# ARBORICULTURAL IMPACT ASSESSMENT REPORT

relating to alterations and additions at

# 17 ERNEST STREET BALGOWLAH HEIGHTS NSW 2093

Prepared for Quynh and Grant Sippel c/o Lifestyle Home Designs

17 March 2021

Revision A

Author:

Joanne Willis Consultant Arboriculturalist, AQF Level 5 Dip. Hort (Arboriculture) Dip. Hort (Landscape Design)

m: 0417 417 012 P.O. Box 419, Gloucester NSW 2422 info@treeconsultingbyjo.com.au abn 26 868 680 754



# TABLE OF CONTENTS

1.	INTRODUCTION
2.	METHODOLOGY4
3.	OBSERVATIONS
4.	IMPACTASSESSMENT11
5.	CONCLUSION   RECOMMENDATIONS
6.	REFERENCES13

# APPENDICES

Appendix 1	Tree Inspection Inventory Notes
Appendix 2	Criteria for Assessment of Landscape Significance

### 1. INTRODUCTION

- 1.1 This report was commissioned by Quynh and Grant Sippel, the owners of 17 Ernest Street, Balgowlah Heights to provide an Arboricultural Impact Assessment (AIA) report relating to the proposed residential development on the site and the existing trees located on the site or on an adjoining site and within close proximity to the proposed works. This report shall form part of a development application submission to Northern Beaches Council for alterations and additions to the existing dwelling, including a first floor addition, a new double garage, proposed entertaining deck and inground swimming pool.
- 1.2 A total of twenty one (21) trees are included in this assessment including eighteen (18) trees located within the site boundaries, and three (3) trees located on a neighbouring property to the east. Generally, a tree is protected in accordance with the Northern Beaches Council Local Environment Plan if it is a height greater than five (5) metres. In some instances a tree may meet the prescribed size, however may not be protected for other reasons such as it being a noxious weed species or a species listed by Council as exempt.
- 1.3 The purpose of this report is to undertake a visual assessment of the trees, determine the sustainability of the trees in the landscape, determine the impact of the proposed works on the trees and provide recommendations for tree protection measures to be implemented for those trees being retained.
- 1.4 This report shall reflect the expert opinion of the Arborist. The Arborist is acting independently of and not as the advocate for the owner. The Arborist shall not receive any commission to prune or remove the tree/s which is the subject of this report.
- 1.5 This report has been prepared in accordance the Australian Standard "*Protection of Trees on Development Sites*" (AS 4970:2009).
- 1.6 Details shown on the following plans were reviewed in this assessment:

Title	Author	Job No.	Date
Architectural drawings (DA01-05)	Lifestyle Home Designs	2034	Feb 2021

- 1.7 Key Definitions and Abbreviations used in this report.
  - TPZ = Tree Protection Zone. This is the area as defined by AS 4970 "Protection of trees on development sites" and means the typical minimum area above and below ground at a given distance from the trunk to provide for protection of the tree. Most importantly it represents the root zone required to be kept uninjured to maintain a healthy and viable tree. Note, roots will usually extend well beyond this zone, so this represents the minimum remaining root zone required, assuming all others are lost or damaged due to construction. It is typically calculated as a circle centred on the trunk unless existing site conditions can be assessed and indicate otherwise. According to the Australian Standard, a minor encroachment of 10% of the TPZ is allowable, provided the 10% is compensated for elsewhere and contiguous to the TPZ.
  - SRZ = Structural Root Zone. This is the area as defined by AS 4970 "Protection of trees on development sites" and means the area immediately around the base of the tree at a given distance from the trunk. The woody roots and soil cohesion in this area are considered vital to the structural stability of the tree. Damage or removal of soil and roots from this area will typically render the tree unstable and require its removal. It is typically calculated as a circle, centred on the trunk, unless existing site conditions can be assessed and indicate otherwise.

# 2. METHODOLOGY

### 2.1 Health and Condition Assessment

A site inspection was undertaken on 5 March 2021 to visually assess the trees in view from ground level. This report is limited to the methods of assessment listed below (and outlined in **Appendix 1**), and does not include any internal probing, compaction testing, drilling, root mapping, aerial inspection or diagnostic testing.

