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3 JULY 2014

MLC BURWOOD
SENIOR SCHOOL CENTRE

Park Road & Grantham Street, BURWOOD, SYDNEY NSW

ARBORICULTURAL ASSESSMENT & DEVELOPMENT IMPACT REPORT

Prepared for

MLC Burwood Senior School Centre
C/- Farrell Coyne Projects
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Prepared by
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AQF Level 5
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INTRODUCTION

This report has been commissioned by Farrell Coyne Projects to assess the Useful Life Expectancy (ULE) and potential impacts that may occur to significant trees in relation to a new development proposal.

The new development proposal consists of constructing new teaching and learning buildings, Art centre and general additions and alteration to existing buildings including associated infrastructure within MLC School Burwood. The school occupies land situated between Grantham & Rowley Street and Park Road, BURWOOD, SYDNEY NSW.

This report has been prepared in accordance with the Secretary's environmental assessment requirements dated 14 May 2014 to aid in the assessment of development impacts. The assessment includes information regarding the health condition and viability of retaining the trees assessed.

Recommendations for retention or removal of trees is based on their accorded ULE category, the design proposal and potential impacts under this development application. Each tree has been accorded an identification number and is referred to by number throughout this report. The trees may be referenced within the Tree Assessment Schedule and Tree Location Plan Appendices C and D.

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

METHODOLOGY

i In preparation for this report a limited site and ground level Visual Tree Assessment (VTA) was conducted on Thursday 5th June 2014 by the author of this report. The principles of VTA were adopted from *Mattheck & Breloer* 1994 '*The Body Language of Trees*.' The inspection included assessment of the overall health and vigour of the trees, tree form, structure and structural condition commencing from near the lower trunk to the upper first order branch division as best as site condition would allow.

Past arboricultural tree assessment schedules were also used to cross reference the trees affected by site works.

ii The inspection was limited to a Visual Tree Assessment (VTA) from within the subject site. No aerial (climbing) inspections, woody tissue testing or tree root investigation was undertaken as part of assessment works. Tree height and canopy spread was estimated and expressed in metres with trunk diameters measured at approximately 1.4 metres above ground level, rounded off to the nearest 50mm and expressed as DBH (Diameter at Breast Height).

Unless specified otherwise all distances and development offsets within this report are taken from the centre of the tree.

iii This report utilises the current Australian Standards AS 4970 'Protection of Trees on Development Sites'– 2009 with reference to the Tree Protection Zone (TPZ): being a combination of the root and crown area requiring protection. The TPZ takes into consideration the Structural Root Zone (SRZ): The area required for tree stability. Determined by AS4970 - 2009 Figure 1, Table of determining the SRZ, section 3.3.5 of the standards.

To retain specific trees and ensure their viability development must take into consideration protection of the TPZ radius.

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

BVN – Donovan Hill

- Floor Plan Level 00 / AR-AR-B-00-02 issue E dated 12.3.14
- Elevations AR-AR-C-XX-01 & 02 issue D dated 12.3.14
- Sections AR-AR-D-XX-01 & 02 issue C dated 12.3.14

Arcadia Landscape Architecture

- Landscape Concept Design 13-161 issue 6 dated March 2014
- Tree removal / survey plan issue 1 dated 14.3.14

SMEC Urban

- Site Survey Plan Dwg No. 70109.12.D05 Sheet 1 of 1 Rev A dated March 2014

1. SUMMARY OF CONCLUSIONS

1.1 Seventy six (76) trees have been assessed under this proposal which consist of two (2) trees located within the Council verge of Grantham Street. Development works are unlikely to affect Council verge trees provided that they are appropriately protected prior to and during works.

All trees assessed within this report may be referenced within Appendix C which identifies their retention value based on tree significance and structural condition.

Exempt tree species

1.2 Of the seventy four (74) trees assessed on site twenty (20) tree are listed as exempt trees from Local Government Authority (LGA) protection. The twenty exempt trees are proposed to be removed to accommodate new works and are identified as trees: 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 35, 55, 62, 64, 65 & 66.

Tree removal to accommodate construction

1.2 Under the current proposal thirty five (35) trees are proposed to be removed to accommodate new buildings and landscape design. These trees are identified as trees: 27, 28, 29, 30, 31, 32, 33, 34, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 56, 57, 58, 59, 60, 61, 63 & 67

In compensation for tree removal Landscape Plan Plant Palette + Schedule identifies thirty (30) replacement trees of which twenty four (24) are native and six (6) are exotic tree species.

1.4 For the remaining nineteen (19) trees located within the construction area an appointed site arborist is to be engaged to oversee tree protection methodology. Such tree protection works are to be conducted as specified within this report and in accordance with the generic Tree Management Plan (TMP) provided within Attachment A p11.

1.5 Prior to construction detailed drawings and methodology of porous pavement and/or surface coverage within the Tree Protection Zone (TPZ) of protected trees is to be endorsed by the site arborist. Arborist endorsement is also required for new stair access adjacent T9, and where any activity is located within the Structural Root Zone (SRZ) setback (the area required for tree stability), refer SRZ & TPZ setback column Appendix C.

Where required the arborist shall provide appropriate ongoing certifications to the development site superintendent and/or Principal Certifying Authority (PCA) at completion of works.

Yours sincerely

Mark A. Kokot

Level 5 consulting arborist
Diploma of Hort/Arboriculture (AQFL5), Associate Diploma Parks Management (AQFL4)
Certified Arborist / Tree Surgeon (AQFL3), Member: Arboriculture Australia (AA) No.1292

2. DISCUSSIONS OF OBSERVATIONS

2.1 General tree assessment

2.1.1 Seventy six (76) trees have been assessed under this development proposal which includes two (2) Council verge trees located within Grantham Street. The two trees 75 & 76 will not be adversely affected by development works and are mature specimens being constantly managed for power line clearances.

