writing.

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

- *Site Survey by Adam Clerke Surveyors Pty Ltd, dated 1 June 2015;*
- *Plans, Sections & Elevations, by Midcoast Design, Sheet 01, 02, 03 & 04, dated, 22 October 2018;*
- *Pittwater Council/NBC "Tree Management Provisions" &*
- *SEPP 'Vegetation in Non-Rural Areas, 25 August 2017.*

The aim of this report is:

1. *To confirm individual trees health, vigour & condition considering any impact foreseen by the proposed demolition & redevelopment.*
2. *Confirm the Site-Specific Tree Management Strategy for Tree #2 is AS4970-2009 compliant.*

This document supports (relative to tree management) the proposal for *Construction of new dwelling with lower level double garage, (see referenced Sheets 01, 02, 03, 04 & 05).*

Kyle A Hill (AQF level 5 & 8 *Practicing/Consulting Arborist*) has prepared this report based on "*Visual Tree Assessment*" (VTA) most recently reassessed/undertaken on Tuesday, 9 July 2019, previously Saturday, 23 June & Thursday, 30 August, 2018.

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2 Introduction

This report contains observations & recommendations intended to assist in the management of the two (2) trees identified as necessary to be discussed by virtue of their location & proposed works.

The only built form within the subject site is a long term established driveway & hard landscaping features, i.e. retaining walls, stairs & multiple level garden beds.

This document supports the proposed *Construction of new dwelling with lower level double garage* with respect to tree management issues.

We confirm to be familiar with both the old *Pittwater Council* & now *NBC* “*Tree Management Provisions*” *plus the new SEPP* “*Vegetation in non-rural Areas, August 2017*”.

The sole consent authority is *NBC*.

The subject site is NOT within a *NBC* designated “*Heritage Conservation Area*”. The subject site is confirmed to NOT be a listed “*Heritage Item*” nor are any of the discussed trees known to be listed on any “*Significant Tree Register*”. No trees discussed are captured as being subject to the protection provisions within the state legislated ‘*NSW Scientific Committee*’-final determination, (*Threatened Species Conservation Act*) which identifies & protects the ‘*Pittwater spotted gum forest-endangered ecological community listing*’ under ‘*NSW legislation*’. The subject site is confirmed to be within a ‘*C01*’, “*Wildlife Corridor*” as defined within the *Pittwater 21 DCP* (see page 8).

Of the two (2) protected trees discussed both are proposed to be retained, managed & protected as part of the post completion of built infrastructure new landscape concept.

A list of considered to be suitable replacement trees for the local environment is included within this document

The subject site is zoned “*E4*”, ‘*Environmental Living*’.

A *Site Specific* “*Tree Management Strategy*” is included within this document.

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
- Appendix C Tree Protection & Management

^{*} **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 only trees within Lot 1 of DP 1229229. The site is 800.10m² by survey in size. The site is linked to one (1) public road & four (4) developed residential lots.

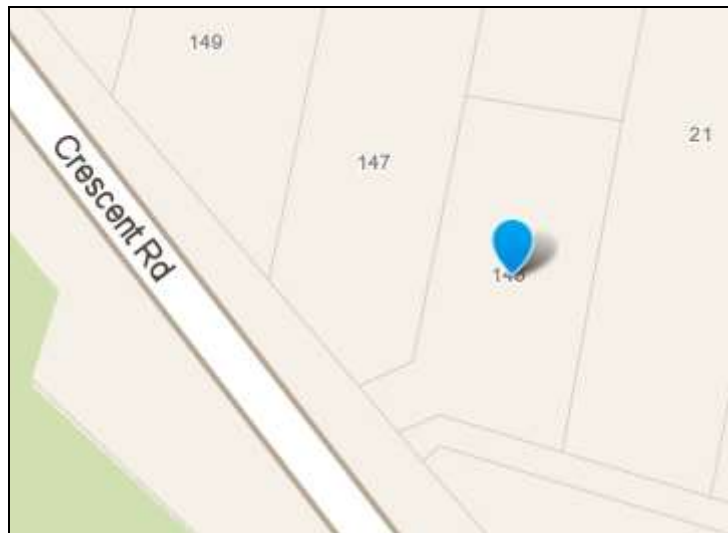
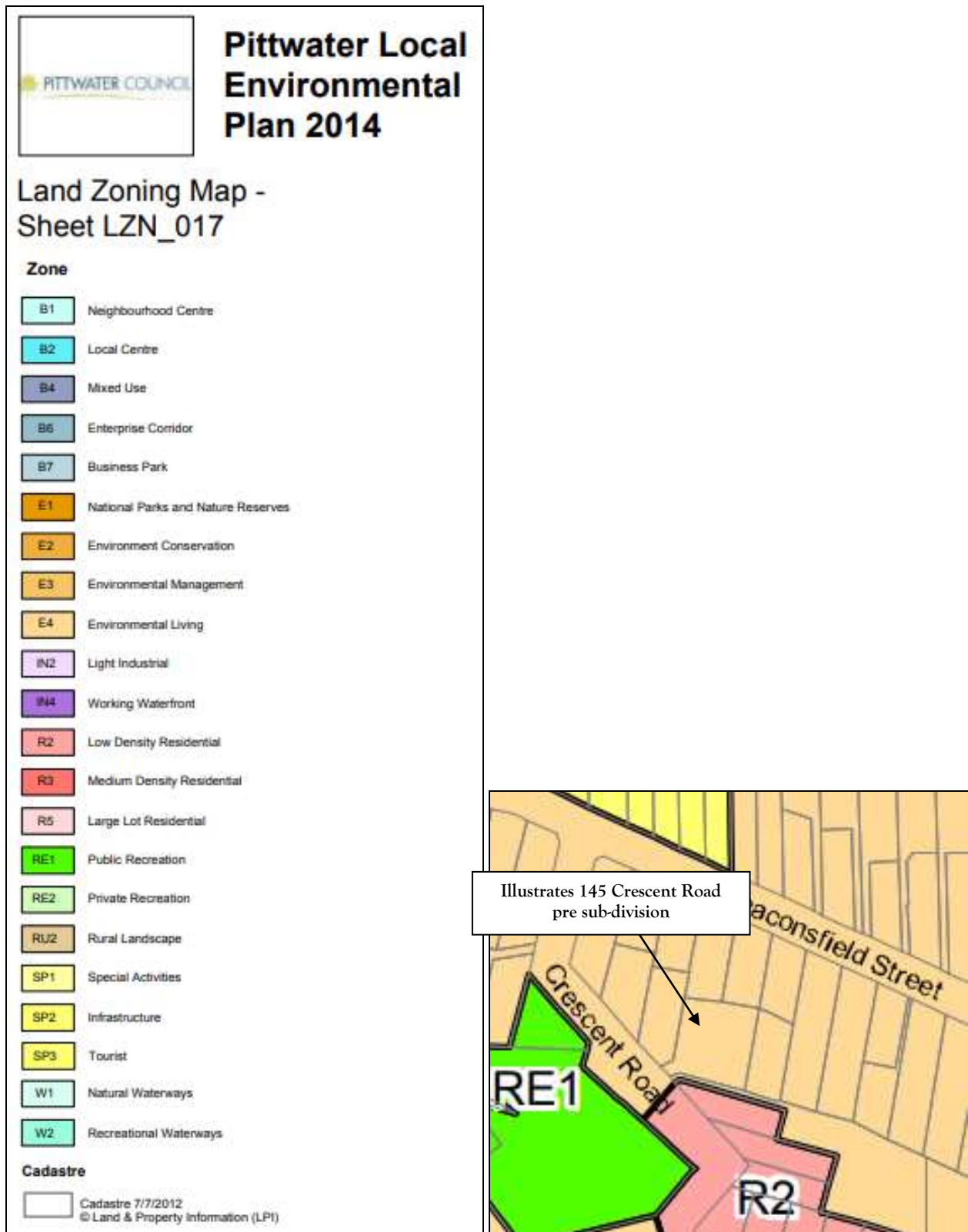


