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ARBORICULTURAL IMPACT ASSESSMENT

Grace Village Early Learning
49 Gibbes Street,
REGENTVILLE

Report Reference: AIA – GRA 06/19

20th June, 2019

Prepared by:

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1.0 Introduction

I. This Arboricultural Impact Assessment (AIA) was commissioned by Raymond Grace, of Grace Village Early Learning, property owner of 49 Gibbes Street, Regentville, for trees potentially impacted by the development application on this site.

II. The proposal involves the demolition of existing structures and construction of a childcare centre wish associated facilities, including carparking and playground areas.

III. The Arborist has identified a total of eleven (11) trees, tabled as T1-T11, assessed with direct reference to guidelines as stipulated in *Australian Standard- Protection of trees on development* sites (AS 4970/2009).

IV. The Arborist supports the removal of all site trees, except for T11, based on low retention value, or poor condition and/or form. Minor design changes to allow for the realistic retention of T11 are endorsed, and although the neighbouring tree (T1) is not directly impacted by this proposal, no special conditions are required for its protection.

2.0 Methodology

I. A Visual Tree Assessment (VTA) was conducted, at ground level only, on 7th June 2019.

II. No subterranean investigation or canopy inspection was undertaken.

III. All dimensions are estimated by diameter tape or by eyesight.

IV. Neighbouring tree (T1) was observed from the client's site only and dimensions were estimated only

V. The Arborist tables the following in 3.2 Tree Observations -Table 1 - Tree Assessment & Impacts Evaluation;

   a. Genus & species, Common name, age, vigour and crown characteristics, general health and condition, defects and the presence of pest and disease.

   b. An appraisal of trees with reference to Tree AZ; determination of the worthiness of trees in the planning process, and a Tree Retention Value (STARS Matrix) that assesses the trees significance and value for retention on the site where development occurs. (Refer to Appendix for further clarification of all scales and values)

c. Calculation of Tree Protection Zones (TPZ) and Structural Root Zones (SRZ), proposed setbacks to works and degree of incursion characterised by minor, moderate, major or no impact to trees.

VI. Findings in Table 1.0 are to be read in conjunction with Notes in Appendix.

VII. Calculations of impacts are undertaken by using an interactive calculator. (Treetec, 2014).

VIII. A Site Plan is included in Appendix, using plans provided by the client, and overlaid by the Arborist, to annotate tree location only.

IX. A Glossary of terms is provided in the Appendix of this report, for clarification of Arboricultural terms and meanings.

X. The following documentation was used as part of this assessment;

Plan Type/Document	Provided by	Reference	Date
Site Analysis and Demolition Plan	Envision Group	Project #82 DA 01 Rev C	28.05.2019
Site Plan	Envision Group	Project #82 DA 03 Rev B	07.05.2019

3.0 Observations

3.0 Site Observations

I. The site is nestled within a residential environment and referred to as Lot 114 Sec C DP 1687 of Penrith Council

II. The site is of southern orientation and to a minimal degree the grounds within present with a cross-slope east

III. The existing dwelling is free-standing single level brick and with the FFL approx. 600mm above NGL

IV. The dwelling is somewhat centred on this lot with large side seatbacks. An inground pool locates in north-west corner and surrounded by vegetation palms and small vegetation

V. Soil, although not formally assessed, is deemed generally clay.

Picture(below) is an aerial shot of the site and surrounding environment

3.2 Tree Observations

Table 1: Tree Assessment & Impacts Evaluation

#	Genus Species	Common Name	DBH (mm)	Height (m)	Spread (m)	Age	Vigour	Condition	Crown Form	Canopy Cover %	Defects	Pest &Disease	TREEAZ	Significance	Retention Value	TPZ (m)	SRZ (m)	Setback from proposed work (m)	Impacts/ Incursion % Nil / Low / Moderate / Major / Total Loss (TL)	Impact Summary
1	*Erythrina sp*	Coral tree	*600	11+	14	M	G	-	D	80	NA	NA	NA	L	L	7.2	2.93	7.6	0	No impact imposed by the proposed development Canopy clear of encroachment
Tree resides in the rear adjoining property. * Note the DBH is large than the survey denotation																				
2	*Syagrus romanzoffiana*	Cocos palm	300	12	6	M	G	G	D	-	NO	NO	Z3	L	L	Tree identified as Exempt Species under Penrith DCP 2014.Not assessed for impacts.				
3	*Callistemon viminalis*	Bottle brush	150	6	5	M	G	F	P	70	NO	NO	Z10	L	L	2.0	1.68	2.0+	0	No impact noted from the proposal.
Site tree with fair health and poor canopy form (Phototropic, 80% bias south)																				
4	*Syagrus romanzoffiana*	Cocos palm	300	10	6	M	G	F	D	-	NO	NO	Z3	L	L	Tree identified as Exempt Species under Penrith DCP 2014.Not assessed for impacts.				
5	*Syagrus romanzoffiana*	Cocos palm	300	11	6	M	G	F	D	-	NO	NO	Z3	L	L	Tree identified as Exempt Species under Penrith DCP 2014.Not assessed for impacts.				
6	*Syagrus romanzoffiana*	Cocos palm	300	10	6	M	G	F	D	-	NO	NO	Z3	L	L	Tree identified as Exempt Species under Penrith DCP 2014.Not assessed for impacts.				
7	*Washingtonia filifera*	Cotton palm	400	11	4	M	G	G	P	-	NO	NO	A2	L	L	3.0	NA	1.0	29.18	Major impact imposed by the proposed building footprint
Site palm tree within minor lean north due to the dominance of adjacent trees																				
8	*Syagrus romanzoffiana*	Cocos palm	250	10	5	M	G	G	F	-	NO	NO	Z3	L	L	Tree identified as Exempt Species under Penrith DCP 2014.Not assessed for impacts.				

