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50 CONDOVER STREET

NORTH BALGOWLAH, NSW

PROPERTY SUBDIVISION

ARBORICULTURAL ASSESSMENT REPORT

Report Ref No- 11221

Prepared for
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INTRODUCTION

This arboricultural report has been commissioned by Mr. Adrian McGreger to assess the remaining Useful Life Expectancy (ULE) of significant trees in relation to a property subdivision proposal. Two (2) individual allotments are proposed separating the subject site known as Lot 4 in DP 30205 being 50 Condoover Street, NORTH BALGOWLAH NSW.

This report is not a development application or Arboricultural Impact Assessment (AIA) report required for tree protection under new dwelling and associated infrastructure proposals. This report provides a guide for tree protection based on indicative building footprints and driveway access handles to accommodate the subdivision proposal.

The Structural Root Zone (SRZ) and Tree Protection Zone (TPZ) radiuses of individual trees has been provided within Appendix-C and are shown within the SRZ & TPZ distance column. These setbacks are recommended to be utilized for initial architectural, construction plan and associated works during structural dwelling design stages. To ensure trees remain viable design should be limited to minimal or Minor (<10%) incursion within the TPZ as identified within Appendix- A *diagram of acceptable incursions* (AS4970).

Development incursions within tree protection zones (TPZ) and impacts to trees have been outlined within Notes of Appendix- A where incursions are described as Minor (<10%) & Major (>10%) TPZ occupancy having low, moderate to high level encroachment impact within the TPZ. Where site restrictions within notional root zone radiuses exists development impacts or encroachment disturbances are based on author's experience, observations of site conditions, soil type and topography.

Within this report each tree has been accorded a temporary identification number and is referred to by number throughout this report. For additional trees not plotted on provided documentation their location has been estimated by taking offsets from existing trees and structures. The subject trees and their location have been identified within the Tree Assessment Schedule and Tree Location Plan of Appendices C and D.

Care has been taken to obtain information from reliable sources. All data has been verified as far as possible, however, I can neither guarantee nor be responsible for the accuracy of information provided by others.

DISCLAIMER & LIMITATION ON THE USE OF THIS REPORT: This report is to be utilized 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 copy) is referenced in, and directly to that submission, report or presentation. Unless stated otherwise: Information contained in this report covers only the tree/s that were examined and reflects the condition of the trees at the time of inspection: and the inspection was limited to visual examination of the subject tree without dissection, excavation, probing or coring. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the subject tree/s may not arise in the future. Arborist cannot guarantee that a tree will be healthy or safe under all circumstances, or for a specific period of time. Trees are a living entity and change continuously, they can be managed but not controlled and to be associated near one involves some degree of risk.

METHODOLOGY

1. In preparation for this report a limited site and ground level Visual Tree Assessment (VTA) was conducted on Friday 9th July 2021 by the author of this report. The principles of VTA were primarily adopted from components of Mattheck & Breloer 1994 '*The Body Language of Trees*' with very basic risk values determined by criteria explained within the ISA Tree Risk Assessment Qualification (TRAQ) manual 2017. The inspection included assessment of the overall health and vigour of the trees, tree form, structure and structural condition commencing from near the lower trunk to the upper first order branch division as best as site conditions would allow. On completion of the VTA the retention value of the tree was summarised utilizing the tree assessment Checklist shown within Appendix- B.
2. The inspection was limited to a visual assessment from within the subject site where the retention value, condition and diameters of neighbouring trees was estimated. Tree height and canopy spread was estimated and expressed in metres with trunk diameters measured at approximately 1.4 metres above ground level, rounded off to the nearest 50mm and expressed as DBH (Diameter at Breast Height).
3. This report acknowledges the current Australian Standards 'Protection of Trees on Development Sites' AS4970 with reference to section 2.3.2 *The preliminary assessment of trees should take place at the beginning of the project once any site surveys have been completed. The purpose of this assessment is to provide quantitative and qualitative information on trees. All trees included in the site survey should be numbered and assessed by the project arborist as the basis for deciding which trees are suitable for retention* (AS4970).
4. Plans and/or documentation received to assist in preparation of this report include:
 - TSS Total Surveying Solutions job No. 190990
 - Survey Plan ref No: 190990_D, rev D dated 4.5.2021
 - McGregor Coxall, phase Subdivision DA
 - Subdivision Plan, Sheet No. DA-01, rev – dated ---.---.---
 - Subdivision Works, Sheet No. DA-02, rev – dated ---.---.---
5. NOTE: Unless specified otherwise all distances and development offsets within this report are radiuses taken from the centre of the tree.