- Tree Species (botanical and common name).
- Tree height was measured using a Nikon Rangefinder Forestry Pro (where possible) or estimated where visibility was obstructed.
- Canopy spread was estimated.
- Diameter at Breast Height (DBH) and Diameter at Ground Level (DGL) was measured or estimated for those trees inaccessible.
- Health and vigour assessed, including indicators such as foliage size, colour, extension growth, presence of disease or pest infestation, canopy density, presence of deadwood, dieback, epicormic growth.
- Condition assessed, including visible evidence of structural defects, instability, evidence of previous pruning and physical damage as indicators.
- Life expectancy of the tree was estimated, suitability of the tree to the site and its existing location.
- The photographs included in this report were taken at the time of inspection.
- Assessment was carried out visually from ground level within the property.
- The comments and recommendations in this report are based on findings from the site inspection.

### 2.2 Landscape Significance

The significance of a tree in the landscape is a combination of its environmental, heritage and amenity values. A criteria for the assessment of landscape significance as devised by Andrew Morton (2003) and shown in **Appendix 2** have been applied. Whilst it may be somewhat subjective to assess these values consistently, it is appropriate to assign some measure to assist in determining the overall retention value of a tree.

The rating system which has been applied to the tree and to assist in determining a priority for retention, includes the following categories:

1.	Significant	5.	Low
2.	Very High	6.	Very Low
З.	High	7.	Insignificant
4.	Moderate		

### 2.3 Tree Retention Value

The retention value shown in the Tree Assessment Schedule in **Figure 2** has been determined on the basis of the estimated longevity of the tree and its landscape significance rating, in accordance with Table 1 below. These retention values can help to determine the most appropriate position of any future building footprints and/or structures within the site, to minimise the impact on trees considered worthy of preservation. When a tree is located on a neighbouring property or public land, typically a higher retention value has been allocated given that the tree is not owned by the client and the client is therefore obligated to ensure the neighbouring or Council owned trees are not negatively impacted upon by proposed works.

	Landscape Sign	ificance Rating	P				
Estimated Life Expectancy	1	2	3	4	5	6	7
Long (>40 yrs)	Hig	gh Retention Va	lue				
Medium (15-40 yrs)		Moderate Retention Value					
Short (5-15 yrs)				Low Rete	ntion Value		
Transient (<5 yrs)					Very Low Re	tention Value	
Dead or poses an unacceptable risk to life							

Table 1: Tree Retention Values - assessment methodology (Ref:- Morton, Andrew 2006 modified from Couston, Mark & Howden, Melanie (2001) Footprint Green Pty Ltd, Sydney, Australia)

### 3. OBSERVATIONS

### 3.1 The Site

The property is legally identified as Lot 32, Section 21 in Deposited Plan 758044 and is located on the southern side of Ernest Street (refer to **Figure 1**). Rectangular in shape, the site has a total area of 594.4 square metres. The property contains a single storey dwelling positioned relatively central to the length of the site. A carport structure is positioned to the eastern side of the residence which is accessed via concrete driveway strips which extend parallel to the eastern side boundary. Residential properties adjoin the east, west and southern boundary.

The property slopes up from Ernest Street to the rear boundary. A retaining wall extends along the front boundary line which provides a relatively level lawn area to the north of the dwelling. The land slopes up significantly to the rear of the dwelling. Retaining walls extending across the width of the site form terraced open spaces which separate the area into paving and garden spaces Small areas of exposed sandstone rock are visible across the site which is indicative of the geology of the area.

According to the Pittwater Local Environmental Plan 2014 the property is zoned R2 Low Density Residential Living. There are no trees or vegetation on the site which hold any particular ecological, heritage or landscape significance.



Figure 1: An aerial image of the site with boundary lines highlighted in red (accessed from http://maps.six.nsw.gov.au/ on 12/3/21).

### 3.2 The Trees

The information and characteristics of the trees are set out in the Tree Assessment Schedule in **Figure 2.** Each tree has been provided with an identification number for reference purposes which is noted on the Tree Location Plan (in **Figure 9**) using the site plan prepared by Lifestyle Home Designs as a base layer and correlates with the Tree Assessment Schedule. Site photos can be found in **Figure 3-8**.