2.1.2 *Exempt trees*: Of the seventy four (74) trees assessed on site twenty (20) trees are noted as exempt tree species within Burwood Council DCP Preservation of Trees & Vegetation Section 6.1.5 A - Exemptions.

The following exempt trees are permitted to be removed without a Council Tree & Vegetation Removal Permit or Development Consent.

- Trees 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 35, 55, 62, 64, 65 & 66.

2.1.3 *Low retention value trees*: Three (3) trees, trees 34, 37 & 51 have been accorded low retention values being over mature senescing trees or trees with structural defects not viable for lengthy periods of retention. They are considered trees which should not restrict the development proposal due to their condition and short retention value.

Tree 51 is structurally damaged and forms part of a dense screen planting consisting of twenty five closely planted trees. The removal of low risk tree T51 would not compromise the avenue or adjacent trees within the screen planting.

2.1.4 Remaining trees on site are considered trees viable for retention in the existing environment.

2.2 The development proposal

2.2.1 The development proposal consists of constructing new learning centre buildings, additions and alterations to existing buildings with new landscape and infrastructure to accommodate the proposal which includes upgrading and incorporating new landscape design and plantings.

2.3 Discussion of development impacts

Trees identified for removal to accommodate development

2.3.1 Thirty five (35) protected trees are identified as falling within the development footprint of new buildings, additions and/or require to be removed for landscape upgrading to complement the new design.

The thirty five trees are identified as trees:

- 27, 28, 29, 30, 31, 32, 33, 34, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 56, 57, 58, 59, 60, 61, 63 & 67

The subject trees may be referenced within Figure 1 p7 where the development footprint and tree removal has been taken from Floor Plan Drawing AR-AR-B-00-02 and Landscape Design Plans.

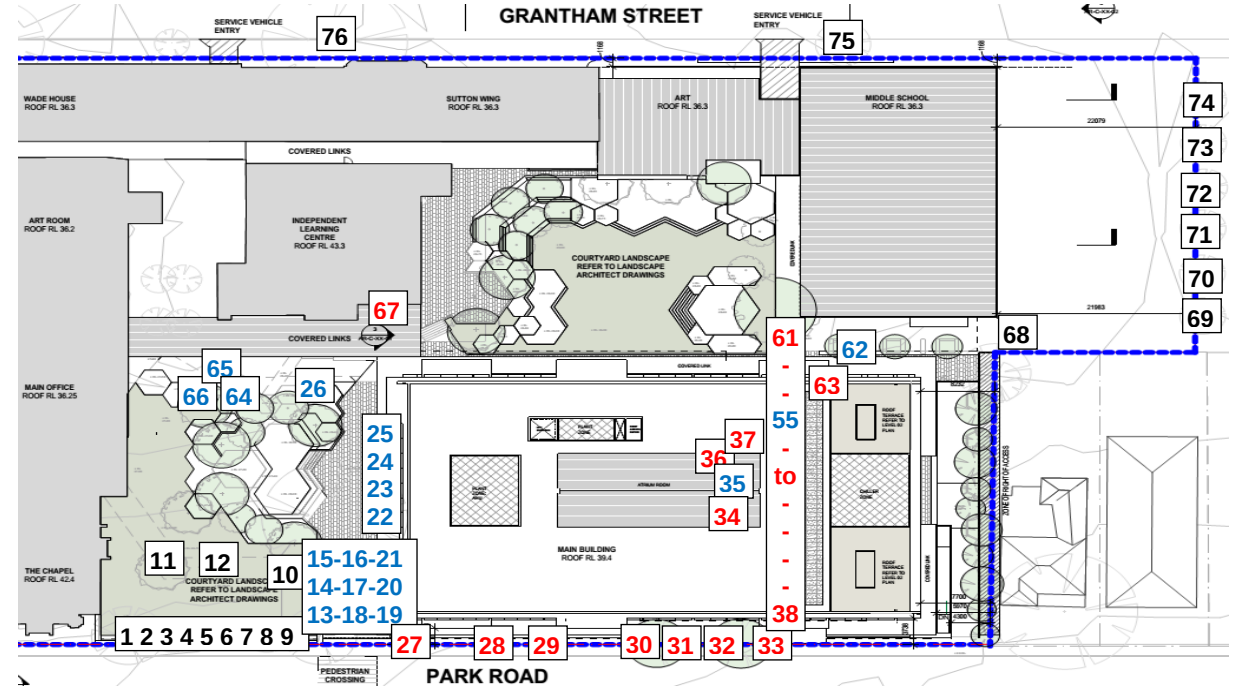
2.3.2 The impact to those trees which are protected species and identified for removal is summarised as follows:

Main Building – twenty eight (28) trees fall directly within the building footprint and require removal to accommodate the building envelope. The trees are identified as trees 30, 31, 32, 33, 34, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 56, 57, 58, & 59.

Six (6) trees will be adversely affected by Main Building works within the building envelope which will impact on the Structural Root Zone (SRZ) the area required for tree stability. The six trees are trees 27, 28, 29, 60, 61 & 63 where the edge of the Main Building is located directly at the trunk of significant T63.

Landscape works – One (1) tree, tree 67 containing lower structural wounding requires removal to accommodate the new landscape design and proposed concrete paving.

Figure 1, showing development footprint & tree removal



2.4 Minimising impacts on trees to be retained

2.4.1 Trees 1 to 8, to retain the trees no change in levels or root disturbance shall occur within the Structural Root Zone (SRZ) & Tree Protection Zone (TPZ) setback as identified within Appendix C the SRZ & TPZ setback column.

Where new works such as hard service / proposed synthetic turf, concrete works or similar coverage is required surface coverage shall commence at the existing garden bed edge or commence at the extremity of the SRZ, be of a porous nature and placed on top of natural grade without compaction within the TPZ, refer Landscape Plan Dwg 101/A.

The final design layout shall be endorsed by the project arborist prior to commencement of works with the trees protected in accordance with the generic Tree Management Plan (TMP) Attachment A.

