Arboricultural Impact Assessment

of Proposed New Childcare Centre

Leichhardt Park, Lilyfield

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1 Contents

2 Summary

This Arboricultural Impact Assessment (AIA) is based on eleven (11) trees located the proposed Leichhardt Park Childcare Centre (subject site). The subject site is currently occupied by open grassed parkland, play equipment and a sloping vegetated embankment. The tree population consists of planted Australian native trees and planted exotics. The proposed works include construction of a new single storey childcare centre at the site and soil remediation works.

The Retention Values of the subject trees were rated as outlined in the following Table. Refer to Figure A (following page) 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	1, 3, 10, 11	2, 5, 6, 7, 8, 9	-
To be Removed	-	4	-

All of the High Retention Value trees and the majority of the Medium Retention Value trees are able to be retained. One (1) Medium Retention Value tree requires removal to facilitate the proposed works.

There is some minor works proposed within the Tree Protection Zones (TPZ) of Trees 1, 2, 3, 5, 8 and 9. Recommendations have been made regarding design consideration, tree protection measures and tree sensitive construction measures to limit the impact of these works on retained trees. No notable impact on the health or stability of these trees is expected if the recommendations of this report are followed.

3 Introduction

3.1 Background

This Arboricultural Impact Assessment (AIA) was prepared for Leichhardt Council in relation to the existing trees and proposed childcare centre at Leichhardt Park, Lilyfield (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.

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

3.2 Subject Site/Proposed Works/Subject Trees

The subject site is currently occupied by open grassed parkland, play equipment and sloping vegetated embankment. Preliminary soil testing revealed contaminates within the fill material that makes up the site soils. It is proposed to undertake soil remediation works and construct a new single storey childcare centre at the site.

The vegetation of the site is made up of planted Australian native trees and planted exotics. The majority of the site trees are Hills Weeping Figs which are not indigenous to this locality. Tree 1 (Moreton Bay Fig) and Tree 3 (Port Jackson Fig) were assessed as being of high significance due to their size and age.

All of the assessed trees are protected under the Leichhardt Council DCP C1.14 –*Tree Management*.

Refer to Figure A below for tree locations and numbers. A detailed description of the subject trees is included in the Tree Assessment Table (Attachment A).

