Arborist Impact Assessment for new driveway access including three(3) Street Trees.



PREPARED FOR Tanya Ward 46 Francis Street, Manly NSW 2095. Tcward186@mac.com 3/04/2018

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Arborist Impact Assessment 1.0 ABSTRACT

1.1 An Arborist Assessment was commissioned to report in relation to two trees at 46 Francis Street, Manly NSW, 2095. These two (2) assessed street trees have environmental heritage value and the proposed access road is to be made between these two trees <u>Livingstonia australis</u> (Cabbage Tree Palms). The encroachment of each tree is greater than 10% therefore, the design is to be sensitive construction including hand dug piers and on grade with minimal excavation. Geofabric on top of the grade and reinforced concrete with turned edges on the side. Storm water is to be percolated through the slab with ducted holes within the slab. No roots are to be cut within the TPZ of the Heritage listed/mapped trees. Tree Protection systems in accordance with As4970 2009 with compliance on the Tree Trunk Protection and prohibitions. Any remedial works will be deemed immediate if required and reported on.

1.2 Collection of survey data was placed into a tree survey table and the collection of this raw data and information was limited to the inspection date on the 7th of March 2018 by Jim McArdle of McArdle Arboricultural Consultancy Pty Ltd. Through the use of the Visual Tree Assessment (VTA) according to Matheck and Breloer (1994), which assesses a tree for biological and mechanical functions while highlighting the status of health and vigour in each tree.

2.0 INTRODUCTION

2.1 Tanya Ward has commissioned an arborist assessment on the impacts of the proposal for a new driveway at 46 Francis Street, Manly. The driveway encroaches approximately 16% for tree 1&2 and will be sensitively constructed with supervision requirements from the AQF level 5 arborist. A proposed reinforced concrete specified driveway with piers and beam will be installed on grade.

2.1McArdle Arboricultural Consultancy Pty Ltd prepared the report with AQF level 5 Consulting Arborist James McArdle conducted the evaluation using Visual Tree Assessment (VTA) method. 2.2 The systems are in accordance with industry best practice (ISA) and impact assessments are based upon the Australian Standards *AS4793-2009*.

3.0 AIMS

3.1 The Arborist Assessment Report was developed to assess the tree at the above address for health and status according to As4970 2009 Protection of trees on Development Sites. The aim of this report is to:

- To assess the three trees at 46 Francis street, according to the methodologies presented in this report.
- To give recommendations for management and protection during the proposed development. Protection measures will be referenced from As4970 2009 Tree Protection on Development Sites.

4.0 REFERENCES:

1. Turing Path Analysis and site lines. Author Clare Meller Architect at Taylor Thomas Whitting. Dated 21.12.17.DWG No TWG1.

5.0 METHODOLOGY

5.1 A tree assessment uses a ground Visual Tree Assessment (VTA) method employed in this report. The VTA system is based on the theory of tree biology, physiology and tree architecture and structure and is a method used to identify visible signs on trees that indicate health and potential hazards. It identifies low-level mechanical functions and biological functions according to Mattheck and Breloer (1994).

5.2 The collection of data is performed in the field by an AQF Level 5 arborist. The assessment summaries the species, height and diameter, the tree health and structural condition of the tree, hazards, and retention categories were assigned.

5.3 This data was recorded in a Tree Survey Table and various assessment methods were used including:

- 1. Tree Useful Life Expectancy. Adapted from Jeremy Barrel (SULE) gives extra assessment life expectancy categories range to no potential for life expectancy. Appendix A.
- 2. Health & Structural Condition of Tree Assessment. This describes the vigour and vitality of the tree. Appendix B
- 3. Retention Values according to Melanie Howden and TCAA significance values. Appendix C.
- 4. Impacts are based on AS4970 2009 Protection of Trees on Development Sites. Extract in appendix D and setbacks given in table 1.