2.4.2 Tree 9, new stair access shall not encroach or disturb the 2m SRZ. New works are recommended to be located where existing site features and access is positioned to prevent anchoring root disturbance and the possibility of tree failure. Surface coverage within the TPZ radius should be of porous nature, placed on top of natural grade without level change or compaction, refer Landscape Plan Dwg 101/A & Site & Roof Plan XX-03/C.

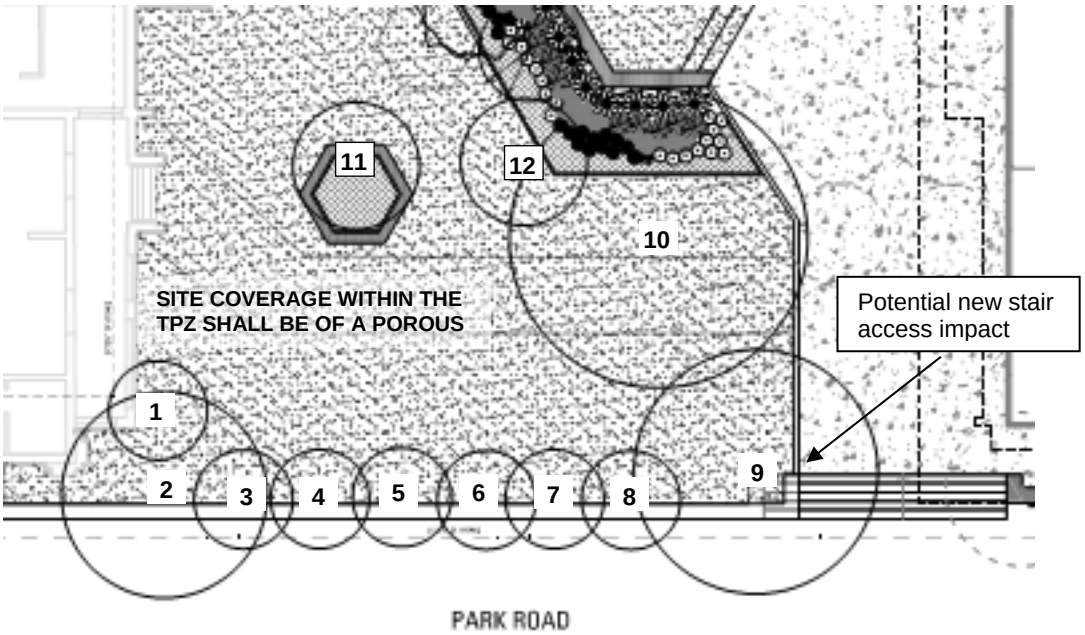
The final access stair design and landscape layout shall be endorsed by the project arborist prior to commencement of works with the tree protected in accordance with the generic TMP Attachment A.

2.4.3 Tree 10, new surface coverage is recommended to commence at existing hard surface setbacks or at extremity of the 3.8m SRZ. Surface coverage within the 15m TPZ radius is recommended to be of porous nature, placed on top of natural grade without level change or compaction within the TPZ, refer Landscape Plan Dwg 101/A. The final porous surface design and landscape layout shall be endorsed by the project arborist prior to commencement of works. Prior to and during works the tree requires to be protected in accordance with the generic TMP Attachment A.

2.4.4 Trees 11 & 12. For tree retention in existing locations new works are recommended to retain the existing garden bed retaining wall and soil levels with the 2m SRZ. The trees can also be relocated, placed in a nursery environment during works and replanted in a desired location near completion of works.

Being Frangipani trees no disturbance within the 2m SRZ is recommended such that the trees are retained satisfactorily given prior arboricultural protection advice during development activities. The trees shall be generally protected in accordance with the generic TMP Attachment A.

Figure 2, showing T1 to T12 landscape proposal



2.4.5 Tree 68, Landscape Plan Dwg 102/A shows hard surface up to and surrounding the tree. To adequately protect the tree surface coverage shall be of a porous nature and placed on top of natural grade without cut, level change or compaction within the 2.4m TPZ. Consideration in providing a tree grate or pervious soft fall within the 1.5m SRZ to adequately protect the tree is recommended.

The final design layout shall be endorsed by the project arborist prior to commencement of works with the tree protected in accordance with the generic TMP Attachment A.

2.4.6 Trees 69 to 74, negligible impact given their setback o development activities. A 6m Tree Protection Fence (TPF) exclusion zone is recommended to be constructed extending the length of the site boundary to protect the trees during development.

2.4.7 Council verge trees 75 & 76 are unlikely to be affected by works. Should heavy vehicle or construction site access be positioned near these trees timber beam trunk protection is recommended to minimise the potential of tree damage during works.

3. RECOMMENDATIONS

3.1 Tree removal

3.1.1 A total of fifty five (55) trees are proposed to be removed for the purpose of development. With consent of Council or regulating authority under the current design the removal of thirty five (35) protected trees is required to accommodate the new development proposal.

The thirty five trees are identified as trees:

- 27, 28, 29, 30, 31, 32, 33, 34, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 56, 57, 58, 59, 60, 61, 63 & 67

Exempt trees, the removal of twenty (20) exempt trees not protected by Councils DCP is permitted without approval to accommodate works. The subject exempt trees are identified as trees:

- 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 35, 55, 62, 64, 65 & 66.

3.2 Tree retention & protection principles

3.2.1 Those trees specified for protection which may include exempt tree species require the construction of Tree Protection Zones (TPZ), fences or specific protection methodology prior to works commencing. Tree protection is required to ensure no significant impact occurs during works, which includes any demolition or excavation proposed to accommodate works.

3.2.2 Attachment A, the generic Tree Management Plan outlines required protection methodology which is to be adopted with any tree specific recommendation provided within this report. Where appropriate the extent of the TPZ radius shall be protected in accordance with section 1 p11 of the Tree Management Plan (TMP).

