

TREE 2 - *Liquidambar styraciflua* →



TREE 5 - *Corymbia citriodora* (Lemon Scented Gum) →



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ARBORICULTURAL REPORT

PROPERTY ADDRESS: 3 Katandra Court, Mount Waverley, VIC
Client: Brett Trevethan
Architect: RNB Design

Our Ref: PSY/2017/0928
 Date of Report: 28/09/2017
 Tree Inspection: **28/09/2017 and 22/11/2017** by Dr Peter Yau

• SUMMARY OF REPORT

There are five trees inside the subject site – only Tree-1 is recommended to be retained with no impact. All the other trees are impacted by the design, and being trees not in HIGH retention value category, or not taller than 10m height, their removal is recommended.

Tree-2 had leaf spot fungal infection first observed when inspected in Sept 17. When re-inspected in November the new spring season foliage has shown no more new signs of such leaf spot symptoms indicating the tree is now in good health with thick dense foliage canopy. The tree is still considered of Medium retention value, meaning removal is recommended because the tree is considered too close to the building front unit with encroachment over 10% allowed limit. However if council refuses to grant removal permit, then the tree has to be retained and **the construction of the front unit closest to this tree MUST be tree sensitive, using screw piles supporting footing system with above-grade edge beams, with no site cut/fill, no excavation, no retaining wall etc. Otherwise a root exploration trenching investigation will be necessary.**

Tree-3 and Tree-4 are under 10m and removal does not trigger the council VPO Permit requirement. Tree-5 has suffered massive limb breakage and limb drop leaving a huge open break wound in the tree trunk and the tree canopy HALVED by the developer next door doing massive canopy pruning leaving the tree in half canopy P-shape only.

Tree-2 and Tree-5 being taller than 10m height will need council VPO permit for tree removal.

All other vegetation in the property are not taller than 10m and their removal does not need council VPO permit.

Small street tree is not impacted as crossover is on the other side of property entrance.

For the protection of retained trees, the tree protection measures as per Australian Standards AS4970-2009 are recommended to be implemented and monitored.

• INTRODUCTION

This arborist report has been commissioned by the client to assess designated trees in the subject site for a proposed development of the subject property.

A survey development design plan of this site with trees locations marked has been provided.

• METHODOLOGY OF TREE ASSESSMENT

Tree Assessment Methodology was by means of VTA method (Visual Tree Assessment as per Matthecks) on ground level. Tree size DBH measurements were made with tape measure, and tree height with clinometer. No other tools or instrumentation were used or deemed necessary in this instance.

The report is based on the format and contents in Australian Standard AS4970:2009 – ‘Protection of Trees on Development Sites’.

• LIMITATIONS IN TREE ASSESSMENT

There is no limitation to access to the trees for assessment and measurement.

• MONASH CITY COUNCIL VPO PLANNING SCHEME

This property is in the Monash VPO zone. A permit is required to remove trees with trunk girth greater than 500mm (DBH 160mm) AND tree height taller than 10m.

Monash Council Planning Scheme Clause 22.05 Tree Conservation Policy :

22.05-3
19/01/2006
VC37

Policy

It is policy that:

- Existing semi-mature and mature canopy trees be retained wherever possible to ensure maintenance of the tree canopy.
- Existing street trees be retained and protected.
- Semi-mature canopy trees with spreading crowns be planted as part of any new development, in open space areas, along boundaries adjacent to neighbouring open space and in front setback areas to reinforce the Garden City Character of the area.

• ARBORICULTURAL DATA COLLECTED IN ASSESSMENT

Tree No.	1
Species:	<i>Cupressus spp</i> (Cypress)
DBH:	550 mm
TPZ:	6.6m radius
SRZ:	2.5m radius
Canopy:	8m
Height:	15m
Health:	Good
Structure:	Good
Form:	Good
Significance:	Exotic conifer cypress tree for frontage amenity & greenery
ULE:	Long (depends on future maintenance)

Retention: Medium – if removal needs VPO permit
Impact: Unlikely to have impact – tree appears far enough away from front Unit

Tree No. 2
Species: *Liquidambar styraciflua* (Liquidambar)
DBH: 480 mm
TPZ: 5.75m radius
SRZ: 2.5m radius
Canopy: 12m
Height: 14m
Health: **Fair in Sept** – leaves suffering from leaf-spot fungal attack and leaf margin necrosis – photo1
***Good in Nov** - New spring season foliage when inspected on 22/11/17 revealed no new signs of any leaf-spot symptoms in the new leaves on this tree in this spring season. The tree canopy foliage density is dense healthy and in good health.
Photos2-3 refer.