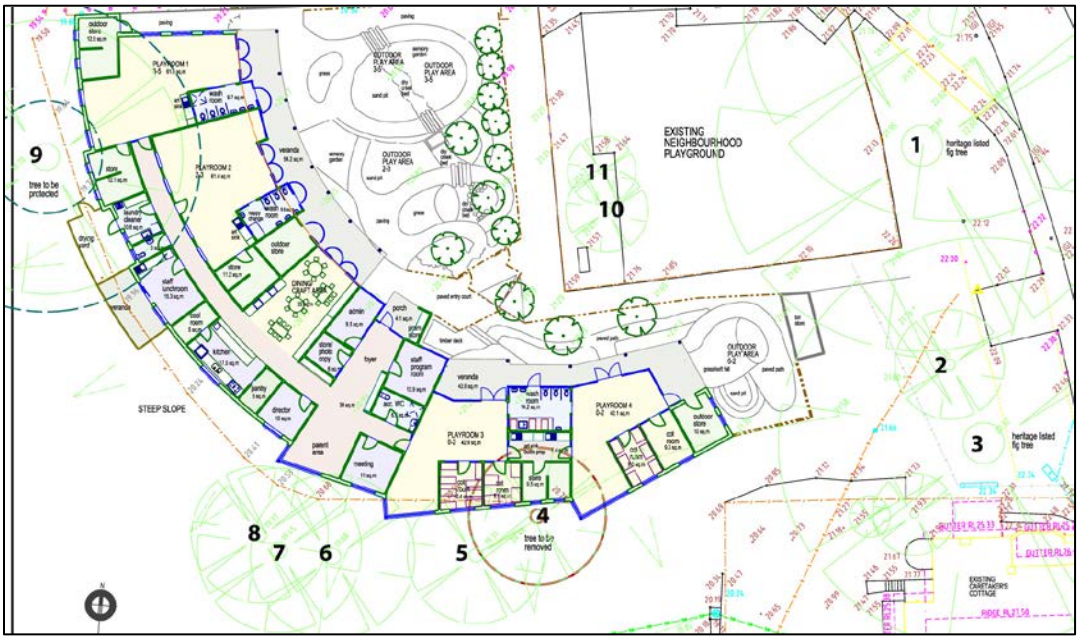

Figure A: Excerpt from the Site and Floor Plan showing tree locations and numbering.

4 Methodology

4.1 Site Inspection

Site inspection and tree assessment was undertaken on the 14th of April, 2014. 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. Tree risk assessment was not requested or included in the scope of works.

4.2 Plans and Diagrams

This report is based upon a review of the Site & Floor Plan and Elevations/Sections prepared by Dillon and Savage Architects and the Landscape and Play Space Concept Plan prepared by Corkery Consulting (June 2014).

The Remedial Action Plan for the contaminated soil prepared by SESL (March 2014) was also reviewed.

No Stormwater/Underground Services plans were provided for review.

The Tree Protection Plan (Attachment C) was drafted using the Concept Plan as a base.

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). Within the TPZ, a smaller root zone called the Structural Root Zone (SRZ) is also calculated. The terms TPZ and SRZ are used throughout this report. 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 required to maintain tree stability. Excavation within the SRZ can lead to whole tree failure.

Refer to the Tree Assessment Table (Attachment A) and Tree Protection Plan (Attachment C) 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. Where works are proposed outside of the TPZ, no sensitive construction methods are 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
4	Medium	Excavation for building footings proposed within the Structural Root Zone. Major root loss affecting tree stability is likely.

5.2 Potential Impacts of Proposal on Retained Trees

Tree Number	Works proposed within the Tree Protection Zone (TPZ)
1	Proposed bin storage area within the TPZ. Less that 5% of the TPZ area will be affected. There is likely to be a temporary access road within the TPZ. This has the potential to compact soil and damage surface roots. Ground protection is recommended.
2	There is likely to be a temporary access road within the TPZ. This has the potential to compact soil and damage surface roots. Ground protection is recommended.
3	Proposed bin storage area within the TPZ. Less than 5% of the TPZ area will be affected. Proposed soil excavation (up to 300mm depth) is required for soil remediation within the outdoor play area. Less that 5% of the TPZ area will be affected. There is likely to be a temporary access road within the TPZ. This has the potential to compact soil and damage surface roots. Ground protection is recommended.
5	Excavation for the proposed building footings is within the TPZ (clear of the SRZ). Approximately 15% of the TPZ area will be affected. Given the good health and vigour of this tree, it is not likely to be significantly impacted.
8	Excavation for the proposed building footings is within the TPZ (clear of the SRZ). Less than 5% of the TPZ area will be affected.
9	The proposed building footprint is within the TPZ and SRZ. Approximately 25-30% of the TPZ area will be affected. An elevated structure has been recommended to ensure that excavation is limited to placement of pier footings and that a void is present between the under-side of the floor and ground. This tree is not likely to be significantly affected is that recommendation is followed.

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

- Stripping of topsoil and removal of organic material form 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 demolition and building contractors and basic tree protection measures.

Impacts Associated With the Remedial Action Plan for Contaminated Soils: The potential for tree impacts associated with the Remedial Action Plan (RAP) are limited to the outdoor play areas. In accordance with the RAP, 300mm of soil is to be removed from the current surface in areas where soil is exposed. This is almost entirely clear of the Tree Protection Zones (5% incursion in the TPZ of Tree 3) of retained trees. No notable impact is expected.

6 Recommendations

6.1 Design Consideration –Tree 9

It is recommended that floor level of the north-eastern section of the proposed building (within the TPZ of Tree 9) be sufficiently elevated to allow a void between the existing ground level and under-side of the floor slab. Excavation should be limited to pier footings. The area of excavation for a ground floor slab should be limited to less than 10% of the TPZ area of Tree 9 (refer to the Tree Protection Plan-Attachment A).