The development site superintendant is responsible for ensuring that all tree protection measures are conducted accordingly during site works and that all site contractors are aware of tree protection requirements.

3.2.3 Additional notes

- *Landscape & final design documentation* details such as stair construction adjacent T9 and porous pavement or materials used within the TPZ are to be endorsed by the project arborist prior to works commencing. To protect the stability of trees no works shall occur within the SRZ setback without prior arborist approval. Works within the TPZ shall be conducted in a manner that abides to the Tree Management Plan (TMP) Attachment A, with reference to the SRZ & TPZ distance column for individual trees provided within Appendix C.

ATTACHMENT A: Generic Tree Management Plan

1. **Tree Protection Fencing (TPF)** unless specified otherwise TPF as in Figure 1 below is to be constructed prior to any works commencing to ensure no adverse impacts occur to trees requiring retention. TPZ fencing is to consist of 1.8m high chain link fencing secured to the ground by 50 x 50mm steel posts. Generally the location of the TPZ is to be constructed outside of the canopy drip line or extent of the TPZ, refer Appendix C, SRZ & TPZ distance column.

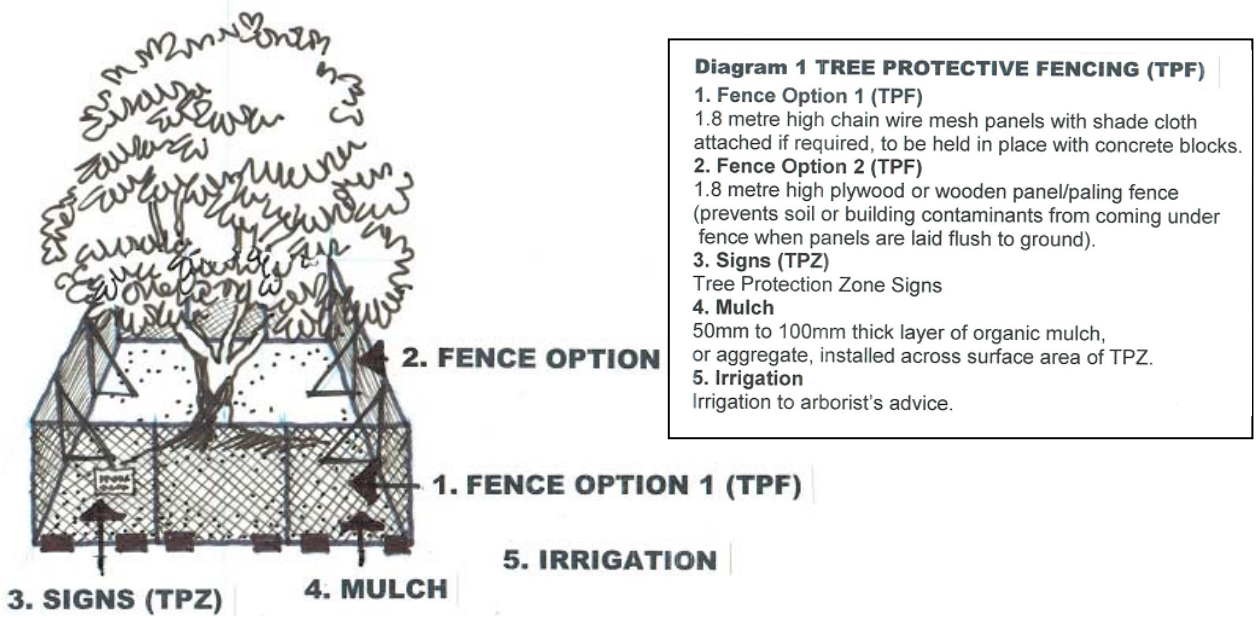
If development site constraints exist the location of the TPZ fence may be reduced - or altered to timber beam trunk protection (TMP Figure 2). Modifications of the TPZ location is to be specified and approved at a pre development site meeting between the appointed site arborist and development site superintendent.

If reduced TPZ fencing or timber bean protection is required the arborist may request that the extent of the TPZ / root zone be protected by native leaf mulch during site works.

The location of the TPZ is to be constructed as to allow for best tree management practices while providing adequate development work access to finalise the construction proposal.

1.3 The TPZ is a development exclusion zone, it is an area isolated from construction disturbance so that the tree remains viable. No works or storage of materials are permitted within the TPZ without prior consultation and written approval from the appointed site arborist. Appropriate signage shall be erected on TPZ fencing identifying the prevention of any unauthorised activity and/or access. Certification of TPZ modifications are to be provided by the site arborist to the Principal Certifying Authority (PCA) at the completion of installation.

TMP Figure 1, showing fence construction detail



TMP Figure 2, showing trunk & root protection detail

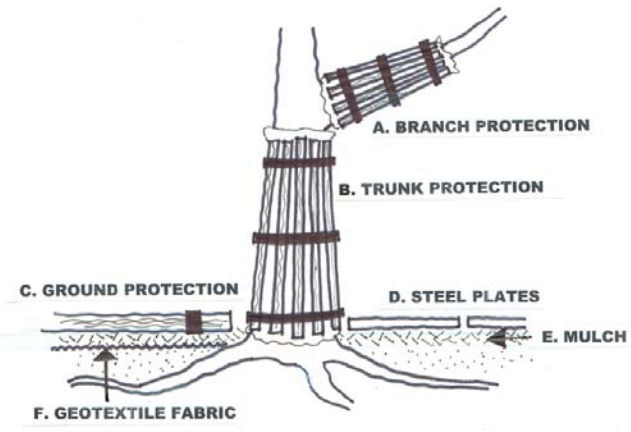


Diagram 2 TYPES OF BRANCH, TRUNK AND GROUND PROTECTION

A. Branch Protection
Prevent bark damage by use of timber boards and padding strapped to branch. (Do not use nails or screws).