1. SUMMARY OF ASSESSMENT

1.1 General tree assessment

1.1.1 Five (5) trees have been assessed for the purpose of this report. Of the five trees two (2) trees are located within adjacent Council verges, one (1) tree is located within a neighbouring property, one (1) tree is located partly on the boundary and one (1) tree within the site is identified as a non-prescribed (exempt) tree being less than 5m in height.

Council verge trees: are identified as Brush Box trees T1 & Grey Gum T5. The trees display no significant visual faults and are viable for retention.

Neighbouring trees: T2 (Angophora) displays no significant visual faults with T4 (Port Jackson Fig) located partly on the boundary. T4 has been subjected to canopy reduction works with both trees being capable of retention displaying with no significant defects that would warrant tree removal.

Exempt non-prescribed species: is identified as T3 (Marraya) being under 5m in height. Being an exempt non-prescribed tree T3 is permitted to be managed (pruned, removed or relocated) without Council consent. Should the tree require retention further advice and protection methodology is required prior to works occurring within Tree Protection Zone (TPZ) setbacks.

Table 1, Summary of tree retention values

	Dead or high risk trees	0	-
	Exempt species	1	T3, under 5m in height
	Low retention value trees	0	-
	Neighbouring tree	1	T2, displaying no significant visual faults
	Part neighbouring tree	1	T4, reduction pruned after storm event
	Council verge trees	2	T1 & 5, display no significant visual faults

1.2 Concept design discussions

1.2.1 As shown within Figures 1 & 2 the proposed driveway access locations and building footprints have low level impacts or manageable occupancy within tree protection zones. No works are proposed within Structural Root Zone (SRZ) with summary of impacts discussed below and detailed within Appendix- C:

T1: Negligible impact with existing driveway to remain.

T2: Proposed building footprint located at or just within the 5.4m TPZ of negligible to potentially Minor (<10%) TPZ encroachment.

T3: An exempt tree that is permitted to be managed without Council consent to accommodate design requirements.

T4: Proposed driveway having Minor (<10%) TPZ occupancy & impact, with proposed building footprint having a Major (>10%) TPZ occupancy of a manageable Moderate to Low (10-15%) encroachment.

T5: Proposed driveway having a Major (>10%) TPZ occupancy of a manageable Moderate to Low (10-15%) encroachment.