Structure: Good
Form: Good
Significance: Exotic shade tree for frontage amenity & greenery
ULE: Medium (depends on future maintenance)

Retention: **Medium – if removal needs VPO permit**
Impact: **Tree too close to front Unit – recommend to remove tree as first option**
IF council refuses to grant removal permit, then the construction of the front unit closest to this tree MUST be tree sensitive, using screw piles supporting footing system with above-grade edge beams, with no site cut/fill, no excavation, no retaining wall etc. Otherwise a root exploration trenching investigation will be necessary.



Photo-1 Last season Leaf Spots and margin necrosis **Photo-2** New Season Foliage – No More Leaf Spots – healthy leaf



Photo-3 Tree in good healthy condition with thick dense foliage canopy (22 Nov 17)

Tree No. 3
Species: *Jacaranda mimosifolia* (Jacaranda)
DBH: 330 mm
Canopy: 8m
Height: 9m
Health: Fair – leaves still deciduous on tree top at inspection time
Structure: Good
Form: Good
Significance: Exotic shade flowering amenity tree for frontage landscape
ULE: Medium (depends on future maintenance)
Retention: **Medium – removal does NOT need VPO permit – not taller than 10m**
Impact: **Tree in front Unit building envelope – need removal**

Tree No. 4
Species: *Pittosporum eugenioides variegatum* (Variegated Pittosporum)
DBH: 8 x stems of 80-100mm
Canopy: 6m
Height: 5m
Health: Good
Structure: Poor – multiple trunks very messy
Form: Fair

Significance: Exotic small greenery tree
 ULE: Medium (depends on future maintenance)
 Retention: **Low – removal does NOT need VPO permit – not taller than 10m**
 Impact: **Tree in the driveway – need removal**

Tree No. 5
 Species: *Corymbia citriodora* (Lemon Scented Gum)
 DBH: 500mm
 Canopy: 12m / 6m (asymmetrical shape)
Height: 16m
 Health: Good
 Structure: **Poor – large branch had broken off leaving HUGE open wound in main trunk – see photo**
 Form: **Poor – half of tree canopy cut off by adjoining property development, canopy shape becomes P-shape with only half canopy - unbalanced and asymmetrical shape – see photo**

Significance: Native greenery tree – a **HIGH RISK** limb dropper gum tree species
 ULE: Medium (depends on future maintenance)
 Retention: **Low – removal recommended - needs VPO permit – tree taller than 10m**
 Impact: **Tree too close to rear unit – will encroach tree TPZ – tree not worth retention**



Tree-5 Large wound by limb breakage

Tree canopy P-shape due to unbalanced canopy lopping

Tree No. 6 - street tree outside property frontage
 Species: *Callistemon spp* (Bottlebrush)
 DBH: 3x 100mm
 TPZ: 2m radius
 SRZ: 1.5m radius
 Canopy: 4m
 Height: 5m
 Health: Fair
 Structure: Fair
 Form: Fair
 Significance: Native flowering greenery street tree for streetscape

ULE: Medium (depends on future maintenance)
Retention: Council street tree to be retained
Impact: No Impact. Crossover on the other side of property entrance.

• CONCLUSION & RECOMMENDATIONS

There are five trees inside the subject site – only Tree-1 is recommended to be retained with no impact. All the other trees are impacted by the design, and being trees not in HIGH retention value category, or not taller than 10m height, their removal is recommended.

