



Arboricultural Impact Assessment

SCEGGS Darlinghurst

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2 Summary

This Arboricultural Impact Assessment (AIA) is based on forty-one (41) trees located at the SCEGGS Darlinghurst school campus (subject site) and the surrounding street frontage.

The tree population of the site consists of combination of planted exotic species trees and planted Australian natives.

The proposed works include building demolition and new building construction and landscaping in parts of the site.

The Retention Values of the subject trees were rated as outlined in the following Table. Refer to the Tree Location Plan (Section 3.4) and the Tree Protection Plan (Attachment C) for tree locations.

Table A: Retention Values of the Subject Trees.

	High Retention Value (Tree Number)	Medium Retention Value (Tree Number)	Low Retention Value (Tree Number)
To be Retained	2, 17, 17a, 17b, 18, 19, 20, 25, 26, 27, 28, 28b	2, 3, 4, 5, 6, 7, 8, 9, 11, 14, 14a, 21, 22, 23, 24, 28a, 28c	-
To be Removed	1	1b, 11a, 11b, 12b, 12c, 13, 15	10, 12, 12a, 16

Twelve (12) trees are proposed to be removed to facilitate this project. These are made up of one (1) High Retention Value tree, seven (7) Medium Retention Value trees, and four (4) Low Retention Value trees.

There are works proposed within the Tree Protection Zones (TPZ) of Trees 1a, 11, 17a, 28a, 28b including canopy pruning to accommodate street hoarding and scaffolding. Recommendations have been made regarding tree protection measures to limit the impact on retained trees.

3 Introduction

3.1 Background

This Arboricultural Impact Assessment (AIA) was prepared for SCEGGS Darlinghurst in relation to the existing trees and proposed new building construction at the school (subject site).

The purpose of this AIA is to assess the likely impacts of the proposed works on the existing site trees and make recommendations regarding construction methods and tree protection measures to limit adverse impacts on trees recommended for retention.

A Preliminary Tree Assessment Report was prepared for this project in September 2018. The purpose of this was to provide the design team with information about the tree population to facilitate a responsive and tree sensitive design.

This AIA has been prepared in accordance with the Australian Standard 4970-2009, *Protection of trees on development sites*.

3.2 Subject Site/Subject Trees

The subject site is currently a functioning school campus. The entire school grounds have been assessed as the subject site for this project.

The tree population within the campus consists of a combination of planted exotic species trees and planted Australian natives.

None of the trees within the school form part of an endangered ecological community, or are protected under the Commonwealth Environmental and Biodiversity Conservation Act 1999 or NSW Threatened Species Conservation Act 1995.

Forty-one (41) trees on the site and street frontages were assessed. This includes thirteen (13) High Retention Value trees, twenty-four (24) Medium Retention Value and four (4) Low Retention Value trees.

Refer to the Tree Location Plan (following page) for tree locations, numbers and Retention Values. A detailed description of the subject trees is included in the Tree Assessment Table (Attachment A).

3.3 Proposed Works

It is proposed to undertake building demolition and new building construction and landscaping in parts of the site.

3.4 Tree Location Plan



4 Methodology

4.1 Site Inspection

Site inspection and tree assessment was undertaken by Alexis Anderson on the 17th of September, 2018. The trees were assessed from ground level using a Tree Assessment Table, which is included as Attachment A. The definitions and explanations of terms used are outlined in the Tree Table Definitions page which is included at Attachment B.

The tree assessment was undertaken for the purpose of pre-development planning. Detailed tree risk assessment was not requested or included in the scope of works.

4.2 Plans and Diagrams

The SCEGGS Darlinghurst Masterplan and Wilkinson House Redevelopment prepared by TKD Architects (Revision P4 – 28/9/18) were reviewed as part of the assessment. The Landscape Masterplan prepared by Context was also reviewed.

No Engineering Detail or Underground Services Plans were available for review at the time of assessment.

All tree protection diagrams were hand drawn by Bluegum Tree Care and Consultancy.

4.3 Tree Protection Zones

Tree assessments in accordance with the Australian Standard 4970-2009, *Protection of trees on development sites*, require calculation of a Tree Protection Zone (TPZ) and Structural Root Zone (SRZ). The following is a brief explanation of these terms:

Tree Protection Zone -TPZ: This is the area that should be isolated from construction disturbance so that the tree remains viable. Some disturbance within the TPZ may be possible following arboricultural assessment.

Structural Root Zone -SRZ: This is the area or undisturbed soil and roots required to maintain tree stability. Excavation within the SRZ can lead to whole tree failure.

Refer to the Tree Assessment Table (Attachment A) for the Tree Protection Zones of the assessed trees.

4.4 Retention Values

Retention values are derived from a combination of Estimated Life Expectancy rating and Landscape and Environmental Significance ratings.

- **HIGH Retention Value:** These trees are worthy of retention and design consideration should be made where possible to allow their retention.
- **MEDIUM Retention Value:** These trees are worthy of retention and minor design consideration should be made to retain these trees wherever possible (e.g. placement of ancillary structures, garden retaining walls, driveway levels).
- **LOW Retention Value:** These trees should not be considered to be a constraint to design layout. Some of these trees should be removed irrespective of any proposed development.

