ALLIED TREE CONSULTANCY
Level 5 and 8 Arboriculturist

Arboricultural Impact Assessment Report

For the site address
Milton Public School, NSW

Prepared for
Department of Education

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STATUS

Draft	November 2024
Draft 2	November 2024
Draft 3	February 2025
Final	April 2025

REFERENCE D5629

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EXECUTIVE SUMMARY

This Arboricultural Impact Assessment is for the proposed activity at the Milton Primary School. This is prepared to support the proposed activity that forms part of a REF approval and involves upgrades to existing school infrastructure. The report contains thirty-five (35) trees and discusses the viability of these trees based on the proposed works. The trees are all planted specimens and are predominantly classed as Medium significance based on the condition and amenity value.

In summary, nineteen (19) trees (trees No. 51, 53, 54, 56, 57, 58, 68, 69, 70, 72, 76, 77, 80, 127, 130, 131, 133, 134 and 136) can be retained based on conditions assigned to the work methodology.

Sixteen trees (trees No. 46, 49, 59, 60, 71, 73, 74, 75, 79, and 122-126), where tree No. 60 represents three trees, are nominated for removal based on the design conflict.

In response to this report, the assigned contractor shall provide a Tree Management Plan to protect the trees during construction.

TABLE OF CONTENTS

1.0 INTRODUCTION 1
2.0 STANDARDS 1
3.0 DISCLOSURE STATEMENT 2
4.0 METHODOLOGY 2
5.0 PLAN 1 - TREE LOCATION 6
6.0 TABLE 1 – TREE SPECIES DATA. 8
7.0 TREE PROTECTION 12
8.0 PROTECTION SPECIFICATION 19
9.0 SUMMARY OF TREE IMPACT 23
10.0 APPENDIX A- DEFINITIONS 23
APPENDIX B- PROTECTION MEASURES 31

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1.0 Introduction

1.1 This Arboricultural Impact Assessment Report (AIA) has been prepared to support a Review of Environmental Factors (REF) for the Department of Education (DoE) for the Milton Public School upgrade (the activity).

The purpose of the REF is to assess the potential environmental impacts of the activity prescribed by *State Environmental Planning Policy (Transport and Infrastructure) 2021* (T&I SEPP) as "development permitted without consent" on land carried out by or on behalf of a public authority under Part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The activity is to be undertaken pursuant to Chapter 3, Part 3.4, Section 3.37 of the T&I SEPP.

1.2 This document has been prepared in accordance with the *Guidelines for Division 5.1 assessments* (the Guidelines) by the Department of Planning, Housing and Infrastructure (DPHI) as well as the *Addendum Division 5.1 guidelines for schools*. The purpose of this report is to determine the viability of the site trees based on the proposed design. This report includes thirty-five (35) trees located on the lot. As part of this, the report shall address the:

- species' identification, location, dimensions, and condition;
- SULE (Safe Useful Life Expectancy) and STARS (Significance of a Tree Assessment Rating System) rating;
- discussion and impact of the proposed works on each tree;
- tree protection zones and protection specifications for trees recommended for retention.

2.0 Standards

2.1 Allied Tree Consultancy provides an ethical and unbiased approach to all assignments, possessing no association with private utility arboriculture or organisations that may reflect a conflict of interest.

2.2 This report must be made available to all contractors during the tendering process so that any cost associated with the required works for the protection of trees can be accommodated.

2.3 It is the responsibility of the project manager to provide the requirements outlined in this report relative to the Protection Zones, Measures (Section 7.0) and Specifications (Section 8.0) to all contractors associated with the project before the initiation of work.

2.4 All tree-related work outlined in this report is to be conducted in accordance with the:

- Australian Standard – AS4373; Pruning of Amenity Trees.
- Guide to Managing Risks of Tree Trimming and Removal Work[1].
- All tree works must be carried out at a tertiary level (minimum Certificate-level 3) qualified and experienced (minimum five years) arboriculturist.
- For any works in the vicinity of electrical lines, the arboriculturist must possess the ISSC26 endorsement (Interim guide for operating cranes and plant in proximity to overhead powerlines).

3.0 Disclosure Statement

Trees are living organisms and, for this reason, possess natural variability. This cannot be controlled. However, risks associated with trees can be managed. An arborist cannot guarantee that a tree will be safe under all circumstances, nor predict the time when a tree will fail. To live or work near a tree involves some degree of risk, and this evaluation does not preclude all the possibilities of failure.

4.0 Methodology

4.1 The following tree assessment was undertaken using criteria based on the guidelines issued by the International Society of Arboriculture.

4.2 The format of the report is summarised below;

4.2.1 Plan 1; Tree Location Relative to Site: This is an unscaled plan reproduced from the Survey Plan as referenced in Section 4.4.1, depicting the area of assessment.

4.2.2 Table 1; This table compiles the tree species, dimensions**,** brief assessment (history, structure, pest, disease or any other variables subject to the tree), significance, allocation of the zones of protection (i.e., Tree Protection Zone[2] ;TPZ and Structural Root Zone; SRZ) for each tree illustrated in Plan 1, Section 5.0. All measurements are in metres.

4.2.3 Discussion relating to the site assessment and proposed works regarding the trees.

4.2.4 Protection Specification; Section 8.0 details the requirements for that area designated as the Tree Protection Zone (TPZ), for those trees recommended for retention.

[1] Safe Work Australia; July 2016; Guide to Managing Risks of Tree Trimming and Removal Work, Australia

[2] Australian Standard, 4970; 2009 – Protection of Trees on Development Sites, Australia

4.3 The opinions expressed in this report, and the material, upon which they are based, were obtained from the following process and data supplied:

4.3.1 The tree data used in this report has been based on the Preliminary Arborist Report[3] issued for this school in November 2023.

4.3.2 Trees not included in this report are those that are;

- Less than 5m in height,
- Dead trees,
- Recognised self-sown weed species.

4.3.3 The tree numbering within this report is not sequential because it has only included trees from the Preliminary Arborist Report[3] that occur within or adjacent to the areas subject to the proposed designs, including the nominated Asset Protection Zone.

4.3.4 The inclusion of trees within this report has been limited to those trees that have been included with tree numbering within the drawings (see Section 4.4) issued to ATC. ATC has not been involved with the tree numbering assigned to these drawings, see Section 4.5.1.

4.3.5 All measurements, unless specified otherwise are taken from the centre of the root crown.

4.3.6 Tagging of trees with embossed aluminium tags nailed to the trees at chest level and facing the centre of the site.

4.3.7 Raw data from the preliminary assessment, including the specimen's dimensions, were compiled using a diameter tape, height clinometer, angle finder, compass, steel probes, Teflon hammer, binoculars, and recording instruments.

4.4 Documentation provided

The following documentation has been provided to Allied Tree Consultancy and utilised within the report.

4.4.1 Survey

Drawn by *Fulton Trotter Architects P/L*
Date: 1 April 2025
Reference: 7068MI01
Drawing No: Existing Site Plan 11

[3] Allied Tree Consultancy, November 2023, Preliminary Arborist Report, Reference: 5300.

4.4.2 Design

Drawn by *Fulton Trotter Architects P/L*
Date: 1 April 2025
Reference: 7068MI01
Revision: 11

4.4.3 Civil

Drawn by *Meinhardt Infrastructure and Environment P/L*
Date: 7 March 2025
Reference: 132571
Revision: P2

4.4.4 Document

Bushfire Assessment Report
Author: *Ecological*
Date: 3 April 2025
Page number: 36
Note 1: See Section 4.5.2

4.5 Limitations of the assessment/discussion process

4.5.1 ATC has not been involved with the tree numbering assigned to the drawings. A follow-up assessment has not formed part of the scope of work for this stage of the proposed work; therefore, any discrepancies are outside the control of ATC.