Table 1: Tree Assessment & Impacts Evaluation

#	Genus Species	Common Name	DBH (mm)	Height (m)	Spread (m)	Age	Vigour	Condition	Crown Form	Canopy Cover %	Defects	Pest &Disease	TREEAZ	Significance	Retention Value	TPZ (m)	SRZ (m)	Setback from proposed work (m)	Impacts/ Incursion % Nil / Low / Moderate / Major / Total Loss (TL)	Impact Summary
9	*Liquidamber styraciflua*	Liquid amber	700	17	12	M	G	G	G	80	TO SR	NO	A2	M	L	8.4	3.17	-	TL	Tree locates within the building footprint and deemed a total loss
Large dominant site tree occupying the eastern side setback. Roots have characteristically surfaced with a 6-meter radius and also lifting the pool pavement. Several branch tears observed within the crown however of little concern. Canopy is changing colour as it enters dormancy. Note this species is invasive																				
10	*Eucalyptus saligna*	Sydney blue gum	700	16	14	M	G	P	P	60	TO DB	F	Z4	M	L	8.4	2.93	0.8 4.0	45.0+	Impacted in two tangents of the TPZ by car parking and driveway.
Site tree within the front setback. Tree comprised co-dominant stems and the western stem recently failed due to fungal decay. Fruiting bodies are present. Tree is not viable																				
11	*Callistemon viminalis*	Bottle brush	150x 3	5	5	M	G	G	G	80 +	NO	NO	A2	M	L	3.12	2.25	1.4	<10	Impacted by staff car parking space, although deemed as low. Drainage plans were not provided for assessment .Refer to Recommendations in this report
Small tree, in good health and condition.																				

Palms have no calculated SRZ, and their TPZ is calculated at no less than 1m > than their radial canopy span.

4.0 Indirect Impacts

The following are indirect impacts that trees may succumb to during construction related activities. It is imperative that these be taken into consideration and all attempts made to minimise indirect impacts, as they can occur over the duration of construction and indeed accumulate to have significant effect on trees longevity.

I. *Mechanical damage from plant/machinery*; Direct wounding and damage of stems and branches by large plant & machinery, including excavator, bob cat, crane, etc., during construction activities will have some impact in the form of cambium damage/abrasion to tree trunks and branch tearing well into collar attachments in turn exposing live woody tissue and predisposing the tree to pest and disease. Similarly, plant/machinery is also responsible for soil compaction within the trees TPZ.

II. *Indirect root injury from soil compaction*; When soil is compacted either via building materials/debris stockpiled on the TPZ or TPZ is utilised as a thoroughfare for heavy plant and machinery, the soil inevitable becomes compacted and impacts on the air and moisture uptake and ultimately affecting the gaseous exchange within the drip line that is vital for the trees health and longevity.

III. *Soil contamination;* where chemicals, cement, and paint products etc., get washed or spilled into the soil and the tree absorbs the soluble content through its roots in addition lime from cement wash off can alter the soil PH

IV. *Soil grade changes;* when the top soil cover down to a depth of approximately 150mm is striped it can illuminate vital feeder roots and can temporarily shock the tree. This process is common particularly during the landscape process. In addition, these fine roots if exposed can prematurely dehydrate and die

V. *Landscaping Impact*; Side paths and driveways comprised of concrete and non-porous materials can deprive roots of air and water and affect gaseous exchange. This is particularly true when there has been lack of consideration for trees located on adjacent properties and within close proximity to building envelope. In addition, masonry fence lines require sub grade footings and usually at the expense of root loss of nearby trees. Furthermore, there can be an increase in reflected heat to the remaining trees as a result from surrounding hard surfaces.

5.0 Conclusion & Recommendations

I. The Arborist has taken into the proposed childcare development and associated facilities, necessitated to function. This means that site will be modified throughout and this, in turn, is at expense of trees.

II. The VTA identified the site vegetation is mostly composed of weedy palms and small vegetation thus assigned low significance and retention and would be removed on that premise. T2, T4, T5, T6 and T8 are exempt trees and can be removed without consent.

III. T1 (rear adjoining tree) is sufficiently setback from the client's boundary and therefore not impacted by the proposal.