The method of determining and defining retention values used in this report has been derived from the ©Retention Index developed by Tree Wise Men® Australia Pty Ltd.

4.5 Consideration for Tree Retention and Removal

Where demolition of existing structures, excavation or fill is proposed within the Tree Protection Zone (TPZ), arboricultural assessment and sensitive construction methods will be required.

Tree removal recommendations have been based on tree Retention Values and construction offsets.

Trees may generally be recommended for removal in the following circumstances:

- Trees located within construction footprints.
- Trees with construction proposed within SRZ where root loss cannot be avoided through sensitive design.
- Trees with a TPZ loss of more than 25%, may be recommended for removal providing tree sensitive design cannot be implemented to avoid significant root and canopy loss.
- Trees with low Retention Values may be recommended for removal irrespective of proposed development.

5 Potential Impacts of Proposed Works

5.1 Trees to be removed

Tree Number	Retention Value	Reason for Removal
1	High	Within the proposed driveway cross-over. Council owned street tree.
1b	Medium	Within the proposed building footprint.
10	Low	Growing from a narrow shelf on the cliff face. Potentially unstable root plate. This tree is a <i>Celtis sinensis</i> that is likely to have self-sown.
11a, 11b	Medium	Boundary wall demolition and Level 1 excavation is proposed within the Structural Root Zone. Major root disturbance and tree destabilisation is possible. New landscaping and tree planting is proposed in this area.
12, 12a	Low	Within the proposed building footprint.
12b, 12c, 13	Medium	
15	Medium	Within the area of proposed building/garden bed demolition.
16	Low	

5.2 Potential Impacts of Proposal on Retained Trees

Tree Number	Retention Value	Works proposed within the Tree Protection Zone (TPZ)
1a	High	Minor canopy pruning may be required to allow for hoarding and scaffolding (Photo A). Less than 10% of the canopy volume would require removal. Refer to the recommendations.
11	Medium	Boundary wall demolition and Level 1 excavation is proposed within the TPZ. Less than 10% of the TPZ area will be affected. Some minor root damage is possible. The tree is likely to tolerate this and remain viable.
17a	High	Canopy pruning may be required to allow for scaffolding and the new building (Photo B). Up to 30% of the canopy volume would require removal. Refer to the recommendations.

28a	Medium	Canopy pruning may be required to allow for hoarding and scaffolding (Photo D). Up to 20% of the canopy volume may require removal. Refer to the recommendations.
28b	High	Canopy pruning may be required to allow for hoarding and scaffolding (Photo C). Up to 20% of the canopy volume would require removal. Refer to the recommendations.

Incidental Impacts: There is the potential for incidental/accidental damage to the trunk, canopy and shallow roots of all retained trees throughout the construction process. Trees are commonly impacted on construction sites in the following ways.

- Stripping of topsoil and removal of organic material from the soil surface.
- Compaction of the topsoil and damage to surface roots through use of heavy machinery and frequent foot traffic.
- Soil contamination through washing out barrows and disposal or spillage of chemical materials.
- Root loss due to unforeseen excavation for plumbing upgrades and landscape construction.
- Bark/trunk and branch injuries from accidental contact with machinery.

These impacts can be easily avoided through communication with building contractors and basic tree protection measures.

6 Recommendations

6.1 Site Establishment –Prior to Construction

Appointment of a Project Arborist: An Arborist with an AQF Level 5 qualification in Arboriculture and experience in tree protection within construction sites should be engaged prior to the commencement of work on the site. The Project Arborist should be present at the following times:

- At a start-up meeting with site foreman to discuss tree protection requirements, access routes, and any canopy pruning necessary for hoarding, scaffolding, piling rigs or crane lift/swing.
- Following installation of tree protection fencing and trunk battening.
- During canopy pruning works.
- During any excavation required within the TPZ of retained trees.
- At any time tree protection fencing is required to be altered.
- At project completion to verify tree protection and retention.

Site Access Routes: All routes to the construction areas that will be taken by machinery and vehicles should be established in consultation with the Project Arborist. Ground protection and trunk battening may be required where access routes pass within Tree Protection Zones.

Tree Canopy Pruning: Canopy pruning may be required for Trees 1a, 17b, 28a and 28b to accommodate street hoarding and scaffolding. The need and extent for street hoarding was unable to be clarified by the architect at the time of this assessment. Any necessary canopy pruning must be undertaken under the guidance of the Project Arborist. Canopy pruning is to be undertaken in accordance with AS4373-2007, *Pruning of Amenity Trees*, Section 7.2.4 (Selective Pruning). The pruning works must be carried out by a tree surgeon with a minimum AQF Level 2 qualification.



Photo A: Tree 1a. Pruning may be required on the eastern side of the canopy if hoarding is required over the street.



Photo B: Tree 17a. Approximate area where pruning may be required to accommodate scaffolding.



Photo C: Tree 28b. Pruning may be required on the western side to accommodate street hoarding.



Photo D: Tree 28a. Pruning may be required on the southern side to accommodate street hoarding.