6.2 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:

- Directly following installation of tree protection fencing and ground protection.
- During any excavation 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.

Tree Protection Fencing: Tree Protection Fencing should be installed prior to any machinery or materials being bought on site and remain in position throughout the entire project. Continuous Tree Protection Fencing should be erected around the Tree Protection Zones as defined 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 must be clamped at each panel junction. Tree Protection Fencing must not be moved at any time without consultation with the Project Arborist. An example of adequate tree protection fencing is detailed in the Tree Protection Plan.

As it is often not feasible to fence off the entire Tree Protection Zone, ground protection and trunk battening as specified in Figure B should be used in areas where fencing is not possible.

Ground Protection: Ground protection is recommended for the likely construction access-way through the existing park maintenance gate. Ground protection is aimed at preventing soil compaction, soil contamination, damage to surface roots and disruption of the natural soil profile.
Specification of ground protection and trunk battening is detailed in Figure B on the following page:

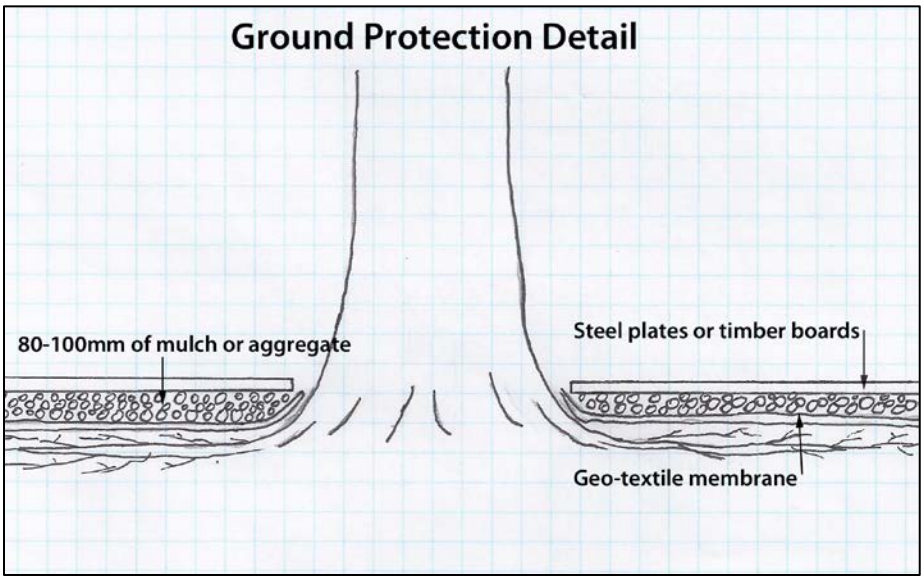

Figure B: Specification of appropriate ground protection –To be used where construction access passes within the TPZ of Trees 1, 2 and 3.

Tree Removal: One (1) tree requires removal to facilitate the proposed works. Tree removal contractors must be briefed on the need to protect retained trees during tree removal operations. The stump of Tree 4 should be ground out rather than pulled out with an excavator to prevent damage to the root system of Tree 5. Tree removal works must be undertaken in accordance with the WorkCover Code of Practice for Amenity Tree Industry, 1998.

Tree Pruning: Pruning of Tree 9 is required to raise the canopy height on the eastern side for construction and roof clearance (Photo A). No more than 10% of the total canopy will be removed as part of these works. Pruning works must be undertaken in accordance with AS 4373-2007-*Pruning of amenity trees*, Section 7.3.3 (Crown Lifting). Only those branches with the potential to conflict with building works should be removed.

Photo A: Approximate area of the canopy that is required to be pruned.