Tree No.	Plant Name (Species/Common Name)	Age	Tree Height (m)	Average Canopy spread (m)	DBH (m)	DGL (m)	Crown Class	Vigour	Condition	Useful Life Expectancy	Landscape Significance	Tree Retention Value	Observations/ comments	Tree Protection Zone (TPZ) radius in metres	Structural Root Zone (SRZ) radius in metres	Plan status - remove or retain?	Impact / Incursion
1	Buckinghamia celsissima (Ivory Curl tree)	semi-mature	5.5	4.0	0.12	0.19	co-dominant	normal	good	medium (15-40yrs)	low	low	Good semi-mature specimen positioned on corner of garden area and adjacent to driveway.	2.0	1.6	s retain	Driveway works located within calculated TPZ of tree.
2	Juniperus chinensis 'Pyramidalis'* (Chinese Juniper)	mature	5.0	4.0	multiple trunks	0.35	dominant	normal	fair	medium (15-40yrs)	low	low	Located on neighbouring property at No. 15 Earnst Street. Brick walling extends parallel to driveway and adjacent to tree. Climber growing throughout canopy.	est. 2.5	2.1	retain	Driveway works located within calculated TPZ of tree.
3a-3b	Syzygium spp. (Lilly Pilly)	semi-mature	5.5	2.0	multiple trunks	0.15	co-dominant	normal	good	medium (15-40yrs)	low	low	Semi-mature specimens	est. 2.0	1.5	retain	Proposed works located outside TPZ of tree.
4a-4b	Hakea spp. (Hakea)	over-mature	5.0	1.5	multiple trunks	0.12	supressed	low	poor	transient (<5vrs)	low	verv low	Short lived species. Deadwood present.	est, 2.0	1.4	retain	Proposed works located outside TPZ of tree.
5a-5b	Cordyline australis cvr.	mature	40-45	15	multiple	multiple	dominant	normal	aood	medium	ventiow	low	Exempt - less than the prescribed height.	est 2.0	ect 1.8	a retain	Proposed works located outside TPZ
6	Juniperus chinensis 'Pyramidalis'* (Chinese Juniper)	over-mature	6.5	5.0	multiple trunks	0.35	dominant	low	poor	short (5-15yrs)	low	low	Located on neighbouring property at No. 15 Earnst Street. Very low vigour and greatly reduced crown density. Tree moving into senescence.	est. 2.5	2.1	retain	Driveway works located within calculated TPZ of tree.
7	Hakea spp. (Hakea)	over-mature	6.0	1.0	0.11	0.15	supressed	low	fair	transient (<5yrs)	low	very low	Short lived species. Deadwood present.	2.0	1.5	i retain	Proposed works located outside TPZ of tree.
8	Buckinghamia celsissima (Ivory Curl tree)	semi-mature	6.0	4.0	0.13	0.19	supressed	normal	fair	medium (15-40yrs)	low	low	Semi-mature specimen	2.0	1.6	eretain	Proposed works located outside TPZ of tree.
9	Howea forsteriana (Kentia Palm) Archontophoenix	semi-mature	3.5	2.5	0.13	n/a	co-dominant/ partially supressed	normal	good	long (40yrs+)	very low	low	Exempt palm species. Semi-mature specimen.	2.8	n/a	a retain	Proposed works located outside TPZ of tree.
10	cunninghamiana (Bangalow Palm) Archontophoenix cunninghamiana (Bangalow Palm)	mature	7 9.0	4.0	multiple trunks 0.60 x 2	n/a 0.95	co-dominant dominant	normal	good good to fair	medium (15-40yrs) medium (15-40yrs)	very low	low high	Exempt palm species. Three trunks.	3.0	n/a n/a	a retain remove a (exempt)	Proposed works located outside TPZ of tree. Building works located immediately adjacent to palm.