Tree Removal: Twelve (12) trees are required to be removed as part of this proposal. Tree removal contractors should be briefed on the need to protect retained trees during tree removal operations. Tree removal works should be undertaken in accordance with the WorkCover Code of Practice for Amenity Tree Industry, 1998.

Tree Protection Fencing: Tree Protection Fencing should be installed prior to any machinery or materials being brought on site and remain in position throughout the entire project. Tree Protection Fencing should be erected around Trees 14 and 14a as outlined in the Tree Protection Plan (Attachment C). Tree Protection Fencing should consist of 1.8 metre high chainlink panels on moveable concrete pads. Tree Protection Fencing should be clamped at each panel junction. Tree Protection Fencing should not be moved at any time without consultation with the Project Arborist. An example of adequate tree protection fencing is detailed in Figure A (following page).

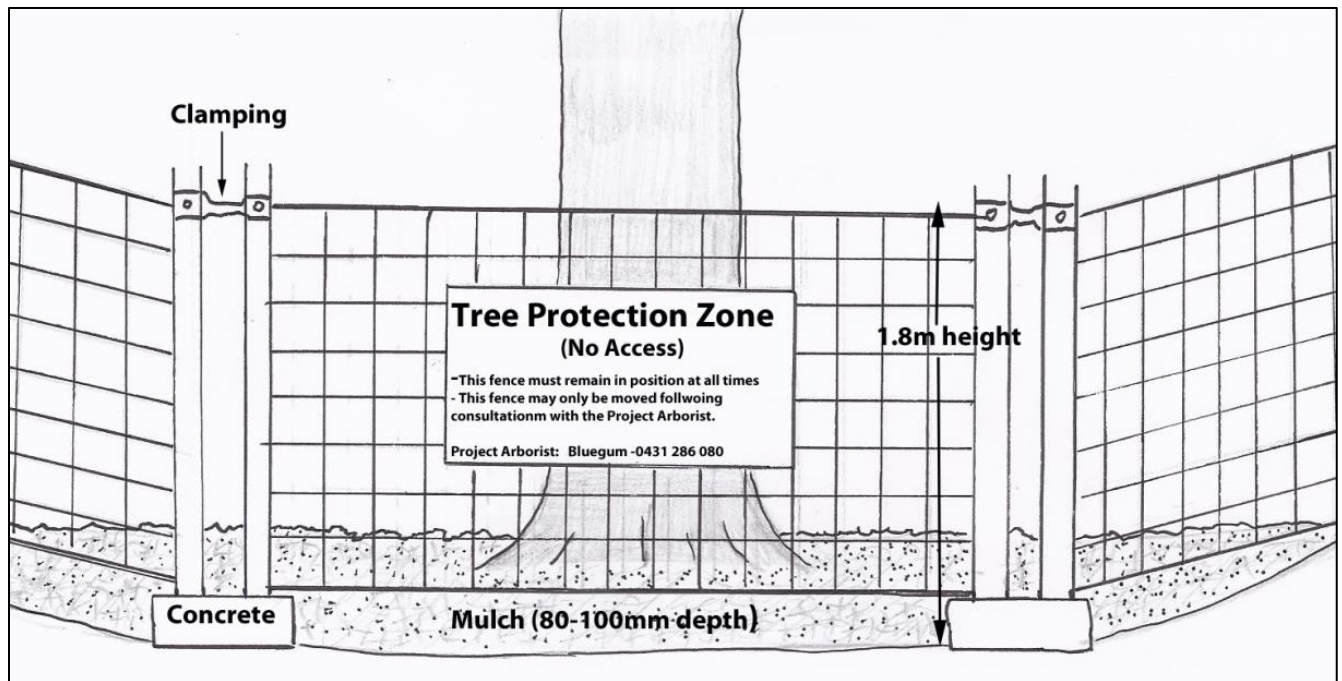


Figure A: Example of adequate tree protection fencing

Trunk Battening: Trunk battening is recommended for Trees 1a, 2, 17, 17a, 17b, 18, 28b. Trunk battening is aimed at preventing accidental bark wounds as often occurs on construction sites where heavy machinery is used. Refer to Figure B for detail of adequate trunk protection.