6.0 PLANNING GUIDELINES AND SPECIFIC LEGISLATION

<u>6.1 Tree management measures are in place for The Northern Beaches Council under the</u> <u>provisions of the Northern Beaches local environmental plan 2013</u> Land zoning is Low Density Residential (R1) according to the NSW Planning Portal .

6.1 A search of Local and State heritage registers, tree registers and determination of landscape significance was carried out for tree identified in the survey, heritage significance is related to this property along the streetscape are Heritage trees.

6.2 SIGNIFICANCE IN THE ENVIRONMENT

Trees are subject to the following legislation:

Threatened Species Conservation Act 1995 (NSW) (TSC Act) – The TSC Act provides a number of provisions for conserving threatened species, populations and ecological communities of animals and plants as well as managing key threatening processes. Where identified, threatened tree species are considered in this report.

6.3 Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) – The EPBC Act provides provisions to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places. Where identified, threatened tree species are considered in this report.

6.4 SIGNIFICANCE IN THE LANDSCAPE

Assessment of trees significance in the landscape is generally categorised as either:

- Significant in the landscape –Prominent from a broad landscape perspective, including streetscape. HIGH VALUE. *
- Significant in the landscape Prominent from a neighbourhood perspective. -Retained due to its status but may have some conditions or health issues. HIGH VALUE. *
- Significant in the landscape Prominent from adjacent areas surrounding the site. HIGH VALUE*
- Good and worthy of preservation Retained due to its status, but may have minor conditions or health issues. MODERATE VALUE. *
- Worthy of preservation- retained due to its status, but may have major conditions or health issues. MODERATE VALUE. **According to *TULE¹
- Low Retention-Retain if possible. Exempt- Very Low

Significance of trees in environment and landscape has a retention value categorizing Trees with Melanie Howden and Andrew Mortons Retention Values Tables.

¹ TULE tree useful Life expectancy Adapted from Jeremy Barrell for use by TCAA climbing consultant arborists. TCAA Tree contractors association of Australia.

Arborist Impact Assessment 7.0 SITE 7.1 The collection of survey data was limited and an inspection was conducted on the 20th of February 2018

SCALED SITE MAP



Plate 1. Aerial Plate of the site. Scale is 1cm:10m Courtesy of Google maps (https://www.google.com.au/maps/)

Tree	Target	Scientific&	Crown Spread	Height (m)	Diam.	SRZ (m)	TPZ (m)	Condition of Tree & Failure potential (Health & Structure) (Defect &	TULE	Retention	IMPACTS
NO.	Usage	common Name	(m)	(11)	(ciii)	(11)	(111)	Measurements)		Value	
1	Street tree	<u>Livingstonia</u> <u>australis</u> Cabbage Tree Palms.	4.5	9	84 110	3.4	3.79	Semi mature, good condition but poor development	2a	-High- Heritage mapped	Retain
2	Street tree	<u>Livingstonia</u> <u>australis</u> Cabbage Tree Palms.	4.5	8.5	75 110	3.4	3.45	Semi mature, damage to trunk	2d	High- Heritage mapped	Retain
3	Under power	<u>Melaleuca Sp.</u> Paperbark	5	5	20/19 30	2	3.3	Immature, good condition but poor development, unbalanced canopy north west	2d	Low	Retain
4		<u>Callistemon</u> <u>viminalis</u> Bottlebrush	4	5	15 18	1.6	2.16	Immature, unbalanced canopy east, heavily pruned	3d	low	Retain
5		<u>Schefflera sp.</u> Umbrella tree	2	4	15 20	-	-	Immature and suitable form.	2a	Low	Possible removal.

9.0 FINDINGS PHOTOGRAPHS TAKEN DURING INSPECTION ON THE 20th of February 2018







Plates 2,3,&4 presenting the two trees 1&2 within the streetscape.