4.5.2 The scope of works issued to ATC has been limited to the inclusion of trees that have been numbered within the drawings (see Section 4.4) issued to ATC. However, the assigned Asset Protection Zone, extends well outside of this area and caters for trees that have not been included.

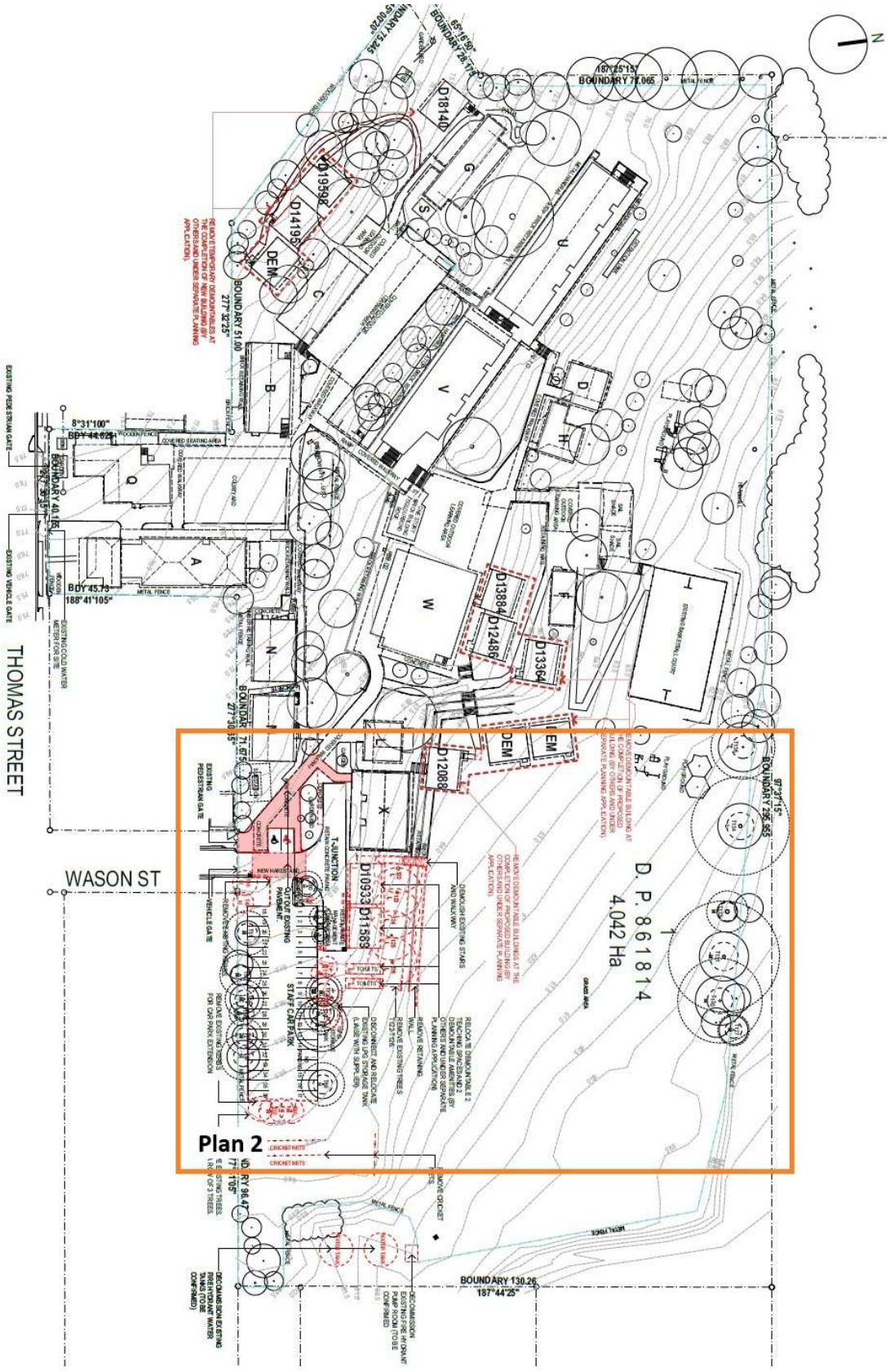
4.5.3 The assessment has considered only those target zones that are apparent to the author and the visually apparent tree conditions, during the time of assessment.

4.5.4 Any tree regardless of apparent defects would fail if the forces applied to exceed the strength of the tree or its parts, for example, extreme storm conditions.

4.5.5 The assessment has been limited to that part of the tree which is visible, existing from the ground level to the crown. Root decay can exist and in some circumstances provide no symptoms of the presence. This assessment responds to all the symptoms provided

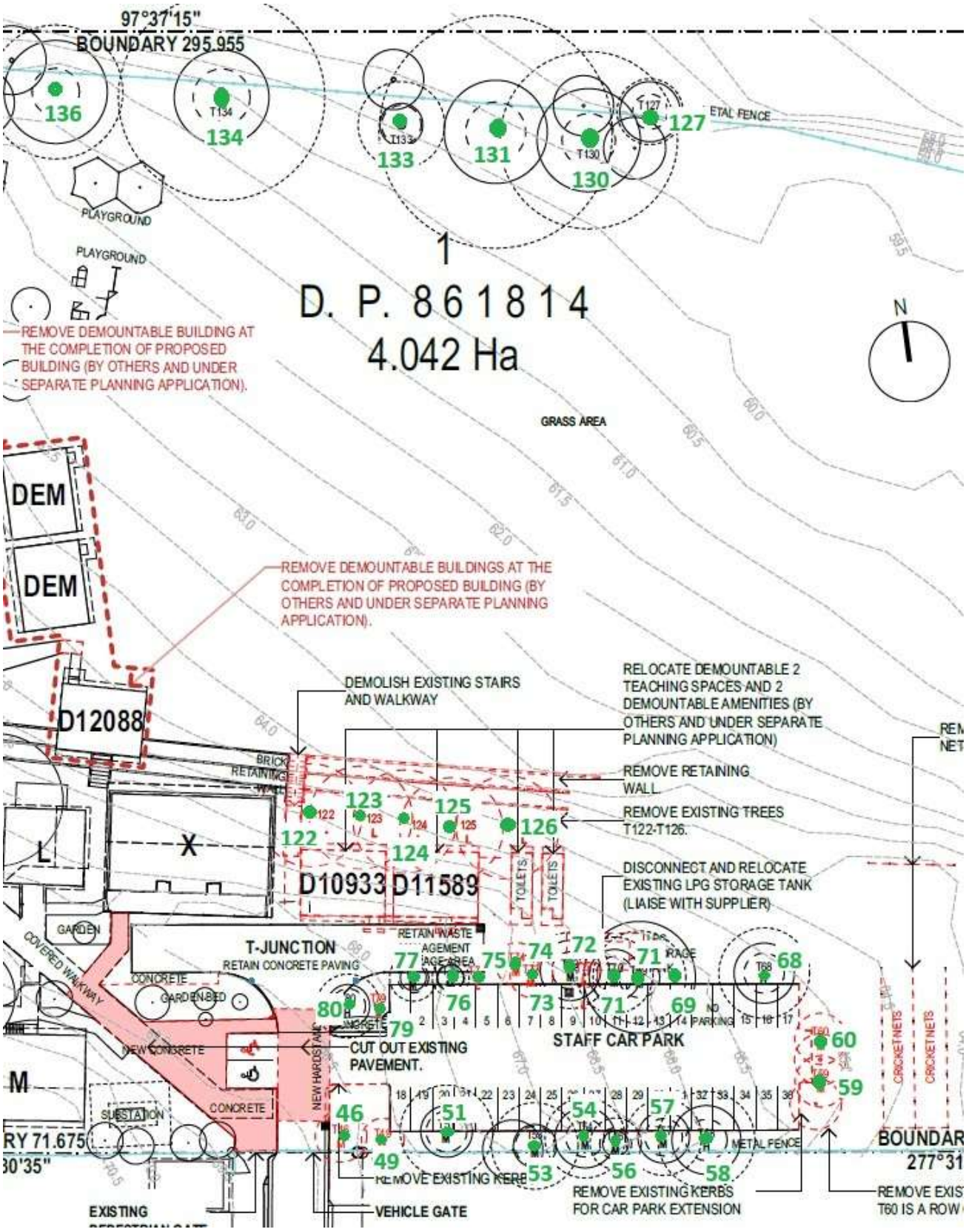
by a tree, however, cannot provide a conclusive recommendation regarding any tree that may have extensive root decay that leads to windthrow without the appropriate symptoms.