Formative pruning of Trees 5 and 6 is recommended to manage the growth of epicormic shoots on the trunk. These shoots are likely to be a response to increased sunlight following removal of a large tree nearby. Formative Pruning (Section 7.2.5 of AS4373-2007) is aimed at selectively thinning these shoots and shortening the longest shoots. This pruning is recommended as risk management exercise rather than a measure to facilitate construction.

6.3 During Construction

Site Induction: The project manager should discuss the reasons for the tree protection fencing as part of the standard induction/introduction to contractors.

Tree Protection Zones: Refer to the Tree Protection Plan (Attachment C) for the location and 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.

If the existing groundcover is stripped within a Tree Protection Zone, it must be replaced with leaf and woodchip mulch to a depth of 80-100mm.

Recommended Construction Methods:

- Building Footings: All excavation for building footings should be undertaken under supervision of the Project Arborist. Where elevated sections of building supported by pier footings are proposed within the SRZ of Tree 9, pier positioning must be finalised following test digging to

ensure that roots greater than 40mm diameter are avoided. In other areas, all roots encountered should be cleanly cut using hand tools prior to continuation of excavation.

- Installation of sub-grade services (All retained trees): No hydraulics or services plans have been reviewed as part of this assessment. All new services must be routed outside of the Structural Root Zones of retained trees. The Project Arborist should be engaged to advise on layout and excavation methods of all services located within TPZ's of retained trees.

6.4 Tree Monitoring (Post Construction)

Following removal of Tree 4, there may be some sunscald damage to Tree 5. The upper trunk and branches should be inspected by an AQF Level 5 Arborist in the Autumn following the removal of Tree 4.

Tree 6 (Cedar Wattle) was in poor structural condition at the time of inspection. This tree may require removal within the next 5 years. It is recommended that the co-dominant stem junction be monitored for signs of cracking in the interim.

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 owners of the subject trees.
- 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.
- The tree assessment was undertaken for the purpose of pre-development planning. Tree hazard assessment was not requested or included in the scope of works.
- 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.
- This report must be read in its entirety. No part of this report may be referred to, verbally or in writing, unless taken in full context of the whole report.