Figure 1: showing driveway crossover proposals

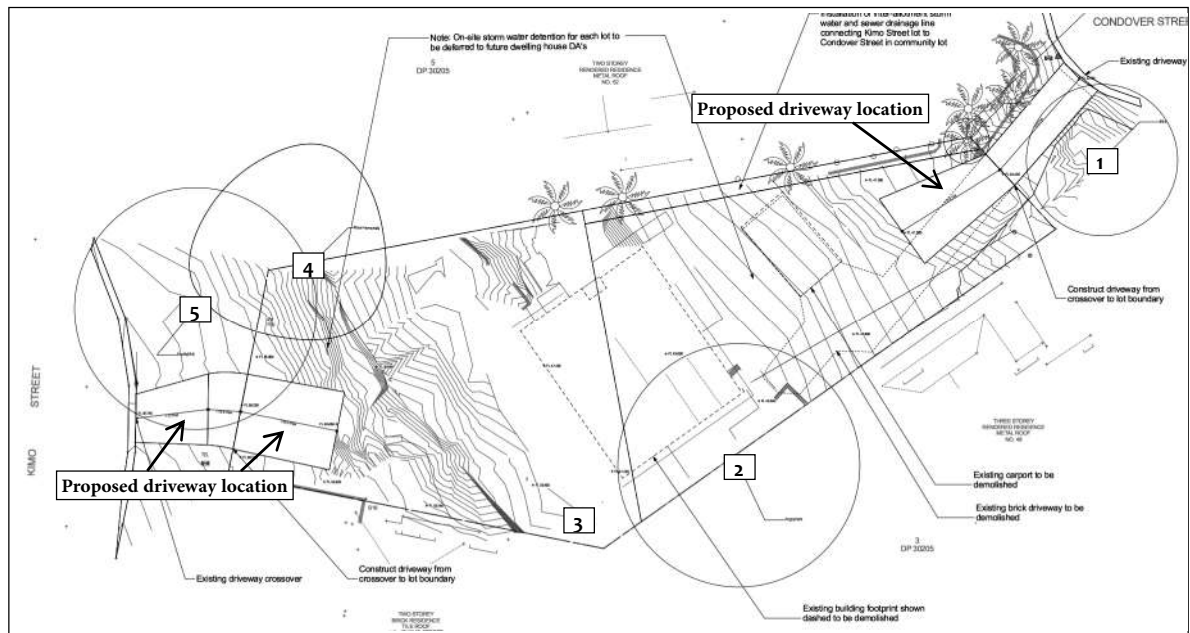
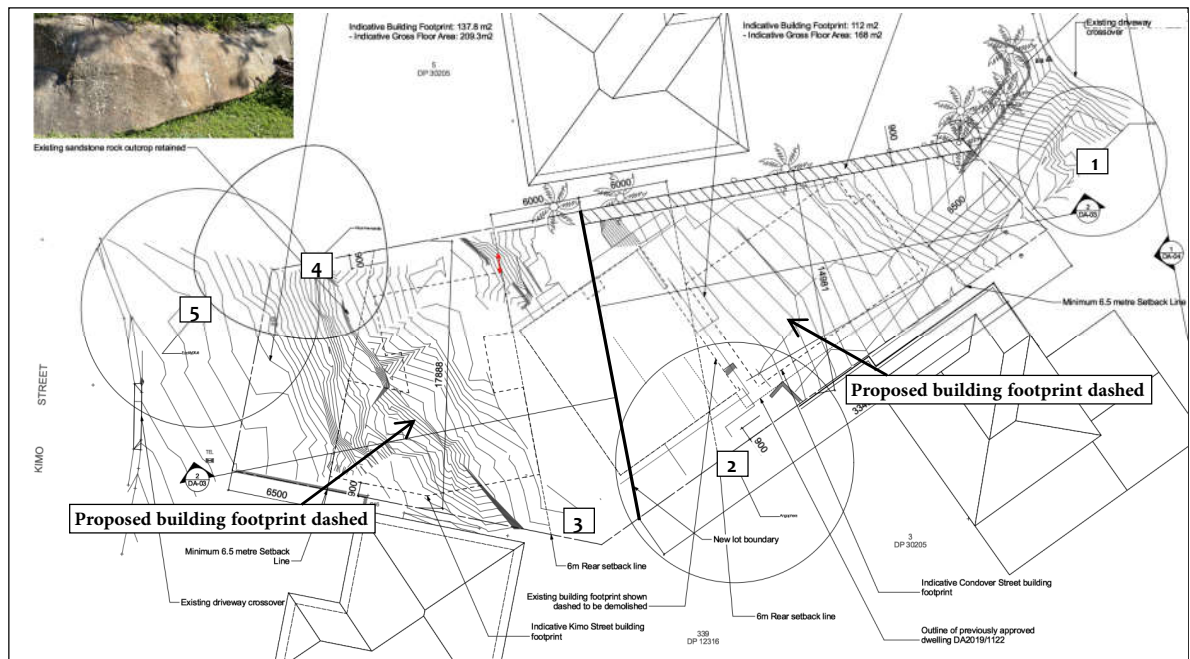


Figure 2: showing proposed subdivision dwelling footprints



1.3 Trees specified for retention

1.3.1 For those trees located near works or specified for retention the SRZ & TPZ radiuses are recommended to be shown within construction drawings such that development incursions and restrictions in design can be clearly identified. For allowable incursions within the TPZ refer to Appendix- A *diagram of acceptable incursions* within the TPZ. Where greater than 10% incursion is proposed further arborist advice is required at the initial design stage to ensure encroachment impacts are minimized.