Tree-2 had leaf spot fungal infection first observed when inspected in Sept 17. When re-inspected in November the new spring season foliage has shown no more new signs of such leaf spot symptoms indicating the tree is now in good health with thick dense foliage canopy. The tree is still considered of Medium retention value, meaning removal is recommended because the tree is considered too close to the building front unit with encroachment over 10% allowed limit. However if council refuses to grant removal permit, then the tree has to be retained and **the construction of the front unit closest to this tree MUST be tree sensitive, using screw piles supporting footing system with above-grade edge beams, with no site cut/fill, no excavation, no retaining wall etc. Otherwise a root exploration trenching investigation will be necessary.**

Tree-3 and Tree-4 are under 10m and removal does not trigger the council VPO Permit requirement. Tree-5 has suffered massive limb breakage and limb drop leaving a huge open break wound in the tree trunk and the tree canopy HALVED by the developer next door doing massive canopy pruning leaving the tree in half canopy P-shape only.

Tree-2 and Tree-5 being taller than 10m height will need council VPO permit for tree removal.

All other vegetation in the property are not taller than 10m and their removal does not need council VPO permit.

Small street tree is not impacted as crossover is on the other side of property entrance.

For the protection of retained trees, the tree protection measures as per Australian Standards AS4970-2009 are recommended to be implemented and monitored.

STRUCTURAL ROOT ZONE (SRZ) AND TREE PROTECTION ZONE (TPZ)

SRZ is the distance calculated from AS4970-2009 formula: $R_{(SRZ)} = (D \times 50)^{0.42} \times 0.64$ (P.13). Construction should not be conducted within a tree's SRZ.

TPZ is the radial distance equivalent to 12 times a tree's DBH (Diameter at Breast Height measured at 1.4m above ground level) according to AS4970:2009 "Tree protection on development sites".

Up to 10% TPZ area encroachment is allowed under AS4970:2009. Encroachment is defined in AS4970-2009 as "excavation, compacted fill and machine trenching". If proposed encroachment is greater than 10% of the TPZ, detailed root investigation by non-destructive methods should be carried out (by hand digging, ground penetration radar, hydro or air knife excavation methods) to determine root distribution pattern and root density to the satisfaction of the project arborist that the tree will remain viable. The area lost to encroachment must be compensated for elsewhere and contiguous with the TPZ.

IF buildings do encroach into the TPZ, acceptable tree sensitive construction building construction methods must be used for tree protection and damage reduction. Such methods include pier and

beam, suspended slabs, cantilevered building sections, screw piles and contiguous piling can minimize the impact of encroachment.

Crossing and driveway construction within TPZ/SRZ shall use porous permeable paving materials to allow air and water infiltration into the subsoil stratum for roots. Driveway construction must be of non-excavation method - above grade that does not damage the roots of protected trees.

Underground pipes conduits channels etc for utility services if located in the TPZ must be laid by tunneling method and NOT by open cut trench excavation.

- Physical damage to tree trunk, branches and bark by impact, fire or tearing.

A protective fence of adequate construction around each protected tree's TPZ shall be erected and maintained throughout construction. Operators of tall machinery (eg mobile cranes, forklifts or similar equipment) working in the vicinity of the tree should take special care not to cause collision damage to the tree branches overhead.

A strong sturdy chain-link wire fence supported by star droppers and tied with reflective warning tapes would be acceptable as an adequate protective fence for this purpose. This fenced-off area shall be known as the TPZ. The ground surface of the TPZ shall be mulched and irrigated, and a warning sign displayed on the fence to ward off potential intruders and unauthorized personnel. The protective fence may only be taken down for the duration to facilitate authorized construction works inside the TPZ, but must be reinstated at works completion at the end of the day.

Any tree pruning, canopy uplifting or branch removal must be performed by a skilled arborist to meet approved arboricultural standards as per AS 4373-2007 "*Pruning of amenity trees*".

- Root damage

Root damage is commonly caused by soil excavation, cut and fill, soil grade reduction, trenching or other earthworks. It is critically important not to induce any soil level changes around the protected tree, especially within the tree's TPZ. An approved arboriculturist (the project arborist) should be consulted, and be present on site to supervise any earthworks within the TPZ of the protected tree.

- Soil aeration

Soil aeration deprivation may be caused by soil level buildup, soil compaction and waterlogging. Anoxic or hypoxic soils will kill tree roots, leading to tree mortality. No soil dumping, soil fill & stockpile, soil compacting, blockage of natural drainage patterns and the like should be allowed within the tree's TPZ.