Tree No.	Common Name/ Genus Species	DBH (mm)	Height (m)	Canopy Spread Radius (m)	Age Class	Health / Vigour	Structural Condition	Tree Protection Zone (m)	Structural Root Zone (m)	Estimated Life Expectancy (ELE)	Landscape and Environmental Significance	Retention Value	Comments	Proposed works within the TPZ.	Recommendations
1	Moreton Bay Fig, *Ficus macrophylla*	2000 (approx)	13	15	M	G	G	15.0	4.0	Long (40+ yrs)	1	High		Proposed bin storage area within the TPZ. Less than 5% of the TPZ area will be affected. There is likely to be a temporary construction access track within the TPZ.	Retain. Ground protection recommended.
2	Sweet Pittosporum, *Pittosporum undulatum*	260, 250, 220	8	5	M	G	G	5.1	2.3	Medium (15-40 yrs)	3	Medium	Compacted soil from vehicle passage within 2.0m to the N.	There is likely to be a temporary construction access track within the TPZ.	Retain. Ground protection recommended.
3	Port Jackson Fig, *Ficus rubiginosa*	1270	14	8	M	G	G	15.0	4.0	Long (40+ yrs)	1	High		Proposed bin storage area within the TPZ. Proposed excavation up to 300mm for soil remediation within the TPZ. Less than 5% of the TPZ area will be affected. There is likely to be a temporary construction access track within the TPZ.	Retain. Ground protection recommended.
4	Hills Weeping Fig, *Ficus microcarpa var. Hillii*	630, 580	19	8	M	G	G	10.3	3.1	Long (40+ yrs)	3	Medium	Mower damage to the surface roots. Co-dominant stem junction with included bark at 0.5m height. Failure at this junction is unlikely within the next 5 yrs.	Proposed excavation for building footings within the Structural Root Zone.	Remove.
5	Hills Weeping Fig, *Ficus microcarpa var. Hillii*	500, 340	17	5	M	G	F	7.3	2.7	Long (40+ yrs)	3	Medium	Supressed by Tree 4 and the previously removed tree to the N. Removal of Tree 4 is likely to expose this tree to unprecendented wind loading and sun.	Proposed excavation for building footings within the Tree Protection Zone. Approximately 15-20% of the TPZ area will be affected.	Retain and protect. Monitor upper trunk and branches for signs of sunscald. Formatively prune the epicormic shoots on the NE stem by selective thinning and shortening the longest ones.
6	Hills Weeping Fig, *Ficus microcarpa var. Hillii*	340	17	3	M	G	F	4.1	2.1	Long (40+ yrs)	3	Medium	Upright forest form.	Nil.	Retain and protect. Formatively prune the epicormic shoots by selective thinning and shortening the longest ones.
7	Cedar Wattle, *Acacia elata*	510	16	3	LM	F	P	6.1	2.5	Short (5-15 yrs)	3	Medium	Previous termite activity at the base. Co-dominant stem junction with bark inclusion at 1.0m height.	Nil.	Remove within the next 5 years. Monitor the stem junction for signs of cracking and splitting in the interim.
8	Hills Weeping Fig, *Ficus microcarpa var. Hillii*	620	17	5	M	G	G	7.4	2.7	Long (40+ yrs)	3	Medium		Proposed excavation for building footings within the Tree Protection Zone. Less than 5% of the TPZ area will be affected.	Retain and protect.
9	Hills Weeping Fig, *Ficus microcarpa var. Hillii*	630, 450, 370	16	8	M	G	G	10.3	3.1	Long (40+ yrs)	3	Medium	Low branches at 3.0m height to a spread of 6.0m from the trunk. Surface roots visible to 2.5m from the trunk.	Proposed building within the Structural Root Zone and Tree Protection Zone.	Retain and protect. Crown lifting pruning required.
10	Canary Island Date Palm, *Phoenix canariensis*	560	7	3	M	G	G	6.7	2.6	Long (40+ yrs)	2	High		Nil.	Retain and protect.
11	Fan Palm, *Washingtonia robusta*	320	14	2	M	G	G	3.8	2.1	Long (40+ yrs)	2	High		Nil.	Retain and protect.

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 circumfrence. DBH is primarily used for the calculation of the TPZ and SRZ.
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)**: There 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 - 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 x 50) $^{0.42}$ x 0.64** (for trees less than 150mm Diameter, a minimum SRZ of 1.5 metres). 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 Life Expectancy (ELE). This method is based upon the system of tree assessment procedure known as Safe Useful Life Expectancy (SULE) developed by Jeremy Barrell, Hampshire, England. The SULE method was originally derived from the Brittish Standard, BS 5837, 1991, *Guide for trees in relation to construction*.
ELE is a simplified method 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 40 years or more with an acceptable level of risk), **Medium** (retainable for 15-40 years), **Short** (retainable for 0-15 years) and **Removal** (tree requiring immediate removal due to imminent 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 (VH): This is an outstanding specimen that holds irreplaceable environmental, landscape or cultural value.

2. High Value (H): 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 (M): 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 (L): 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 (VL): 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.

<table>
<tr><td rowspan="6">Landscape & Environmental Significance</td><td></td><td colspan="4">Estimated Life Expectancy</td></tr>
<tr><td></td><td>Long</td><td>Medium</td><td>Short</td><td>Removal</td></tr>
<tr><td>Very High (1)</td><td colspan="2" rowspan="2">HIGH</td><td rowspan="2">MEDIUM</td><td rowspan="2"></td></tr>
<tr><td>High (2)</td></tr>
<tr><td>Medium (3)</td><td colspan="2">MEDIUM</td><td rowspan="3" colspan="2">LOW</td></tr>
<tr><td>Low (4)</td><td colspan="2" rowspan="2"></td></tr>
<tr><td>Very Low (5)</td></tr>
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HIGH Retention Value: These trees are worthy of retention and major design consideration should be made where possible 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.