IV. Likewise, T3 is not encroached, however the tree is of poor form due to overcrowding and not worthy of retention.

V. T9 *does* play a role in the current landscape given it is the largest tree on site. However, further growth *is* anticipated, and due to its vigorous nature, this tree, with its expansive root system, could potentially be problematic. Designers explored options for the retention of T9 but because of its central location, it is challenging to accommodate, especially with the nature of this development, requiring vast developable area.

VI. T7 and T10 are exposed to significant impact by way of root loss and calculated incursion of 30% and 45% respectively. The arborist does note that T7 (palm tree) *could* tolerate this level of impact but would not be retained given its low significance and low retention value. T10, is also worthy of mention, based on species, but is diseased and structurally compromised, evidenced by the recent stem failure.

VII. T11 *may* be impacted by the proposed car parking, and grade modifications., but this *could* be managed to allow tree to remain viable.

VIII. The Arborist recommends the following;

a. Removal of all site trees, except T11.

b. For T11 to remain viable, then following must be implemented;

   i. Maintain existing soil levels in the TPZ of this tree

   ii. The nearest staff car parking spot must be constructed on grade.

   iii. It would also be beneficial if the car spot was of porous pavement.

   iv. Drainage plans pipes, pits etc, including OSD tanks must not occur in the TPZ.

IX. Although T1 is not *directly* impacted, the client must ensure that Indirect Impacts on Page 8 be minimised.

6.0 Tree Protection Measures

I. The following are tree protection measures to be adhered to for the protection of trees;

a. A **Project Arborist** with a minimum AQF level 5 to be retained to oversee critical stages of works near trees and provide certification where necessary.

b. For the protection of T11, install protective fencing to enclose 3.0-metres radius of the TPZ (measured from the centre of the trunk). The fence radius may be can *only* be reduced for the construction of the proximal parking lot.

c. Protective fencing shall comprise chain link wire and no less than 1.8 metres high and anchored down with concrete blocks in a non-intrusive manner and not conflict with tree parts. Refer to in Picture 1

d. Protection fence must be mulched, no less than 150mm depth, and maintained regularly throughout the duration of the works. The mulch must comprise material that complies with AS-4454-2003 *Composts, Soil Conditioners and Mulch*

e. Signs must be clearly visible to warn all contractors that a TPZ has been established. Signage to read '**TREE PROTECTION ZONE': Entry not permitted without Project Arborist consultation**. Sign shall include PA detail. (Figour 2)

f. No stock piling of building materials within the TPZ of retention trees i.e. bricks cement bags, spoil etc.

g. No Construction permitted within the TPZ unless specified in this report and approved by Council.

h. No construction waste wash-off within the TPZ.

i. All Indirect Impacts as stated in this report are to be minimised

Picture 1

Figure 2

Yours Faithfully,

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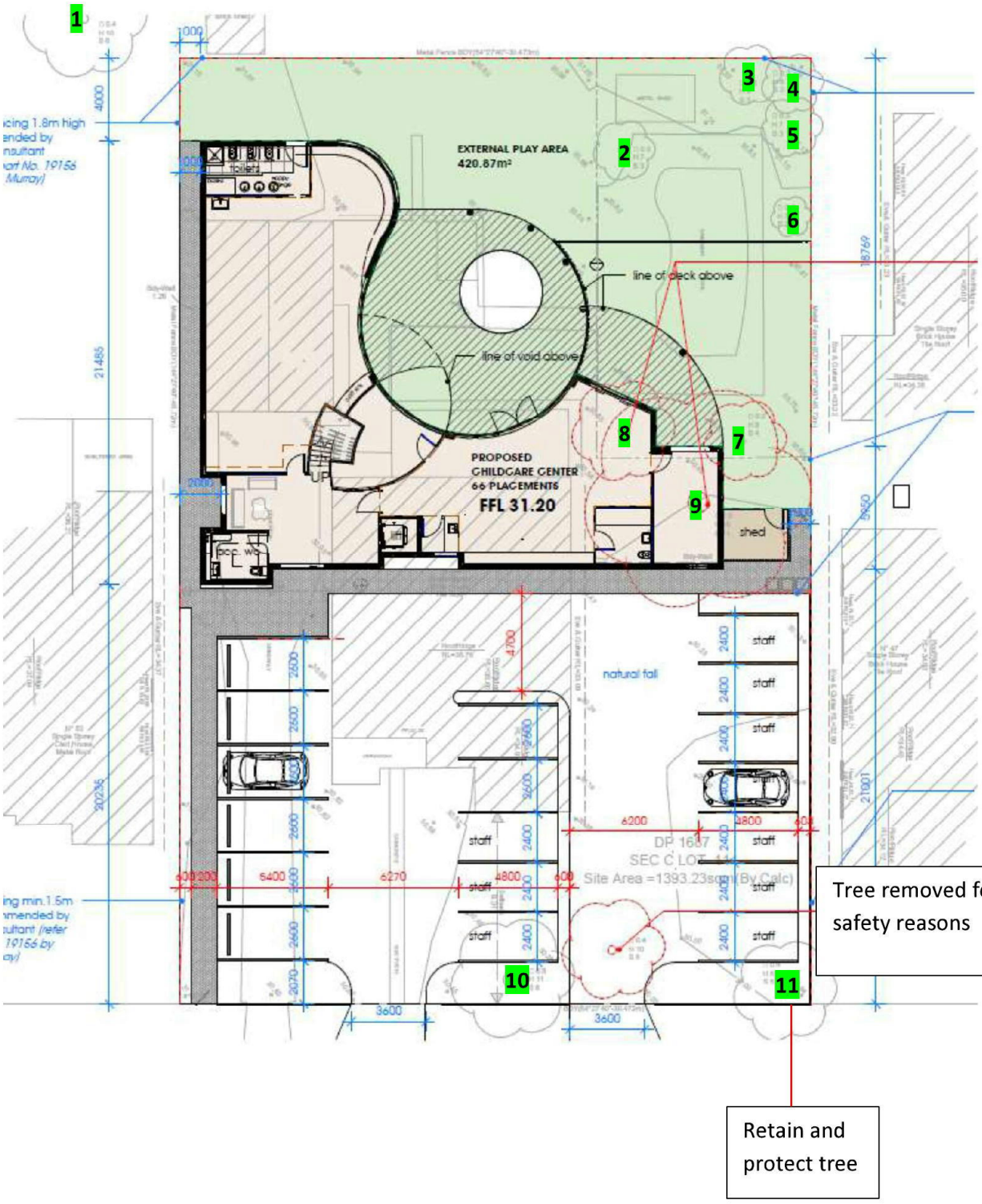
Appendix A

