

Arboricultural Impact Assessment

Alterations & Additions at

981 Barrenjoey Road, Palm Beach

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2 Summary

This Arboricultural Impact Assessment (AIA) is based on twenty seven (27) trees located at 981 Barrenjoey Road, Palm Beach (subject site).

The tree population of the site consists of three (3) locally indigenous natives and a variety of planted natives and exotics. The majority of trees on the site are Palm trees that are exempt from protection within the Northern Beaches LGA.

The proposed works include demolition of parts of the existing dwelling, alterations and additions to the existing dwelling and construction of a new carport, turn-table and inclinator.

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

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

Table A: Retention Values of the Subject Trees.

All four (4) of the High Retention Value trees and the majority of the Medium Retention Value trees are able to be retained.

Five (5) trees are proposed to be removed as part of this project. This includes four (4) Low Retention Value trees and one (1) Medium Retention Value tree. Each of the trees proposed for removal is exempt from protection within the Northern Beaches LGA. Council approval is not required for the removal of these trees.

There is construction proposed within the Tree Protection Zones (TPZ) of Trees 2, 3, 4, 5, 6. Recommendations have been made regarding tree protection measures to limit the potential for impact on retained trees.

3 Introduction

3.1 Background

This Arboricultural Impact Assessment (AIA) was prepared for Morris Symonds and Irene Deutsch in relation to the existing trees and a proposed alterations and additions at 981 Barrenjoey Road, Palm Beach (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

The subject site is occupied by a one and two storey brick house and garden areas.

It is proposed to demolish parts of the existing dwelling and undertake building alterations and additions and construction of a new carport, turn-table and inclinator.

3.3 Subject Trees

All trees within the site have been assessed. The majority of the tree population consists of planted exotic palm trees that are exempt from protection within the Northern Beaches LGA.

There are three (3) locally indigenous natives (*Eucalyptus umbra*) within the site (Trees 3, 4 and 5).

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

4 Methodology

4.1 Site Inspection

Site inspection and tree assessment was undertaken on the 14th of October, 2019. 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 Preliminary Advice and Co-ordination

Following the site inspection, a Tree Assessment Table and Tree Location Plan was sent to the Architect. The purpose of this was to communicate Tree Retention Values, Tree Protection Zones and Structural Root Zones. This information was used by the Architect to plan for tree sensitive design and retention of High and Medium Retention Value trees.

4.3 Exploratory Excavation

Exploratory excavation was undertaken in the areas where building footings are proposed close to the perimeters of the Structural Root Zones of Trees 2 and 3 (Figure A below). The purpose of this was to determine the extent of root damage likely to occur during excavation.

Exploratory excavation was undertaken by Alexis Anderson on the 6th January 2020. Exploratory excavation was undertaken using hand tools with care to avoid damage to any tree roots encountered.



Figure A: Excerpt from the Ground Floor Plan showing locations where exploratory excavation was undertaken.



Photo A: Location of exploratory excavation near Tree 2.



Photo B: Location of exploratory excavation near Tree 3.

4.4 Plan Review

The set of plans provided by Architects Ink (Issue J) were reviewed as part of this assessment. No Landscaping Plans, Hydraulics Plans or Engineering Detail were available for review as part of this assessment.

4.5 **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.

<u>Structural Root Zone -SRZ</u>: 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.

4.6 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, stormwater pipes, 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.

4.7 **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 Exploratory Excavation

5.1 **Tree 2**

Exploratory excavation was undertaken near Tree 2 in the location outlined in Figure A and Photo A, Section 4.3. This was undertaken to a depth of 500mm which was sufficient to expose the underlying claystone and shale bedrock. One (1) x 80mm diameter root was exposed at a depth of 400mm in the location of the proposed sauna/steam room footing. This root was located outside of the Structural Root Zone at a distance of 4.0m from the centre of trunk. This root is not considered to critical for inground structural support. Pruning of this root is unlikely to compromise the stability of Tree 2.



Photos B and C: 80mm diameter root located in the location of proposed footings, 4.0m from Tree 2.