- Soil water content changes

Soil water content changes in both extremes of water deprivation or waterlogging can adversely affect tree health and survival.

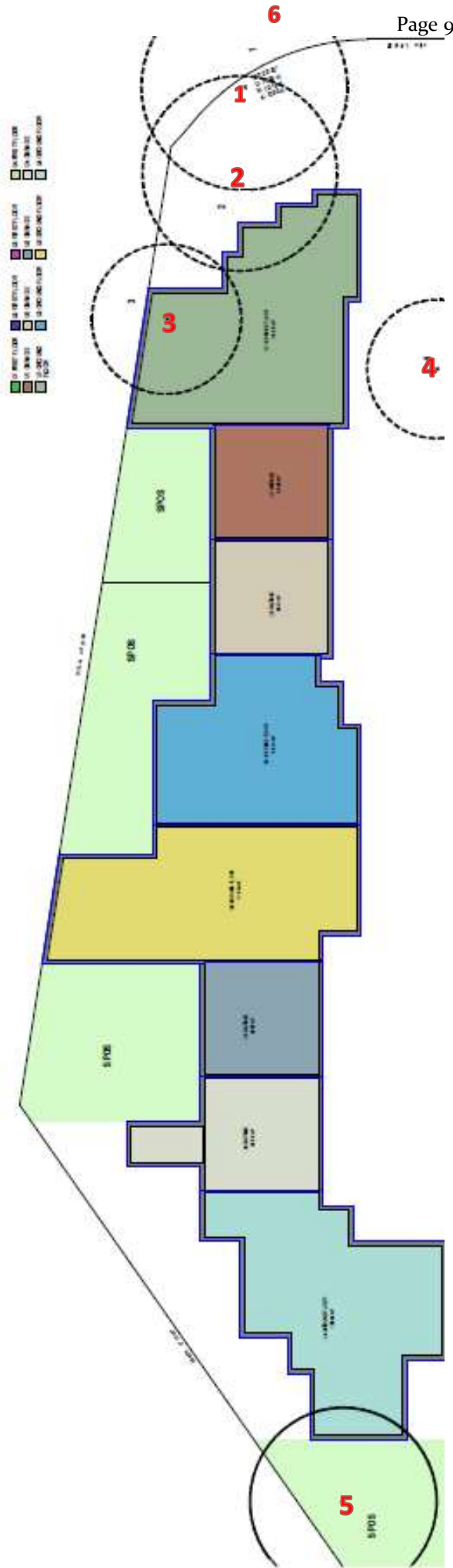
Site works that alter natural water table level, water flow, soil water infiltration, retention or drainage should not be permitted.

- **Soil compaction**

Soil compaction by construction machinery can adversely affect soil physical properties, eg porosity, aeration, water retention, soil strength etc which in turn would affect root growth and tree health. Planks or rumble boards should be placed over mulched soil surfaces to reduce the compaction pressure of machinery tyres on soil surfaces.

- **Spilling or dumping of building materials**

Spillage or dumping of building materials (eg lime, cement, concrete etc) or other chemicals (acids, petrol, oil, herbicides etc) is harmful to tree roots and can lead to tree mortality. Building materials or other toxic materials should not be stored close to or within the critical root zone of the tree. Any spillage should be cleaned up immediately and reported to the project manager.



EXPLANATORY NOTES

SIZE DIMENSIONS:

DBH (Diameter Breast Height) is a measurement of trunk diameter taken at 1.4m above ground level. Girth is circumference measured at 1.4m above ground level.

For multiple trunk trees, $DBH_T = \{ (DBH_1)^2 + (DBH_2)^2 + (DBH_3)^2 \}^{1/2}$

Canopy Spread is a measurement of canopy diameter measured from edge-to-edge of canopy drip-line.

Height is a measurement of the tree's height by clinometer.