Figure 2: Tree Assessment Schedule

			Tree	Average								Tree		Tree Protection Zone (TPZ)	Structural Root Zone (SRZ)	Plan status -	
Tree No.	Plant Name (Species/Common Name)	Age	Height (m)	Canopy spread (m)	DBH (m)	DGL (m)	Crown Class	Vigour	Condition	Useful Life Expectancy	Landscape Significance	Retention Value	Observations/ comments	radius in metres	radius in metres	remove or retain?	Impact / Incursion
12	Archontophoenix alexandrae (Alexander Palm)	mature	10.5	7.0	0.43	0.49	supressed	low	fair	long (40yrs+)	high	moderate	Exempt palm species.	5.2	n/a	remove a (exempt)	Building works located immediately adjacent to palm.
13	<i>Dypsis lutescens</i> (Golden Cane Palm)	mature	7.0	5.0	multiple trunks	multiple trunks	dominant	normal	fair	medium (15-40yrs)	very low	low	Exempt palm species.	3.5	n/a	remove (exempt)	Building works will necessitate removal of palm.
14	Harpullia pendula (Tulipwood)	mature	7.0	8	0.21 0.23	0.37	co-dominant	normal	good	medium (15-40yrs)	moderate	moderate	Co-dominant in form. Good representation for the species.	3.7	2.2	retain	Small portion of poolside paving located in TPZ of tree
15	Cupaniopsis anacardioides (Tuckeroo)	mature	7.0	8.0	0.3	0.36	co-dominant	normal	fair	medium (15-40yrs)	very low	low	Exempt - listed as an exempt species on Council's website	3.6	2.2	remove (exempt)	Swimming pool and paving works located adjacent to tree
16	Dracena marginata (Dragon Tree)	mature	4.0	4	multiple trunks	multiple trunks	supressed	normal	fair	medium (15-40yrs)	very low	low	Exempt - less than the prescribed size	est. 2.2	est. 1.6	remove 6 (exempt)	Swimming pool paving works will necessitate removal of tree
17	<i>Livistona australis</i> (Cabbage Tree Palm)	mature	4.0	3	0.3	n/a	supressed	normal	fair	long (40yrs+)	very low	moderate	Exempt - less than the prescribed size	3.6	n/a	remove (exempt)	Swimming pool will necessitate removal of tree
18	Schefflera actinophylla	mature	5.0	4	multiple trunks	multiple trunks	dominant	low	fair	medium (15-40vrs)	very low	low	Exempt - listed as an exempt species on Council's website	est 22	est 1.8	remove (exempt)	Swimming pool will necessitate removal of tree
19	Howea forsteriana (Kentia Palm)	mature	3.5	3.5	0.2	n/a	supressed	normal	qood	long (40yrs+)	very low	low	Exempt - listed as an exempt species	2.4	n/a	remove (exempt)	Swimming pool will necessitate removal of tree
20	Livistona australis (Cabbage Tree Palm)	mature	3.5	4	0.3	n/a	supressed	normal	good	long (40yrs+)	very low	low	Exempt - less than the prescribed size	3.6	n/a	retain	Swimming pool and paving works located within TPZ of palm. It is likely the Palm can be safely retained.
21	Livistona australis* (Cabbage Tree Palm)	mature	9.0	4.5	not visible	not visible	dominant	normal	good	medium (15-40yrs)	moderate	moderate	Located on neighbouring property at No. 15 Earnst Street. Mature specimen.	3.3	n/a	ı retain	Proposed works located outside TPZ of tree.

\* denotes those trees located on the adjoining land

Figure 2: Tree Assessment Schedule continued.



Figure 3: Photograph viewing south at the front of the property from Ernest Street. (Photo: J Willis) Note, two photos joined together.



Figure 4: Photograph viewing south at the front of the dwelling and carport structure. (Photo:J Willis)



Figure 5: Photograph viewing west at the front of the existing residence. (Photo: J Willis)



Figure 6: Photograph viewing east across the rear lawn area (Photo: J Willis)



Figure 7: Photograph viewing west across the rear lawn area (Photo: J Willis)



Figure 8: Photograph viewing west from the rear southeastern corner of the site, viewing Tree No. 14 (Tulipwood) (Photo: J Willis)

Arboricultural Impact Assessment Report - Alterations and Additions (Rev A) 17 Ernest Street, Balgowlah Heights NSW 2093 Prepared by Joanne Willis on 17 March 2021



Arboricultural Impact Assessment Report - Alterations and Additions (Rev A) 17 Ernest Street, Balgowiah Heights NSW 2093 Prepared by Joanne Willis on 17 March 2021

### 4. IMPACT ASSESSMENT

- 4.1 The intention of this assessment is to determine the incursion to the root zones and canopies of the trees resulting by the proposed works and evaluate the likely impact of the works on the existing trees located on the site or on an adjoining site and within close proximity to the proposed works. The Tree Location Plan shown in **Figure 9** indicates the tree locations and the encroachment of the proposed works in relation to the tree's Tree Protection Zone (TPZ) for those trees proposed for retention. The following criteria have been examined as part of this assessment:-
  - Existing Relative Levels (RL)
  - Tree Protection Zone (TPZ)
  - Structural Root Zone (SRZ)
  - Footprint of the proposed development and any temporary structures (such as scaffolding)
  - Incursions to the TPZ & SRZ, including excavation, filling, and potential above ground impacts to tree canopy;
  - Existing structures located in the TPZ of the retained trees; and
  - Assessment of the likely impact of the works on the existing trees.