Arborist Impact Assessment 10.0 ANALYSIS OF MAPPING CONTROLS



11.0 DISCUSSION

11.1 Proposed is a relocation of the driveway at 46 Francis street, Manly. The driveway is proposed to be located within two large *Livingstonia australis* (Cabbage tree palms). No pruning is required for this development and trees 3,4&5 are not impacted and are retained. Rootmapping by an AQF level 5 arborist is proposed prior to any construction of the new driveway to ensure that no roots are cut greater than 40mm within the Tree Protection Zones and the driveway installation will allow the two trees numbered 1&2 to be viable.

11.2 The driveway must also be constructed reinforced concrete pier and beam, a hand dug excavation. With 100 mm (minimum) concrete laid on geo-fabric and 40ml basalt gravel to a depth of 100mm. The reinforced concrete slabs with drain holes at every 1.5m to allow water to percolate through the surface.

11.3 The driveway must have turned up edges to prevent vehicle collision with trunk and be a minimum of 1m away from tree no.1's stem. Requires approved trunk protection as seen in appendix D on the nearby trees during this development.



Plate 5 Streetscape view with a proposed driveway installation. Tree 1 to the left will be encroached 16% and tree 20%, therefore this triggers sensitive construction requirements as per AS4970 2009 Tree Protection on Development Sites. Driveway red arrow T1 is 1 metre from the outside of the stem. Driveway blue arrow is three metres, the arrows are not to scale.

Arborist Impact Assessment 14.0 IMPACTS (*See plate 2&3 calculations).

Tree No	Impacts	Retention Value	Works
1 <u>Livingstonia australis</u> (Cabbage tree palms).	16%	High	Tree trunk Installation, hand excavation, Installation of driveway, AQF L5 supervision and certification.
2 <i>Livingstonia australis</i> (Cabbage tree palms).	16%	High	Tree trunk Installation, hand excavation, Installation of driveway, AQF L5 supervision and certification.





15.0 HOLDING POINTS

1.0 Tree Protection of hessian or carpet underlay wrapped around the tree 1&2 trunks. Add
1.8 metre lengths of hardwood of 50x100mm width and 150mm air gaps. The vertical lengths are to be parallel to the tree trunk and secured with framing steel. See appendix D section 4.
2.0 Excavation within the TPZ of tree 1&2 for the driveway installation is to be by hand and must be supervised by the AQF level 5 arborist. Any services within the TPZ must also be supervised on there installation.

3.0 Arborist assessment of the trees including monitoring for health and remedial works if threes become dehydrated or diseased during the project and three months after the installation.
4.0 Prohibitions listed within Appendix D are to be certified compliant by an AQF level 5 arborist.
5.0 No machinery or compaction device is to be utilized within the TPZ without an arborist present.

16.0 CONCLUSION

The proposal will allow trees 1&2 to be viable with reference to works that are to be recommended.

17.0 RECOMMENDATION

- 1. Retain trees 1,2,3,4.
- 2. Rootmap trees 1&2 providing information to the consenting authority.
- 3. Holding points 1,2,3,4,5 are to be certified by an AQF level 5 arborist.

GLOSSARY

Crown: The width of the foliage in the upper canopy of the assessed tree to the four cardinal points.

Crown lifting means the removal of the lower branches of the tree

Crown thinning means the portion of the tree consisting of branches and leaves and any part of the stem from which branches arise.

Drip line: Where the canopy releases water shed from the foliage during precipitation.

DBH/Diameter: Diameter of trunk at 1.4meters in height of assessed tree.

Dead wooding means the removal dead branches from a tree.

Dieback: Tree deterioration where the branches and leaves die.

Flush cut: A cut that damages or removes the branch collar or removes the branch and stem tissue and is inconsistent with the branch attachment as indicated by the bark branch ridge.

Genus/ Species: The Genus and species of each tree has been identified using its scientific name. Where the species name is not known the letters species is used. The common name for trees may vary considerably in each area of geographical differences and so will not be used in the field survey.