1.3.2 *In general* the impact of development on **vegetation** can be minimised by:

- Locating buildings to minimise the amount of disturbance on vegetation and landforms by providing adequate distance between the dripline of the tree and development. This avoids destabilising trees and deoxygenating the soil or altering **drainage** to help tree preservation;
- Avoiding strip footings and slab on ground construction due to the impact on trees in close proximity. Suitable footing alternatives which can be considered are - stump footings usually associated with lightweight construction on sloping sites, pier and beam footings as the beams are able to span the root systems and minimise tree root damage. Pier and beam footings also allow trees to be located closer to development where no other alternative exists, locating paved areas outside the dripline of trees and minimise paved area impact on understorey vegetation or native groundcover species, minimising hard surfaces to allow water infiltration to the root system, locating trenches outside the dripline of a tree, Adequately protecting and managing trees and vegetation during construction in accordance with AS4970 and protecting root zones, tree trunk and bases with fencing or a tree barrier during construction.

1.3.3 *Proposed driveway construction:*

- In accordance with AS4970 - 2009 (1.4.4) a Project or Site Arborist is to be engaged to monitor, supervise excavation within TPZ setbacks, advise and provide certification of tree or root protection works conducted. The project arborist is recommended to hold a minimum Australian Qualification Framework (AQF) Level 4 certification and be competent in methodology of protecting trees on development sites.
- Unless specified otherwise during approved driveway excavation activities within TPZ setbacks excavation is to be conducted manually (by hand) under the supervision of an appointed project arborist. Where approved by the arborist the pruning of roots at or <30mm(Ø) is to be conducted in accordance with AS4970 – 2009 Section 4.5.4 *Root protection during works within the TPZ*, such that tree roots are not damaged or ripped beyond the point of excavation by site machinery. Where larger roots have been encountered they are to be referred to an independent Level 5 arborist for further advice.
- *Tree sensitive construction measures* such as suspended slabs, pier and beam bridging over critical roots and cantilevered driveway sections can minimise the impact of TPZ encroachment (AS4970). Final design shall be reviewed and endorsed by an appointed project arborist prior to obtaining a Construction Certificate (CC).

1.3.4 The detailing of additional tree protection and impacts by design is to be specified within a detailed Arboricultural Impact Assessment (AIA) report.

1.4 Future structural design work recommendations

1.4.1 For the purpose of development trees which have been identified for retention and specific protection require final arboricultural planning advice and reports to be appropriately retained. Report requirements and ongoing arborist activities are identified within the Australian Standard AS4970 'Protection of Trees on Development Sites' 2009 being specific to:

- AS4970 section 2.3.4: *Development design and review*, the ongoing review of architectural, engineering (e.g. bulk earthworks and construction drawings) services and landscape drawings. The purpose of this is to determine the potential impacts on trees proposed for retention.
 - AS4970 section 2.3.5: *Arboricultural impact Assessment or statement*, to be prepared once the final development layout is complete. This report identifies trees to be removed, retained or transplanted. The report explains tree protection methodology required to minimise development impacts where development encroachment is within the TPZ. The location of tree protection methods should also be shown on other documents such as demolition, bulk earth works, construction and landscape plans (AS4970).
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Should you require further liaisons in this matter please contact me direct on
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Yours sincerely



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Certified Arborist / Tree Surgeon (AQF3), ISA Tree Risk Assessment Qualified 2024
Member: ISA, Arboriculture Australia & IACA, Working With Children No: WWC0144637E



APPENDIX- A: Terminology, notes & references

Age classes: (I) Immature refers to a well established but juvenile tree. (ESM) refers to an early semi mature tree not of juvenile appearance. (SM) Semi-mature refers to a tree at growth stages advancing into maturity and full size. (LSM) Late Semi- Mature, refers to a tree between semi-mature and close to mature. (EM) refers to a tree at the first stages of maturity. (M) Mature refers to a full size tree with some capacity for future growth. (LM) Late mature refers to a tree entering into over maturity (OM) and likely first stages of senescence.