B. Trunk Protection
Prevent bark damage by use of timber boards and padding for at least 2 metres above ground level. (Do not use nails or screws).
Also refer to Detail Diagram 3.

C. Ground Protection
Install a suitable device eg timber rumble boards strapped together, above mulch or aggregate. The device shall be thick enough to prevent soil compaction and also to prevent compression or damage to roots.

D. Steel Plates
Steel plates (or similar, as approved by arborist) may be laid with, or without, mulch or aggregate under.

E. Mulch
Minimum 50mm thick, maximum 100mm thick, organic mulch or aggregate.

F. Geotextile fabric
Geotextile fabric laid under mulch or aggregate layer.

2. **Appointing a Site Arborist**. Prior to works commencing a qualified arborist with a minimum AQF Level 5 qualification is to be appointed as the site arborist to address any development impacts that may occur to trees that require retention including any neighbouring tree.

The development site superintendent is responsible for enforcing all tree protection methodology, contacting and liaising with the appoint site arborist. The appointed site arborist must be consulted at all times when working within the TPZ and specifically be on site if development activities are required within the SRZ to discuss root impact mitigation techniques, refer Appendix C for SRZ & TPZ setbacks. The appointed site arborist is to certify to the Principal Certifying Authority (PCA) that all tree protection methodology has been conducted accordingly as specified within this report.

3. **Hold Points**, unless specified otherwise no works are permitted within the SRZ radius of any tree without prior onsite arborist consultation or direct site involvement. The SRZ setback is a development exclusion zone. Where works are proposed within the SRZ an air spade or water jetting root investigation is required to identify the potential impact which is to be assessed by the appointed arborist.

Hand tools are to be used when working within both the SRZ & TPZ with cantilevering or bridging over the SRZ under pier & beam construction recommended.

4. **Demolition within the Tree Protection Zone (TPZ)** is to be supervised by the appointed site arborist. Rubber tracked excavators are recommended to work within the footprint of any hard surface such as pathways and pavements to minimise the radial impact to the TPZ and/or SRZ. No tree roots at or exceeding 30mm(Ø) are to be severed during works. Where large woody roots are located the appointed site arborist is to be notified before continuing.

5. **Excavation within the TPZ,** is to be avoided where possible. Any excavation for footings, foundations or grading (site leveling) is to be approved and supervised by the appointed arborist.

To appropriately protect the root zone air spade or water jetting excavation is recommended to locate and expose any tree roots which may be affected and to avoid ripping by site machinery.

Tree roots <30mm(Ø) in diameter shall be clean cut with sharp clean root pruning tools. Further advice from the site arborist is required where larger woody tree roots have been exposed.

6. **Landscaping or development within the TPZ** is to complement the long term needs to retain the subject trees. Pervious paving materials are recommended within the TPZ to maintain soil moisture availability.

Unless approved within this report no grade changes being cut or fill is to occur within 10% of the TPZ radius. Ten (10%) percent of the TPZ may be affected by development encroachment given prior arborist consultation and appropriate management.

Maintaining the existing soil levels, moisture and aeration is the key to significant tree preservation. All efforts are to be made in maintaining the TPZ, soil moisture content and soil microorganism activity essential for maintaining good tree vigour.

7. **Fill material within the Tree Protection Zone**, unless endorsed by the site arborist fill material within the Tree Protection Zone shall be avoided.

8. **Site machinery**, demolition, excavations and site construction machinery must ensure that no direct conflicts occur to protected trees which may include canopy overhang towards development areas.

8.2 In the event of tree damage the appointed site arborist is to be notified immediately. The site arborist is to immediately undertake action to minimise any impact.

9. **Underground services**, no trenching for underground services is permitted within the radial SRZ setback without prior arborist approval.

Where underground services are required within the SRZ or in line cutting through the TPZ, underboring or directional drilling is recommended.

10. **Root pruning**, with consent of the project or site arborist tree roots >30mm(Ø) are to be correctly treated, clean cut by ane appointed arborist abiding to the Australian Standards Pruning of Amenity Trees AS 4373 2007 section 9 *Root pruning* at all times. At no stage are tree roots greater than 30mm(Ø) (in diameter) allowed to be cut by site contractors without prior arborist consultation. Where significant woody tree roots are located bridging over or tunneling beneath the root system may be required to ensure the vigour of the tree is not adversely affected by proposed works.

11. **Canopy pruning**, where required tree removal and canopy reductions are to be approved by the Local Government Authority and conducted by a suitably qualified AQF Level 3 arborist abiding to the Australian Standards Pruning of Amenity Trees AS 4373 2007 at all times.

Pruning of significant or neighbouring tree overhang is to be supervised by a minimum AQF level 4 arborist. The extent of pruning for neighbouring trees is to be approved and clearly identified such that no over pruning occurs.

12. **Regular site inspections**, the appointed site arborist shall undertake regular site inspections of Tree Protection Zones (TPZ) & Tree Protection Fencing (TPF). Site inspections are recommended at the following stages.

- TPF inspection prior to demolition
- Every six (6) weeks from commencement of demolition works
- Then as deemed necessary based on the quality of tree protection and compliance by site contractors

13. **Certifications**, obtaining relevant arborist certifications is the responsibility of the development site superintendent. Certifications are to be provided to the Principal Certifying Authority (PCA) stating that all tree protection fencing and/or methodology has been installed to adequately protect any tree requiring retention which includes neighbouring trees.

Arborist Certification is to consist of timing of events, discussions of attendance, tree roots encountered and mitigation works conducted to minimise development impacts on protected trees during the course of development activities.