Height: Height has been estimated to + / - 2 meters.

ISA: International Society of Arboriculture.

Maturity: Tree maturity has been assessed as over mature (last one third of life expectancy), mature (one third to two thirds life expectancy) and semi mature (less than one third life expectancy).

Remedial (restorative) pruning: includes: Removing damaged, deadwood; trimming diseased or infested branches. Trimming branches back to undamaged tissue in order to induce the production of shoots from latent or adventitious buds, from which a new crown will be established.

SRZ- Structural Root Zone: An area within the trees root zone in which roots stabilize the tree. Roots cut in this zone can cause instability and lead to anchorage loss.

Structural Integrity: Describes the internal supporting timber. (Substantial to frail)

TULE- Tree Useful Life Expectancy: An estimation of the trees useful life expectancy using appropriate industry methods with an inspection regime.

TPZ- Tree Protective Zone: This zone should be considered as optimal for tree growth and sustainability however the size of the zone is subjective and should be reassessed when individual design and construction methods are being discussed.

Tree Age: Trees have either been assessed as mature, immature or semi-mature.

Tree Numbering: All trees listed in the tree survey have been numbered and plotted

Vigor: This is an indication of the tree health. Trees have either been assessed as Good Vigor, Normal Vigor or Low Vigor.

Arborist Impact Assessment BIBLIOGRAPHY

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* Mattheck, C., Bethge, K., Kappel, R., Mueller, P. & Tesari, I. (2003). Failure modes for trees and related criteria. International Conference "Wind Effects on Trees". 16-18th September 2003. University of Karlsruhe: Germany. 1-12.

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WEBSITE

http://maps.six.nsw.gov.au/ https://www.planningportal.nsw.gov.au

Arborist Impact Assessment APPENDIX A TULE – TREE USEFUL LIFE EXPECTANCY Table 1 Devised 14 4 14

 Table 1 Revised 14.4.14 ADAPTED FROM JEREMY BARREL (SULE) FOR TCAA CLIMBING CONSULTANT ARBORISTS

	1 Long TULE	2 Medium TULE	3 Short TULE	4 Remove	5.No Potential for Retention REMOVE IMMEDIATELY	6 Small, Young or Regularly clipped
	Trees that appeared to be retainable at the time of assessment for more than 40 years with low level of risk	Trees that appeared to be retainable at the time of assessment for 15 to 40 years with and with low to medium level risk	Trees that appeared to be retainable at the time of assessment for 5 to 15 years with medium to high level of risk	Trees that should be removed within the next 5 years High to Very high level of risk	Trees that must be removed immediately. Very high to Extreme level of risk	Trees that can be easily transplanted or replaced.
A	Structurally sound trees located in positions that can accommodate future growth	Trees that may only live for between 15 and 40 more years	Trees that may only live for between 5 and 15 more years	Dead, dying, suppressed or declining trees through disease or inhospitable conditions.	Dead, dying or declining trees diseased or inhospitable conditions.	Small trees less than 5 meters in height
В	Trees that could be made suitable for retention in the long term by Intervention Works.	Trees that may live for more than 40 years, but would need to be removed for safety or Nuisance reasons	Trees that may live for more than 15 years, but would need to be removed for safety or nuisance reasons	Dangerous trees through instability or recent loss of adjacent trees	Dangerous trees through instability or recent loss of adjacent trees	Young trees less than 15 years old but over 5 meters in height
C	Trees of special significance for historical, commemorative or rarity reasons that would warrant extraordinary efforts to secure their long term retention	Trees that may live for more than 40 years, but should be removed to prevent interference with more suitable individuals or to provide space for new planting	Trees that may live for more than 15 years, but should be removed to prevent interference with more suitable individuals or to provide space for new planting	Dangerous trees through structural defects including cavities, decay, included bark, wounds or poor form	Dangerous trees through structural defects including cavities, decay, included bark, wounds or poor form	Trees that have been regularly pruned to artificially control growth
D		Trees that could be made suitable for retention in the medium term by Intervention Works.	Trees that require substantial Intervention Works, and are only suitable for retention in the short term	Damaged trees that are clearly not safe to retain	Damaged trees that are clearly not safe to retain and must be removed immediately	
E				Trees that may live for more than 5 years, but should be removed to prevent interference with more suitable individuals or to provide space for new planting	High Toxicity Allegan trees, asthmatic and poisonous trees and must be removed immediately.	
F				Trees that may cause damage to existing structures within 5 years	OTHER with legitimate explanation to be removed immediately	
G				Trees that will become dangerous after removal of other trees for reasons given in 1A-1F		
INSPECTI ON FREQUE NCY	Inspection frequency 1-5 Years by competent inspector unless event monitored.	Inspection frequency 1-5 Years by competent inspector unless event monitored.	Inspection frequency 1-3 years by competent inspector unless event monitored.	Inspection frequency to 1 year by competent inspector unless event monitored.	1-7 days by competent inspector and event monitored	Inspection frequency Biannually by competent inspector