Tree Protection Zone (TPZ) is estimated as 12 times the tree trunk DBH as per AS 4970:2009 'Protection of Trees on Development Sites' – it is a radius distance from tree trunk base

Structural Root Zone (SRZ) is estimated as per AS 4970:2009 'Protection of Trees on Development Sites' – it is a radius distance from tree trunk base

VIGOUR/HEALTH:

The health condition of the tree is classified as **Very Good, Good, Fair, Poor, Moribund/Dead**.

These observations are based on factors such as physical damage, broken branches, scars, root damage, rotten cavities, visible fungal bodies, branches dieback, deadwood, branch stubs, observable diseases or insect damage/infestation, foliar colour and density of the canopy, growth extension over the last year etc.

Vigour/Health:

Category	Description
Very Good	Outstanding specimen. Full & balanced canopy. Good shape and form. Foliage dense, entire with good colour, no pest/disease damage. No dieback or deadwood. Excellent growth indicators, eg extension growth.
Good	Canopy full, may be slightly asymmetrical. Foliage dense, entire with good colour, minimal pest/disease damage. Negligible quantity of deadwood (<10%). Good growth indicators, eg extension growth.
Fair	Canopy may be unbalanced. Foliage density thin, generally with good colour, some discoloration may be present. Minor pest or disease damage present. (Typical for species in location). Minor quantity of deadwood (<30%).
Poor	Major quantity of deadwood & dead/broken limbs (>30%). Foliage density thin & sparse, may be severely defoliated, wilting, chlorotic or necrotic, may have excessive epicormic or basal sprout growth. Serious pest/disease damage, and stress level leading to tree decline.
Dead Moribund	Tree is moribund or dead, totally defoliated or no live-foliage and green bark on the tree. Bark may be peeling off trunk-branch.

STRUCTURE:

The structure of the tree is classified as **Very Good, Good, Fair, Poor, Dead**.

These observations are based on factors such as canopy balance and symmetry, straight or leaning trunk, single or multiple trunks, bifurcated codominants with included bark, risk of branch drop or tree collapse, presence of decay in trunk or roots, evidence of instability etc.

Structure:

Category	Description
Very Good	Excellent branch attachment, no structural defects. Trunk straight, sound and solid, with no exposed wounds, cavities and decay. No damage to roots, and good root buttressing. Good trunk and scaffold branch taper. No branch over extension.
Good	Good branch attachment with minor structural defects. Trunk straight, sound, may show minor non-hazard wounding. No damage to roots, with good buttressing.
Fair	Some minor structural defects and/or minor damage to trunk. Regenerated crown after severe pollarding. Bark torn and missing on main trunk or branches. Cavities and decay may be present. May have minor damage to roots not threatening tree stability. May have slight leaning and slightly lopsided canopy.
Poor	Major structural defects eg trunk bifurcation with included bark, cracked or split branches, pollarded canopy not regenerated, trunk/branch damage and/or missing bark, large rotten cavities, girdling or damaged roots that destabilize the tree. Root buttress not visible above ground. Serious lean, not straight growing. Canopy halved and lopsided.
Dead	Dead tree poses imminent risk or high hazard risk

SHAPE/FORM:

The shape and form of the tree is classified as **Good, Fair, Poor**.

These observations are based on factors such as canopy shape, balance and symmetry, straight or leaning trunk, single or multiple trunks.

Shape/Form:

Category	Description
Good	Single upright straight tree trunk. No leaning. Well-balanced full density symmetrical canopy.
Fair	Multiple trunks. Tree with minor leaning (<30 degrees off vertical). Slightly lopsided unbalanced canopy. Regenerated canopy after lopping/pollarding.
Poor	Tree trunk with serious leaning (>30 degrees off vertical), tree trunk with kinking, twisting, Canopy lopped/pollarded. Canopy halved, badly leaning and/or lopsided. Tree top cut off for overhead powerlines clearance or top dieback, or blown off in strong winds.

SIGNIFICANT TREES

This rating is to be used to rate the significance of trees in the area.

Trees that are of State or National significance would normally be registered by The National Trust or Heritage Council and would be identified as such.

Local Councils planning scheme may have separate listings of Significant Trees in the Municipality.