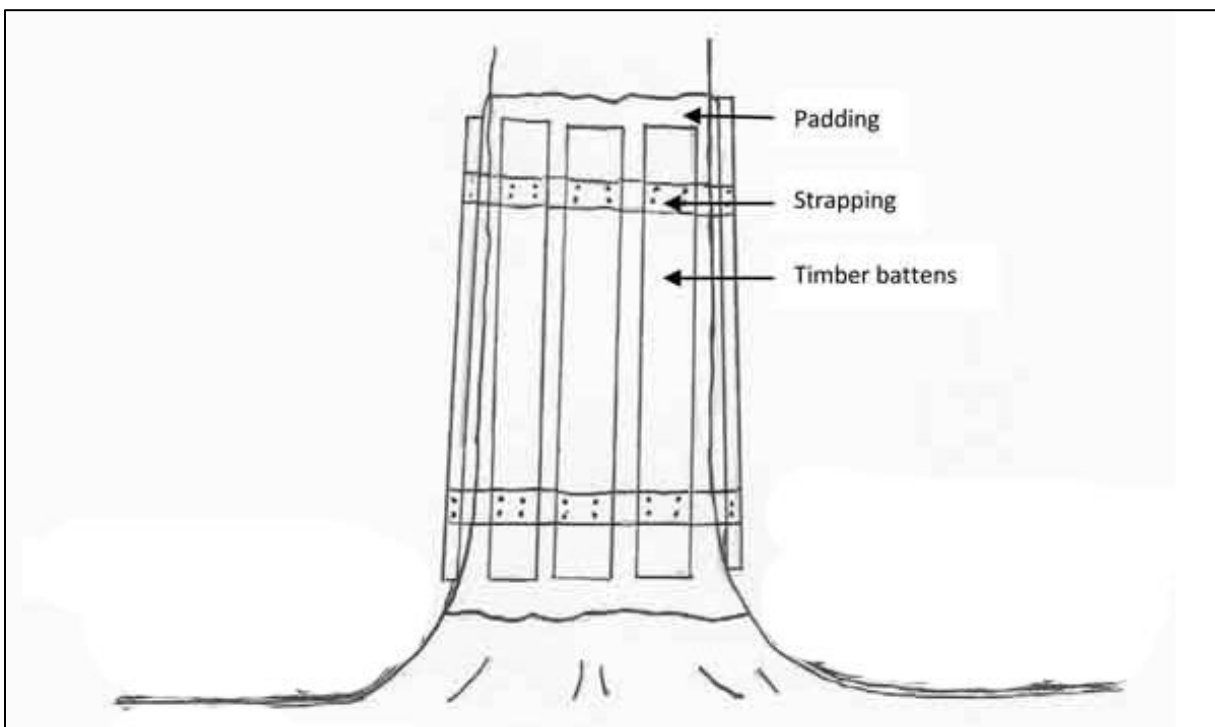


Figure B: Specification of appropriate trunk protection.

Constructed Tree Guard/Barriers: Temporary tree guards or barriers should be constructed around Trees 28a and 28c. These trees are young establishing street trees that are not large or strong enough to support timber trunk battening and there is unlikely to be adequate space on the footpath for standard temporary fencing panels. The type of guard/barrier construction should be determined by the building contractor in co-ordination with the Project Arborist.

6.2 During Construction

Tree Protection Zones: Refer to the Tree Assessment Table (Attachment A) for the spread of TPZ's of trees nominated for retention. The following should be prohibited within the Tree Protection Zones:

- Stripping of topsoil or organic surface material.
- Storage of material, vehicles and machinery.
- Disposal of solid, liquid or chemical waste.
- Any excavation, fill or other construction activity other than that discussed in this report.

Underground Services: Underground services alignments should be routed outside of the TPZ's of retained trees. Any excavation for installation any underground services required within TPZ's must be undertaken using hand tools under supervision of the Project Arborist. All tree roots greater than 30mm diameter must be retained and dug around. Any smaller roots may be cleanly cut using a hand saw or secateurs. Piping should be threaded below exposed tree roots as required to avoid root damage.

Landscape Construction: Existing ground levels must be retained wherever possible within the Tree Protection Zones of retained trees. The Project Arborist will need to be consulted on any areas where ground level changes are proposed within a Tree Protection Zone.

7 Statement of Impartiality

- This report prepared by Bluegum Tree Care & Consultancy (BTCC) reflects the impartial and expert opinion of Alexis Anderson.
- BTCC is acting independently of and not as the advocate for the client.
- BTCC does not undertake tree pruning and removal works and will not have any involvement with pruning or removing trees which are the subject of this report.

8 Limitations

- The findings of this report are based upon and limited to visual examination of trees from ground level without any climbing, internal testing or exploratory excavation.
- This report is based upon a review of the SCEGGS Darlingtonhurst Masterplan and Wilkinson House Redevelopment prepared by TKD Architects (Revision P4 – 28/9/18). The Landscape

Masterplan prepared by Context was also reviewed. No Engineering Detail or Underground Services Plans were available for review at the time of assessment.

- The tree assessment was undertaken for the purpose of pre-development planning. Detailed tree risk assessment was not requested or included in the scope of works. Any recommendations from previous Tree Risk Assessment reports should be implemented independently of this report.
- This report reflects the health and structure of trees at the time of inspection. Bluegum cannot guarantee that a tree will be healthy and safe under all circumstances or for a specified period of time. There is no guarantee that problems or defects with assessed trees, will not arise in the future. Liability will not be accepted for damage to person or property as a result of failure of assessed trees.