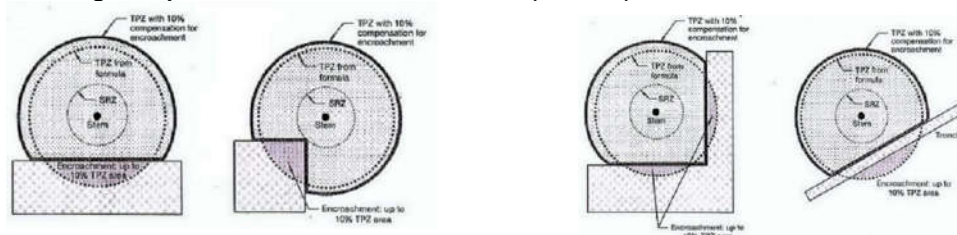
Vitality – the state of being strong & active, capacity for survival or for the continuation of a meaningful or purposeful existence which includes **Health:** refers to a trees vigor exhibited by the crown density, leaf colour, presence of epicormic shoots, ability to withstand disease invasion and the degree of dieback & **Condition:**

referring to the tree's form and growth habit, as modified by its environment (aspect, suppression by other trees, soils) and the state of the scaffold (i.e. Trunk and major branches), including structural defects such as cavities, crooked trunks or weak trunk / branch junctions. These are not directly connected with health and it is possible for a tree to be healthy but in poor condition. **Decay:** (N) – an area of wood that is undergoing decomposition. (V) – decomposition of an area of wood by fungi or bacteria. **Decline:** Is the response of a tree to a reduction of energy levels resulting from stress. Recovery from decline is difficult and slow; is usually irreversible. **Defect:** A identifiable fault in a tree. **Epicormic Shoots:** Shoots that arise from latent or adventitious buds that occur on stems and branches and on suckers produced from the base of the tree. A symptom / result of stress related factors. **Footprint:** The area occupied by site structures, including the dwelling driveways and hard surfaces. **Included Bark:** (Inclusion) a genetic weak fault, pattern of development at branch junctions where the bark is turned inwards rather than pushed out, can pose a potential hazard.

Order of branches: First order being those that are the first to extend from the main trunk or codominant limbs, second order branches extend from the first order and third order branches extend from the second order. **Probability:** The likelihood of some event happening. **Risk:** Is the probability of something adverse happening. **Suppression:** Restrained growth pattern from competition of other trees or structures. **Wound:** Damage inflicted upon a tree through injury to its living cells, may continue to develop further weakening of the structure compromising structural integrity.

NOTE 1: SRZ: The anchoring root zone responsible for tree stability. A development exclusion zone pending appropriate arboricultural advice. Determined by AS4970 - 2009 Figure 1, Table of determining the SRZ section 3.3.5. The percentage of encroachment requires to be calculated where development is proposed within the natural area of the SRZ. **TPZ:** The principle means of protecting trees on development sites. It is a combination of the root area and crown area requiring protection. Development occupying 10% of the TPZ is acceptable, greater encroachment requires specific arboricultural assessment. The TPZ forms part of the development exclusion zone. **NOTE 2: The extent of inclusion within the TPZ radius has been categorised as follows:** No impact (0%) incursion, Low to negligible impact (<10%) of minor consequence, 10 - <15% incursion of moderate to low impact, 15 - <20% Medium to moderate level of impact and incursion where the project arborist is to demonstrate the tree/s remain viable by tree sensitive construction techniques, 20 - <25% incursion of Medium to high level of impact, 25 - <35% of High level impact to significant >35% incursion where moderate to high level impacts may require design changes or further information to manage tree vitality. **WBF** = located within the building footprint where design necessitates tree removal. Showing acceptable incursion within the TPZ (AS4970)

Showing acceptable incursion within the TPZ (AS4970)



SELECTED REFERENCES:

- Barrell J. 1993, 'Preplanning Tree Surveys: Safe useful Life expectancy (SULE) is the Natural Progression', Arboricultural Journal 17: 1, February 1993, pp. 33-46.
- International Society of Arboriculture (ISA) 2017, Tree Risk Assessment Manual, Martin Graphics, Champaign Illinois U.S.
- Mattheck, C. & Breloer, H.(1994) *The Body Language of Trees*. Research for Amenity Trees No.4 the Stationary Office, London.
- Matheny N. & Clark J. 1998, *Trees & Development 'A Technical Guide to Preservation of Trees During Land Development'* International Society of Arboriculture, Champaign USA.
- Standards Australia 2009, *Australian Standards 4970 Protection of Trees on Development Sites* - Standards Australia, Sydney, Australia.
- ProSafe: TPZ encroachment calculator https://proofsafe.com.au/tpz_incursion_calculator.html
- Northern Beaches Council DCP <https://www.northernbeaches.nsw.gov.au/planning-and-development/building-and-renovations/planning-controls>

APPENDIX- B: Tree Retention Value Checklist ©rainTree consulting

VTA i) Landscape Significance (LS): The significance of a tree in the landscape is a combination of its amenity, environmental and heritage values. Values may be subjective however, are based after IACA Sustainable Retention Index Value (SRVI) which offer a visual understanding of the relative importance of the tree to the environment. The Landscape Significance for this assessment is described in seven categories to assist in determining the retention value of trees.

1	Significant	2	Very High	3	High	4	Moderate	5	Low	6	Very Low	7	Insignificant
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ii) Visual Tree Assessment (VTA)

0	If appropriate to VTA - *exempt trees from Local Government Authority (LGA) Tree Management or Preservation Orders (TPO)	2E	Trees location likely to be affected by infrastructure restricting root growth potential, or tree has potential to cause infrastructure damage where risk mitigation or rectification works may likely compromise tree. Tree(s) may be contained within a vault having restricted anchoring root potential
0A	Noxious or invasive species located within heritage conservation area		
1	Trees that are dead, significantly declining >75% volume or obviously hazardous	3	This rating incorporates trees that may require further investigation of defects such as cavities or symptoms indicating internal decay to an extent that cannot be quantified under visual examination. Further inspections may be in the way of arborist climbing inspection within the canopy, root crown investigation and/or drill penetrating or Picus Sonic Tomograph ultrasound testing procedures to determine percentage of internal decay.
2	Trees that are structurally damaged. Have poor structure or weak & detrimental large stem inclusions capable or failure opposed to 2B. Tree also may be affected by extensive borer damage, fungal pathogens (wood rot) or viruses. Some symptoms may be reversible, remediated or controlled give appropriate management.		
2A	Tree damage specific to basal and/or root plate damage, very shallow soils or steep topography resulting in poor anchorage where condition may become problematic in the near future, may include trees with included bark splits to ground level	4	Trees which appear specifically environmentally stressed by drought, poor soil or site conditions. Symptoms may be reversible given appropriate management
2B	Defect specific to stem inclusions development (weak branch attachments) where the condition may not be immediately detrimental however, require annual to biannual monitoring with control to prevent stem failure by installing slings, cable or bracing. Tree may also contain multi stems or codominant twin stems	5	Trees that would benefit from crown maintenance pruning as identified within the Australian Standards AS 4373 – 2007 Pruning of Amenity Trees
		5A	Screen trees or shrubs that are routinely hedged or pruned for height control
2C	Tree may contain minor wounds, pest or minor pathogen activity, altered from storm damaged to an extent that is not considered immediately detrimental, may also display average form. Likely to require close annual monitoring or minor corrective pruning	6	Trees may be typical for species type, of good form and visual condition for age class. May have suppressed one sided canopies or are visually low risk trees noted under a limited assessment only
2D	Trees significantly altered by recent storm or over pruning events which may reduce retention values due to average form- or tree extensively pruned for power line clearance	7	VTA restricted by canopy or plant material vine or ivy covering tree parts, or site conditions which do not allow access / fences to neighbouring sites

iii) Retention Value (RV): Determined by [1] tree free of visual defects and viable for retention, [2] viable for retention with minor faults which may reduce ULE, [3] trees which should not restrict development applications containing faults that are likely to become problematic in the short term, [4] trees to be considered for removal due to average condition.