Tree Location Plan



Appendix B

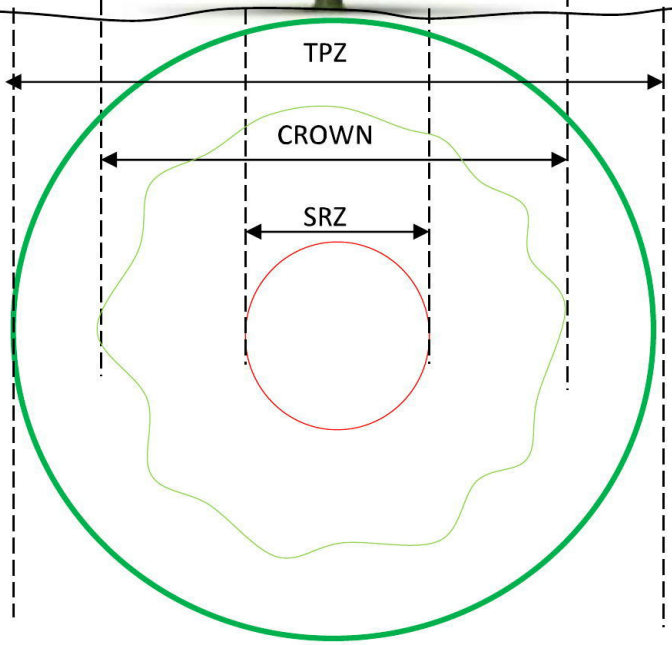
Tree Assessment & Impacts Evaluation Table Notes					
DBH	Diameter at Breast Height (estimated circumference of tree at approximately 1400mm)				
H	Height of tree (estimated)				
S	Spread of tree (estimated)				
Age	Y = Young J= Juvenile M= Mature O=Over mature S=Senescent EM = Early Mature				
Vigour	G= Good F=Fair L= Low D=Dormant				
Condition	G= Good F=Fair P= Poor D= Dead				
Crown Form	D=Dominant C=Co-dominant I=Intermediate S=Suppressed F=Forest E=Emergent				
Crown Cover	Percentage of crown foliage present on tree. D = Dormant at time of inspection, no foliage noted P = Palm				
Defects	**BI**= Bark Inclusion (defect fork) **BC** = Basal cavity **BD** = Basal decay **C**=Cavity or hollow **CC**= Cable conflict **DB**= Dieback **DC**= Declining canopy **DF** = Dead Fronds **DW**= Deadwood **H** = Hangers **KT** = Kinked trunk **L**= Lopped **MW**= Mechanical wound **PBA** = Poor Branch Attachment **R**=Root exposure/decay **RD** = Root Decline **SBD** = Summer Branch Drop **SC** = Stem cavity **SF**= Stem Failure **SFW** = Stem failure Wound **SW**=Stem Wound **TO** = Tear out				
Pest and Disease	B=Borers F=Fungal T= Termites NO = Nothing Obvious O= other				
TREES AZ	Categorisation of trees with regards to development Refer to Appendix – Tree AZ				
Significant Scale	H=High M=Medium L=Low (Refer to Appendix - Significance of a Tree, Assessment Rating System (STARS)©				
Retention Value	H=High M=Medium L=Low R=Removal (Refer to Appendix - Significance of a Tree, Assessment Rating System (STARS)©				
TPZ	Calculated area above and below ground at a radial distance form centre of trunk. Exclusion zone for the protection of tree roots and crown to ensure tree viability				
SRZ	Calculated area below ground at a radial distance from centre trunk of tree, required exclusively for tree stability				
Setback	Calculated setback for proposed works from tree, measured at centre of trunk.				
Impacts/Incursion	Calculated degree of incursion				
	Nil No impact	Low 0% - 15%	Moderate 15%- 25%	Significant 25%+	Total Loss Lost to proposal
Comments	Arborist commentary on tree location, health , structure and relationship to development.				