Tree No.	Common Name/ Genus Species	DBH (mm)	Height (m)	Canopy Spread Radius (m)	Age Class	Health / Vitality	Structural Condition	Tree Protection Zone (m)	Structural Root Zone (m)	Estimated Remaining Life Expectancy (ELE)	Landscape and Environmental Significance	Retention Value	Comments	Potential Impact of Proposed Works	Retain / Remove
1	Liquidambar, <i>Liquidambar styraciflua</i>	500	12	6	M	G	G	6.0	2.5	Long (30+ yrs)	2	High	Street tree.	Within the proposed driveway cross-over.	Remove.
1a	London Plane Tree, <i>Platanus acerifolius (hybrida)</i>	170	7	3	EM	G	F	2.0	1.6	Long (30+ yrs)	2	High	Street tree.	Potential for minor canopy pruning to allow for hoarding and scaffolding.	Retain.
1b	Blueberry Ash, <i>Elaeocarpus reticulatis</i>	100	8	2	M	G	G	2.0	1.5	Medium (10-30 yrs)	3	Medium	Not surveyed.	Within the proposed building footprint.	Remove.
2	Bangalow Palm, <i>Archontophoenix cunninghamiana</i>	100	8	2	M	G	G	2.0	1.0	Long (30+ yrs)	3	Medium	Services pit at the base.	Nil.	Retain.
3	Kentia Palm, <i>Howea forsteriana</i>	100	5	2	M	G	G	2.0	1.0	Long (30+ yrs)	3	Medium		Nil.	Retain.
4	Tree Fern, <i>Cyathea cooperi</i>	160	7	2	M	G	G	2.0	1.0	Long (30+ yrs)	3	Medium		Nil.	Retain.
5	Kentia Palm, <i>Howea forsteriana</i>	150	10	2	M	G	G	2.0	1.0	Long (30+ yrs)	3	Medium		Nil.	Retain.
6	Bangalow Palm, <i>Archontophoenix cunninghamiana</i> (x3)	200, 200, 200	14	3	M	G	G	4.0	1.0	Long (30+ yrs)	3	Medium		Nil.	Retain.
7	Bangalow Palm, <i>Archontophoenix cunninghamiana</i> (x3)	280, 220, 200	14	3	M	G	G	4.0	1.0	Long (30+ yrs)	3	Medium		Nil.	Retain.
8	Kentia Palm, <i>Howea forsteriana</i>	180	9	2	M	G	G	3.0	1.0	Long (30+ yrs)	3	Medium		Nil.	Retain.
9	Bangalow Palm, <i>Archontophoenix cunninghamiana</i> (x3)	200, 200, 190	14	3	M	G	G	4.0	1.0	Long (30+ yrs)	3	Medium		Nil.	Retain.
10	Chinese Hackberry, <i>Celtis sinensis</i>	500	16	8	M	G	F	NA	NA	Medium (10-30 yrs)	4	Low	Self sown. Growing from a narrow shelf on the cliff face.	N/A	Remove.
11	Jacaranda, <i>Jacaranda mimosifolia</i>	400	11	4	M	G	G	4.8	2.3	Long (30+ yrs)	3	Medium	Street tree.	Excavation for Level 1 construction is proposed within the TPZ.	Retain.
11a	Willow Bottlebrush, <i>Callistemon salignus</i>	300	10	3	M	G	F	3.6	2.0	Medium (10-30 yrs)	3	Medium	Street tree. Not surveyed.	Boundary wall demolition and Level 1 excavation is proposed within the SRZ.	Remove.
11b	Weeping Bottlebrush, <i>Callistemon viminalis</i>	250	10	2	M	G	G	3.0	1.8	Medium (10-30 yrs)	3	Medium	Street tree.	Boundary wall demolition and Level 1 excavation is proposed within the SRZ.	Remove.