5.0 Plan 1; Area of assessment



Not to scale
Source: Adapted from *Fulton Trotter Architects P/L,* see Section 4.4.1

5.1 Plan 2; Area of assessment illustrating tree location



Not to scale

Source: Adapted from *Fulton Trotter Architects P/L,* see Section 4.4.1

6.0 Table 1 – Tree Species Data

Terminology/references provided in Appendix A.

Tree No.	Botanical Name Common Name	Height (m)	DBH (m)	Crown Spread (m)	Age	Crown Class	Crown Aspect	Vitality Rating	SULE Rating	STARS Rating	TPZ	SRZ
46	*Melaleuca citrinus* Crimson Bottlebrush[A]	12	0.30 0.30[C]	6 x 6	M	C	Sym	A	**3A**	**Medium**	**5.09**	**2.31**
Assessment This tree is covered in vine. bifurcates into two leaders at 100mm up. The crotch area consist of included bark.											**Development Impact** See Section 7.1.2	
49	*Melaleuca bracteata* Black Tea-tree	7	0.27 0.27[C]	5 x 5	M	C	NE	A	**2A**	**Medium**	**4.58**	**2.21**
Assessment Presents as typical of its species.											**Development Impact** See Section 7.1.2	
51	*Eucalyptus pilularis* Blackbutt[A]	14	0.45[C]	6 x 6	M	C	Sym	B	**2A**	**Medium**	**5.40**	**2.37**
Assessment Presents as typical of its species, however exhibits some twiggy decline.											**Development Impact** See Section 7.1.1	
53	*Melaleuca bracteata* Black Tea-tree	7	0.42[C,B]	5 x 5	M	S	Sym	B	**2A**	**Medium**	**5.04**	**2.30**
Assessment Presents as typical of its species however presents with some minor twiggy decline.											**Development Impact** See Section 7.1.1	
54	*Eucalyptus moluccanai* Grey Box[A]	12	0.39	7 x 7	M	C	Sym	A	**2A**	**Medium**	**4.68**	**2.23**
Assessment Presents as typical of its species.											**Development Impact** See Section 7.1.1	
56	*Corymbia maculata* Spotted Gum	10	0.25	3 x 3	M	I	Sym	A	**2A**	**Medium**	**3.00**	**1.85**
Assessment Presents as typical of its species.											**Development Impact** See Section 7.1.1	

Tree No.	Botanical Name Common Name	Height (m)	DBH (m)	Crown Spread (m)	Age	Crown Class	Crown Aspect	Vitality Rating	SULE Rating	STARS Rating	TPZ	SRZ
57	*Corymbia maculata* Spotted Gum	10	.37	6 x 6	M	C	Sym	A	**2A**	**Medium**	**4.44**	**2.18**
Assessment Presents as typical of its species.											**Development Impact** See Section 7.1.1	
58	*Corymbia maculata* Spotted Gum	16	0.47	8 x 8	M	C	Sym	A	**2A**	**High**	**5.64**	**2.41**
Assessment Presents as typical of its species.											**Development Impact** See Section 7.1.1	
59	*Eucalyptus pilularis* Blackbutt	8	0.32	4 x 6	M	C	W	A	**2A**	**Medium**	**3.84**	**2.05**
Assessment Presents as typical of its species.											**Development Impact** See Section 7.1.2	
60	*Corymbia maculata* Spotted Gum	18	0.39	6 x 6	M	I	Sym	A	**2A**	**Medium**	**4.68**	**2.23**
Assessment This is a row of 3 trees located approximately 2 m apart. The middle tree bifurcates into 2 leaders at 3m above ground.											**Development Impact** See Section 7.1.2	
68	*Corymbia maculata* Spotted Gum	16	0.44	7 x 7	M	D	Sym	A	**1A**	**High**	**5.28**	**2.34**
Assessment Presents as typical of its species.											**Development Impact** See Section 7.1.3	
69	*Corymbia maculata* Spotted Gum	19	0.45	13 x 13	M	C	Sym	B[E]	**2A**[E]	**Medium**[E]	**5.40**	**2.37**
Assessment This tree is located next to the school gas tank. There is an anomaly 7m up on the main stem. One of the leaders appears to be a large epicormic growth. It is 200mm diameter x 10m in length with a previous pruning wound. Therefore an aerial assessment (see Section 6.1.4) is required to allow for further comment in relation to the proposed development.											**Development Impact** See Section 7.1.3	
70	*Eucalyptus pilularis* Blackbutt	13	0.37	6 x 5	M	C	S	A	**3A**	**Medium**	**4.44**	**2.18**
Assessment Presents as typical of its species.											**Development Impact** See Section 7.1.3	

Tree No.	Botanical Name Common Name	Height (m)	DBH (m)	Crown Spread (m)	Age	Crown Class	Crown Aspect	Vitality Rating	SULE Rating	STARS Rating	TPZ	SRZ
71	*Eucalyptus pilularis* Blackbutt	10	0.27	3 x 3	M	I	S	B	**3A**	**Low**	**3.24**	**1.91**
Assessment This tree is experiencing excessive branch conflict with other trees.											**Development Impact** See Section 7.1.4	
72	*Eucalyptus pilularis* Blackbutt[A]	9	0.35	7 x 5	M	C	NE	A	**3A**	**Medium**	**4.20**	**2.13**
Assessment There is a wound on the stem at 3m up on the northeastern side, The adjacent fence is causing abiotic wounding on stem, 2m up.											**Development Impact** See Section 7.1.3	
73	*Corymbia maculata* Spotted Gum	12	0.37	5 x 5	M	C	Sym	A	**1A**	**Medium**	**4.44**	**2.18**
Assessment Presents as typical of its species.											**Development Impact** See Section 7.1.4	
74	*Corymbia maculata* Spotted Gum	12	0.36	5 x 5	M	C	Sym	A	**2D**	**Medium**	**4.32**	**2.15**
Assessment Presents as typical of its species.											**Development Impact** See Section 7.1.4	
75	*Corymbia maculata* Spotted Gum	5	0.10	1 x 1	Y	F	Sym	B	**4A**	**Low**	**1.20**	**1.26**
Assessment Presents with some twiggy decline and there is limited room for future growth.											**Development Impact** See Section 7.1.5	
76	*Corymbia maculata* Spotted Gum	7	0.18	3 x 3	M	D	Sym	A	**2A**	**Medium**	**2.16**	**1.61**
Assessment Presents as typical of its species.											**Development Impact** See Section 7.1.3	
77	*Corymbia maculata* Spotted Gum	10	0.23	3 x 3	M	D	Sym	A	**2A**	**Medium**	**2.76**	**1.79**
Assessment Presents as typical of its species.											**Development Impact** See Section 7.1.3	
79	*Corymbia maculata* Spotted Gum	5	0.07	1 x 1	M	I	Sym	A	**4B**	**Low**	**0.84**	**1.08**