### 4.2 Exempt Trees

Under the provisions of Council's tree management policy, a total of eleven (11) trees located on the site and included in this assessment are exempt (ie. not protected) from Council protection. These trees may be removed without requiring permission from Council. The identified exempt trees are listed below:

Tree No.	Tree Species	Exemption	Remove or retain?
5a-5b	<i>Cordyline australis cvr.</i> (Cabbage Tree)	Less than the prescribed size (ie. 5 metres)	Retain
9	Howea forsteriana (Kentia Palm)	Listed as exempt species by Council	Retain
10	Archontophoenix cunninghamiana (Bangalow Palm)	Listed as exempt species by Council	Retain
11	Archontophoenix cunninghamiana (Bangalow Palm)	Listed as exempt species by Council	Remove
12	Archontophoenix alexandrae (Alexander Palm)	Listed as exempt species by Council	Remove
13	<i>Dypsis lutescens</i> (Golden Cane Palm)	Listed as exempt species by Council	Remove
15	Cupaniopsis anacardioides (Tuckeroo)	Listed as exempt species by Council	Remove
16	<i>Dracena marginata</i> (Dragon Tree)	Less than the prescribed size (ie. 5 metres)	Remove
17	<i>Livistonia australis</i> (Cabbage Tree Palm)	Less than the prescribed size (ie. 5 metres)	Remove
18	<i>Schefflera actinophylla</i> (Umbrella tree)	Listed as exempt species by Council	Remove
19	Howea forsteriana (Kentia Palm)	Listed as exempt species by Council	Remove
20	<i>Livistonia australis</i> (Cabbage Tree Palm)	Less than the prescribed size (ie. 5 metres)	Retain

### 4.3 Proposed concrete driveway

The architectural drawings indicate a new concrete driveway from the Ernest Street kerb side to the new double garage. The new driveway extends through the TPZ of Tree No. 1 (Ivory Curl Tree), No. 2 and 6 (Chinese Juniper) representing an encroachment between 14-31%. Whilst the numerical encroachment is well above the acceptable 10% threshold, given the existing masonry walling which already extends through the TPZ of Tree No. 1 and 2, it is the author's opinion the driveway works should not result in any below ground impact upon the Tree No. 1 and No. 2. This is also based on the assumption that minimal excavation will be required (ie. no more than 200mm deep) to install the new concrete driveway.

### 4.3 Swimming pool and paving works to the rear of the dwelling

- It is proposed to construct an inground swimming pool to the rear of the dwelling. Most of the trees located in the rear yard are exempt species and shall be removed to accommodate the new swimming pool area.

- Tree No. 20 (Cabbage Tree Palm) is exempt due to its small size however shall retained as part of the works. The root system of a palm is much simpler in form to that of a tree. Rather than a woody root system, they have adventitious roots that are composed of numerous, small to medium sized non-woody roots (that form a root mass) and arise independently from the base of the trunk. As such, potential severance of these non-woody roots may not be detrimental to the longevity of the palm in comparison to severance of woody roots of a tree.

- The swimming pool paved surrounds extends slightly into the TPZ of Tree No. 14 (Tulipwood) representing an encroachment of less than 1%.

- Providing tree protection measures are implemented during the course of the works, Tree No. 14 and No. 20 should not be adversely impacted upon by the swimming pool and paving works.

4.8 The remaining trees included in this assessment are located away from the new structures and should not be impacted upon by the proposed works. Canopy pruning should not be required to accommodate the first floor addition. Tree protection measures should be implemented to ensure they are not inadvertently damaged during the course of the works.