Tree No.	Common Name/ Genus Species	DBH (mm)	Height (m)	Canopy Spread Radius (m)	Age Class	Health / Vitality	Structural Condition	Tree Protection Zone (m)	Structural Root Zone (m)	Estimated Remaining Life Expectancy (ELE)	Landscape and Environmental Significance	Retention Value	Comments	Potential Impact of Proposed Works	Retain / Remove
12	Giant Strelitzia, <i>Strelitzia nicholai</i>	Multi 150, 150, 150, 150	8	2	M	G	G	2.0	1.0	Medium (10-30 yrs)	4	Low		Within the proposed building footprint.	Remove.
12a	Native Tamarind, <i>Diploglottis australis</i>	90	13	1	M	F	F	2.0	1.5	Medium (10-30 yrs)	4	Low	Not surveyed.	Within the proposed building footprint.	Remove.
12b	Kentia Palm, <i>Howea forsteriana</i>	150	12	2	M	G	G	3.0	1.0	Long (30+ yrs)	3	Medium	Not surveyed.	Within the proposed building footprint.	Remove.
12c	Firewheel Tree, <i>Stenocarpus sinuatis</i>	70	8	1	EM	G	G	2.0	1.5	Long (30+ yrs)	3	Medium	Not surveyed.	Within the proposed building footprint.	Remove.
13	Coast Banksia, <i>Banksia integrifolia</i>	190	10	3	M	F	G	2.3	1.6	Medium (10-30 yrs)	3	Medium		Within the proposed building footprint.	Remove.
14	Native Frangipani, <i>Hymenosporum flavum</i>	270	15	5	M	F	G	3.2	1.9	Long (30+ yrs)	3	Medium	Steel hydrant pipe at the base.	Nil.	Retain.
14a	NZ Christmas Bush, <i>Meterosideros excelsa</i>	120, 100	7	3	M	G	G	2.0	1.5	Long (30+ yrs)	3	Medium	Not surveyed.	Nil.	Retain.
15	Curly Palm, <i>Howea belmoreana</i>	120	6	2	M	G	G	2.0	1.0	Long (30+ yrs)	3	Medium		Within area of building/landscape demolition.	Remove.
16	Kentia Palm, <i>Howea forsteriana</i>	90	2	2	EM	G	G	2.0	1.0	Long (30+ yrs)	4	Low		Within area of building/landscape demolition.	Remove.
17	Jacaranda, <i>Jacaranda mimosifolia</i>	440, 300, 270	13	7	M	G	G	7.2	2.7	Long (30+ yrs)	2	High	Structural root spread is restricted by the garden bed walls.	No changes to the external building layout within the TPZ.	Retain.
17a	Brushbox, <i>Lophostemon confertus</i>	580	11	5	M	G	G	7.0	2.7	Long (30+ yrs)	2	High	Street tree.	Minor canopy pruning may be required to accommodate scaffolding and the new building.	Retain.
17b	Brushbox, <i>Lophostemon confertus</i>	420	11	5	M	G	G	5.0	2.3	Long (30+ yrs)	2	High	Street tree.	Nil.	Retain.
18	QLD Kauri Pine, <i>Agathis robusta</i>	1110	25	4	M	G	G	13.3	3.5	Long (30+ yrs)	1	High		Nil.	Retain.
19	Moreton Bay Fig, <i>Ficus rubiginosa</i>	2000	26	12	M	F	G	15.0	4.4	Long (30+ yrs)	1	High	Trunk wrapped in hessian at 10m height.	Nil.	Retain.
20	Moreton Bay Fig, <i>Ficus rubiginosa</i>	2500	24	13	M	F	G	15.0	4.5	Long (30+ yrs)	1	High	Thinning of the upper canopy. There has been significant root loss from previous development within the TPZ.	Nil.	Retain.
21	Crepe Myrtle, <i>Lagerstroemia indica</i>	100	3	2	M	G	G	2.0	1.5	Long (30+ yrs)	3	Medium		Nil.	Retain.

Tree No.	Common Name/ Genus Species	DBH (mm)	Height (m)	Canopy Spread Radius (m)	Age Class	Health / Vitality	Structural Condition	Tree Protection Zone (m)	Structural Root Zone (m)	Estimated Remaining Life Expectancy (ELE)	Landscape and Environmental Significance	Retention Value	Comments	Potential Impact of Proposed Works	Retain / Remove
22	Crepe Myrtle, <i>Lagerstroemia indica</i>	100	3	2	M	G	G	2.0	1.0	Long (30+ yrs)	3	Medium		Nil.	Retain.
23	Crepe Myrtle, <i>Lagerstroemia indica</i>	100	3	2	M	G	G	2.0	1.0	Long (30+ yrs)	3	Medium		Nil.	Retain.
24	Crepe Myrtle, <i>Lagerstroemia indica</i>	100	3	2	M	G	G	2.0	1.0	Long (30+ yrs)	3	Medium		Nil.	Retain.
25	Chinese Weeping Elm, <i>Ulmus parvifolia</i>	470	9	5	M	F	G	5.6	2.4	Long (30+ yrs)	2	High	The canopy has been reduced.	Nil.	Retain.
26	Kentia Palm, <i>Howea forsteriana</i>	200	8	3	M	G	G	2.4	1.0	Long (30+ yrs)	2	High		Nil.	Retain.
27	Kentia Palm, <i>Howea forsteriana</i>	200	7	3	M	G	G	2.4	1.0	Long (30+ yrs)	2	High		Nil.	Retain.
28	Chinese Weeping Elm, <i>Ulmus parvifolia</i>	370, 300	9	5	M	F	G	5.7	2.5	Long (30+ yrs)	2	High	The canopy has been reduced.	Nil.	Retain.
28a	Golden Rain Tree, <i>Koelreuteria paniculata</i>	70, 50	4	2	EM	G	G	2.0	1.0	Long (30+ yrs)	3	Medium	Street tree.	Canopy pruning will be required to accommodate street hoarding/scaffolding.	Retain.
28b	Brushbox, <i>Lophostemon confertus</i>	420	9	5	M	G	G	5.0	2.3	Long (30+ yrs)	2	High	Street tree.	Canopy pruning will be required to accommodate street hoarding/scaffolding.	Retain.
28c	Golden Robinia, <i>Robinia psuedoacacia</i> 'Frisia'	30	3	1	EM	G	F	2.0	1.0	Long (30+ yrs)	3	Medium	Street tree. Not surveyed.	Nil.	Retain.

Attachment B: TREE ASSESSMENT DEFINITIONS

Height. Tree height is estimated from ground level. This assessment is made independently of data plotted on survey plan. These measurements have not been confirmed with clinometer or other surveying instrument.

Diameter at Breast Height (DBH). Trunk diameter is measured at 1.4 metres above ground level. A diameter tape is used which calculates the diameter from a measurement of the circumference. DBH is primarily used for the calculation of the TPZ. The trunk diameter above the root buttress is measured to calculate the Structural Root Zone. If a tree has more than 4 trunks, the diameter of the four largest trunks is recorded. For irregular trunk formations the DBH is calculated as outlined in Appendix A of AS4970-2009 -*Protection of Trees on Development Sites*.