Arborist Impact Assessment APPENDIX B HEALTH & STRUCTURAL CONDITION OF TREE- Visual McArdle Arboricultural Consultancy Pty Ltd

Health & Structural Condition of Tree					
1.	1. J- Juvenile: im- Immature: SM-Semi- Mature: M-Mature				
2.	Excellent Condition	······,			
3.	Good Condition but Poor De	velopment / Habit			
4.	Dieback is more than 20%.	4b Epicpormics			
5.	Sparse Foliage Crown	5b Unbalanced Canopy			
6.	Physical Damage				
7.	Cavity				
8.	Lean				
9.	Heavily Pruned				
10	. Inclusions				
11	. Damage to roots				
12	. Insect Damage	12b Borers			
13	. Termite Damage				
14	. Fungal Attack				
15	. Parasitic Vine Present				
16	. Damage by Climbing Plant				
17	. Habitat Tree				
18	. Endangered Species				
19	. Endangered community				

Developed by Claus Mattheck in: *The Body Language of Trees*(1994), which have adapted versions from Hornsby Shire Council.

Arborist Impact Assessment APPENDIX C RETENTION VALUES

TABLE 3 - DETERMINING LANDSCAPE SIGNIFICANCE RATING

RATING	HERITAGE VALUE	ECOLOGICAL VALUE	AMENITY VALUE
	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 is listed on Council's Significant Tree Register	The subject tree is scheduled as a Threatened Species as defined under the Threatened Species Conservation Act 1995 (NSW) or the Environmental Protection and Biodiversity Conservation Act 1999	The subject tree has a very large live crown size exceeding 300m ² with normal to dense foliage cover, is located in a visually prominent position in the landscape, exhibits very good form and habit typical of the species
SIGNIFICANT	The subject tree forms part of the curtilage of a Heritage Item (building /structure /artefact as defined under the LEP) and has a known or documented association with that item	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	The subject tree 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
	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 a Remnant Tree, being a tree in existence prior to development of the area	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/artefact/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.	The tree is a locally-indigenous species, representative of the original vegetation of the area and is a dominant or associated canopy species of an Endangered Ecological Community (EEC) formerly occurring in the area occupied by the site.	The subject tree has a very large live crown size exceeding 200m ² ; a crown density exceeding 70% (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	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 large live crown size exceeding 100m ² ; The tree is a good representative of the species in terms of its form and branching habit with minor deviations from normal (e.g. crown distortion/suppression) with a crown density of at least 70% (normal); 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
	The tree has no known or suspected historical association, but	The subject the is a non-local Native of exotic species that is	The subject togs has a medium live crown size acceeding 40m ³ The true is a fair representative of the species, embiliting moderate deviations from typical form (distortion) suppression etc) with a provin density of more than 50% (fainning to normal); and
MODERATE	does not detract or diminish the value of the item and is sympathetic to the original era of planting.	The suger treat is a son-local native or exoto species that is protected under the provisions of this DCP.	The tree is visible from surrounding properties, but is not visually prominent, – view may be partially obscured by other vegetation as built forms. The tree makes a fair contribution to the visual character and amentify of the rate.
. S. LOW	The subject tree detracts from heritage values or diminishes the value of a heritage item	The subject tree is scheduled as exempt (not protected) under the provisions of this DCP due to its species, nuisance or position relative to buildings or other structures.	The subject tree has a small live crown size of less than 40m ² and can be replaced within the short term (5-10 years) with new tree planting
6. VERY LOW	The subject tree is causing significant damage to a heritage item.	The subject tree is listed as an Environment Weed Species in the Leichhardt Local Government Area, being invasive, or is a known nuisance species.	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. 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% (sparse).
7. INSIGNIFICANT	The tree is completely dead and has no visible habitat value	The tree is a declared Noxious Weed under the Noxious Weeds Act (NSW) 1993 within the relevant Local Government Area.	The tree is completely dead and represents a potential hazard.