Yours sincerely

Mark A Kokot - 0419 250 248

Level 5 consulting arborist

APPENDICES

APPENDIX - A: Terminology & references

Age classes: (I) Immature refers to a well established but juvenile tree. (ESM) refers to an early semi mature tree not of juvenile appearance. (SM) Semi-mature refers to a tree at growth stages advancing into maturity and full size. (LSM) Late Semi- Mature, refers to a tree between semi-mature and close to mature. (EM) refers to a tree at the first stages of maturity. (M) Mature refers to a full size tree with some capacity for future growth.
Health: Refers to a trees vigor exhibited by the crown density, leaf colour, presence of epicormic shoots, ability to withstand disease invasion and the degree of dieback.
Condition: Refers to the tree's form and growth habit, as modified by its environment (aspect, suppression by other trees, soils) and the state of the scaffold (i.e. Trunk and major branches), including structural defects such as cavities, crooked trunks or week trunk / branch junctions. These are not directly connected with health and it is possible for a tree to be healthy but in poor condition.
Decay: (*N*) – an area of wood that is undergoing decomposition. (*V*) – decomposition of an area of wood by fungi or bacteria.
Decline: Is the response of a tree to a reduction of energy levels resulting from stress. Recovery from decline is difficult and slow; is usually irreversible.
Defect: A identifiable fault in a tree.
Epicormic Shoots: Shoots that arise from latent or adventitious buds that occur on stems and branches and on suckers produced from the base of the tree. A symptom / result of stress related factors.
Footprint: The area occupied by site structures, including the dwelling driveways and hard surfaces.
Hazard: When a tree failure hazard is present when a tree has potential to cause harm to people or property. (A source of potential harm).
Included Bark: (Inclusion) a genetic weak fault, pattern of development at branch junctions where the bark is turned inwards rather than pushed out, can pose a potential hazard.
Order of branches: First order being those that are the first to extend from the main trunk or codominant limbs, second order branches extend from the first order and third order branches extend from the second order.
Probability: The likelihood of some event happening.
Risk: Is the probability of something adverse happening.
Suppression: Restrained growth pattern from competition of other trees or structures.
Shall: is a requirement – **Should**: is a recommendation
Wound: Damage inflicted upon a tree through injury to its living cells, may continue to develop further weakening of the structure compromising structural integrity.

SELECTED REFERENCES:

Barrell J. 1993, 'Preplanning Tree Surveys: Safe useful Life expectancy (SULE) is the Natural Progression", Arboricultural Journal 17: 1, February 1993, pp. 33-46.

Mattheck, C. & Breloer, H.(1994) *The Body Language of Trees.* Research for Amenity Trees No.4 the Stationary Office, London.

Matheny N. & Clark J. 1998, Trees & Development *'A Technical Guide to Preservation of Trees During Land Development'* International Society of Arboriculture, Champaign USA.

Standards Australia 2009, *Australian Standards 4970 Protection of Trees on Development Sites* - Standards Australia, Sydney, Australia.

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

APPENDIX - B: Tree Retention Values *©rainTree consulting*

VTA i) Landscape Significance (LS): The significance of a tree in the landscape is a combination of its amenity, environmental and heritage values.
Values may be subjective however, offer a visual understanding of the relative importance of the tree to the environment. The Landscape Significance of a tree is described in seven categories to assist in determining the retention value of trees.

1	Significant	**2**	Very High	**3**	High	**4**	Moderate	**5**	Low	**6**	Very Low	**7**	Insignificant

ii) Visual Tree Assessment (VTA)

0	If appropriate to VTA - **exempt* trees from Local Government Authority (LGA) Tree Management or Preservation Orders (TPO)	**3**	This rating incorporates trees that may require further investigation of defects such as cavities or symptoms indicating internal decay of an extent that cannot be quantified under visual examination. Further inspections may be in the way of arborist climbing inspection within the canopy, root crown investigation and/or drill penetrating or xray testing procedures to determine percentage of internal decay.
1	Trees that are dead, significantly declining >75% volume or obviously hazardous		
2	Trees that are structurally damaged. Affected by fungal pathogens (wood rot) or viruses, have poor structure or weak & detrimental large stem inclusions capable or failure opposed to 2B. Some symptoms may be reversible, remediated or controlled give appropriate management.		
2A	Tree damage specific to basal and/or root plate damage where tree is not viable for retention / or trees with included bark splits to ground level	**4**	Trees which appear specifically environmentally stressed by drought, poor soil or site conditions. Symptoms may be reversible given appropriate management
2B	Defect specific to developing stem inclusions (weak branch attachments) where the condition may not be immediately detrimental however, requires annual to biannual monitoring or control to prevent stem failure by slings, cable or bracing. Tree may also contain multi stems or codominant twin stems	**5**	Trees that would benefit from crown maintenance pruning as identified within the Australian Standards AS 4373 – 2007 Pruning of Amenity Trees
		5A	Trees that require little or no maintenance at time of inspection other than close monitoring
2C	Trees of poor form, contain minor wounds or canopy altering storm or pruning damaged to an extent that is not considered immediately detrimental. Likely to require close annual monitoring or minor corrective pruning	**6**	Trees may be typical for species type, of good form and visual condition for age class, may have suppressed one sided canopies or are low risk trees
2D	Standing damaged trees or significantly altered by recent storm events not viable for retention in areas of frequent public usage or valuable targets	**7**	VTA restricted by canopy or plant material vine or ivy covering tree parts, or site conditions which do not allow access- fences or neighbouring sites

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

1	High retention	**2**	Medium retention	**3**	Low retention	**4**	Consider removal

iv) U.L.E. categories Useful Life Expectancy (after *Barrell* 1996, modified by the author)
A trees U.L.E. category is the life expectancy of the tree modified first by its age, health, condition, safety and location. U.L.E. assessments are not static but may be modified as dictated by changes in trees health and environment. The five categories of U.L.E. are as follows:
1. Long U.L.E. - Appear retainable at the time of assessment for over 40 years with an acceptable degree of risk assuming reasonable maintenance.
2. Medium U.L.E. - Appear to be retainable at the time of assessment for 15 to 40 years with an acceptable degree of risk assuming reasonable maintenance.
3. Short U.L.E. - Trees appear to be retainable at the time of assessment for 5 to15 years with an acceptable degree of risk assuming reasonable maintenance.
4. Very short - Removal- Trees which should be scheduled for removal within the very short term or as specified within this report.
5. Small, young or regularly pruned – Trees under 5m in height that can be easily moved or replaced, includes screen plantings or hedge lines.