Appendix C

Indicative TPZ and SRZ (AS 4970/2009)

ELEVATION VIEW

PLAN VIEW



CALCULATIONS

TPZ (Radius) = DBH X 12

SRZ (Radius) = $(D \times 50)^{0.42} \times 0.64$

- The Australian Standards provides a formula for calculating both the TPZ and SRZ. The TPZ is a combination of both root and crown area requiring protection for viable tree retention. Basically, it is the area isolated from construction disturbances. The TPZ incorporates the SRZ, the area required for tree stability.
- It should be noted that the TPZs have been calculated with the following in mind; tree characteristics, typography of the site and the TPZ reconfiguration allowance as stated in AS 4970-2009. (Refer to Appendix E for calculation methods of TPZ.) The Standards allow 10% of the radii from one edge of the TPZ to be offset and added to another edge whilst still maintaining total surface area required for TPZ
- TPZ of palms is calculated as no greater than 1m of its radial canopy span and no SRZ is calculated.
- TPZ and SRZ estimated only and cannot be relied on as accurate with trees on neighbouring properties

Appendix D

IACA Significance of a Tree, Assessment Rating System (STARS) (IACA 2010)©

In the development of this document IACA acknowledges the contribution and original concept of the Footprint Green Tree Significance & Retention Value Matrix, developed by Footprint Green Pty Ltd in June 2001.The landscape significance of a tree is an essential criterion to establish the importance that a particular tree may have on a site. However, rating the significance of a tree becomes subjective and difficult to ascertain in a consistent and repetitive fashion due to assessor bias. It is therefore necessary to have a rating system utilising structured qualitative criteria to assist in determining the retention value for a tree. To assist this process all definitions for terms used in the *Tree Significance - Assessment Criteria* and *Tree Retention Value - Priority Matrix*, are taken from the IACA Dictionary for Managing Trees in Urban Environments 2009.

This rating system will assist in the planning processes for proposed works, above and below ground where trees are to be retained on or adjacent a development site. The system uses a scale of *High, Medium and Low significance* in the landscape. Once the landscape significance of an individual tree has been defined, the retention value can be determined. An example of its use in an Arboricultural report is shown as Appendix A.

Tree Significance - Assessment Criteria

1. High Significance in landscape

- The tree is in good condition and good vigour;
- The tree has a form typical for the species;
- The tree is a remnant or is a planted locally indigenous specimen and/or is rare or uncommon in the local area or of botanical interest or of substantial age;
- The tree is listed as a Heritage Item, Threatened Species or part of an Endangered ecological community or listed on Councils significant Tree Register;
- The tree is visually prominent and visible from a considerable distance when viewed from most directions within the landscape due to its size and scale and makes a positive contribution to the local amenity;
- The tree supports social and cultural sentiments or spiritual associations, reflected by the broader population or community group or has commemorative values;
- The tree's growth is unrestricted by above and below ground influences, supporting its ability to reach dimensions typical for the taxa in situ - tree is appropriate to the site conditions.

2. Medium Significance in landscape

- The tree is in fair-good condition and good or low vigour;
- The tree has form typical or atypical of the species
- The tree is a planted locally indigenous or a common species with its taxa commonly planted in the local area
- The tree is visible from surrounding properties, although not visually prominent as partially obstructed by other vegetation or buildings when viewed from the street,
- The tree provides a fair contribution to the visual character and amenity of the local area,
- The tree's growth is moderately restricted by above or below ground influences, reducing its ability to reach dimensions typical for the taxa in situ.

3. Low Significance in landscape

- The tree is in fair-poor condition and good or low vigour;
- The tree has form atypical of the species;
- The tree is not visible or is partly visible from surrounding properties as obstructed by other vegetation or buildings,
- The tree provides a minor contribution or has a negative impact on the visual character and amenity of the local area,
- The tree is a young specimen which may or may not have reached dimension to be protected by local Tree Preservation orders or similar protection mechanisms and can easily be replaced with a suitable specimen,
- The tree's growth is severely restricted by above or below ground influences, unlikely to reach dimensions typical for the taxa in situ - tree is inappropriate to the site conditions,