Canopy Spread Radius. Average canopy spread radius is estimated from the centre of trunk to the outer edge of canopy. Refer to Comments column for detail of heavily skewed canopy spread.

Age Class - This is an estimation of the tree's current age class based on size, growth habit, local environmental conditions and comparison with surrounding trees.

- **Immature (IM):** This is a juvenile specimen that is likely to have germinated within the previous 5 years.
- **Early Mature (EM):** This is a tree that is established within its growing environment, though has not reached an age of reproductive maturity or the natural growth habit of a mature individual.
- **Mature (M):** This is a tree has reached both reproductive maturity and a physical form and shape typical for the species. Trees can have a Mature Age Class for the majority of their life span.
- **Late-Mature (LM):** These trees show early signs of senescence with symptoms such as reduced canopy density and an accumulation of dead branches.
- **Over-mature (OM):** These trees show symptoms of irreversible decline such as canopy dieback with dead branches concentrated in the upper canopy.

Health / Vitality - Good (G), Fair (F) or Poor (P). This is primarily based on the extent of vigorous new foliage growth at branch tips and the colour, size and density of foliage generally. The percentage of live branches to dead branches is considered. The location of any dead branches is also considered. The presence of any pest or disease is considered as part of this assessment. Health can vary with climatic conditions.

Structural Condition - Good (G), Fair (F) or Poor (P). This is an assessment of tree structure and stability. Root anchorage, trunk lean, structural defects, canopy skew and any hazardous features are considered. Dead branches can be considered as part of Structural Condition if they are of a size and location that could cause injury or property damage.

Tree Protection Zone (TPZ). This is a radial distance of (12X) the DBH measured from centre of trunk. TPZ is rounded to the nearest 0.1 metre. A TPZ should not be less than 2m or greater than 15m. The TPZ for palms and other monocots should not be less than 1m outside of the crown projection. Existing constraints to root spread can vary the TPZ. For a tree to remain viable, construction activity should be excluded or undertaken with care within the TPZ. Disturbance within up to 10% of the TPZ area is considered to be a minor encroachment. Disturbance to more than 10% of the TPZ area is considered a major encroachment. Major encroachment into the TPZ is possible depending on the type of disturbance, and species tolerance to disturbance. Exploratory excavation may be required to quantify the presence of roots at the alignment of proposed ground disturbance. This is based upon the Australian Standard AS 4970, 2009, *Protection of trees on development sites* and the Matheney & Clarke "Guidelines for adequate tree preservation zones for healthy, structurally stable trees".

Structural Root Zone (SRZ). This is a radial distance based on the following formula- $SRZ = (D \times 50)^{0.42} \times 0.64$ (for trees less than 150mm Diameter, a minimum SRZ of 1.5 metres). The **D** in the formula is the trunk diameter measured above the root buttress. This was recorded in the field notes. SRZ measurements are rounded to the nearest 0.1m. The Structural Root Zone is the area of soil and roots required to maintain tree stability. Excavation within the SRZ can result in whole tree failure. Fully elevated construction is possible within SRZ with specific rootzone assessment. Existing constraints to root spread can vary the SRZ. This method of determining SRZ is outlined at Section 3.3.5 of Australian Standard AS 4970, 2009, *Protection of trees on development sites*.

Estimated Remaining Life Expectancy: This gives a length of time that the Arborist believes a particular tree can be retained from the time of assessment with an acceptable level of risk based on the information available at the time of the inspection. This system of rating does not take into consideration the likely impacts of any proposed development. Ratings are **Long** (retainable for 30 years or more with an acceptable level of risk), **Medium** (retainable for 10-30 years), **Short** (retainable for 0-10 years) and **Removal** (tree requiring removal due to risk/hazard or absolute unsuitability).

Landscape & Environmental Significance*. This is an assessment of the impact of the tree on the surrounding landscape amenity and natural environment. Rarity, habitat value, physical prominence, historical and cultural significance of the tree are considered in this rating system. The Landscape & Environmental Value ratings used in this report are:

1. Very High Value: This is an outstanding specimen that holds irreplaceable environmental, landscape or cultural value.

2. High Value: An excellent specimen that holds environmental, landscape or cultural value that is present in other site trees or that could be replaced.

3. Moderate Value: Can be a good to fair specimen with environmental, landscape or cultural value that is common within other trees in the locality.

4. Low Value: Removal would not result in any loss of site amenity or environmental value. Can include undesirable or weed species or trees growing in unsuitable locations.

5. Very Low Value: Dead or hazardous with no other environmental or cultural value. Could also include weed species. These trees should be removed or pruned in a way to make safe irrespective of any development.

***Note:** The concept of using a five (5) point scale to assess tree significance was derived from the Tree Wise Men® Australia Pty Ltd ©Significance Rating Scale.

Retention Value*. Retention values are derived from a combination of Estimated Life Expectancy rating and Landscape and Environmental Significance ratings.