APPENDIX - C: Tree Assessment Schedule

	Trees requiring removal due to hazardous or dead condition - subject to Local Government Authority notification		Trees with low retention values: senescence, developing defects or being *exempt trees from the LGA Tree Preservation Order (TPO)

Tree No	***Botanical Name*** **COMMON NAME**	Height x spread (m)	DBH (mm)	SRZ / TPZ	Age	Health	Condition	Signifi-cance	VTA	RV	ULE	Comments CV = Council verge tree
1	*Camellia sasanqua* Camellia	6 x 7	250	1.8 / 3	M	Good	Fair / Good	3	2B/6	1	2	Developing stem inclusion evident – appears not immediately detrimental
2	*Jacaranda mimosifolia* Jacaranda	8 x 9	400	2.3 / 4.8	ESM	Good	Good	3	6	1	2	Typical for species type with no significant defects noted.
3	*Plumeria sp* Frangipani	4 x 5	300at base	2 / 3.6	EM	Good?	Fair / Good	4/3	2C	2	3/5	Typical for species type in location with no significant defects noted
4	*Plumeria sp* Frangipani	4 x 5	300at base	2 / 3.6	EM	Good?	Fair / Good	4/3	2C	2	3/5	Typical for species type in location with no significant defects noted
5	*Plumeria sp* Frangipani	4 x 5	300at base	2 / 3.6	EM	Good?	Fair / Good	4/3	2C	2	3/5	Typical for species type in location with no significant defects noted
6	*Plumeria sp* Frangipani	4 x 5	300at base	2 / 3.6	EM	Good?	Fair / Good	4/3	2C	2	3/5	Typical for species type in location with no significant defects noted
7	*Plumeria sp* Frangipani	4 x 5	300at base	2 / 3.6	EM	Good?	Fair / Good	4/3	2C	2	3/5	Typical for species type in location with no significant defects noted
8	*Plumeria sp* Frangipani	4 x 5	300at base	2 / 3.6	EM	Good?	Fair / Good	4/3	2C	2	3/5	Typical for species type in location with no significant defects noted
9	*Jacaranda mimosifolia* Jacaranda	6 x 7	300	2 / 3.6	ESM	Good	Fair / Good	4/3	2C	2	3	Minor wounds at 2.4m WST side appears not immediately detrimental
10	*Melaleuca quinquenervia* Paperbark	16 x 10	1450at base	3.8 / 15	M	Good	Fair / Good	3	2B/C	2	3	3 x stems at ground level with slight developing stem inclusion + typical inclusions within upper branch scaffolds
11	*Plumeria sp* Frangipani	5 x 5	300at base	2 / 3.6	EM	Good?	Fair / Good	4/3	2C	2	3/5	Typical for species type in location with no significant defects noted
12	*Plumeria sp* Frangipani	5 x 4	300at base	2 / 3.6	EM	Good?	Fair / Good	4/3	2C	2	3/5	Typical for species type in location with no significant defects noted

Tree Assessment Schedule

	Trees requiring removal due to hazardous or dead condition - subject to Local Government Authority notification		Trees with low retention values: senescence, developing defects or being *exempt trees from the LGA Tree Preservation Order (TPO)

Tree No	*Botanical Name* COMMON NAME	Height x spread (m)	DBH (mm)	SRZ / TPZ	Age	Health	Condition	Signifi-cance	VTA	RV	ULE	Comments CV = Council verge tree
*13	*Robinia pseudocacia* Black Locust	6 x 6	200	1.6 / 2.4	EM	Good?	Good	4/3	0	2	3	DCP Section 6.1.5 Exemptions / exempt tree species
*14	*Robinia pseudocacia* Black Locust	6 x 5	150	1.5 / 2	EM	Good?	Good	4/3	0	2	3	DCP Section 6.1.5 Exemptions / exempt tree species
*15	*Robinia pseudocacia* Black Locust	7 x 6	200	1.6 / 2.4	EM	Good?	Good	4/3	0	2	3	DCP Section 6.1.5 Exemptions / exempt tree species
*16	*Robinia pseudocacia* Black Locust	6 x 3	100	1.5 / 2	EM	Good?	Good	4/3	0	2	3	DCP Section 6.1.5 Exemptions / exempt tree species
*17	*Robinia pseudocacia* Black Locust	4 x 3	100	1.5 / 2	EM	Good?	Fair / Good	4/3	0/2C	2	3	DCP Section 6.1.5 Exemptions / exempt tree species
*18	*Robinia pseudocacia* Black Locust	5 x 5	150	1.5 / 2	EM	Good?	Good	4/3	0/2C	2	<3	DCP Section 6.1.5 Exemptions / exempt tree species with minor wounding
*19	*Robinia pseudocacia* Black Locust	6 x 6	200	1.6 / 2.4	EM	Good?	Good	4/3	0	2	3	DCP Section 6.1.5 Exemptions / exempt tree species
*20	*Robinia pseudocacia* Black Locust	3 x 3	100	1.5 / 2	EM	Good?	Good	4/3	0/2C	2	3	DCP Section 6.1.5 Exemptions / exempt tree species with minor wounding
*21	*Robinia pseudocacia* Black Locust	6 x 5	150	1.5 / 2	EM	Good?	Fair	4/3	0/2	4	4	DCP Section 6.1.5 Exemptions / exempt tree species with significant stem damage
*22	*Robinia pseudocacia* Black Locust	8 x 8	250	1.8 / 3	M	Good?	Good	3	0	1	3	DCP Section 6.1.5 Exemptions / exempt tree species
*23	*Robinia pseudocacia* Black Locust	8 x 5	200	1.6 / 2.4	M	Good?	Good	3	0	1	3	DCP Section 6.1.5 Exemptions / exempt tree species
*24	*Robinia pseudocacia* Black Locust	8 x 8	250	1.8 / 3	M	Good?	Good	3	0	1	3	DCP Section 6.1.5 Exemptions / exempt tree species