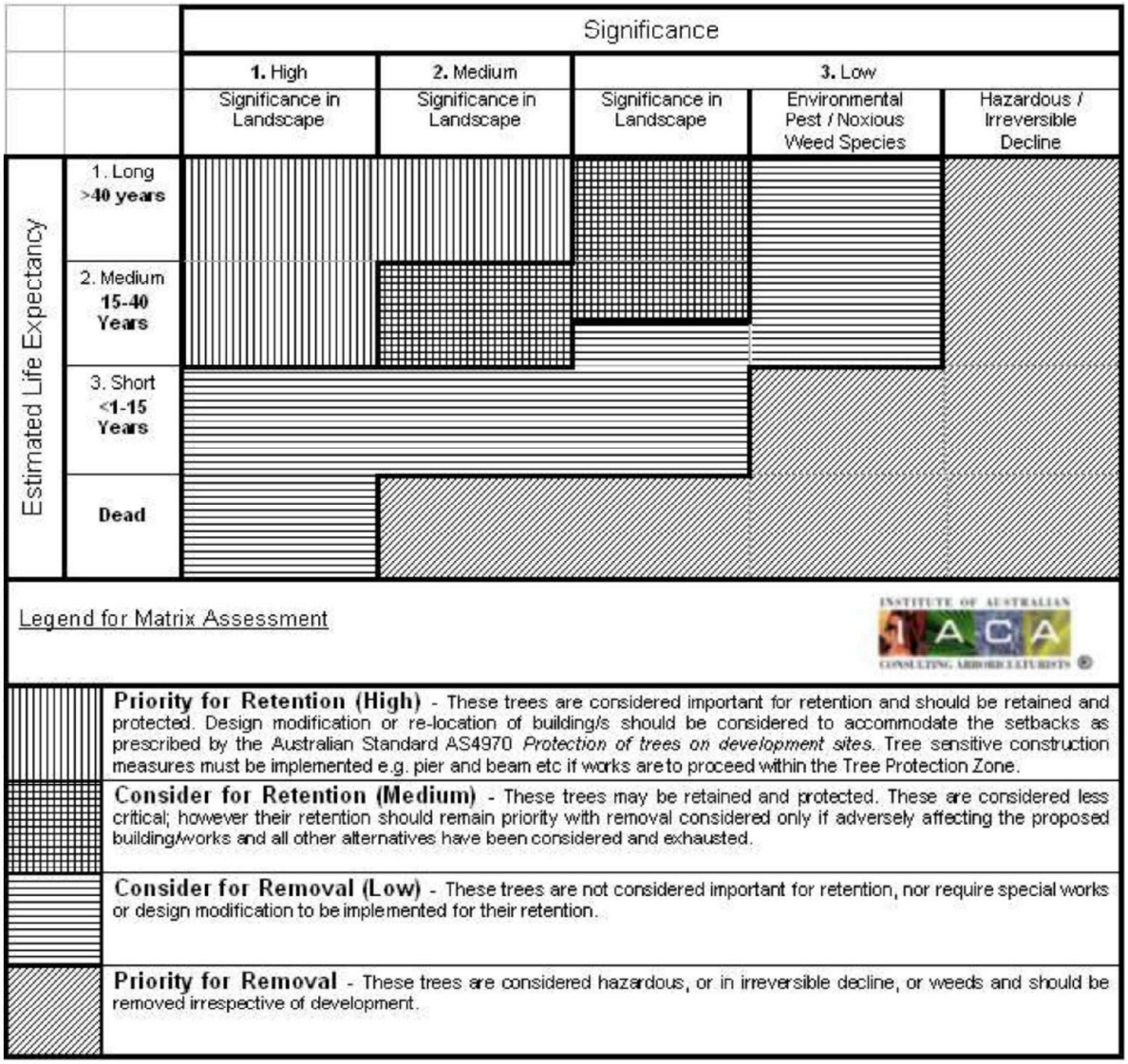
- The tree is listed as exempt under the provisions of the local Council Tree Preservation Order or similar protection mechanisms,
- The tree has a wound or defect that has potential to become structurally unsound.
  Environmental Pest / Noxious Weed Species
- The tree is an Environmental Pest Species due to its invasiveness or poisonous/ allergenic properties,
- The tree is a declared noxious weed by legislation.
- Hazardous/Irreversible Decline - The tree is structurally unsound and/or unstable and is considered potentially dangerous, - The tree is dead, or is in irreversible decline, or has the potential to fail or collapse in full or part in the immediate to short term.

The tree is to have a minimum of three (3) criteria in a category to be classified in that group.

Note: The assessment criteria are for individual trees only, however, can be applied to a monocultural stand in its entirety

Table 1.0 Tree Retention Value - Priority Matrix

IACA, 2010, IACA Significance of a Tree, Assessment Rating System (STARS), Institute of Australian Consulting Arboriculturists, Australia, www.iaca.org.au



Appendix E

Tree AZ Categories (Version 10.10 ANZ)

Category Z: Unimportant trees not worthy of being a material constraint

Local policy exemptions: Trees that are unsuitable for legal protection for local policy reasons including size, proximity and species

Z1	Young or insignificant small trees, i.e. below the local size threshold for legal protection, etc
Z2	Too close to a building, i.e. exempt from legal protection because of proximity, etc
Z3	Species that cannot be protected for other reasons, i.e. scheduled noxious weeds, out of character in a setting of acknowledged importance, etc

High risk of death or failure: Trees that are likely to be removed within 10 years because of acute health issues or severe