Tree No.	Botanical Name Common Name	Height (m)	DBH (m)	Crown Spread (m)	Age	Crown Class	Crown Aspect	Vitality Rating	SULE Rating	STARS Rating	TPZ	SRZ
Assessment Presents as typical of its species. however, there is limited room for future growth. the tree has limited stem tapper.											**Development Impact** See Section 7.1.5	
80	*Corymbia maculata* Spotted Gum	10	0.31	5 x 5	M	D	Sym	A	**2A**	**High**	**3.72**	**2.02**
Assessment Presents as typical of its species.											**Development Impact** See Section 7.1.3	
122	*Erythrina x sykesii* Coral Tree	18	0.80	12 x 10	M	C	S	B^E	**$3A^E$**	**Low**	**9.60**	**3.01**
Assessment This tree presents as typical of the species. This species is a recognised weed species.											**Development Impact** See Section 7.1.2	
123	*Erythrina x sykesii* Coral Tree	18	0.88	12 x 10	M	C	S	B^E	**$3A^E$**	**Low**	**10.56**	**3.14**
Assessment This tree presents with a recent branch failure 4m up 200mm diameter on the southern side. The branch was laying on the ground next to the tree at the time of the assessment. The crown has formed multiple epicormic shoots. has previously been subject to several branch failures. . This would require an aerial assessment to provide further comment in relation to the development. This species is a recognised weed species.											**Development Impact** See Section 7.1.2	
124	*Erythrina x sykesii* Coral Tree	18	0.63	12 x 10	M	C	S	B^E	**$3A^E$**	**Low**	**7.56**	**2.73**
Assessment This tree has been subject to previous pruning and has had a leader removed at 3m up on the southern side. There are some signs of borer damage on the with swelling on the stem at 3m stem. Experiencing branch conflict with surrounding trees. . This would require an aerial assessment to provide further comment in relation to the development. This species is a recognised weed species.											**Development Impact** See Section 7.1.2	
125	*Erythrina x sykesii* Coral Tree	18	0.73	12 x 10	M	C	S	A^E	**$3A^E$**	**Low**	**8.76**	**2.90**
Assessment Experiencing branch conflict with surrounding trees. has previously been subject to several branch failures and crown lift pruning on the southern side of the crown. This would require an aerial assessment to provide further comment in relation to the development. This species is a recognised weed species.											**Development Impact** See Section 7.1.2	

Tree No.	Botanical Name Common Name	Height (m)	DBH (m)	Crown Spread (m)	Age	Crown Class	Crown Aspect	Vitality Rating	SULE Rating	STARS Rating	TPZ	SRZ
126	*Erythrina x sykesii* Coral Tree	18	0.75	12 x 10	M	C	N	A[E]	**3A[E]**	**Low**	**9.00**	**2.93**
Assessment This tree divides into 3 leaders at 3m up and has swelling around the bole area. There is a possibility of root disturbance because of construction of adjacent the buildings. This would require an aerial assessment to provide further comment in relation to the development. This species is a recognised weed species.											**Development Impact** See Section 7.1.2	
127	*Syzygium paniculatum* Magenta Lilly Pilly[A]	7	0.32	7 x 5	M	S	SE	A	**3A**	**Medium**	**3.84**	**2.05**
Assessment This tree presents as typical of the species. However is experiencing excessive branch conflict by surrounding trees. This may explain its east growth aspect.											**Development Impact** See Section 7.1.1	
130	*Erythrina x sykesii* Coral Tree	12	0.86	12 x 10	M	C	Sym	A	**2A**	**Medium**	**10.32**	**3.11**
Assessment This tree presents as typical of the species.											**Development Impact** See Section 7.1.1	
131	*Erythrina x sykesii* Coral Tree	12	1.13[B]	12 x 12	M	C	Sym	A	**2A**	**Medium**	**13.56**	**3.48**
Assessment This tree presents as typical of the species, however there is a wound from an old branch tear out at 2m up on the western side. This appears to be partially callusing. There is some epicormics growth forming within the crown, particularly within close proximity of remaining aged pruning stubs. This is a recognised weed species**.**											**Development Impact** See Section 7.1.1	
133	*Erythrina x sykesii* Coral Tree	10	0.42[C,B]	5 x 5	M	C	N	A	**2A**	**Medium**	**5.04**	**2.30**
Assessment This tree presents as typical of the species. Located behind fence on the adjacent lot north of tree 132.											**Development Impact** See Section 7.1.1	
134	*Erythrina x sykesii* Coral Tree	11	1.00	11 x 10	M	D	E	B	**2D**	**Low**	**12.00**	**3.31**
Assessment This tree presents as atypical of the species. the tree has poor structure and has previously been subject to several branch failures.											**Development Impact** See Section 7.1.1	

Tree No.	Botanical Name Common Name	Height (m)	DBH (m)	Crown Spread (m)	Age	Crown Class	Crown Aspect	Vitality Rating	SULE Rating	STARS Rating	TPZ	SRZ
136	*Erythrina x sykesii* Coral Tree	11	0.65	12 x 12	M	C	W	A	**2A**	**Low**	**7.80**	**2.76**
Assessment This tree presents as typical of the species, however there is some epicormic growth forming within the crown. This is a recognised weed species.											**Development Impact** See Section 7.1.1	

[A]. Incomplete identification of species due to insufficiently available plant material
[B]. Diameter taken below 1.4m due to low stem bifurcation
[C]. Estimate due to the overgrown area and/or limited access
[D]. Deciduous species, void of foliage at the time of assessment
[E]. Level 3 assessment required to determine the accurate rating

7.0 Site Description

The site is located at 9 Thomas Street, Milton, NSW, 2538 (the site). The site is legally referred to as Lot 1 in Deposited Plan 861814 and is within the Shoalhaven Local Government Area (**LGA**)and has an approximate site area of 4ha. An aerial photograph of the site is provided at **Figure 1**.

The site is zoned SP2 Educational Establishment and existing development comprises various buildings, sports facilities and play space associated with Milton Public School. Milton Public School currently comprises 24 permanent teaching spaces (PTS) and 12 demountable teaching spaces (DTS). The site contains two locally heritage listed buildings (Building A and Q).

The site is predominantly cleared however, there is existing vegetation interspersed throughout the site and significant trees are present along the northern and western boundary of the site. There is a gradual slope downwards from the south-east to the north-east. of the site.

The site is an irregularly shaped lot with a narrow frontage along Thomas Street. Pedestrian and vehicular access is provided from Thomas Street and from Wason Street. Milton Public School is adjoined by low density residential properties to the south, west and east and Milton Rainforest Reserve is located to the north.

Figure 1 Aerial Photograph

Source: Urbis, April, 2025.

7.1 Proposed Activity Description

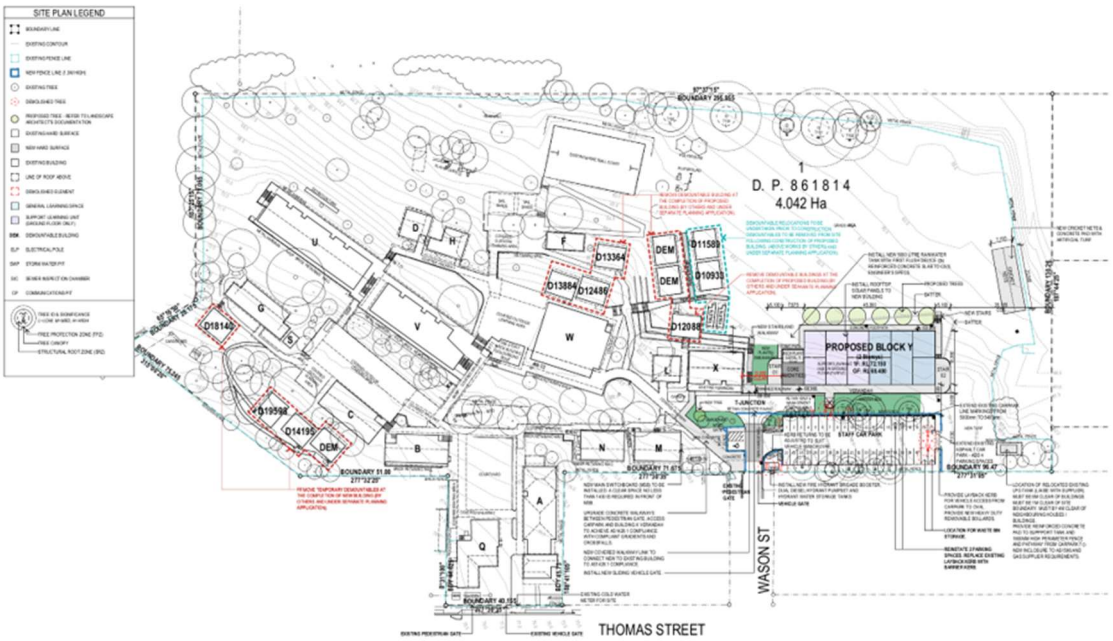
The proposed activity relates to upgrades to Milton Public School. Specifically, the proposed activity comprises the following:

- Construction of a new two-storey home base building.
- Installation of additional solar panels.
- Relocation of existing cricket nets to the eastern boundary of site.
- Construction of new stairs and covered walkways linking the new building to the existing school.
- Construction of new fencing.
- Construction of new hardstand area.
- Minor alterations to the existing staff car park.
- Tree removal.
- External landscape works.

