rain Tree consulting

Arboricultural Management

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16 March 2020

1 - 3 FLORIDA ROAD

PALM BEACH, NSW

ADDITIONS & ALTERATIONS

ARBORICULTURAL IMPACT ASSESSMENT REPORT

Report Ref No- RTC-5520

Prepared for

Mr & Mrs Anderson

C/- The Design Section

P: 9918 7570

Prepared by

Mark A. Kokot

AQF Level 5 Consulting arborist

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INTRODUCTION

This report has been commissioned by Mr & Mrs Anderson C/- The Design Section to assess the remaining Useful Life Expectancy (ULE) and potential impacts that may occur to two (2) trees known as trees A & B in relation to a new development proposal. The new development proposal consists of additions and alterations to the existing dwelling situated within 1 - 3 Florida Road, PALM BEACH NSW.

Recommendations for retention or removal of trees is based on the trees condition, accorded ULE category, current design and potential impacts to trees under this development application.

To retain specific trees and ensure their viability development must take into consideration protection of the Tree Protection Zone (TPZ) radius as identified within Appendix- A Notes: *acceptable incursions*. As a guide to determining impacts the Structural Root Zone (SRZ) & Tree Protection Zone (TPZ) radial setbacks have been provided within Appendix- C the SRZ & TPZ distance column. Development encroachments are referred to as No impact (0%) incursion, Low impact (<10%) of minor consequence, Medium impact (<20%) incursion where the project arborist is to demonstrate the tree(s) remain viable by tree sensitive construction techniques, and High level impact (>20%) where design changes or further information is required to manage tree vitality.

Each tree assessed 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 trees and their location may be referenced within the Tree Assessment Schedule and Tree Location Plan Appendix C.

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.

METHODOLOGY

i In preparation for this report a ground level Visual Tree Assessment (VTA) was conducted on Thursday 12th March 2020 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 basic risk values determined by criteria explained within the ISA TRAQ manual 2017. The inspection included assessment of the overall health and vigour of 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 provided within Appendix- B.

ii The inspection was limited to a visual assessment from within the subject site. No aerial (climbing) inspections, woody tissue testing or tree root investigation was undertaken as part of this tree assessment. 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).

iii This report acknowledges and utilizes the current Australian Standards 'Protection of Trees on Development Sites' AS 4970 – 2009 as explained within Notes of Appendix- A. Unless specified otherwise all distances and development offsets within this report are taken from the centre of the tree.

iv Plans and/or documentation received to assist in preparation of this assessment include:

The Design Section *specific to*:

- DA Plan Lower level Dwg No. WD-02 dated Nov 2019
- DA Elevations & Section Dwg No. WD-04 dated Nov 2019
- Markup Tree Location Diagram shown within Figure 1

1. SUMMARY OF ASSESSMENT

1.1 General tree assessment

1.1.1 Two (2) trees have been assessed under this development proposal with several exempt non-prescribed *Strelitzia reginae* Giant Bird of Paradise palms scattered throughout the site. The *Strelitzia's* palms are exempt species and are permitted to be managed (pruned, removed or relocated) within Council consent. Prior to works the extent of palm removal should be clearly identified by an appointed project arborist.

Trees A & B are prescribed trees being protected species where the design proposes a negligible impact or Tree Protection Zone (TPZ) incursion by design.