Figure 1: Aerial photograph with lot boundaries courtesy of NBC website tool.

The subject site is Land Zoned “E4” ‘Environmental Living’.



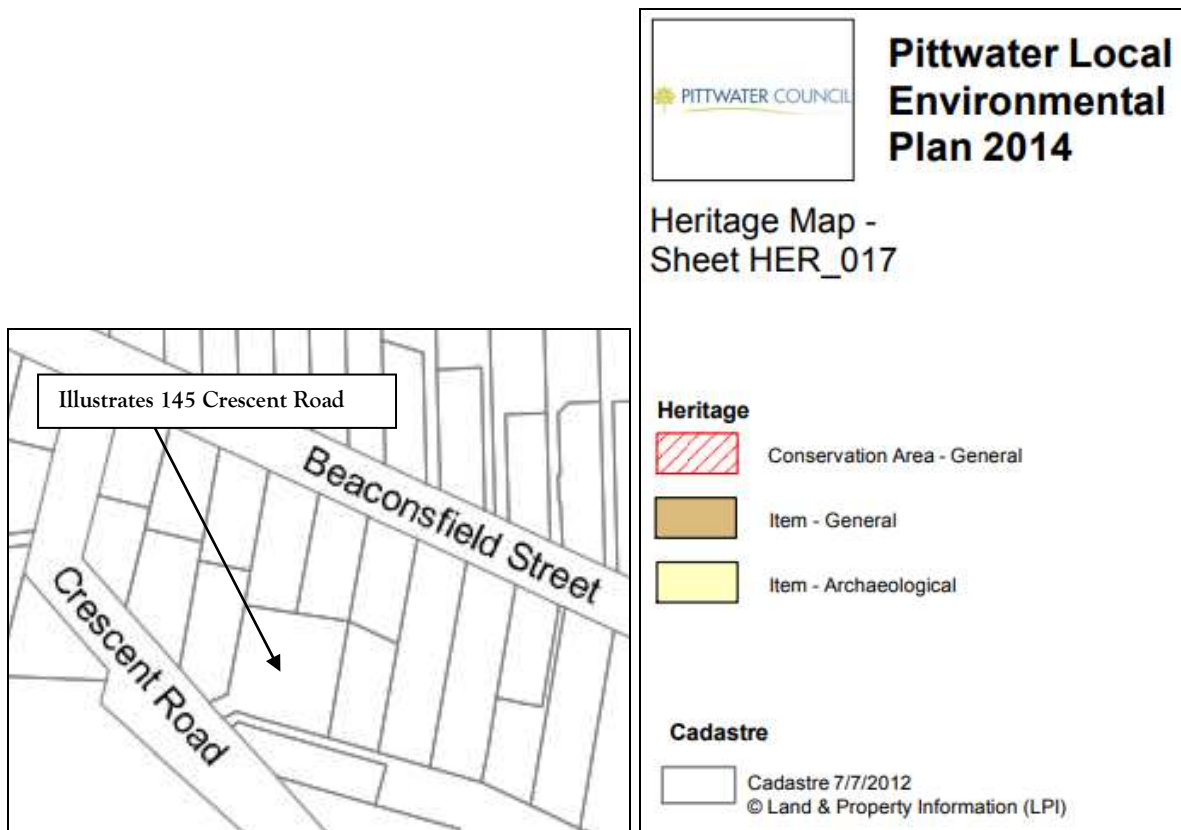


Figure 2: Above & previous page illustrates Land Zoning & Heritage Conservation Area status.

The site is NOT within a NBC designated “Heritage Conservation Area” (see page 6). The site is also confirmed to NOT be a listed “Heritage Item” nor is it near any listed “Heritage Item”. The discussed trees are NOT known to be on any ‘significant tree register’. The subject site & local environs are located within a designated ‘Wildlife Corridor’ CO1 – “those areas though disturbed are likely to be of habitat value due to good crown cover &/ or understorey’.