5.2 **Tree 3**

Exploratory excavation was undertaken near Tree 3 in the locations outlined in Figure A and Photo B, Section 4.3. This was undertaken to a depth of 600mm which was sufficient to expose the underlying sandstone bedrock. No tree roots were found in the locations of exploratory excavation.



Photos D and E: Exploratory pits excavated within the location of column footings at the perimeter of the Structural Root Zone of Tree 3.

6 Potential Impacts of Proposed Works

6.1 **Trees to be removed**

Tree Number	Retention Value	Reason for Removal				
8	Low					
21	Medium	Within the proposed building footprint.				
17, 19, 26	Low	Within the proposed inclinator alignment.				

Tree Number	Retention Value	Works proposed within the Tree Protection Zone (TPZ)
2	High	Excavation for the sauna/steam room footing is proposed within the TPZ. Exploratory excavation revealed that one (1) 80mm diameter root will need to be pruned as part of footing excavation. The Gym room floor slab (R.L 16.1) will float over existing ground levels within the Structural Root Zone. The existing retaining walls are likely to have prevented major root growth downslope to the location of the western gym slab footing. This is a vigorous species that can typically tolerate some root disturbance. This tree is likely to tolerate the proposed works and remain viable in the long-term. The canopy of this tree is clear of the proposed upper floor and roof structures. No canopy pruning is required.
3	High	No excavation is proposed within the Structural Root Zone and no roots were found in the locations of exploratory excavation. The remaining areas of building footings (outside of the existing building footprint) will affect less than 10% of the TPZ area. No pruning of structural roots or major woody transport roots is expected. Minor canopy pruning will be required to accommodate the games room Loggia (R.L 16.2). A single 3 rd order branch will require removal. Less than 5% of the total canopy volume will require removal. Refer to the recommendations for details and specifications for canopy pruning. This tree is likely to tolerate the proposed works and remain viable.
4	High	There are 2 pier footings for the proposed extended terrace within the TPZ. These are located within the location of the existing retaining wall at an elevated height. The new inclinator will pass within the TPZ on isolated pier footings. Footings will occupy less than 5% of the TPZ area. Minor root loss is possible. No notable impact is expected. No canopy pruning is required.
5	High	A new porous footpath is proposed over the existing lower retaining wall. The path is to be entirely above existing grade with no excavation required. No impact is expected.
6	Medium	A new stairway is proposed within the TPZ. It will be possible to construct the stairs on an elevated light-weight frame. No excavation is required within the TPZ.
22	Medium	The extended terrace will be fully elevated and suspended over the TPZ. No footings are proposed within the TPZ. No impact is expected.

6.2 **Potential Impacts of Proposal on Retained Trees**

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 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 building contractors and basic tree protection measures.

7 Recommendations

7.1 Site Establishment – Prior to Demolition/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 site establishment to meet with the Site Foreman and discuss tree protection requirement.
- Following installation of tree protection trunk battening.
- During excavation within the TPZ of retained trees.
- At project completion to verify tree protection and retention.

<u>Tree Removal</u>: Five (5) trees are proposed to be removed as part of the project. Tree removal contractors should be briefed on the need to protect retained trees during tree removal operations. The mulch collected during the tree removal operation should be retained on-site to be spread within the Tree Protection Zones of retained trees.

Tree removal works should be undertaken in accordance with the WorkSafe Australia *Guide to Managing Risks of Tree Trimming & Removal Work.*

Canopy Pruning (Tree 3): A single 60mm diameter 3rd order branch is to be removed to allow construction (Photo F). Canopy pruning should be undertaken by an AQF Level 2 (minimum) Arborist in accordance with AS4373-2007-*Pruning of Amenity Trees,* Section 7.2.4 (Selective Pruning). No more than 5% of the canopy volume should be removed.



Photo F: 3rd order branch to be removed.

<u>Trunk Protection</u>: (Trees 2, 3, 4, 5, 20, 22): Trunk protection is recommended for these trees as an alternative to fencing due to the sloping/terraced ground levels.

Trunk battening is aimed at preventing accidental bark wounds as often occurs on construction sites where heavy machinery is used.



Figure B: Specification of appropriate trunk protection.

7.2 **During Demolition**

The existing flagstone within the TPZ's of Trees 2 and 3 should be retained as ground protection during demolition and remain throughout the entire project.