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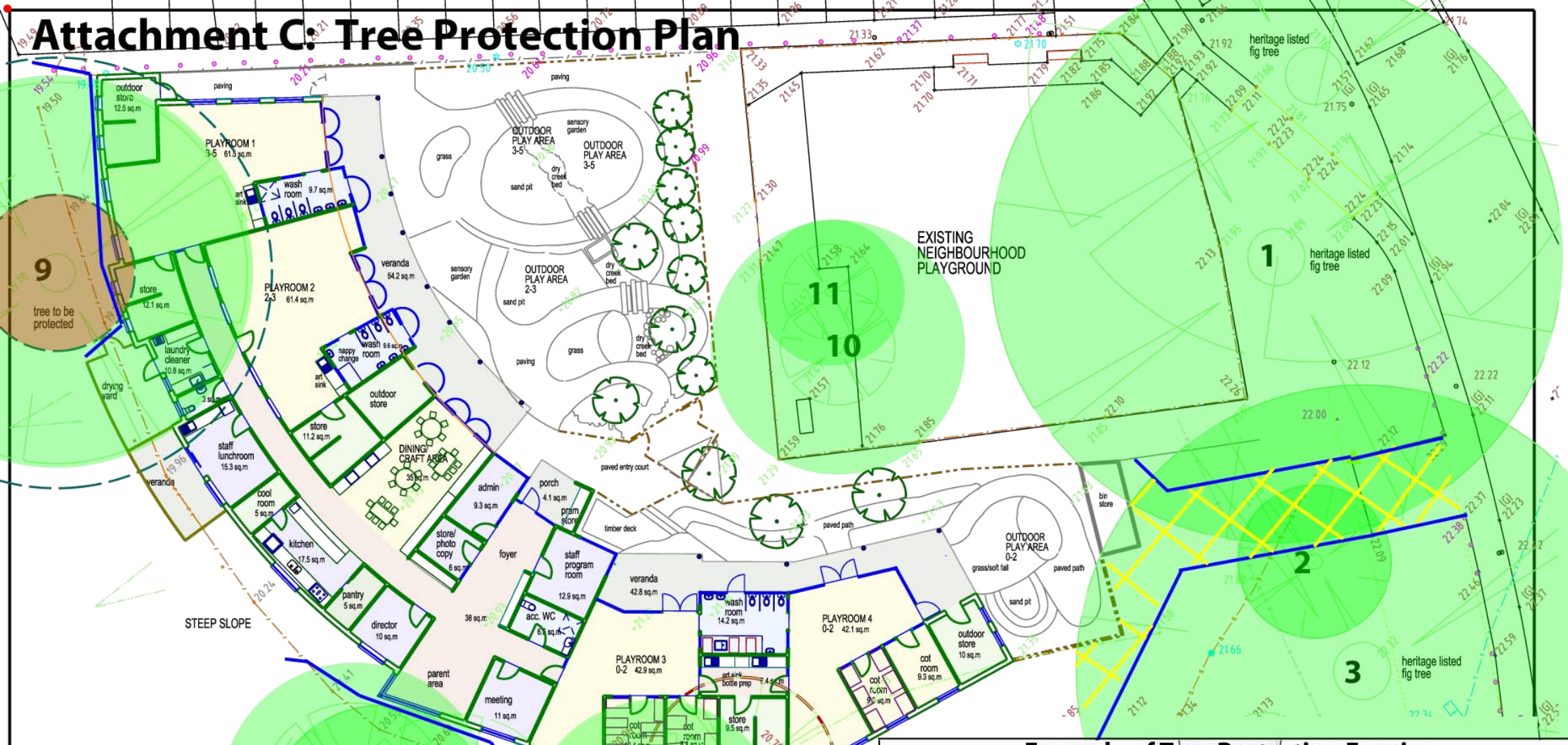
Attachment C: Tree Protection Plan



Tree Protection Zone

Tree Protection Fencing

Structural Root Zone (Tree 9)

Ground Protection

Example of Tree Protection Fencing