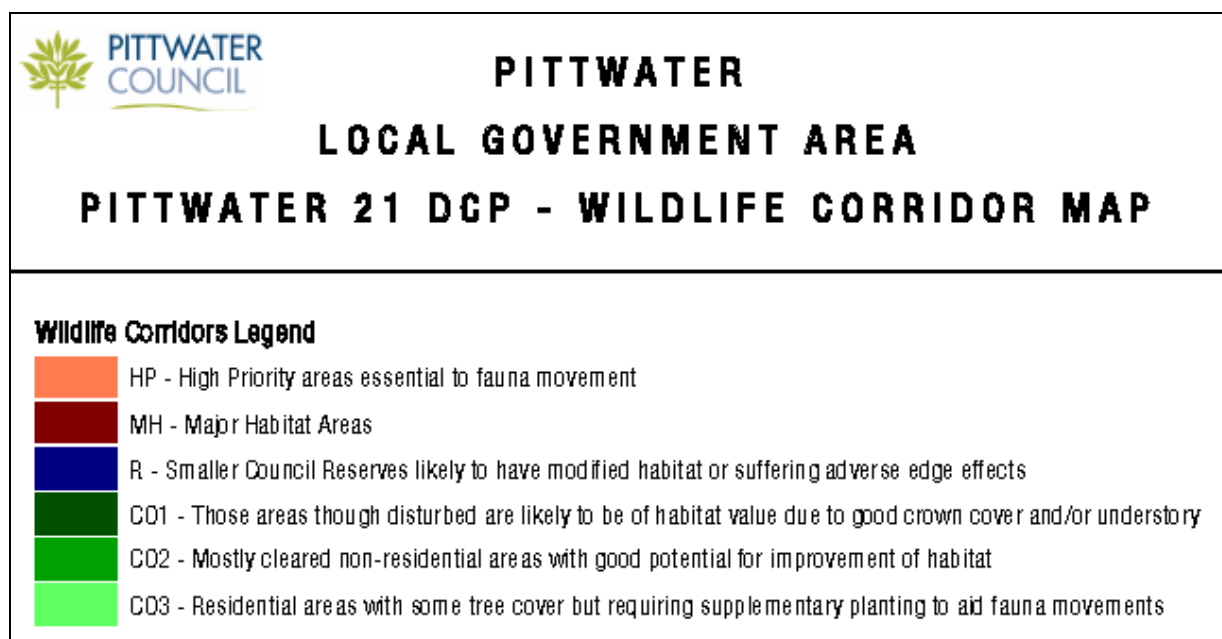
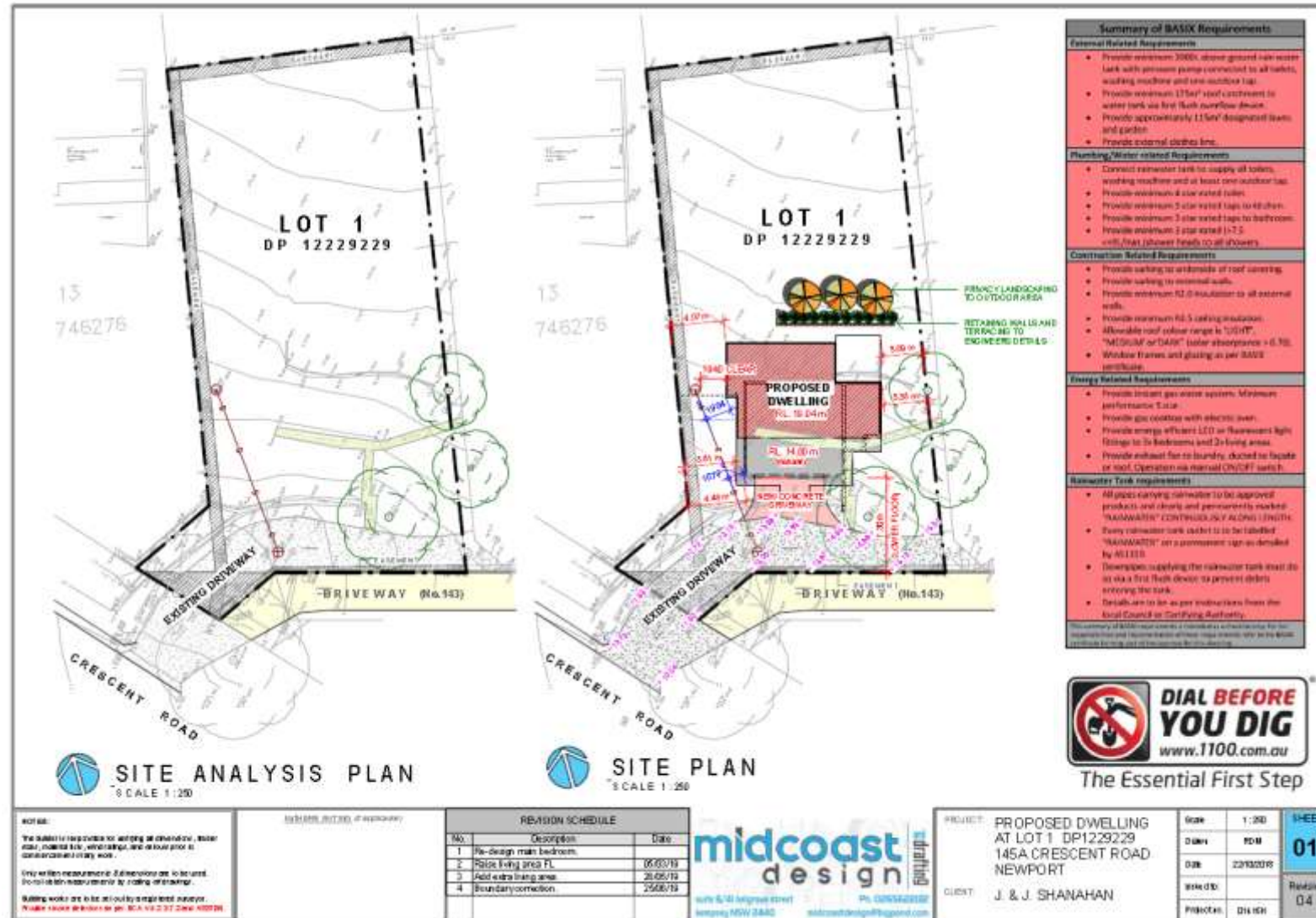