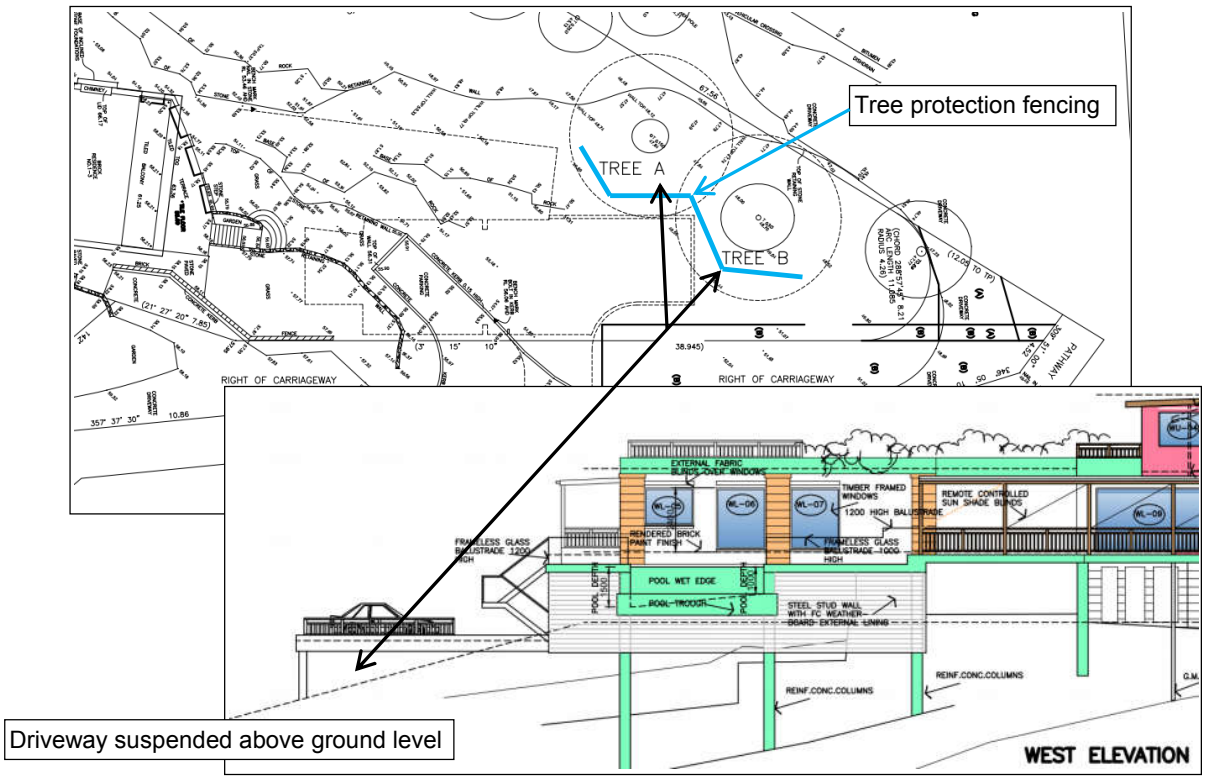
1.2 Discussion of development impacts *(prescribed trees)*

1.2.1 As shown within Figure 1 below the driveway design is suspended above ground level, where the footprint of design is located outside of tree protection zones radiuses.

To ensure the trees remain viable tree protection fencing is recommended to be constructed under the guidance and certification of an appointed project arborist, positioned at or near the extremity of TPZ radiuses as indicated below.

Within the fenced zone the area is to be considered a tree protection area (TPA) where no works are to occur without prior arborist advice.

Figure 1, showing suspended driveway & tree protection area



2. CONCLUSIONS & RECOMMENDATION

2.1 Tree Removal

2.1.1 No prescribed trees require removal under this development application.

Non-prescribed *Strelitzia's* palms are permitted to be managed (pruned, removed or relocated) without consent. Should an exempt species require retention further protection advice from an appointed project arborist is recommended prior to works commencing. Where exempt palms require removal the arborist is recommended to clearly mark all exempt palms permitted to be removed without the consent of Council.

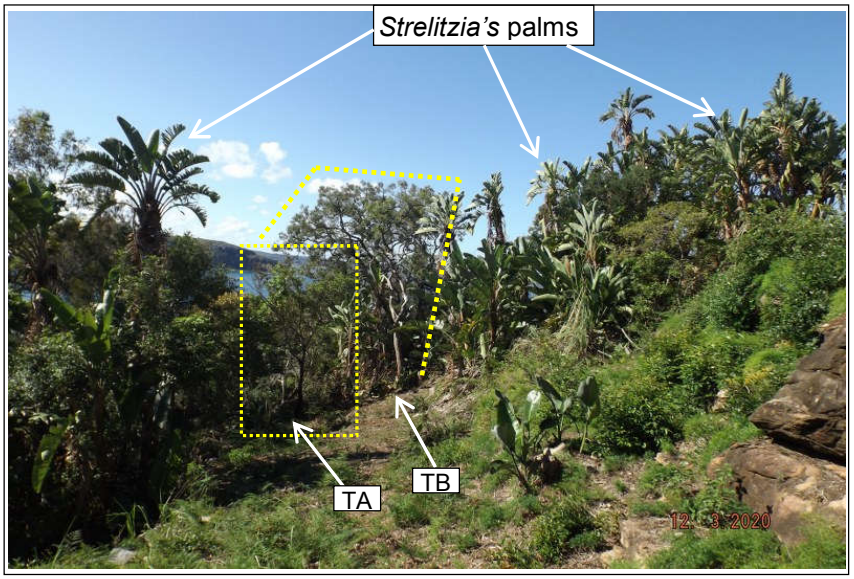
2.2 Recommended tree management & protection principles

2.2.1 In addition to the recommendations provided within this report the following summary and/or additional recommendations are provided as a guide to tree protection during works:

Specific recommendations

1. *Trees A & B.* Prior to works commencing tree protection fencing is recommended to be installed under the guidance of an appointed project arborist. The fenced area is to be considered a tree protection area (TPA) where general requirements & guidelines as specified within Section 2.2.2 apply.