# 5. CONCLUSION | RECOMMENDATIONS

- 5.1 A total of twenty one (21) trees are included in this assessment including eighteen (18) trees located within the site boundaries and three (3) trees located on the neighbouring property at No. 15 Ernest Street. The development application includes a first floor addition and alterations to the existing dwelling; a new double garage; and an inground swimming pool in the rear yard. The proposed works will result in the removal of eight (8) trees of low or very low retention value, including Tree No's. 11, 12, 13, 15, 16, 17, 18 and 19. All of the aforementioned trees are exempt from Council protection as outlined in section 4.2 of this report.
- 5.2 The new concrete driveway extends through the TPZ of Tree No. 1, 2 and 6. Assuming excavation is limited to 200mm deep and with consideration to the existing structures located in the TPZ of the trees, the driveway works should not result in any adverse impact upon the trees.
- 5.3 The swimming pool and associated paving works are located in the TPZ of Tree No. 14 and 20 which shall be retained as part of the works. The extent of encroachment is considered to be within acceptable limits and should not result in any adverse impact upon the trees.
- 5.4 To ensure the protection and long term preservation of the trees being retained and identified in this report, it is recommended tree protection fencing is installed around the retained trees located within the site, to provide a physical barrier between the trees and the works zone. Final positioning of fencing should be as directed by council or a consultant arborist. As a minimum the fence should consist of temporary chain wire panels 1.8 metres in height, supported by steel stakes as required and fastened together and supported to prevent sideways movement. The fence shall be erected prior to the commencement of any work on-site and shall be maintained in good condition for the duration of construction. Signage is to be attached to the nominated Tree Protection Zone and displayed in a prominent location and the sign repeated at 5 metre intervals

or closer where the fence changes direction. The signs are to be a minimum size of 600 x 500mm. Each sign shall advise the following details:

Tree Protection Zone - access is restricted.

Name, address and contact number of the developer.

If you have any questions regarding this report please do not hesitate to contact the undersigned.

Joanne Willis Consultant Arboriculturalist (AQF 5) Member of I.A.C.A. (Institute of Australian Consulting Arborists) Member of I.S.A (International Society of Arboriculture)

#### Assumptions

Care has been taken to obtain all information from reliable sources. All data has been verified as far as possible. However Joanne Leigh – Consulting Arborist 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 tree that was examined and reflects the condition of the tree 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 may not arise in the future.

# 6. REFERENCES

- Draper, Danny B. and Richards, Peter A (2009) "Dictionary for Managing Trees in Urban Environments". CSIRO Publishing, Collingwood, VIC Australia

- Harris, R.W; Clark, J.R; & Matheny, N.P (2004) Arboriculture; Integrated Management of Landscape Trees, Shrubs & Vines 4th Edition, Prentice Hall, New Jersey.

- Mattheck, Claus (2007) "Updated Field Guide for Visual Tree Assessment". Karlsruhe Research Centre, Germany.

- Standards Australia (2009) AS2970-2009 "Protection of Trees on Development Sites", Sydney.

- Council's relevant tree planning documents.

# **APPENDIX 1: TREE INSPECTION INVENTORY NOTES**

The values for terminology provided below are sourced from SRIV© Sustainable Retention Index Value © From Draper BD and Richards PA 2009, Dictionary for Managing Trees in Urban Environments, Institute of Australian Consulting Arboriculturists (IACA), CSIRO Publishing, Collingwood, Victoria, Australia.

Age: Most trees have a stable biomass for the major proportion of their life. The estimation of the age of a tree is based on the knowledge of the expected lifespan of the taxa in situ divided into three distinct stages of measurable biomass, when the exact age of the tree from its date of cultivation or planting is unknown and can be categorized as Young. Mature and Over-mature.

Young - Tree aged less 20% of life expectancy, in situ.

Mature - Tree aged 20-80% of life expectancy, in situ.

Over-mature - Tree aged greater than >80% of life expectancy, in situ, or senescent with or without reduced vigour, and declining gradually or rapidly but irreversibly to death.