Any works relating to demountables or the water tank will proceed via a separate planning pathway.

Figure 2 provides an extract of the proposed site plan.

Figure 2 Site Plan



Source: Fulton Trotter, 2025

This application has been subject to a Preliminary Arboricultural Assessment Report for the purpose of identifying trees that are considered significant for the intent of retaining and designing around.

The calculations included in the following discussion have not considered;

- subsurface utilities that have not been included in the design,

- work methods related to subsurface utilities, for example concrete encasing or replacement of existing lines, or
- work methods related to construction (stockpiling, site sheds, scaffolding) unless otherwise specified.
- Public infrastructure including footpaths, new kerb/guttering, subsurface utilities on Rickard Road.

These may also increase the encroachment and tree impact and therefore the opportunity for tree retention.

The calculations included in the following discussion has not considered;

- Work methods related to subsurface utilities, for example concrete encasing or replacement of existing lines, or
- Work methods related to construction (stockpiling, site sheds, scaffolding) unless otherwise specified.
- Public infrastructure including footpaths, new kerb/guttering, subsurface utilities .

These may also increase the encroachment and tree impact and therefore the opportunity for tree retention.

The lot is located within a bushfire zone and will require conforming to the receommendations of the Bushfire Assessment Report and Planning for Bushfire Protection[4].

7.1 Tree impacts by Proposed Design

This report discusses the impact of the proposed design on the trees. Thirty-three (33) trees have been listed within this report based upon the vicinity of the proposed works. This has included any tree where any part of the zones of protection; Tree Protection Zone (TPZ) and Structural Root Zone (SRZ), encroach into the area proposed for work. Recommendations based on the tree significance and condition, together with the impact on these trees regarding the proposed development (based on the documents contained in Section 4.4) and mitigation where available follow.

7.1.1 Trees and zones of protection (TPZ/SRZ) outside of the proposed design

Trees No. 51, 53, 54, 56, 57, 58, 127, 130, 131, 133, 134 and 136.

None of the proposed works conflict with the location of these trees or respective zones of protection. These trees can be retained without impact by the proposed design.

[4] NSW Rural Fire Service, Standards for asset protection zones, https://www.rfs.nsw.gov.au/__data/assets/pdf_file/0010/13321/Standards-for-Asset-Protection-Zones.pdf

7.1.2 Trees directly conflicting with the design

Trees No. 46, 49, 59, 60, and 122-126

These trees are located in the footprint of the proposed design and would require removal based on this premise alone. The conflict is summarised as follows;

Trees No. 122-126; within the footprint of the proposed building

Trees No. 59 and 60; within the footprint of proposed drive

Tree No. 46 and 49; within the footprint of the proposed fire hydrant brigade booster.

7.1.3 Trees subject to a minor encroachment

Trees No. 68, 69, 70, 72, 76, 77, and 80.

These trees are not directly located in the footprint of the proposed design, however, are subject to a *minor encroachment*. That is, the proportion (<10%) of encroachment provided by design will not adversely impact on the tree. These trees could be retained relative to the design.

As part of the design is a fence to extend across the SRZ for each tree, No. 68, 69, 70, 2, 76, 77 and 80. The nominated design is a *Safe Direction Crash Barrier*, which will require piers, assumed as 300mm in diameter. To limit any impact on a tree and limit future damage to the fence, these footings shall be located outside of the SRZ for each tree.

7.1.4 Trees subject to a major encroachment

Trees No. 71, 73, and 74

These trees are not directly located in the footprint of the proposed design, however, are located close and adjacent to the design footprint and subject to a *major encroachment*, that is, in excess of 10% of the TPZ. The extent of the encroachment for each tree is excessive and will not allow for tree retention. These trees will require removal to allow for the design.

7.1.5 Trees providing a limited useful life expectancy

Trees No. 75 and 79.

These trees provide low significance based on the species, habit and rating and could be removed due to the low amenity value and limited useful life expectancy, and irrespective of the proposed works.

7.2 Planning for Bushfire Protection

This section requires the bushfire report to confirm the status of tree retention/removal. However, the limitation described in Section 4.5.2 reduces the opportunity to discuss the actual tree impact. Based on the aerial photograph of the site, the trees that occur within the APZ that are not included in this report are few and appear to occur on the perimeter of the APZ. Therefore suggesting

the following discussion will conform to the recommendations. However, only a site assessment to determine what number is assigned to each of these trees, coupled with a discussion with the bushfire consultant, can confirm the outcome.

An Asset Protection Zone (APZ) has been nominated for this proposal and referenced in the Bushfire Report, Section 3 and Table 3, that illustrates the APZ. The recommendations provided within this report regarding the management of the trees for bushfire protection requires to be managed in accordance with Section A4.1.1 (page 106) of the document Planning for Bush Fire Protection 2019. This includes the following conditions, and the means for which they have been assessed is described. The impact imposed by each condition, regarding conformance or maintenance required follows.

- Tree canopy cover should be less than 15% at maturity; Conforms
- Trees at maturity should not touch or overhang the building; Conforms
- Tree canopies should be separated by 2 to 5m; Conforms
- Preference should be given to smooth-barked and evergreen trees; Conforms

7.3 Sub-surface utilities

Numerous trees that have not been included within the scope of works may be impacted by the installation of the proposed sub-surface infrastructure. These are trees that have been included in the Preliminary Arboricultural Assessment Report, however, have not been included by a tree number on the survey or drawing set. The details regarding the specific routes for these services is unclear, including the method of installation, depth and width of trench (if installed by trenching or using existing conduit) and the flexibility of the desired routes. For this reason, the assigned project arborist must be contacted before installation occurs to discuss the routes and methods of installation so as to limit the impact on trees. For this reason, any trenching, other than what has been allowed for should be avoided within the area of the dripline/TPZ for any tree nominated for retention. Underboring may be required if a limitation for the route of a service is restricted to an area that falls within the dripline/TPZ. Any excavation in the area of a dripline must be authorised and conditioned by the project arborist.

7.4 Mitigation Measures

The following measures are required to avoid, minimise and offer options for rectification to reduce or eliminate any adverse environmental impacts of a Division 5.1 activity. These are summarised in Table 2; Environmental Mitigation.