Trees may be considered as significant if they fall into one or more of the following categories:-

- ◆ Exceptional size and/or age
- ◆ Rare or threatened/endangered species.
- ◆ Unusual shape or form
- ◆ Aboriginal cultural value
- ◆ Heritage or Historic value
- ◆ Exceptional example of a species.
- ◆ Genetical Biodiversity Value
- ◆ Outstanding feature in the landscape
- ◆ Habitat Value.

Generally trees are described according to their flowering and foliage amenity, greenery contribution, shade, shelter, screening, or being classified as noxious weeds or environmental weeds.

USEFUL LIFE EXPECTANCY (ULE)

<u>Long</u>	Over 50 years
<u>Median</u>	10-50 years
<u>Short</u>	Under 10 years

RETENTION

<u>High</u>	Retention recommended
<u>Median</u>	Retention/Removal Optional
<u>Low</u>	Removal recommended
<u>Remove</u>	Removal a matter of necessity or urgency



Dr Peter Yau *MSc(Oxford) PhD(Melb) CBiol FRSB*
Arboricultural Consultant

28 September 2017 – First Report

22 November 2017 - Amendment

Summary of Author's qualifications and experience

- (a) I (Dr Peter Yau) am the arboriculturist who prepared this arborist report.
- (b) My qualifications include:
- a. Bachelor of Science (Honours) in Botany & Biochemistry – Hong Kong University, HKG
 - b. Master of Science (Forestry/Arboriculture) – Oxford University England, UK
 - c. Doctor of Philosophy (Forestry/Arboriculture) – Melbourne University Victoria AUST
 - d. Graduate Diploma in Business Administration – Swinburne University of Technology, Victoria Australia
 - e. Chartered Biologist (CBiol) & Fellow of Royal Society of Biology (FRSB) UK
 - f. Editorial Board Member (1995-2008) of Arboricultural Journal (International Journal of Urban Forestry) Arboricultural Association of UK.

My professional experience in arboriculture includes:

- a. 1976-1995 Arboriculturist of the Melbourne City Council being responsible for the policy and management issues relating to the planting, maintenance, removal, transplanting, protection, preservation of all trees within the municipal district of the City of Melbourne. Also appointed to membership of Victorian state government task force for Elm tree diseases.
- b. 1995- now Arboricultural Consultant to public and private sector clients eg
 - i. Office of The Governor, Government House Victoria
 - ii. Energy & Water Ombudsman of Victoria
 - iii. Public Transport Ombudsman of Victoria
 - iv. Municipal Councils in Victoria and NSW
 - v. State Government - Places Victoria (Former VicUrban)
 - vi. Private property developers, architects, planners, lawyers etc
 - vii. Hong Kong Government – Leisure & Cultural Services Department (LCSD), Agriculture Forestry & Conservation Department (AFCD), MTR Corporation
 - viii. Appointed Member of Expert Panel of Hong Kong Government Tree Management Office, Development Bureau 2011-2016
 - ix. P.R. China – Registered Foreign Expert

My academic experience in arboriculture includes:

- c. 1982- now Visiting Lecturer in Arboriculture – Burnley College, The University of Melbourne
- d. 1990- now External Examiner of Post-Graduate Research Degree Thesis
- e. I have given arboricultural training courses, keynote addresses and presentations to national and international conferences, workshops and seminars nationally and internationally, and I have published peer-reviewed papers in international journals in arboriculture. I have written critique reviews on other scientists' books, publications and papers.

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Any alteration to any part of the document unless authorized by or undertaken by the author will invalidate the entire document.

All observations made and all information provided in this document represents the assessor's personal professional opinion based on the trees' conditions **at the time of inspection** only.

Except as otherwise stated in the report, all observations and assessments are made by visual inspection (VTA – Visual Tree Assessment of Matthecks) conducted at ground level only.

All comments made are based on current professional scientific knowledge and available published research findings.