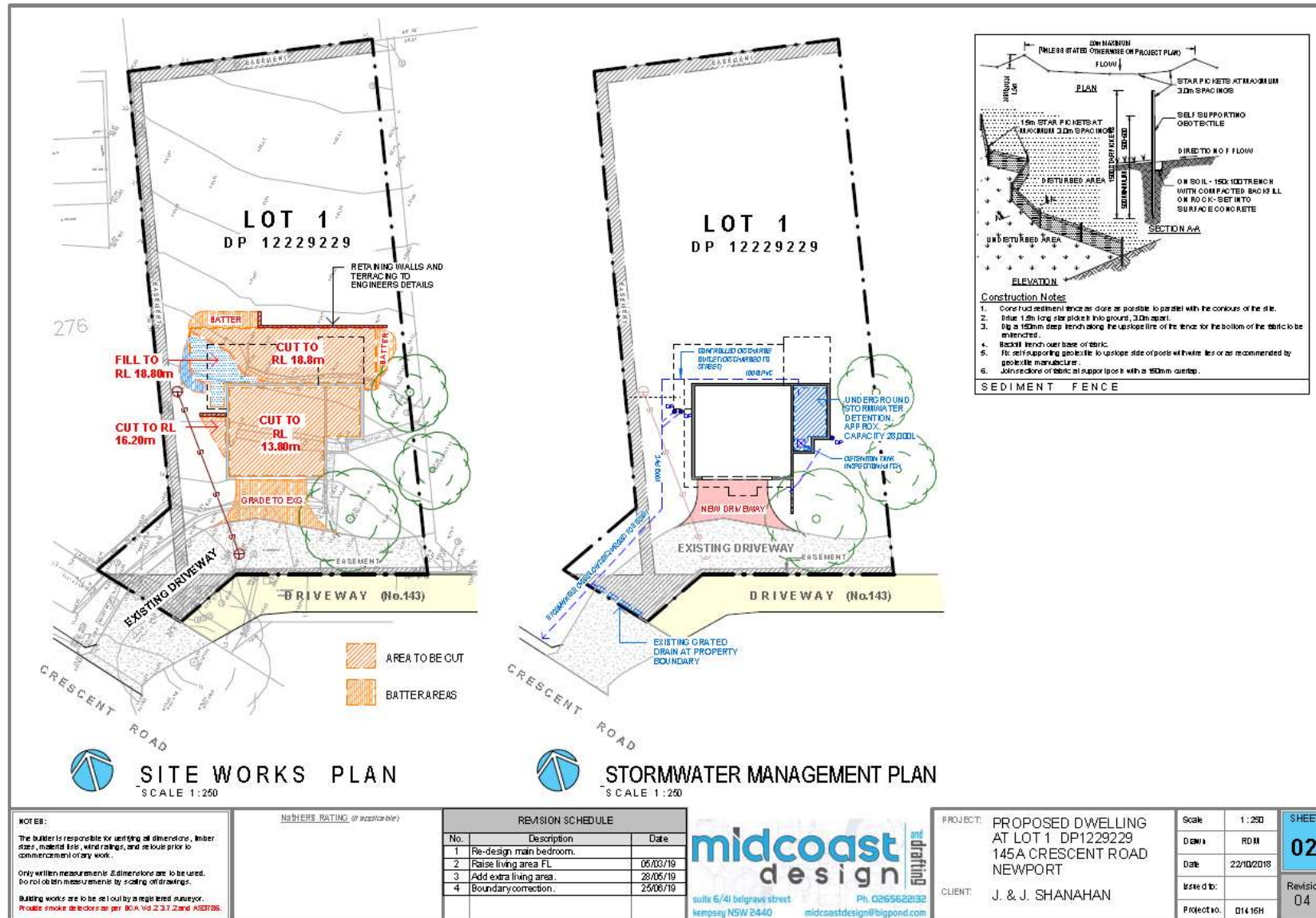
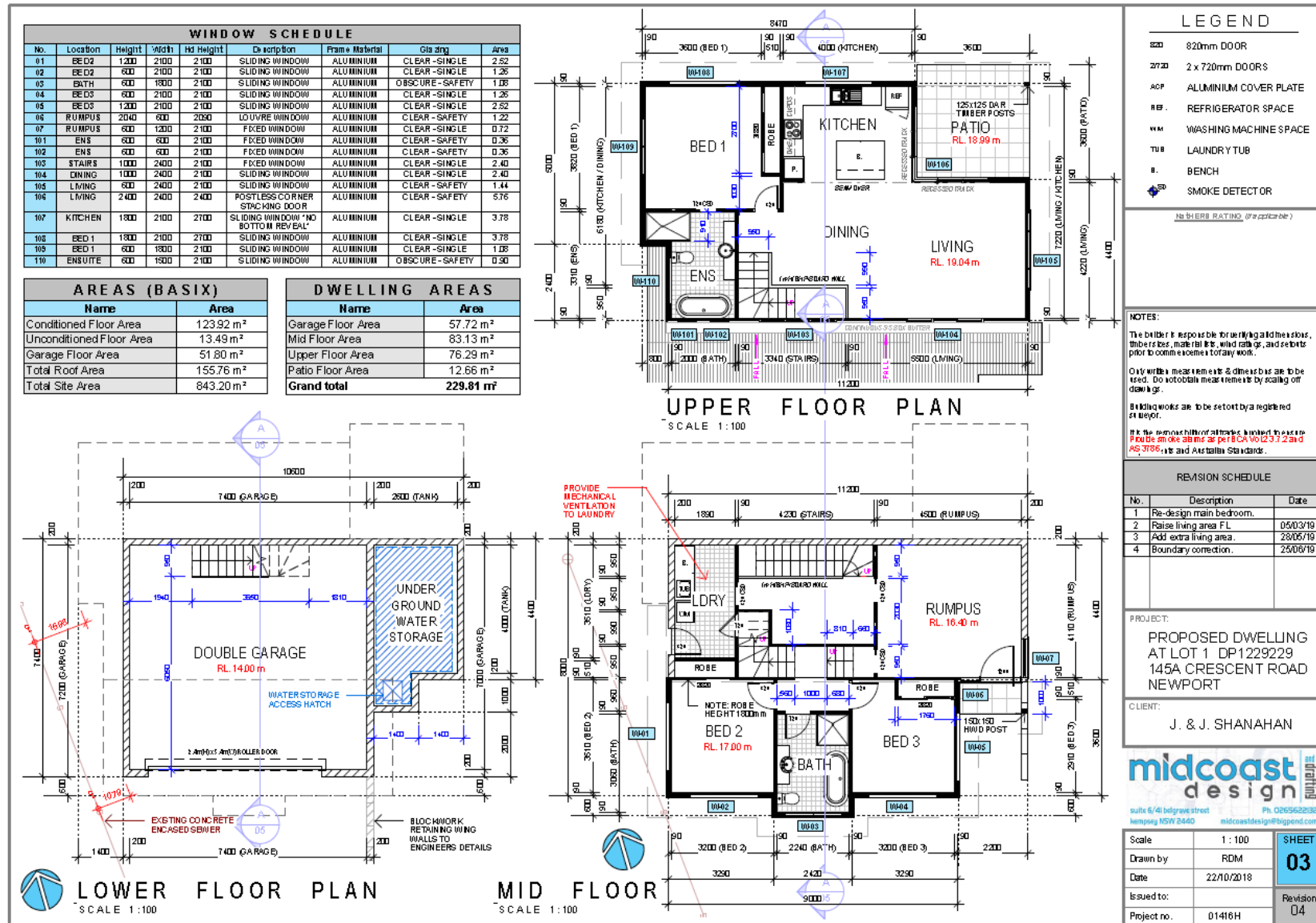