Height: In metres (estimated)

Spread: Average diameter of canopy in metres (estimated)

#### Crown class:

- (D) Dominant (crown extends above general canopy; not restricted by other trees)
- (C) Co-dominant (crown forms the bulk of the general canopy but crowded by other trees)
- (I) Intermediate (crown extends into dominant/codominant canopy but quite crowded on all sides)
- (S) Supressed (crown development restricted from overgrowing trees)

Vigour: Ability of a tree to sustain its life processes. This is independent of the condition of a tree but may impact upon it. Vigour can appear to alter rapidly with change of seasons (seasonality) e.g. dormant, deciduous or semi-deciduous trees. Vigour can be categorized as:

Normal Vigour Ability of a tree to maintain and sustain its life processes. This may be evident by the typical growth of leaves, crown cover and crown density, branches, roots and trunk and resistance to predation. This is independent of the condition of a tree but may impact upon it, and especially the ability of a tree to sustain itself against predation.

High Vigour Accelerated growth of a tree due to incidental or deliberate artificial changes to its growing environment that are seemingly beneficial, but may result in premature aging or failure if the favourable conditions cease, or promote prolonged senescence if the favourable conditions remain, e.g. water from a leaking pipe; water and nutrients from a leaking or disrupted sewer pipe; nutrients from animal waste, a tree growing next to a chicken coop, or a stock feed lot, or a regularly used stockyard; a tree subject to a stringent watering and fertilising program; or some trees may achieve an extended lifespan from continuous pollarding practices over the life of the tree. **Low Vigour** Reduced ability of a tree to sustain its life processes. This may be evident by the atypical growth of leaves, reduced crown cover and reduced crown density, branches, roots and trunk, and a deterioration of their functions with reduced resistance to predation. This is independent of the condition of a tree but may impact upon it, and especially the ability of a tree to sustain itself against predation.

**Dormant Tree Vigour** Determined by existing turgidity in lowest order branches in the outer extremity of the crown, with good bud set and formation, and where the last extension growth is distinct from those most recently preceding it, evident by bud scale scars. Normal vigour during dormancy is achieved when such growth is evident on a majority of branches throughout the crown.

Useful Life Expectancy: The life span of a tree in the urban environment may often be reduced by the influences of encroachment and the dynamics of the environment and can be categorized as Immediate, Short Term, Medium Term and Long Term.

Short Term - Period of time less than 15 years.

Medium Term - Period of time 15 - 40 years.

Long Term - Period of time greater than >40 years.

**Condition:** A tree's crown form and growth habit, as modified by its environment (aspect, suppression by other trees, soils), the stability and viability of the root plate, trunk and structural branches (first (1st) and possibly second (2nd) order branches), including structural defects such as wounds, cavities or hollows, crooked trunk or weak trunk/branch junctions and the effects of predation by pests and diseases. These may not be directly connected with vigour and it is possible for a tree to be of normal vigour but in poor condition. Condition can be categorized as:

**Good Condition** - Tree is of good habit, with crown form not severely restricted for space and light, physically free from the adverse effects of predation by pests and diseases, obvious instability or structural weaknesses, fungal, bacterial or insect infestation and is expected to continue to live in much the same condition as at the time of inspection provided conditions around it for its basic survival do not alter greatly. This may be independent from, or contributed to by vigour.

Fair Condition - Tree is of good habit or misshapen, a form not severely restricted for space and light, has some physical indication of decline due to the early effects of predation by pests and diseases, fungal, bacterial, or insect infestation, or has suffered physical injury to itself that may be contributing to instability or structural weaknesses, or is faltering due to the modification of the environment essential for its basic survival. Such a tree may recover with remedial works where appropriate, or without intervention may stabilise or improve over time, or in response to the implementation of beneficial changes to its local environment. This may be independent from, or contributed to by vigour.

**Poor Condition** - Tree is of good habit or misshapen, a form that may be severely restricted for space and light, exhibits symptoms of advanced and irreversible decline such as fungal, or bacterial infestation, major die-back in the branch and foliage crown, structural deterioration from insect damage e.g. termite infestation, or storm damage or lightning strike, ring barking from borer activity in the trunk, root damage or instability of the tree, or damage from physical wounding impacts or abrasion, or from altered local environmental conditions and has been unable to adapt to such changes and may decline further to death regardless of remedial works or other modifications to the local environment that would normally be sufficient to provide for its basic survival if in good to fair condition. Deterioration physically, often characterised by a gradual and continuous reduction in vigour but may be independent of a change in vigour, but characterised by a proportionate increase in susceptibility to, and predation by pests and diseases against which the tree cannot be sustained. Such conditions may also be evident in trees of advanced senescence due to normal phenological processes, without modifications to the growing environment or physical damage having been inflicted upon the tree. This may be independent from, or contributed to by vigour.