7.4.1 Table 2: Environmental Mitigation

Project Stage*	Mitigation Measures	Reason for Mitigation Measure	Section of Report
C	Tree management A project arborist (conforms to the AS 4970) is required to be nominated before works start, and they are to be provided with all related site documents.	Protection of trees	-
C	Tree protection Protection of trees during any site works, a Tree Management Plan (Arboricultural Method Statement) is issued before work starts and measures of protection employed.	Protection of trees From Construction activities	-
C	Tree protection Installation of tree protection measures as per Tree Management Plan (Arboricultural Method Statement)	Protection of trees	-
C	Trees are identified and marked for removal	Avoid incorrect tree removal.	-
C	Native wildlife habitats are identified to avoid injury to animals. A licensed wildlife handler[5] supervises the tree removal. Tree removal shall avoid nesting season.	Protection of native fauna	-

[5] NSW National Parks and Wildlife Act 1074

Project Stage*	Mitigation Measures	Reason for Mitigation Measure	Section of Report
C	Site induction; All workers must be briefed about the conditions outlined in Tree Management Plan before the initiation of work. This is required as part of the site induction process.	Contractors induction Protection of trees	-
C	Trenching, shall avoid the TPZ's. Proposed routes shall be re-routed outside of the TPZ. Underboring required if unable reroute. Any excavation in the area of a TPZ must be authorised and conditioned by the project arborist.	Protection of trees Subsurface utilities	-
C	Construction conditions Trees No. 68, 69, 70, 72, 76, 77 and 80.	Protection of trees	Section 7.1.3
C	Work-related to demolition/construction, e.g. stockpiling, site sheds, and scaffolding, shall avoid the TPZs. Any activity within a TPZ must be authorised and conditioned by the project arborist.	Protection of trees From Construction activities	-
C	Environmental Impact, Tree loss; ecological impact Planting of advanced specimens of the same species in groups.	Compensation for the loss of protected flora and related fauna habitats.	-
C	Environmental Impact, Tree loss; amenity impact Planting of advanced specimens of the same species in areas that offer visual/noise screening.	Compensation for the loss of amenity value.	-

*Note: Project stages include:

(D) Design

(C) Construction

(O) Operation

8.0 Protection Specification

The retention and protection of these trees requires the remaining Tree Protection Zone (TPZ) not subject to encroachment to conform to the conditions outlined below. These conditions provide the limitations of work permitted within the area of the Tree Protection Zone (TPZ) and must be adhered to unless otherwise stated.

Any engineering drawings issued as part of the construction certificate must conform with these requirements.

1. Foundation/footing types should not be strip type, but utilise footing types that are sympathetic towards retaining root system that is, screw, pier, etc. Slab on the ground can be accommodated in some circumstances and will be nominated by the project arborist. The extent of encroachment will be dependent upon the tree species, soil type (texture and profile) and gradients.

2. Subsurface utilities can extend through the TPZ and Structural Root Zone (SRZ), however, are limited to the method of installation. That is under boring is permitted, however trenching is limited and depends on the proposed route within the TPZ. No trenching is permitted within the area of the TPZ unless stipulated by the project arborist.

3. Soil levels within the TPZ must remain the same. Any excavation within the TPZ must have been previously specified and allowed for by the project arborist:

   a) So it does not alter the drainage to the tree.

   b) Under specified circumstances,

      - Added fill soil does not exceed 100mm in depth over the natural grade. Construction methodologies exist that can allow grade increases in excess of 100mm, via the use of an impervious cover, an approved permeable material or permanent aeration system or other approved methods.

      - Excavation cannot exceed a depth of more than 50mm within the area of the TPZ, not including the SRZ. The grade within the SRZ cannot be reduced without the consent from a project arborist.

4. No form of material or structure, solid or liquid, is to be stored or disposed of within the TPZ.

5. No lighting of fires is permitted within the TPZ.

6. All drainage runoff, sediment, concrete, mortar slurry, paints, washings, toilet effluent, petroleum products, and any other toxic wastes must be prevented from entering the TPZ.

7. No activity that will cause excessive soil compaction is permitted within the TPZ. That is, machinery, excavators, etc. must refrain from entering the area of the TPZ unless measures have been taken, in consultation with the project arborist.

8. No site sheds, amenities or similar site structures are permitted to be located or extend into the area of the TPZ unless the project arborist provides prior consent.

9. No form of construction work or related activity such as the mixing of concrete, cutting, grinding, generator storage or cleaning of tools is permitted within the TPZ.

10. No part of any tree may be used as an anchorage point, nor should any noticeboard, telephone cable, rope, guy, framework, etc. be attached to any part of a tree.

11. (a) All excavation work within the TPZ will utilise methods to preserve root systems intact and undamaged. Examples of methods permitted are by hand tools, hydraulic, or pneumatic air excavation technology.

(b) Any root unearthed which is less than 50mm in diameter must be cleanly cut and dusted with a fungicide, and not allowed to dry out, with minimum exposure to the air as possible.

(c) Any root unearthed which is greater than 50mm in diameter must be located regarding their directional spread and potential impact. A project arborist will be required to assess the situation and determine future action regarding retaining the tree in a healthy state.

9.0 Summary of tree impact by design

Based on the design supplied (Section 4.4) and the limitations described in Section 4.0. The following summary provides the impacts imposed on the trees included in this report.

9.1 Trees to be retained and protected

Trees No. 51, 53, 54, 56, 57, 58, 68, 69, 70, 72, 76, 77, 80, 127, 130, 131, 133, 134 and 136

These trees are not adversely impacted by the design, that is, they conform to an acceptable encroachment based on the nominated zones of protection (TPZ, SRZ) and the requirements of the Protection Specification, Section 8.0. The proposed design does not adversely affect these trees. These trees can be retained.

9.2 Trees to be removed based on design conflict or poor form.

Trees No. 46, 49, 59, 60, 71, 73, 74, 75, 79, and 122-126

The proposed design will conflict with the location of these trees and they are unable to be retained based on the design. These trees will require removal.

9.3 Sub-surface utilities

The flexibility of proposed routes for sub-surface utilities is unknown as is the size, depth and method of installation. For this reason, the assigned project arborist must be contacted before installation occurs to discuss the routes and methods of installation so as to limit the impact on trees. Any trenching, other than what has been allowed for should be avoided within the area of the dripline or TPZ for any tree nominated for retention. Under boring may be required if a limitation for the route of a service is restricted to an area that falls within the dripline. Any excavation in the area of a dripline/TPZ must be authorised and conditioned by the project arborist.

9.4 Evaluation of Environmental Impacts

The following summarises an evaluation of the environmental impacts and concludes with the following:

1. The extent and nature of potential impacts are low and will not have a significant impact on the locality, community and/or the environment.
2. Potential impacts can be appropriately mitigated or managed to ensure that there is minimal impact on the locality, community and/or the environment.

The opinions expressed in this report by the author have been provided within the capacity of a Consulting Arborist. Any further explanation or details can be provided by contacting the author.

Prepared and checked by Warwick Varley
Consulting Arborist; Principal
Level 5 and 8; Arborist
ISA Tree Risk Assessment Qualification
IACA and ISA Member

10.0 Appendix A- Terminology Defined

Height
Is a measure of the vertical distance from the average ground level around the root crown to the top surface of the crown, and on palms - to the apical growth point.

DBH
Diameter at Breast Height – being the stem diameter in meters, measured at 1.4m from ground level, including the thickness of the bark.; Mult. refers to multiple stems, that is in excess of 4 stems.

Crown Spread
A two-dimension linear measurement (in metres) of the crown plan. The first figure is the north-south span, the second being the east-west measurement.

Age
Is the estimate of the specimen's age based upon the expected lifespan of the species. This is divided into three stages.

Young (Y)	Trees less than 20% of life expectancy.
Mature (M)	Trees aged between 20% to 80% life expectancy.
Over-mature (O)	Trees aged over 80% of life expectancy with probable symptoms of senescence.