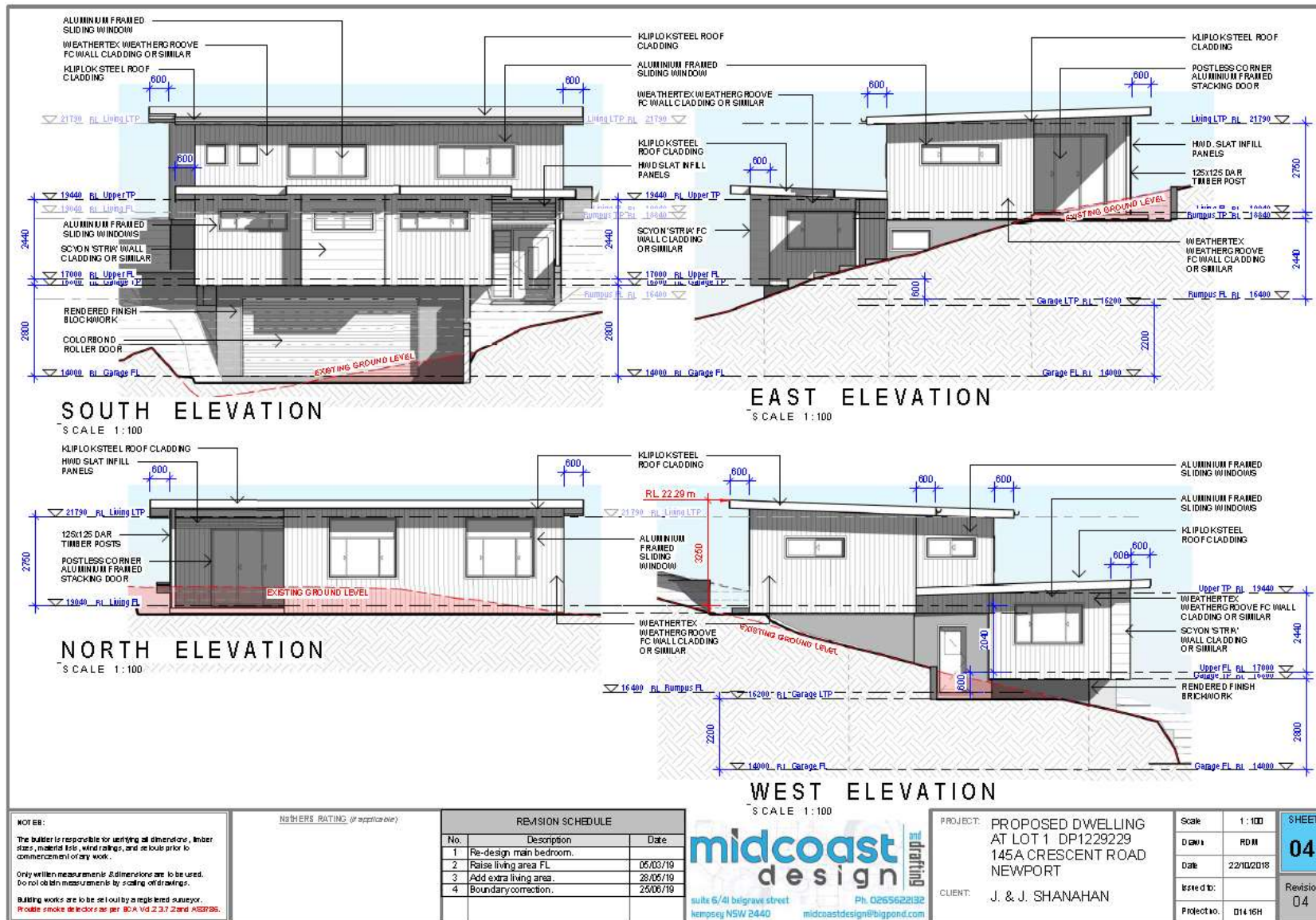
Figure 3: Confirms (above & bottom of previous page) Pittwater 21 DCP-Wildlife Corridor Status.