4

DETERMINING THE RETENTION VALUE OF TREES ON DEVELOPMENT SITES EARTHSCAPE HORTICULTURAL SERVICES December 2011

RETENTION VALUE	RECOMMENDED ACTION
"High"	 These trees considered worthy of preservation; as such careful consideration should be given to their retention as a priority. Proposed site design and placement of buildings and infrastructure should consider the Tree Protection Zones as discussed in the following section to minimise any adverse impact. In addition to Tree Protection Zones, the extent of the canopy (canopy dripline) should also be considered, particularly in relation to high rise developments. Significant pruning of the trees to accommodate the building envelope or temporary scaffolding is generally not acceptable.
"Moderate"	 The retention of these trees is desirable. These trees should be retained as part of any proposed development if possible, however they trees are considered less critical for retention. If these trees must be removed, replacement planting should be considered in accordance with Council's Tree Replacement Policy to compensate for loss of amenity.
"Low"	 These trees are not considered to worthy of any special measures to ensure their preservation, due to current health, condition or suitability. They do not have any special ecological, heritage or amenity value, or these values are substantially diminished due to their SULE. These trees should not be considered as a constraint to the future development of the site.
"Very Low"	 These trees are considered potentially hazardous or very poor specimens, or may be environmental or noxious weeds. The removal of these trees is therefore recommended regardless of the implications of any proposed development.

Arborist Impact Assessment APPENDIX D - TREE PROTECTION

Extract from Australian Standard AS4970 2009 Protection of trees on development sites 4.5 OTHER TREE PROTECTION MEASURES

When tree protection fencing cannot be installed due to restricted access e.g. tree located along side an access way or requires temporary removal, other tree protection measure should be used, including those set out below;

4.5.2 TRUNK AND BRANCH PROTECTION see fig4.

4.5.3 GROUND PROTECTION

If temporary access for machinery is required within the TPZ, ground protection measure will be required to prevent compaction in the root zone. Measures may include permeable membrane such as geotextile fabric beneath a layer of mulch (100mm) or crushed rock below rumble boards as per fig 4.

Examples of Trunk, Branch and ground protection



NOTES:

- 1 For trunk and branch protection use boards and padding that will prevent damage to bark. Boards are to be strapped to trees, not nailed or screwed.
- 2 Rumble boards should be of a suitable thickness to prevent soil compaction and root damage.

FIGURE 4 EXAMPLES OF TRUNK, BRANCH AND GROUND PROTECTION

4.4.5 Installing underground services within TPZ

"All services should be routed outside the TPZ. If underground services must be routed within the TPZ, they should be installed by directional drilling or in manually excavated trenches. The directional drilling bore should be at least 600 mm deep. The project arborist should assess the

likely impacts of boring and bore pits on retained trees. For manual excavation trenches the project arborist should advise on roots to be retained and should monitor the works. Manual excavation may include the use of pneumatic and hydraulic tools.