Tree Assessment Schedule

	Trees requiring removal due to hazardous or dead condition - subject to Local Government Authority notification		Trees with low retention values: senescence, developing defects or being *exempt trees from the LGA Tree Preservation Order (TPO)

Tree No	*Botanical Name* COMMON NAME	Height x spread (m)	DBH (mm)	SRZ / TPZ	Age	Health	Condition	Signifi-cance	VTA	RV	ULE	Comments CV = Council verge tree
*25	*Robinia pseudocacia* Black Locust	8 x 7	200	1.6 / 2.4	M	Good	Good	3	0	1	3	DCP Section 6.1.5 Exemptions / exempt tree species
*26	*Robinia pseudocacia* Black Locust	8 x 8	250	1.8 / 3	M	Good	Good	3	0	1	3	DCP Section 6.1.5 Exemptions / exempt tree species
27	*Jacaranda mimosifolia* Jacaranda	4 x 4	200	1.6 / 2.4	ESM	Good	Good	4/3	5A	1	2	Typical for species type in location with no significant defects noted
28	*Jacaranda mimosifolia* Jacaranda	5 x 6	200	1.6 / 2.4	ESM	Good	Good	3	6	1	2	Typical for species type in location with no significant defects noted
29	*Jacaranda mimosifolia* Jacaranda	5 x 6	250	1.8 / 3	ESM	Good	Good	3	6	1	2	Typical for species type in location with no significant defects noted
30	*Jacaranda mimosifolia* Jacaranda	5 x 4	200	1.6 / 2.4	ESM	Fair / Good	Fair / Good	4	2C	2	3	Tree with minor wounding evident
31	*Jacaranda mimosifolia* Jacaranda	7 x 6	300at base	2 / 3.6	ESM	Good	Good	4/3	6	1	2	Tree with no significant defects noted
32	*Waterhousea floibunda* Weeping Lilly Pilly	7 x 7	500at base	2.5 / 6	SM	Good	Good	3	6	1	2	Tree with no significant defects noted
33	*Waterhousea floibunda* Weeping Lilly Pilly	7 x 6	400at base	2.3 / 4.8	SM	Good	Good	3	6	1	2	Tree with no significant defects noted
34	*Tibouchina sp* Tibouchina	8 x 3	300at base	2 / 3.6	LM	Fair / Good	Fair / Good	4	2B/7	3	<3	Developing over mature tree of low retention value
35	*Cupressus sempervirens* "Totem" pine	4 x 1	150	1.5 / 2	ESM	Fair	Fair / Good	4/5	4	3	<3	Environmentally stressed with low foliage volume = low retention value
36	*Cupressus sempervirens* "Totem" pine	6 x 1	100	1.5 / 2	ESM	Good	Good	4	4	2	3	Tree with no significant defects noted

Tree Assessment Schedule

	Trees requiring removal due to hazardous or dead condition - subject to Local Government Authority notification		Trees with low retention values: senescence, developing defects or being *exempt trees from the LGA Tree Preservation Order (TPO)

Tree No	*Botanical Name* COMMON NAME	Height x spread (m)	DBH (mm)	SRZ / TPZ	Age	Health	Condition	Signifi-cance	VTA	RV	ULE	Comments CV = Council verge tree
37	*Jacaranda mimosifolia* Jacaranda	8 x 3	100	1.5 / 2	ESM	Good	Fair	4/3	2A	3	4	Tree with poor anchoring root development = low retention value
38 to 61 Screen hedge	*Waterhousea floibunda* Weeping Lilly Pilly	av 6 x 3	av 150	1.5 / 2	ESM	Good	Fair	4/3	2C	2	3	Screen hedge consisting of 25 trees, past lopped resulting in multi stems with developing stem inclusion. T51 is significantly damaged with T55 being a dead stump
*62	*Citrus sp* Lemon Tree	5 x 3	150	1.5 / 2	EM	Fair / Good	Fair / Good	4/5	0	2	5	DCP Section 6.1.5 Exemptions / exempt tree species
63	*Syzygium australe* Bush Cherry	15 x 14	1100	3.5 / 13.2	M	Good	Good	2	2C	1	3	WST side wound seam with open wound from 1.3m^ extending to lower limb- may be past lightning struck – appears not immediately detrimental
*64 to 66	*Robinia pseudocacia* Black Locust	av 5 x 2.5	av 100	1.5 / 2	ESM	Good	Fair / Good	4	0	1	5	Exempt trees 4m in height easily replaceable
67	*Liquidambar styraciflua* Liquidambar	19 x 18	950	3.2 / 11.4	M	Good?	Fair	4/3	2C	2	<3	Contains lower trunk damage + developing stem inclusion in upper branch scaffolds
68	*Syzygium australe* Bush Cherry	5 x 4	200	1.6 / 2.4	ESM	Good	Good	2	2C	1	2/5	Tree with no significant defects noted
69 to 74	*Melaleuca quinquenervia* Paperbark	av 9 x 6	av 550	2.6 / 6.6	SM	Good	Fair / Good	4/3	2B	2	3	5 x trees all with typical developing stem inclusion – appears not immediately detrimental
75 CV	*Sapium sebiferum* Chinese tallow Tree	5 x 6	500at base	2.5 / 6	M	Fair / Good	Fair / Good	4/3	2C	3	<3	Council verge tree topped for power line clearances reducing retention value
76 CV	*Callitris rhomboidea* Port Jackson Cypress	5 x 4	600at base	2.7 / 7.2	M	Fair / Good	Fair	3	2	3	<3	Council verge tree topped for power line clearances reducing retention value

APPENDIX - D: Tree Location Plan