4.2 The Proposal









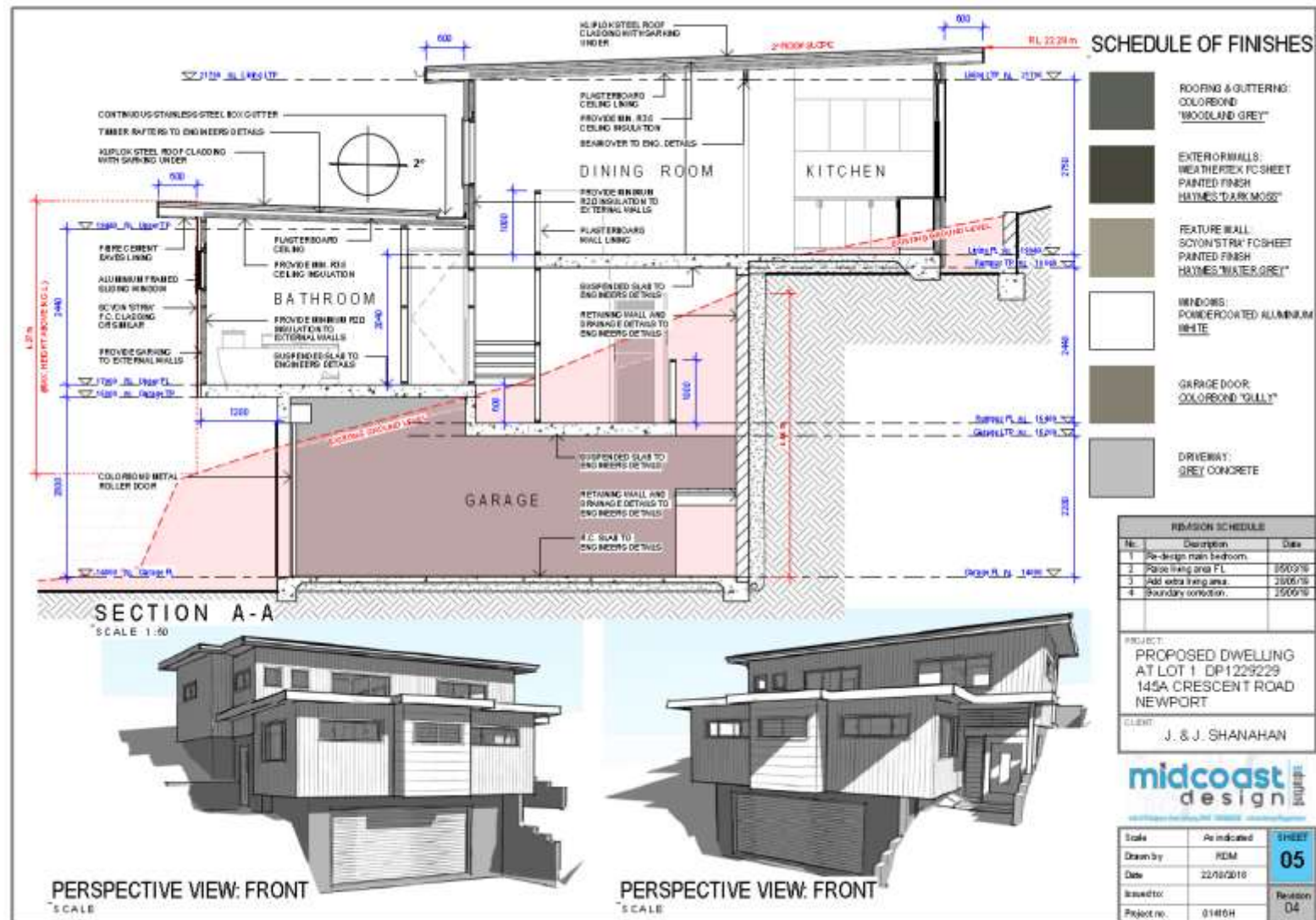


Figure 4: Illustrates the proposed new dwelling Site Analysis, Stormwater, Elevations, Section & Perspective images.

4.3 Tree Locations & Site Images

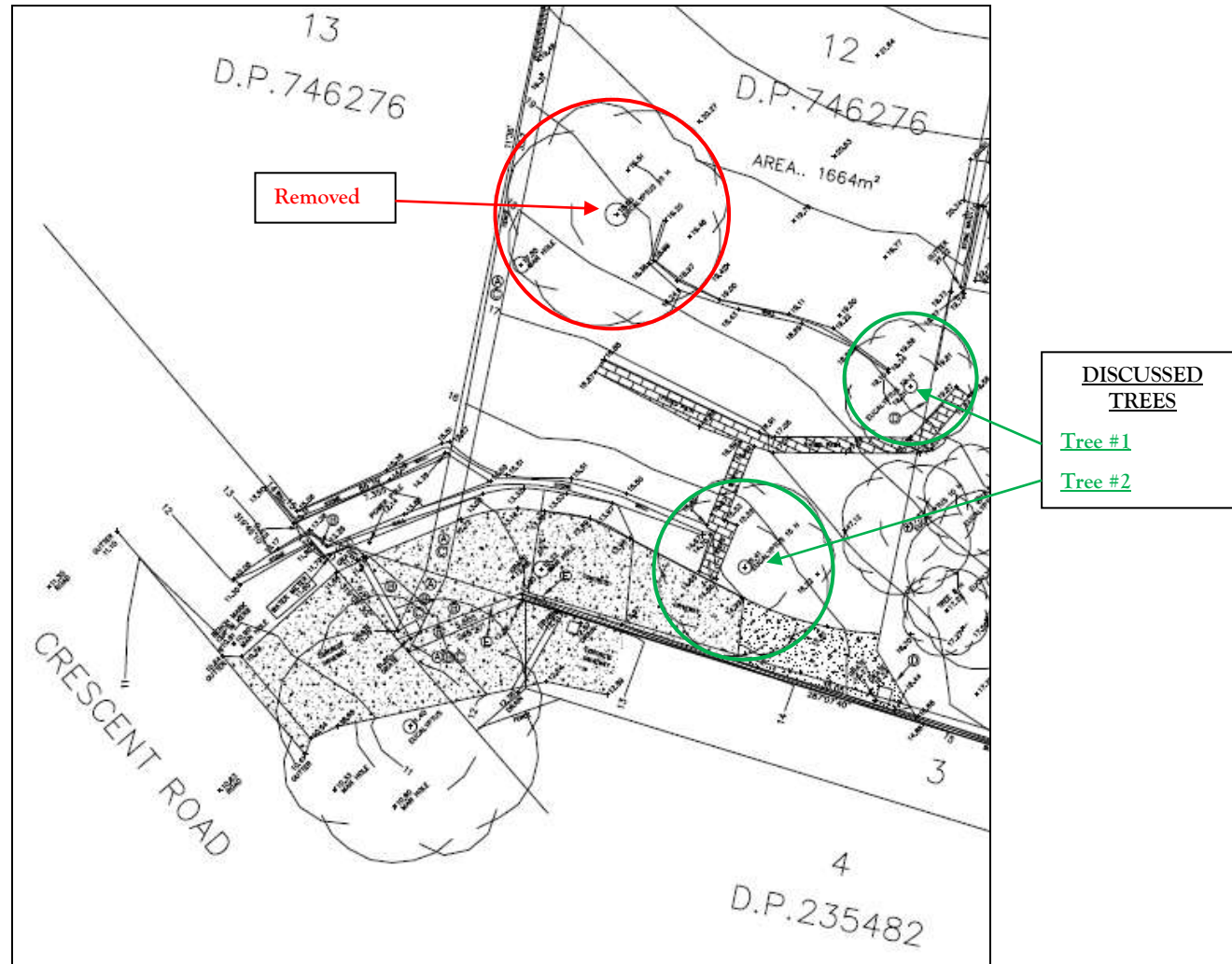


Figure 5: Illustrates location of the 2 discussed trees.