Z4	Dead, dying, diseased or declining
Z5	Severe damage and/or structural defects where a high risk of failure cannot be satisfactorily reduced by reasonable remedial care, i.e. cavities, decay, included bark, wounds, excessive imbalance, overgrown and vulnerable to adverse weather conditions, etc
Z6	Instability, i.e. poor anchorage, increased exposure, etc

Excessive nuisance: Trees that are likely to be removed within 10 years because of unacceptable impact on people

Z7	Excessive, severe and intolerable inconvenience to the extent that a locally recognized court or tribunal would be likely to authorize removal, i.e. dominance, debris, interference, etc
Z8	Excessive, severe and intolerable damage to property to the extent that a locally recognized court or tribunal would be likely to authorize removal, i.e. severe structural damage to surfacing and buildings, etc

Good management: Trees that are likely to be removed within 10 years through responsible management of the tree population

Z9	Severe damage and/or structural defects where a high risk of failure can be temporarily reduced by reasonable remedial care, i.e. cavities, decay, included bark, wounds, excessive imbalance, vulnerable to adverse weather conditions, etc
Z10	Poor condition or location with a low potential for recovery or improvement, i.e. dominated by adjacent trees or buildings, poor architectural framework, etc
Z11	Removal would benefit better adjacent trees, i.e. relieve physical interference, suppression, etc
Z12	Unacceptably expensive to retain, i.e. severe defects requiring excessive levels of maintenance, etc

NOTE: Z trees with a high risk of death/failure (Z4, Z5 & Z6) or causing severe inconvenience (Z7 & Z8) at the time of assessment and need an urgent risk assessment can be designated as ZZ. ZZ trees are likely to be unsuitable for retention and at the bottom of the categorization hierarchy. In contrast, although Z trees are not worthy of influencing new designs, urgent removal is not essential and they could be retained in the short term, if appropriate.

Category A: Important trees suitable for retention for more than 10 years and worthy of being a material constraint

A1	No significant defects and could be retained with minimal remedial care
A2	Minor defects that could be addressed by remedial care and/or work to adjacent trees
A3	Special significance for historical, cultural, commemorative or rarity reasons that would warrant extraordinary efforts to retain for more than 10 years
A4	Trees that may be worthy of legal protection for ecological reasons (Advisory requiring specialist assessment)

NOTE: Category A1 trees that are already large and exceptional, or have the potential to become so with minimal maintenance, can be designated as AA at the discretion of the assessor. Although all A and AA trees are sufficiently important to be material constraints, AA trees are at the top of the categorization hierarchy and should be given the most weight in any selection process.

Appendix F

Glossary of Terms

Taken from: Draper, D. B and Richards, P.A. (2009) Dictionary for Managing Trees in Urban Environments, CSIRO Publishing, Victoria, Australia

Arborist An individual with competence to cultivate, care and maintain trees from amenity or utility purposes.

Basal Proximal end of the trunk or branch, e.g. trunk wound extending to the ground is a basal wound, or as epicormic shoots arising from lignotuber

Branch failure The structural collapse of a branch that is physically weakened by wounding or from the actions of pests and diseases or overcome by loading forces in excess of its load – bearing capacity.

Buttress A flange of adaptive wood occurring at a junction of a trunk and root or trunk and branch in response to addition loading.

Callus wood Undifferentiated and unlignified wood that forms initially after wounding around the margins of a wound separating damaged existing wood from the later forming lignified wood or wound wood.

Canker A wound created by repeated localized killing of the vascular cambium and bark by wood decay fungi and bacteria usually marked by concentric disfiguration. The wound may appear as a depression as each successive growth increment develops around the lesion forming a wound margin (Shigo 1991, p. 140)

Canopy cover The amount of area of land covered by the lateral spread of the tree canopy, when viewed from above that land.

Codominant stem Two or more first order structural branches or lower order branches of similar dimensions arising from about the same position from a truck or stem.

Crown Of an individual tree all the parts arising above the trunk where it terminates by its division forming branches, e.g. the branches, leaves, flowers and fruits; or the total amount of foliage supported by the branches.

Decline The response of the tree to a reduction of energy levels resulting from stress. Recovery from a decline is difficult and slow, and decline is usually irreversible.

Diameter at Breast Height (DBH) Measurement of a trunk width calculated at a given distance from above ground from the base of the tree often measured at 1.4m.

Dominance A tendency in a leading shoot to maintain a faster rate of apical elongation and expansion other than other nearby lateral shoots, and the tendency also for a tree to maintain a taller crown than its neighbours (Lonsdale 1999, p.313)

Dripline A line formed around the edge of a tree by the lateral extent of the crown.

Dynamic Load Loading force that is moving and changes over time, e.g. from wind movement (James 2003, p. 166)

Endemic A native plant usually with a restricted occurrence limited to a particular country, geographic region or area and often further confined to a specific habitat.

Epicormic Branch derived from an epicormic shoot

Frass The granular wood particles produced from borer insects and can be categorized as fine frass, medium frass, and coarse frass with the different types being of different sizes and caused by different insects.

Habitat tree A tree providing a niche supporting the life processes of a plant or animal

Hazard The threat of danger to people or property from a tree or tree part resulting from changes in the physical condition, growing environment, or existing physical attributes of the tree, e.g. included bark, soil erosion, or thorns or poisonous parts, respectively.