7.3 During Construction

Excavation for building footings (Trees 2 and 3): All excavation within the TPZ's of Trees 2 and 3 must be undertaken using hand tools within the top 600mm of soil or to the depth of bedrock. All tree roots encountered must be cleanly cut using a hand saw or secateurs. The purpose of this is to avoid additional unnecessary root damage such (tearing/splintering) that typically occurs when roots are pruned using an excavator and to minimise the surface area of pruning wounds.

<u>Tree Protection Zones</u>: 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.

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

7.4 **Post Construction**

<u>Tree Care</u>: At the completion of the project, the retained trees should be inspected by the Project Arborist. Depending on the health and vitality of retained trees, the Project Arborist may prescribe some remedial tree care. This may include installation of temporary or permanent irrigation, application of soil conditioners, compost application, fertiliser application and installation of mulch.

8 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.

9 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. Detailed tree risk 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.

January, 20	20
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Tree No.	Common Name/ Genus Species	Trunk Diameter (cm)	Height (m)	Canopy Spread Radius (m)	Age Class	Health / Vitality	Structural Condition	Tree Protection Zone (m)	Structural Root Zone (m)	Estimated Life Expectancy (ELE)	Landscape and Environmental Significance	Retention Value	Comments	Likely Construction Impacts	Proposed Action.
1	Orchid Tree, Bauhinea variegata	32	8	3	м	F	F	3.8	2.1	Medium (10-30 yrs)	3	Medium	Planted exotic.	Nil.	Retain.
2	Brushbox, Lophostemon confertus	72	17	6	М	G	G	8.6	3.0	Long (30+ yrs)	2	High	Planted Australian native.	Building footings are proposed within the TPZ. 1 x 80mm diameter will be cut to allow footings. The floor slab will float over existing paved courtyard within the SRZ.	Retain.
3	Broad-leaved White Mahogany, Eucalyptus umbra	47	11	5	м	F	F	5.6	2.5	Medium (10-30 yrs)	2	High	Locally indigenous native. Likely to have self sown.	Post footings are propossed within the TPZ. No root pruning is required. Minor canopy pruning is required.	Retain.
4	Broad-leaved White Mahogany, Eucalyptus umbra	44	14	6	м	G	G	5.3	2.4	Long (30+ yrs)	2	High	Locally indigenous native. Likely to have self sown.	There is a single pier footing propsed within the SRZ. The footing is in the location of the existing retaining wall. No impact is expected.	Retain.
5	Broad-leaved White Mahogany, Eucalyptus umbra	29, 27	8	5	м	F	F	4.8	2.3	Medium (10-30 yrs)	2	High	Locally indigenous native. Likely to have self sown.	A new porous pedestrian path is proposed within the TPZ/SRZ. No excavation is required. No impact is expected.	Retain.
6	Kentia Palm, Howea forsteriana (x2)	15	8	2	м	G	G	2.0	1.0	Long (30+ yrs)	3	Medium	Planted exotic. Exempt from protection within the Northern Beaches LGA.	New stairway is proposed within the TPZ. No excavation is required. No imapct is expected.	Retain.
7	Bangalow Palm, Archontophoenix cunninghamiana	16	7	2	м	G	G	2.0	1.0	Long (30+ yrs)	3	Medium	Planted Australian native. Exempt from protection within the Northern Beaches LGA.	Nil.	Retain.
8	Giant Bird of Paradaise, Strelitzia nicholii (x5)	16	5	1	м	G	G	2.0	1.0	Long (30+ yrs)	4	Low	Planted exotic. Exempt from protection within the Northern Beaches LGA.	Within the proposed building footprint.	Remove.