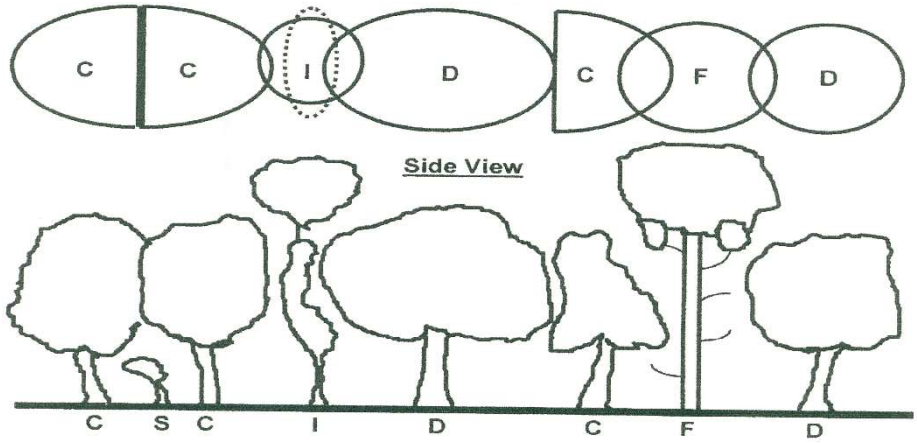
Crown Aspect
In relation to the root crown, this refers to the aspect the majority of the crown resides in. This will be either termed Symmetrical (Sym.) where the centre of the crown resides over the root crown or the cardinal direction the centre of the crown is biased towards, being either North (N), South (S), East (E) or West (W).

Vitality Rating
Is a rating of the health of the tree, irrespective and independent of the structural integrity, and defined by the 'ability for a tree to sustain its life processes' ((Draper, Richards, 2009). This is divided between three variables, and based on the assessment of symptoms including, but not limited to; leaf size, colour, crown density, woundwood development, adaptive growth formation, and epicormic growth.
A: Normal vitality, typical for the species
B: Below average vitality, possibly temporary loss of health, partial symptoms.
C: Poor vitality; obvious decline, potentially irreversible

Crown Class
Is the differing crown habits as influenced by the external variables within the surrounding environment. They are:

D	– *Dominant*	Crown is receiving uninterrupted light from above and sides, also known as emergent.
C	– *Codominant*	Crown is receiving light from above and one side of the crown.
I	– *Intermediate*	Crown is receiving light from above but not the sides of the crown.
S	– *Suppressed*	Crown has been shadowed by the surrounding elements and receives no light from above or sides.
F	– *Forest*	Characterised by an erect, straight stem (usually excurrent) with little stem taper and virtually no branching over the majority of the stem except for the top of the tree which has a small concentrated branch structure making up the crown.

Top View



D C, I & S, and side view, after (Matheny, N. & Clark, J. R. 1998, Trees Development, Published by International Society of Arboriculture, P.O. Box 3129, Champaign IL 61826-3129 USA, p.20, adapted from the Hazard Tree Assessment Program, Recreation and Park Department, City of San Francisco, California).

Levels of assessment

Level 1: Limited visual: a visual tree assessment to manage large populations of trees within a limited period and in order to identify obvious faults which would be considered imminent.

Level 2: Basic assessment: a standard performed assessment providing for a detailed visual assessment including all parts of the tree and surrounding environment and via the use of simple tools.

Level 3: Advanced assessment: specific type assessments conducted by either arborist who specialise with specific areas of assessment or via the use of specialised equipment. For example, aerial assessment by use of an EWP or rope/harness, or decay detection equipment.

TPZ; Tree Protection Zone

Is an area of protection required for maintaining the trees vitality and long-term viability. Measured in meters as a radius from the trees centre. The requirements of this zone are outlined within the Protection Specification, Section 8.0, and are to be adhered to unless otherwise stated.

The size of the Tree Protection Zone (TPZ) has been calculated from the *Australian Standard, 4970; 2009* – Protection of Trees on Development Sites

The TPZ does not provide the limit of root extension, however, offers an area of the root zone that requires predominate protection from development works. The allocated TPZ can be modified by some circumstances; however will require compensation equivalent to the area loss, elsewhere and adjacent to the TPZ.

SRZ; Structural Root Zone

Is the area around the tree containing the woody roots necessary for stability. Measured in meters as a radius from the trees centre. The requirements of this zone are outlined within the Protection Specification, Section 8.0, and are to be adhered to unless otherwise stated.

Protection Measures

These are required for the protection of trees during demolition/construction activities.
Protective barriers are required to be installed before the initiation of demolition and/or construction and are to be maintained up to the time of landscaping. Samples of the recommended protection measures are illustrated in Appendix C.

Project Arborist person nominated as responsible for the provision of the tree assessment, arborist report, consultation with stakeholders, and certification for the development project. This person will be

adequately experienced and qualified with a minimum of a level 5 (AQF); Diploma in Horticulture (Arboriculture)[6].

All other definitions are referenced from;
Draper D.B., Richards P.A., 2009, Dictionary for Managing Trees in Urban Environments, CSIRO Pub., Australia

Significance Rating, Significance of a Tree Assessment Rating System (S.T.A.R.S), IACA, 2010[7]

Tree Significance – Assessment Criteria

1. High Significance in landscape

- The tree is in good condition and good vitality;
- 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 vitality;
- 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 vitality;
- The tree has form atypical of the species;
- The tree is not visible or is partly visible from surrounding properties as obstructed

[6] Based upon the definition of a 'consulting arborist' from the AS 4970; Protection of trees on development sites; 2009, Section 1.4.4, p 6.

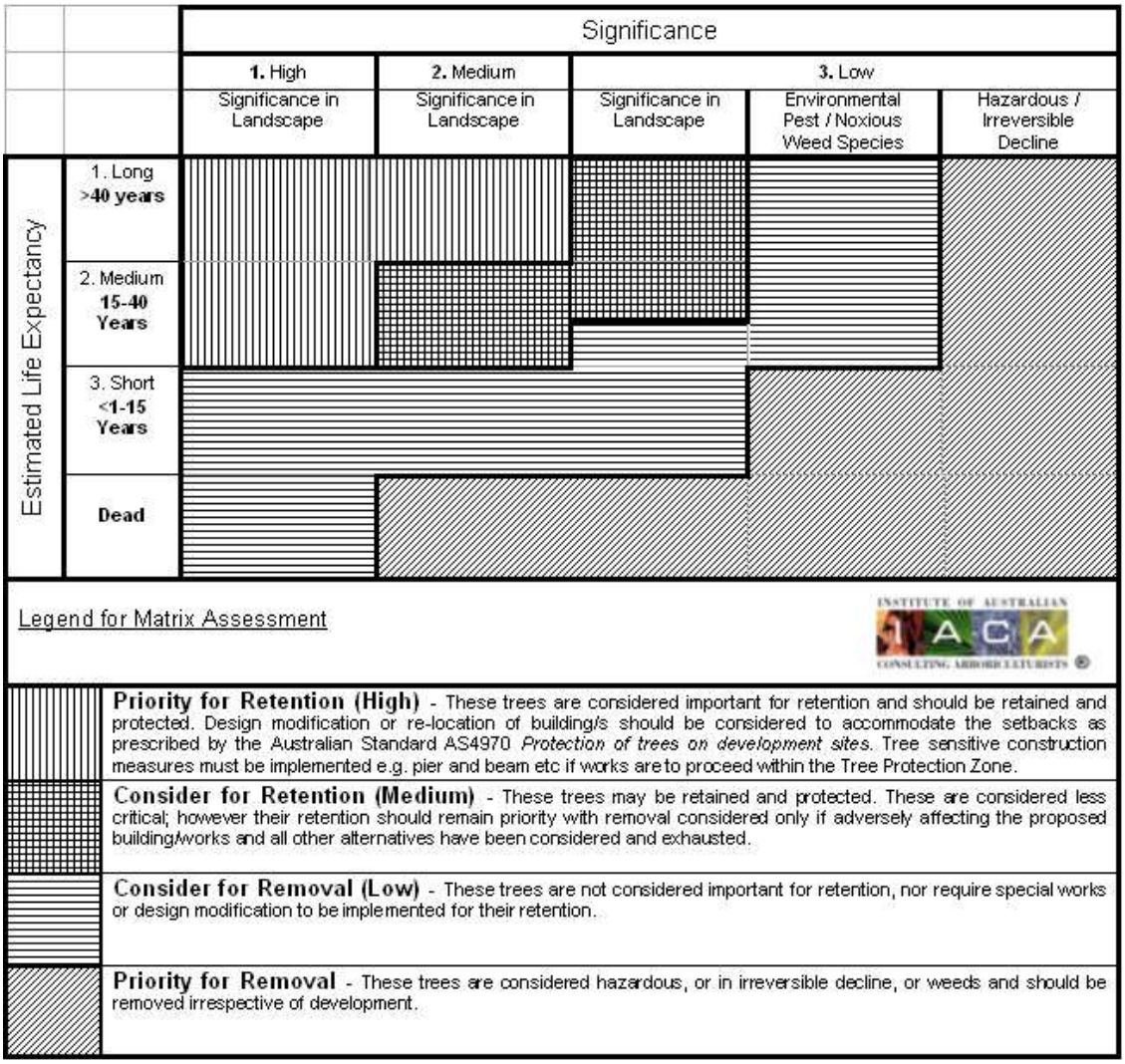
[7] IACA, 2010, IACA Significance of a Tree, Assessment Rating System (STARS), Institute of Australian Consulting Arboriculturists, Australia, www.iaca.org.au

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 e.g.