## APPENDIX 2: CRITERIA FOR ASSESSMENT OF LANDSCAPE SIGNIFICANCE

The level of landscape significance has been determined using the following key criteria as a guide:

#### 1. SIGNIFICANT

• The subject tree is listed as a Heritage Item under the Local Environment Plan (LEP) with a local, state or national level of significance; or

• The subject tree forms part of the curtilage of a Heritage Item (building /structure /artifact as defined under the LEP) and has a known or documented association with that item; or

• The subject tree is a Commemorative Planting having been planted by an important historical person (s) or to commemorate an important historical event;

• The subject tree is scheduled as a Threatened Species or is a key indicator species of an Endangered Ecological Community as defined under the Threatened Species Conservation Act 1995 (NSW) or the Environmental Protection and Biodiversity Conservation Act 1999; or

• The tree is a locally indigenous species, representative of the original vegetation of the area and is known as an important food, shelter or nesting tree for endangered or threatened fauna species; or

• The subject tree is a Remnant Tree, being a tree in existence prior to development of the area; or

• The subject tree has a very large live crown size exceeding 300m2 with normal to dense foliage cover, is located in a visually prominent in the landscape, exhibits very good form and habit typical of the species and makes a significant contribution to the amenity and visual character of the area by creating a sense of place or creating a sense of identity; or

• The tree is visually prominent in view from surrounding areas, being a landmark or visible from a considerable distance.

#### 2. VERY HIGH

• The tree has a strong historical association with a heritage item (building/structure/artifact/garden etc) within or adjacent the property and/or exemplifies a particular era or style of landscape design associated with the original development of the site; or

• The subject tree is listed on Council's Significant Tree Register; or

• The tree is a locally-indigenous species and representative of the original vegetation of the area and the tree is located within a defined Vegetation Link / Wildlife Corridor or has known wildlife habitat value;

• The subject tree has a very large live crown size exceeding 200m2; a crown density exceeding 70% Crown Cover (normal-dense), is a very good representative of the species in terms of its form and branching habit or is aesthetically distinctive and makes a positive contribution to the visual character and the amenity of the area.

#### 3. HIGH

• The tree has a suspected historical association with a heritage item or landscape supported by anecdotal or visual evidence; or

• The tree is a locally-indigenous species and representative of the original vegetation of the area; or

The subject tree has a large live crown size exceeding 100m2; and

• The tree is a good representative of the species in terms of its form and branching habit with minor deviations from normal (eg crown distortion/ suppression) with a crown density of at least 70% Crown Cover (normal); and

• The subject tree is visible from the street and surrounding properties and makes a positive contribution to the visual character and the amenity of the area.

#### 4. MODERATE

· The subject tree has a medium live crown size exceeding 40m2; and

• The tree is a fair representative of the species, exhibiting moderate deviations from typical form (distortion/suppression etc) with a crown density of more than 50% Crown Cover (thinning to normal); and

• The tree makes a fair contribution to the visual character and amenity of the area; and

• The tree is visible from surrounding properties, but is not visually prominent – view may be partially obscured by other vegetation or built forms.

The tree has no known or suspected historical association

#### 5. LOW

• The subject tree has a small live crown size of less than 40m2 and can be replaced within the short term with new tree planting; or

• The tree is a poor representative of the species, showing significant deviations from the typical form and branching habit with a crown density of less than 50% Crown Cover (sparse); and

• The subject tree is not visible from surrounding properties (visibility obscured) and makes a negligible contribution or has a negative impact on the amenity and visual character of the area.

#### 6. VERY LOW

• The subject tree is listed as an Environment Weed Species in the relevant Local Government Area, being invasive, or a nuisance species.

• The subject tree is scheduled as exempt (not protected) under the provisions of the local Council's Tree Preservation Order due to its species, nuisance or position relative to buildings or other structures.

#### 7. INSIGNIFICANT

• The tree is a declared Noxious Weed under the Noxious Weeds Act (NSW) 1993

Ref:- Morton, Andrew (2003) Criteria for Assessment of Landscape Significance Earthscape Horticultural Services. Sydney, Australia