Figure 2, showing degraded existing site conditions

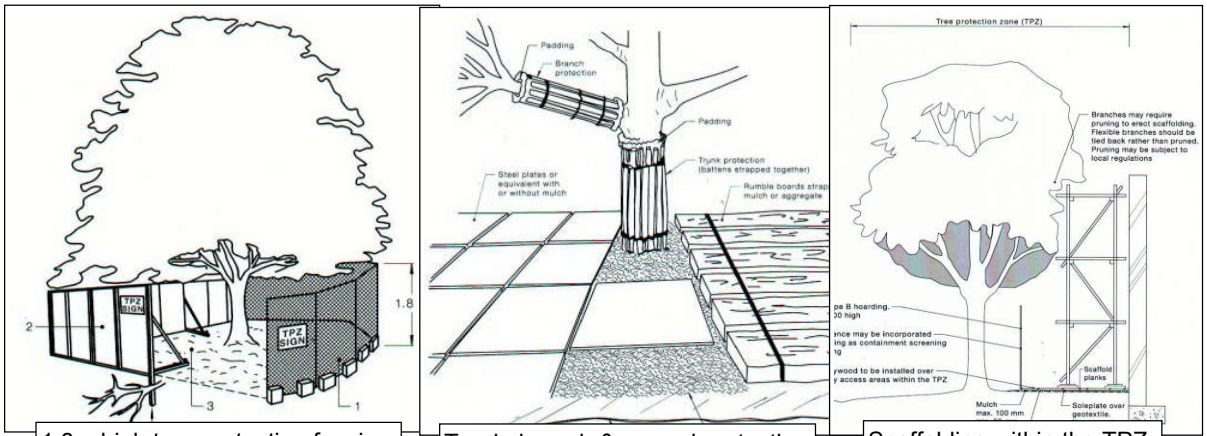


2.2.2 *General requirements & guidelines*

1. Prior to demolition works Tree Protection Fencing (TPF) and/or zones as identified within Figure 3 are recommended to be located under the guidance of an appointed site arborist. Unless specified otherwise the location of tree protection fencing is to be positioned to allow for adequate work access and/or be located at the extremity of the TPZ radius, see SRZ & TPZ distance column Appendix- C. Where design & construction access may be restrictive timber beam trunk protection is recommended to be installed, with ground protection mats provided to protect underlying tree roots within tree protection zones or specified tree protection areas (TPA).

2. In accordance with AS4970 - 2009 (1.4.4) a Project Arborist is to be engaged to monitor, supervise excavation within TPZ setbacks, advise and provide certification of protection works conducted. The project arborist is recommended to be suitably qualified having a minimum Australian Qualification Framework (AQF) Level 4 certification and be competent in methodology of protecting trees on development sites.
3. The project arborist is to provide final certification outlining tree protection measures with photographic evidence of ongoing works retained for certification purposes (AS4970 S/5.5.2 *Final certification*).
4. The project arborist is to be familiar with protection measures specific to Australian Standard AS4970 'Protection of Trees on Development Sites' – 2009 requirements with any modification in Tree Protection Fencing (TPF), Zones (Z) or Areas (TPA) to be compliant with AS4970 Section 4.5 *Other Tree Protection Measures.*

Figure 3: tree protection fencing, ground and trunk protection detail



1.8m high tree protection fencing | Trunk, branch & ground protection | Scaffolding within the TPZ

All tree protection fencing requires appropriate signage clearly stating *a TPZ restriction area* being a designated Tree Protection Zone.

5. ***Hold points***: Hold points specific to *no works are to commence without arborist advice, inspections & certifications*: 1) No works shall occur within the SRZ without prior arborist advice and certification. 2) No excavation shall occur within the TPZ without prior project arborist notification and/or site supervision. It is the responsibility of the principle contractor to complete each task identified within Table 1 to ensure trees are appropriately managed in accordance with Australian Standard AS 4970 – 2009 Protection of Trees on Development Sites.

Table 1, certification requirements & hold points

1.	Pre-construction	Prior to works install tree protection as specified or as directed by the site arborist
2.	During construction	Project arborist to supervise & certify approved works within designated tree protection zones or areas
3.	Post construction	Prior to handover project arborist to provide final inspection & certification of tree health & vitality