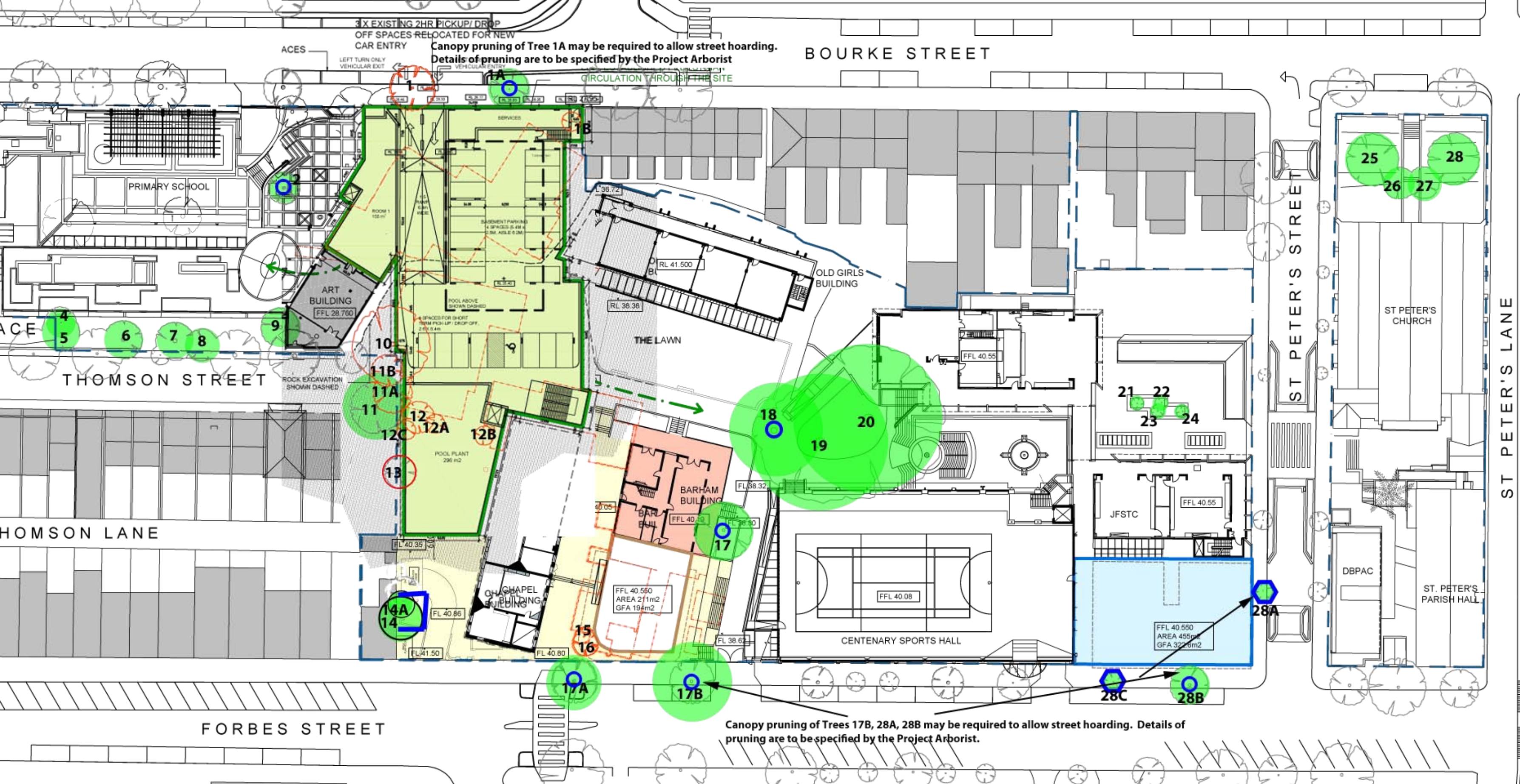
Landscape & Environmental Significance		Estimated Life Expectancy			
		Long	Medium	Short	Removal
	Very High (1)	HIGH		MEDIUM	
	High (2)				
	Medium (3)	MEDIUM		LOW	
	Low (4)				
	Very Low (5)				

HIGH Retention Value: These trees are worthy of retention and major design consideration should be made where feasible to allow this.

MEDIUM Retention Value: These trees are worthy of retention and minor design consideration should be made to retain these trees wherever possible (e.g. placement of ancillary structures, garden retaining walls, driveway levels).

LOW Retention Value: These trees should not be considered to be a constraint to design layout. Some of these trees should be removed irrespective of any proposed development.

***Note:** The method of determining and defining retention values used in this report has been derived from the ©Retention Index developed by Tree Wise Men® Australia Pty Ltd.



LEGEND

Retained Tree		Tree Protection Fencing	
Tree Proposed for Removal		Trunk Protection / Constructed Tree Barrier	

Tree Protection Plan

SCEGGS Darlinghurst



- This plan was prepared with the Proposed Master Plan (Level 4), TDK Architects as a base.
- This plan is to be read in conjunction with the Arboricultural Impact Assessment (AIA) report prepared for this site, November 2018.
- Tree protection fencing is indicative only. Final positions should be determined with co-ordination between the Site Foreman and Project Arborist to allow adequate site access during construction. Refer to the report for detail of adequate fencing type.