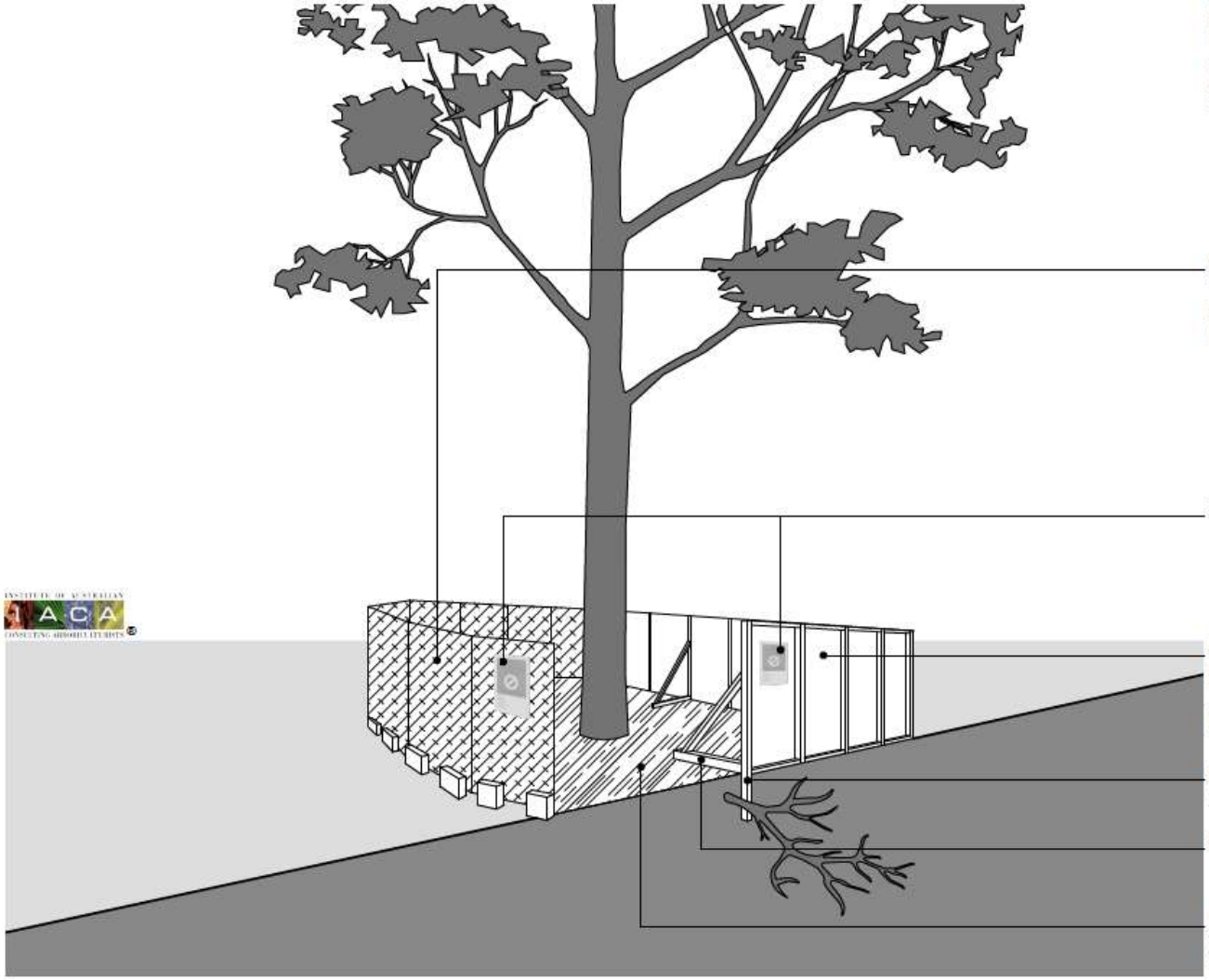
Table 3; Tree Retention Value – Priority Matrix.


Significance
1. High
Significance in Landscape
2. Medium
Significance in Landscape
3. Low
Significance in Landscape
Environmental Pest / Noxious Weed Species
Hazardous / Irreversible Decline
Estimated Life Expectancy
1. Long
>40 years
2. Medium
15-40 Years
3. Short
<1-15 Years
Dead
Legend for Matrix Assessment
Priority for Retention (High) - These trees are considered important for retention and should be retained and protected. Design modification or re-location of building/s should be considered to accommodate the setbacks as prescribed by the Australian Standard AS4970 Protection of trees on development sites. Tree sensitive construction measures must be implemented e.g. pier and beam etc if works are to proceed within the Tree Protection Zone.
Consider for Retention (Medium) - These trees may be retained and protected. These are considered less critical; however their retention should remain priority with removal considered only if adversely affecting the proposed building/works and all other alternatives have been considered and exhausted.
Consider for Removal (Low) - These trees are not considered important for retention, nor require special works or design modification to be implemented for their retention.
Priority for Removal - These trees are considered hazardous, or in irreversible decline, or weeds and should be removed irrespective of development.

Safe Useful Life Expectancy – S.U.L.E (Barell 1995)

	1. Long	2. Medium	3. Short	4. Removal	5. Moved or Replaced
	Trees that appeared to be retainable at the time of assessment for more than 40 years with an acceptable level of risk.	Trees that appeared to be retainable at the time of assessment for 15 – 40 years with an acceptable level of risk.	Trees that appeared to be retainable at the time of assessment for 5 – 15 years with an acceptable level of risk.	Trees that should be removed within the next 5 years.	Trees which can be reliably moved or replaced.
A	Structurally sound trees located in positions that can accommodate future growth.	Trees that may only live between 15 and 40 years.	Trees that may only live between 5 and 15 more years.	Dead, dying, suppressed or declining trees through disease or inhospitable conditions.	Small trees less than 5m in height.
B	Trees that could be made suitable for retention in the long term by remedial tree care.	Trees that may live for more than 40 years but would be removed for safety or nuisance reasons.	Trees that may live for more than 15 years but would be removed for safety or nuisance reasons.	Dangerous trees through instability on recent loss of adjacent trees.	Young trees less than 15 years old but over 5m in heights
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 would 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.	Damaged trees through structural defects including cavities, decay, included bark, wounds or poor form.	Trees that have been pruned to artificially control growth.
D		Trees that could be made suitable for retention in the medium term by remedial tree care.	Trees that require substantial remedial tree care and are only suitable for retention in the short term.	Damaged trees that are clearly not safe to retain.	
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 plantings.	
F				Trees that are damaging or may cause damage to existing structures within 5 years.	
G				Trees that will become dangerous after removal of other trees for reasons given in (A) to (F).	

Appendix B- Protection measures;
Protective fence



Stem and Ground protection