Figure 6: Illustrates location & condition of Tree #1.



Figure 7: Above & previous page illustrates the locations of Tree #1 & Tree #2.

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	Structure	Significance/ Retention Values	Comments
1	<i>Syncarpia glomulifra</i> Turpentine Tree	<15.50	<7.00	0.49	5.90	2.60	Established	Fair & Fair	Typical but displays compromized supporting wood tissue	High/ High	<u>Retain, Manage & Protect:</u>
2	<i>Syncarpia glomulifra</i> Turpentine Tree	<15.50	<9.50	0.52	6.30	2.50	Established	Good & Good	Canopy linked to T2 & T3/ Typical	High/ High	<u>Retain, Manage & Protect:</u>

5 Discussion

The *Australian Standard (AS4970–2009 Protection of trees on development sites)* is the guideline required to be addressed relative to best practice '*Tree Management Principles*'. See Chapters 3, 4 & 5 of this document.

Discussed Tree #1 & Tree #2 are confirmed to be within the lot known as 145A Crescent Road.

Tree #1 acknowledged as being of High Significance & High Retention value by size, species, condition or presence. (This tree was not given higher ratings as it displays compromised internal supporting wood tissue as a consequence of 'decay pathogen' (fungal) activity.) Tree #1 is acknowledged to provide 'landscape amenity but is considered to have a 'compromised' Useful Life Expectancy (from herein ULE).



Figure 8: Illustrates supporting wood tissue defects (above) & Tree #1 character (top).

Proposed works, (i.e. excavation required for the dwelling) extends further east compared to the determined DA (DA 2018/1905) of the tree trunk location.

Proposed works, (i.e. excavation) is whilst creating a mathematical 'major encroachment', (i.e. >10% but <20%) of its TPZ total surface area of 109.40m². is considered able to be managed in a manner whereby its ULE could reasonably be predicted to not be compromised.

No breach of the calculated SRZ radial distance (2.60m) is proposed.

Relative to protecting the tree prior to the commencement & throughout the construction phase this tree will be specified to have 'temporary metal mesh (or similar) fencing instated as close to its calculated TPZ radial distance (5.90m) as existing site features allow.

Additionally, any excavation within its 5.90m TPZ radial distance is specified to be completed manually to a depth of 1.00m (or to solid rock) along any line of excavation that breaches its TPZ radial distance.

Tree #2 is acknowledged to be in a 'state of good health & vigour". As such it has been given High Significance & Retention values.

Tree #2 as can be seen on page 17 (Figure 6) is confirmed to be located near previous site disturbance, (i.e. driveway construction, masonry stair construction, retaining walls & terraced garden beds). The tree does not appear to have been adversely impacted upon by the previous identified 'change of environment characteristics.

Proposed works, (i.e. excavation) is whilst creating a mathematical 'major encroachment', (i.e. >10% but <20%) of its TPZ total surface area of 124.00m². is considered able to be managed in a manner whereby its ULE could reasonably be predicted to not be compromised.

Relative to protecting the tree prior to the commencement & throughout the construction phase this tree will be specified to have 'temporary metal mesh (or similar) fencing instated as close to its calculated TPZ radial distance (6.30m) as existing site features allow.

Additionally, any excavation within its 6.30m TPZ radial distance is specified to be completed manually to a depth of 1.00m (or to solid rock) along any line of excavation that breaches its TPZ radial distance.

New tree specimens 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 specimens are to be professionally planted & maintained for a minimum period of six (6) months once installed.

Below is a list of suggested suitable new tree species compatible with the local environment & likely the subject site.

- *Acacia binervia* (Coast Myall)
- *Angophora floribunda* (Rough bark Angophora)

- *Angophora costata* (Sydney Red Gum)
- *Banksia integrifolia* (Coast Banksia)
- *Corymbia maculata* (Spotted Gum)
- *Corymbia gummifera* (Red Bloodwood Gum)
- *Eucalyptus paniculate* (Northern Grey Ironbark Gum)
- *Eucalyptus punctata* (Grey Gum)
- *Glochidion ferdinandi* (Cheese Tree)
- *Syncarpia glomulifera* (Turpentine Tree)

“Site Specific Tree Management Strategy”

TREE # & IDENTIFICATION	RETAIN	MANAGE	PROTECT	REMOVE	REPLACE	METHODOLOGY/ SPECIFICATION
<p><i>Tree #1: Syncarpia glomulifera</i></p> <p>Turpentine Tree</p>						<p>Tree is within 3.20m of the proposed new dwelling.</p> <p>Temporary ‘metal mesh panel fencing’ (or similar) must be instated prior to the commencement of any onsite works.</p> <p>The TPZ temporary fencing plus completed excavation works must be signed off as being AS4970-2009 compliant with the documentation being supported by photographic evidence that no ‘significant diameter damage to ‘live woody roots’ occurred. This document is to be provided to the retained Principal Certifying Authority.</p> <p>Exposed ground within the isolated TPZ exclusion zone is to be mulched.</p> <p>When natural rain events do not occur in any seven consecutive days water is to be</p>