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Tree No.	Common Name/ Genus Species	Trunk Diameter (cm)	Height (m)	Canopy Spread Radius (m)	Age Class	Health / Vitality	Structural Condition	Tree Protection Zone (m)	Structural Root Zone (m)	Estimated Life Expectancy (ELE)	Landscape and Environmental Significance	Retention Value	Comments	Likely Construction Impacts	Proposed Action.
9	Bangalow Palm, Archontophoenix cunninghamiana (x2)	20	10	2	м	G	G	2.0	1.0	Long (30+ yrs)	3	Medium	Planted Australian native. Exempt from protection within the Northern Beaches LGA.	Nil.	Retain.
10	Giant Bird of Paradaise, <i>Strelitzia nicholii</i> (x4)	12	7	1	м	G	G	2.0	1.0	Long (30+ yrs)	4	Low	Planted exotic. Exempt from protection within the Northern Beaches LGA.	Nil.	Retain.
11	Cocos Palm, Syagrus romanzoffiamnum	25	10	2	м	G	G	2.0	1.0	Long (30+ yrs)	4	Low	Planted exotic. Exempt from protection within the Northern Beaches LGA.	Nil.	Retain.
12	Cocos Palm, Syagrus romanzoffiamnum	28	12	2	м	G	G	2.0	1.0	Long (30+ yrs)	4	Low	Planted exotic. Exempt from protection within the Northern Beaches LGA.	Nil.	Retain.
13	Cocos Palm, Syagrus romanzoffiamnum	30	9	2	м	G	G	2.0	1.0	Long (30+ yrs)	4	Low	Planted exotic. Exempt from protection within the Northern Beaches LGA.	Nil.	Retain.
14	Cocos Palm, Syagrus romanzoffiamnum	25	10	2	м	G	G	2.0	1.0	Long (30+ yrs)	4	Low	Planted exotic. Exempt from protection within the Northern Beaches LGA.	Nil.	Retain.
15	Bangalow Palm, Archontophoenix cunninghamiana (x3)	20	12	2	м	G	G	2.0	1.0	Long (30+ yrs)	3	Medium	Planted Australian native. Exempt from protection within the Northern Beaches LGA.	Nil.	Retain.
16	Cocos Palm, Syagrus romanzoffiamnum (x2)	25	10	2	м	G	G	2.0	1.0	Long (30+ yrs)	4	Low	Planted exotic. Exempt from protection within the Northern Beaches LGA.	Nil.	Retain.
17	Cocos Palm, Syagrus romanzoffiamnum (x4)	30	12	2	м	G	G	2.0	1.0	Long (30+ yrs)	4	Low	Planted exotic. Exempt from protection within the Northern Beaches LGA.	Within the proposed inclinator alignment.	Remove.
18	Cocos Palm, Syagrus romanzoffiamnum (x3)	20	7	1	EM	F	G	2.0	1.0	Long (30+ yrs)	4	Low	Planted exotic. Exempt from protection within the Northern Beaches LGA.	Nil.	Retain.

Tree No.	Common Name/ Genus Species	Trunk Diameter (cm)	Height (m)	Canopy Spread Radius (m)	Age Class	Health / Vitality	Structural Condition	Tree Protection Zone (m)	Structural Root Zone (m)	Estimated Life Expectancy (ELE)	Landscape and Environmental Significance	Retention Value	Comments	Likely Construction Impacts	Proposed Action.
19	Cocos Palm, Syagrus romanzoffiamnum (x2)	20	7	1	EM	F	G	2.0	1.0	Long (30+ yrs)	4	Low	Planted exotic. Exempt from protection within the Northern Beaches LGA.	Within the proposed inclinator alignment.	Remove.
20	Cocos Palm, Syagrus romanzoffiamnum (x3)	27	14	3	м	G	G	2.0	1.0	Long (30+ yrs)	4	Low	Planted exotic. Exempt from protection within the Northern Beaches LGA.	Nil.	Retain.
21	Bangalow Palm, Archontophoenix cunninghamiana (x2)	24	14	2	м	G	G	2.0	1.0	Long (30+ yrs)	3	Medium	Planted Australian native. Exempt from protection within the Northern Beaches LGA.	Within the proposed building footprint.	Remove.
22	Bangalow Palm, Archontophoenix cunninghamiana (x4)	15	6	2	EM	G	G	2.0	1.0	Long (30+ yrs)	3	Medium	Planted Australian native. Exempt from protection within the Northern Beaches LGA.	Nil.	Retain.
23	Bangalow Palm, Archontophoenix cunninghamiana	12	10	2	м	G	G	2.0	1.0	Long (30+ yrs)	3	Medium	Planted Australian native. Exempt from protection within the Northern Beaches LGA.	Nil.	Retain.
24	Bangalow Palm, Archontophoenix cunninghamiana	12	10	2	м	G	G	2.0	1.0	Long (30+ yrs)	3	Medium	Planted Australian native. Exempt from protection within the Northern Beaches LGA.	Nil.	Retain.
25	Bangalow Palm, Archontophoenix cunninghamiana	20	10	2	м	G	G	2.0	1.0	Long (30+ yrs)	3	Medium	Planted Australian native. Exempt from protection within the Northern Beaches LGA.	Nil.	Retain.
26	Cocos Palm, Syagrus romanzoffiamnum	32	9	2	м	F	G	2.0	1.0	Long (30+ yrs)	4	Low	Planted exotic. Exempt from protection within the Northern Beaches LGA.	Within the proposed inclinator alignment.	Remove.
27	Cocos Palm, Syagrus romanzoffiamnum (x2)	25	8	1	м	F	G	2.0	1.0	Long (30+ yrs)	4	Low	Planted exotic. Exempt from protection within the Northern Beaches LGA.	тва.	Retain.