Included bark The bark on the inner side of the branch union , or in within a concave crotch that is unable to be lost from the tree and accumulates or is trapped by acutely divergent branches forming a compression fork

Indigenous A native plant usually with a broad distribution in a particular country, geographic region or area. See also Endemic, Locally indigenous and non-locally indigenous. .

In situ Occurring in its original place, e.g. soil level, remnant vegetation, the place from where a tree was transplanted, or where a tree is growing.

Irreversible decline The decline of a tree where it has progressively deteriorated to a point where no remedial works will be sufficient to prevent its demise , usually of poor form and low vigour.

Isolated tree A tree growing as a solitary specimen in an exposed location away from other trees as a result of natural or artificial causes and may be naturally occurring.

Kino The extractive polyphenols (tannins) formed in veins in a cambial zone as a defense in response to wounding in eucalypts. Often visible as an exudate when the kino veins rupture or are injured (Boland, *et al.* 2006, p. 691)

Lignotuber A woody tuber developed in the axils of the cotyledons.

Loading Weight that is carried, e.g. as bending stress on a branch.

Locally Indigenous A native plant as remnant vegetation, self-sown or planted in an area or region where it occurred originally.

Longevity Long lived, referring to a plant living for a long period of time.

Mechanical wound -Wound inflicted by abrasion, by mechanical device

Naturalised A plant introduced from another country or region to a place where it was not previously indigenous where it has escaped from agriculture or horticulture or as a garden escape and has sustained itself unassisted and given rise to successive generations of viable progeny.

Necrotic Dead area of tissue that may be localized e.g. on leaves, branches, bark or roots

Negligence With regard to trees , failure to take reasonable care to prevent hazardous situations from occurring which may result in injury to people or damage to property (Lonsdale 1999, p. 317)

Noxious weed A plant species of any taxa declared a weed by legislation. Treatment for the control or eradication of such weeds is usually prescribed by legislation...

Remnant A plant /s of any taxa and their progeny as part of the floristics of the recognised endemic ecological community remaining in a given location after alteration of the site or its modification or fragmentation by activities on that land or on adjacent land

Useful Life Expectancy (ULE) A system used to determine the time a tree can be expected to be usefully retained

Shedding - Shedding of plant organs when it is mature or aged, by the formation of a corky layer across its base. This may be influenced by stress, drought, senescence, declining condition, reduced vigour and also occurs

Stability Resistance to change especially from loading forces or physical modifications to a trees growing environment

Stress A factor in a plants environment that can have adverse impacts on its life processes e.g. altered soil conditions, root damage, toxicity, drought or water logging. The impact t of stress may be reversible given good arboricultural practices that may lead to plant decline.

Structural defect A weak point in or on a tree causing its structural deterioration diminishing its stability in full or part

Structural integrity The ability of a load bearing part of a tree, and its resistance to loading forces

Structural roots- Roots supporting the infrastructure of the root plate providing strength and stability of the tree.

Symbiotic An association between different species usually but not always mutually beneficial.

Termite leads Tunnels of mud on the stem and between the bark created by termites that may be active or inactive.

Tree Protection Zone (TPZ) A combination of RPZ and CPZ as an area around the tree set aside for the protection of a tree and a sufficient proportion of its growing environment above and below ground established prior to demolition or construction and maintained until the completion of works to allow for its viable retention including stability.

Visual Tree Assessment (VTA) A visual inspection of a tree from the ground. Such assessment should only be undertaken by suitably competent practitioners.

Disclaimer

This report has been compiled using knowledge & expertise relating to trees, and makes recommendations based on this. It should be noted that trees are affected by many elements, environmental and situational, some of which cannot be predicted or foreseen even by Qualified Arborists.

The client when reading this report should take the following factors into consideration;

- It is not feasible to assume that Arborists identify all hazards or risks associated with trees at the time of consultation or indeed in this report.
- This Assessment is valid for 3 months from the date stipulated on the report, and may need to be updated after this.
- Regular maintenance and monitoring by a Qualified Arborist will minimize the risks associated with tree and contribute to its longevity in its growing environment, however there is no guarantee that all risks are to be eliminated and that the tree is not privy to external factors that will impact on the tree after it has been assessed by our service.
- The report is compiled in good faith, where any information given to our service is correct and true, and where interested parties and /or stakeholders are notified. This includes title and ownership of property, orders as directed by relevant authorities, development application determinations and other matters that affect the tree/s in question.
- The Arborist shall not be required to give testimony or to attend court by reason of this report unless other arrangements are made prior.
- This Arborist Report does not issue permission for any recommendations made in this report, particularly where trees are to be removed. Permission must be sought and obtained from Council and owner/s of trees.
- Any treatments recommended by the Arborist cannot be guaranteed, due to the volatile environment in which trees are growing.
- Clients may choose to accept or disregard the recommendations of the Arborist, or to seek additional advice.
- This report is intended for the Recipient, no part of this report is to be copied or altered without the authors permission

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