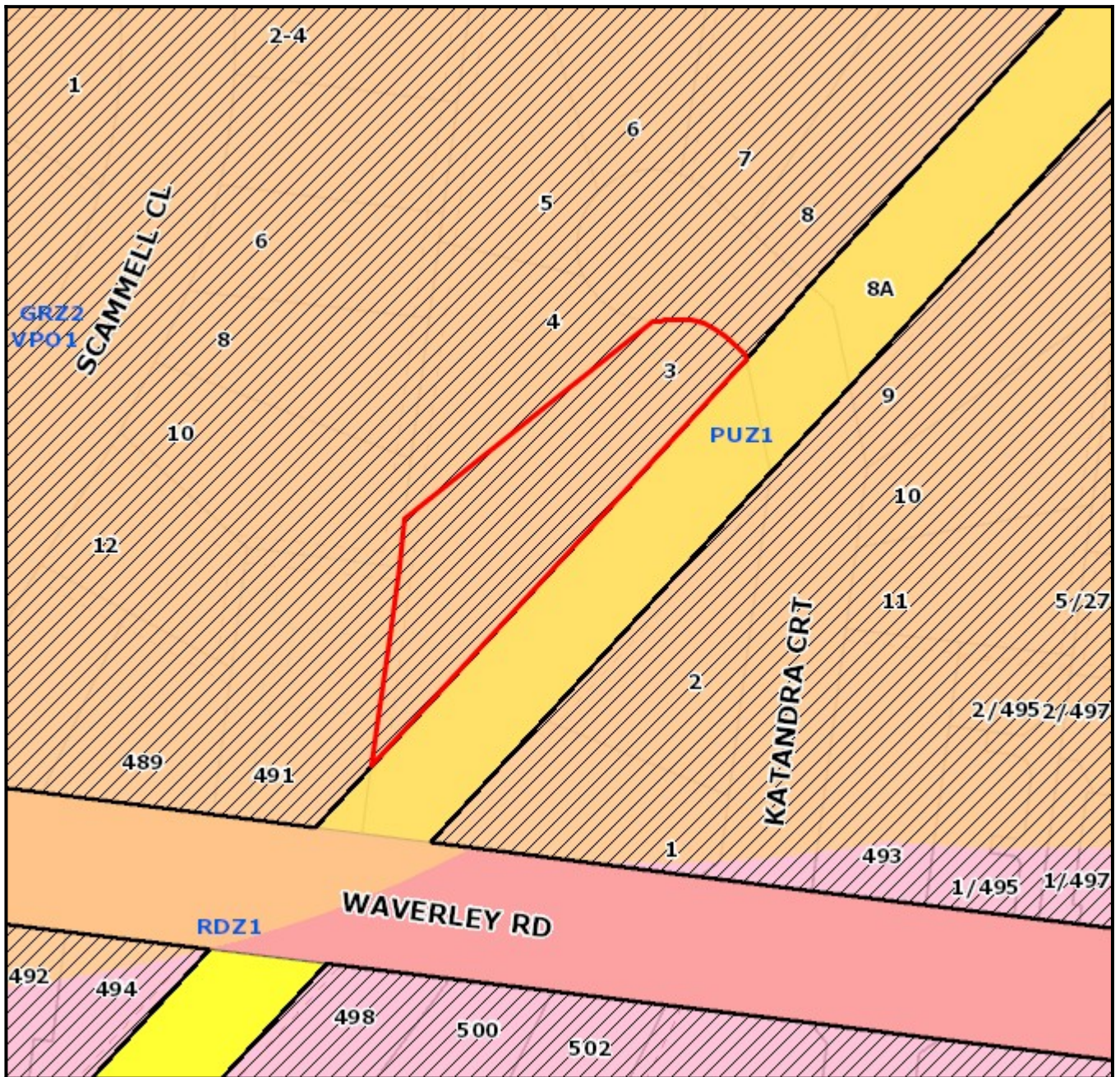
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Planning Overlays and Zones



Legend

Planning Zones	GRZ2	PUZ1	PUZ7	SUZ3	Planning Overlay	HO
C1Z	IN1Z	PUZ2	RDZ1	SUZ4	LSIO / SBO	IPO
C2Z	MUZ	PUZ3	RGZ1	SUZ5	NCO	DPO
CA	NRZ1	PUZ4	RGZ2	SUZ6	PAO	PO
CDZ1	PCRZ	PUZ5	SUZ1	UFZ	EAO	
GRZ1	PPRZ	PUZ6	SUZ2		DDO	
					VPO	

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