1	High retention	2	Medium retention	3	Low retention	4	Consider removal
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iv) U.L.E. categories Useful Life Expectancy (after Barrell 1996, modified by the author). A trees U.L.E. category is the life expectancy of the tree modified first by its age, health, condition, safety and location. U.L.E. assessments are not static but may be modified as dictated by changes in trees health and environment.

1. Long U.L.E. - Appear retainable at the time of assessment for over 40 years with an acceptable degree of risk assuming reasonable maintenance.
2. Medium U.L.E. - Appear to be retainable at the time of assessment for 15 to 40 years with an acceptable degree of risk assuming reasonable maintenance.
3. Short U.L.E. - Trees appear to be retainable at the time of assessment for 5 to 15 years with an acceptable degree of risk assuming reasonable maintenance.
4. Very short - Removal- Trees which should be scheduled for removal within the very short term or as specified within this report.
5. Small, young or regularly pruned – Trees under 5m in height that can be easily moved or replaced, includes screen plantings or hedge lines.

APPENDIX- C: Tree Assessment Schedule

Trees requiring removal due to hazardous or dead condition - subject to Local Government Authority notification							Trees with low retention values: senescence, developing defects or being *exempt trees from the LGA Tree Preservation Order (TPO)					
Tree No	Botanical Name COMMON NAME	Height x spread (m)	DBH (mm)	SRZ TPZ	Age	Vitality (Health)	Condition	Significance	VTA	RV	U. L.E.	Comments CV = Council verge tree NT= Neighbouring tree
1 CV	<i>Lophostemon confertus</i> Brush Box	13 x 11	400, 350	2.8m 9	SM	Good	Good	3	2B	2	2	Codominant twin stemmed tree at 1.4m with minor stem inclusion development, on rock restricting root development N side by driveway access
Subdivision requirement		Retain: likely negligible property subdivision impact by driveway access proposal due to existing driveway footprint										
2 NT	<i>Angophora costata</i> Angophora	17 x 12	450	2.5 5.4	ESM	Good	Good	3	7/2A	2	2	Located at edge of embankment, steep rock E side restricting compression root development, SRZ tension roots likely to be greater upslope
Subdivision requirement		Unlikely to be affected by proposed subdivision / building footprint where proposed building footprint is located at or just within the 5.4m TPZ of negligible to Minor (<10%) TPZ occupancy										
*3	<i>Marraya paniculata</i> Marraya	4.5 x 5	400at base	2.3 4.8	M	Good	Good	4	0/6	2	2	Exempt non-prescribed tree height class <5m, located at edge of embankment, no significant visual faults with exempt Privet tree within canopy
Subdivision requirement		Exempt species, can be managed in accordance with development requirement without Council consent										
4	<i>Ficus rubiginosa</i> Port Jackson Fig	15 x 16	700, 500	3.6 14.4	SM	Good	Fair	3	2D	2	2	Located at edge of embankment restricting radial SRZ development, minor coalescing roots on rock face E side, large reduction pruning SE side, minor past pruning cut stub end decline areas, major surface roots in neighbouring property appear of average condition, tree located on boundary
Subdivision requirement		Retain: proposed subdivision driveway access located outside of the SRZ having Minor (<10%) TPZ occupancy. Proposed building footprint of Major (>10%) TPZ occupancy at or near 11.3% disturbance within the TPZ of Moderate to low level impact. May require tree sensitive design within TPZ to mitigate combined TPZ occupancy for driveway & dwelling.										
5 CV	<i>Eucalyptus punctata</i> Grey Gum	16 x 14	700	2.8 8.4	SM	Good	Fair / Good	3	2C	2	2	Minor wound at 1.2m W & 2.1m N sides, past limb failure at 6m W, with no significant visual faults
Subdivision requirement		Retain: proposed subdivision driveway access located outside of the SRZ with footprint having Major (>10%) TPZ occupancy at or near 14.8% disturbance within the TPZ being of Moderate to low level impact.										