6. Unless specified otherwise during approved excavation 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. For deep excavations exposed roots at the excavated cut face are to be protected with jute mesh, geotextile fabric or similar being secured in place to avoid drying of roots and the exposed soil profile.
7. The storage of materials and fill within tree protection zones or areas is to be avoided. Should storage be required further advice and certification from the appointed project arborist is recommended.
8. *Canopy pruning / tree removal:* where required tree removal and canopy reductions are to be approved by the Local Government Authority. Works are to be conducted by a suitably qualified AQF Level 3 arborist in accordance with AS4373 Pruning Standards, and specifically be conducted in accordance with Safe Work Australia – Guide to managing risks of tree trimming and removal works 2016 (www.swa.gov.au).
9. *Boundary fence and minor retaining wall construction*: to avoid disturbance to underlying tree roots boundary fences and landscape retaining walls should span across the SRZ being suspended above ground level supported by pier and beam construction within the TPZ
10. *Additional inground services* which may include landscape works, sewer, stormwater, water and electrical services, final design and impact to trees shall be reviewed and endorsed by the project arborist prior to their installment.
11. To ensure tree(s) are appropriately protected the development site superintendent is recommended to be familiar with all tree protection requirements as outlined within this report. The superintendent is responsible for informing all subcontractors of the responsibilities and requirements of tree protection prior to their engagement.

Should you require further liaisons in this matter please contact me direct on 0419 250 248

Yours sincerely

Mark A Kokot
AQF Level 5 consulting arborist
Diploma of Hort/Arboriculture (AQF5), Associate Diploma Parks Management (AQF4)
Certified Arborist / Tree Surgeon (AQF3), ISA Tree Risk Assessment Qualified 2024
Member: ISA, Arboriculture Australia & IACA, Working With Children No: WWC0144637E

APPENDICES

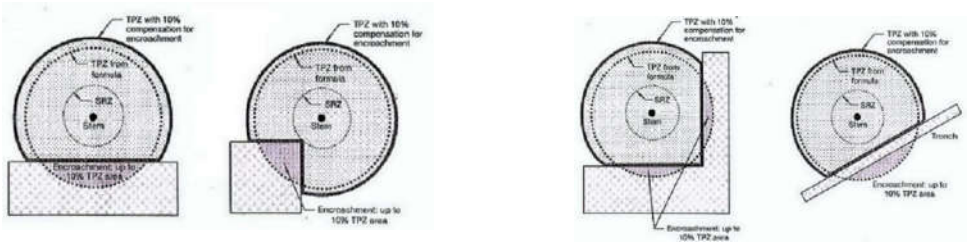
APPENDIX- A: Terminology & references

Acceptable Risk: Exposure to or reject risk of varying degrees. The acceptable risk is defined as '*The person who accepts some degree of risk in return for a benefit being exposed to some risk of varying degree*.
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. **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:** Refers 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 week 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: This report acknowledges the current **Australian Standards 'Protection of Trees on Development Sites'** AS 4970 – 2009 with reference to the Tree Protection Zone (TPZ): being a combination of the root and crown area requiring protection. The TPZ takes into consideration the Structural Root Zone (SRZ): The area required for tree stability. Determined by AS4970 - 2009 Figure 1, Table of determining the SRZ, section 3.3.5 of the standards. The standard states where a greater than 10% encroachment occurs the arborist is to take into consideration the schedule of determining impacts as set within AS4970 s. 3.3.4. Encroachments are referred to within this report as major or minor encroachments (AS4970 s. 3.3.2 & 3.3.3). Below is the terminology used for estimated percentage of development incursion used within this report. To retain specific trees and ensure their viability development must take into consideration protection of the TPZ radius.

NOTE 2: The extent of inclusion within the TPZ radius has been categorised as follows:
Development encroachments are referred to as No impact (0%) incursion, Low impact (<10%) of minor consequence, Medium impact (<20%) incursion where the project arborist is to demonstrate the tree/s remain viable by tree sensitive construction techniques, and High level impact (>20%) where design changes or further information is required to manage tree vitality.

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) 2013, 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.
Standards Australia 2007, *Australian Standards 4373 Pruning of Amenity Trees* - Standards Australia, Sydney, Australia.

APPENDIX- B: Tree Retention Value *Check list* ©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, offer a visual understanding of the relative importance of the tree to the environment. The Landscape Significance of a tree 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

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 compromise tree. Tree(s) may be contained within a vault have 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 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	Trees that require little or no maintenance at time of inspection other than close monitoring
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 low risk trees
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 fee 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

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 to15 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 & Location Plan

	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	Health	Condition	Signifi-cance	VTA	RV	U. L.E.	Comments CV = Council verge tree NT= Neighbouring tree
A	*Allocasuarina littoralis* Black She Oak	5 x 2.5	200	1.8m / 2.4	ESM	Fair	Fair	4	2C/4	2	3	Vine covered upper branch scaffolds, appears environmentally stressed with slight decline in canopy & bowing lower trunk form
B	*Angophora floribunda* Rough Barked Apple	8 x 5	300	2.1 / 3.6	ESM	Fair / Good	Fair	3	2C/4	2	2	Skewed trunk at 3m, bowing upper branch scaffolds to NE, appears environmentally stressed

Tree Location Plan