						<p>applied either manually or by temporary irrigation system, (e.g. soaker hoses).</p> <p>Any excavation required within the TPZ exclusion Zone must be completed under the direct supervision of the sites retained Practicing/Consulting Arborist.</p> <p>Any 'live woody tree root' exposed less than 50mm in diameter can be cleanly severed without any input from the sites retained Practicing/Consulting Arborist.</p> <p>Any 'live woody tree root' exposed greater than 50mm in diameter MUST be managed & documented (with supporting photographic evidence) by the sites retained Practicing/Consulting Arborist.</p>
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TREE # & IDENTIFICATION	RETAIN	MANAGE	PROTECT	REMOVE	REPLACE	METHODOLOGY/ SPECIFICATION
<p><i>Tree #2: Syncarpia glomulifera</i></p> <p>Turpentine Tree</p>						<p>Tree is assessed as manageable with no likely adverse impact relative to its ULE.</p> <p>Temporary 'metal mesh panel fencing' (or similar) must be instated prior to the commencement of any onsite works.</p> <p>The TPZ temporary fencing plus completed excavation works must be signed off as being AS4970-2009 compliant with the documentation being supported by photographic evidence that no 'significant diameter damage to 'live woody roots' occurred. This document is to be provided to the retained Principal Certifying Authority.</p> <p>Exposed ground within the isolated TPZ exclusion zone is to be mulched.</p> <p>When natural rain events do not occur in any seven consecutive days water is to be applied either manually or by temporary irrigation system, (e.g. soaker hoses).</p> <p>Any excavation required within the TPZ exclusion Zone must be completed under the direct supervision of the sites retained Practicing/Consulting Arborist.</p>

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						diameter MUST be managed & documented (with supporting photographic evidence) by the sites retained Practicing/Consulting Arborist.
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6 Conclusions / Recommendations

- Relative to the information as presented the GMW consultancy supports the proposed works as presented in documentation reviewed.
- The DA submission is lodged for determination by council officers as per plans referenced considering the specified site specific “Tree Management Strategy”.
- New tree specimens 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 specimens are to be professionally planted & maintained for a minimum period of up to ten (10) months once installed.

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]

7 Limitations on the use of this report

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

8 Assumptions

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

Unless stated otherwise:

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

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

9 Recommended References

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

Barrell, J. 1995, 'Pre-development Tree Assessments', in Trees & Building Sites, Proceedings of n International Conference Held in the Interest of Developing a Scientific Basis for Managing Trees in Proximity to Buildings, International Society of Arboriculture, Illinois

Dr. G. Watson & Dr. D. Neely, 'Trees & Building Sites', LSA Illinois USA 1995

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

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. & 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. $TPZ = DBH \times 12$. 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.

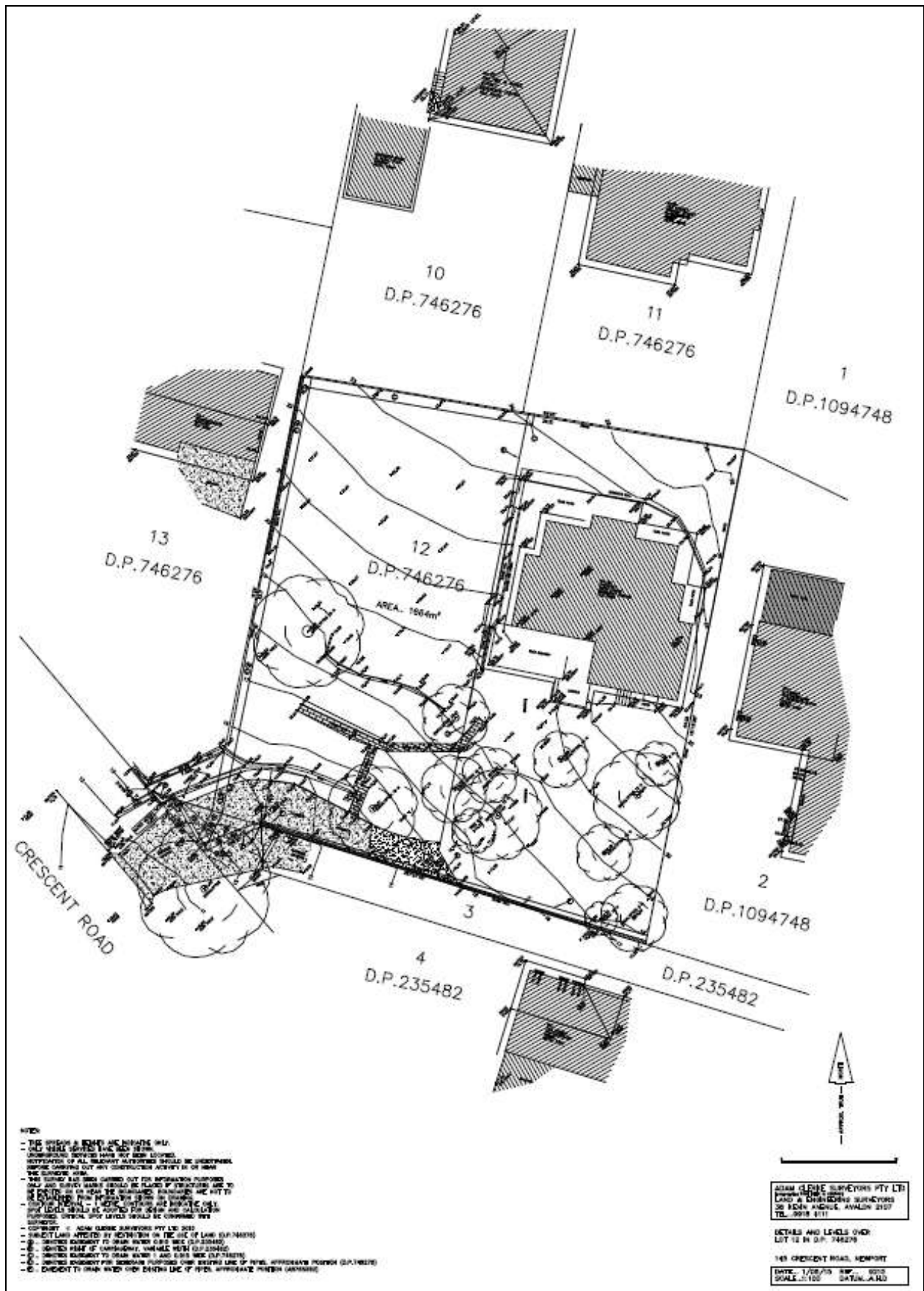
Crown Foliage Density of Potential (CFDP) refers to the density of a tree's crown in relation to the expected density of a healthy specimen of the same species. CFDP is measured as a percentage.

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

Tree Protection & Management Prior to Excavation & 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.