PROHIBITIONS

1. The following activities shall not be carried out within any Tree Protection Zone:

I. Disposal of chemicals and liquids (including concrete and mortar slurry, solvents, paint, fuel or oil);

- ii. Stockpiling, storage or mixing of materials;
- iii. Refuelling, parking, storing, washing and repairing tools, equipment, machinery and vehicles;
- iii. Disposal of building materials and waste;

2. The following activities shall not be carried out within any Tree Protection Zone unless under the supervision of the Project Arborist:

- A. Increasing or decreasing soil levels (including cut and fill);
- B. Soil cultivation, excavation or trenching;
- C. Placing offices or sheds;
- D. Erection of scaffolding or hoardings; and/or
- E. Any other act that may adversely affect the vitality or structural condition of the tree.

3.All work undertaken within or above a Tree Protection Zone shall be supervised by the Project Arborist.

4.Excavation within the Tree Protection Zone of any tree to be retained shall:

A. Be undertaken using <u>non-destructive methods</u> (eg. an Airspade or by hand) to ensure no roots greater than 40mm in diameter are damaged, pruned or removed. All care shall be taken to preserve and avoid damaging roots; B.not occur within the Structural Root Zone.

Arborist Impact Assessment DISCLAIMER

McArdle Arboricultural Consulting Pty Ltd does not assume responsibility for liability associated with the tree on or adjacent to this project site, their future demise and/or any damage, which may result therefrom.

Any legal description provided to McArdle Arboricultural Consultancy Pty Ltd is assumed to be correct. Any titles and ownerships to any property are assumed to be good and sound. McArdle Arboricultural Consultancy Pty Ltd takes care to obtain all information from reliable sources. All data has been verified insofar as possible; however, the consultant can neither guarantee nor be responsible for the accuracy of information provided by others.

McArdle Arboricultural Consultancy's reports and recommendations shall not be viewed by others or for any other reason outside its intended target, either partially or whole, without the prior written consent of the consultant. Unauthorised alteration or separate use of any section of the report invalidates the whole report. McArdle Arboricultural Consultancy Pty Ltd cannot be held responsible for any consequences as a result of work carried out outside specifications, not in compliance with Australian Standards or by inappropriately qualified staff.

Sketches, diagrams, graphs, and photographs in this report, being intended as visual aids, are not necessarily to scale. All recommendations contained within this report represent the current industry best practice methods of inspection. McArdle Arboricultural Consultancy Pty Ltd shall not be required to give testimony or to attend court by reason of this report unless subsequent contractual arrangements are made, including payment of an additional fee for such services.

LIMITS OF OBSERVATION

McArdle Arboricultural Consultancy Pty Ltd makes every effort to accurately identify current tree health and safety issues. Results may or may not correlate to actual tree structural integrity. There are many factors that may contribute to limb or total tree failure. Not all these symptoms are visible. There can be hidden defects that may result in a failure even though it would seem that other, more obvious defects would be the likely cause of failure.

All standing trees have an element of unpredictable risk. McArdle Arboricultural Consultancy Pty Ltd endeavors to identify the risk that the tree represents; however a level of risk associated with every tree will remain. McArdle Arboricultural Consultancy Pty Ltd does not provide any warranty or guarantee that problems, deficiencies or failures with regard to the plant/s, property or building/s will not arise in the future.

Ongoing monitoring may foresee deterioration of a tree and allow remedial action to be taken to prevent injury or damage. The timing for re-inspection on individual trees is subjective and will vary however an annual inspection is advisable for trees in subsequent years.

FURTHER RESEARCH The report does not cover threatened, heritage or existing trees in relation to remnant forest. Further reporting may be considered as part of the relevant ASSESSMENT.