Attachment B: TREE ASSESSMENT DEFINITIONS

<u>**Height**</u>. 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*.

<u>Canopy Spread Radius</u>. 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.

<u>Age Class</u> - 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.

<u>Health/Vitality</u> - 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.

<u>Structural Condition</u> - 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*".

<u>Structural Root Zone (SRZ).</u> 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 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.

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

					Estimate	ed Life Expectanc	;y
				Long	Medium	Short	Removal
S	En	La	Very High (1)				
gnifi	viror	ndso	High (2)	н	IGH	MEDIUM	
cance	Iment	cape 8	Medium (3)	MED	NUM		-
	<u>a</u>	Xo	Low (4)			LOW	
			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.



-Tree protection detail is indicative only. The extent and type of tree protection should be determined with co-ordination between the Site Foreman and Project Arborist to allow adequate site access during construction.

KEY:

^{\4.59}+RLE21.55 existing relative level +RL21.55 proposed structural relative level proposed finished +RLfin21.55 relative level existing wall new brick wall wall to demolish

190 concrete block wall

new timber framed wall

ex150x50 H2 grade F8 light timber frame where wall height over 3.0m (external wall at 450cc)

timber framed or light steel framed wall (at 450cc) as above with 75mm external "hebel power panel" wall lining to achieve FRL -/120/120



Letter	Revisions/Issue	Date	Ву
8	preliminary issue	13.09.19	PD
b		18.09.19	PD
0		24.09.19	PD
d		30.09.19	PD
E		1.10.19	PD

etter	Revisions/Issue	Date	Ву
	preliminary issue	13.09.19	PO
		18.09.19	PD
		24.09.19	PD
		30.09.19	PD
		1.10.19	PD

tter	Revisions/Issue	Date	
	preliminary issue	13.09.18	
		18.09.19	
		24,09.19	
		30.09.19	

	nevisions/issue	Date
tter	Revisions/lesue	Date
		13.09.19
		15.09.19
		24/08/18

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in association: MARCO MENEGUZZI DESIGN

DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE STATE VERIFY ALL LEVELS AND DIMENSIONS ON SITE BEFORE THE COMMENCEMENT OF ANY WORK OR SHOP DRAWINGS

DONOT SCALE OFF DRAWINGS DRAWINGS SHALL BE READ IN CONJUNCTION WITH ENGINEERS A THER CONSULTANTS SPECIFICATIONS AND DETAILS

ANY DISCREPANCIES ARE TO BE REFERRED TO ARCHITECTS FOR CLARIFICATION BEFORE PROCEEDING WITH FURTHER WOR

Project

ALTERATIONS and ADDITIONS for

MORRIS SYMONDS and

IRENE DEUTSCH

Address

981 BARRENJOEY ROAD, "SANDY POINT LODGE"

GROUND FLOOR PLAN

PDP Sheet size Scales 1:100 (1:200 - A3) A1 Date August 2019 Project Number

1922 - 2 of 8

PALM BEACH

Drawing SCHEME-F

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